2017
ANNUAL REPORT

PSI
FOUNDATION

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 of applications, the final decision on each application lies with the Grants Committee and the Board of Directors.

PSI now accepts grant applications through our online application system. Application guidelines are available on the Foundation'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

Suite 5G
4773 Yonge Street
Toronto, Ontario
M2N 0G2

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S.J. Moore, MA, *Executive Director*

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W.D. Hemens, MD

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Connor, Clark, & Lunn Investment Management Ltd.
Doherty & Associates Ltd.
Conor, Clark, & Lunn Infrastructure Investing†
Crest Point Real Estate Fund†

*joined 2017
†opened account 2017

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Western University ..... London

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Jessica Haxton, *Grants Coordinator*
Asumi Matsumoto, *Grants Coordinator*
Linda Cheng, *Accountant*
Nuvi Dhaliwal, *Post-Grants Coordinator*†

* special Non-Director Committee member
† resigned 2017

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Cornwall Academy of Medicine	R. Menon, MD
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Sunnybrook Medical Society	A. Gershon, MD
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Toronto East Medical Society	B. Kee, MD
Toronto Hospital Clinical Society	D.J. McNeely, MD
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York Central Medical Society	P.C.Y. Woo, MD
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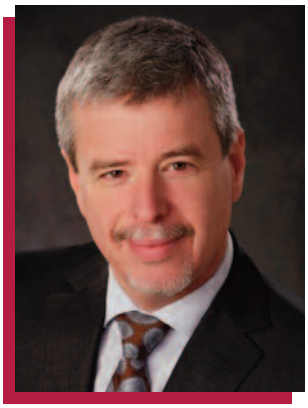
J. Sharp, CPA, CA

ONTARIO MEDICAL ASSOCIATION

W.A. Hodge, MD
K.M. Moore, MD

PRESIDENT'S REMARKS

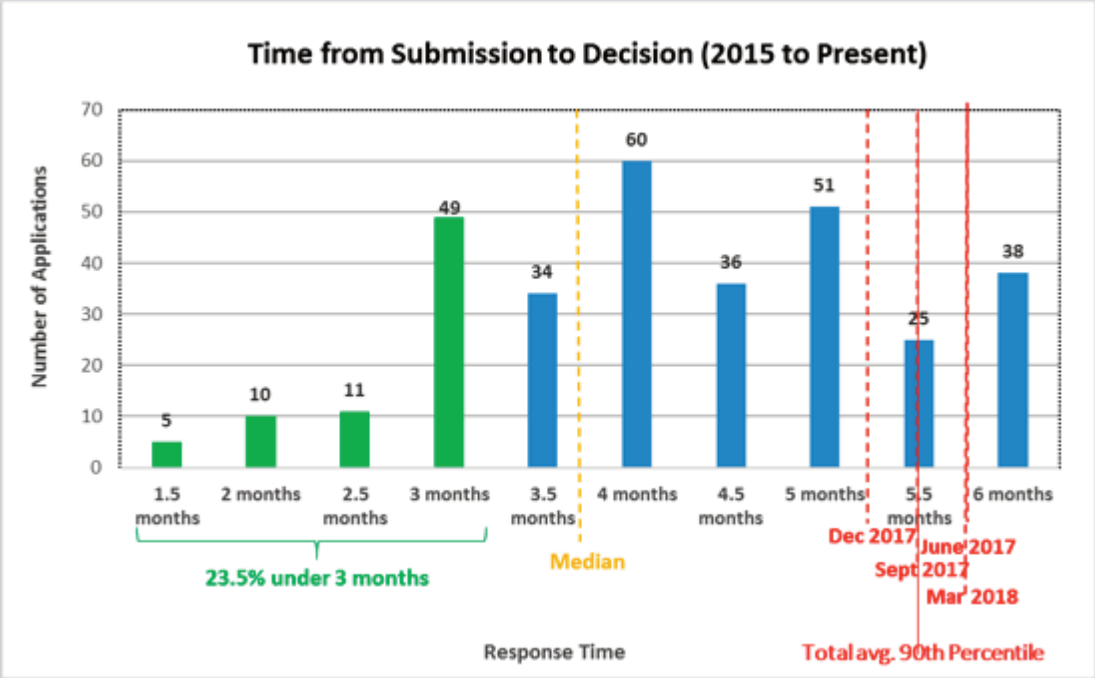


2017 was another excellent year for the PSI Foundation!

Despite turmoil and uncertainty in markets our strong financial position has allowed us to increase our investment in research and physician education and to fund clinically relevant research, ultimately to improve the health care and health of the people of Ontario. We received a number of very strong proposals in 2017 and to meet this demand our Finance Committee increased our maximum granting dollars from $4.7 million to $5.2 million. We funded ~30% of the applications we received, invested in two PSI Graham Farquharson Knowledge Translation Fellows, funded 4 Research Trainee Fellowships in this program's initial competition and established a Visiting Scholars program at Western University.

An external review of PSIF was completed by Drs. Jim Rourke (Memorial University), Catharine Whiteside (University of Toronto) and Denise Figlewicz (Western University). Dr. Rourke led the review and we were fortunate to have the wisdom and guidance of two former Deans of Medicine and a Vice-Dean of Research. The review confirmed that the PSIF has maintained its identity and autonomy, continued its standard of excellence, and the mission has been respected. The External Review Committee had 11 recommendations for the PSIF, all of which the Board thoroughly considered, and have accepted or implemented 10.

The Board declined to implement one recommendation, that the Grants Committee members should not be Directors, i.e., they should be independent of the Board. This has been an ongoing area of discussion for PSIF and as previously noted by Dr. John Duff, past President, while this arrangement exists for most charitable foundations, unlike PSIF, the major function for the Boards of other Foundations is to raise money. Never having this activity our Board has always been intimately involved in the granting process. The Grants Committee has implemented a very strong arms-length external grant review process for content and methodological review with the primary function of the Grants Committee being to ensure our awards align with the mission of the Foundation. The Board carefully considered this recommendation and concluded that the current long-standing policy and composition of the Grants Committee should remain.



PRESIDENT'S REMARKS (CONTINUED)

To better understand the outcomes of our funded research we continue to enhance our post grant process including an infographic dashboard for the Grants Committee. In my last report I showed the 10-year summary of grant success by funding stream (as noted just over 30% for 2017). This year I would like to focus on "Time from grant submission to award decision" and funding.

All of our grantees are receiving an award decision within 6 months of grant submission. This is an incredible turnaround time and validation of the great work of our office staff, external reviewers and Grants Committee members. Innovative ideas like an open grants submission process have facilitated this result.

I would also like to highlight another innovation at PSIF that represents a shift in our funding support from a stand-alone grants model to an investment in individuals. Learning from our partnership with the Health Research Alliance we project that our Knowledge Translation and Research Trainee Fellows will have a great impact. Early review of our KT Fellows' outcomes, based on peer reviewed publications, reveal an output over 4x greater than we receive from similar investment in stand-alone projects. The value of this investment was also apparent during a retreat held for our Knowledge Translation Fellows in September 2017; attended by our past and current Fellows and by Grants Committee members. The retreat was very productive with excellent discussion of the opportunities and challenges facing the Fellows as well as suggestions for future consideration. Our Fellows represent a unique opportunity to accelerate innovation and solve tough problems in health care in Ontario (and beyond). And these high quality individuals will help invigorate and sustain our Foundation.

I would 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. Nana 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 support of PSI Foundation is exemplary. Mr. Moore leads an exceptionally talented and hard-working Foundation staff. Our staff continue their work to re-design and update our PSI website (www.psifoundation.org) and I invite you to visit our News and Events page and follow us on Twitter (@PSIFoundation). We have also started planning for our 50th Anniversary celebration and I would like to acknowledge and thank the planning committee consisting of Dr. Bill Hemens, Dr. Robin Walker, Dr. Deborah Cook, and Mr. John Sharp and Mr. Sam Moore. Suggestions for celebration are welcome.

Finally, I would like to express gratitude to my colleagues who serve with me on the Board and to the House of Delegates for their commitment to and stewardship of the Foundation. It has been a privilege to serve and help guide this unique Foundation. Thank you for your continuing effort in support of our trainees and physicians, and for ultimately making a meaningful difference in the health of Ontarians.

Here's a look back at 2017 and what we accomplished together.

Respectfully submitted,

W. James King BSc, MSc, MD, FRCPC

2017 PSI GRAHAM FARQUHARSON KNOWLEDGE TRANSLATION FELLOWSHIP

In December 2016, the PSI Foundation named three recipients as the 2017 PSI Graham Farquharson Knowledge Translation Fellows. This Fellowship is intended to protect a new, promising clinician's research time, allowing the Fellow to undertake high-impact translational research.

To best meet potential fellows' needs, PSI allows each fellow to allocate award funds to either $150,000 per year for two years or $100,000 per year for three years.

Dr. Kerstin de Wit

"The PSI Graham Farquharson Knowledge Translation grant will allow me to dedicate 3 years of research on how to improve the way pulmonary embolism is diagnosed in Canadian emergency departments. Currently, many emergency patients who are tested for pulmonary embolism undergo CT imaging. The CT scan has a small risk of kidney damage and cancer in later life. There are well validated pathways to test patients for pulmonary embolism without doing a CT scan. This research program will identify and address the barriers to using these other tests in the emergency department."

Dr. de Wit trained in Emergency Medicine and Acute Internal Medicine in the UK. She graduated from Edinburgh University Medical School, has a BSc in Pharmacology and a research doctorate (MD) from the University of Manchester. She moved to Canada in 2010 to take up a Thrombosis Research Fellowship in Ottawa, where she obtained a Master of Epidemiology. She is now an Assistant Professor at McMaster University, and works clinically as both a Thrombosis and Emergency physician at Hamilton Health Sciences.

Dr. Ziad Solh

"I am truly honoured to receive the 2017 PSI Graham Farquharson Knowledge Translation Fellowship. This award will be the essential catalyst to the development of a research program in Pediatric Transfusion Medicine - an area where clinical and laboratory practice would benefit tremendously from evidence-based knowledge translation work. Thank you to my mentors and to PSI for this exciting opportunity to devote my time to Knowledge Translation research."

Best practices in blood transfusion lead to enhanced patient safety and optimal utilization of health care resources. Dr. Solh will work on improving transfusion practices in the hospital setting by linking evidence-based knowledge translation interventions with barriers to transfusion knowledge uptake that he described in previous work. Expected changes will include enhanced reporting, investigation, and prevention of transfusion-related injuries. Dr. Solh holds an MD from the University of Ottawa, a BSc (Hons) in Chemistry/Biochemistry from Western University, and an MSc in Health Research Methodology from McMaster University. He completed his pediatrics residency training at Queen's University and his pediatric hematology/oncology, Clinician-Investigator, and Transfusion Medicine training with Canadian Blood Services at McMaster University. He is currently an Assistant Professor and clinician-researcher at Western University and a Transfusion Medicine physician at London Health Sciences Centre in the Department of Pathology and Laboratory Medicine. He is also a clinical hematologist with a focus on red blood cell disorders and hemoglobinopathies in the Department of Medicine.

2017 PSI GRAHAM FARQUHARSON KNOWLEDGE TRANSLATION FELLOWSHIP (CONTINUED)

Dr. Angel Arnaout

"Understanding how to effectively reduce non-evidence based practices reflects a commitment to evidence-based medicine that will help optimize outcomes and contain healthcare spending. The PSI Graham Farquharson Fellowship Award will provide me with the support I need to be a successful lifetime KT scientist and help me elevate the standard of care across Canada through reduction of harmful non-evidence based practices, benefitting Ontarians, Canadians, and the global community."

