



ROYAL COLLEGE
OF PHYSICIANS AND SURGEONS OF CANADA
COLLÈGE ROYAL
DES MÉDECINS ET CHIRURGIENS DU CANADA



RESEARCH REPORT 2019

Research and Scholarly Activities at-a-Glance


January–December 2019



1 Award
Staff/Educators


Presentations

44 Staff **48** Educators




7
Non-peer reviewed/
technical reports/
E-learning modules
Staff/Educators

10
Educational Events



Publications




29 Staff **37** Educators

External Funding

Principal investigator, co-investigator or collaborator

\$193,581.88



3
Staff

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Message from **DR. PADMOS**



Medicine is changing faster than ever before. In order to effectively manage our health care system, we must be cognizant of what is happening in the medical ecosystem. Over the last several years, the Royal College has built up a robust research enterprise that focuses on innovations and learnings in postgraduate medical education (PGME), residency training and the professional practice of health care professionals. This work supports physicians and others working in our health care system to provide the best training and, ultimately, the best care for patients.

It is no simple feat to serve such broad interests; I am pleased to see that, as an organization, we have risen to the challenge. The efforts of the Royal College Research Unit, overseen by Tanya Horsley, PhD, MBA, Associate Director of Research, must be recognized. They have been instrumental in professionalizing research, strengthening oversight and increasing visibility of the accomplishments of our research program, both within and outside the organization.

As you delve into this report, you will see that the Royal College's research accomplishments have expanded in quantity, quality and scope. I am particularly proud of the collaborations between our organization and our research partners and other institutions.

The Royal College's biggest undertaking in the last decade has been the implementation of the Competence by Design program across all specialties and subspecialties, advancing and confirming the position of the organization as a global leader in PGME. It is imperative that we continue to lead by conducting and supporting research and evaluation about the impact and outcomes of this transformation.

Digital transformation is also underway. The work of the Task Force on Artificial Intelligence & Emerging Digital Technologies is another sign of the maturity of the Royal College's research capabilities. As we seek to better understand the implications of artificial intelligence and other technologies on the current and future practice of specialty medicine, our research imperatives are gaining momentum.

Finally, our Professor-in-Residence program is another visible mark of the esteem in which research is held at the Royal College, providing opportunities for mentorship and collaboration, and making research more accessible to staff. It was an honour to welcome Brian Hodges, MD, PhD, FRCPC, as our 2019 lecturer and to hear his insightful views on the future of artificial intelligence in medicine.

I am excited to see the Royal College's research portfolio and offerings continue to grow and prosper. I hope it is a source of pride for all Fellows, volunteers and staff.

Sincerely,

Andrew Padmos, BA, MD, FRCPC, FACP, FRCP
Chief Executive Officer (2006–2019)

Message from the CEO



Research plays a key role in helping us innovate. It is an important part of our continuous improvement to provide the highest quality of care to Canadians. As the new CEO of the Royal College, it has been my pleasure to learn about all the great work our staff does and how, together, they are contributing to better training for specialists.

I understand this drive to continually improve. I started as a researcher having completed my PhD in Transplantation Immunology at the University of Cambridge. I absolutely loved asking questions and getting answers. I was very fortunate to have really committed researchers as my supervisors and I learned so much from them. My PhD was one of the best experiences in my life and every now and again I miss my Bunsen burners and pipettes.

About 10 years ago, I turned my research interest to studying clinical outcomes and how systems work to improve the care of patients. I have been very fortunate to have great collaborators — research is truly a team sport. It is very exciting to see this same team spirit and drive to innovate reflected in our organization's research.

As you read this report, you will see we had an incredible year:

- We engaged with global experts, our Fellows and Resident-Affiliates to make recommendations on how to embed competencies related to artificial intelligence and emerging digital technologies into residency training and professional development.
- Our 2019 Professor-in-Residence, Dr. Brian Hodges, shared his insights on the effects of new technologies on clinical practice with our Fellows, partners and staff.
- Our latest employment research, based on 7,000+ interviews with newly certified specialists, sparked national conversations including articles in *The Globe and Mail* and on CBC News.

We value all forms of research including that which directly impacts and improves patient care and outcomes. Through implementation science, we renew our focus and commitment to decreasing the research-to-clinical impact gap. In this way, research can serve to elevate the importance of innovations in education, lifelong learning and development at the Royal College and elsewhere.

Sincerely,

Susan Moffatt-Bruce, MD, PhD, MBA, FACS, FRCSC
Chief Executive Officer (2020-present)

CONTRIBUTORS



**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. Dr. Bhanji was the inaugural recipient of the Richard & Sylvia Cruess Faculty Scholar in Medical Education at McGill University (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 within the CBD strategic initiative focuses on the design, implementation and evaluation of strategies, processes or tools to facilitate the implementation of a competency-based continuing professional development (CPD) model for physicians in practice. His 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. Dr. Campbell 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. 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, where Dr. Cardinal is now responsible for developing educational and clinical interventions aimed at improving patient safety and health care team performance. Dr. Cardinal is also the co-principal investigator in a Canadian project centred on conducting a 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.

Dr. Pierre Cardinal is also the co-principal investigator in a Canadian project centred on conducting a needs assessment and developing an organ and tissue donation competency-based medical education program.

Dr. Jason Frank is the founder and chair of the International CBME Collaborators consortium and co-chair of the Royal College's flagship Competence by Design project.



