


RESEARCH REPORT

2018

A.D. 1921





"As the medical education community grapples with such emerging issues as the future of artificial intelligence and its implications for medical education and training, a guiding strategic vision has never been more important."

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Message from the CEO

The Royal College has been setting the highest standards in specialty medical education in Canada since we were established in 1929. While people are most familiar with that aspect of our work, all our medical education innovations and activities are underpinned by the large volume of evidence-informed research that our staff and affiliated faculty undertake each year. The Royal College's new strategic plan for 2018-2020 echoes our commitment to research and scholarship by setting the goal to *"identify and promote research, innovation and advocacy on key health and care issues for the benefit of peoples in Canada and Fellows."*

The comprehensive Research Report you are reading illustrates the targeted research activities that we undertook in 2018 – as well as the contributions the Royal College made to research and scholarship through our grants program and conference activities in Canada and abroad. This year, we contributed over 50 publications and 100 presentations to the literature on key areas of national concern. We launched several new corporate programs that will build partnership and capacity with scholars and researchers across Canada, including the prestigious Professor-in-Residence program, which will foster innovation and knowledge exchange at the Royal College. It was our honour to welcome the inaugural Professor-in-Residence, Dr. Richard Reznick, in 2018 for a one-year appointment.

We also diversified our grants program this year, which positions us among the largest funders in Canada for medical education research and scholarship. The new Dr. Karen Mann Catalyst Grant in Medical Education Research honours the late Dr. Mann, who was a passionate educator, scholar and mentor. The grant is intended to encourage Resident Affiliates and Fellows early in their careers to pursue work as clinician educators or medical education researchers. You can read more about the award and its recipient on page 27.

Our Research Task Force continued into its second year of work in 2018 with the goal to develop recommendations for a strategic vision and mission for the Royal College's expanding research efforts. As the medical education community grapples with such emerging issues as the future of artificial intelligence and its implications for medical education and training, a guiding strategic vision has never been more important.

I invite you to read on about the great talent and leading innovations that continue to propel the Royal College's robust and expanding research and scholarship effort.

Sincerely,

Andrew Padmos, BA, MD, FRCPC, FACP, FRCP
Chief Executive Officer

"We also diversified our grants program this year, which positions us among the largest funders in Canada for medical education research and scholarship."

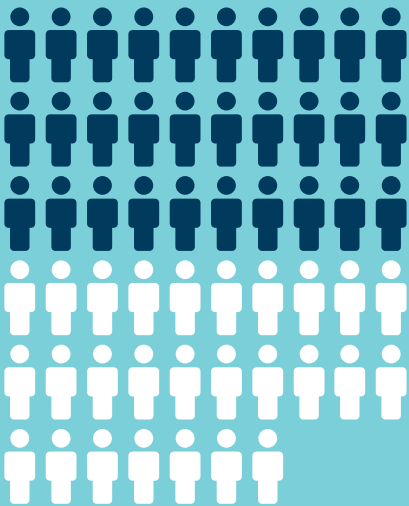
Productivity

Peer Reviewed Publications



Staff:

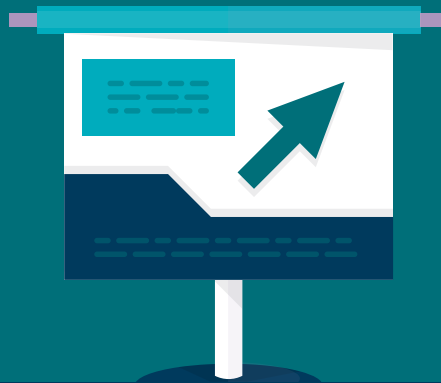
30



Educators:

27

Presentations



Staff:

104

Educators:

67



10

Educational Events

External Funding

(Co-Investigator and/or Knowledge User)



\$436,688



Scholarly Contributors 2018



Glenn Barton
RN, MSN (Ed.)

Curriculum Designer, Practice Performance and Innovation

“His current educational design work involves the collaborative planning, development, assessment and evaluation of various accredited, simulation based, continuing professional development (CPD) offerings for multispecialty physicians and their inter-professional health team colleagues.”

Mr. Glenn Barton’s experience includes various frontline clinician and educator roles primarily in the specialty of critical care. His current educational design work involves the collaborative planning, development, assessment and evaluation of various accredited, simulation based, continuing professional development (CPD) offerings for multi-specialty physicians and their inter-professional health team colleagues.

Glenn is currently completing an Educational Doctorate (EDd) with a focus on higher learning leadership at the University of Western Ontario. His scholarly interests include high reliability teamwork competency in health professions education, serious gaming-virtual simulation pedagogy, and systems applied organizational learning and development.



Farhan Bhanji
MD, MSc (Ed.), FAHA, FRCPC

Associate Director, Assessment

Dr. Farhan Bhanji supports the Examinations (and assessment practices) for the 68 Specialties and 126 National Examinations. He is an active researcher with over 150 peer reviewed abstracts and manuscript publications. He has (co-) supervised over 15 residents and Masters students in Medical Education/ Simulation research.

Farhan was the inaugural recipient of the Richard and Sylvia Cruess Faculty Scholar in Medical Education at McGill (Educational Scholarship) and served as a Visiting Professor at the Medical Education Development Center of Gifu University, Japan from January to March 2013. He is a frequently sought after speaker and has delivered over 200 National and International invited presentations.



Craig Campbell
MD, FRCPC, FSACME

Principal Senior Advisor, Competency-based Continuing Professional Development

Dr. Craig Campbell’s role focuses on the design, implementation and evaluation of strategies, processes or tools to facilitate the implementation of a competency-based CPD model for physicians in practice within the Competence by Design strategic initiative.

Craig’s research interests focus on developing and implementing strategies to promote ‘informed’ self-assessment, and workplace-based assessments of competence and performance of individuals, groups or health care teams. Craig is a Fellow of The Society for Academic Continuing Medical Education (SACME).



Pierre Cardinal
MD, FRCPC, MSc (Epidemiology)

Senior Clinical Scholar, Practice, Performance and Innovation

Dr. Pierre Cardinal is a Professor of Medicine, University of Ottawa, and Senior Clinical Educator, Royal College of Physicians and Surgeons of Canada (RCPSC). He founded CRI Critical Care Education Network, whose goals were to improve quality of care and patient safety through educational interventions. CRI was acquired by the Royal College of Physicians and Surgeons of Canada where Dr. Cardinal is now responsible for developing educational and clinical interventions aimed at improving patient safety and health care team performance.

Pierre has recently edited two books: *Optimizing Crisis Resource Management in Acute Care Medicine/ Practical insights and theoretical considerations in Patient Safety and High Performance*; and *Navigating Medical Emergencies/An interactive guide to patient management*.

Pierre is also the co-principal investigator in a Canadian project centered on conducting a province-wide needs assessment and developing an organ and tissue donation competency based medical education program for Critical Care Medicine Residents across Canada in collaboration with Canadian Blood Services.



Jason R. Frank
MD, MA (Ed.), FRCPC

Director, Specialty Education, Strategy and Standards

Dr. Jason R. Frank is the Director, Specialty Education, Strategy and Standards in the Office of Specialty Education at the Royal College of Physicians and Surgeons of Canada, as well as Vice President, Academic Collaborations for Royal College International. An associate professor at the University of Ottawa, Faculty of Medicine, he also serves as Vice-Chair, Education and the Director of Educational Research & Development in the Department of Emergency Medicine, University of Ottawa.

Jason is known for his work on all aspects of medical education, particularly the CanMEDS Project and competency-based medical education (CBME). He is the founder and chair of the International CBME Collaborators consortium and co-chair of the Royal College's flagship Competence By Design project.

He is the recipient of the 2013 Council Award Honouring Outstanding Physicians, from the College of Physicians and Surgeons of Ontario, and was made an honorary Fellow of the Australian Orthopedic Association in 2015 for his contributions to surgical education.



Tanya Horsley
PhD, MBA

Associate Director, Research Unit

Dr. Tanya Horsley is the Associate Director, Research Unit at the Royal College of Physicians and Surgeons of Canada and Adjunct Professor, School of Epidemiology and Public Health, University of Ottawa. She joined the Royal College (2007) after completing a Post-Doctoral Fellowship at the Centres for Disease Control and Prevention (CDC) focussed on systematic review methods and has since received her MBA in 2018.

Informed by theories from knowledge translation and implementation science, Tanya leads research that explores integrated knowledge translation on the co-creation, use, and influence of evidence in medical education with a focus on multi-stakeholder engagement and the complexity of knowledge use in organizational contexts. She is also a leader in advancing the development of reporting guidelines to enhance the credibility and uptake of different forms of complex evidence in medical education.



Renate Kahlke
PhD

*Research Associate,
Research Unit*

Dr. Renate Kahlke is a Research Associate in the Research Unit and Adjunct Professor in the Department for Innovation in Medical Education at the University of Ottawa. She completed a postdoctoral fellowship at the Centre for Health Education Scholarship at UBC. She holds a PhD in Education, with a focus on health professions education and has practiced as a curriculum designer in health professions education at the University of Alberta.

Renate draws on her expertise in a broad range of qualitative methodologies and methods to explore the moments in which health professionals and learners encounter social and systemic pressure to act in ways that are inconsistent with their knowledge and beliefs about what is in the best interests of their patients. Her current projects investigate how professionals work to improve their practice in spite of these obstacles, and how learners understand their role as health advocates when there is often significant pressure not to advocate.



Jolanta Karpinski
MD, FRCPC

*Associate Director,
Specialties Unit*

Dr. Jolanta Karpinski is a nephrologist at the Ottawa Hospital, working mostly in renal transplantation, and a clinician educator with experience in postgraduate medical education and CPD.

Jolanta's academic interest is in medical education. At the University of Ottawa, she served as program director in Nephrology, Director of the Office of Faculty Development, Director of PGME Evaluation and Accreditation, and as acting Vice-Dean PGME. She completed a 6 year term as Chair of the Royal College specialty committee in Nephrology, and has been a clinical educator in the Specialties Unit since 2011.

“Tanya leads research that explores integrated knowledge translation on the co-creation, use, and influence of research in medical education with a particular focus on multi-stakeholder engagement and the complexity of knowledge use in organizational contexts. She is also a leader in advancing the development of reporting guidelines to enhance the credibility and uptake of different forms of complex evidence in medical education.”



Angèle Landriault
RN, BScN, MA (Ed.), CNCC (c)

*Manager, Practice,
Performance
& Innovation*

“Angèle’s scholarly interest is in the integration of simulation-based education in health profession education as well as program evaluation.”

Ms. Angèle Landriault started her career as a critical care nurse and was part of the team tasked with the development and implementation of the System level Critical Care Response Team training in Ontario, following the SARS crisis.