The Ontario government's 2016 Patient's First: Action Plan for Health Care, identified the need to protect, prolong and sustain our universal healthcare system by ensuring the best value for healthcare resources; thereby also improving access and health care resource availability for patients that need them. A major cause of waste of healthcare resources is low-value care, a treatment or procedure for which there is no evidence of benefit or there is an indication of more harm than benefit. It is estimated that low value care represents up to 30% of the costs of healthcare. The PSI Graham Farquharson Fellowship Award allows Dr. Arnaout to undertake a substantial research program informed by state-of-the-art approaches from implementation science to develop and evaluate major initiatives to reduce low-value care in Ontario. Specifically, she will be focusing on the Choosing Wisely surgical initiative of reducing unnecessary advanced preoperative imaging in surgical patients. A direct result of this fellowship project will be a better understanding of the extent, drivers, and testing of effective methods to eliminate low value care, which will then serve as a framework for implementation of other Choosing Wisely initiatives; and will have immediate direct benefits for the Ontario healthcare system and the patients it serves through the reduction of low-value care.

Dr. Arnaout is a Breast Surgical Oncologist at the Ottawa Hospital and Associate Scientist at the Ottawa Hospital Research Institute. Dr. Arnaout has won numerous national awards for her work including the "Best Innovation in Cancer Care Delivery Award" at the Canadian Ontario Provincial Showcase, the Canadian Association of General Surgeon's Research Award, and the Order of Ottawa. As a member of the Ottawa Center for Implementation Research, her passion is to set the standard for best practices in breast care delivery in Canada, through efforts of greater use of evidence-based guidance. She intends to use her research and leadership to raise the standard of breast care delivered in Canada, improve the quality of life of women with breast disease, and promote the responsible use of healthcare resources.

2017 MENTAL HEALTH RESEARCH GRANTEES

In 2017, PSI Foundation awarded the following research grants in the field of Mental Health:

Dr. Benicio N. Frey, McMaster University

A translational study of blood-brain barrier disruption in bipolar disorder: implications for a new pathway for drug development

Dr. Frey is an Associate Professor at the Department of Psychiatry and Behavioural Neurosciences at McMaster University, Academic Head of the Mood Disorders Program, and Director of the Women's Health Concerns Clinic at St. Joseph's Healthcare.

Dr. Frey's PSI grant aims at investigating whether bipolar disorder is associated with damage in the blood-brain barrier. For that, he and his team will recruit individuals with bipolar disorder during depressive states and will use brain magnetic resonance imaging (MRI) to study the blood-brain barrier. They will then repeat the MRI after treatment to investigate if successful treatment can fix the blood-brain barrier damage. The research team will also use a rat model to study if the mood stabilizer lithium protects the blood-brain barrier and to measure which blood-brain barrier proteins increase after lithium treatment.

If successful, these studies will link, for the first time, bipolar disorder with blood-brain barrier dysfunction, and will suggest a novel molecular pathway for the development of new treatments for this devastating illness.

Dr. Dallas Seitz, Queen's University

Comparative safety and efficacy of antipsychotic medications in late-life psychotic disorders: a population-based study from Ontario

Dr. Seitz is an Associate Professor of Psychiatry and the Chair of the Division of Geriatric Psychiatry at Queen's University. He is also the President of the Canadian Academy of Geriatric Psychiatry.

Dr. Seitz's grant will study the patterns of antipsychotic use among older adults with psychotic disorders in Ontario and evaluate the safety and effectiveness of different classes of antipsychotic medications in this population. This study will provide new information comparing the safety and efficacy of antipsychotics in late-life psychotic disorders using a large real-world population of older adults.

Information learned from this study will help guide safe and effective prescribing for the growing population of older adults with psychotic disorders in Ontario and worldwide.

2017 PSI Foundation Visiting Scholars

In 2017, PSI Foundation funded the following Visiting Scholar programs:

Northern Ontario School of Medicine

2017's NOSM PSI Visiting Scholar was Dr. Mohit Bhandari of McMaster University. Dr. Bhandari holds many titles, including Professor in the Department of Surgery, Academic Head of the Division of Orthopaedic Surgery, and Canada Research Chair in Evidence-Based Orthopaedics. He travelled to Northern Ontario in the fall of 2017 to share his expertise on large clinical trials. He also discussed collaboration opportunities and provided guidance to NOSM faculty with interest in starting large sample research. Dr. Bhandari delivered a keynote address at the Northern Health Research Conference entitled "Think Bigger! The New Culture of Research."

Western University

Please see the following summary provided by Western University:

Our inaugural PSI Visiting Scholar event was a resounding success. Our 2017 Visiting Scholar was Dr. Stanley Hamstra, Vice President of Milestone Research & Evaluation at the Accreditation Council for Graduate Medical Education in Chicago, IL. His 3-day visit included a public lecture, "CBME as an Educational CQI Project: Enabling Residency Programs to Enhance Assessment Processes and Quality of Training", which was delivered to ~60 attendees (in person and by online conference) and promoted/engaged with on social media. The 3-day itinerary also included daily Research Roundtable sessions each morning, daily afternoon one-on-one research consultations and mentoring meetings, and an evening dinner. Two collaborative research projects have emerged from this first event, representing meaningful and mutually relevant scholarly work between Schulich/CERI and Dr. Hamstra's research unit at the ACGME. This work will be seeded by the remaining funds in our PSI Visiting Scholar budget and supplemented by in-kind contributions from CERI and ACGME scholars. The results of these projects will be disseminated at national and international medical education meetings in the next 1-2 years, with acknowledgement of their origins in the PSI Visiting Scholar.

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 (P.S.I.) commenced operation in November 1947 and soon became the largest prepaid medical care plan in Canada. P.S.I. 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, P.S.I. ceased operation due to the implementation by the Ontario Government of what is now the Ontario Health Insurance Plan. The Board of P.S.I. 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 practice 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.

The 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

Knowledge translation 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.

In 2017, the PSI Foundation held a retreat for all the KT Fellows past and present. This event allowed the Fellows to connect with each other and provided an opportunity for constructive feedback on both this funding program and PSI overall.

HEALTH RESEARCH

Within this broad category, PSI's preference is to support research into any clinical problem (other than cancer, heart and stroke, mental health, 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 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 steam offers researchers the ability to apply for three years of funding, as compared 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 stream 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

Research focusing within the health care system, such as preventive medicine, care of the elderly, communications within the system, underserviced 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 funding stream, 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 practise 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

Instituted as a funding stream in 2015, the primary purpose of this stream is to fund clinically relevant research directed at the identification, assessment, prevention, and treatment of mental disorders. While PSI recognizes the wide range of research in this field, PSI focuses on physician led, hypothesis driven biomedical research. Applications within this category should not exceed the maximum of two years duration and the limit of $100,000 per year set for clinical research.

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.

This program is open to all six medical universities in Ontario.

RESEARCH TRAINEE FELLOWSHIPS

The primary aim of this fellowship is to provide highly qualified Medical Doctors (MD's) with clinically applicable research training opportunities and support.

LUNCH AND LEARNS

The purpose of the Lunch and Learn program is to connect with clinician researchers at the six medical universities in Ontario to increase understanding of PSI's funding programs and priorities, as well as connect new investigators and faculty with well-established researchers.

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 – 2017

- 112 applications received with a total value of $13.3 million compared to 124 applications totalling $10.7 million in 2016.
- $5.1 million in new grants were approved in 2017 compared to $4.2 million in 2016.

HEALTH EDUCATION

Educational Fellowships for Practising Physicians

- 1 grant totalling $16,000.

Postgraduate Diploma in Clinical Dermatology
Dr. Kersti E. Kents, Muskoka Algonquin Healthcare

HEALTH SYSTEMS RESEARCH

- 5 grants totalling $107,000; a selection is highlighted below.

Health economic evaluation of endoscopic polypectomy performed in clinic (EPIC) for patients with chronic rhinosinusitis

Dr. Shaun Kilty, Ottawa Hospital Research Institute

Chronic sinusitis is one of the most common chronic diseases in North America, with over 5% of the Canadian population affected by the disease. Until now, treatment with surgery has been performed only in the operating room. Recently, a smaller surgical procedure that is done in the clinic for patients with chronic sinusitis with polyps has been found to result in symptom control that appears similar to that which occurs with sinus surgery.

Performing the smaller less invasive clinical procedure has advantages including a shorter patient wait time for the procedure and a shorter recovery time for the patient; however, the value for money of this small procedure remains unknown. The investigators will therefore conduct a study to compare costs and outcomes of the small clinical procedure to usual care to determine whether the benefits of the small surgical procedure justify its costs.

If the in-clinic treatment is found to be less expensive while providing at least an equal improvement in patient's quality of life, this will aid tremendously to support clinician adoption of this new clinic procedure.

Understanding and reducing barriers to postmastectomy breast reconstruction in Ontario

Dr. Helene Retrouvey (resident), Dr. Toni Zhong (supervisor), University Health Network

Breast cancer is the most common cancer in women affecting 1 in 9 Canadian women during their lifetime. Treatment involves mastectomy (surgical removal of one or both breasts), which can lead to body image issues and a decline in quality of life. Breast reconstruction (BR) can be offered to breast cancer patients after mastectomy and aims to surgically restore the breast form. BR may provide long-term quality of life improvements as well as psychological benefits for patients who choose this option. Despite these potential benefits, BR remains underused in Ontario as it fails to be consistently integrated as part of the treatment of breast cancer patients.

The investigators performed a systematic literature review and found that patient factors such as increased age, non-Caucasian race, tumor characteristics such as larger tumours, and negative physician perceptions of BR were associated with low rates of BR. Canadian studies highlighted a significant problem: that access to BR in Ontario was not universal. Additionally, studies failed to explain how these factors can lead to low rates of BR. Meaningful discussions with patients, clinicians and hospital administrators are needed to increase our understanding of the relationship between these different barriers and poor access to BR in Ontario.

In this study, the investigators will first conduct interviews to increase understanding of the local barriers to access to BR in Ontario, and then use this knowledge to design interventions that target these barriers and aim to improve access to BR in Ontario. The ultimate goal of this research is to ensure that all breast cancer patients whom wish to have BR have access to this surgical procedure, as dictated by the principles of the Canadian universal health act.

MEDICAL EDUCATION RESEARCH

- 3 grants totalling $136,460.

From classroom to clinic: assessing a novel integrated curriculum to teach ethical decision making for future physicians

Dr. Carrie D. Bernard, Dr. Mahan K. Kulasegaram, University of Toronto

MEDICAL EDUCATION RESEARCH (CONTINUED)

Ethical reasoning and judgement is one of the foundations upon which trusting and caring relationships are formed with patients; however, it is an aspect of practice for which doctors in training feel underprepared and unconfident – a view shared by many practicing Family Physicians. Despite ethics' importance to practice, the best approaches to teaching it in post-graduate medical training are unknown and debatable.

The goal of this study is to evaluate the efficacy and utility of a novel ethics curriculum for postgraduate Family Medicine trainees at the University of Toronto. The curriculum is based on the emerging field of learning sciences. Using concepts from psychology and education, this body of knowledge explains how to teach and train in ways congruent with how the mind and brain work. The curriculum uses this knowledge to better prepare doctors to apply ethical principles when they see patients in the clinical setting.

The theory-driven evaluation will compare the new curriculum to traditional teaching methods. The investigators will examine the impact of the ethics curriculum across multiple community and hospital teaching sites at the University of Toronto Family Medicine program. The anticipated outcome is to show the efficacy and feasibility of this new approach as well as to highlight the best principles for training ethically competent physicians.

Deliberate practice and mastery learning: a multi-centre randomized study for technical skills training in medicine

Dr. Andrew Petrosoniak (New Investigator), St. Michael's Hospital

Simulation-based training is now a cornerstone in residency medical education. Multiple studies show simulation training is superior to traditional teaching methods (e.g. lectures) for technical skill acquisition. Highly structured practice, a training strategy used increasingly in simulation training, provides systematic and focused feedback from expert instructors. There is little evidence, however, demonstrating its superiority over less resource intensive approaches such as trainee-guided practice, where the learner practices a skill and requests instructor feedback only when they feel it is required. This less resource intensive approach is more cost effective and requires fewer instructors. Given the balance between resources and learning outcomes, an improved understanding of how to design efficient simulation-based training that maximizes learning is required.