Jason R. Frank, MD, MA (Ed.), FRCPC
Director, Specialty Education, Strategy and Standards

Dr. Jason Frank is known for his work on all aspects of medical education, particularly the CanMEDS project and 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. Dr. Frank 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.



Mohsen Sheikh Hassani, MASc
*Senior Policy Analyst,
Research Unit*

Mr. Mohsen Sheikh Hassani is a senior policy analyst on the Task Force on Artificial Intelligence & Emerging Digital Technologies. The mandate of the Task Force is to help the medical profession in Canada prepare for the profound changes that artificial intelligence and emerging digital technologies will have on residency training and delivery of care. Mr. Sheikh Hassani received his MASc in Biomedical Engineering with a focus on Bioinformatics from Carleton University in 2018. His research includes developing artificial intelligence and machine learning techniques to solve problems within the health care domain (big data), computational biology, bioengineering and biomedical device design.



Ken Harris, MD, FRCSC
*Executive Director, Office of Specialty Education
and Deputy CEO*

In his current roles and responsibilities at the Royal College, Dr. Ken Harris oversees educational initiatives in the domain of specialty medicine.

This includes the setting and evolution of program standards in postgraduate medical education as well as the assessment of specialty candidates and residency training programs. Previous research interests and activities have included clinical trials, attitudes of surgeons towards bloodborne pathogens and the pathophysiology and consequences of skeletal muscle ischemia. Dr. Harris has participated in establishing the Trans-Atlantic Inter-Society Consensus Document on Management of Peripheral Arterial Disease (TASC) guidelines for the management of critical limb ischemia. His current activities revolve around competency-based medical education.

Dr. Ken Harris has participated in establishing the Trans-Atlantic Inter-Society Consensus Document on Management of Peripheral Arterial Disease (TASC) guidelines for the management of critical limb ischemia.



Tanya Horsley, PhD, MBA
Associate Director, Research Unit

Dr. Tanya Horsley is the Associate Director, Research, at the Royal College. She is also a Principal Scientist with over 100 peer-reviewed abstracts and publications. She is a proud faculty member within the School of Epidemiology and Public Health, University of Ottawa, where she teaches approaches to evidence syntheses including systematic and scoping review methods. Dr. Horsley leads a program of research looking at the formalization of integrated knowledge translation for the co-creation, use and influence of research and complex systems of care with a particular focus on multi-stakeholder engagement and organizational contexts. She is frequently sought after for her expertise in evidence synthesis approaches and work in reporting guideline development.

Dr. Tanya Horsley leads a program of research looking at the formalization of integrated knowledge translation for the co-creation, use and influence of research and complex systems of care.



Sarah Taber, MHA/MGSS
Associate Director, Education Strategy and Accreditation

Ms. Sarah Taber coordinates all activities related to Royal College accreditation for residency education in Canada and internationally, as well as the Education Strategy, Innovations and Development (ESID) Unit, which oversees the Royal College's Committee on Specialties and undertakes strategic policy projects related to the system of residency education in Canada. As part of this role, she is instrumentally involved in the current three colleges (Royal College/College of Family Physicians of Canada (CFPC)/Collège des médecins du Québec (CMQ)) conjoint initiative to review and redesign residency education accreditation to place greater emphasis on continuous quality improvement (CQI) and program outcomes, and ensure standards are better aligned with the principles of CBME.



Renate Kahlke, PhD
Research Associate, Research Unit

Dr. Renate Kahlke draws on expertise in qualitative methodologies to explore the moments in which health professionals encounter social and systemic pressure to act in ways that are inconsistent with their belief about what is best interests for their patients. Current projects investigate how professionals work to improve their practice in spite of obstacles, and how learners navigate their role as health advocates when there is significant pressure not to advocate.



Viren Naik, MEd, MBA, FRCPC
Director of Assessment, Office of Specialty Education

Dr. Viren Naik is the R.S. McLaughlin Professor of Medical Education and Professor of Anesthesiology at the University of Ottawa. In 2001, he obtained his MEd and a Fellowship in Education from the University of Toronto, and started a Research Fellowship program as Director of the Allan Waters Family Simulation Centre. In 2009, he was recruited to establish the University of Ottawa Skills and Simulation Centre as the inaugural Medical Director. Dr. Naik previously served as Vice President, Education for The Ottawa Hospital. He is the Medical Director for the Medical Assistance in Dying (MAiD) Program across greater eastern Ontario.

Key Literature in Medical Education (KeyLIME)

Since 2012, the Royal College has produced and released 274 episodes of Key Literature in Medical Education (KeyLIME), a weekly medical education podcast, with over 118,679 downloads by listeners from 119 countries in 2019! KeyLIME is most popular in the United States, Canada and Australia. Our listeners regularly suggest articles to be reviewed, and they earn Maintenance of Certification (MOC) section 2 credits while they're at it.

What was new in 2019?

- In May, the hosts Drs. Jason R. Frank, Jon Sherbino and Linda Snell welcomed a fourth host, Dr. Lara Varpio. As a PhD-trained scientist, she adds a different perspective and helps the hosts explore the research methodologies behind the papers.
- KeyLIME Classic was introduced at ICRE in September. Nine must-read classics like *Feedback in Clinical Medical Education* (JAMA, 1983) were reviewed. These discussions can be heard in episodes 241, 242 and 243.



