



PSI
FOUNDATION

2016
ANNUAL REPORT

APPLICATION PROCEDURE

All requests for research funding from PSI Foundation may be submitted at any time, as PSI no longer has application submission deadlines. A decision will be made at the next grants meeting following the external peer review process. Final funding decisions can be expected a maximum of 6 months after an application is received.

While PSI obtains independent appraisals on applications, the final decision on each application lies with the Board of Directors.

PSI now accepts grant applications through our online application system. Application guidelines are available on PSI's website, and any inquiries regarding funding opportunities should be directed to:

PSI Foundation
Tel: 416-226-6323
Fax: 416-226-6080
e-mail: psif@psifoundation.org
website: www.psifoundation.org

Although the Foundation does not solicit funds, as a charitable organization it is able to accept donations or bequests and to provide receipts for tax purposes.

MISSION STATEMENT

PSI Foundation is a non-profit physician centred organization dedicated to improving the health of Ontarians through excellence and innovation in clinically relevant research and education.

PSI FOUNDATION

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* special Non-Director Committee member

† resigned 2016

‡ joined 2016

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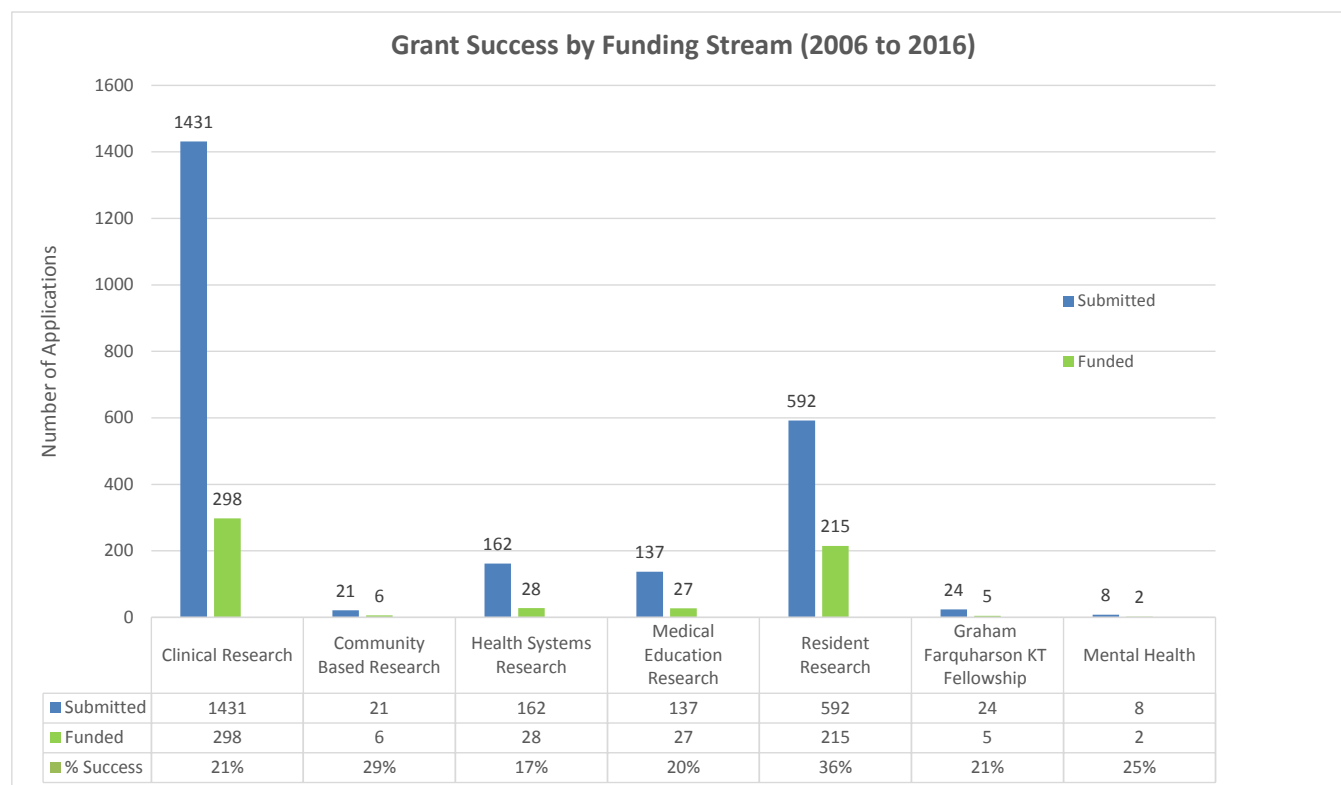
PRESIDENT'S REMARKS

2016 was an excellent year for the PSI Foundation! I am proud of the impact that the PSI Foundation has had this past year on research and physician education.

In our mission to improve the health of Ontarians we remain unique in our commitment to physician led clinical research, protection of physician time for knowledge translation, support for resident research and the education of practicing physicians. Despite turbulent times and continued market uncertainty we saw growth in our portfolio and we increased support for physician investigators. To help promote the translation and dissemination of research findings we funded three Graham Farquharson Knowledge Translation Fellows.



We launched an unprecedented number of new initiatives, expanding our Visiting Scholar Program and commencing our 'Lunch and Learn' series with the Academic Health Science Centres. To better understand the outcomes of our funded research we developed a post grant review process including a dashboard for the Grants Review Committee. The following is one report from the dashboard; a 10-year summary of grant success by funding stream.



Overall, we are extremely consistent in our grant success rate, both over time and by funding stream. We fund approximately 20% of the grants we receive with a slightly higher percentage of Community Based Research (29%) and Resident Research (36%). We also completed our first Mental Health research grant competition funding 2 grants; one grant focused on whether brain imaging improves therapy in psychiatric disorders and the other focused on the effective treatment of postpartum depression by public health nurses.

Our physician investigators have been busy as well. The results of PSI Foundation funded research has produced an incredible number of papers in high impact journals. Approximately 100 articles are published per year with an

average impact factor of 5.53 (range: 1.19-59.56). Also, to further disseminate PSI Foundation funded research we have increased our social media presence. We are tracking online news articles that reference funded grantees and highlight the stories on Twitter or in our Grantee Spotlight series. I invite you to visit our PSI Foundation Blog (psifoundation.wordpress.com) and follow us on Twitter (@PSIFoundation). And stay tuned as we re-design and update our Website (www.psifoundation.org).

It will soon be 10 years since the last external review of PSI Foundation. Despite our growth and success during these years it is crucial to continually evaluate and improve. At the Board's direction we have initiated an external review led by Dr. James Rourke, Past Dean of Medicine and Professor of Family Medicine at Memorial University of Newfoundland. We have asked the review committee to examine our return on investment for awarded grants, the focus and governance of the PSI Foundation and future directions, priorities, and opportunities.

I would again like to recognize the excellent work of our Finance Committee, chaired by Mr. John Sharp with members Mr. John Eby, Mr. Paul Richardson, Mr. Jim McGill, Ms. Giselle Bodkin and Dr. Robert McMurtry whose stewardship enable us to fund research and education. And our Grants Committee, chaired by Dr. Andrew Baker, and supported by Dr. Bill Hemens, Dr. Robin Walker, Dr. Deborah Cook, Dr. John Drover and Dr. Naana Jumah who, while staying true to our mission, help us innovate and invest in the high quality work proposed by Ontario physicians. And we are grateful for the time and content expertise of our volunteer external reviewers.

I would also like to acknowledge our Executive Director, Mr. Sam Moore, whose dedication and continuing support of PSI Foundation is exemplary. Mr. Moore leads an exceptionally talented and hard-working Foundation staff: Ms. Jessica Haxton, (Grants Coordinator), Ms. Nuvi Dhaliwal (Post Grants Coordinator), Ms. Asumi Matsumoto (Administrative Assistant), and Ms. Linda Cheng (Accountant).

Finally, I would like to express gratitude to my colleagues on the Board and to the House of Delegates for their commitment to and stewardship of the Foundation. Thank you for your continuing effort in support of our trainees and physicians, and for making a meaningful difference in the health of Ontarians.

Here's a look back at 2016 and what we accomplished together.

Respectfully submitted,



W. James King M.Sc., M.D., FRCPC.



2016 PSI GRAHAM FARQUHARSON KNOWLEDGE TRANSLATION FELLOWSHIP

"The PSI Graham Farquharson Knowledge Translation Fellowship will allow me to conduct translational research focused on addressing health inequities. The research will promote excellent primary care for everyone, including disadvantaged and marginalized people. It is fitting that the PSI Foundation would support my aim to improve access to care because the Foundation was established using funds from a pre-paid medical plan that improved access to care for Ontarians. We already know that access to primary care improves health and reduces inequities; the PSI Graham Farquharson Knowledge Translation Fellowship will help me translate that knowledge into improvements in health."

The PSI Foundation is pleased to announce Dr. Nav Persaud of St. Michael's Hospital and the University of Toronto as the 2016 PSI Graham Farquharson Knowledge Translation Fellow. This Fellowship – valued at \$150,000 per year for two years – is intended to protect a new, promising clinician's research time, allowing the Fellow to undertake high-impact translational research.

Millions of Canadians cannot afford medications. At the same time millions are harmed by medications that are inappropriately prescribed or not prescribed. The Fellowship will allow Dr. Persaud to conduct translational research promoting access to appropriately prescribed essential medications. He will conduct a trial of providing people with free access to a carefully selected set of essential medications and measure the effects on health and the quality of prescribing.

Dr. Persaud received his BSc in Physiology from the University of Toronto, his BA from the University of Oxford in Philosophy and Psychology, his MSc from the University of Oxford in Neuroscience, and his MD from the University of Toronto. Dr. Persaud completed his Family Medicine residency and postdoctoral research training at the University of Toronto and St. Michael's Hospital. He is a staff physician at St. Michael's Hospital, an associate scientist at the hospital's Li Ka Shing Knowledge Institute and an assistant professor at the University of Toronto.

2016 MENTAL HEALTH RESEARCH GRANTEES

In 2016, PSI Foundation awarded research grants in the field of Mental Health for the first time. The funded grantees are highlighted below.

**DR. GEORGE NORTHOFF, UNIVERSITY OF OTTAWA**

Does brain imaging improve therapy in psychiatric disorders? An imaging-based and individualized approach to stimulation treatment

Dr. Northoff holds a Canada Research Chair in Mind, Brain Imaging and Neuroethics and heads the equivalent unit at Ottawa's The Royal Mental Health Research Institute. He is also a Professor at the Brain and Mind Research Institute of the University of Ottawa. He has completed PhDs in Philosophy and Psychiatry, as well as his medical degree.

Dr. Northoff's PSI grant is based on a medical imperative to develop new or enhanced treatments of psychiatric disorders, such as schizophrenia, bipolar disorder and major depressive disorder. Brain imaging can decipher processing alterations in the brain's neural activity. It remains unclear how the changes in the brain's spontaneous activity are related to alterations in multisensory processing in psychiatric disorders like schizophrenia and depression.

The project aims to investigate the neural changes underlying multisensory integration in these disorders and to use these measures to guide therapy in an individualized way. The recent acquisition of a Siemens hybrid PET-MRI brain scanner, with an integrated EEG system, will support this project and offer leading-edge capabilities.

**DR. RYAN VAN LIESHOUT, MCMASTER UNIVERSITY**

Impact of public health nurse delivered group CBT for postpartum depression on maternal relapse, recurrence, attachment, parenting, and offspring emotion regulation: a randomized controlled trial

Dr. Van Lieshout is the Albert Einstein/Irving Zucker Chair in Neuroscience at McMaster University. He is also an Assistant Professor in the Department of Psychiatry and Behavioural Neurosciences and Associate Member of the Department of Clinical Epidemiology and Biostatistics.

Dr. Van Lieshout's PSI grant is focussed on treatment of postpartum depression. Postpartum depression (PPD) affects over 14,000 women in Ontario each year, and can have profound effects on mothers and their infants. Indeed, the cost of one case of PPD exceeds \$150,000, a significant proportion of which is related to its impact on offspring. Difficulties accessing preferred treatments (e.g., psychotherapy) result in fewer than 15% of women receiving care. While Public Health Units have played an important role in PPD detection in Ontario, Public Health Nurses (PHNs) currently lack the skills to deliver evidence-based treatment to women.

The investigators' objectives are to determine if: 1. PHNs can effectively treat PPD in the community using group cognitive behavioural therapy (CBT) to prevent depressive relapse and recurrence up to 18 months; 2. Improve mother-infant attachment and parenting; and 3. Prevent the intergenerational transmission of depression risk.

The researchers will conduct a randomized controlled trial comparing group CBT to care as usual in women with PPD. Funding from a previous study will enable the research team to assess the impact of group CBT on maternal depression immediately post-treatment, while the work proposed here will examine mother-infant attachment, parenting, and infant emotion regulation at 6, 12, and 18 months after group completion using self-report, observational, and physiological measures.

ORGANIZATION

PSI Foundation was incorporated on June 4th, 1970 under the laws of the Province of Ontario and is registered with the Canada Revenue Agency as a public charitable foundation under the Federal Income Tax Act.

PSI's membership is composed of physicians representing each of the Ontario Medical Association's branch societies and six other persons appointed by the Board of Directors for their interest in the Foundation's activities. These six members and eight physician representatives of the medical societies form the Board of Directors. The management of the Foundation is vested in this Board. An Executive Committee acts for the Board when required between meetings of the Board.

Finance and Grants Committees make recommendations to the Board of Directors on investment policy and granting programs respectively. Both Committees are largely composed of members of the Board of Directors.

An Executive Director, who is responsible to the Board, administers PSI's programs, as approved by the Board.

SOURCE OF FUNDS

The original capital of the Foundation came from the remaining funds of Physicians' Services Incorporated, the doctor-sponsored prepaid medical care plan.