This study compares highly structured practice with learner-guided practice for skill performance of a life-saving emergency airway procedure, a bougie-assisted cricothyroidotomy. A multi-centre, randomized study will be conducted at four Canadian residency programs with approximately 100 residents assigned to one of the two practice methods. Skill performance will be evaluated before, immediately after practice, and 6 months later. Performance of each group will be compared to assess whether the type of practice impacts performance and skill retention.

This study will have important implications for residency training across the country as it will aid medical educators in their design of simulation-based practice sessions. Better residency training ultimately translates to patients through better outcomes and improved patient safety. From a policy and funding perspective, these study results will guide resource allocation for skills training and inform future curricular designs

End of life skills & professionalism for Critical Care residents in training - ESPRIT Study

Dr. Sameer Shaikh (resident), Dr. Timothy A. Karachi (supervisor), McMaster University

Palliative and end-of-life (EOL) care, and care of a potential organ donor, are essential components of delivering high-quality care in the ICU. Critical Care Medicine (CCM) subspecialty residents play a crucial role in providing this care to patients and their families. To date, there has been no report of the current landscape of EOL care education for CCM subspecialty residents in Canada.

MEDICAL EDUCATION RESEARCH (CONTINUED)

This dynamic research team is composed of residents, research trainees, intensivists, palliative care physicians, and internists, and includes some national leaders in research methodology, palliative care, and educational development. Members of the team have also been working with provincial organizations such as the Trillium Gift of Life Network (TGLN) on developing educational tools addressing organ donation for CCM residents. With the help of collaborators across Ontario, the investigators have begun developing survey instruments for CCM subspecialty residents and program directors that will allow for the evaluation of the current structure of EOL training for all CCM residents in Canada. The researchers will soon be ready for instrument testing, including piloting, clinical sensitivity testing, and reliability testing.

The investigators will administer this survey to residents and program directors at all five CCM residency programs in Ontario, as well as in other provinces. By gaining an understanding of the current state of EOL care teaching in CCM subspecialty programs, first in Ontario, then nationwide, the ESPRIT Study will facilitate the informed evolution of a comprehensive integrated EOL curriculum in Canada.

CLINICAL RESEARCH

- 29 grants totalling $3,644,100; a selection is highlighted below.

A PRAGMATIC RANDOMIZED TRIAL EVALUATING PRE-OPERATIVE ANTISEPTIC SKIN SOLUTIONS IN FRACTURED EXTREMITIES (PREPARE)

Dr. Mohit Bhandari, Dr. Gerard Slobogean, McMaster University

Open fractures represent the most severe musculoskeletal injuries. Patients with open fractures frequently experience surgical site infections (SSIs) which can result in devastating consequences such as prolonged morbidity, loss of limb function, and potential limb loss.

The investigators' previous research has found that simple measures may lead to dramatic improvements in open fracture patients. Additionally, data from a recent study of over 2,400 open fracture patients has shown that the type of antiseptic skin solution applied to the fractured limb in the operating room may affect outcomes; therefore, the investigators propose a cluster randomized crossover trial that will enroll open fracture patients to test the central hypothesis that iodophor-based pre-operative solutions are more effective than chlorhexidine solutions to reduce open fracture SSIs.

The primary objective of the definitive trial is to determine the most effective pre-operative antiseptic skin solution to reduce SSIs during open fracture management. Participants will be followed up to 90 days. The primary rationale for the proposed trial is the need to reduce avoidable SSIs and their negative impact on open fracture patients. Prior to initiating this large definitive trial, a pilot trial is necessary to demonstrate the feasibility of this novel study design.

A MULTI-CENTRE INVESTIGATION OF THE MANAGEMENT AND OUTCOMES OF COMMUNITY-ONSET *ESCHERICHIA COLI* BACTEREMIA

Dr. Michael Bonares (resident), Dr. Andrew M. Morris (supervisor), Sinai Health System

E. coli bacteremia is a common infection that is associated with high mortality. Despite its frequency and fatality, there are no guidelines with regard to its management; namely, the optimal identity and duration of antibiotic therapy in addition to the optimal means of source control are unestablished. It is also unestablished what effect a consultation by Infectious Diseases would have on clinical outcomes in *E. coli* bacteremia.

It is reasonable to deduce that since there are no guidelines about its management, then variability exists therein, such that patients receive inconsistent care. The researchers believe that this variability could be minimized by the establishment of best practice guidelines, which in turn, would improve outcomes for patients.

CLINICAL RESEARCH (CONTINUED)

Though this study's objective is not to develop such guidelines, it does seek to inform such a process, by characterizing the management of *E. coli* bacteremia at three academic hospitals in Toronto, such that variables that effect mortality, including the identity and duration of antibiotic therapy and the means of source control, could be identified.

High reliability organizing in healthcare: caring safely at the Hospital for Sick Children

Dr. Maitreya Coffey, Hospital for Sick Children

Patient safety has become an international hospital priority given the magnitude of preventable harm caused by medical care. Although gains have been made in patient safety over the past 15 years, progress has been slower than expected. Patient safety experts suggest that a high reliability organizing approach that fosters safety culture can advance the patient safety agenda. This approach is drawn from high-risk industries that have successfully avoided catastrophes despite their complexity; however, evidence around this organizational approach in healthcare is lacking.

Research on its implementation process is particularly essential to understanding the complex processes, practices, and consequences involved. This evidence is critical given the significant implications of a high reliability organizing intervention for patient care, medical and other health professionals' practices, and resources. In this study, the innovative, large-scale, 'Caring Safely' program at SickKids will be studied to examine how its aim to implement high reliability organizing is influencing patient safety culture and preventable harms.

Using interviews, observations, and documents, this study will explore how hospital leaders, healthcare providers, and family advisors, are interpreting and practicing 'Caring Safely'. The findings will provide in-depth insights underscoring the social processes and contextual factors that characterize organizational change for improving patient safety.

Symptoms and relevant outcomes: SMART

Dr. Thomas R. Freeman, Dr. Moira Stewart, Western University

People visit family physicians with sensations (symptoms) which may or may not be due to a disease. Two-thirds of patients visit a family physician for a symptom, of which 35% are not given a disease label at the end of that visit. It is the task of the family physician to figure out which symptoms are associated with a disease or require investigation, and which can be safely cared for without a disease label.

The proposed study will provide information to family physicians on 10 common symptoms answering the following questions. For each symptom, what percent are given a new diagnosis at the end of the visit? What percent are connected to an old diagnosis? What percent remain labelled as a symptom and how many future visits are needed before a diagnosis is made? Finally, the study will link patient characteristics (such as age, sex and prior conditions) with whether or not the symptom is diagnosed. This information will help patients and family physicians to better understand and care for common symptoms.

A prospective study to assess the vascular burden in TTP patients

Dr. Shih-Han S. Huang (New Investigator), London Health Sciences Centre

Thrombotic thrombocytopenic purpura (TTP) is a rare and life-threatening disease where clots formed in the small blood vessels can lead to major organ injuries throughout the body, including the heart and the brain. The effective treatment for TTP involves immediate plasma exchange, which is the removal of the fluid part of blood (plasma) in exchange for donor plasma. The immediate survival rate of the disease has improved from almost fatal to close to 80-90% due to plasma exchange; however, TTP is still associated with significant morbidity and mortality, even after plasma exchange treatment. The mortality rate has been shown to be almost 33% over 8 years.

CLINICAL RESEARCH (CONTINUED)

There is a need to re-focus the management goal of these patients and prevent these injuries to the heart and the brain. To do so, there is a need to understand the impact of the disease in these patients. In this study, the investigators will follow 30 patients who have TTP, and have been successfully treated with plasma exchange therapy, over a 12-month period. The researchers will apply advanced imaging tools and evaluate blood markers to understand the disease burden and its structural and functional impact on the heart and the brain.

Development and preliminary evaluation of The Integrated Parkinson's Disease Care Network: an integrated care model to address complex care in a chronic condition

Dr. Tiago A. Mestre (New Investigator), Dr. David A. Grimes, Ottawa Hospital Research Institute

Parkinson's disease (PD) is the second most common neurodegenerative disorder. Due to an aging population, the prevalence of PD is expected to increase in Ontario. Traditionally, PD is seen to cause difficulties with movement (tremor and slowness). Researchers now appreciate that a wide variety of non-movement difficulties occur (depression, dementia, bladder and bowel issues, among others) which has transformed PD into a condition with multiple and very different needs. Since PD has no cure, care becomes progressively more complex and challenging for the patient, families, and the healthcare team. The multiple care needs found in patients with PD require the intervention of various health care professionals. The ideal model for coordinating this type of care in PD has not been established. The use of available healthcare resources must be optimized to potentiate quality and sustainability of care in a chronic condition such as PD.

To address these challenges, the investigators have developed the Integrated Parkinson's Disease Care Network (IPCN). The IPCN is based on a patient-centered approach to define care priorities in partnership with an easily accessible nurse with expertise in PD (the clinical care integrator) and to promote self-management skills. In an innovative one-stop shop style service, the IPCN will facilitate access to health resources to people with PD, with a focus in care delivery in the community and patient self-management. Using this strategy, the researchers expect the IPCN to facilitate the access to available specialized services with little increase in resources and cost. The research team is now able to conduct a preliminary evaluation of its effectiveness, refine the IPCN as a model for complex care delivery, and set the foundation for a large scale confirmatory trial. The IPCN model has the potential for a province-wide implementation for PD that could also be applied to other chronic complex conditions in a sustainable fashion for our healthcare system.

Surgical outcomes of people living with HIV/AIDS (SOPHA)

Dr. Uitsile Ndlovu (resident), Dr. Shawn Forbes, McMaster University

New medications to treat HIV have changed this infection from a deadly disease into a chronic condition; therefore, people infected with HIV (PHAs) are living longer, healthier lives and, like everyone else, are seeking surgery for varied conditions. At present, it is not known how many PHAs in Ontario undergo surgery, what types of procedures are commonly being performed or the associated post-operative outcomes.

The purpose of this study is to describe the incidence of major surgical procedures post advent of antiretroviral medication and determine whether postoperative outcomes are similar to those of HIV uninfected people. The investigators hypothesize that an increasing number of PHAs are undergoing major surgical procedures with similar outcomes when matched with HIV uninfected patients.

Early intervention neuroimaging biomarkers to guide clozapine treatment

Dr. Nicholas Neufeld (resident), Dr. Aristotle Voineskos (supervisor), Centre for Addiction and Mental Health

After two adequate antipsychotic medication trials, patients with schizophrenia can be declared as having treatment-resistant schizophrenia (TRS) and become eligible for a trial of clozapine (CLZ). Identification of patients with TRS and treatment as early as possible in the disease course is a high priority. Yet early identification and management of TRS remains a major unmet need.

CLINICAL RESEARCH (CONTINUED)

This research provides an opportunity to determine whether a baseline MRI scan can be used to identify functional connectivity patterns in TRS patients associated with response to CLZ. If successful, the pilot results will inform future longitudinal studies with the goal of translating these neuroimaging biomarkers into a predictor to further advocate for CLZ in patients who are likely to respond, while mitigating the risks inherent in CLZ treatment for those who are unlikely to respond.

iSpy: a carbohydrate counting smartphone app for youth with type 1 diabetes

Dr. Mark Palmert, Dr. Jennifer Stinson, Hospital for Sick Children

Type 1 diabetes mellitus (T1DM) is a common chronic disease of childhood. T1DM has substantial impact on quality of life (QOL), including burdensome dietary restrictions and the need to count carbohydrates in foods to safely dose insulin. Carbohydrate counting is challenging, inconvenient, and, if done wrong, can cause high or low blood glucose levels.