Angèle joined the Royal College of Physicians and Surgeons of Canada in 2010 where she is the manager of the Practice, Performance and Innovations (PPI) unit. This highly specialized educational development and delivery unit builds capacity for simulation-based education in collaboration with experts in the field through a variety of initiatives such as faculty development, accreditation of simulation programs and the annual Simulation Summit conference.

Angèle’s scholarly interest is in the integration of simulation-based education in health profession education as well as program evaluation.



Viren N. Naik
MD, MEd, MBA, FRCPC

Director, Assessment

Dr. Viren Naik is the Director of Assessment for the Royal College of Physicians and Surgeons of Canada, a Professor of Anesthesiology, and the R.S. McLaughlin Professor of Medical Education at the University of Ottawa. He has 20 years of experience as an educator, and oversees the credentialing of specialist training and the assessment, including examinations, for all medical specialties in Canada. As a Vice President for Royal College International, he leads education collaboratives in Kuwait and Qatar.

In 2001, Viren obtained a Master of Education degree from the University of Toronto, and a Fellowship in Education from The Wilson Centre for Research in Education. Following his training, he started a Research Fellowship program in Simulation and was subsequently appointed Medical Director of the Allan Waters’ Family Patient Simulation Centre. In 2009, he became the inaugural Medical Director of the University of Ottawa Skills and Simulation Centre (uOSSC).

While serving as the Vice President, Education for The Ottawa Hospital (2015-2017), Viren completed an Executive MBA at the Telfer School of Management (2015).



Steve Slade
BA

*Director, Health Systems
and Policy*

Mr. Steve Slade is a health data, research and policy expert. Using data and evidence as key enablers, Steve advances the Royal College effort to “respond to the changing needs of patients and populations, and advance high-quality specialty care and health systems improvement through research, innovation and policy development”. Steve and his team are showing how Canada’s specialty workforce improves the health and lives of Canadians.

As Vice President of Data and Analysis at the Association of Faculties of Medicine of Canada, Steve co-chaired Canada’s multi-stakeholder Physician Resource Planning Task Force Technical Steering Committee. He implemented new data and information services at the Canadian Institute for Health Information and College of Family Physicians of Canada – services that inform and improve healthcare planning. Steve studied computer science and biostatistics at the University of Toronto and completed his undergraduate degree in psychology at York University.



Paul Tomascik
MBA, BSc

*Senior Policy Analyst,
Health Systems Innovation
and External Relations*

Mr. Paul Tomascik, is a senior analyst in Health Policy and External Relations with the Office of Health Policy at the Royal College of Physicians and Surgeons of Canada. As a member of the policy team, he has produced a number of discussion papers, workshops and research reports on Indigenous health in support of the Royal College’s commitment to advance culturally safe medical education and practice.

Paul was a major architect in developing the Royal College Indigenous health values and principles statement, which was co-authored by members of the Royal College Indigenous Health Advisory Committee (IHAC); the statement is a foundational document that guides the Royal College’s strategic plan for Indigenous health. He works closely with members of IHAC and other health organizations.

“Paul was a major architect in developing the Royal College Indigenous health values and principles statement, which was co-authored by members of the Royal College Indigenous Health Advisory Committee (IHAC).”

Royal College **Educators**

An educator is a physician with formal training (e.g., graduate degree, robust diploma program, or formal fellowship) in medical education, providing consultative advice for educational projects undertaken by faculty in the health professions.

Najma Ahmed,
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Pediatric Emergency
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University
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Université de Montréal

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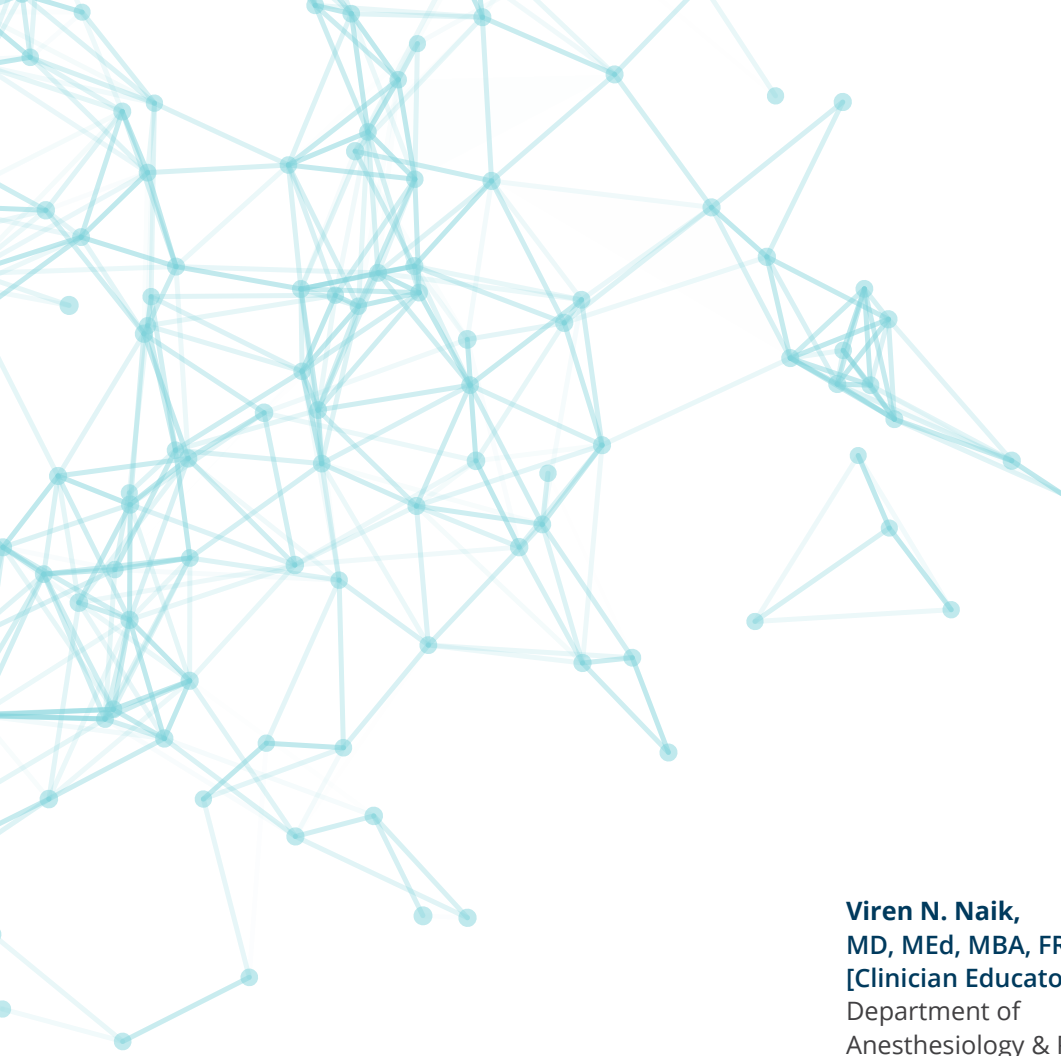
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McGill University

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Linda Snell,
MD, MHPE, FRCPC, FACP
[Clinician Educator]

Department of Medicine,
McGill University

Walter Tavares,
PhD [Simulation
Educator]

Wilson Centre,
University of Toronto

Elaine Van Melle,
PhD [Medical Education
Researcher, Clinician
Educator]

Faculty of Education,
Queen's University

Brian Wong,
MD, FRCPC
[Clinician Educator]

Sunnybrook Research
Institute
Centre for Quality
Improvement and
Patient Safety,
Department of Medicine,
University of Toronto

Brie Yama,
MD [Clinician Educator]

Department of Pediatrics,
University of Toronto,
The Hospital for
Sick Children

Major Initiatives & Activities

Task Force on Research and Scholarship

A Council Task Force on Research and Scholarship was convened January 2017 to formulate and recommend a strategy to guide the Royal College's actions in fulfillment of what was KRA 3 (Innovation, research and scholarship) and other key result areas of the 2015-2017 strategic plan. While the new strategic plan adopted by Council in June (2018) does not have a distinct KRA devoted to research, it is understood that research and scholarship are underlying themes, much like responsible stewardship, of the new plan.

The Task Force is chaired by Dr. Brian Hodges, MD, PhD, FRCPC (Executive Vice-President Education and Chief Medical Officer University Health Network). Dr. Andrew Padmos, BA, MD, FRCPC, FACP, FRCP (CEO, Royal College of Physicians and Surgeons) serves as Executive sponsor and Dr. Tanya Horsley, PhD, MBA (Associate Director, Research Unit) serves as coordinator.

The Task Force held its third (and final) in-person meeting on September 05, 2018, to define recommendations, early business considerations and actions moving forward. Early draft recommendations were presented and discussed at the October Council meeting. Stakeholder engagement to prioritize the 25 recommendations is now ongoing.

The Research Task Force report is anticipated to be presented to Council February 2019.

Task Force on Artificial Intelligence & Emerging Digital Technologies

The Royal College has convened a Task Force on Artificial Intelligence & Emerging Digital Technologies (TFoAI) that will formulate recommendations to inform a strategy on the impact of emerging technologies in specialty medical education and implications for ongoing professional development of our current Fellows. Specifically, the TFoAI will advise and be integrated within all domains of the renewed Royal College Strategic Plan (2018-2020).



The TFoAI is chaired by Dr. Richard Reznick, MD, MEd, FRCSC, FACS, FRCSEd (hon), FRCSI (hon). Dr. Ken Harris MD, FRCSC (Deputy CEO & Executive Director, Office of Specialty Education) serves as Executive Sponsor and Dr. Tanya Horsley, PhD, MBA (Associate Director, Research Unit) serves as coordinator.

The Artificial Intelligence & Emerging Digital Technologies report will be completed in spring 2020.

Periodic Reaffirmation of Professional Competence Task Force

A Council Task Force on Reaffirmation (TFoR) will formulate and provide recommendations to inform the Royal College's commitment to developing education, assessment and other strategies that ensure competence post-certification. Specifically, the TFoR will advise and be integrated within two domains of the renewed Royal College Strategic Plan (2018-2020) including "Education and Lifelong Learning" and "Value to Fellows and Professional Practice".

The Task Force will report to Royal College Council and will explore activities that will include, but is not limited to 1) Learning from the experience of re-validation & re-certification systems in other jurisdictions 2) Examining what processes, approaches, evidence and/or sources of data and feedback will be required to reaffirm the periodic continuing competence of Fellows 3) The role for specialties including Royal College specialty committees, national specialty societies and academic heads of disciplines and 4) Strategies, process or tools that might be required to demonstrate continuous improvement of competence, performance and/or quality of care.