HISTORICAL BACKGROUND

Physicians' Services Incorporated (PSI) commenced operation in November 1947 and soon became the largest prepaid medical care plan in Canada. PSI was sponsored by the Ontario Medical Association and supported by about 8,000 practising physicians in the Province of Ontario. These participating physicians agreed to allow the Corporation to prorate their medical fees in order to meet administrative expenses and provide the reserves required by law.

In September 1969, PSI ceased operation due to the implementation by the Ontario Government of what is now the Ontario Health Insurance Plan. The Board of PSI and the participating physicians decided that the funds remaining in the general reserve, after meeting all obligations to subscribers and physicians, should be used to establish a foundation, the income of which would be applied to charitable activities within the health field.

GRANTING POLICY AND PROGRAM

PSI Foundation is a granting agency and does not normally engage directly in charitable activities other than awarding medical fellowships. In accordance with the Federal Income Tax Act, PSI must award grants to other registered charities as defined by the Income Tax Act. Hospitals and medical schools come within this definition for the purposes of the Foundation's granting activities. Organizations seeking funds must provide the organization's charitable registration number issued by the Canada Revenue Agency. It is a policy of the Foundation to devote its funds to charitable endeavours in the health field within the Province of Ontario only.

PSI's granting interests focus on two areas - education of practising physicians and health research with emphasis on research relevant to patient care.

EDUCATION OF PRACTISING PHYSICIANS

This program is directed at physicians in established practices in Ontario, residing outside of the teaching centres, who wish to take a period of training to bring a needed clinical skill or knowledge to the community or to undertake training in research methodology.

Fellowships are provided to cover course fees, if any, transportation, room and board costs. Funds are not provided to replace income lost while undertaking a training program and the program is not designed to assist physicians taking refresher courses.

KNOWLEDGE TRANSLATION FELLOWSHIP

Translational research aims at transitioning research discoveries to the real world to improve health outcomes. This prestigious Fellowship protects research time of a new, promising clinician, thereby allowing the Fellow the opportunity to pursue their research interests.

HEALTH RESEARCH

Within this broad category, PSI's preference is to support research into any clinical problem (other than cancer, heart and stroke, drug and alcohol abuse, pharmaceutical drug studies or where there is substantial funding available through other agencies) that is of direct relevance to the care of patients.

PSI offers funding in the following funding streams:

- Clinical Research
- Medical Education Research
- Health Systems Research
- Healthcare Research by Community Physicians

CLINICAL RESEARCH

Clinical research is defined as research that is of direct relevance to patient care. Studies involving animals will be considered only if the animals are required as an immediate patient surrogate, which should be indicated in a written statement attached to the application.

Applications will be considered only where a practising physician is the principal investigator, which is defined as being a College of Physicians' and Surgeons licensed MD. Applicants must possess an academic appointment, defined as someone who is allowed to apply for his or her own research grants and be an independent investigator. Further in establishing priorities among applications, when scientific merit and clinical relevance are equal, preference will be given to the new investigator as opposed to the established investigator.

Fellows are eligible to apply for research grants but are required to have a co-investigator who has an academic appointment. The Fellow must provide evidence of having official hospital status, which should be in the form of a letter from his or her supervisor or department chair.

The duration of projects considered will be for a maximum of two years. Except under unusual circumstances, PSI cannot consider applications for projects requiring more than \$100,000 per year.

NEW INVESTIGATOR

The New Investigator funding stream offers researchers the ability to apply for three years of funding, as opposed to the standard two years, and a total amount of \$250,000 (maximum of \$100,000 in any one year). This funding stream is only available to those investigators within the first 5 years of his or her first academic appointment.

RESIDENT RESEARCH

Medical research being undertaken by a resident will be considered if the project is supervised by a physician with an academic appointment. A resident project's maximum duration is two years, with a maximum amount of \$20,000.

The maximum annual amount for total approvals for this funding stream is \$300,000. These applications are in competition with all others, thus the maximum amount awarded could obviously be less.

Proposals within this funding program must have been largely developed by the resident. The majority of the work involved in completing the research must be done by the resident.

To be eligible to apply for a Resident Research Grant, the Resident must have PGY status as per the College of Physicians and Surgeons of Ontario.

The restriction whereby PSI will not consider applications for research within the areas of cancer, heart and stroke and mental health does not apply to resident research projects.

MEDICAL EDUCATION RESEARCH

Funds are available to support research projects designed to assess the post M.D. educational environment such as curricula, methods and teaching resources. PSI Foundation recognizes that research within this area may involve teams that include non-medical researchers.

HEALTH SYSTEMS RESEARCH

Projects focusing within the health care system, such as preventive medicine, care of the elderly, communications within the system, underserved regions and ways of enhancing the effectiveness of medical practice, will be considered under this category.

Applications within these categories should not exceed the maximum of two years duration and the limit of \$100,000 per year set for clinical research.

HEALTHCARE RESEARCH BY COMMUNITY PHYSICIANS

Within this category of funding, physicians practising in a community setting may apply for a grant to assist them in undertaking a review of their practice patterns which would enhance effectiveness of practice and patient care in their own clinic, hospital or region. Grants up to \$20,000 are available to cover the costs of the data gathering and analysis, support staff and preparation of reports. Up to an additional \$500 will be provided for travel costs incurred in presenting papers on the results of a community practice study.

MENTAL HEALTH RESEARCH

PSI launched a new mental health Letter of Intent (LOI) funding stream in 2015. In 2016, each of Ontario's six medical universities submitted up to four LOIs, from which a PSI grants review sub-committee requested eight full applications.

PSI continues to review how to strengthen the Mental Health funding stream.

PSI VISITING SCHOLARS

PSI's Visiting Scholar funding program aims to support a specific need identified by a given medical university and PSI's Grants Committee. This program provides funds for a medical university to attract an external expert to address such a need.

PSI funded two Visiting Scholars in 2016, at the Northern Ontario School of Medicine and Western University.

AREAS OF NON-SUPPORT

While not an all-inclusive list, the following areas are not supported by the Foundation:

- Annual fund raising campaigns
- Building funds or other capital cost campaigns
- Research in the areas of cancer, heart and stroke, drug and alcohol abuse, pharmaceutical drug studies or where there is relatively more funding opportunities available through other agencies
- Systematic reviews and meta-analyses
- Operating costs of any organization or department
- Budget deficits
- Service programs
- Ongoing research
- Major equipment, unless required for a research project being supported by the Foundation
- Projects outside the Province of Ontario
- Films, books and journals.

PSI Foundation will support only one project per investigator at any given time. If an investigator is currently being supported by the Foundation as the principal investigator, PSI will not consider an application for a new project until the current granting period has ended.

ASSISTANCE GIVEN

If in doubt as to whether a proposal would fit within PSI's interests or policies, please contact the Executive Director or Grants Coordinator for assistance.

GRANTING ACTIVITIES – 2016

- 124 applications received with a total value of \$10,681,000 compared to 130 applications totalling \$14,604,500 in 2015.
- \$4,179,000 in new grants were approved in 2016.

HEALTH EDUCATION

EDUCATIONAL FELLOWSHIPS FOR PRACTISING PHYSICIANS

- 2 grants totalling \$24,500.

INTERNATIONAL INTERPROFESSIONAL WOUND CARE COURSE

Dr. Christen M. Cormier, Quarry Medical

POSTGRADUATE DIPLOMA IN CLINICAL DERMATOLOGY

Dr. Rebecca J. Woolnough, Quinte Health Care

HEALTH SYSTEMS RESEARCH

- 3 grants totalling \$238,500; a selection is highlighted below.

THE TOOLS AND THE TRADE: AN ETHNOGRAPHIC STUDY OF CHECKLIST POLICY AND PERFORMANCE, AND IMPLICATIONS FOR PATIENT SAFETY

Dr. Carol-Anne E. Moulton, Dr. Elise Paradis, University Health Network

Patients entering Canadian hospitals have a 7.5% chance of suffering an adverse event (AE), 36% of which are preventable. The most commonly identified AEs occur in the Operating Room (OR). Most errors occur because of

gaps in communication. In 2008, the World Health Organization proposed that introducing a new tool into practice, the Surgical Safety Checklist (SSC), could drastically reduce mortality and complications in the OR. Based on initial reports of success and admitted gaps in communication as a predominant source of error, hospitals across the globe mandated the use of the SSC, demanding 100% compliance and achieving it in the majority of cases.

In addition, the checklist model as a tool to facilitate communication and reduce error has been applied to many other points of patient care; however although it appears that checklist implementation into the lives of healthcare workers has been a major success story, frontline workers seem to have a more nihilistic view of checklists, often 'rolling their eyes' in cynicism when asked to perform the checklist, and doing so out of obligation for a policy driven from the 'top-down'. Moreover, a large Ontario study demonstrated no reduction in either mortality or complications despite widespread 'compliance' with the SSC, suggesting that simply 'ticking boxes' in compliance of the policy may not be sufficient.

To this end, the investigators are proposing a second wave of research that studies the safety culture in the OR. Specifically, the researchers want to study how the OR culture intersects with the use of the SSC in the OR. This study will use an ethnographic lens to identify how checklists are perceived, experienced and practiced by healthcare workers in the OR, and interrogate the relationship between OR culture and team engagement with the SSC. While the SCC and other checklists have been implemented across Canada, Canadian patients have yet to appreciate their full value in terms of reduced mortality and complications. There is a pressing need to understand the underlying mechanisms of cultural resistance embedded in our systems that prevent us from realizing the checklists' full patient safety potential.

MIXED METHODS EVALUATION OF AN INTERPROFESSIONAL COMMUNICATION PLATFORM'S IMPACT ON PATIENT SAFETY, TEAM COMMUNICATION PROCESSES, TEAM FUNCTIONING, ALLIED HEALTH UTILIZATION, AND LENGTH OF STAY

Dr. Terrance Tang (New Investigator), Dr. Robert Reid, Trillium Health Partners

In our aging population, more people are living longer with one or more chronic health conditions. As patients admitted to the hospital become increasingly complex, they often require care from a group of diverse clinicians including physicians, nurses, and allied health professionals. This makes teamwork and effective communication among the care team an important factor for patient safety and discharge planning.

Communication technologies currently used in hospitals are often out dated and have a number of limitations. The investigators developed Care Connector, a web-based and mobile electronic tool to support effective communication across the care team. This study evaluates the impact of Care Connector on the care team's processes for communication, teamwork, whether or not allied health staff are involved sooner, and on a patient's length of stay in hospital. If this technology is proven effective, it can be adopted by other hospitals to improve care.

RESEARCH BY COMMUNITY PHYSICIANS

2 grants totalling \$30,000.

IMPACT OF A MULTIFACETED AND MULTIDISCIPLINARY APPROACH ON PAIN, AGITATION AND DELIRIUM MANAGEMENT IN A COMMUNITY INTENSIVE CARE UNIT

Dr. Jennifer L.Y. Tsang, Niagara Health System

THE ASSOCIATION BETWEEN TOTAL BREASTFEEDING DURATION AND HOUSEHOLD FOOD INSECURITY

Dr. Peter D. Wong, Hospital for Sick Children

MEDICAL EDUCATION RESEARCH

2 grants totalling \$29,000.

A QUALITATIVE ASSESSMENT OF THE ROLE OF 'BOOT-CAMPS' IN SURGICAL RESIDENCY

Dr. Brandon Girardi (resident), Dr. Lucas Murnaghan (supervisor), Hospital for Sick Children

The transition from senior medical student to resident is a period of substantial increase in responsibility. This responsibility includes direct effects on patient care and thus represents a new stressor for junior residents. This transition period has been identified as a timepoint where simulation interventions could provide important benefits for residents and their patients. From this notion, there has been a widespread adoption of “pre-clinical training camps” or “Boot-camps” targeting new residents prior to entrance to the hospital environment.

While a plethora of studies have highlighted positive trainee reaction to implementation of pre-clinical training camps, and a limited few have demonstrated learning in pre-post test designs, there is a paucity of data on the theories informing how trainees learn in this environment and how they transfer those new skills to their hospital practice. In order to effectively implement pre-clinical training camps and efficiently maximize benefit to junior residents, a thorough understanding of the resident experience within these camps is needed. Qualitative grounded theory methodology employing semi-structured interviews will be utilized to explore the construct of “Boot-camps” through the eyes of junior surgical resident trainees, senior resident instructors, staff physician preceptors, and members of the inter-disciplinary health team at the University of Toronto.

Transcribed interviews will be coded and analyzed thematically to inform and develop theory that can subsequently be used to improve future implementations of pre-clinical training camps. In addition, the transfer of knowledge from the pre-clinical camp environment to the real-world hospital environment will be explored to help assess the ultimate impact of these camps on actual practice. In light of the widespread adoption of pre-clinical training camps, and the large amount of resources required to implement them, increasing understanding of their effectiveness and impact is vital to justifying their continued use.

CAN WE ASSESS TRAINEES, PROVIDE WRITTEN FEEDBACK, AND IMPROVE UPTAKE? A GROUNDED THEORY STUDY OF ASSESSMENT ANCHORS IN POSTGRADUATE MEDICAL EDUCATION

Dr. Nancy Dudek, University of Ottawa

Workplace-based assessment (WBA) is considered the best method of assessing professional competence. High quality WBA is a vital component of the successful implementation of competency based medical education. WBA tools typically provide a list of items that detail particular aspects of a clinical activity to be rated on a scale. Traditional anchors for these scales ask educators to quantify a trainee’s ability as compared to their level of training or the quality of the performance.

WBA tools that use traditional anchors have well documented problems. A new generation of WBA tools have used the concept of entrustment by using anchors such as “I would allow this trainee to practice unsupervised”. WBA tools using entrustability scales are more reliable. How and why entrustability scales seem to work and whether residents will accept these scales are complex questions that remain unanswered in the literature. The answers to which are needed to help create and improve the use of new WBA tools.