Feedback in Clinical Medical

Ep
241

Ep
242

Ep
243





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, MD, PhD, FRCSC, FACS [Clinician Educator]
*St. Michael's Hospital,
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Rob Anderson, MD, FRCPC [Clinician Educator]
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Health Sciences North Simulation Lab*

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Brian Wong, MD, FRCPC
[Clinician Educator]
Sunnybrook Research Institute Centre for Quality Improvement and Patient Safety, Department of Medicine, University of Toronto

Major Initiatives & ACTIVITIES



AI & Emerging Digital Technologies Resident and Fellow round table to discuss emerging task force recommendations, December 18, 2019.

Task Force on Research and Scholarship: Update

The Research Task Force concluded its work and issued its report and recommendations for Council's consideration in February 2019. Council accepted the final report, which coalesced around six high-level recommendations. Management is in the final stages of preparing a business plan and road map for consideration by the Executive Directors Committee. Fellows will be engaged to ensure program development provides value to and aligns with their needs (e.g., if research funding is to be diversified, how should this be done to better support Fellows at different stages of their careers?). Dr. Tanya Horsley (Associate Director, Research) anticipates presenting a road map of the priority recommendations at the October 2020 meeting of Council.

Task Force on Artificial Intelligence & Emerging Digital Technologies

This Task Force was created to provide recommendations to inform a strategy on the impact of emerging technologies in specialty medical education and implications for ongoing professional development of Fellows. The Task Force has now concluded its work, and the report and recommendations were accepted by Council. Management is now advancing discussions to develop a business plan for consideration by the Executive Directors Committee. Led by Dr. Tanya Horsley, Committee members are conducting a scoping review on artificial intelligence and specialty medicine to complement the work of the Task Force. This will serve as an evidentiary base to the report.

Task Force on Periodic Reaffirmation of Professional Competence

This Task Force was convened in 2018 to formulate recommendations that inform the Royal College's commitment to developing education and assessment strategies that ensure competence post-certification. The Task Force has now concluded its work and the resulting report and recommendations have been accepted by Council. Along with the Executive Director team and Council, the Task Force consulted widely with many key stakeholders including key research leaders in Canada; the Royal College Senior Management Committee and Royal College internal staff; the Royal College Council; and Fellows. A business plan is currently under development and will be presented to the Executive Directors Committee for consideration.

Little Things Make Big Differences: Recognizing and Managing Disruptive Behaviour in the Health Care Environment

Disruptive behaviour is empirically linked to many patient safety care concerns (e.g., increased medical errors, postoperative complications). It also has negative impacts on both staff and learners in the clinical environment. The Practice, Performance and Innovation unit's, (PPI), latest online learning simulation, "Little Things Make Big Differences," aims to target disruptive behaviour in healthcare. The module design and evaluation incorporated a gamified approach that used a broad swath of non-passive multi-specialty learning methods. Fellows described more active engagement with the self-assessment content of this accredited Maintenance of Certification (MOC) program.

Embedding game-based motivators (e.g., socialization, achievement and exploration) facilitated cognitive, socioemotional and behavioural learning engagement. Results of early evaluations show that over 1,700 learners,



Periodic Reaffirmation of Professional Competence task force members, February 23, 2019 committee meeting.

representing over 40 different medical-surgical specialities, have already registered for the module. Average time spent on the module is currently at approximately 100 minutes and, impressively, the total module completion rate is over 50 per cent. This is noteworthy given that a recent Harvard-MIT study¹ reported that, of the 6 million who enrolled in their free online courses, less than 4 per cent complete them. Ongoing evaluation is measuring the extent to which this early data reflects global engagement, relevance and knowledge translation.

Competence by Design Program Evaluation

The Royal College is leading a multi-year program evaluation initiative to evaluate the Competence by Design (CBD) program. As the CBD program is a complex system with many interacting components, evaluation will require a systematic, longitudinal approach.

The program evaluation is based on Dr. Elaine Van Melle's program evaluation framework (Van Melle, Frank, Brzezina, & Gorman, 2017), which highlights three pillars – readiness to implement, fidelity and integrity of implementation, and outcomes. The CBD Program Evaluation Operations team, involving Clinician Educators and Royal College staff, leads the work on these pillars.

1 Reich, J., & Rupiérrez-Valiente, J. A. (2019). The MOOC pivot. *Science*, 363(6423), 130-131.

Since 2011, between 11 and 18 per cent of new specialists who replied to the annual survey said they did not have work as a specialist at the time of their certification.

In 2019, the Operations team conducted a Pulse Check of the 2017 and 2018 launch disciplines and a Readiness to Implement Checklist of the 2019 launch disciplines. These provided information on how programs were preparing for CBD; how implementation was going on the ground; and the benefits, challenges, and early outcomes. The Operations team was also awarded two grants, used to conduct a Rapid Evaluation study and a Competence Committees study. Data for the Competence Committee study was collected towards the end of 2019, and data collection for the Rapid Evaluation study is ongoing.

Program evaluation is also informed by insights from studies at other sites, for example, the resident organizations and local institutions and programs. The Royal College is integrating feedback from these sites through various avenues, such as a CBD Program Evaluation Steering Committee, made up of stakeholders from across the system of specialty medicine in Canada who provide strategic direction to the program evaluation.

As another way to share program evaluation initiatives, integrate feedback and foster collaboration, the Royal College, with other stakeholders, hosted a Competency-based Medical Education (CBME) Program Evaluation Summit. This summit was attended by over 85 participants, and over 35 projects were presented. The Operations team is currently looking at ways to continue to engage this program evaluation community, including the CBME Program Evaluation Forum. Each Forum will showcase program evaluation projects and allow attendees to network and collaborate, and currently has meetings booked in 2020.