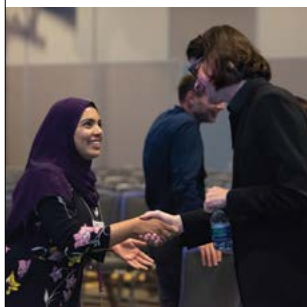
The Task Force is Chaired by Dr. Kevin Imrie, MD, FRCPC, FACP, FRCP, FACP, FRCPI (hon), FRACP (hon) (William Sibbald Chair for the Physician-in-Chief, Physician-in-Chief, Sunnybrook Health Sciences Centre, Professor of Medicine, University of Toronto). Dr. Doug Hedden, MD, FRCSC (Executive Director, Professional Practice and Membership) serves as Executive sponsor and Dr. Tanya Horsley, PhD, MBA (Associate Director, Research Unit) serves as coordinator.

The Reaffirmation of Professional Competence report is anticipated to be presented to Council October 2019.



2,695

Physicians



30

Item online assessment

Prescribing Safely Canada

Prescribing is a complex task and, to effectively and safely prescribe medicines throughout their careers, physicians must maintain and extend their competencies as their practice evolves.

The Royal College Prescribing Safety Canada (PSC) initiative, in collaboration with the British Pharmacological Society, builds on established success in the UK, where a validated competency framework has been published by the pharmacological society and a prescribing safely assessment tool has been developed and implemented by the society.

THE PRESCRIBING SAFELY CANADA INITIATIVE INCLUDES THREE KEY DELIVERABLES:

1. The UK prescribing competency framework was adapted to the Canadian context using a Delphi approach. The Prescribing Safely Canada (PSC) – Physician Prescribing Competencies is available at <https://rcportal.royalcollege.ca/mssites/prescribingsafely/EN/PSCCOMP2018.pdf>
2. In collaboration with the British Pharmacological Society, three formative online prescribing assessments were developed, peer reviewed and made available during the pilot to specialists and family physicians across Canada.
3. In addition, three online learning modules were developed, peer reviewed, and are currently available for specialists and family physicians across Canada.

A rigorous program evaluation strategy was developed and implemented based on the logic model framework, while asking evaluative questions. The program evaluation report concluded the following:

An evaluation of the program suggests that PSC was highly-valued. A total of 2695 physicians from 28 specialties registered to participate. Physicians who completed the 30 item online assessment were asked to complete a satisfaction survey. Data suggest much of the value is derived from providing easy access to online assessment modules.

“Through a strengthened partnership with the British Pharmacological Society, the Royal College will offer an additional six formative online prescribing assessments for Canadian physicians. The additional modules will be developed on prescribing themes that transcend multiple specialties.”



Navigating medical emergencies – interactive guide to patient management

Recognizing a dire need to provide speciality physicians and their teams with an evidence-based teaching resource on patient safety and the failure-to-rescue problem, the Royal College launched the *Navigating Medical Emergencies – Interactive Guide to Patient Management* e-book project. We partnered with five national organizations and over 80 expert authors and peer reviewers to develop this freely accessible 800-page guide. It provides comprehensive information for recognizing and safely managing emergent clinical situations commonly encountered across various medical specialties.

Although free, open-access medical education (FOAMed) has gained tremendous global attention, physician consumers are continually challenged to judge the credibility of the content compared to traditionally accepted information sources such as scholarly journals. Aware of these challenges, the Royal College wrote authoring and editorial guidelines that will steer content development in accordance with recommendations from The International Committee of Medical Journal Editors. In addition, we maintained rigorous scholarship and editorial processes by not only meeting, but also exceeding current FOAMed quality assurance standards and validated ratings criteria cited in the medical education literature.

To date, this resource has managed to engage more than 8,000 unique users from over 90 countries around the world. It truly demonstrates the Royal College's collective scholarship and research commitment to being global leaders in specialty medical education and patient care.



8,000

Unique users



90

Countries



Competence by Design Program Evaluation

Competence by Design (CBD) is a major change initiative aimed at introducing competency-based medical education (CBME) into specialty medical education and continuing professional development across Canada. CBD is a complex system with many interacting components, and its overall, system-wide evaluation will be a multi-year, collaborative endeavour. In 2017, Dr. Elaine Van Melle led the drafting of a program evaluation framework, which provides an overview of the evaluation process.

THIS FRAMEWORK HIGHLIGHTS THREE KEY GOALS OF THE CBD EVALUATION, WHICH ARE TO

1
2
3

foster successful implementation of CBD by examining factors that influence readiness for implementation,

understand the influence of local contexts, adaptations and innovations as programs and schools implement CBD within their unique settings, and

build an evidence base of the impact of CBD over time, with a focus on readiness to practice in the short term and impact on patient care over the longer term.

“CBD is a complex system with many interacting components, and its overall, system-wide evaluation will be a multi-year, collaborative endeavour.”

Projects under each goal are being led by Royal College CanMEDS clinician educators in order to meet the objectives of the CBD evaluation. A work plan for these projects is under development, and stakeholders are invited to reach out to collaborate on program evaluation activities.

Preliminary studies were also conducted throughout 2018 as part of the program evaluation, including a “pulse check” for the first two launch disciplines and a costing analysis conducted by a group of stakeholders called the Resource Framework Working Group. This latter project was undertaken in collaboration with the Association of Faculties of Medicine of Canada and the Committee on Health Workforce.

- Faculty enrichment
- Faculty empowerment
- Faculty understanding



International Competency-Based Medical Education Collaborators

International Competency-Based Medical Education (ICBME) Collaborators is a group of leading international experts who examine conceptual issues and current debates in CBME. The Royal College provides secretariat support to the ICBME Collaborators. Aimed at advancing global medical education, the ICBME Collaborators endeavour to produce various projects, including webinars, publications and international summits.



PUBLICATIONS

To date, the ICBME Collaborators have published two major supplements devoted to CBME in *Medical Teacher*, the journal of the Association of Medical Education of Europe (AMEE) – Series I in 2010 and Series II in 2017. Several of these articles have become the most downloaded and cited from *Medical Teacher*.



WEBINAR SERIES

The ICBME Collaborators also engage international audiences in exploring various models and approaches to CBME through one-hour webinar sessions facilitated by international CBME experts. To date, two webinar series have been produced, with Series III expected in 2019.



SUMMITS

In August 2018, the ICBME Collaborators hosted the second summit on CBME in Basel, Switzerland, in conjunction with the AMEE conference. The summit included over 265 participants from more than 40 countries, and its success has stimulated plans for a third summit on CBME in conjunction with the AMEE conference in Glasgow, Scotland in 2020.



Physician Employment Study

Since 2011, the Royal College has been examining the employment challenges that some of our newly certified specialists face at the time of their certification. This has been done by way of two online surveys: a first survey administered to every newly certified specialist and subspecialist, and a second survey the following year to those certificants who reported employment challenges when completing the first survey.

In 2017, 201 new certificants (19 per cent) said they did not have a job as an independent specialist consultant after certification. The previous peak was in 2013, when 18 per cent of respondents reported employment problems. Survey findings show that, throughout the study period, employment challenges were more commonly reported in surgical and more resource-intensive specialties and subspecialties.

Over the four years of our follow-up cohort survey (2013-2016), 60 per cent of specialists (who reported employment challenges when completing the initial survey) eventually secured employment within a year of certification.

In 2019, a series of special analyses will be carried out and published as brief technical reports. Special topics will include the enablers and barriers to employment, variations in employment across provinces, types of employment obtained, and a gender analysis of specialist employment.

“In 2019, a series of special analyses will be carried out and published as brief technical reports.”

2013-2016

follow-up cohort survey:



60 per cent of specialists (who reported employment challenges when completing the initial survey) eventually secured employment within a year of certification.



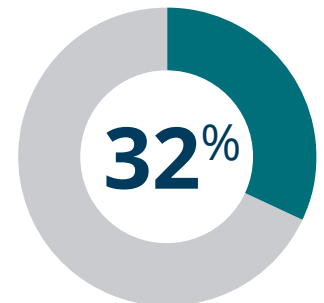


Medical care for the elderly

Canada is witnessing significant growth in its seniors' population. In 2016, for the first time on record, the nation's elderly, aged 65 and above, exceeded the number of children under 15. These trends underscore the need for informed health workforce planning to prepare for the potential impact of an aging population on the health care system.

At present, Canada has limited data to study how all providers care for the elderly, but data is available to measure what physicians are doing. The Medical Care for the Elderly Study uses the Canadian Institute for Health Information's National Physician Database to analyze all fee-for-service care provided to elderly patients. Preliminary findings reveal the following:

- Most physicians care for the elderly, but participation rates vary across specialties and patient age groups. For example, among Family Medicine physicians, 94 per cent provide care to patients aged 65-69; whereas 63 per cent of Family Medicine physicians provide care to the oldest group of seniors – those aged 94 and older.
- In 2015-2016, over 70 million services (32 per cent of all services) were provided to patients aged 65 and older. Patients aged 65-69 received the largest number (17.7 million) and share (25 per cent) of services. However, individuals aged 94 and older consumed twice as many services per capita than their younger counterparts (aged 65-69).
- Family Medicine physicians, Internists and Ophthalmologists account for 84 per cent of all physician services for the elderly. Some speciality groups do not provide a large volume of services; however, they provide most of their care to the elderly. For instance, geriatricians accounted for less than 1 per cent of all services provided to the elderly in 2015-2016. However, 92 per cent of all services provided by Geriatricians were given to patients aged 65 and older.
- Compared to the population aged 65 and under, seniors' use of medical care is much higher in areas such as diagnostic and therapeutic services, major surgery and hospital care days.



Percentage of services provided to patients aged 65 and older (2015-2016)

“A series of brief reports will delve more deeply into this data and highlight the distinct cross-specialty variations in service volumes, intensity and types of services provided to the elderly. The first report is slated for release in early 2019.”

Medical Workforce Knowledgebase 2.0

The Medical Workforce Knowledgebase (MWK) provides an easy-to-read snapshot of physician workforce supply based on authoritative data sources. In June 2018, the Royal College launched MWK 2.0 online, an interactive data dashboard that allows users to monitor supply data and trends for specialties, subspecialties and faculties of medicine. Of note, MWK 2.0 is showing that surgical workforce supply has taken a downturn. Overall, the number of surgical training positions and PGY1 trainees has decreased almost 12 per cent, with Orthopedic Surgery seeing a 32 per cent decrease.

“Of note, MWK 2.0 is showing that surgical workforce supply has taken a downturn.”

“These trends are difficult to reconcile with recent reports showing that Canadians wait the longest for elective surgeries among Commonwealth nations, and relatively fewer Canadians are receiving hip and knee surgeries within benchmark wait times.”

Future iterations of the MWK will further interpret and contextualize the supply trends being identified by incorporating feedback from internal and external stakeholders (e.g., Royal College specialty committees and National Specialties Societies). This constellation of information will ultimately help inform strategic actions to ensure Canadians have appropriate access to specialized care.