This study will explore why and how the concept of entrustment as an assessment method resonates with residents and their supervisors. This study will use the qualitative approach of grounded theory, which aims to build theories to explain complex, social phenomena.

CLINICAL RESEARCH

38 grants totalling \$2,449,000; a selection is highlighted below.

THE MANAGEMENT OF SMALL BOWEL OBSTRUCTION: A POPULATION-BASED ANALYSIS ON PRACTICES AND OUTCOMES

Dr. Ramy Behman (resident), Dr. Paul Karanicolas (supervisor), Sunnybrook Health Sciences Centre

Small bowel obstruction (SBO) represents one of the most common surgical problems in Western medicine accounting for up to 16% of all surgical admissions. American data has shown that more than 300,000 emergent surgeries are performed per year for this disease at a cost of 850,000 days of inpatient care and \$2.3 billion. These figures likely comprise only a fraction of the overall burden of this disease as only 20-35% of patients who present to hospital with this problem are treated operatively.

Existing management guidelines are based on limited high-quality evidence. Prior studies have focused on short-term outcomes; few studies exist with sufficient follow-up to allow for characterization of the long-term consequences of management decisions. The proposed study is a population-based analysis of patients in Ontario presenting with their first admission for small bowel obstruction. The investigators will evaluate the burden of disease of SBO in Ontario and follow the population forward in time to assess how early management patterns affect long-term outcomes.

ACCURACY OF GASTRIC ULTRASOUND TO DIAGNOSE A “FULL STOMACH”. A BAYESIAN FRAMEWORK

Dr. Luis E. Chaparro (resident), Dr. Anahi Perlas (supervisor), University Health Network

Aspiration of gastric contents into the lungs during anesthesia can lead to serious injury and death; therefore a “full stomach” at the time of anesthesia should be avoided. Ultrasound can evaluate stomach content to help anesthesiologists decide on the best timing and type of anesthesia to prevent aspiration.

This study will be the first to evaluate how accurate gastric ultrasound is to differentiate a “full” from an “empty” stomach. The accuracy of a test is defined as how well the test can “pick up” all subjects with a full stomach (“sensitivity”) and how likely it is that a stomach identified as full on ultrasound, actually is so (“specificity”). To that end, 80 healthy volunteers will be studied. After fasting for 8 hours, the subjects will ingest either a) a cup of coffee, b) a cup of coffee and a muffin, or c) nothing. An anesthesiologist who is unaware of what the subject ingested will examine the stomach content using ultrasound and will conclude if the stomach is empty or full according to pre-established criteria.

The results of the ultrasound test will then be compared with what the subjects actually ingested and the accuracy of the test result will be calculated using standard formulas.

CANADIAN HYSTERECTOMY ALTERNATIVES STUDY

Dr. Innée Chen (New Investigator), Ottawa Hospital Research Institute

With 40,000 hysterectomies being performed each year, Canada has among the highest hysterectomy rates in the developed world, 2nd only to the US. Most hysterectomies are performed on otherwise healthy women for the treatment of common gynaecologic conditions. Alternatives to hysterectomy exist, and the use of more conservative medical and minor procedural alternatives to hysterectomy can lead to a reduction in unnecessary surgery and associated complications and sequelae. Social inequities exist for hysterectomy practice in Canada, and variation is seen in geographic location, income, and education.

The objectives of this study are to: (1) explore the variation in hysterectomy practice in Canada; (2) determine the effect of First Nations/Inuit/Métis status, neighbourhood income, neighbourhood education, and geographic factors on hysterectomy rate, approach, and use of alternatives to hysterectomy, after taking into consideration the effects of patient clinical factors and identify patient subgroups that may be vulnerable to potentially avoidable

hysterectomy; and (3) compare healthcare utilization and cost of care for women who received alternative to hysterectomy compared with hysterectomy without prior use of alternative. A population-based retrospective analysis will be conducted.

This study will provide: (1) a quantified description of disparities in hysterectomy rates, use of minimally invasive approaches, and use of non-hysterectomy alternatives, and (2) quantified measure of the benefits and costs of hysterectomy alternatives compared with hysterectomy in Canada. By identifying subgroups of patients at highest risk of potentially avoidable procedures, the research has potential to lead to practice and policy changes that reduce inappropriate and invasive gynaecologic interventions for vulnerable women in our society.

ELASTASE AND MATRIX METALLOPROTEINASES IN PULMONARY HYPERTENSION ASSOCIATED WITH CONGENITAL DIAPHRAGMATIC HERNIA: POTENTIAL THERAPEUTIC TARGETS?

Dr. Kyle N. Cowan, Children's Hospital of Eastern Ontario

Congenital diaphragmatic hernia (CDH) is a developmental anomaly of the diaphragm that impairs lung growth in utero. Up to 40% of neonates with CDH die, a large part due to pulmonary hypertension (PH). Existing therapies for controlling PH have met with limited success in these infants, highlighting the need for a novel therapy.

The investigator's previous studies have demonstrated that a matrix-enzyme pathway is crucial to the progression of primary PH. Blockade of this pathway completely reversed PH and improved survival. The researcher's laboratory has now shown using a rat model of CDH that a similar pathway is activated in the diseased pulmonary arteries; thus suggesting that the molecular players involved in this pathway may represent novel therapeutic targets to treat the PH associated with CDH. It is now necessary to determine whether these molecular players are also induced in human CDH.

The objective of the current study is to assess the levels of these factors in archived lung tissue from patient's with CDH and compare them to lung tissue from patients that do not have pulmonary disease. This work is a necessary step towards identifying novel therapeutic targets to improve the treatment of PH secondary to CDH.

BALANCE OF THE MICROBIOME

Dr. Nick Daneman, Dr. Bryan Coburn, Sunnybrook Health Sciences Centre

Bloodstream infections are common and potentially fatal, and require early treatment with effective antibiotics to improve patient outcomes. The ideal duration of treatment for these infections is unknown, and in the absence of evidence unnecessarily prolonged treatment lengths are causing avoidable harms to patients. These harms include occasional but severe side effects such as kidney injury and *Clostridium difficile* infection, and increasing bacterial resistance to our antibiotics, but may also include universal but unseen harm to the gut microbiome (the normal diverse bacterial species present in the human gut).

In the Bacteremia Antibiotic Length Actually Needed for Clinical Effectiveness (BALANCE) randomized controlled trial the investigators are testing whether 7 days of antibiotics are associated with non-inferior survival rates to 14 days of antibiotic treatment. In this BALANCE of the Microbiome sub-study, in a subset of patients in the BALANCE trial, the researchers aim to test whether 7 days of treatment is superior to 14 days of treatment through preservation of the normal microbiome diversity.

Taken together, the results of the BALANCE trial and BALANCE of the Microbiome sub-study will define the appropriate treatment duration for bloodstream infections, and potentially result in major reductions in antibiotic treatments and harms across Ontario.

DISCOVERY OF NEW DRUGS TO TREAT INFLUENZA: HIGH-THROUGHPUT SCREENING IN ZEBRAFISH AND CONFIRMATORY TESTING IN A MURINE MODEL OF INFECTION

Dr. Niall C.J. Filewod (resident), Dr. Warren Lee (supervisor), St. Michael's Hospital

Influenza affects a large number of people in Ontario every year. Many of these people are admitted to hospital, and up to 5% will die. As new strains continuously emerge, the influenza vaccine is not always protective, and the drugs that are currently available to treat influenza have not been shown to save lives.

In this paradigm-shifting study the investigators will look for new types of drugs to fight influenza: rather than finding drugs that fight the virus, the researchers will look for drugs that alter how the body responds to infection. Leveraging the considerable investment of public money in the local zebrafish facility, the investigators will screen a library of candidate drugs in both zebrafish and mice to see if they can help the animals survive influenza. Testing drugs in two different animals will allow them to quickly eliminate those with serious side-effects, hastening the time between drug discovery and clinical trials.

Once possible drugs are identified, the researchers will determine how they work by performing experiments in human cells, zebrafish embryos, and mice. Overall, this project is a cost-effective discovery process with a real chance of finding new drugs to fight a common and serious disease.

A RANDOMIZED CONTROLLED TRIAL INVESTIGATING THE USE OF ABLATIVE FRACTIONAL CARBON DIOXIDE LASER THERAPY TO IMPROVE PEDIATRIC BURN SCARS

Dr. Joel Fish, Hospital for Sick Children

Despite improvements in the treatment of pediatric burn injuries, many children develop severe hypertrophic scars. Hypertrophic scars occur when the normal healing process is disrupted. As a result, these scars are typically red, raised, and stiff and often lead to serious morbidity. Ablative Fractional Carbon Dioxide laser therapy (AFCL) is the newest form of scar treatment available and early evidence has shown its ability to greatly improve hypertrophic burn scars.

AFCL was first introduced as a scar treatment at the Hospital for Sick Children (SickKids) in 2014. SickKids is the only pediatric center offering AFCL for pediatric burn scars in Canada. A randomized controlled trial (RCT) that compares AFCL to standard scar management (SSM) in pediatric patients has not been published. Thus, the investigators are proposing to conduct an RCT to determine whether treatment with AFCL and SSM is superior to SSM alone for improving the texture and appearance of hypertrophic burn scars in children aged 1 to 18 years from baseline to month 12 as measured by a validated scar assessment scale.

Ultimately, the findings from this study may change how hypertrophic burn scars are treated and may also benefit both children and adults with other types of scars.

CONVENTIONAL FOLLOW-UP VERSUS MOBILE APP HOME MONITORING FOR POST-OPERATIVE ACL RECONSTRUCTION PATIENTS: A RANDOMIZED CONTROLLED TRIAL

Dr. James P. Higgins (resident), Dr. John Theodoropoulos (supervisor), Women's College Hospital

Rupture of the anterior cruciate ligament (ACL) is one of the most common ligamentous knee injuries and occurs with an incidence of 35 out of 100,000. Innovations in mobile communication have created opportunities to incorporate technology into medical practice and have helped eliminate the distance between patients and their physicians. Web-based questionnaires, automatic appointment and medication reminders, as well as patient learning tools have already been adopted in many areas of medicine.

This will be a study comparing conventional clinic follow-up with electronic follow-up using a mobile device in a population of ACL reconstruction patients. Daily uploading of pictures from a mobile tablet or smartphone in

addition to clinical questions will potentially allow for early assessment of post-operative complications and avoid unnecessary follow-up appointments and long-term morbidity. The use of smartphone technology in surgical follow-up could decrease wait times for specialty surgeon clinic visits for new referrals and reduce emergency room visits through direct physician contact via a mobile app.

Eligible patients will be randomized between the mobile app and conventional clinic follow-up. Patient's in the conventional group will be assessed in clinic at 2 and 6 weeks post-operatively. The mobile app group will have no planned in-person follow-up. These visits will be replaced by answering questions through the mobile app and surgical site examination via submitted photos. The physician is then able to access these images and data online.

The investigators aim to determine if physician visits/direct contact with health care providers can be eliminated in the first six post-operative weeks through the use of our mobile application. The research team will also look at differences in complication rates between the two groups during this time period as well as perform a cost-effectiveness analysis. It is hypothesized that the mobile app will save patients money due to reduced travel costs and time lost from work, while subsequently allowing the surgeon to decrease wait time for new referrals.

USE OF SEMEN TEX101 TO IMPROVE SPERM RETRIEVAL RATES FOR MEN WITH NONOBSTRUCTIVE AZOOSPERMIA

Dr. Keith Jarvi, Mount Sinai Hospital

Infertility is very common, affecting close to 15% of couples. Contrary to popular belief, a male factor contributes to the couple's infertility half of the time. The most severe type of male infertility, found in 20% of these men, occurs when the man has no sperm in the ejaculate. Most of the time this problem arises when the man is producing either few or no sperm. Approximately 50% of these men have some sperm in the testis, which could be retrieved with a testicular biopsy for use in the process of in-vitro fertilization allowing the couple to have children.

Until recently the only way to determine if these men produce sperm was with an invasive testicular biopsy. The investigators have recently discovered a non-invasive marker to predict which of these men are producing sperm. While this helps to predict the presence of sperm, this does not improve the chances of finding sperm.

It is well recognized that men's sperm production varies with time. The researchers plan to use the marker to noninvasively monitor sperm production changes then offer sperm retrieval at the time of peak sperm production. This should improve the overall chances of retrieving sperm.

IMAGING OF NON-LESIONAL EPILEPSY USING HYBRID PET/MRI: A PROSPECTIVE FEASIBILITY STUDY

Dr. Benjamin Y. Kwan (resident), Dr. Jorge Burneo (supervisor), London Health Sciences Centre

Patients with epilepsy that is unable to be controlled by medications may be potential candidates for epilepsy surgery. Surgical removal of an epileptic lesion can lead to alleviation or elimination of seizures. Current diagnostic imaging standards are unable to detect a surgical lesion in a significant proportion of these patients. Patients who undergo surgery without a visible lesion on MRI have worse outcomes than those who do.

Recent advances in imaging technology have led to the development of PET/MRI scanners which allow two versatile imaging modalities to be combined into one machine. It is predicted that such technology will allow greater rates of lesion localization in medically refractory epilepsy patients thus leading to improved surgical outcomes. In Ontario, access to PET/MRI scanners will improve from one to three additional scanners by the end of 2016. This project will aim to establish indications for the use of this exciting technology in this patient population and form a starting point for establishing Canadian guidelines.