Physician Employment Study

The Royal College has launched the report *Employment Patterns of Canada's Newly Certified Medical Specialists*. This report examines the issue of employment for newly certified specialists based on findings from a multi-year survey of 7,178 specialists.

The report found that newly certified medical specialists continue to report that they cannot find work. Since 2011, between 11 and 18 per cent of new specialists who replied to the annual survey said they did not have work as a specialist at the time of their certification. Survey findings also show that employment challenges were more commonly reported in surgical and more resource-intensive specialties and subspecialties throughout the study period. Respondents point to various barriers to employment: too few available positions in Canada, poor access to job listings and competition with other physicians for limited resources, among others. They also identify enablers to employment, such as additional training, flexibility about the type and location of intended practice and networking.

Physician employment patterns vary across provinces. The eight-year average of data collected between 2011 and 2018 show that only 8 per cent of surveyed specialists who completed their residency training in Saskatchewan reported that they had not yet secured a clinical post. The percentage of those still seeking employment doubles among survey respondents who completed their training in other provinces, notably Ontario and Alberta (16 per cent each).

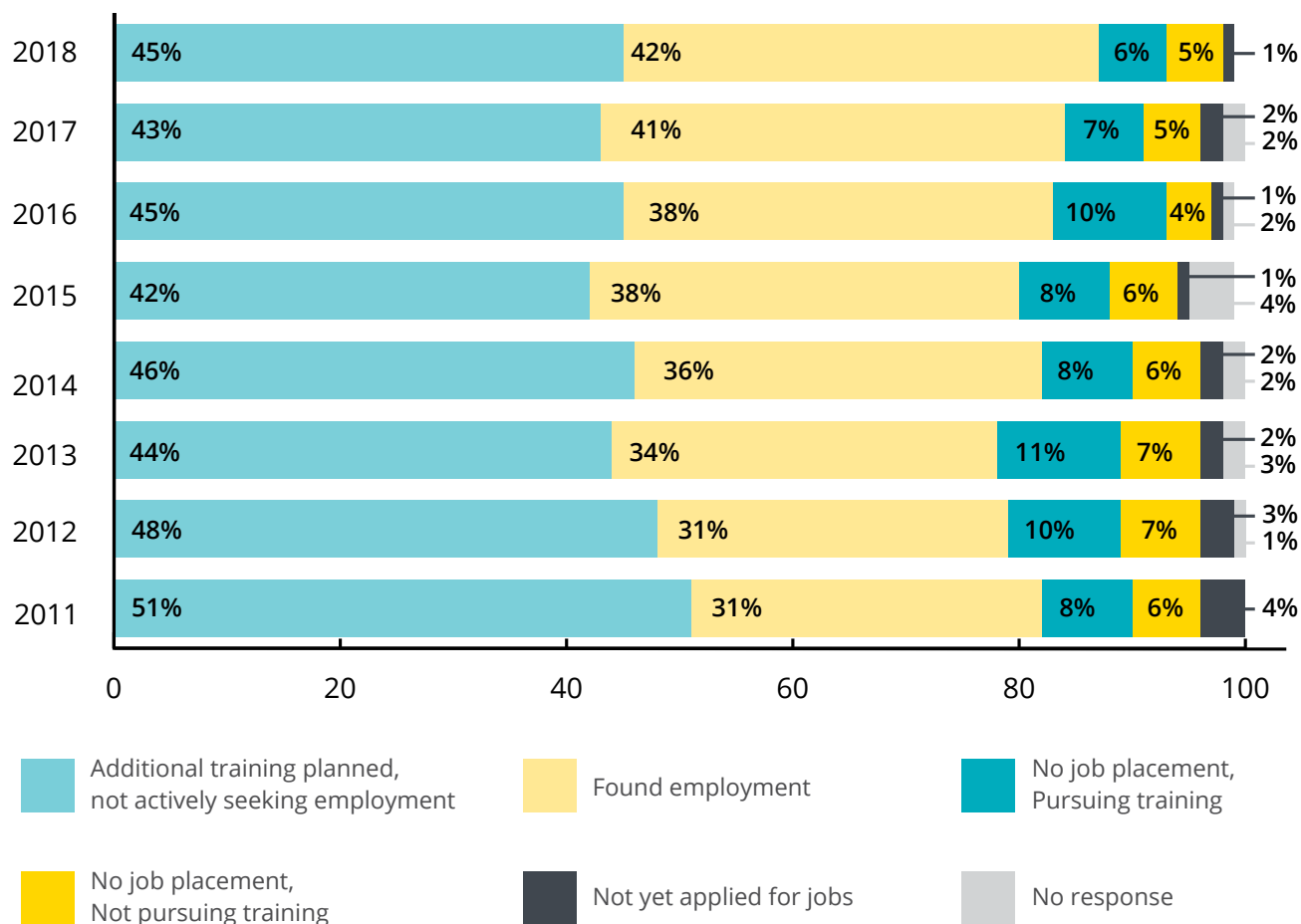
The full report is available here: <http://www.royalcollege.ca/rcsite/health-policy/employment-study-e>.



Medical Care for the Elderly

On June 12, 2019, the Royal College released the report *Health Care for an Aging Population: A Study of how Physicians Care for Seniors in Canada*. It shows who provides care to seniors (i.e. those aged 65 years and above) and outlines the unique roles specialties play in their care.