For more information about the MWK, please visit:
<http://www.royalcollege.ca/rcsite/health-policy/medical-workforce-knowledgebase-e>



The Medical Workforce Knowledgebase (MWK) provides an easy-to-read snapshot of physician workforce supply based on authoritative data sources.

Corporate Programs

Professor-In-Residence & Visiting Scholar Programs

This prestigious new program aims to foster innovation and knowledge exchange at the Royal College. A renowned expert leader in health care is invited annually to join the Royal College leadership team to examine health education and health policy with the goal of improving Royal College programs.

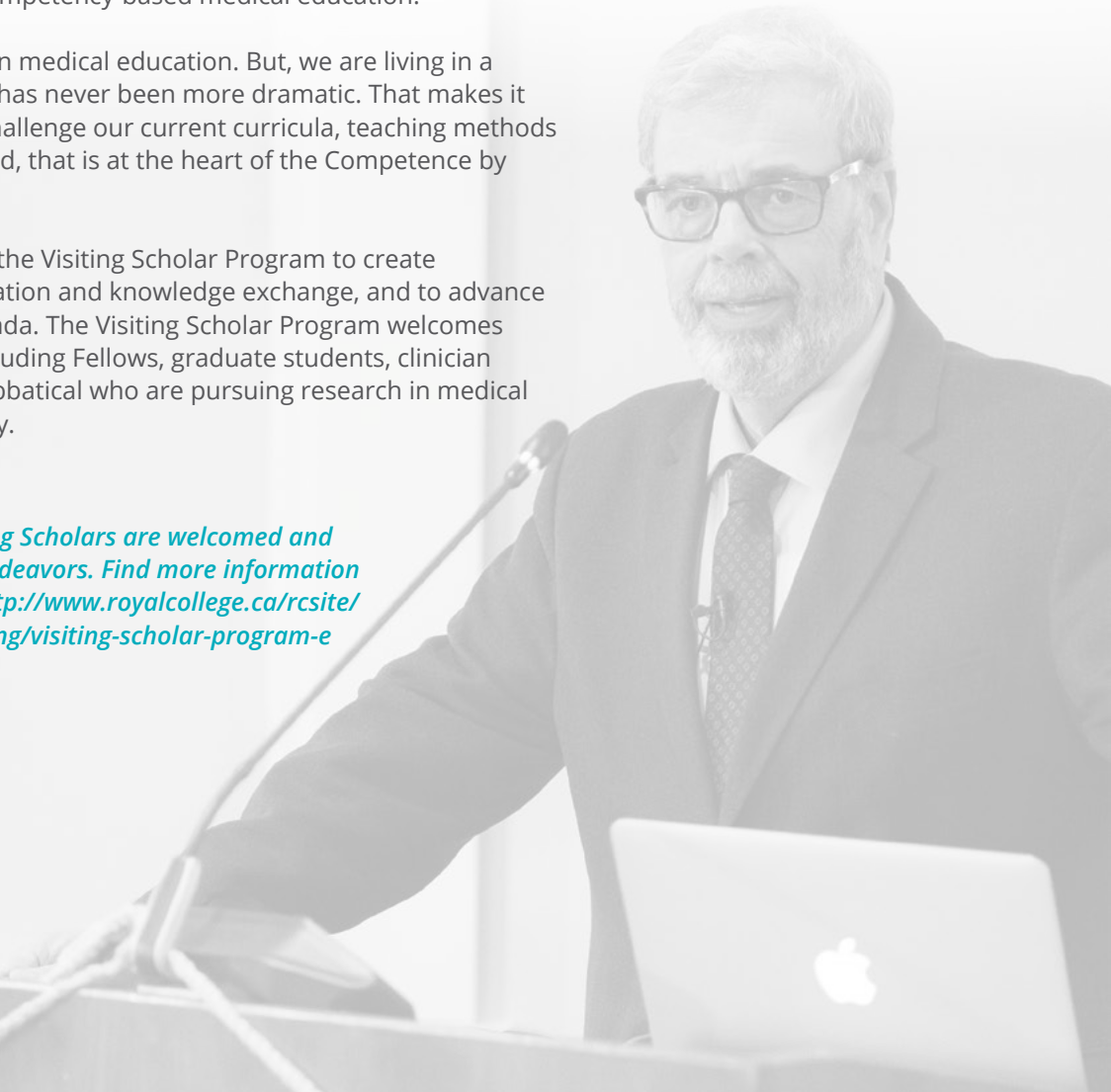
We had the privilege of welcoming Dr. Richard Reznick, FRCSC, Dean of the Faculty of Health Sciences at Queen's University as our inaugural Professor-in-Residence. Dr. Reznick delivered the Professor-in-Residence lecture, *CBME: a strong value proposition and a necessary direction for our changing times*, to an engaging group of health care providers, educators, and stakeholder organizations. (<https://ceomessage.royalcollege.ca/2018/03/01/watch-deanoncampus-on-why-cmbe-is-a-necessary-direction/>)

A renowned thought leader in medicine and medical education, Dr. Reznick's career has combined a clinical interest in colorectal surgery with 30 years of dedication to the advancement of medical education. Many of you will know him from his work in championing competency-based medical education.

"We are currently world leaders in medical education. But, we are living in a world where the pace of change has never been more dramatic. That makes it imperative that we continually challenge our current curricula, teaching methods and modes of assessment. Indeed, that is at the heart of the Competence by Design initiative."

The Royal College also launched the Visiting Scholar Program to create opportunities to stimulate innovation and knowledge exchange, and to advance scholarship and research in Canada. The Visiting Scholar Program welcomes scholars from across Canada including Fellows, graduate students, clinician educators, and professors on sabbatical who are pursuing research in medical education or related health policy.

Our goal is to ensure all Visiting Scholars are welcomed and supported in their research endeavors. Find more information or submit an application to <http://www.royalcollege.ca/rcsite/awards-grants/research-funding/visiting-scholar-program-e>



Royal College Research Forum

Forum is Latin for ‘a public meeting place to discuss ideas’. In ancient Rome, forums were marketplaces alive with social activities, debates, assemblies and lectures.

The Royal College Research Forum is intended to be just that: a place for staff to come together and exchange ideas, collaborate, learn and share around topics relating to scholarship and research.

In 2018 we hosted the following Forum events:

<p>January 25th CanERA: Excellence in Residency Accreditation Sarah Taber, MHA/MGSS Denis Laliberté</p>	<p>May 8th Genius comes from Gaming Marlies P. Schijven, MD PhD, MHSc</p>	<p>September 25th How to teach ethics and communication using simulation: A holistic approach in Neonatal Perinatal Medicine Thierry Daboval, MD FRCPC</p>
<p>February 27th Society’s influence on the changing face of medical education Richard K. Reznick, MD, MEd, FRCSC, FACS, FRCSEd (hon), FRCSI (hon)</p>	<p>May 10th Fatigue Risk Management Plans in PGME: How we can help tired trainees Lisa Carroll, MSc</p>	<p>October 30th Research Forum Town Hall Tanya Horsley, PhD, MBA Jimmy Bourque, PhD Brittany Glynn, PhD Renate Kahlke, PhD Myuri Manogaran, PhD</p>
<p>April 12th Mastoidectomy Simulator for Surgical Training and Rehearsal Sumit Agrawal, MD, FRCSC Sonny Chan, PhD Joseph Dort, MD, CCFP, FRCSC, FACS Hanif Ladak, PhD</p>	<p>June 18th The role of ambiguity, uncertainty, and complexity in reasoning and error: Preliminary results from a scoping study Meredith Young, PhD Alik Thomas PhD, OT (c), erg.</p>	<p>November 13th To be or not to be a health advocate: Workplace learning and health advocacy Renate Kahlke, PhD</p>

“The Royal College Research Forum is intended to be just that: a place for staff to come together and exchange ideas, collaborate, learn and share around topics relating to scholarship and research.”

International Conference on Residency Education

Over the last decade, the International Conference on Residency Education (ICRE) has evolved into one of the most innovative conferences in medical education. Each year, participants experience inspiring, relevant and thought-provoking programming, and ICRE 2018 was no exception.

This year's conference in Halifax, Nova Scotia attracted more than 1,500 registrants from all over the globe. Attendance of medical students and residents exceeded expectations, breaking participation records from previous years.

The 2018 program featured 21 learning tracks, more than 60 workshops, and over 200 poster and paper presentations, all designed to support participants in educating in a more effective and inventive manner.

For the first time, the conference featured six plenary sessions from world-renowned researchers and leaders in medical education – all of whom share a particular interest and expertise on the conferences theme, "The Learning Environment and Residency Education: The Evolution of Training." Highlights included the addition of a two-part live simulation scenario and debriefing, and a BBC News-style roundtable debate hosted by former BBC News reporter, Maxine Mawhinney.

ICRE 2018 was not only well attended in Halifax, but also saw its strongest social media presence yet, garnering over 38 million impressions and more than 12,000 tweets under the hashtag #ICRE2018.

The Royal College also hosted many pre-conference events, including the International Medical Education Leadership Forum, Understanding the Complex Construct of the Learning Environment: A Consensus Conference, and the Program Administrators Conference.



1,500

Registrants



21

Learning tracks



12,000+

#ICRE2018 tweets

"ICRE 2018 was not only well attended in Halifax, but also saw its strongest social media presence yet, garnering over 38 million impressions and more than 12,000 tweets under the hashtag #ICRE2018."

Simulation Summit

The Simulation Summit is Canada’s leading educational activity focused solely on medical simulation research and education. The two-day conference provides an innovative, practical program that explores how educators can incorporate simulation into real-life medical practices, such as improving training processes to improve patient care.

The 2018 conference was held September 28 to 29, 2018 at the Shaw Centre in Ottawa, Ont. It hosted Royal College Fellows, Residents, Family Physicians, nurses, respiratory therapists, simulation programmers and more.

There were over 270 participants at the 2018 Simulation Summit. They attended plenary presentations from expert researchers and change makers such as Peter Dieckmann and Marlies van Dijk, as well as innovative and practical professional development workshops tailored to interprofessional audiences.



To attend the 2019 Simulation Summit, to be held in Winnipeg Manitoba, find more information here: <http://www.royalcollege.ca/rcsite/sim-summit-home-e>

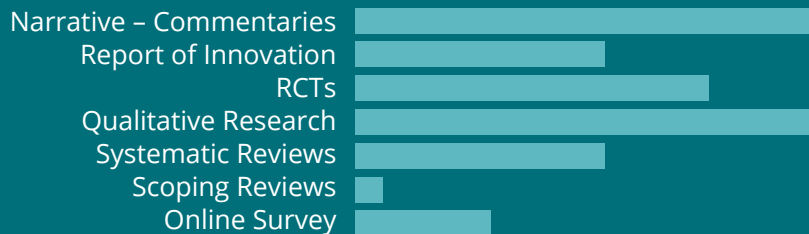


January 1 - December 31, 2018

Key Literature in Medical Education (KeyLIME) is a podcast produced by the Royal College of Physicians and Surgeons of Canada. It started in 2012 and has released over 200 episodes.