To address these challenges, iSpy, a novel smartphone application, was created to identify foods and determine their carbohydrate content using pictures or speech. This proposal is for youth-based usability testing of iSpy followed by a pilot study to see if using iSpy improves carbohydrate counting and freedom in food choices. The usability testing will involve scenario-based tasks while for the pilot study, 40 youth (20 using iSpy; 20 controls), aged 8-17 years, with T1DM will participate in a 3-month study. Pilot participants will have carbohydrate counting (accuracy and efficiency) and their freedom to eat a variety of foods assessed at baseline and after 3-months.

The investigators hypothesize that using iSpy will make carbohydrate counting easier (by improving accuracy and efficiency) and allow youth to eat a broader range of foods. If so, iSpy may help lessen the burden of living with T1DM.

Intranasal ketamine for procedural sedation in children: a randomized controlled non-inferiority trial

Dr. Naveen Poonai, London Health Sciences Centre

Sedating children for painful procedures, termed procedural sedation, is commonly performed in the emergency department (ED). Procedural sedation is almost universally performed by giving anesthetic drugs intravenously (IV). Due to its safety profile and efficacy, the most common drug for sedation in children is ketamine. Unfortunately, inserting an IV in a child is time-consuming, a strain on nursing resources, an infection risk, and most importantly, very painful. Evidence suggests children view an IV as one of the most painful parts of their hospital Experience; furthermore, nurses in general EDs (that primarily treat adults) have limited experience placing an IV in a child, further straining resources and causing distress to the family.

Although ketamine is necessary for effective sedation, it can also be delivered through the nose or intranasally (IN). This two-year project will evaluate if IN ketamine is effective to sedate children undergoing painful procedures. If the investigators show that IN ketamine is less time-consuming, less skill-dependent, less painful, but just as effective for anesthesia, it could radically change the way children are sedated in the ED. More importantly, it will enable health care workers at both adult and paediatric EDs to adopt a pain-free and less resource-intensive approach to caring for children with injuries.

Magnetic resonance imaging (MRI) in the assessment of peripheral arterial disease

Dr. Trisha L. Roy (resident), Dr. Andrew D. Dueck (supervisor), Sunnybrook Health Sciences Centre

Peripheral arterial disease (PAD) is a morbid, mortal, and prevalent condition that affects over 800,000 Canadians. It is one of the most common cardiovascular diseases. Decreased blood flow to the leg causes exertional pain and is associated with poor quality of life and disability. When PAD is severe it is called "critical limb ischemia". In this subset of patients, major amputation is required within 1 year in up to 40% of patients.

CLINICAL RESEARCH (CONTINUED)

Current treatment options for PAD involve re-establishing blood flow to the leg through either bypass surgery or percutaneous vascular intervention (PVI). PVI is an attractive, minimally invasive approach with improved morbidity and shorter length of hospital stay compared to surgery; however, not all lesions are amenable to PVI and it has a high failure rate of 20% and high re-intervention rate of 30%. PVI is guided with x-ray fluoroscopy, which offers very limited visualization of the diseased arteries in the leg, making it difficult to predict if PVI would be successful or even possible to treat specific patients. Prompt, definitive revascularization is necessary to avoid major amputation, and appropriate patient selection is critical.

MRI is capable of producing high quality images of the blood flow in the legs. In this study, the investigators will develop and validate MRI methods of visualizing diseased arteries in the leg to facilitate PVI planning. MRI has the potential to significantly advance the treatment of PAD by enabling physicians to make more effective decisions with respect to patient selection to reduce PVI failure rates. MRI also holds significant promise to characterize diseased arteries to facilitate tailored wire and device selection to improve the success rates and durability of PVI. Informed patient, wire, and device selection is key to improving amputation rates, disability outcomes and quality of life in this growing patient population.

Infant susceptibility to measles: the impact of maternal vaccination on maternal and infant antibody levels and implications for public health policy in Canada

Dr. Michelle Science (New Investigator), Dr. Shelly Bolotin, Hospital for Sick Children

Measles is a highly infectious, acute viral illness that can lead to severe complications. It is preventable by vaccination, but recent outbreaks in Canada have raised concerns about lack of immunity in certain populations. Of particular concern are infants, who are born with maternally derived antibodies and have historically been considered to be protected by these antibodies for the first year of life; however, recent evidence suggests that in elimination settings such as Canada, where measles does not circulate endemically and most immunity is from immunization, maternal antibody levels are lower. As a result, infant immunity is lower and wanes earlier, potentially leaving the infant susceptible for much of their first year of life.

The researchers will investigate the antibody-based immunity to measles in infants less than one year of age in Canada. This study will help to reveal previously unidentified immunity gaps and help answer practical public health questions related to measles prevention and control. Specifically, this new Canadian data is required to evaluate whether current measles immunization recommendations require revision and it will aid with the management of infants under one exposed to measles, including the age at which post-exposure prophylaxis should be administered and determining susceptibility for isolation purposes.

Normothermic ex vivo kidney perfusion for the storage, assessment, and repair of human kidney grafts prior to transplantation

Dr. Markus Selzner, University Health Network

Kidney transplantation offers improved survival and a better quality of life for patients with end stage renal failure; however, many more patients are waiting for kidney transplantation than organs are available. As a result, patients with renal failure wait for several years until an organ becomes available. This organ shortage has triggered interest in the use of grafts obtained from older donors or donors with cardiac arrest (marginal grafts) for kidney transplantation. To allow transplantation kidneys have to be stored for several hours cold without oxygen to allow for transportation from the donor hospital to the transplant center and for recipient preparation. Unfortunately, marginal grafts do not tolerate cold storage well and often develop poor function after transplantation.

The investigators developed a new technique of kidney storage, which uses warm kidney perfusion outside the body with oxygen, blood cells, and nutrition. In several animal studies using pig kidney transplantation, it was determined that warm perfused kidney storage improves kidney function and reduces kidney injury resulting in higher quality grafts. In this application the researchers propose to translate the animal findings into a clinical trial to use warm perfused kidney storage for human kidney transplantation.

CLINICAL RESEARCH (CONTINUED)

Effects of histidine therapy on hearing and vision in children with HARS syndrome

Dr. Victoria M. Siu, London Health Sciences Centre

HARS syndrome is a progressive degenerative disease affecting eyesight and hearing. It is caused by a mutation in the HARS gene which codes for an enzyme involved in protein synthesis. It has been exclusively found in the Old Order Amish communities in Southwestern Ontario and in Pennsylvania. Children with this disorder initially have normal vision and hearing, but with a febrile illness, they can have a sudden loss of vision and hearing, as well as visual hallucinations. In more severe cases, fluid accumulates in the lungs which can cause a drop in oxygen levels and sometimes death. There is currently no specific treatment for this disease.

Anecdotal evidence suggests that administration of L-histidine may lead to an improvement in vision; however, no baseline objective measurements of vision were conducted prior to this treatment. The investigators have designed a project in which histidine will be given to children with HARS for 2 years. Vision, hearing, and bloodwork will be monitored to determine any changes during the treatment course. Results from this project may pave the way for a standard of care for these patients.

DICER1 in uterine rhabdomyosarcoma, adenosarcoma and carcinosarcoma - a potential diagnostic tool for molecular distinction

Dr. Ju-Yoon Yoon (resident), Dr. Blaise Clarke (supervisor), University Health Network

Studies of rare tumours have allowed researchers to identify genes important for cancer formation/progression, as well as identifying potential therapeutic targets. DICER1 is such a gene with numerous roles in the gynaecological tract, including development and fertility, as well as being implicated in uterine cancer.

Based on previous works, including works by the collaborator, the research team proposes that a specific gynaecological tract tumour, known as embryonal rhabdomyosarcoma, is associated with mutations in the DICER1 gene. To prove this idea, the investigators are employing state-of-art sequencing technology to examine for mutations in the DICER1 gene. By comparing features seen under the microscope, DNA sequence data and clinical data, the researchers can test their hypothesis and determine the significance of mutated DICER1. The results obtained will be important for both the patient and their family members, as inherited mutations in DICER1 increases risk for a number of different diseases.

Pediatric concussion assessment of rest and exertion + MRI

Dr. Roger L. Zemek, Dr. Andrée-Anne Ledoux, Children's Hospital of Eastern Ontario

Concussion in children and youth is a common public health concern. Children are not only at higher risk of sustaining concussions than adults, but recovery also takes longer. Physical symptoms (such as headache or dizziness), concentration problems, and emotional changes are common following concussions. One third of children with concussion continue to experience symptoms for more than one month, a condition known as Persistent Post-Concussive Symptoms (PPCS). PPCS has been shown to lower quality of life, especially school quality of life. Further, PPCS symptoms may impede children from doing the activities that they love, such as competing in team sports or attending social gatherings with friends.

To prevent PPCS, it was thought that the best recovery plan was to rest both mentally and physically until children became symptom-free; however, recent research suggests that too much rest may cause more harm than good. Determining the ideal balance of rest and physical activity may help decrease the chance of having PPCS. Rather than solely relying on patient self-report to determine recovery, studies that also include objective measures of recovery are urgently needed. The proposed study (PedCARE+MRI) will combine state-of-the-art MRI scans (advanced neuroimaging) with patient self-report to determine whether restarting physical activity at 3-days following a concussion results in both faster return back to normal brain function (by measuring brain blood flow on advanced MRI scan) and lower risk of PPCS (by self-report) as compared to complete resting until symptom-free.

FINANCIAL REPORT

2017 OVERVIEW

- Original investment by the doctors of Ontario: $16.7 million in 1970
- Net Assets (Total assets less liabilities and grants payable, i.e. equity) at December 31, 2017 was $101.9 million (2016 - $99.3 million)
- Increase in Net Assets over prior year $2.6 million (2016 - $7.5 million)
- Rate of return on investments approximately 8.4% consisting of 2.7% from dividends and interest and a 5.7% increase in the market value of investments (2016- 13.3%)
- Grants and Program Activity approved in 2017 - $5.12 million before refunds and withdrawals (2016 - $4.03 million)
- Total grants paid since inception $135.4 million
- Future grant commitments at 2017 year end: $6.9 million, with $3.8 million payable in 2018 and $1.8 million payable in 2019, $1.3 million payable thereafter (2016 - $5.6 million)
- Operating costs including investment management fees: $1.04 million (2016 - $1.25 million), year over year reduction is due primarily to the pension plan windup payment of $209,000 in 2016
- Operating costs as a percentage of assets under management: .95% (2016 – 1.2%)
- Asset allocation at year end:

	2017	2016
Canadian bonds	8.3%	9.7%
Canadian equities	44.6	48.1
U.S. and International equities	38.9	39.4
Real estate and infrastructure	5.9	1.0
Cash	2.3	1.8
	100%	100%

2017 IN DETAIL

It is my pleasure to present the PSI Foundation financial results for the year ended December 31, 2017. We have continued with our portfolio heavily weighted toward equities. The Finance Committee is watching this carefully, and we ensure the Board of Directors is cognisant of this allocation's risk profile. The markets performed well in 2017, but our conservative portfolio only gave us a total return of 8.4%, down from 13.3% in 2016. Both our Canadian managers failed to beat the market. Our investment in the US equity Exchange-Traded Fund (ETF) also failed to match the market in US$ terms due to the strength of the alcohol and tobacco stocks which PSI's Statement of Investment Policies & Goals requires us to short. The strengthening of the Canadian dollar against the US greenback also worked against us.

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 three times, but the Bank of Canada raised the Canadian rate twice. The latter seems to be content to move at a slower pace due to slower economic growth and uncertainties related to NAFTA and other trade issues. The current risk level in the fixed income market is not worth the reward, as bond yields are forecasted to continue to rise. Much of our portfolio is focused on blue chip securities paying strong dividends. The average yield of our Canadian portfolio is about 3%, far in excess of the return on 5 to 10-year Government of Canada bonds.