Overall employment status (percentage) 2011-2018, specialists and subspecialists combined, Canada.



Overall employment status (n) 2011-2018, specialists and subspecialists combined, Canada.

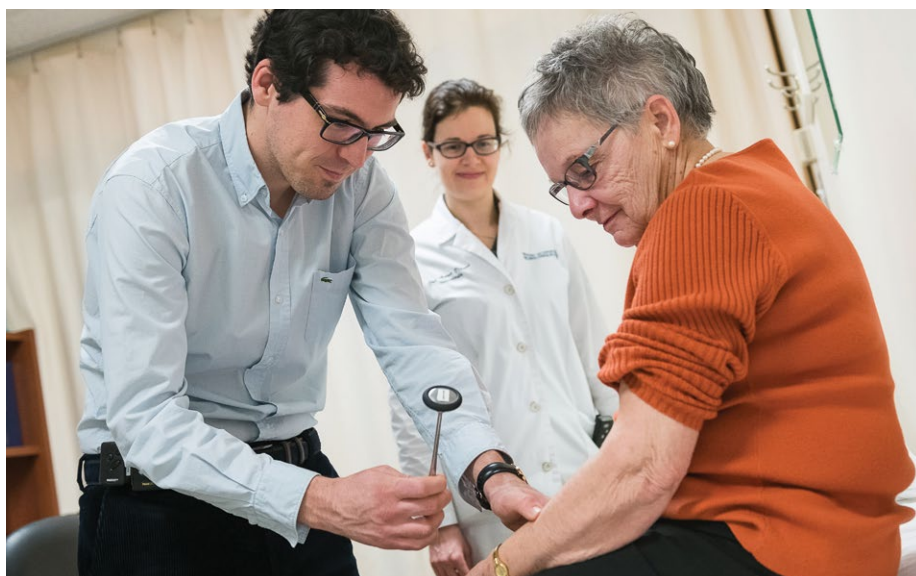
	2011	2012	2013	2014	2015	2016	2017	2018
Found employment	191	219	306	323	371	346	434	389
Additional training planned, not actively seeking employment	317	339	402	416	409	416	457	412
No job placement, pursuing training	48	74	98	70	78	88	77	53
No job placement, not pursuing training	37	49	61	57	56	37	52	50
Not yet applied for jobs	27	24	17	15	12	13	24	9
No response	3	4	24	21	41	22	26	3

Source: Royal College Employment Survey

Major Initiatives & Activities

The study findings reveal the following:

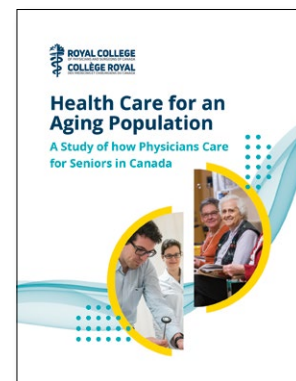
- Although seniors comprised only 16 per cent of the population, they received about one-third of all services provided by physicians in 2015–16.
- Together, family physicians, internists and ophthalmologists provided 85 per cent of all medical services received by seniors in 2015–16 (51, 23 and 11 per cent, respectively, provided by each specialty group).
- Some specialty groups concentrate their practices on medical care for seniors. In fact, seven specialty groups provided more than half of their medical services to seniors: geriatricians (92 per cent), ophthalmologists (62 per cent), cardiovascular/thoracic surgeons (57 per cent), nephrologists (55 per cent), oncologists (54 per cent), cardiologists (53 per cent) and urologists (52 per cent).
- Seniors use relatively more medical services per capita compared to the rest of the population, especially services related to diagnostic and therapeutic procedures (four times more), major surgery (five times more) and hospital care days (10 times more).
- Patient gender is an important consideration in the provision of medical care to seniors.
- Physicians were more likely to see women aged 65 and older, but provided relatively more medical services to men in the same age group.



Royal College Fellow, Dr. Annie Dionne, FRCPC, and resident Dr. Francis Brunet with a patient, Québec City.

The study calls for a more robust research agenda to provide provincial policy-makers with data to inform health workforce planning to support this growing demographic.

The full report is available here: <http://www.royalcollege.ca/rcsite/health-policy/senior-care-e>.



How Physician Care Varies in Urban and Rural Settings

In 2016, approximately 17 per cent of the Canadian population resided in small communities outside of medium/large metropolitan areas; these communities are often rural and remote. During this time period, relatively few physicians (8 per cent), including 14 per cent of family physicians and 2 per cent of specialists, practised in these communities. The misalignment between population and physician workforce distribution underscores the impetus to study how health care needs are met in rural and remote areas. This study addresses knowledge gaps in understanding access to specialty care by examining how physician services vary across geographic settings.

The study uses the Canadian Institute for Health Information's National Physician Database to analyze all fee-for-service care delivered in eight provinces (2002/03–2015/16), with a particular focus on volumes and types of care delivered to small and large communities. Geographic areas were defined using Statistics Canada's area classifications: census metropolitan areas (CMA, population $\geq 100,000$); tracted census agglomerations (CA, population = 50,000–99,000); untraced census agglomeration (CA, population = 10,000–49,000); and metropolitan-influenced zones (MIZ, population $< 10,000$).

Findings presented at 2019 meetings of the Canadian Association of Health Services

Physician Care in Urban and Rural Settings

Urban

80%

of physician services were delivered in CMAs.

48%

increase in the number of physicians providing fee-for-service care in CMAs.