PROSPECTIVE, OPEN-LABEL TRIAL TO EVALUATE EFFICACY OF LYOPHILIZED FECAL MICROBIOTA TRANSPLANTATION FOR TREATMENT OF RECURRENT *C. DIFFICILE* INFECTION

Dr. Christine H. Lee, McMaster University

Clostridium difficile infection (CDI) is the leading cause of healthcare-associated infection in Canada and the rates of this infection continue to also rise in the community setting. Treatment of a primary episode of CDI with metronidazole, or with oral vancomycin in severe cases, is the standard of care. Recurrence rates following treatment with metronidazole and vancomycin are approximately 20%, increase to 40% following the first recurrence, and to more than 60% after two or more recurrences.

Fecal transplantation, also known as fecal microbiota transplantation (FMT), uses stool from a healthy screened donor to restore the healthy bacteria (microbiota) in the colon, and breaks the cycle of the need to treat with antibiotics which prevent reestablishment of beneficial microbiota in the colon. The investigators have recently reported in the JAMA that the efficacy of frozen or fresh FMT is approximately 85%; however FMT remains unavailable in most healthcare facilities in Canada largely due to lack of suitable donors and laboratory support to manufacture FMT.

Laboratory testing showed that lyophilisation (freeze-and-dried) of FMT allows healthy microbiota to survive for several months stored at 5 degrees Celsius. The use of lyophilized FMT will allow wider and immediate accessibility of FMT across many healthcare facilities in Canada. The researchers' primary objective is to determine the efficacy of lyophilized FMT compared to the frozen FMT.

THE ROLE OF THE NLRP3 INFLAMMASOME IN THE PATHOGENESIS OF RHEUMATIC VALVE DISEASE

Dr. Amine Mazine (resident), Dr. Bobby Yanagawa (supervisor), St. Michael's Hospital

Rheumatic heart disease (RHD) is the leading cause of valvular disease worldwide. The only treatment for end stage RHD is heroic, namely surgical valve replacement. Despite its high prevalence, little is known about the pathogenesis of RHD. The NLRP3 inflammasome is a protein complex that plays an essential role in triggering the innate immune system and has key roles in multiple infectious, inflammatory and autoimmune diseases as well as multiple cancers. Its role in RHD has not been studied.

The purpose of this study is to investigate a potential role for the NLRP3 inflammasome in the pathogenesis of RHD. The investigators hypothesize that auto-inflammatory inflammasome signaling is a critical upstream regulator of innate immunity in RHD. This study will address this hypothesis using a translational approach by studying NLRP3 protein and gene expression in human rheumatic and control valve leaflets explanted at the time of surgery. These proposed studies carry significant discovery potential and may provide new insights into our understanding of the pathogenesis of RHD.

INVESTIGATING THE ROLE OF MELATONIN AND PROSTAGLANDINS IN ENDOMETRIOSIS

Dr. Andrea A. Mosher (resident), Dr. Nicholas Leyland (supervisor), McMaster University

Endometriosis is a condition characterized by uterine tissue located outside the uterine cavity, which results in pelvic pain and infertility. Current treatments for endometriosis include hormonal suppression of menstruation and surgical removal of the ectopic endometrial tissue. Unfortunately, there is a high rate of recurrence for both treatment options.

A recent study has shown that melatonin can reduce the pain associated with endometriosis. The goal of this research project is to investigate the role of melatonin in the molecular mechanism of endometriosis. This will be accomplished by assessing the expression of melatonin receptors in endometriotic tissue and determining the effect of melatonin on inflammatory output from cultured endometriotic cells.

There is a need for effective non-hormonal and non-invasive treatments that don't interfere with the ability to conceive. Melatonin would be an ideal choice as it has a low side effect profile and does not interfere with conception. The results of this project will provide molecular insight into the mechanisms of a potential fertility sparing treatment for endometriosis.

SCREENING FOR *STRONGYLOIDES STERCORALIS* IN HIGH-RISK PATIENTS UNDERGOING IMMUNOSUPPRESSIVE THERAPY IN ASSOCIATION WITH BONE-MARROW TRANSPLANT, SOLID-ORGAN TRANSPLANT OR RHEUMATOLOGICAL DISORDERS

Dr. Ruchi Murthy (resident), Dr. Anne McCarthy (supervisor), Ottawa Hospital Research Institute

Strongyloides stercoralis, a soil transmitted worm (helminth), occurs in tropical and subtropical regions of the world. Increasing migration to Canada from endemic areas means more Canadians are at risk of exposure. Many are often asymptomatic, but may become gravely ill if they became immune suppressed, even decades after moving to Canada. Many chronic illnesses and cancers can be treated with immunosuppression and transplantation of bone marrow or solid organ. This study will investigate whether or not it is valuable to test for *Strongyloides* in patients that have lived in areas where the disease is common.

The investigators will use a blood test to screen individuals who may be at risk of severe *Strongyloides* infection because of their underlying diseases or treatments. A standardized screening questionnaire regarding country of origin or country in which a patient has spent more than 1 year will be used to identify potential participants under the care of hematology, nephrology, and rheumatology. All participating patients will have standard blood testing for *Strongyloides stercoralis*.

This research will allow the investigators to provide descriptive statistics of our patient population as well as the burden of this infection in patient groups at high risk for potentially fatal complications of that infection.

A DOUBLE BLIND RANDOMIZED CLINICAL TRIAL OF HIGH VOLUME SIMETHICONE TO IMPROVE VISUALIZATION DURING CAPSULE ENDOSCOPY

Dr. Michael Sey (New Investigator), London Health Sciences Centre

Capsule endoscopy (CE) involves swallowing a pill with a tiny camera built into it to examine the small intestine. Unfortunately, air bubbles inside the bowel can block the view of the camera and lead to missed diagnoses, such as cancers, polyps, abnormal blood vessels, and ulcers.

Simethicone is a liquid medication swallowed 30 minutes before CE that stays inside the bowels to get rid of air bubbles. Prior studies have tried using this medication with mixed success. The investigators believe that simethicone is likely effective but is not being given in a high enough volume to clean the entire small intestine.

In this study, the research team will randomize people to either the standard amount of simethicone (200 ml) or high volume simethicone (750 ml) to determine if the latter will remove air bubbles better and lead to improved views of the small intestine and more diagnoses. The researchers have already conducted a mini pilot study that showed a strong trend supporting the hypothesis that the high volume simethicone works better; however, confirmation of these findings by a rigorous clinical trial is needed.

FINANCIAL REPORT

2016 OVERVIEW

- Original investment by the doctors of Ontario: \$16.7 million in 1970
- Market value of assets (except Office condo which is at depreciated cost) as of December 31, 2016: \$105.9 million before accruing future grant commitments (2015 - \$98.1 million)
- Increase in value of assets over prior year \$7.8 million (2015 - \$1.1 million decrease)
- Rate of return on investments approximately 13.6% consisting of 2.8% from dividends and interest minus a 10.8% increase in the market value of investments (2015 - 1.0%)
- Grants approved in 2016 \$4.03 million before refunds and withdrawals (2015 - \$4.12 million)
- Total grants paid since inception \$130.3 million
- Future grant commitments at 2016 yearend: \$5.6 million, with \$3.4 million payable in 2017 and \$1.3 million payable in 2018, \$.9 million payable in 2019 (2015 - \$4.6 million, with \$3.4 million payable in 2016 and \$1.2 million payable in 2017)
- Operating costs including investment management fees: \$1.25 million (2015 - \$1.3 million)
- Operating costs as a percentage of assets under management: 1.2% (2015 – 1.4%)
- Asset allocation at year end:

	<u>2016</u>	<u>2015</u>
Canadian bonds	9.7%	9.7%
Canadian equities	48.1	42.9
U.S. equities and		
International equities	39.4	45.7
Real estate and infrastructure	1.0	
Cash	1.8	1.7
	<u>100%</u>	<u>100%</u>

2016 IN DETAIL

It is my pleasure to present the PSI Foundation financial results for the year ended December 31, 2016. We have continued with our portfolio heavily weighted toward equities. The Finance Committee is watching this carefully. The markets performed well in 2016, after a slow start to give us a total return of 13.6%. Both our Canadian managers managed to match or beat the benchmark. Our investment in the US equity ETF matched the market in US\$ terms, but the decline of the Canadian dollar aided our overall return. We continue to monitor the fixed income market and plan to move to a more conservative asset allocation when the risk to reward ratio of fixed income securities returns to "normal" levels. In the past year, the Federal Reserve in the US has raised interest rates, but the Bank of Canada seems to be content with our current rates due to the slow economic growth. The current risk level in the fixed income market is not worth the reward. Much of our portfolio is focused on blue chip securities paying strong dividends. The average yield of our portfolio is about 3%, far in excess of the return on 5 to 10 year Government of Canada bonds.

In 2014, the Foundation acquired an office condo at Sheppard and Yonge. This year, your Finance committee has looked into expanding the assets we invest in. With our long-range outlook, we are considering investments in real estate and infrastructure. Due to the small size of our investment, these will be in funds and not direct.

We have budgeted for \$4.7 million in grants approvals for 2017, up from the \$4.6 figure budgeted for 2016. In addition, we have budgeted a further \$75,000 for additional programs our Grants Committee wishes to provide. We have tried to set an annual grants figure which will be sustainable for the Foundation in the future. The 2017 budgeted figure is based on our budgeted income plus a 3% return on our portfolio. Any return in excess of the 3%, we add to our capital base. The Finance Committee has also indicated to the Grants Committee, they could request further funding if they feel the need, based on the applications reviewed.

I would like to take this opportunity to thank the members of the Finance Committee for their assistance this past year – the Vice Chair Paul Richardson, Dr. Jim King, Dr. Andrew Baker, Giselle Bodkin, John Eby, Jim McGill and Dr. Robert McMurtry.