In 2017, we reduced our exposure to Canadian equities and invested in real estate and infrastructure funds. We feel these long-term holdings will provide a steady return and remove some market volatility from the portfolio.

During 2017, our operating costs were $200,000 below 2016. This was due to the windup of the defined benefit pension plan which required a windup payment of $209,000 in 2016. We have no further obligations under this pension plan. We currently contribute to employee's RRSP programs to assist them to save for their retirement.

At the request of the Grants Committee, we increased the 2017 budgeted amount for grants by $500,000 to $5.2 million at our November meeting. For 2018, we have budgeted for $4.8 million for grants approved in 2018. In addition, we have budgeted a further $100,000 for additional programs our Grants Committee wishes to provide, up from $75,000 in 2017. We have tried to set an annual grants figure which will be sustainable for the Foundation in the future. The 2018 budgeted figure is based on our budgeted income plus a 3% return on our portfolio. Any return in excess of the 3%, we will add to our capital base.

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.

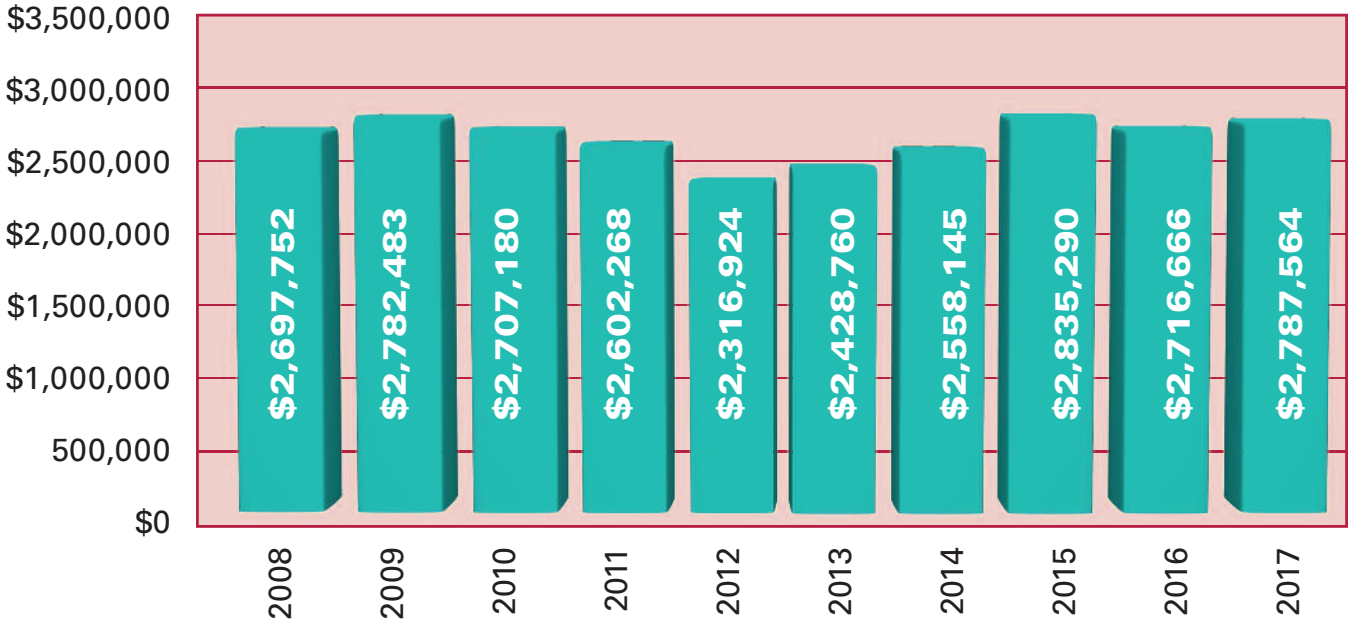
PSI FOUNDATION

FINANCIAL SUMMARY

1971 - 2017

Donated Capital		$ 16,693,123
Plus Capital appreciation	$ 127,408,601	
Revenue earned	127,040,049	254,448,651
		271,141,774
Less: Charitable contributions	$ 135,389,092	
Pension adjustment	371,296	
Investment & administrative expense	33,493,985	169,254,373
		101,887,401
Net assets, December 31, 2017		101,887,401
Net assets, December 31, 2016		99,327,524
Pension adjustment December, 2017		–
Increase/(Decrease) for year		2,559,877
Consisting of:		
Deficit for year		(3,357,944)
Capital appreciation on investments		5,917,821
		(2,559,877)

REVENUE 2008 - 2017



GRANTS PAID NET OF REFUNDS 2008 - 2017

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, 2017, 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, 2017, 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.

KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

March 7, 2018
Vaughan, Canada

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Statement of Financial Position

December 31, 2017, with comparative information for 2016

	2017	2016
Assets		
Cash and cash equivalents (note 2)	$ 2,819,637	$ 2,945,118
Bonds and debentures (note 3)	8,970,727	10,099,346
Shares (note 3)	91,221,384	91,600,187
Real Estate/Infrastructure Funds (note 3)	5,409,281	–
Dividends and interest receivable	168,590	184,210
Harmonized sales tax receivable	19,670	22,039
Capital assets (note 4)	1,031,361	1,058,684
	$ 109,640,650	$ 105,909,584
Liabilities and Net Assets		
Liabilities:		
Accounts payable and accrued liabilities	$ 131,418	$ 109,499
Securities sold short (note 5)	695,431	818,761
Grants payable (note 6)	6,926,400	5,653,800
	7,753,249	6,582,060
Net assets:		
Invested in capital assets	1,031,361	1,058,684
Internally restricted capital (note 7)	100,856,040	98,268,840
	101,887,401	99,327,524
Lease commitments (note 8)		
	$ 109,640,650	$ 105,909,584

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, 2017, with comparative information for 2016

	2017	2016
Revenue:		
Interest on bonds and debentures	$ 291,042	$ 285,846
Dividends	2,410,094	2,430,820
Real Estate/Infrastructure Funds dividend	86,428	–
	2,787,564	2,716,666
Less investment management fees	325,378	294,860
	2,462,186	2,421,806
Expenses:		
Administrative:		
Salaries and benefits	353,831	570,060
Board and committee	134,118	147,195
Office supplies	83,203	70,529
Amortization of capital assets	54,993	59,879
Safekeeping charges	44,025	49,834
Delegate and annual meeting	13,193	19,930
Legal and audit fees	17,120	18,440
Rent and maintenance	14,821	12,387
Information services and annual report	3,000	3,000
	718,304	951,254
Grants and programs:		
Grants approved	5,059,925	4,026,910
Lunch & learns	4,732	–
Visiting scholars	27,518	–
Fellow retreat	9,650	–
	5,101,825	4,026,910
	5,820,129	4,978,164
Excess of expenses over revenue before the undernoted	(3,357,943)	(2,556,358)
Other income:		
Realized gain on sale of investments	2,634,398	7,276
Unrealized gain on investments	3,283,422	10,060,284
	5,917,820	10,067,560
Excess of revenue over expenses	$ 2,559,877	$ 7,511,202

See accompanying notes to financial statements.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Statement of Changes in Net Assets

Year ended December 31, 2017, with comparative information for 2016

	Invested in capital assets	Internally restricted capital	Unrestricted	2017 Total	2016 Total
Balance, beginning of year	$ 1,058,684	$ 98,268,840	$ –	$ 99,327,524	$ 91,816,322
Excess (deficiency) of revenue over expenses	(54,993)	–	2,614,870	2,559,877	7,511,202
Investment in capital assets	27,670	(27,670)	–	–	–
Internally restricted capital (note 7)	–	2,614,870	(2,614,870)	–	–
Balance, end of year	$ 1,031,361	$ 100,856,040	$ –	$ 101,887,401	$ 99,327,524

See accompanying notes to financial statements.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Statement of Cash Flows

Year ended December 31, 2017, with comparative information for 2016

	2017	2016
Cash provided by (used in):		
Operating activities:		
Cash received from:		
Investment income	$ 2,704,589	$ 2,838,303
Grant refunds	29,135	101,590
Harmonized sales tax received	43,446	151,709
	2,777,170	3,091,602
Cash applied to:		
Administrative expenses	960,155	1,150,308
Grants and programs payments	3,843,978	3,835,553
Purchase of capital assets	27,670	17,224
Harmonized sales tax paid	41,155	40,627
	4,872,958	5,043,712
	(2,095,788)	(1,952,110)
Investing activities:		
Cash received from proceeds of investments:		
Beutel, Goodman & Company Ltd. - Bonds and debentures	16,929,895	17,290,448
Doherty & Associates Ltd. - Equities	5,967,526	628,003
Connor, Clark & Lunn Investment Management Ltd. - Equities	9,289,925	12,775,231
Vanguard Investments Canada Inc. - Equities	3,704,106	5,104,774
Crestpoint Real Estate & CCL Infrastructure - Funds	–	–
Interactive Brokers	176,344	9,603
	36,067,796	35,808,059
Cash applied to purchase of investments:		
Beutel, Goodman & Company Ltd. - Bonds and debentures	16,003,173	18,359,751
Doherty & Associates Ltd. - Equities	1,787,684	1,603,714
Connor, Clark & Lunn Investment Management Ltd. - Equities	9,853,959	13,851,814
Vanguard Investments Canada Inc. - Equities	812,625	988,722
Crestpoint Real Estate & CCL Infrastructure - Funds	5,279,495	–
Interactive Brokers	360,553	104,344
	34,097,489	34,908,345
	1,970,307	899,714
Decrease in cash and cash equivalents	(125,481)	(1,052,396)
Cash and cash equivalents, beginning of year	2,945,118	3,997,514
Cash and cash equivalents, end of year	$ 2,819,637	$ 2,945,118
Cash and cash equivalents on hand represented by:		
Canadian dollars	$ 1,581,413	$ 1,644,273
U.S. dollars	1,238,224	1,300,845
	$ 2,819,637	$ 2,945,118

See accompanying notes to financial statements.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements

Year ended December 31, 2017

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 includes cash in bank, cash with investment managers and a money market pooled fund, which is highly liquid.

(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 all investments 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, 2017

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) Grants:

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

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2017

1. Significant accounting policies (continued):

(g) 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:

	2017	2016
Cash on deposit	$ 1,767,842	$ 2,256,389
Beutel Goodman Cash Management Funds	128	127
Connor, Clark & Lunn Money Market Pooled Fund	1,051,667	688,602
	$ 2,819,637	$ 2,945,118

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2017

3. Investments:

Investments are managed by five independent investment managers.

	Nature of investments	2017	2016
Bonds and debentures:			
Beutel Goodman & Company Limited	Canadian fixed income	$ 8,970,727	$ 10,099,346

	Nature of investments	2017	2016
Shares:			
Doherty & Associates Investment Ltd.	Canadian equity	$ 19,481,284	$ 23,239,311
Connor, Clark & Lunn Investment Management Ltd.	Canadian equity	28,871,184	27,126,419
Vanguard Investments Canada Inc.	U.S. equity	42,868,916	41,234,457
		$ 91,221,384	$ 91,600,187

	Nature of investments	2017	2016
Pooled Funds:			
Crestpoint Real Estate & CCL Infrastructure	Canadian	$ 5,409,281	$ –
		$ 5,409,281	$ –

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2017

4. Capital assets:

	Cost	Accumulated amortization	2017 Net book value	2016 Net book value
Buildings	$ 903,310	$ 45,068	$ 858,242	$ 876,544
Building improvements	183,034	43,240	139,794	157,195
Furniture and equipment	26,142	13,018	13,124	18,353
Computer equipment	62,826	42,625	20,201	6,592
	$ 1,175,312	$ 143,951	$ 1,031,361	$ 1,058,684

5. Securities sold short:

The Foundation has sold short various U.S. equities in the aggregate amount of $695,431 (2016 - $818,761) to comply with no tobacco and no alcohol investment holdings as stated in the statement of investment policies and goals.