98%

of services provided by oncologists were delivered in CMAs.

45%

of colonoscopies were typically provided by gastroenterologists in CMAs.

Rural

12%

of physician services were delivered in CAs.

2%

increase in the number of physicians providing fee-for-service care in MIZ.

86%

of all physician services in MIZ are family physicians/general practitioners.

71%

of colonoscopies were typically provided by gastroenterologists in MIZ.

Major Initiatives & Activities

Policy Research and Association of American Medical Colleges includes the following:

- In 2015/16, approximately 80 per cent of physician services were delivered in CMA, as compared to 12 per cent in all CA and 5 per cent in MIZ.
- The number of physicians providing fee-for-service care in MIZ has increased marginally (2 per cent growth since 2002/03) compared to physician workforce growth in CMA (48 per cent growth), tracted CA (50 per cent growth) and untraced CA (53 per cent growth).
- Smaller communities have a breadth of specialists, but family physicians/general practitioners were the largest group, accounting for 86 per cent of all physician services in MIZ.
- Certain disciplines practised intensively in large urban centres, for example, 98 per cent of services provided by oncologists were delivered in CMAs.
- Major surgical procedures relating to the circulatory system, such as carotid endarterectomy, coronary angioplasty and coronary artery bypass/repair, are rarely if ever performed in MIZ.
- Some procedures were performed by different provider groups depending on the geographic location. For instance, in CMAs, colonoscopies were typically provided by gastroenterologists (45 per cent of procedures) or general surgeons (41 per cent). In MIZ, general surgeons conducted the majority of colonoscopies (71 per cent of procedures). Similarly, obstetricians/gynecologists provided almost all caesarean sections (99.5 per cent) in CMAs. Multiple providers in MIZ performed caesarean sections including family physicians/general practitioners (44 per cent of procedures), obstetricians/gynecologists (36 per cent) and general surgeons (20 per cent).

These findings can provide vital insights into how healthcare is provided in urban and rural communities. Understanding the types of care physicians provide in different settings can help inform physician recruitment as well as efforts to align training and continuing professional development with practice realities in rural settings.

Prototype Evaluation for CanERA: Canadian Excellence in Residency Education

The new Canadian residency accreditation system, Canadian Excellence in Residency Education (CanERA), has 10 components (Table 1). Given the high-stakes nature of accreditation, these new innovations needed to be tested and evaluated before they were fully deployed. CanRAC (the three-college consortium for residency accreditation) developed a three-stage prototype model of implementation; each prototype collected and implemented feedback from previous phases, gradually increasing impact and effort required by accreditation stakeholders.

Based on a logic model for outcomes-based accreditation, prototype evaluation utilized surveys that were distributed directly to surveyors, postgraduate office staff, programs, specialty committee members and residency accreditation committee members involved with nine onsite accreditation reviews over four years. Nearly 200 accreditation stakeholders completed evaluation surveys throughout the prototypes. Results informed ongoing CanERA process and content development, with highlights such as:

- development of the evidence required to show standards have been met;
- new features for the onsite review model;
- improvements to the user experience, work flow and efficiencies in CanAMS, the new accreditation management system; and
- enhancements to the stakeholder training methodology.

Prototype evaluation provided invaluable lessons for iterative implementation. CanERA has been shaped directly by stakeholders involved in the accreditation process and will continue to be a system based on evaluation and continuous improvement.

The new Canadian residency accreditation system, Canadian Excellence in Residency Education (CanERA), has 10 components.

Table 1: 10 CanERA accreditation reform components

NEW STANDARDS	NEW EVALUATION FRAMEWORK	INSTITUTION REVIEW PROCESS	NEW DECISION CATEGORIES & THRESHOLDS	8 YR CYCLE & DATA INTEGRATION
... updated for institutions and programs to improve clarity	... including rating at the requirement level, and identification of leading practices and innovations	... consisting of an enhanced institution reviews, including an institution accreditation decision	... to improve consistency of decisions	... regular accreditation reviews, balanced with ongoing integration of quality improvement data
ENHANCED ACCREDITATION REVIEW	DIGITAL ACCREDITATION MANAGEMENT SYSTEM (CanAMS)	EMPHASIS ON THE LEARNING ENVIRONMENT	EMPHASIS ON CONTINUOUS IMPROVEMENT	EVALUATION AND RESEARCH
... refined processes, enabling efficient and focused accreditation reviews	... to facilitate accreditation & quality improvement activities	...increased focus on the quality and safety of the learning environment	... including a focus on empower and supporting institutions and residency programs	... systematic approach for continuous improvement of CanERA

CanERA Annual Resident and Faculty Surveys: Proof of Concept Testing

As part of the prototype testing for one of the new components of CanERA (eight-year cycle and data integration), CanRAC launched resident and faculty surveys during an initial “proof of concept” phase. The annual CanERA resident and faculty surveys are intended to serve three overall purposes:

- providing useful input for continuous quality improvement (CQI) of the program and institution;
- ensuring continuous resident input for accreditation; and
- signalling the need for further investigation of any issues that arise.

The 13-question survey and the principles guiding the administration of the survey (e.g., privacy) were developed by the *Conjoint Task Force for Resident Input into the Accreditation Process*.

Proof of concept testing has been undertaken at three universities, with a total of 698 residents and 884 faculty responding to the surveys. Preliminary analysis shows

that the surveys have high reliability (Cronbach alpha = 0.911 and 0.881 for the resident and faculty surveys, respectively). Proof of concept testing continues, with the addition of another university in fall 2019, with continued reliability and validity analysis.