100,049 Downloads in 2018!

Research Papers Reviewed:



Top 10 countries KeyLIMErs listen from:

United States	48,431
Canada	22,582
Australia	9,735
United Kingdom	5,682
New Zealand	1,340
Sweden	1,196
Israel	774
Netherlands	721
Saudi Arabia	708
Mexico	624

KeyLIME LIVE
@ ICRE, AAMC & CGEA



KeyLIME is Weekly!

Addition of *"Methods Consults"*
5 episodes by Lara Varpio

Ep 153	Ep 163	Ep 170	Ep 185	Ep 193
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Research Grants

Announcing the Inaugural Dr. Karen Mann Catalyst Grant Recipient

The Royal College launched a new grant for Resident Affiliates and early career clinician educators interested in pursuing medical education research.

The new Royal College Dr. Karen Mann Catalyst Grant in Medical Education Research will be awarded annually and provides funding up to \$30,000 for one recipient and includes funds for an identified mentor.

Eligible to Resident Affiliates enrolled in a Royal College accredited residency training program and Royal College Fellows who are early in their careers as medical education researchers.

“The late Dr. Karen Mann was a passionate educator, scholar and mentor. Her outstanding contributions to medical education, particularly through mentorship and support of young researchers, shaped the careers of many scholars and have contributed widely to the strength of medical education in Canada. She was an icon in medical education and contributed widely to the activities of the Royal College including the Education Research Grant Committee and the development of the CanMEDS role descriptions. Her volunteerism and her influence in medical education research have been widely recognized and inspired the creation of this new grant.”

“Her volunteerism and her influence in medical education research have been widely recognized and inspired the creation of this new grant.”



Tomas J. Saun, BSc(hon), MD, MASc(candidate)

Resident Physician,
Division of Plastic and Reconstructive Surgery,
Department of Surgery,
University of Toronto

Improved video recording of open surgery with a body-mounted motorized gimbal-stabilized camera system

This work is important to medical education because...

Intraoperative video recording has become a fundamental technology in modern-day surgery, and serves a myriad of uses, including better surgical training, continuing performance enhancement, and quality improvement initiatives. Unfortunately, in open surgery, we do not have the appropriate technology to reliably and routinely capture high-quality intraoperative video. This work, therefore, aims to develop a better camera system that is optimized for filming open surgery and then benchmark it against existing technology. Following development and testing, this technology will serve as an indispensable tool for surgical education from the beginning of training well into ongoing professional practice.





Elif Bilgic, PhD

Postdoctoral Fellow,
Department of Surgery,
McGill University

Medical Education Research Grant – Recipients 2018

Development of a curriculum to teach and assess advanced laparoscopic suturing skills: taking first steps in the development of an advanced laparoscopic surgery program

How this work will inform research in medical education

Laparoscopic suturing is an advanced skill that is essential for a wide range of procedures but it is also one of the most challenging skills to master. Evidence supports the use of low-fidelity bench-top simulation to develop basic laparoscopic suturing skills; however, needs assessments identified that there is a gap between the skills targeted by the current simulation platforms versus the complex laparoscopic skills needed in the clinical setting (one of the identified skills being laparoscopic suturing). The available laparoscopic suturing models have several limitations in terms of cost-effectiveness and validity-evidence to support them as measures of laparoscopic suturing skills. By developing models for advanced laparoscopic suturing and providing evidence in the context of assessment and training, we are taking the first steps in developing an advanced laparoscopic surgery program that will include other advanced skills that were identified by needs assessments to be lacking in representation within simulation training.



**Tristen Gilchrist, MD,
FRCPC (MHPE Student,
Maastricht University)**

Clinical Educator Fellow,
Centre for Health
Education Scholarship,
University of British
Columbia

Residents' recognition and disclosure of limitations: how it impacts entrustment decisions on the clinical teaching unit

How this work will inform research in medical education

In teaching hospitals, patient care and safety are at least partially based on residents' appropriately recognizing and disclosing limitations because attending physicians cannot directly observe all of their actions. Even when residents recognize their own limitations, they struggle with deciding when and how to disclose limitations and request clinical support. As we transition to using entrustment decisions as part of competence assessments, it is increasingly important to understand when, how and under what conditions residents disclose limitations and request clinical support. It is equally important to understand how those requests are interpreted and utilized by attending physicians. Our study has the potential to provide a model of the tacit relationship between disclosures of limitations, requests for clinical support, entrustment decisions and assessments within supervisor-resident dyads. It could also deepen our understanding of how clinical faculty interpret the meaning of entrustment and aid, in the design and revision of entrustment scales and workplace-based assessments.

“Even when residents recognize their own limitations, they struggle with deciding when and how to disclose limitations and request clinical support.”



Anna MacLeod, PhD

Associate Professor,
Faculty of Medicine,
Continuing Professional
Development & Medical
Education, Dalhousie
University

Cadaver as practice: a sociomaterial ethnography

How this work will inform research in medical education

As residency programs adopt CBD, there are significant challenges to address; these include ensuring residents have sufficient opportunity to learn, see, practice, prove, do and maintain their skills. Simulation will therefore play a key role in the successful implementation of CBD. Providing high quality, high-fidelity simulation experiences will be particularly important. Arguably, no mannequin can offer more fidelity in reproducing the complexity, variability and particularity of the human body than an actual human body; thus, cadaver-based simulation (CBS) is emerging as a promising approach. As advances in cadaveric preservation arise, the potential use of clinical cadavers for simulation is growing. Yet, there are certainly complex questions that have yet to be considered with respect to practising skills and procedures on clinical cadavers. We believe CBS has tremendous potential in the context of CBD. Our objective is to conduct a sociomaterial ethnography of the CBS program in the Emergency Medicine Residency Program at Dalhousie University. We believe our ethnographic work will advance our understanding of CBS and translate into real world implications about its possible use in CBD programs.



Tracy Moniz, PhD

Associate Professor,
Department of
Communication Studies,
Mount Saint Vincent
University

How are postgraduate medical educators using reflective writing to remediate professionalism?

How this work will inform research in medical education

A lack of professionalism in medicine impedes the delivery of quality patient care and compromises physician wellness; however, remediating professionalism is among the most challenging educational interventions. This project aims to critically explore current practices of using reflective writing as a tool to remedy underperformance in the “Professional” Role at the postgraduate level. Our research will provide medical educators with an understanding of the current state of professionalism remediation across multiple residency programs at two Canadian medical schools, focusing on how and why reflective writing is used as a tool to nurture and strengthen professional values. This research will inform the use of reflective writing as a remediation strategy. Our work aims to elucidate both the successes and the cautionary tales related to the use of reflective writing for remediation of professionalism problems, enabling faculty development to occur that positions educators to use this strategy to maximum effect.

“Our research will provide medical educators with an understanding of the current state of professionalism remediation across multiple residency programs at two Canadian medical schools, focusing on how and why reflective writing is used as a tool to nurture and strengthen professional values.”



Heather Waters, MD, CCFP, FCFP

Associate Professor,
Department of Family
Medicine, McMaster
University, Hamilton Site
Director for Postgraduate
Family Medicine

Optimizing feedback from direct observation of clinical performance: learner feedback-seeking and avoidance behaviour in four clinical settings

How this work will inform research in medical education

Understanding how to optimize feedback from direct observation is essential, given medical education’s move towards competency-based, outcomes-oriented training with an explicit mandate that direct observation be used to both assess performance and offer formative feedback. In Canada, the approaching shift to Competence by Design across Royal College specialties will place an increased onus on learners to request and use direct observation for feedback and coaching. Our research will illuminate how and why they may choose to do this, and guide preceptors in how to enhance its effectiveness. By developing our understanding of the factors that impact medical learners’ behaviours and perceptions related to feedback from direct observation, we will be able to make suggestions to medical teachers, programs and learners to assist each party in using direct observation to its highest potential.



Timothy J. Wood, PhD

Professor, Department
of Innovation in Medical
Education, Faculty of
Medicine, University
of Ottawa

Implicit versus explicit first impressions in the workplace: will raters overcome their first impressions when learner performance changes?

How this work will inform research in medical education

Direct observation of learners by raters is increasingly important. Unfortunately, raters often demonstrate unwanted variability in their judgments. Much of the work on rater variability has occurred in laboratory settings and the degree these findings generalize to real world settings (i.e. the workplace) is unknown. If we want to generalize laboratory results to the real world, we need to ensure our manipulations do not unduly influence raters. This study is a first step toward moving from the laboratory to the real world. Previous work around first impressions has demonstrated that raters form first impressions of learners but it has been demonstrated by asking raters to make their judgments explicit. Forming a first impression reflects an unconscious process; therefore, making these judgments explicit introduces a level of artificiality. The goal of this study is to examine first impressions in a more naturalistic task in order to determine the degree a first impression influences raters.

“In Canada, the approaching shift to Competence by Design across Royal College specialties will place an increased onus on learners to request and use direct observation for feedback and coaching.”



**Anita Cheng, MD,
RCPC, MHPE**

Assistant Professor and
Neonatologist, Children's
Hospital, London, ON

Royal College/Associated Medical Services CanMEDS Research Development Grant – 2018 Recipients

Difficult conversations training through reflective practice initiative

How this work will inform research in medical education

This work is important to medical education because it encourages trainees to thoughtfully reflect on their practice and growth as physicians, and to take initiative in striving for competence and excellence in compassionate care for families. Involving all stakeholders in the process of identifying gaps in training, developing curriculum, delivering teaching, and assessment and evaluation, increases accountability, potentially builds collaborative interdisciplinary relationships, and ultimately aims to improve the patient and family experience.



**Taryn Taylor, MD, PhD,
FRCSC**

Assistant Professor,
Department of Obstetrics
& Gynaecology, London
Health Sciences Centre,
Scientist, Centre for
Education Research &
Innovation, Schulich School
of Medicine & Dentistry,
Western University

Fatigue management strategies among practicing clinicians and residents: a descriptive catalogue with implications for patient care and provider wellbeing

How this work will inform research in medical education

Fatigue threatens physician well-being and interferes with the provision of high-quality, compassionate patient care. The "Professional" CanMEDS role states that trainees must "exhibit self-awareness and manage influences on personal well-being and professional performance." Unfortunately, we lack an empirical description of how physicians employ fatigue management in the clinical workplace. Strategies for managing fatigue in other industries focus on managing the performance hazards of fatigue while overlooking the personal impact of fatigue. Similarly, these strategies ignore the negative interpersonal implications of working while fatigued, which we cannot afford to disregard in the clinical context. Thus, the purpose of this research is to determine the current fatigue management practices of physicians and senior trainees as they pertain to patient safety, interpersonal conduct and physician wellness. This research will help to ensure clear expectations around what it means to demonstrate competence in fatigue management for the sake of patients and physicians alike.