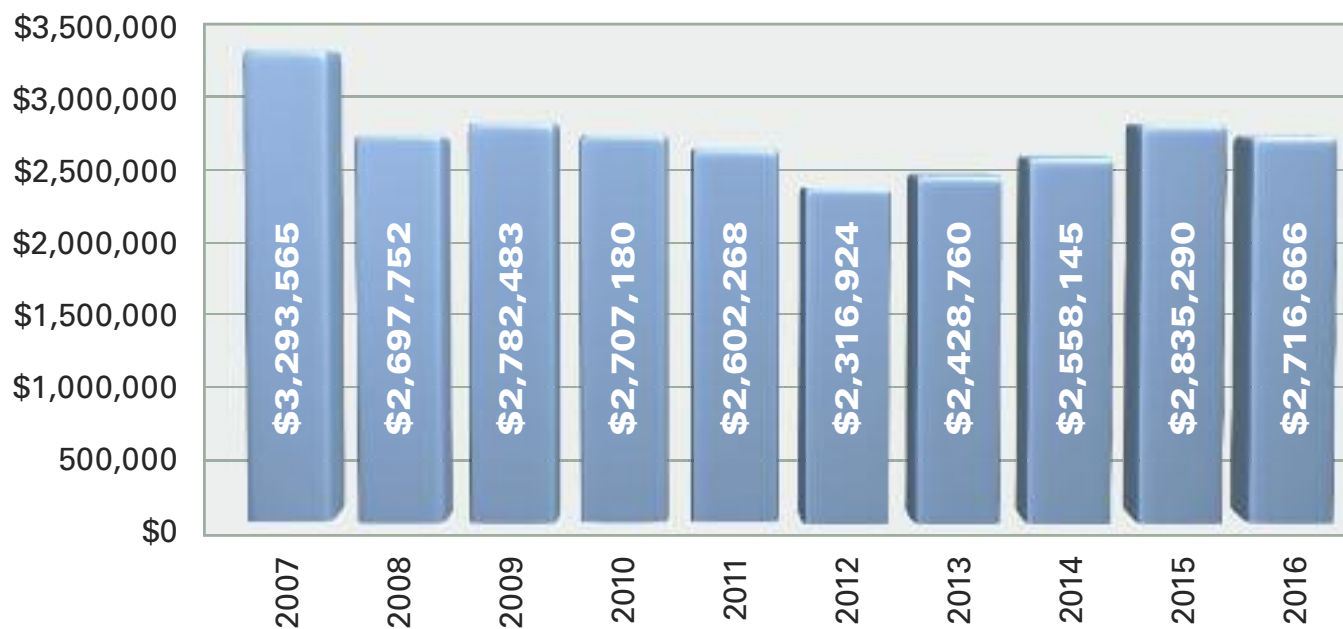
PSI FOUNDATION

FINANCIAL SUMMARY

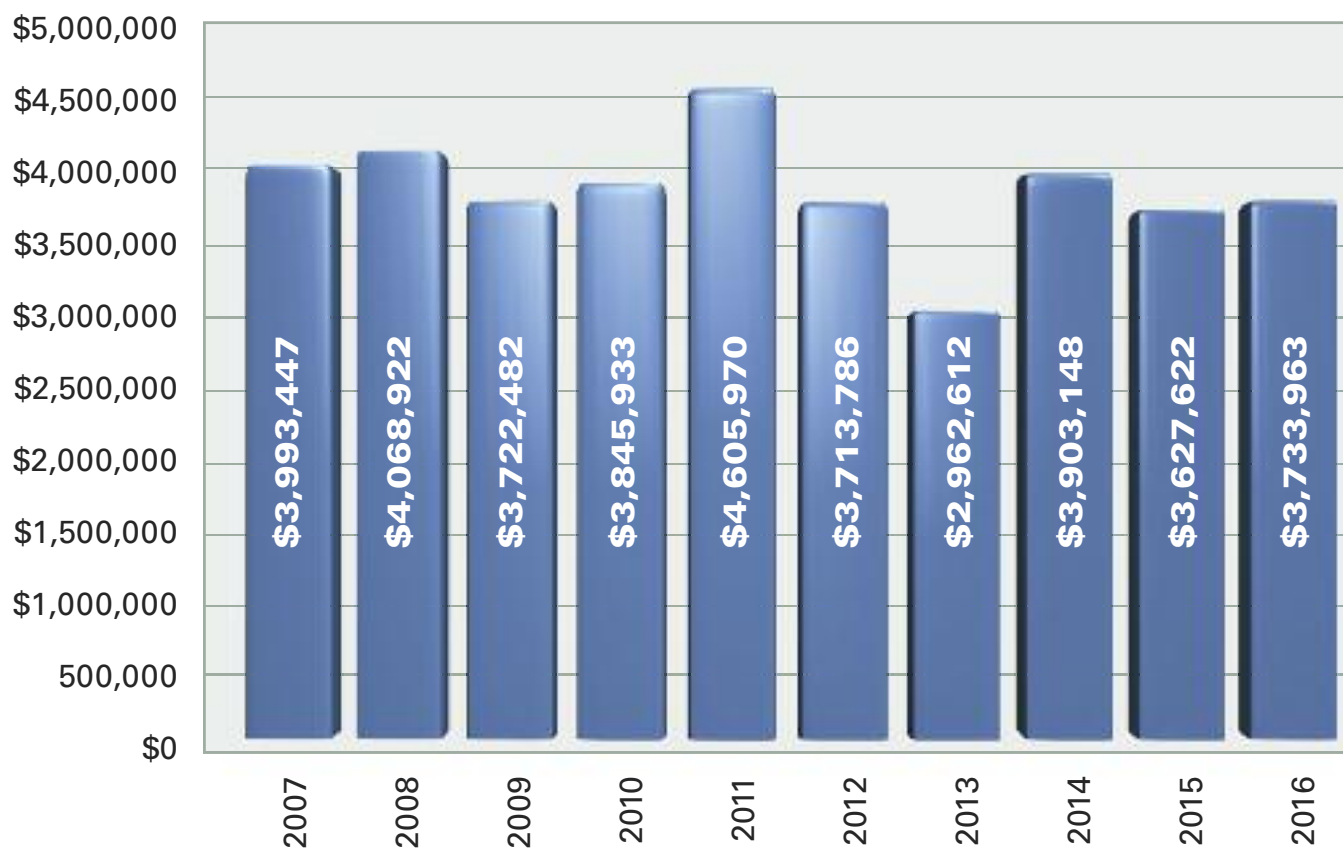
1970 - 2016

Donated Capital		\$ 16,693,123
Plus Capital appreciation	\$ 121,490,780	
Revenue earned	124,252,485	245,743,265
		<hr/> 262,436,388
Less: Charitable contributions	\$ 130,301,910	
Pension adjustment	356,652	
Investment & administrative expenses	32,450,302	163,108,864
		<hr/> 99,327,524
Net assets, December 31, 2016		99,327,524
Net assets, December 31, 2015		91,816,322
Pension adjusting December 31, 2016		14,600
Increase/(Decrease) for year		<hr/> 7,511,202
Consisting of:		
Deficit for year		(2,556,358)
Capital appreciation on investments		10,067,560
		<hr/> 7,511,202
Different to be finalized (\$20)		<hr/> 7,511,202

REVENUE 2007 - 2016



GRANTS PAID 2007 - 2016





INDEPENDENT AUDITORS' REPORT

To the House of Delegates of The Physicians' Services Incorporated Foundation

We have audited the accompanying financial statements of The Physicians' Services Incorporated Foundation which comprise the statement of financial position as at December 31, 2016, the statements of operations, changes in net assets and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform an audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the institute's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of The Physicians' Services Incorporated Foundation as at December 31, 2016, and its results of operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

A handwritten signature in black ink that reads "KPMG LLP". A horizontal line is drawn underneath the signature.

Chartered Professional Accountants, Licensed Public Accountants

Vaughan, Canada

March 31, 2017

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Statement of Financial Position

December 31, 2016, with comparative information for 2015

	2016	2015
Assets		
Cash and cash equivalents (note 2)	\$ 2,945,118	\$ 3,997,514
Bonds and debentures (note 3)	10,099,346	9,149,251
Shares (note 3)	91,600,187	83,536,054
Dividends and interest receivable	184,210	186,933
Harmonized sales tax receivable	22,039	132,273
Capital assets (note 4)	1,058,684	1,101,339
	\$ 105,909,584	\$ 98,103,364
Liabilities and Net Assets		
Liabilities:		
Accounts payable and accrued liabilities	\$ 109,499	\$ 91,761
Securities sold short (note 5)	818,761	834,428
Grants payable (note 7)	5,653,800	5,360,853
	6,582,060	6,287,042
Net assets:		
Invested in capital assets	1,058,684	1,101,339
Internally restricted capital (note 8)	98,268,840	90,714,983
	99,327,524	91,816,322
Lease commitments (note 9)		
	\$ 105,909,584	\$ 98,103,364

See accompanying notes to financial statements.

On behalf of the Board:

_____ Director

_____ Director

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Statement of Operations

Year ended December 31, 2016, with comparative information for 2015

	2016	2015
Revenue:		
Interest on bonds and debentures	\$ 285,846	\$ 266,476
Dividends	2,430,820	2,568,814
	2,716,666	2,835,290
Less investment management fees	294,860	522,693
	2,421,806	2,312,597
Expenses:		
Administrative:		
Salaries and benefits	570,060	359,208
Board and committee	147,195	138,418
Office supplies	70,529	105,250
Amortization of capital assets	59,879	29,079
Safekeeping charges	49,834	48,329
Delegate and annual meeting	19,930	17,633
Legal and audit fees	18,440	18,215
Rent and maintenance	12,387	57,271
Information services and annual report	3,000	3,000
	951,254	776,403
Grants	4,026,910	3,773,175
	4,978,164	4,549,578
Excess of expenses over revenue before the undernoted	(2,556,358)	(2,236,981)
Other income:		
Realized gain on sale of investments	7,276	19,369,987
Unrealized gain (loss) on investments	10,060,284	(19,204,936)
	10,067,560	165,051
Excess (deficiency) of revenue over expenses	\$ 7,511,202	\$ (2,071,930)

See accompanying notes to financial statements.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Statement of Changes in Net Assets

Year ended December 31, 2016, with comparative information for 2015

				2016	2015
	Invested in capital assets	Internally restricted capital	Unrestricted	Total	Total
Balance, beginning of year	\$ 1,101,339	\$ 90,714,983	\$ —	\$ 91,816,322	\$ 93,873,652
Excess (deficiency) of revenue over expenses	(59,879)	—	7,571,081	7,511,202	(2,071,930)
Investment in capital assets	17,224	(17,224)	—	—	—
Remeasurement and other items	—	—	—	—	14,600
Internally restricted capital (note 8)	—	7,571,081	(7,571,081)	—	—
Balance, end of year	\$ 1,058,684	\$ 98,268,840	\$ —	\$ 99,327,524	\$ 91,816,322

See accompanying notes to financial statements.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Statement of Cash Flows

Year ended December 31, 2016, with comparative information for 2015

	2016	2015
Cash provided by (used in):		
Operating activities:		
Cash received from:		
Investment income	\$ 2,838,303	\$ 3,228,196
Grant refunds	101,590	116,378
Harmonized sales tax received	151,709	39,746
	3,091,602	3,384,320
Cash applied to:		
Administrative expenses	1,150,308	1,181,253
Grants paid	3,835,553	3,744,000
Purchase of capital assets	17,224	258,733
Harmonized sales tax paid	40,627	189,562
	5,043,712	5,373,548
	(1,952,110)	(1,989,228)
Investing activities:		
Cash received from proceeds of investments:		
Bonds and debentures	17,290,448	22,020,318
Magna Vista Investment Management Equities	628,003	2,341,251
Connor, Clark & Lunn Investment		
Management Ltd. Equities	12,775,231	15,534,426
Vanguard Investments Canada Inc.	5,104,774	696,350
Neuberger Berman, LLC	—	46,248,340
Interactive Brokers	9,603	818,806
	35,808,059	87,659,491
Cash applied to purchase of investments:		
Bonds and debentures	18,359,751	28,384,500
Magna Vista Investment Management Equities	1,603,714	796,727
Connor, Clark & Lunn Investment		
Management Ltd. Equities	13,851,814	14,426,030
Vanguard Investments Canada Inc.	988,722	42,193,094
Neuberger Berman, LLC	—	4,141,648
Vanguard Investments Canada Inc.	104,344	7,700
	34,908,345	89,949,699
	899,714	(2,290,208)
Decrease in cash and cash equivalents	(1,052,396)	(4,279,436)
Cash and cash equivalents, beginning of year	3,997,514	8,276,950
Cash and cash equivalents, end of year	\$ 2,945,118	\$ 3,997,514
Cash and cash equivalents on hand represented by:		
Canadian dollars	\$ 1,644,273	\$ 2,605,835
U.S. dollars	1,300,845	1,391,679
	\$ 2,945,118	\$ 3,997,514

See accompanying notes to financial statements.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements

Year ended December 31, 2016

The Physicians' Services Incorporated Foundation (the "Foundation") is incorporated without share capital under the laws of Ontario. Under the Income Tax Act (Canada), the Foundation is registered as a public foundation constituted for charitable purposes and, accordingly, is exempt from income taxes, provided certain requirements of the Income Tax Act (Canada) are met.

1. Significant accounting policies:

These financial statements have been prepared by management in accordance with Canadian accounting standards for not-for-profit organizations in Part III of the Chartered Professional Accountants of Canada Handbook.

(a) Revenue recognition:

Investment income, which consists of dividends, interest, realized and unrealized gains and losses on investments, is recognized on the accrual basis.

(b) Cash and cash equivalents:

Cash and cash equivalents include cash on hand and short-term investments, which are highly liquid with original maturities of less than three months.

(c) Financial instruments:

Financial instruments are recorded at fair value on initial recognition. Equity instruments that are quoted in an active market are subsequently measured at fair value. All other financial instruments are subsequently measured at cost or amortized cost, unless management has elected to carry the instruments at fair value. The Foundation has elected to carry its bonds and debentures at fair value.

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs. These costs are amortized using the straight-line method.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2016

1. Significant accounting policies (continued):

Financial assets are assessed for impairment on an annual basis at the end of the fiscal year if there are indicators of impairment. If there is an indicator of impairment, the Foundation determines if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset. If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the highest of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount the Foundation expects to realize by exercising its right to any collateral. If events and circumstances reverse in a future year, an impairment loss will be reversed to the extent of the improvement, not exceeding the initial carrying value.

(d) Foreign currency translation:

Assets and liabilities denominated in foreign currencies have been translated into Canadian dollars at exchange rates prevailing at the year-end date. Revenue and expenses have been translated using the exchange rates prevailing on the transaction date. Gains and losses arising from these translation policies are included in the statement of operations.

(e) Capital assets:

Purchased capital assets are recorded at cost. Capital assets are amortized on a straight-line basis over the estimated useful lives as follows:

Buildings	50 years
Building improvements	10 years
Furniture and equipment	5 years
Computer equipment	2 years

(f) Employee future benefits:

The Foundation maintained a defined benefit pension plan covering its employees. The benefits from the defined benefit pension plan are based on years of service and final average salary up to October 31, 2013. In 2013, the defined benefit pension plan was closed for new entries. In addition, earnings and benefits were frozen and required contributions ceased for all members. Effective May 19, 2014, the Foundation filed for wind-up of its defined benefit pension plan.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2016

1. Significant accounting policies (continued):

On February 13, 2015, the Financial Services Commission of Ontario authorized the wind-up. As at December 31, 2016, the surplus assets have been distributed.

The Foundation now makes contributions directly to employees' retirement through payments directed at their registered retirement savings plans.

(g) Grants:

Grants are recognized in the statement of operations as an expense in the year the grant is approved by the Board of Directors.

(h) Use of estimates:

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the year. Actual results could differ from those estimates.

2. Cash and cash equivalents:

Cash and cash equivalents include deposits in banks and short-term investments, which are highly liquid with original maturities of less than three months. Components of cash and cash equivalents are as follows:

	2016	2015
Cash on deposit	\$ 2,256,389	\$ 3,063,470
Beutel Goodman Cash Management Funds	127	22,140
Connor, Clark & Lunn Short-Term Investments	688,602	911,904
	\$ 2,945,118	\$ 3,997,514

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2016

3. Investments:

Investments are managed by four independent investment managers.

Nature of investments		2016	2015
Bonds and debentures: Beutel Goodman & Company Limited	Canadian fixed income	\$ 10,099,346	\$ 9,149,251

Nature of investments		2016	2015
Shares:			
Magna Vista Investment Management	Canadian equity	\$ 23,239,311	\$ 18,287,331
Connor, Clark & Lunn Investment Management Ltd.	Canadian equity	27,126,419	22,126,709
Vanguard Investments Canada Inc.	U.S. equity	41,234,457	43,122,014
		\$ 91,600,187	\$ 83,536,054

4. Capital assets:

			2016	2015
	Cost	Accumulated amortization	Net book value	Net book value
Buildings	\$ 903,310	\$ 26,766	\$ 876,544	\$ 894,610
Building improvements	183,034	25,839	157,195	158,532
Furniture and equipment	26,142	7,789	18,353	23,288
Computer equipment	35,156	28,564	6,592	24,909
	\$ 1,147,642	\$ 88,958	\$ 1,058,684	\$ 1,101,339

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2016

5. Securities sold short:

The Foundation has sold short various U.S. equities in the aggregate amount of \$818,761 (2015 - \$834,428) to comply with no tobacco and no alcohol investment holdings as stated in the statement of investment policies and goals.

6. Employee future benefits:

Effective May 19, 2014, the Foundation filed for wind-up of its defined benefit pension plan and the wind-up liabilities for all remaining members in the plan were determined. There are no remaining active members in this plan after the wind-up date. As of February 13, 2015, the Financial Services Commission of Ontario authorized and approved the wind-up of the plan.