6. Grants payable:

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

7. 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.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

Year ended December 31, 2017

8. 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:

2018	$ 3,294
2019	3,294
2020	3,294
2021	1,647
	$ 11,529

9. Financial risks:

The Foundation manages its investment portfolio to earn investment income and invests according to a statement of investment policies and goals approved by the Board of Directors. 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 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.

Credit risk is the risk that an issuer or counterparty will be unable or unwilling to meet a commitment that it has entered into with the Foundation. In order to minimize the exposure to credit risk, the Foundation invests in Canadian-issued instruments according to its statement of investment policies and goals.

THE PHYSICIANS' SERVICES INCORPORATED FOUNDATION

Notes to Financial Statements (continued)

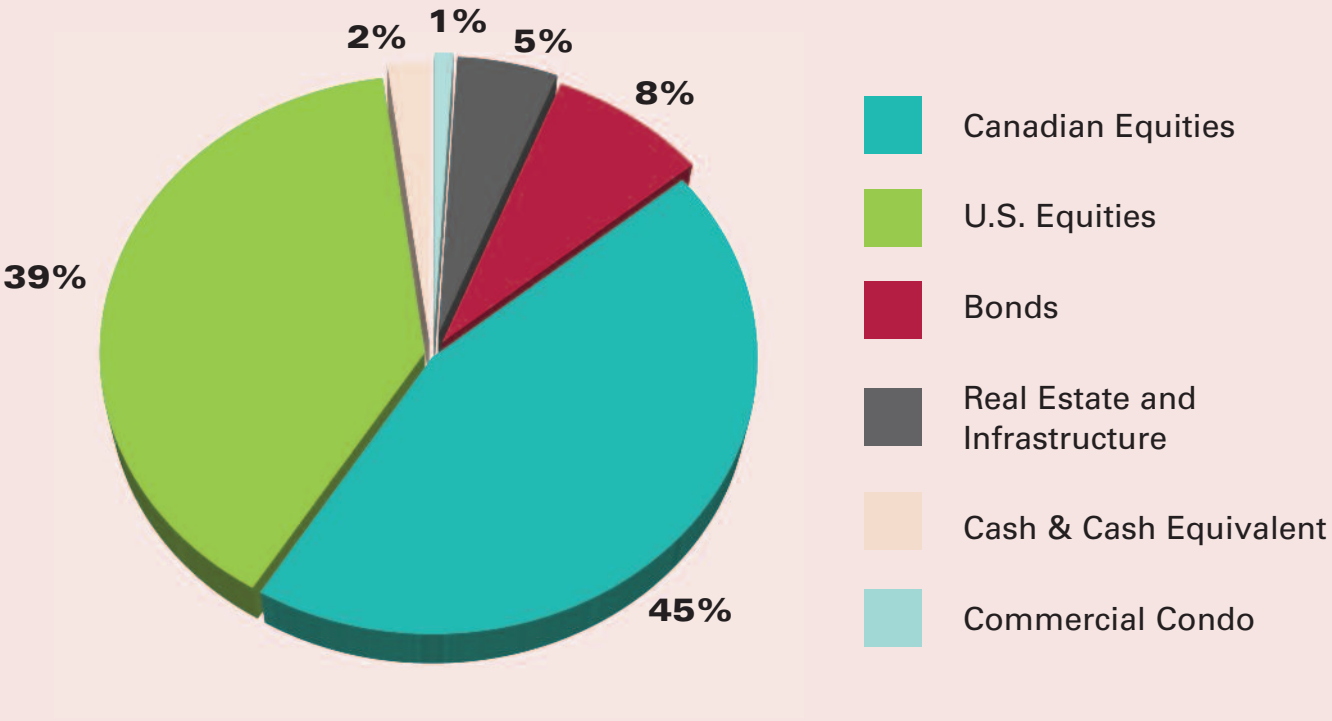
Year ended December 31, 2017

9. Financial risks (continued):

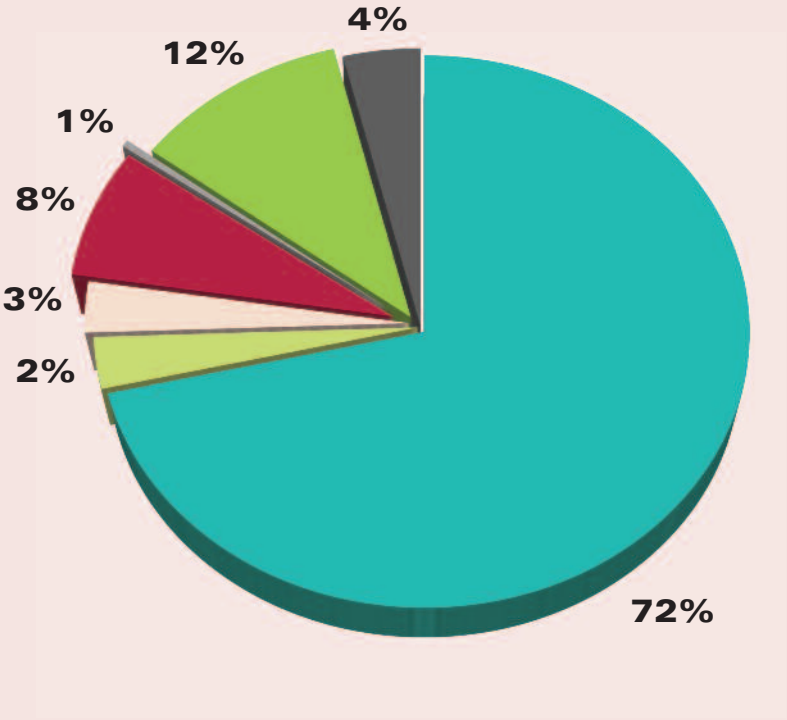
Additionally, the Foundation believes it is not exposed to significant liquidity risk as all investments are held in instruments that are highly liquid and can be disposed of to settle commitments.

Other than expanding its portfolio in 2017 to include Canadian real estate/infrastructure funds, there has been no change to the risk exposures from 2016.

2017 DISTRIBUTION OF ASSETS AT MARKET VALUE



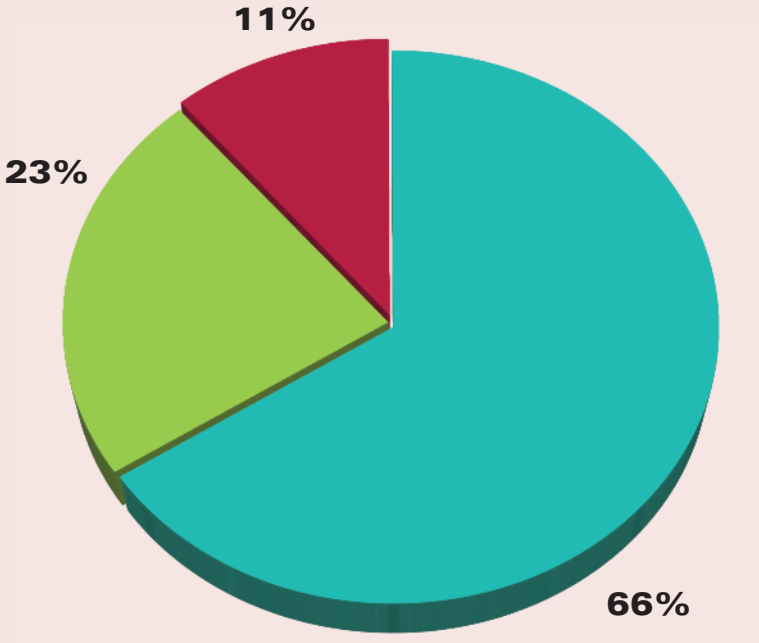
2017 TOTAL GRANTS APPROVED



- Clinical Research
- Health Systems Research
- Medical Education Research
- Mental Health Research
- Community-Based Research*
- Educational Fellowship for Practising Physicians
- Knowledge Translation Fellowship
- Research Trainee Fellowship

*no grants awarded in 2017

2017 TOTAL PROGRAMS APPROVED



- Visiting Scholar
- Lunch and Learns
- Fellows Retreat

PSI FOUNDATION

GRANTS AND PROGRAMS APPROVED

For the year ended December 31, 2017

	Amount Approved
GRANTS	
HEALTH EDUCATION	
Queen's University	
Dr. K. Kents	
Postgraduate Diploma in Clinical Dermatology	$ 16,000
Total Health Education	$ 16,000
HEALTH SYSTEMS RESEARCH	
McMaster University	
Dr. F. Amin*, Dr. C. Demers	
Evaluation of the impact of the primary care heart failure billing codes on clinical outcomes	$ 20,000
Mount Sinai Hospital	
Dr. K. Quinn*, Dr. C. Bell	
The risk of death following first hospitalization: a population based study	$ 20,000
Toronto General Hospital	
Dr. H. Retrouvey*, Dr. T. Zhong	
Understanding and reducing barriers to postmastectomy breast reconstruction in Ontario	$ 20,000
The Ottawa Hospital Research Institute	
Dr. S. Kilty	
Health economic evaluation of endoscopic polypectomy performed in clinic (EPIC) for patients with chronic rhinosinusitis	$ 36,000
Dr. L. Bernard*, Dr. W. Faught	
Analysis of socio-medical characteristics of Ontario cervical cancer patients	$ 11,000
Total Health Systems Research	$ 107,000

GRANTS AND PROGRAMS APPROVED

For the year ended December 31, 2017 (continued)

	Amount Approved
MEDICAL EDUCATION RESEARCH	
McMaster University	
Dr. S. Shaikh*, Dr. T. Karachi	
End of life skills & professionalism for Critical Care residents in Training - ESPRIT Study	$ 9,460
University of Toronto	
Dr. C.D. Bernard, Dr. M.K. Kulasegaram	
From classroom to clinic: assessing a novel integrated curriculum to teach ethical decision making for future physicians	$ 79,500
St. Michael's Hospital	
Dr. A. Petrosoniak	
Deliberate practice and mastery learning: a multi-centre randomized study for technical skills training in medicine	$ 47,500
Total Medical Education Research	$ 136,460
CLINICAL RESEARCH	
McMaster University	
Dr. M. Bhandari, Dr. G. Slobogean	
A pragmatic randomized trial evaluating pre-operative antiseptic skin solutions in fractured extremeties (PREPARE)	$ 199,000
Dr. J. Spence*, Dr. S. Connolly	
Benzodiazepine-free anesthetic for reduction of delirium (B-Free): a single centre pilot study to determine the feasibility of a multi-centre, randomized, cluster crossover trial	$ 19,500
Dr. U. Ndlovu*, Dr. T. Forbes	
Surgical outcomes of people living with HIV/AIDS (SOPHA)	$ 19,500
Centre for Addiction and Mental Health	
Dr. N. Neufeld*, Dr. A. Voineskos	
Early intervention neuroimaging biomarkers to guide clozapine treatment	$ 20,000
Hospital for Sick Children	
Dr. M. Coffey	
High reliability organizing in healthcare: Caring Safely at the Hospital for Sick Children	$ 112,000
Dr. F. Mahmud, Dr. M. Marcon	
Celiac disease and diabetes longitudinal follow-up and evaluation study (CD-LiFE): a longitudinal study evaluating dietary factors, metabolic control and complications and, self-perceived health and wellness in type 1 diabetes patients with celiac disease	$ 187,000
Dr. M. Palmert, Dr. J. Stinson	
iSpy: a carbohydrate counting smartphone app for youth with type 1 diabetes	$ 106,000

GRANTS AND PROGRAMS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2017 (CONTINUED)