*"Fatigue threatens physician well-being and interferes
with the provision of high-quality, compassionate
patient care."*



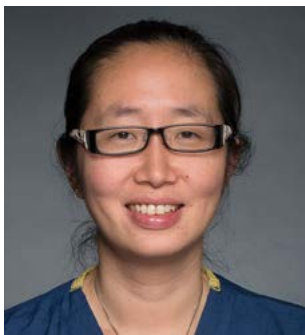
**Katherine Wisener,
M.A. Ph.D (Candidate)**

Associate Director, Office of Faculty Development, Faculty of Medicine, University of British Columbia

Incentivizing medical teachers: exploring the role of incentives in influencing clinicians' motivations to teach

How this work will inform research in medical education

This work is important to medical education because the success of any competency-based medical education program is dependent on the quality of teaching provided by medical educators; however, recruiting motivated and effective educators – particularly through times of change – can be challenging, and many clinical teaching faculty members feel dissatisfied and are considering leaving their teaching roles. Further, researchers have suggested that the more intrinsic CanMEDS roles are not being taught in many settings, among those who do teach. This research aims to identify what motivates clinicians to teach, what drives them to prioritize a focus on competencies about which they might have less comfort or natural inclination to teach, and what role incentives play in influencing these motivations. These views will inform strategies in how to incentivize effective teaching across all CanMEDS domains, and help to address the growing issues around the recruitment of medical educators.



**Yvonne Ying, MD, MSE,
Med, MSc (GlobSurg),
FRCSC**

Associate Professor, Division of Plastic Surgery, Department of Surgery, University of Ottawa

The hidden curriculum and the “un-teaching” of health advocacy in specialty medicine

How this work will inform research in medical education

Physicians and surgeons have a responsibility to become health advocates within their communities. Specialists can use their clinical knowledge to augment community outreach and bring their medical expertise to enhance social engagement. As such, health advocacy is considered a key CanMEDs role and is taught in all postgraduate specialty training programs. Yet residents self-report decreasing health advocacy and community engagement during post-graduate medicine specialty training. This dichotomy between curriculum content and behavioural change could be due to socialization and the hidden curriculum counteracting attempts to teach health advocacy in a theoretical context. The goal of this project is to better understand why trainees withdraw from community activities and how they perceive advocacy within their profession. By doing so, we can consider curriculum changes to ensure that health advocacy becomes something not only understood in theory, but part of a resident's professional identity development and practice.

“Recruiting motivated and effective educators – particularly through times of change – can be challenging, and many clinical teaching faculty members feel dissatisfied and are considering leaving their teaching roles.”



Lauren Gordon, MD, MSc (Computer Science), PhD Candidate

Resident physician,
Division of Vascular
Surgery, University
of Toronto

Robert Maudsley Fellowship for Studies in Medical Education 2018

Outcome-Based Competency Assessment in General and Vascular Surgery

This work is important to medical education because...

Surgery is inherently a high risk field, requiring a diverse skillset. As competency-based medical education is implemented in General and Vascular Surgery, it becomes increasingly important to determine what benchmarks to set to ensure competent surgical graduates. This work is important to medical education because it will help define the skills that make a competent surgeon. With the Operating Room Black Box (a recording platform being implemented in operating rooms worldwide) we have the unique opportunity to get insight into the technical skills demonstrated and their relationship to intraoperative events and patient outcomes. The results of this work will provide a foundation for evidence-based competency benchmarks as residency programs move toward implementing Competence by Design.



Farhana Shariff, BSc, MDCM, FRCSC, MHPE Candidate

Clinical Educator Fellow,
Division of General
Surgery, Centre for Health
Education Scholarship,
University of British
Columbia

Team training in the OR: A Pilot Project

This work is important to medical education because...

The operating room (OR) is a complex and dynamic environment with multiple team members, learners and leaders. Crises in the OR are stressful, high-stakes events that require efficient and coordinated team performance. While simulation is utilized in residency curricula, there is little opportunity for its use in interprofessional, multidisciplinary training and education. The influence of critical events checklists in the pediatric surgical setting, where events are infrequent and often present unique challenges, remains largely unexplored. An in-situ OR simulation training program provides a valuable opportunity to examine the effects of interprofessional education and crisis checklist implementation on both OR efficiency and team performance in managing critical events. Long term, this project aims to examine changes in team performance and patient outcomes in real-life critical OR situations in response to this intervention.



Alexander Winkler-Schwartz, MDCM

Neurosurgical resident,
Department of Neurology
and Neurosurgery, McGill
University

Does Neurosurgical Virtual Reality Training Improve Operative Performance?

This work is important to medical education because...

If successful, this will be the first time simulated operative rehearsal has been demonstrated to influence open surgical performance in Neurosurgery. This represents a crucial step in making simulators an integral part of residents' technical skill development. Given the transition of surgical residencies to a competency-based curriculum, these findings may have wide-reaching implications in the education of future neurosurgeons. Standardizing surgical education and training has the potential to reduce operative complications, leading to decreased patient morbidity and mortality, and reduced medical care costs.

“Given the transition of surgical residencies to a competency-based curriculum, these findings may have wide-reaching implications in the education of future neurosurgeons.”



Kelly L. Dore, PhD

Scientist, McMaster Education Research, Innovation & Theory, McMaster University (MERIT).

Associate Professor, Division of Innovation and Education, Departments of Medicine & Obstetrics & Gynecology, McMaster University

Strategic Request for Proposals: Advancing Evaluation of Competency-based Medical Education across the Continuum

The (Unintended) Consequences of Implementing Competency Based Medical Education: Outcomes to inform our strategies

This work is important to medical education because...

This mixed method program of research will help identify some of the consequences – intended and unintended – of the global changes to Canadian postgraduate specialty medical education curriculum and assessment program via the competency-based medical education (CBME) initiative, Competence by Design (CBD). This multi-site study, across different specialties, will highlight the dynamic variability of implementation practices as each program strives to apply the principles of CBME in their own unique context. The evaluation of possible outcomes (both positive and negative) will allow for a comprehensive understanding of implementation, practices, and program effectiveness during the process of CBD adoption driven by policy and assessment changes. This research project will inform current and future postgraduate training programs facilitating course-corrections, potentially mitigating unintended outcomes, and allowing programs to better contextualize their program-specific implementation of CBD.



Christen Rachul, PhD

Director of Research, Office of Educational & Faculty Development, Rady Faculty of Health Sciences, University of Manitoba

Realist Evaluation of Competence by Design in Postgraduate Medical Education

This work is important to medical education because...

Competence By Design (CBD) is being implemented within a complex system involving national, provincial, and local stakeholders. Due to local factors and program variability, we expect that residency programs will adapt CBD in a variety of different ways. The purpose of our evaluation study is to identify program-specific factors that promote successful implementation of CBD. We are conducting a realist evaluation to investigate what works for whom in which circumstances and why. Realist evaluations start with the assumption that it is not an intervention or program that works, but that participants' interpretation and engagement with an intervention produces particular outcomes. Findings from the evaluation will be used to develop and refine local policies and practices that account for the diversity in programs, but are also expected to contribute further evidence of the effectiveness of CBME in complex systems.

Anna Tomiak, MD, BSc

Assistant professor,
Department of Oncology,
Queen's University

Leveraging the power of diagnostic metrics to evaluate CBME implementation in Medical Oncology across Canada

This work is important to medical education because...

CBME implementation has begun in multiple disciplines across Canada. Although research interest is focusing on outcomes and assessing the extent to which CBME is meeting its goals, less attention has been paid to the implementation process itself. Developing a method to measure and evaluate CBD implementation, and its progression towards successful completion would be of practical use to guide individual programs as they begin this journey. In this collaborative study of Medical Oncology training programs across Canada, we plan to identify and develop indicators that track progress in implementation and identify the most efficient and effective methods of implementation. These indicators will be used to create a diagnostic metric dashboard that can be utilized by training programs to direct and facilitate their implementation process locally and help inform an early ongoing process of monitoring outcomes. Such a tool will have potential for modification by other disciplines for more widespread application. This study is a collaborative effort of the RCPSC Medical Oncology Specialty committee with leadership by Dr. Nazik Hammad, Lead CBD Evaluation Subgroup (Medical Oncology Specialty Committee).



Jessica Trier, MD, FRCPC

Assistant Professor,
Department of
Physical Medicine and
Rehabilitation, Faculty of
Health Sciences, Queen's
University

Creating a Culture of Coaching at Queen's University: Exploring Coaching Behaviours in Postgraduate Medical Education

This work is important to medical education because...

This research seeks to gain a deeper understanding of residents' and clinical teachers' perceptions of coaching behaviours that characterize effective relationships between residents and clinical teachers in the postgraduate medical education (PGME) learning culture. It will inform processes to enhance the quality of coaching-based educational interventions for clinical teachers, and ultimately improve residents' developmental outcomes. We anticipate that this work will have important theoretical implications since it will provide further understanding of the applicability of coaching models within PGME, and will inform coaching-based faculty development for clinical teachers. This evidence-informed approach to faculty development program design will aid in improving residents' lifelong learning skills and readiness for practice, and ultimately, patient care. The lessons learned about coaching behaviours in PGME will provide valuable information for program leaders, clinical teachers, and residents about the coaching process in medical education.



Warren J. Cheung
MD, MMed, FRCPC

Director of Assessment,
Associate Director,
Education Scholarship,
Assistant Professor,
Department of Emergency
Medicine, University
of Ottawa, The Ottawa
Hospital, RC Clinician
Educator

2018 Royal College Intramural Grant

Resident Progress Decisions: Evaluating the Fidelity and Integrity of Competence Committee Implementation in Canadian Residency Training Programs

How this work will inform research in medical education

Competence committees (CCs) are the cornerstone of a program of assessment within the Royal College's Competence By Design (CBD). However, little is yet known about the structure, function and work of Canadian CCs. Programs may successfully implement all of the required components of a CC in alignment with best practices (fidelity of implementation), yet not be functionally engaging in processes that embody the spirit and qualities of CBD (integrity of implementation). The objective of this project is to evaluate both fidelity and integrity of CC implementation in Canada. To support effective adoption of CBD and establish the link between implementation and outcomes, it is critical to document and evaluate the strengths, innovations, and challenges of early implementation efforts. The results will inform areas for improvement and advance our understanding of successful implementation practices with the aim of helping CCs operationalize their mandate of assuring the competence of Canadian specialty graduates.