During the year, the Foundation extinguished its defined benefit obligation on settlement, distributing assets of \$830,700 (2015 - \$303,500). On final settlement, the pension obligation exceeded pension plan assets and, as such, the Foundation contributed an additional \$182,100 to fund the shortfall and related plan costs.

The reconciliation of the funded status of the defined benefit pension plan to the amount recorded in the financial statements is as follows:

	2016	2015
Accrued benefit obligation	\$ —	\$ (597,900)
Fair value of plan assets	11,800	681,600
Valuation allowance	(11,800)	(83,700)
	\$ —	\$ —

Continuity of the accrued pension asset is as follows:

	2016	2015
Balance, beginning of year	\$ —	\$ —
Benefit expense	(21,500)	(14,600)
Employer contributions	182,100	—
Remeasurements and other items	(160,600)	14,600
Balance, end of year	\$ —	\$ —

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2016

7. Grants payable:

Grants payable represent the balance of grants approved by the Board of Directors, which are payable over the next three years.

8. Restriction on net assets:

The Board of Directors has internally restricted the original net assets which established the Foundation as the base on which investment income would be earned annually to fund general operations and provide funds for charitable endeavours in the health field. Annually, the Board of Directors increases or decreases these internally restricted amounts depending on the level of grants awarded in the year. These internally restricted amounts are not available for other purposes without approval of the Board of Directors.

9. Lease commitments:

The Foundation has certain equipment under operating leases, which expire at various dates to July 21, 2021. Future minimum payments, by year and in aggregate, are as follows:

2017	\$ 4,084
2018	3,294
2019	3,294
2020	3,294
2021 and thereafter	1,647
	<u>\$ 15,613</u>

10. Financial risks:

The Foundation manages its investment portfolio to earn investment income. The Foundation is not involved in any hedging relationships through its operations and does not hold or use any derivative financial instruments for trading purposes.

Market price risk arises as a result of trading in equity securities and fixed income securities. Fluctuations in the market expose the Foundation to a risk of loss. The Foundation mitigates this risk through controls to monitor and limit concentration levels.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2016

10. Financial risks (continued):

The Foundation is exposed to foreign exchange risk in its foreign investment portfolios as a result of exchange rate fluctuations and the volatility of these rates.

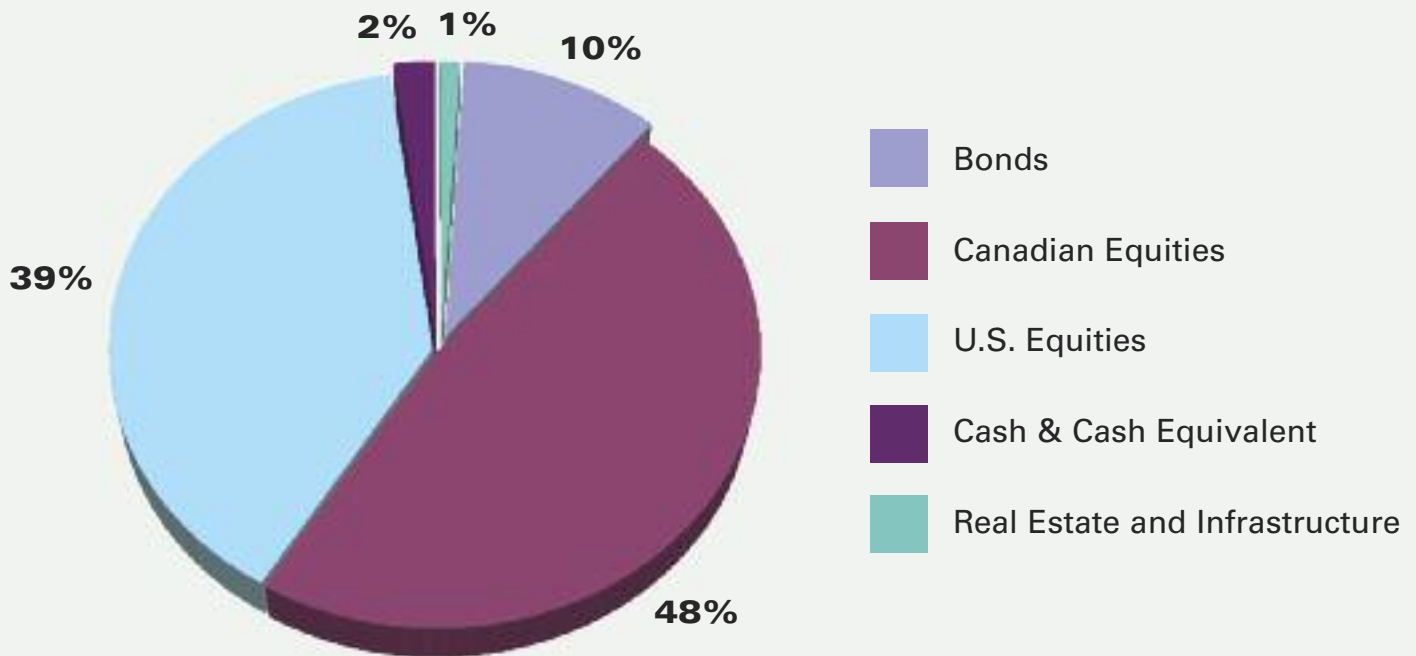
Interest rate risk arises from fluctuations in interest rates and the degree of volatility of these rates. The Foundation is exposed to interest rate risk on its bonds and debentures investments. The Foundation manages this risk by staggering the maturity dates of its investments.

The Foundation believes that it is not exposed to significant credit risk arising from its financial instruments.

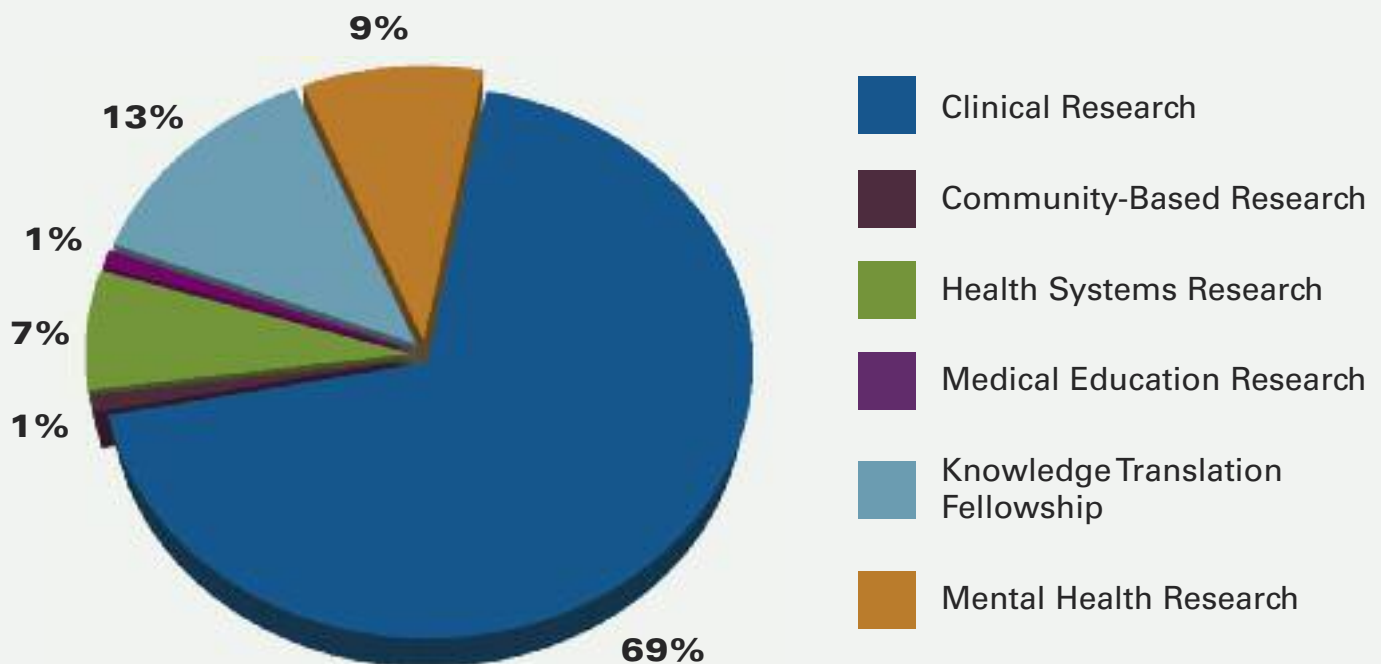
Additionally, the Foundation believes it is not exposed to significant liquidity risk as all investments are held in instruments that are highly liquid and can be disposed of to settle commitments.

There has been no change to the risk exposures from 2015.

2016 DISTRIBUTION OF ASSETS AT MARKET VALUE



2016 DISTRIBUTION OF GRANTS APPROVED



PSI FOUNDATION

GRANTS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2016

AMOUNT
APPROVED

HEALTH EDUCATION

Fellowships for Practising Physicians

Dr. C.M. Cormier	
International Interprofessional Wound Care Course	\$ 7,000
Dr. R.J. Woolnough	
Postgraduate Diploma in Clinical Dermatology	\$ 17,500

Total Health Education

\$ 24,500

HEALTH SYSTEMS RESEARCH

St. Michael's Hospital

Dr. S. Shen*, Dr. A. Lofters	
Non-adherence to colorectal cancer screening among immigrants to Ontario: a population-based study	\$ 7,500

Toronto General Hospital

Dr. C.E. Moulton, Dr. E. Paradis	
The Tools and the Trade: an ethnographic study of checklist policy and performance, and implications for patient safety	\$ 169,500

Trillium Health Partners

Dr. T. Tang, Dr. R. Ried	
Mixed methods evaluation of an interprofessional communication platform's impact on patient safety, team communication processes, team functioning, allied health utilization, and length of stay	\$ 61,500

Total Health Systems Research

\$ 238,500

COMMUNITY-BASED RESEARCH

Niagara Health System

Dr. J.L.Y. Tsang	
Impact of a multifaceted and multidisciplinary approach on pain, agitation and delirium management in a community intensive care unit	\$ 14,500

GRANTS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2016 (CONTINUED)

AMOUNT
APPROVED**COMMUNITY-BASED RESEARCH (CONTINUED)****Hospital for Sick Children**

Dr. P.D. Wong

The association between total breastfeeding duration and household food insecurity

\$ 20,500

Total Community-Based Research

\$ 35,000

MEDICAL EDUCATION RESEARCH**Hospital for Sick Children**

Dr. B. Girardi*, Dr. L. Murnaghan

A qualitative assessment of the role of 'Boot-camps' in surgical residency

\$ 9,000

University of Ottawa

Dr. N. Dudek

Can we assess trainees, provide written feedback, and improve uptake? A grounded theory study of assessment anchors in postgraduate medical education

\$ 20,000

Total Medical Education Research

\$ 29,000

CLINICAL RESEARCH**McMaster University**

Dr. J.C. Dionne*, Dr. D.J. Cook

Diarrhea, interventions, consequences and epidemiology in the intensive care unit (DICE-ICU)

\$ 19,500

Dr. J. Johnstone, Dr. D. Cook

PROSPECT: probiotics: prevention of severe pneumonia and endotracheal colonization trial

\$ 250,000

Dr. C.H. Lee

Prospective, open-label trial to evaluate efficacy of lyophilized fecal microbiota transplantation for treatment of recurrent *C. difficile* infection

\$ 170,000

Dr. A.A. Mosher*, Dr. N. Leyland

Investigating the role of melatonin and prostaglandins in endometriosis

\$ 20,000

Dr. A. Thoma

A multi-center, randomized controlled trial comparing the clinical effectiveness and cost-effectiveness of collagenase injection (Xiaflex) and palmar fasciectomy in the management of Dupuytren's disease - evaluation of Xiaflex: trial of effectiveness in Dupuytren's (EXTEND)

\$ 106,000

GRANTS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2016 (CONTINUED)

AMOUNT
APPROVED**CLINICAL RESEARCH (CONTINUED)****Hospital for Sick Children**

Dr. L.D.C.R. Barra*, Dr. K. Boutis	
Home management versus primary care physician follow up children with distal radius buckle fractures: a randomized control trial	\$ 20,000
Dr. J. Fish	
A randomized controlled trial investigating the use of ablative fractional carbon dioxide laser therapy to improve pediatric burn scars	\$ 169,500
Dr. M. Seed, Dr. J. Keunen	
Preliminary investigation of the utility of MRI for measuring the hematocrit in fetal anemia	\$ 115,000

Mount Sinai Hospital

Dr. K. Jarvi	
Use of semem TEX101 to improve sperm retrieval rates for men with non-obstructive azoospermia	\$ 72,000
Dr. R. Upshur	
Validating the frailty and vulnerability evaluation (FAVE) score	\$ 98,500

St. Michael's Hospital

Dr. A.B. Fecso*, Dr. T.P. Grantcharov	
Predictors of short-term patient outcomes in laparoscopic gastrectomies for gastric cancer	\$ 18,500
Dr. N.C.J. Filewod*, Dr. W. Lee	
Discovery of new drugs to treat influenza: high-throughput screening in zebrafish and confirmatory testing in a murine model of infection	\$ 20,000
Dr. A. Mazine*, Dr. B. Yanagawa	
The role of the NLRP3 inflammasome in the pathogenesis of rheumatic valve disease	\$ 20,000