It is anticipated that the CanERA resident and faculty surveys will launch to all universities in 2021.

Performance of the Ebel Standard-Setting Method in a Medical MCQ Certification Exam

The goals of this study are to evaluate:

- interrater agreement in Ebel ratings;
- correlations between Ebel scores and item difficulties;
- impact of raters’ knowledge of correct answers’ on the Ebel scores; and
- effect of rater specialty on interrater agreement and Ebel scores.

Data came from a Royal College of Physicians and Surgeons of Canada exam. The Ebel method was applied by 49 raters to 203 multiple-choice questions (MCQs).



Specialty Committee Chairs meeting, November 25, 2019.

Difficulty indices came from 194 “minimally competent” candidates. Fleiss kappa was below 0.15 for difficulty and relevance. The correlation between Ebel scores and difficulties was small when correct answers were provided and negligible when they were not. A Bland–Altman plot suggests a systematic overestimation of the difficulty of easy item and underestimation of that of hard items. The Ebel score was the same whether or not the correct answers were provided. Interrater agreement and Ebel scores were similar for internists and other specialists. The results emphasize the importance of training, clear definitions and rater calibration. Low variability in item difficulties may have attenuated the correlation between difficulties and Ebel scores. Valid and accurate standard-setting might be challenging in the presence of resources and time constraints on raters’ training and calibration.

Moving Away from Cronbach Alpha: The Royal College Experience

While much of the psychometric world moved on from Classical Test Theory to embrace Rasch modelling and Item Response Theory in the 1980s and 1990s, certification boards with small cohorts of examinees were left with few options to estimating score reliability. Moreover, if norm-referenced reliability indices have benefited from wide-ranging research efforts, interest in

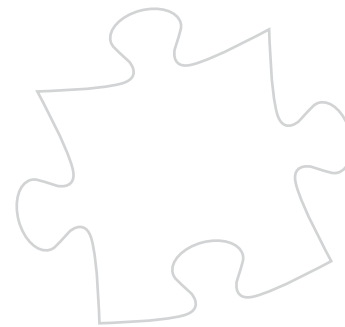
criterion-referenced indices quickly dwindled after the 1970s. However, as stipulated in the 2014 Standards, criterion-referenced tests require criterion-referenced reliability indices. In this study, we addressed a transition from a norm-referenced reliability index to a criterion-referenced one. Both Cronbach alpha and Woodruff and Sawyer theta were computed for the 24 Royal College fall exams with a minimum of 20 examinees. We looked at whether the indices met their suggested thresholds and to what extent they provided useful information on reliability given the nature of the exam.

As expected, because the Cronbach alpha is norm-referenced and depends highly on score variance, its value was consistently lower than theta, a coefficient of agreement for pass/fail decisions. The value of alpha failed to meet the suggested 0.80 criterion in 14 cases out of 24, whereas theta was below its 0.85 threshold in only one case. In all the cases where theta was over its recommended threshold but alpha was not, we could establish that cohort homogeneity and item score format would have significantly attenuated inter-item correlations without affecting examinee classification consistency. We concluded that theta was both more conceptually appropriate and empirically accurate than Cronbach alpha as a reliability estimate.



While much of the psychometric world moved on from Classical Test Theory to embrace Rasch modelling and Item Response Theory in the 1980s and 1990s, certification boards with small cohorts of examinees were left with few options to estimating score reliability.

Corporate PROGRAMS



“The coming era with the emergence of artificial intelligence and other technologies is predicted to change the work of almost everyone. The more we’re knowledgeable and can anticipate what that would look like, the better we’ll be able to prepare ourselves and each other for a future that’s going to be different from the present.”

—Dr. Brian Hodges

Professor-in-Residence Program

This prestigious 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. Our 2019 Professor-in-Residence was Brian Hodges, MD, PhD, FRCPC, Executive-Vice President Education and Chief Medical Officer at the University Health Network. Dr. Hodges delivered the Royal College Professor-in-Residence lecture, titled “The Future with AI: What will we need (human) specialists for?”, to an engaged group of health care providers, educators and stakeholder organizations (<http://www.royalcollege.ca/rcsite/awards-grants/professor-in-residence-program-e>).

Dr. Hodges is a renowned thought leader on the future of healthcare and education and an advocate for balancing emerging technologies

with compassion. He is a practising psychiatrist and professor in the Faculty of Medicine and at the Ontario Institute for Studies in Education at the University of Toronto; the Richard and Elizabeth Currie Chair in Health Professions Education Research at the Wilson Centre; and Executive-Vice President Education at the University Health Network (Toronto General, Toronto Western, Princess Margaret, Toronto Rehab Hospitals and the Michener Institute). Dr. Hodges’ work has been recognized with the Association for Studies in Medical Education Gold Medal (2014), the Association of American Medical Colleges Flexner Award (2015) and the Karolinska Institutet Prize for Research in Medical Education (2016).

Visiting Scholar Program

Visiting Scholar Program

The Visiting Scholar Program was launched in 2018 to attract scholars and researchers from across Canada and the world. The goal of

the program is to provide access to expert knowledge and information related to Royal College programs, to build a network of experts working on complementary research and to help the Royal College identify synergies that propel and advance scholarship related to the health professions.