Andrew K. Hall
MD, FRCPC, MMed

Associate Professor and
CBME Lead, Department
of Emergency Medicine,
Queen's University, RC
Clinician Educator

Rapid Evaluation of the Competence by Design Implementation: Readiness, Fidelity, Outcomes

How this work will inform research in medical education

This intramural grant will support the rapid evaluation of CBD implementation by comparing and contrasting the implementation efforts, experiences, and early outcomes of individual training programs across multiple disciplines. Through partnerships between the Royal College, specialty committee chairs, and individual program leaders, this in-depth program level evaluation will facilitate local and specialty-level adaptations, while simultaneously providing a broader understanding of the national implementation of CBD, specifically related to readiness to implement, fidelity and integrity of Implementation, and early outcomes of implementation.

Publications & Awards

(January 1, 2018 to December 2018)

Royal College Staff *(clinician or simulation or CPD educator)*

Awards (Staff / Educators)

Cardinal P. *Frank S. Rutledge Award of Excellence in Critical Care Teaching for 2018.* In recognition to those who have made a remarkable contribution to the future leaders of critical care in Canada, and to acknowledge Canada's outstanding clinical teachers. November 2018.

External Funding

1. **Bhanji F, Tavares W** (Collaborators). *Évaluation en contexte de parcours professionnalisant: monitoring de la qualité et des conséquences. [Assessment within competency-based education programs: monitoring quality and considering consequences.* Fonds de recherche du Québec – Société et culture (FRQSC) – Soutien aux équipes de recherche (équipe émergente) [Québec Research Fund – Society and Culture (FRQSC) – Support to Research Teams (Emerging Team)] grant, \$102,900. Application includes: Team Leads: St-Onge C, Axis Leaders: Young M (co-team lead), Renaud J-S, Thomas A. Regular Members (alphabetical order): Boileau E, Cambron-Goulet E, Chamberland M, Dory V, Gomez-Garibello C, Lacasse M, Lakhal S, Nguyen HP, Poitras M, Wagner M. Collaborators (alphabetical order): Bernier F, **Bhanji F**, Boulais B, Cummings B.A, Désilets V, Dubé T, Eva K, Gallagher F, Gauthier G, Graillon A, Hodges B, Lubarsky S, McConnell M, Setrakian J, Sheldon S, Tavares W, Thériault J, Touchie C, Varpio L.
 2. **Cheung W** (PI). *Resident Progress Decisions: Evaluation the Fidelity and Integrity of Competence Committee Implementation in Canadian Residency Training Programs.* Royal College Intramural Grant. \$18,468. Application includes: Co-I(s): Hall A, Oswald A, Atkinson A, Richardson D, Snell L, Van Melle E, **Frank J**.
 3. **Hall A** (PI). *Rapid Evaluation of the Competence by Design Implementation: Readiness, Fidelity, and Outcomes.* Royal College Intramural Grant. \$19,920. Application includes: Co-I(s): Cheung W, Cooke L, **Frank J**, Van Melle E.
 4. **Horsley T** (Co-PI). *Inappropriateness of Health Care in Canada.* CIHR Project Grant, \$ 275,400. Application includes: PI(s): Dr. Janet Elaine Squires, Dr. Doris R. Grinspun. Co-I(s): Bornstein S, Brien S, Dobrow M, Estabrooks C, Graham I, Greenough M, Grimshaw J, Hillmer M, **Horsley T**, Katz A, Krause C, Lavis J, Levinson W, Levy A, Légaré F, Majumdar S, Mancuso M, Morgan S, NadalinPenno L, Neuner A, Teare G, Tepper J, Vandyk A, Widmeyer D.
 5. **Horsley T** (Co-PI). *Using 'brain hacks' for multiple health behaviour change: Planning the first-in-Canada evaluation of implementation intentions at scale.* CIHR Planning and Dissemination Grant, \$20,000. Application includes: PI(s): Presseau J, Grimshaw J, Squires J. Co-I(s): Armitage C, Bacon S, Conner M, Desroches S, Gaudreau P, **Horsley T**, Ivers N, Kellar I, Lavoie K, McCleary N, Patey A, Rhodes R, Sniehotta F, Taljaard M, Thavorn K, Welch V, Witterman H.
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Peer Reviewed Publications (Staff)

1. **Barton G**, Valiani S, Werstiuk G, Canfield C, Parotto M, **Cardinal P.** (2018). First Glance: Interprofessional Approach to Managing Early Minutes of Emergent Illness. In Cardinal P, Witter T, Yamashita S. (Eds.). *Navigating Medical Emergencies: An interactive guide to patient management.* First Edition. Ottawa, ON. Royal College of Physicians and Surgeons of Canada. Retrieved from <http://navme.royalcollege.ca/ebook-e-dev/EN/imap.shtml#36>.
2. Kleinman ME, Perkins GD, **Bhanji F**, Billi JE, Bray JE, Callaway CW, de Caen A, Finn JC, Hazinski MF, Lim SH, Maconochie I, Nadkarni V, Neumar RW, Nikolaou N, Nolan JP, Reis A, Sierra AF, Singletary EM, Soar J, Stanton D, Travers A, Welsford M, Zideman D. *ILCOR Scientific Knowledge Gaps and Clinical Research Priorities for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care: A Consensus Statement.* Resuscitation. 2018 Apr 25.



3. Brown LL, Lin Y, Tofil NM, Overly F, Duff JP, **Bhanji F**, Nadkarni VM, Hunt EA, Bragg A, Kessler D, Bank I, Cheng A; International Network for Simulation-based Pediatric Innovation, Research, Education CPR Investigators (INSPIRE). *Impact of a CPR feedback device on healthcare provider workload during simulated cardiac arrest*. Resuscitation. 2018 Jul 3;130:111-117.
4. Francoeur C, Shea S, Ruddy M, Fontela P, **Bhanji F**, Razack S, Gottesman R, Di Genova T. *It Takes a Village to Move a Hospital: Simulation Improves Intensive Care Team Preparedness for a Move to a New Site*. Hosp Pediatr. 2018 Feb 15.
5. Cheng A, Nadkarni VM, Mancini MB, Hunt EA, Sinz EH, Merchant RM, Donoghue A, Duff JP, Eppich W, Auerbach M, Bigham BL, Blewer AL, Chan PS, **Bhanji F**; American Heart Association Education Science Investigators; and on behalf of the American Heart Association Education Science and Programs Committee, Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation; Council on Cardiovascular and Stroke Nursing; and Council on Quality of Care and Outcomes Research Collaborators: Kessler D, Siddall VJ, Ma I, Perretta J, Brown K, Patocka C, Lin Y, Davis H, Sullivan N, Niles D, Hoadley T, Rosen M, Kadlec K, Shilkofski N, Stull M, Rodgers D, O'Donnell J, Wolfe HA, McNeil MA, Duval-Arnould J, Calhoun A, McBride M, *Tavares W*, Adler M, Hatala R, Thoma B, Leary M, Chan T, Brooks S, Chang T, Wolff M, Flores G, Kassam-Adams N, Mackinnon R, Tesniere A, Jeffries P, Griswold-Theodorson S, Shercliffe R, Halamek L, Grant V, Nestel D, Rudolph J, Berman J, Huang L, Diederich E, Ziegler C. *Resuscitation Education Science: Educational Strategies to Improve Outcomes From Cardiac Arrest: A Scientific Statement From the American Heart Association*. Circulation. 2018 Jun 21.
6. Chappell K, Jeong D, ElChamaa R, Lundmark V, Kendall-Gallagher D, Salt E, Newhouse R, Johantgen M, Reeves S, Moore D, Olson C, Van Hoof T, Price D, **Campbell C**, Danilovich N, Kitto S. *Constructing a Sensitizing Definition of Certification in Nursing for Research Purposes: A Hybrid Methodology Using Consensus-Building Approach*. J Nurs Adm. 2018 Nov 28.
7. Links MJ, Wilkinson T, **Campbell C**. *Discourses of professionalism: Metaphors, theory and practice*. Med Teach. 2018 Mar 26:1-8.
8. Lockyer JM, Sockalingam S, **Campbell C**. *Assessment and Change: An Exploration of Documented Assessment Activities and Outcomes by Canadian Psychiatrists*. J Contin Educ Health Prof. 2018 Aug 28.
9. Wiljer D, *Tavares W*, Mylopoulos M, **Campbell C**, Charow R, Davis D, Okrainec A, Silver I, Sockalingam S. *Data and Lifelong Learning Protocol: Understanding Cultural Barriers and Facilitators to Using Clinical Performance Data to Support Continuing Professional Development*. J Contin Educ Health Prof. 2018 Oct 16.
10. Alam F, *LeBlanc VR*, Baxter A, Tarshis J, Piquette D, Gu Y, Filipkowska C, Krywenky A, Kester-Greene N, **Cardinal P**, Au S, Lam S, Boet S, *Clinical Trials Group PA*. *Does the age of acute care physicians impact their (1) crisis management performance and (2) learning after simulation-based education? A protocol for a multicentre prospective cohort study in Toronto and Ottawa, Canada*. BMJ Open. 2018 Apr 21;8(4).
11. **Cardinal P**, Witter T, Yamashita (Eds.). *Navigating Medical Emergencies: An interactive guide to patient management*. First Edition. Ottawa, ON. Royal College of Physicians and Surgeons of Canada. Retrieved from <http://navme.royalcollege.ca/ebook-e-dev/EN/index.shtml>.
12. Sarti AJ, Sutherland S, Healey A, Dhanani S, Hartwick M, Oczkowski S, Messenger D, Soliman K, Ball I, Mema B, Cardinal MP, Valiani S, **Cardinal P**. *A multicentre investigation of organ and tissue donation education for critical care residents*. Can J Anaesth. 2018 Jun 26.
13. *Cheung WJ*, Patey AM, **Frank JR**, Mackay M, Boet S. *Barriers and Enablers to Direct Observation of Trainees' Clinical Performance: A Qualitative Study Using the Theoretical Domains Framework*. Acad Med: August 7, 2018.
14. Fernando SM, *Cheung WJ*, Choi SB, Thurgur L, **Frank JR**. *Faculty mentorship during residency and professional development among practising emergency physicians*. CJEM. 2018 Apr 10:1-8.