Sunnybrook Health Sciences Centre

Dr. R. Aviv, Dr. S. Morrow	
Longitudinal, multicenter study of cortical perfusion as biomarkers of cortical disease severity and cognitive impairment in multiple sclerosis	\$ 84,000
Dr. R. Behman*, Dr. P. Karanicolas	
The management of small bowel obstruction: a population based analysis on practices and outcomes	\$ 20,000
Dr. H.M. Cheung*, Dr. L. Milot	
Preoperative gadolinium-enhanced MRI as a predictor of long-term survival in surgical patients with colorectal liver metastases	\$ 20,000
Dr. N. Daneman, Dr. B. Coburn	
BALANCE of the microbiome	\$ 165,500
Dr. J.C. Lauscher*, Dr. P. Karanicolas	
Prediction of postoperative liver function with preoperative primovist (gadodetate disodium)-enhanced MRI (PROLIVE)	\$ 16,000

GRANTS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2016 (CONTINUED)

AMOUNT
APPROVED**CLINICAL RESEARCH (CONTINUED)****Toronto General Hospital**

Dr. S.A. Crawford*, Dr. T.L. Forbes	
Determination of geometric factors that cause rotation of fenestrated aortic stent grafts during deployment	\$ 19,500
Dr. T.L. Forbes	
Determination of geometric factors that cause rotation of fenestrated aortic stent grafts during deployment	\$ 159,000
Dr. R. Grant*, Dr. S. Gallinger	
Germline genetic variants influencing survival from pancreatic cancer: results from an exome-wide association study and independent replication	\$ 18,500
Dr. C.M. Ryan	
Sleep pediatric transition clinic cohort study - bridging the gap between pediatric and adult sleep medicine	\$ 150,500

Toronto Western Hospital

Dr. L.E. Chaparro*, Dr. A. Perlas	
Accuracy of gastric ultrasound to diagnose a "full stomach". A Bayesian framework	\$ 19,500
Dr. Z. Touma	
Improving the assessment of cognitive function in systemic lupus erythematosus: screening and measurement of change in cognitive impairment over time and determination of its implications on patients' quality of life and productivity	\$ 140,000
Dr. C.D. Witiw*, Dr. M.G. Fehlings	
Impact of surgical approach for cervical spondylotic myelopathy on outcome and resource utilization: a cost-utility comparison based on the combined data from the AOSpine North America and International prospective studies	\$ 14,000

University of Ottawa

Dr. K. Gauthier*, Dr. M. Rodger	
Preventing maternal mortality: VTE prophylaxis with LMWH in the postpartum period, a before and after study	\$ 20,000
Dr. A. Stewart*, Dr. J. Werier	
Smoking cessation intervention within the fracture clinic	\$ 20,000

The Ottawa Hospital Research Institute

Dr. I. Chen	
Canadian hysterectomy alternatives study	\$ 156,500
Dr. S. Lalani*, Dr. I. Chen	
ProSE Study: pregnancy outcomes in surgically-diagnosed endometriosis study	\$ 19,500
Dr. R. Murthy*, Dr. A.E. McCarthy	
Screening for <i>Strongyloides stercoralis</i> in high-risk patients undergoing immunosuppressive therapy in association with bone-marrow transplant, solid-organ transplant or rheumatological disorders	\$ 13,000
Dr. A. Seth*, Dr. W. Gofton	
Learning new skills in practice: how surgeons make a risk assessment and know when and how to implement new procedures	\$ 20,000

GRANTS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2016 (CONTINUED)

AMOUNT
APPROVED**CLINICAL RESEARCH (CONTINUED)****Children's Hospital of Eastern Ontario**

Dr. K.N. Cowan

Elastase and matrix metalloproteinases in pulmonary hypertension associated with congenital diaphragmatic hernia: potential therapeutic targets?

\$ 138,000

Dr. S.L. Orr*, Dr. R. Zemek

Oral dexamethasone for the treatment of acute migraine recurrence in pediatric patients presenting to the Emergency Department with migraine: a pilot randomized controlled trial

\$ 18,500

Women's College Hospital

Dr. J.P. Higgins*, Dr. J. Theodoropoulos

Conventional follow-up versus mobile app home monitoring for post-operative ACL reconstruction patients: a randomized controlled trial

\$ 20,000

London Health Sciences Centre

Dr. M.J. Cecchini*, Dr. D.K. Driman

Loss of CDX2 as a clinically actionable biomarker in stage II and III colon cancer

\$ 19,500

Dr. B.Y. Kwan*, Dr. J.G. Burneo

Imaging of non-lesional epilepsy using hybrid PET/MRI: A prospective feasibility study

\$ 19,500

Dr. M. Sey

A double blind randomized clinical trial of high volume simethicone to improve visualization during capsule endoscopy

\$ 40,500

Dr. R.M. Shapiro*, Dr. A. Lazo-Langner

Methylation study of myelodysplastic syndrome patients treated with azacitidine

\$ 18,500

Total Clinical Research**\$ 2,449,000****MENTAL HEALTH RESEARCH****McMaster University**

Dr. R.J. Van Lieshout

Impact of public health nurse delivered group CBT for postpartum depression on maternal relapse, recurrence, attachment, parenting, and offspring emotion regulation: a randomized controlled trial

\$ 168,000

University of Ottawa

Dr. G. Northoff

Does brain imaging improve therapy in psychiatric disorders?
An imaging-based and individualized approach to stimulation treatment

\$ 170,000

Total Mental Health Research**\$ 338,000**

GRANTS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2016 (CONTINUED)

AMOUNT
APPROVED**FELLOWSHIPS****PSI Graham Farquharson Knowledge Translation Fellowship**

Dr. J.L. Sievenpiper	\$ 150,000
Dr. K. de Wit	\$ 300,000
Dr. Z. Solh	\$ 300,000
Dr. A. Arnaout	\$ 300,000

Total Fellowships	\$ 1,050,000
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LECTURESHIPS**Visiting Lectureship**

Western University Visiting Scholar	\$ 15,000
Northern Ontario School of Medicine	\$ 6,073

Total Visiting Lectureships	\$ 21,073
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GRAND TOTAL	\$ 4,185,073
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* Investigators funded under the Resident Research Program

PSI FOUNDATION

RECENTLY PUBLISHED PAPERS
ON FOUNDATION FUNDED PROJECTS

TITLE	GRANTEE	JOURNAL
The effect of hospital isolation precautions on patient outcomes and cost of care: a multi-site, retrospective, propensity score-matched cohort study	Abrams, H.B.	J Gen Intern Med. 2016 Oct 17
Re-evaluating the inhibition of stress erosions (REVISE): a protocol for pilot randomized controlled trial	Alhazzani, W.	Ann Saudi Med. 2016 Nov-Dec;36(6):427-433
Long-term corneal endothelial cell counts after penetrating keratoplasty in infants	Ali, A.	Cornea. 2016 Jun;35(6):784-8
Idiopathic enlargement of the extraocular muscles in young patients: a case series	Ali, A.	Am J Ophthalmol. 2016 Jan;161:206-13
Women's values and preferences and health state valuations for thromboprophylaxis during pregnancy: A cross-sectional interview	Bates, S.M.	Thromb Res. 2016 Apr;140:22-9
Early goal directed mobility in the ICU: 'something in the way you move'	Batt, J.	J Thorac Dis. 2016 Aug;8(8):E784-7
Transcriptomic analysis reveals abnormal muscle repair and remodeling in survivors of critical illness with sustained weakness	Batt, J.	Sci Rep. 2016 Jul 14;6:29334
The Radiographic Union Score for Hip (RUSH) identifies radiographic nonunion of femoral neck fractures	Bhandari, M.	Clin Orthop Relat Res. 2016 Jan 4. [Epub ahead of print]
From research question to conducting a randomized controlled trial on continuous antibiotic prophylaxis in prenatal hydronephrosis: a rational stepwise process	Braga, L.	Front Pediatr. 2016 Mar 30;4:27
Development of CAPTSureTM - a new index for the assessment of pediatric postthrombotic syndrome	Brandao, L.	J Thromb Haemost. 2016 Oct 6
Collateral circulation in pediatric postthrombotic syndrome	Brandao, L.	Thromb Res. 2016 Aug;144:210-2
Pediatric post-thrombotic syndrome in children: toward the development of a new diagnostic and evaluative measurement tool	Brandao, L.	Thromb Res. 2016 Aug;144:184-91

RECENTLY PUBLISHED PAPERS

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Long-term outcomes and health care utilization following prolonged mechanical ventilation	Burns, K.E. Lellouche, F.	Ann Am Thorac Soc. 2016 Dec 29
Retrograde labeling of regenerating motor and sensory neurons using silicone caps	Catapano, J.	J Neurosci Methods. 2016 Feb 1;259:122-8
Optimizing pain and rehabilitation after knee arthroplasty: a two-center, randomized trial	Choi, S.	Anesth Analg. 2016 Nov;123(5):1316-1324
Changes in medical errors after implementation of a handoff program	Coffey, M.	N Engl J Med. 2014 Nov 6;371(19):1803-12
Are some children with empyema at risk for treatment failure with fibrinolytics? A multicenter cohort study	Cohen, E.	J Pediatr Surg. 2016 May;51(5):832-7
Probiotics: prevention of severe pneumonia and endotracheal colonization trial-PROSPECT: a pilot trial	Cook, D.	Trials. 2016 Aug 2;17:377
Determinants of admission to inpatient rehabilitation among acute care survivors of hypoxic-ischemic brain injury: a prospective population-wide cohort study	Cullen, N.	Arch Phys Med Rehabil. 2016 Jun;97(6):885-91
Determinants of alternate-level-of-care delayed discharge among acute care survivors of hypoxic-ischemic brain injury: a population-based cohort study	Cullen, N.	CMAJ Open. 2016 Nov 21;4(4):E689-E697
Exploring daily blood pressure fluctuations and cardiovascular risk among individuals with motor complete spinal cord injury: a pilot study	Dance, D.L.	J Spinal Cord Med. 2016 Nov 4:1-10
Duration of antimicrobial treatment for Bacteremia in Canadian critically ill patients	Daneman, N. Fowler, R.	Critical Care Medicine. 2016 Feb;44(2):256-64
Preliminary cross-sectional reliability and validity of the Skull Base Inventory (SBI) quality of life questionnaire	De Almeida, J.R. Vescan, A.	J Otolaryngol Head Neck Surg. 2016 Sep 7;45(1):45
Hemiarthroplasty of the elbow: the effect of implant size on joint congruency	Desai, S. King, G.	J Shoulder Elbow Surg. 2016 Feb;25(2):297-303
A randomised comparison between ultrasound and nerve stimulation for infraclavicular catheter placement	Dhir, S.	Anaesthesia. 2016 Feb;71(2):198-204

RECENTLY PUBLISHED PAPERS

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Mechanisms of chronic muscle wasting and dysfunction after an intensive care unit stay. A pilot study	Dos Santos, C.	Am J Respir Crit Care Med. 2016 Oct 1;194(7):821-830
Feedback to supervisors: is anonymity really so important?	Dudek, N.	Acad Med. 2016 Mar 29. [Epub ahead of print]
Cervical spondylotic myelopathy: metabolite changes in the primary motor cortex after surgery	Duggal, N.	Radiology. 2016 Sep 30:152083
A site-specific, sustained-release drug delivery system for aneurysmal subarachnoid hemorrhage	Etminan, N.	Neurotherapeutics. 2016 Apr;13(2):439-49
The inter-rater reliability of the diagnosis of surgical site infection in the context of a clinical trial	Evaniew, N. Ghert, M.	Bone Joint Res. 2016 Aug;5(8):347-52
Factors associated with undiagnosed and overdiagnosed COPD	Gershon, A.	Eur Respir J. 2016 Aug;48(2):561-4
Inhaled long-acting anticholinergics and urinary tract infection in individuals with COPD	Gershon, A.	COPD. 2017 Feb;14(1):105-112
Frequency of health service use in the year prior to asthma death	Gershon, A.	J Asthma. 2016 Jun;53(5):505-9
The effect of patient neighborhood income level on the purchase of continuous positive airway pressure treatment among patients with sleep apnea	Gershon, A.	Ann Am Thorac Soc. 2016 Jan;13(1):93-100
Adverse event assessment and reporting in trials of newer treatments for postoperative pain	Gilron, I.	Acta Anaesthesiol Scand. 2016 Mar 16 [Epub ahead of print]
Impact of chronobiology on neuropathic pain treatment	Gilron, I.	Pain Manag. 2016 Mar 14. [Epub ahead of print]
Antidepressant drugs for postsurgical pain: current status and future directions	Gilron, I.	Drugs. 2016 Feb;76(2):159-67
Combination of pregabalin with duloxetine for fibromyalgia: a randomized controlled trial	Gilron, I.	Pain. 2016 Jul;157(7):1532-40
Methodological issues associated with clinical trials in neuropathic pain	Gilron, I.	Expert Rev Clin Pharmacol. 2016 Sep 30:1-4