	Amount Approved
CLINICAL RESEARCH (CONTINUED)	
Dr. S. Schuh, Dr. Y. Finkelstein Suctioning of nose therapy (SNOT) versus usual home care in bronchiolitis - a randomized clinical trial	$ 195,000
Dr. M. Science, Dr. S. Bolotin Infant susceptibility to measles: the impact of maternal vaccination on maternal and infant antibody levels and implications for public health policy in Canada	$ 245,000
Mount Sinai Hospital	
Dr. M. Bonares*, Dr. A. Morris A multi-centre investigation of the management and outcomes of community-onset *Escherichia coli* bacteremia	$ 20,000
St. Michael's Hospital	
Dr. O.N. Pathmanaban, Dr. M.D. Cusimano Tranexamic acid in the treatment of residual chronic subdural hematoma: a single-centre, observer-blinded, randomized, controlled trial	$ 167,500
Sunnybrook Health Sciences Centre	
Dr. A. Mayo, Dr. S. Hitzig Health and quality of life outcomes post-amputation in Ontario	$ 182,500
Dr. T.L. Roy*, Dr. A.D. Dueck Magnetic resonance imaging (MRI) in the assessment of peripheral arterial disease	$ 20,000
Toronto General Hospital	
Dr. A. Laliberte*, Dr. T. Waddell Tissue plasminogen activator dose analysis in the treatment of empyema: retrospective chart review	$ 9,500
Dr. L. Levy, Dr. T. Martinu Risk stratification of sub-clinical acute rejection in lung transplantation	$ 166,500
Dr. M. Selzner Normothermic ex vivo kidney perfusion for the storage, assessment, and repair of human kidney grafts prior to transplantation	$ 142,000
Dr. J. Yoon*, Dr. B. Clarke DICER1 in uterine rhabdomyosarcoma, adenosarcoma and carcinosarcoma - a potential diagnostic tool for molecular distinction	$ 18,000
Toronto Western Hospital	
Dr. M.G. Fehlings Characterization of blood biomarkers in patients with degenerative cervical myelopathy to direct management and prognosticate clinical outcome: a prospective cohort study	$ 200,000
Dr. A. Strafella Imaging synaptic density in Parkinsonisms with [11C]UCB-J PET	$ 197,500

GRANTS AND PROGRAMS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2017 (CONTINUED)

CLINICAL RESEARCH (CONTINUED)

	Amount Approved
The Ottawa Hospital Research Institute	
Dr. T. Mestre, Dr. D. Grimes	
Development and preliminary evaluation of The Integrated Parkinson's Disease Care Network: an integrated care model to address complex care in a chronic condition	$ 195,000
Dr. M. Ruzicka, Dr. S. Hiremath	
Blood pressure measurement: should technique define targets?	$ 45,000
Children's Hospital of Eastern Ontario	
Dr. R. Zemek, Dr. A. Ledoux	
Pediatric concussion assessment of rest and extertion+MRI	$ 195,500
London Health Sciences Centre	
Dr. S.S. Huang	
A prospective study to assess the vascular burden in TTP patients	$ 65,600
Dr. B. Lanting	
Clinical effectiveness, cost-effectiveness, and patient satisfaction with outpatient total hip and total knee arthroplasty	$ 245,000
Dr. P. Murphy*, Dr. K. Vogt	
Impact of surgeon factors on the management and outcomes of acute appendicitis	$ 19,000
Dr. N. Poonai	
Intranasal ketamine for procedural sedation in children: a randomized controlled non-inferiority trial	$ 199,500
Dr. E. Schemitsch, Dr. D.M. McKee	
The DECIPHER Study: determinants of function and clinically important outcomes following proximal humerus fractures in the elder population: a national cohort	$ 185,000
Dr. V. Siu	
Effects of histidine therapy on hearing and vision in children with HARS syndrome	$ 104,000
Western University	
Dr. T.R. Freeman, Dr. M. Stewart	
Symptoms and relevant outcomes: SMART	$ 167,500
Total Clinical Research	$ 3,647,600

MENTAL HEALTH RESEARCH

McMaster University	
Dr. B.N. Frey	
A translational study of blood-brain barrier disruption in bipolar disorder: implications for a new pathway for drug development	$ 187,000

GRANTS AND PROGRAMS APPROVED

FOR THE YEAR ENDED DECEMBER 31, 2017 (CONTINUED)

	Amount Approved
MENTAL HEALTH RESEARCH (CONTINUED)	
Queen's University	
Dr. D. Seitz	
Comparative safety and efficacy of antipsychotic medications in late-life psychotic disorders: a population-based study from Ontario	$ 200,000
Total Mental Health Research	$ 387,000

FELLOWSHIPS

PSI Graham Farquharson Knowledge Translation Fellowship	
Dr. T. Chan	$ 300,000
Dr. N.N. Haroon	$ 300,000
Total KT Fellowships	**$ 600,000**
PSI Research Trainee Fellowship	
Dr. K. Premji*	$ 50,000
Dr. A. Badre*	$ 50,000
Dr. Y. Meng*	$ 49,500
Dr. J. Rullo*	$ 49,000
Total Research Trainee Fellowships	**$ 198,500**
TOTAL GRANTS	**$ 5,092,560**

PROGRAMS

Visiting Scholars	
NOSM Visiting Scholar 2017	$ 12,518
Western University Visiting Scholar 2018	$ 15,000
University of Ottawa/CHEO Visiting Scholar 2018†	$ TBD
Total Visiting Scholars	**$ 27,518**
Lunch and Learns	**$ 4,732**
KT Fellows Retreat	**$ 9,650**
TOTAL PROGRAMS	**$ 41,900**
GRAND TOTAL	**$ 5,134,460**

*resident grantees

†amount to be determined at a later date

PSI FOUNDATION

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.	J Gen Intern Med. 2017 Mar;32(3):262-268.
Withholding pantoprazole for stress ulcer prophylaxis in critically ill patients: a pilot randomized clinical trial and meta-analysis	Alhazzani, W.	Crit Care Med. 2017 Jul;45(7):1121-1129.
Biomarkers of glycocalyx injury are associated with delayed cerebral ischemia following aneurysmal subarachnoid hemorrhage: a case series supporting a new hypothesis	Bell, J.	Neurocrit Care. 2017 Jun;26(3):339-347.
The PROTROPICS feasibility: prognostic value of elevated troponins in critical illness	Belley-Cote, E.P.	European Heart Journal. 2017 August 1;38(1):ehx502.P2748.
The PROTROPICS feasibility: prognostic value of elevated troponins in critical illness	Belley-Cote, E.P.	Canadian Journal of Cardiology. 2017 October;33(10):S56.
Fracture fixation in the operative management of hip fractures (FAITH): an international, multicentre,	Bhandari, M.	Lancet. 2017 Apr 15; 389(10078):1519-1527.
Vitamin D use and health outcomes after surgery for hip fracture	Bhandari, M.	Orthopedics. 2017 Oct 1; 40(5):e868-e875.
Atypical autism in a boy with double duplication of 22q11.2: implications of increasing dosage	Carter, M.	NPJ Genom Med. 2017 Sep 28;2:28.
Long-term functional and psychosocial outcomes after hypoxic-ischemic brain injury: a case-controlled comparison to traumatic brain injury	Cullen, N.	PM R. 2017 Dec;9(12):1200-1207.
Exploring daily blood pressure fluctuations and cardiovascular risk among individuals with motor complete spinal cord injury: a pilot study	Dance, D.	J Spinal Cord Med. 2017 Jul;40(4):405-414.
Treatment of asymptomatic UTI in older delirious medical in-patients: a prospective cohort study	Dasgupta, M.	Arch Gerontol Geriatr. 2017 Sep;72:127-134.
Metabolite and functional profile of patients with cervical spondylotic myelopathy	Duggal, N.	J Neurosurg Spine. 2017 Feb 3:1-7
Accelerated titration of oxytocin in nulliparous women with labour dystocia: results of the ACTION pilot randomized controlled trial	Dy, J.	J Obstet Gynaecol Can. 2017 Dec 21. pii: S1701-2163(17)30711-9

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Benchmarking outcomes in the Neonatal Intensive Care Unit: cytogenetic and molecular diagnostic rates in a retrospective cohort	Dyment, D.	Am J Med Genet A. 2017 May 9.
Challenging authority during an emergency - the effect of a teaching intervention	Friedman, Z.	Crit Care Med. 2017 Aug;45(8):e814-e820.
Cardiovascular and neuropsychiatric events following varenicline use for smoking cessation	Gershon, A.	Am J Respir Crit Care Med. 2017 Dec 20.
Concomitant pulmonologist and primary care for chronic obstructive pulmonary disease: a population study	Gershon, A.	Fam Pract. 2017 Nov 16; 34(6):708-716.
Forecasting hospital-based acute health services utilization rates for chronic obstructive pulmonary disease: a time-series analysis	Gershon, A.	Ann Am Thorac Soc. 2017 Mar 7.
Inhaled long-acting anticholinergics and urinary tract infection in individuals with COPD	Gershon, A.	COPD. 2017 Feb;14(1):105-112.
Mental health services claims and adult onset asthma in Ontario, Canada	Gershon, A.	J Allergy Clin Immunol Pract. 2017 Apr 7. pii: S2213-2198(17)30113-7
The Cardiovascular Health in Ambulatory Care Research Team performance indicators for the primary prevention of cardiovascular disease: a modified Delphi panel study	Gershon, A.	CMAJ Open. 2017 Apr 25; 5(2):E315-E321.
Innovations in the management of musculoskeletal pain with alpha-lipoic acid (IMPALA Trial): study protocol for a double-blind, randomized, placebo-controlled crossover trial of alpha-lipoic acid for the treatment of fibromyalgia pain	Gilron, I.	JMIR Res Protoc. 2017 Mar; 6(3): e41.
Oral vancomycin followed by fecal transplantation versus tapering oral vancomycin treatment for recurrent clostridium difficile Infection: an open-label, randomized controlled trial	Hota, S.S.	Clin Infect Dis. 2017 Feb 1; 64(3):265-271.
Aspergillus galactomannan detection in exhaled breath condensate compared to bronchoalveolar lavage fluid for the diagnosis of invasive aspergillosis in immunocompromised patients	Husain, S.	Clin Microbiol Infect. 2017 Sep 29.
Targeted metabolomics in colorectal cancer: a strategic approach using standardized laboratory tests of the blood and urine	Jerzak, K.	Hypoxia (Auckl). 2017; 5: 61–66.
Dysphagia screening after intracerebral hemorrhage	Joundi, R. Kapral, M.	Int J Stroke. 2017 Jan 1: 1747493017729265.

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Predictors and outcomes of dysphagia screening after acute ischemic stroke	Joundi, R. Kapral, M.	Stroke. 2017 Apr;48(4):900-906.
Sitagliptin in patients with non-alcoholic steatohepatitis: a randomized, placebo-controlled trial	Joy, T.	World J Gastroenterol. 2017 Jan 7;23(1):141-150.
Monoamine oxidase-A genetic variants and childhood abuse predict impulsiveness in borderline personality disorder	Kolla, N.	Clin Psychopharmacol Neurosci. 2017 Nov; 15(4): 343–351.
Continued under-recognition of acute respiratory distress syndrome after the Berlin definition: what is the solution?	Laffey, J.	Curr Opin Crit Care. 2017 Feb;23(1):10-17.
Cryopreserved, xeno-free human umbilical cord mesenchymal stromal cells reduce lung injury severity and bacterial burden in rodent *Escherichia coli*-induced acute respiratory distress syndrome	Laffey, J.	Crit Care Med. 2017 Feb;45(2):e202-e212.
Fifty years of research in ARDS. Cell Based Therapy for ARDS: biology and potential therapeutic value	Laffey, J.	Am J Respir Crit Care. Med. 2017 Mar 17.
A randomized-controlled trial of nabilone for the prevention of acute postoperative nausea and vomiting in elective surgery	Levin, D.N. Hong, A.	Can J Anaesth. 2017 Feb 3.
Increasing palliative interventions at the end of life: patterns in metastatic colorectal cancer (mCRC)	Liang, V.S. Easson, A.M.	Annals of Oncology. 2017 Sep 1; 28(5): mdx382.011.
The impact of hospital experience with out-of-hospital cardiac arrest patients on post cardiac arrest care	Lin, S. Morrison, L.J.	Resuscitation. 2017 Jan;110:169-175.
Intrapleural dornase and tissue plasminogen activator in pediatric empyema (DTPA): a study protocol for a randomized controlled trial	Livingston, M.H. Jones, S.	Trials. 2017 Jun 24; 18(1):293.
Nonrandomized assessment of ingrown toenails treated with excision of skinfold rather than toenail (NAILTEST): an observational study of the Vandenbos procedure	Livingston, M.H. Jones, S.	J Pediatr Surg. 2017 Jan 29. pii: S0022-3468(17)30062-3.
Sedation and mobilization during venovenous extracorporeal membrane oxygenation for acute respiratory failure: an international survey	Marhong, J.	Crit Care Med. 2017 Nov;45(11):1893-1899.
Heart rate variability in leucine-rich repeat kinase 2-associated Parkinson's disease	Marras, C. Lang, A.	Mov Disord. 2017 Jan 10.