15. Graham ID, Kothari A, McCutcheon C; Integrated Knowledge Translation Research Network Project Lead Collaborators: Angus D, Banner D, Bucknall T, Dunn S, Gagnon M, Gifford W, Godfrey C, Holmes B, **Horsley T**, Hutchinson AM, Jull J, Law S, MacLeod M, McLean R, Mrklas K, Nguyen T, Plamondon K, Rycroft-Malone J, Sibbald SL, Sibley KM, Stacey D, Wright DK, Yeung E. *Moving knowledge into action for more effective practice, programmes and policy: protocol for a research programme on integrated knowledge translation*. Implement Sci. 2018 Feb 2;13(1):22.
16. **Horsley T**, Regehr G. *When are two interventions the same? Implications for reporting guidelines in education*. Med Educ. 2018 52: 139-14.
17. Liddy C, Moroz I, Joschko J, **Horsley T**, Kuziemsky C, Kovacs K, Kossey S, Mitera G, Keely E. *Using an Integrated Knowledge Translation (IKT) Approach to Enable Policy Change for Electronic Consultations in Canada*. Healthc Policy. 14(1) August 2018 : 19-29.
18. Moreau K, Eady K, Sikora L, **Horsley T**. *Digital storytelling in health professions education: a systematic review*. BMC Medical Education. (2018) 18:208.
19. Tricco AC, Lillie E, Zarin W, O'Brien K.K., Colquhoun H, Levac D, Moher D, Peters M D.J., **Horsley T**, Weeks L, Hempel S, Akl EA, Chang C, McGowan J, Stewart L, Hartling L, Aldcroft A, Wilson M.G., Garrity C, Lewin S, Godfrey CM, Macdonald MT, Langlois EV, Soares-Weiser K, Moriarty J, Clifford T, Tunçalp O, Straus SE. *PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation*. Ann Intern Med. 2018 Oct 2;169(7):467-473.
20. **Kahlke R**, Bates J, Nimmon L. *When I say ... sociocultural learning theory*. Med Educ. 2018 Jun 25.
21. **Kahlke R**, Eva K. *Constructing critical thinking in health professional education*. Perspect Med Educ. 2018 Apr 4.
22. **Kahlke R**. *Reflection/Commentary on a Past Article: "Generic Qualitative Approaches: Pitfalls and Benefits of Methodological Mixology"*. International Journal of Qualitative Methods: First Published August 28, 2018.
23. Pinsk M, **Karpinski J**, Carlisle E. *Introduction of Competence by Design to Canadian Nephrology Postgraduate Training*. Can J Kidney Health Dis. 2018 Jul 17.
24. Taylor DR, Park YS, Smith CA, **Karpinski J**, Coke W, Tekian A. *Creating Entrustable Professional Activities to Assess Internal Medicine Residents in Training: A Mixed-Methods Approach*. Ann Intern Med. 2018 Apr 17.
25. Sarti AJ, Sutherland S, Healey A, Dhanani S, **Landriault A**, Fothergill-Bourbonnais F, Hartwick M, Beitel J, Oczkowski S, **Cardinal P**. *A Multicenter Qualitative Investigation of the Experiences and Perspectives of Substitute Decision Makers Who Underwent Organ Donation Decisions*. Prog Transplant. 2018 Sep 16:1526924818800046.
26. Sarti AJ, Ajjawi R, Sutherland S, **Landriault A**, Kim J, **Cardinal P**. *Comparison of simulation debriefs with traditional needs assessment methods: a qualitative exploratory study in a critical care community setting*. BMJ Open. 2018 Oct 8;8(10):e020570.
27. Malas T, Al-Atassi T, Brandys T, **Naik V**, Lapierre H, Lam BK. *Impact of visualization on simulation training for vascular anastomosis*. J Thorac Cardiovasc Surg. 2018 Apr;155(4):1686-1693.e5.
28. McCormick TJ, Miller EC, Chen R, **Naik VN**. *Acquiring and maintaining point-of-care ultrasound (POCUS) competence for anesthesiologists*. Can J Anaesth. 2018 Jan 11.
29. Oandasan IF, Archibald D, Authier L, Lawrence K, McEwen LA, Mackay MP, Parkkari M, Ross S, **Slade S**. *Future practice of comprehensive care: Practice intentions of exiting family medicine residents in Canada*. Can Fam Physician. 2018 Jul;64(7):520-528.



30. **Tomascik P**, Dignan T, Lavallée B. *Chapter 5 – Health and Health Service Needs in Urban Indigenous Communities*. In Under-Served, Health Determinants of Indigenous, Inner-City, and Migrant Populations in Canada. Edited by Neil Arya A, Piggott T. Canadian Scholars, September 2018.

Peer Reviewed Publications (Educators)

1. Kouzmitcheva E, Grover SA, Berenbaum T, Ali A, Atkinson A, Yeh EA. *Evaluation of an Ophthalmoscopy Simulator to Teach Funduscopy Skills to Pediatric Residents*. Can J Neurol Sci. 2018 Feb 19:1-5.
2. Aldekhyl S, *Cavalcanti RB*, Naismith LM. *Cognitive load predicts point-of-care ultrasound simulator performance*. Perspect Med Educ. 2018 Jan 5.
3. *Cooke LJ*, Duncan D, Rivera L, Dowling SK, Symonds C, Armson H. *How do physicians behave when they participate in audit and feedback activities in a group with their peers?* Implement Sci. 2018 Jul 31;13(1):104.
4. *Cooke LJ*, Duncan D, Rivera L, Dowling SK, Symonds C, Armson H. *The Calgary Audit and Feedback Framework: a practical, evidence-informed approach for the design and implementation of socially constructed learning interventions using audit and group feedback*. Implement Sci. 2018 Oct 30;13(1):136.
5. Saliken D, *Dudek N*, Wood TJ, MacEwan M, *Gofton WT*. *Comparison of the Ottawa Surgical Competency Operating Room Evaluation (O-SCORE) to a Single-Item Performance Score*. Teach Learn Med. 2018 Dec 4:1-8.
6. Parsons T, Tregunno D, Joneja M, Dalgarno N, *Flynn L*. *Using graphic illustrations to uncover how a community of practice can influence the delivery of compassionate healthcare*. Med Humanit. 2018 Sep 26.
7. Sheahan G, Reznick R, Klinger D, *Flynn L*, Zevin B. *Comparison of faculty versus structured peer-feedback for acquisitions of basic and intermediate-level surgical skills*. Am J Surg. 2018 Jun 30.
8. Braman JP, Bernthal N, Freedman B, *Gofton W*, Hsu J, Sheps D, Strauss E. *I Am What I Am Because of Who We All Are: The 2017 American-British-Canadian Traveling Fellowship*. J Bone Joint Surg Am. 2018 Mar 7;100(5):e28.
9. Halman S, Rekman J, Wood T, Baird A, *Gofton W*, *Dudek N*. *Avoid reinventing the wheel: implementation of the Ottawa Clinic Assessment Tool (OCAT) in Internal Medicine*. BMC Med Educ. 2018 Sep 20;18(1):218.
10. Raïche I, Hamstra S, *Gofton W*, Balaa F, Dionne É. *Cognitive challenges of junior residents attempting to learn surgical skills by observing procedures*. Am J Surg. 2018 Dec 4. pii: S0002-9610(18)30102-8.
11. Busari J, Chan M-K, Dath D, *Matlow A*, de Camps Meschino D. *Sanokundu: The birth of a multinational network for the development of healthcare leadership education*, Leadership in Health Services 2018;31: 254-264.
12. Simone K, Ahmed RA, Konkin J, Campbell S, Hartling L, *Oswald AE*. *What are the features of targeted or system-wide initiatives that affect diversity in health professions trainees? A BEME systematic review: BEME Guide No. 50*. Med Teach. 2018 Jul 22:1-19.
13. Babenko O, *Oswald A*. *The roles of basic psychological needs, self-compassion, and self-efficacy in the development of mastery goals among medical students*. Med Teach. 2018 Mar 1:1-4.
14. Fong S, Tan A, Czupryn J, *Oswald A*. *Patient-centred education: How do learners' perceptions change as they experience clinical training?* Adv Health Sci Educ Theory Pract. 2018 Jul 26.

Publications & Awards

15. Ding M, Babenko O, Koppula S, Oswald A, White J. *Physicians as Teachers and Lifelong Learners*. J Contin Educ Health Prof. 2018 Oct 29.
16. Dale-tam J, Posner GD. *Alice's Delirium: A Theatre-based Simulation Scenario for Nursing*. Cureus 10(4): e2411.
17. Garber A, Rao P M, Rajakumar C, Dumitrascu G, Rousseau G, Posner GD. *Postpartum Magnesium Sulfate Overdose: A Multidisciplinary and Interprofessional Simulation Scenario*. Cureus 10(4): e2446.
18. Rajakumar C, Mallick R, Posner G, Schramm D, Singh S, Lortie K, Pascali D, Chen I. *The Effect of Surgical Trainee Presence on Vaginal Hysterectomy Outcomes*. J Minim Invasive Gynecol. 2018 Feb 26.
19. Roberts-MacDonald M, Razack S. *Navigating social distance in foundational clinical encounters: Understanding medical students' early experiences with diverse patients*. Med Teach. 2018 Jan 15:1-10.
20. Stroud L, Sibbald M, Richardson D, McDonald-Blumer H, Cavalcanti RB. *Feedback Credibility in a Formative Postgraduate Objective Structured Clinical Examination: Effects of Examiner Type*. J Grad Med Educ. 2018 Apr;10(2):185-191.
21. Tavares W, Sadowski A, Eva KW. *Asking for Less and Getting More: The Impact of Broadening a Rater's Focus in Formative Assessment*. Acad Med. 2018 May 22.
22. Mausz J, Snobelen P, Tavares W. *"Please. Don't. Die.": A Grounded Theory Study of Bystander Cardiopulmonary Resuscitation*. Circ Cardiovasc Qual Outcomes. 2018 Feb;11(2):e004035.
23. Cusimano MC, Ting DK, Kwong JL, Van Melle E, MacDonald SE, Cline C. *Medical Students Learn Professionalism in Near-Peer Led, Discussion-Based Small Groups*. Teach Learn Med. 2018 Dec 15:1-12.
24. Singh N, Wong BM, Stroud L. *Characterizing Resident Preferences for Faculty Involvement and Support in Disclosing Medical Errors to Patients*. J Grad Med Educ. 2018 Aug;10(4):394-399.
25. Goldman J, Kuper A, Wong BM. *How Theory Can Inform Our Understanding of Experiential Learning in Quality Improvement Education*. Acad Med. 2018 Jun 12. [Epub ahead of print]
26. Najeeb U, Wong B, Hollenberg E, Stroud L, Edwards S, Kuper A. *Moving beyond orientations: a multiple case study of the residency experiences of Canadian-born and immigrant international medical graduates*. Adv Health Sci Educ Theory Pract. 2018 Sep 27.
27. Wong BM, Shojania KG. *Rigor in Quality Improvement Studies and the Role of Time-Series Methodologies*. JAMA Intern Med. 2018 May 1;178(5):724-725.

White papers (Staff / Educators)

1. Bowmer I, **Campbell C**, LeBlanc C, Mazurek K, Meuser J, Moineau G, Prigent E, Shortt S, Wallace G, Strachan D, Shahin M. *The Future of Medical Education in Canada (FMEC) Continuing Professional Development (CPD) A Strategy for the Development of a Pan-Canadian FMEC CPD Consortium*. September 2018.
2. Fatigue Risk Management Task Force. *Fatigue Risk Management Toolkit for Residents, Leaders, and Policy makers in Canadian Postgraduate Medical Education*. Ottawa, ON: 2018.





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