RECENTLY PUBLISHED PAPERS

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Strategies to maximize enrollment in a prospective study of comatose children in the PICU	Hahn, C.	Pediatr Crit Care Med. 2016 Mar;17(3):246-50
Development and feasibility testing of a critical care EEG monitoring database for standardized clinical reporting and multicenter collaborative research	Hahn, C.	J Clin Neurophysiol. 2016 Apr;33(2):133-40
Burst-suppression is reactive to photic stimulation in comatose children with acquired brain injury	Hahn, C.	Clin Neurophysiol. 2016 Aug;127(8):2921-30
Sensitivity of quantitative EEG for seizure identification in the intensive care unit	Hahn, C.	Neurology. 2016 Jul 27 [Epub ahead of print]
The postcardiac arrest consult team: impact on hospital care processes for out-of-hospital cardiac arrest patients	Hayes, C. Ginsburg, S.	Crit Care Med. 2016 Nov;44(11):2037-2044
Impact of platelet-rich plasma on arthroscopic repair of small to medium-sized rotator cuff tears	Holtby, R.	Orthop J Sports Med. 2016 Sep 13;4(9)
Validation of carotid artery revascularization coding in Ontario health administrative databases	Hussain, M.	Clin Invest Med. 2016 Apr 2;39(2):E73-8
Impact of clinical trial results on the temporal trends of carotid endarterectomy and stenting from 2002 to 2014	Hussain, M.	Stroke. 2016 Nov 10. pii: STROKEAHA.116.0148 56
Infection in burns	Jeschke, M.	Surg Infect (Larchmt). 2016 Apr;17(2):250-5
Morbidity and mortality in severely burned children with Clostridium difficile associated diarrhea	Jeschke, M.	Surgery. 2016 Jun;159(6):1631-7
Hypercapnic acidosis attenuates pulmonary epithelial stretch-induced injury via inhibition of the canonical NF- κ B pathway	Laffey, J.	Am J Ophthalmol. 2016 Jan;161:206-13. doi: 10.1016/j.ajo.2015.10.019. Epub 2015 Nov 14
Recent insights: mesenchymal stromal/stem cell therapy for acute respiratory distress syndrome	Laffey, J.	Version 1. F1000Res. 2016; 5: F1000 Faculty Rev-1532
Stem cell therapy for acute respiratory distress syndrome: a promising future?	Laffey, J.	Curr Opin Crit Care. 2016 Feb;22(1):14-20

RECENTLY PUBLISHED PAPERS

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Frozen vs fresh fecal microbiota transplantation and clinical resolution of diarrhea in patients with recurrent <i>Clostridium difficile</i> infection: a randomized clinical trial	Lee, C.H. Moayyedi, P.	JAMA. 2016 Jan 12;315(2):142-9
Appendectomy in mid and later life and risk of Parkinson's disease: a population-based study	Marras, C. Lang, A.	Mov Disord. 2016 Aug;31(8):1243-7
The impact of red blood cell transfusion on cerebral tissue oxygen saturation in severe traumatic brain injury	McCredie, V.A.	Neurocrit Care. 2016 Oct 18
Airway management strategies for brain injured patients meeting standard criteria to consider extubation: a prospective cohort study	McCredie, V.A.	Ann Am Thorac Soc. 2016 Nov 21
Antipsychotic drug use and screening for delirium in mechanically ventilated patients in Canadian intensive care units: an observational study	Mehta, S.	Can J Hosp Pharm. 2016 Mar-Apr;69(2):107-13
Impact of feeding method on diaphragm electrical activity and central apnea in preterm infants (FEAdi study)	Ng, E.	Early Hum Dev. 2016 Jul 8;101:33-37 [Epub ahead of print]
High-flow nasal cannulae are associated with increased diaphragm activation compared with nasal continuous positive airway pressure in preterm infants	Ng, E.	Acta Paediatr. 2015 Aug;104(8):e337-43
Ethnic differences in incidence and outcomes of childhood nephrotic syndrome	Parekh, R.	Clin J Am Soc Nephrol. 2016 Jul 21
Parental attitudes to genetic testing differ by ethnicity and immigration in childhood nephrotic syndrome: a cross-sectional study	Parekh, R.	Can J Kidney Health Dis. 2016 Mar 17;3:16
Sympathoadrenal activation is associated with acute traumatic coagulopathy and endotheliopathy in isolated brain injury	Rizoli, S.	Shock. 2016 Sep;46(3 Suppl 1):96-103
Inflammatory cytokine and chemokine profiles are associated with patient outcome and the hyperadrenergic state following acute brain injury	Rizoli, S.	J Neuroinflammation. 2016 Feb 16;13:40
Improving appropriate neurologic prognostication after cardiac arrest. A stepped wedge cluster randomized controlled trial	Scales, D.	Am J Respir Crit Care Med. 2016 Nov 1;194(9):1083-1091

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ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Unintentional continuation of medications intended for acute illness after hospital discharge: a population-based cohort study	Scales, D.	J Gen Intern Med. 2016 Feb;31(2):196-202
Timing of withdrawal of life-sustaining therapies in severe traumatic brain injury: impact on overall mortality	Scales, D.	J Trauma Acute Care Surg. 2016 Mar;80(3):484-91
Association of early withdrawal of lifesustaining therapy for perceived neurological prognosis with mortality after cardiac arrest	Scales, D.	Resuscitation. 2016 May;102:127-35
Improving appropriate neurological prognostication after cardiac arrest: a stepped wedge cluster RCT	Scales, D.	Am J Respir Crit Care Med. 2016 Apr 26. [Epub ahead of print]
Long-term outcomes and healthcare utilization following critical illness – a population-based study	Scales, D.	Crit Care. 2016 Mar 31;20:76
Hydrogen sulfide treatment mitigates renal allograft ischemia-reperfusion injury during cold storage and improves early transplant kidney function and survival following allogeneic renal transplantation	Sener, A.	J Urol. 2015 Dec;194(6):1806-15
Hydrogen sulfide protects renal grafts against prolonged cold ischemia-reperfusion injury via specific mitochondrial actions	Sener, A.	Am J Transplant. 2016 Oct 15
Understanding early decisions to withdraw life-sustaining therapy in cardiac arrest survivors. A qualitative investigation	Sinuff, T. Cook, D. Scales, D.	Ann Am Thorac Soc. 2016 Jul;13(7):1115-22
Suicide in males and females with cardiovascular disease and comorbid depression	Sinyor, M. Schaffer, A.	J Affect Disord. 2016 Mar 3;197:88-93
Reasons for hospitalization among emergency department patients with syncope	Thiruganasambandamoorthy, V. Stiell, I.G.	Acad Emerg Med. 2016 Jul 18 [Epub ahead of print]
Development of the Canadian Syncope Risk Score to predict serious adverse events after emergency department assessment of syncope	Thiruganasambandamoorthy, V. Stiell, I.G.	CMAJ. 2016 Sep 6;188(12):E289-98

RECENTLY PUBLISHED PAPERS

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Survival and cardiovascular events in men treated with testosterone replacement therapy: an intention-to-treat observational cohort study	Wallis, C. Nam, R.	Lancet Diabetes Endocrinol. 2016 Jun;4(6):498-506
Human serum antibodies against EBV latent membrane protein 1 cross-react with α -synuclein	Woulfe, J. Munoz, D.	Neurol Neuroimmunol Neuroinflamm. 2016 May 10;3(4):e239
Correlation of tumor immunohistochemistry with dynamic contrast-enhanced and DSC-MRI parameters in patients with gliomas	Woulfe, J. Munoz, D.	AJNR Am J Neuroradiol. 2016 Dec;37(12):2217-2223
Peripapillary RNFL thickness in nonexudative versus chronically treated exudative age-related macular degeneration	Yau, G. Sharma, S.	Can J Ophthalmol. 2015 Oct;50(5):345-9
Progenitor cell secretory products exert additive renoprotective effects when combined with ace inhibitors in experimental CKD	Yuen, D. Leong-Poi, H.	J Renin Angiotensin Aldosterone Syst. 2016 Sep 15;17(3)

2017 GRANTEE ANNUAL MEETING PRESENTERS

DR. HOWARD ABRAMS, UNIVERSITY HEALTH NETWORK

Dr. Howard Abrams received a BSc in Engineering from the University of Guelph and his MD from McMaster University. He obtained his specialty certificate in Internal Medicine (Fellow of the Royal College of Physicians of Canada) while at Toronto General Hospital, and trained in Clinical Epidemiology both at McMaster and the University of Toronto.

Dr. Abrams is an Associate Professor with the Department of Medicine at the University of Toronto, Division Head of General Internal Medicine at the University Health Network and for Mount Sinai Hospital, and Staff Internist in the divisions of general internal medicine and clinical epidemiology at University Health Network and Mount Sinai. He has been working with Medical Informatics and Shared Information Management Services on the implementation of Computer Physician Order Entry (CPOE) and the province wide Emergency Department-General Internal Medicine (ED-GIM) transformation project. His expertise is in leveraging his over 30 years on the front-line of clinical care with his experience in optimizing processes to achieve successful integration of innovative solutions into the clinical environment. He has been the physician lead on a number of innovations at University Health Network including the ED-GIM Re-Design project, and one of the first successful introductions of CPOE at a major academic hospital in North America.



Dr. Howard Abrams

DR. JANE BATT, ST. MICHAEL'S HOSPITAL

Dr. Jane Batt is a Clinician Scientist, and the Interim Medical Director of the Tuberculosis Program at St. Michael's Hospital. She graduated from McMaster University medical school in 1991, and Internal Medicine and Respiriology at the University of Toronto in 1997. She completed her PhD at the Institute of Medical Sciences at the University of Toronto in 2002, and is also cross-appointed as an Assistant Professor to the Faculty of Medicine.

Her research focuses on delineating the molecular mechanisms underlying the development of skeletal muscle atrophy. Her research program studies the molecular biology and signalling networks regulating muscle wasting in tissue culture and rodent models, with the aim of identifying novel mediators of atrophy. Additionally, her research evaluates the activity of signalling networks and biologic processes identified as being key regulators of muscle atrophy, in human disease.



Dr. Jane Batt

DR. NAANA JUMAH, NORTHERN ONTARIO SCHOOL OF MEDICINE

Dr. Naana Jumah received her BASc in Chemical Engineering from the University of Toronto, her PhD in Medical Engineering from the University of Oxford as a Rhodes Scholar, her MD from Harvard University and completed her residency in Obstetrics and Gynaecology at the University of Toronto. She is an Assistant Professor at the Northern Ontario School of Medicine and a clinician researcher at the Thunder Bay Regional Research Institute. She has sat on numerous boards and committees including serving as an advisory board member for the Canadian Institutes of Health Research, Institute of Nutrition Metabolism and Diabetes and serving as a Governor on the University of Toronto Governing Council. Dr. Jumah's research and clinical practice focuses on Aboriginal health and addiction in pregnancy in Northwestern Ontario. She is the 2014 PSI Graham Farquharson Knowledge Translation Fellow.



Dr. Naana Jumah

2017 RESIDENT POSTER PRESENTERS

DR. SERENA LAURA ORR, CHILDREN'S HOSPITAL OF EASTERN ONTARIO

Dr. Serena Laura Orr is currently a resident in Neurology at the University of Ottawa. She received her MD from McMaster University. Dr. Orr was funded by PSI in 2016. Her research project title is "Oral dexamethasone for the treatment of acute migraine recurrence in pediatric patients presenting to the Emergency Department with migraine: a pilot randomized controlled trial."

DR. RANITA HARPREET MANOCHA, WESTERN UNIVERSITY

Dr. Ranita Harpreet Manocha received her MD at the University of British Columbia and BA in Cross-Disciplinary Studies (Western Scholars Distinction) at Western University. She is currently an MSc candidate in the Department of Medical Biophysics at Western University. Dr. Manocha was funded by PSI in 2014. Her research project title is "Rehabilitation of the ligament-deficient elbow: a biomechanical study."

DR. GARY YAU, QUEEN'S UNIVERSITY

Dr. Gary Yau is an Ophthalmologist fellow at the Beetham Eye Institute, Joslin Diabetes Center in Boston. He received his MD from Queen's University. Dr. Yau was funded by PSI in 2014. His research project title is "The effect of repeated intravitreal injections of anti-vascular endothelial growth factor on intraocular pressure and optic nerve morphology: a prospective cohort study."

DR. CHRISTOPHER WALLIS, UNIVERSITY OF TORONTO

Dr. Christopher Wallis is a resident in Urology in the Department of Surgery at the University of Toronto. Currently, he is completing a Doctoral Program in Clinical Epidemiology & Health Care Research at the Institute of Health Policy, Management and Evaluation at the University of Toronto with a research focus on clinical and genetic epidemiologic studies of prostate cancer outcomes. He received his MD at the University of British Columbia. Dr. Wallis was funded by PSI in 2015. His research project title is "A population-based cohort study assessing cardiovascular and oncologic events associated with testosterone replacement therapy."

DR. EMILIE BELLEY-CÔTÉ, MCMASTER UNIVERSITY

Dr. Emilie Belley-Côté completed her internal medicine and cardiology training at Université de Sherbrooke. She is completing a Critical Care Fellowship at McMaster University and is enrolled in the Clinician Investigator Program completing a thesis based PhD in the Health Research Methodology program. Dr. Belley-Côté was funded in 2014 for her project entitled "Prognostic value of elevated troponins in critical illness study (PRO-TROPICS): a pilot study."

VISION STATEMENT

BACKGROUND

When the Foundation was established in 1970 it was agreed that it should primarily be a granting agency rather than an operating agency and it continues to be managed by the physicians of Ontario. It was mandated by the Board of the new foundation, and the participating physicians, that the Foundation's prime objective should be the provision of funds solely within the health field.

To meet this mandate the Board of the new Foundation agreed that a diversified portfolio should be held consisting of equities and income-producing securities to permit a consistent level of granting.

THE VISION

The Foundation seeks to build upon its unique situation in the health research community, as a physician sponsored granting agency, and is based on the belief that continued support of peer reviewed, innovative research, will bring new and improved benefits to clinical practice.

The vision of the Foundation is to seek to address the unparalleled challenges that will face physicians in providing effective health care for their patients in the years to come.

The essential supporting structure of this vision is to encourage the research efforts of the new investigator, as well as providing funding for the education of practising physicians.



GET INVOLVED

If you are interested in volunteering with PSI, please consider:

- Becoming a delegate: the House of Delegates meets annually with the mandate of overseeing the Board of Director's actions.
- Becoming a Director: PSI draws most of its Directors from the House of Delegates.
- Joining a committee: PSI has several working committees - including Grants and Finance committees, for which PSI requires expertise in such areas as medical research and the financial sector.

DONATE

While PSI does not actively solicit funds, PSI is a registered charity and can provide tax receipts for charitable donations.

Please consider the above while reviewing PSI's accomplishments identified in this annual report.



Research & Education Funded by the Physicians of Ontario