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Global collaboration in acute care clinical research: opportunities, challenges, and needs	Marshall, J.C.	Crit Care Med. 2017 Feb;45(2):311-320
Effect of early versus late tracheostomy or prolonged intubation in critically ill patients with acute brain injury: a systematic review and meta-analysis	McCredie, V.A. Morrison, L.J. Scales, D.	Neurocrit Care. 2017 Feb;26(1):14-25.
The Impact of red blood cell transfusion on cerebral tissue oxygen saturation in severe traumatic brain injury	McCredie, V.A.	Neurocrit Care. 2017 Apr;26(2):247-255.
Long-term clinical outcomes and predictors for survivors of out-of-hospital cardiac arrest	Morrison, L.J.	Resuscitation. 2017 Mar;112:59-64.
Colchicine for prevention of perioperative atrial fibrillation in patients undergoing lung resection surgery: a pilot randomized controlled study	Neary, J.	Eur J Cardiothorac Surg. 2017 Dec 9.
The effect of colchicine administration on postoperative pleural effusion following lung resection: a randomized blinded placebo-controlled feasibility pilot study	Neary, J.	Eur J Cardiothorac Surg. 2017 Nov 23.
Circulating PCSK9 is lowered acutely following surgery	Ooi, T.	J Clin Lab Anal. 2017 Nov 17.
Parental health literacy and outcomes of childhood nephrotic syndrome	Parekh, R.	Pediatrics. 2017 Mar;139(3).
Protocol for a randomised controlled trial evaluating the effects of providing essential medicines at no charge: the Carefully seLected and Easily Accessible at No Charge Medicines (CLEAN Meds) trial	Persaud, N.	BMJ Open. 2017 Jun 12; 7(5):e015686.
8-way randomized controlled trial of doxylamine, pyridoxine and dicyclomine for nausea and vomiting during pregnancy: restoration of unpublished information	Persaud, N.	PLoS One. 2017 Jan 4; 12(1):e0167609.
Estimated effects of adding universal public coverage of an essential medicines list to existing public drug plans in Canada	Persaud, N.	CMAJ. 2017 Feb 27; 189(8):E295-E302. doi: 10.1503/cmaj.161082.
Systematic review of sex-specific reporting of data: cholinesterase inhibitor example	Rochon, P.	J Am Geriatr Soc. 2017 Oct;65(10):2213-2219.
Airway management strategies for brain-injured patients meeting standard criteria to consider extubation. A prospective cohort study	Scales, D.	Ann Am Thorac Soc. 2017 Jan;14(1):85-93.

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Long-term outcomes and health care utilization after prolonged mechanical ventilation	Scales, D.	Ann Am Thorac Soc. 2017 Mar;14(3):355-362.
Prehospital cooling to improve successful targeted temperature management after cardiac arrest: a randomized controlled trial	Scales, D.C.	Resuscitation. 2017 Oct 5. pii: S0300-9572(17) 30650-0.
Hydrogen sulfide protects renal grafts against prolonged cold ischemia-reperfusion injury via specific mitochondrial actions	Sener, A.	Am J Transplant. 2017 Feb; 17(2):341-352.
An appetite for modernizing the regulatory framework for protein content claims in Canada	Sievenpiper, J.	Nutrients. 2017 Aug 23;9(9).
Cost-effectiveness of maintaining daily intake of oat β-glucan for coronary heart disease primary prevention	Sievenpiper, J.	Clin Ther. 2017 Apr;39(4):804-818.e3.
Effect of a low glycemic index diet versus a high-cereal fibre diet on markers of subclinical cardiac injury in healthy individuals with type 2 diabetes mellitus: an exploratory analysis of a randomized dietary trial	Sievenpiper, J.	Clin Biochem. 2017 Sep 25. pii: S0009-9120(17) 30639-2.
Relation of total sugars, fructose and sucrose with incident type 2 diabetes: a systematic review and meta-analysis of prospective cohort studies	Sievenpiper, J.	CMAJ. 2017 May 23; 189(20):E711-E720.
Salba-chia (Salvia hispanica L.) in the treatment of overweight and obese patients with type 2 diabetes: a double-blind randomized controlled trial	Sievenpiper, J.	Nutr Metab Cardiovasc Dis. 2017 Feb;27(2):138-146.
The effect of alpha-linolenic acid on glycemic control in individuals with type 2 diabetes	Sievenpiper, J.	Medicine (Baltimore). 2017 May; 96(21): e6531.
An observational study of suicide death in homeless and precariously housed people in Toronto	Sinyor, M. Schaffer, A.	Can J Psychiatry. 2017 Jul;62(7):501-505.
Did the suicide barrier work after all? Revisiting the Bloor Viaduct natural experiment and its impact on suicide rates in Toronto	Sinyor, M. Schaffer, A.	BMJ Open. 2017 Jun 19;7(5):e015299.
Self-poisoning suicide deaths in people with bipolar disorder: characterizing a subgroup and identifying treatment patterns	Sinyor, M. Schaffer, A.	Int J Bipolar Disord. 2017 Dec;5(1):16.
Predicting short-term risk of arrhythmia among patients with syncope: the Canadian syncope arrhythmia risk score	Thiruganasambandamoorthy, V.	Acad Emerg Med. 2017 Nov;24(11):1315-1326.

ON FOUNDATION FUNDED PROJECTS (CONTINUED)

TITLE	GRANTEE	JOURNAL
Syncope prognosis based on Emergency Department diagnosis: a prospective cohort study	Thiruganasambandamoorthy, V.	Acad Emerg Med. 2017 Nov 14. doi: 10.1111/acem 13346. [Epub ahead of print]
Surgery for degenerative cervical myelopathy: a patient-centered quality of life and health economic evaluation	Witiw, C.	Spine J. 2017 Jan;17(1):15-25.
International multiphase mixed methods study protocol to develop a cross-cultural patient-reported outcome instrument for children and young adults with cleft lip and/or palate (CLEFT-Q)	Wong, K.	BMJ Open. 2017 Jan 11; 7(1):e015467.
Role of magnetic resonance elastography as a noninvasive measurement tool of fibrosis in a renal allograft: a case report	Yuen, D.	Transplant Proc. 2017 Sep; 49(7):1555-1559.
The role of thrombectomy and diffusion-weighted imaging with MRI in post-transplant renal vein thrombosis: a case report	Yuen, D.	BMC Nephrol. 2017 Jul 10; 18(1):224.
Magnetic resonance elastography to assess fibrosis in kidney allografts	Yuen, D.	Clin J Am Soc Nephrol. 2017 Oct 6;12(10): 1671-1679.
The risk of acute rejection following kidney transplant by 25-hydroxyvitamin D and 1,25-dihydroxyvitamin D status: cohort study	Zimmerman, D.	Can J Kidney Health Dis. 2017; 4: a prospective 2054358117699822.

2018 GRANTEE ANNUAL MEETING PRESENTERS

Dr. Jennie Johnstone, Public Health Ontario/University of Toronto

Dr. Jennie Johnstone is an Assistant Professor in both the Dalla Lana School of Public Health and the Department of Medicine at the University of Toronto. She received her medical degree from Dalhousie University and a PhD in Health Research Methodology from McMaster University.

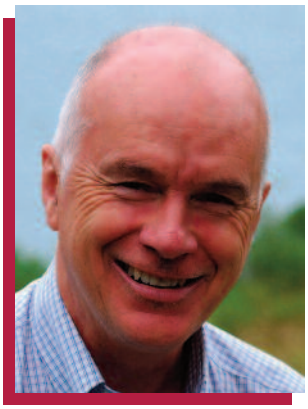
Dr. Johnstone's research interests are in infectious disease, infection prevention and control, health care-associated infections, immunosenescence, and epidemiology. She received a New Investigator PSI grant in 2016 entitled "PROSPECT: probiotics: prevention of severe pneumonia and endotracheal colonization trial."

Dr. Jennie Johnstone

Dr. Alex MacKenzie, University of Ottawa

Dr. Alex MacKenzie is a principal investigator at the CHEO Research Institute and a Professor in the Department of Medicine at the University of Ottawa. He received his MD from the University of Toronto, as well as a PhD in Medical Biophysics. Dr. MacKenzie works on the molecular genetics of pediatric disease with a current research focus on spinal muscular atrophy.

Dr. MacKenzie received a PSI grant in 2011 entitled "Preclinical assessment of clinic ready agents for the treatment of neuromuscular diseases."



Dr. Alex MacKenzie

Dr. Andrew Morris, Sinai Health System

Dr. Andrew Morris is a Professor of Medicine at the University of Toronto and the Director of the Sinai Health System-University Health Network Antimicrobial Stewardship Program. He is currently Chair of the Antimicrobial Stewardship and Resistance Committee for the Association of Medical Microbiology and Infectious Diseases Canada (AMMI Canada) and is a member of the parallel committee with the Society for Hospital Epidemiology of America (SHEA). Dr. Morris has worked closely with regional, provincial, and federal governments and interprovincial organizations to help develop and coordinate antimicrobial stewardship efforts.

Dr. Morris obtained his medical degree from the University of Toronto and a Master of Science degree in Epidemiology from the Harvard School of Public Health. He received a PSI grant in 2013 entitled "Evaluation of a province wide roll-out of antimicrobial stewardship programs in Critical Care units: a prospective, stepped-wedge observational study."

Dr. Andrew Morris

2018 RESIDENT POSTER PRESENTERS

Dr. Laurence Bernard, University of Ottawa

Dr. Laurence Bernard is currently a resident in Obstetrics and Gynecology at the University of Ottawa. He is also completing a Master of Public Health at the Harvard Chan School of Public Health and a postgraduate certificate in Global Health Policy at the London School of Hygiene and Tropical Medicine. He received his MD from McGill University. Dr. Bernard was funded by PSI in 2017. The title of his research is "Analysis of the socio-medical characteristics of Ontario cervical cancer patients."

Dr. Benjamin Y. Kwan, Western University

Dr. Benjamin Kwan is currently completing a Neuroradiology fellowship at the University of Toronto. He completed his residency training in Diagnostic Radiology at Western University and his MD at the University of Ottawa. Dr. Kwan was funded by PSI in 2016. His research was entitled "Imaging of non-lesional epilepsy using hybrid PET/MRI: a prospective feasibility study."

Dr. Christopher D. Witiw, University of Toronto

Dr. Christopher Witiw is a resident in Neurosurgery at the University of Toronto. He holds a Master of Science degree in Healthcare Economics and received his MD from the University of Manitoba. Dr. Witiw was funded by PSI in 2016. The title of his funded research is "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."

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