The Royal College was honoured to welcome Hannah Sinclair, Membership Manager of Australian and New Zealand College of Anaesthetists (ANZCA), as a Visiting Scholar in May–June 2019. Her project focused on developing more sustainable membership engagement initiatives; sharing ANZCA initiatives and key learnings in areas such as gender equity, and continuing medical education through presentations and internal publications; and developing greater partnerships with relevant stakeholders at the Royal College.

The Royal College also welcomed Martin Pusic, MD, PhD, FRCPC, Associate Professor of Emergency, Medicine & Pediatrics, NYU School of Medicine, on November 13, 2019. Staff had the opportunity to meet with Dr. Pusic and to attend his Research Forum presentation, Decision-Aligned Measurement Models: Psychometric Models for Normal People.

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.

Each event may feature staff or invited guests. A guest could be a visitor from another institution, an expert on a technological innovation or a community leader on a topic of interest.

In 2019, we hosted the following Research Forum events:

January 22:

Supporting our learners: optimizing the clinical learning environment

Jerry M. Maniate, MD, MEd, FRCPC, Vice President, Education, The Ottawa Hospital

Stephanie Burgetz, MEd, CTD, Learning Guru, People Services and Organizational Development, Royal College

February 14:

2018 Member value survey results: Lessons and future directions

Christine James, MA, CAE, Associate Director, Membership Services and Programs Unit, Royal College and Sandra Shearman, BA, Director, Communications, Royal College

May 28:

Applying human factors engineering principles to patient safety

Kathryn Kellogg, MD, MPH, Assistant Vice President, Ambulatory Quality & Safety, MedStar Health, Associate Medical Director, National Center for Human Factors in Healthcare, MedStar Institute for Innovation

July 24:

Changing culture in health care



Simon Fleming, MBBS., MRCS. MSc, FRSA, MAcadMed, MASE(RACS), MFSTEd, AFHEA, Specialist Registrar – Percivall Pott Trauma & Orthopaedic Surgery Rotation, Vice Chair – Academy Trainee Doctors’ Group (ATDG)

March 6:

Does place of MD training make a difference on exam results?

Jimmy Bourque, PhD, Exam Developer, Exam Quality and Analytics, Royal College

June 17:

Automation and the future of work: What does AI mean for me?



Brian D. Hodges, MD, PhD, FRCPC, Executive Vice-President Education and Chief Medical Officer, University Health Network, Professor, Faculty of Medicine, University of Toronto

April 18:

The Royal College’s role in advocacy

Greg Killough, MSc, Senior Policy Analyst, Health Policy and Advocacy, Royal College

November 13:

Decision-Aligned Expertise Measurement Models



Martin V. Pusic, MD, PhD, FRCPC, Dept. of Emergency Medicine; Institute for Innovations in Medical Education, NYU School of Medicine

May 27:

Leader developmental readiness: Lessons and implications

Anurag Saxena, MBBS, MD, MEd, MBA, FRCPC, FCAP, CHE, CCPE, Associate Dean, Postgraduate Medical Education, College of Medicine, University of Saskatchewan; Rhonda St. Croix, MBA, CMA, Change Advisor, Office of Specialty Education, Royal College; and

November 19:

Medical assistance in dying 3 years later: Where we’ve come from and where we’re going

Viren N. Naik, MD, MEd, MBA, FRCPC, Director, Assessment, Royal College



Rethinking simulation and the social mission. Representatives discussing McGill's program on simulation for Human Trafficking education.

International Conference on Residency Education

The annual International Conference on Residency Education (ICRE) was held on September 26–28, 2019, in Ottawa, Canada. This year's conference attracted more than 1,700 registrants from across the globe, including over 200 medical students and residents who, once again, broke the participation records of previous years.

The conference had six plenary sessions led by world-renowned medical education leaders with expertise on the conference theme, "Diversity in Residency: Training in World of Differences," including keynote addresses from Dr. Lisa Richardson, University of Toronto, and Dr. Quinn Capers, Ohio State College of Medicine. The 2019

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

ICRE 2019 was not only well attended, but also saw its strongest social media presence yet, garnering over 40 million impressions and more than 10,000 tweets under the hashtag #ICRE2019.

The Royal College also hosted many pre-conference events, including the International Medical Education Leaders Forum (IMELF), the fifth International Conference on Faculty Development in the Health Professions and the Program Administrators Conference.

ICRE 2019 was not only well attended, but also saw its strongest social media presence yet, garnering over 40 million impressions and more than 10,000 tweets under the hashtag #ICRE2019.

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 enhancing training processes to improve patient care.

The 2019 conference was held on November 7–8, 2019, at the RBC Convention Centre in Winnipeg, Manitoba. Among the 200 plus participants were Royal College Fellows, residents, family physicians, nurses, respiratory therapists, simulation programmers and more.

In addition to innovative and practical professional development workshops tailored to interprofessional audiences, participants also attended plenary presentations from expert researchers and change makers such as Mr. Ry Moran, Professor Debra Nestel and Dr. Ivy Lynn Bourgeault. The conference also featured a plenary panel on the role of health care providers in advocating for victims of sex trafficking.



(1) Fellows and Residents hard at work during one of Simulation Summit's workshop sessions, November 2019. (2) Dr. Quinn Caper delivers a powerful conference closing plenary session, ICRE, September 28, 2019. (3) Intimate, small group discussions during the valuable 'meet the experts' session, Simulation Summit, November 2019. (4) Facilitated debriefing with Sim Trek participants 'on the big stage'. ICRE, September 28, 2019. (5) Engaged attendees at the opening plenary, ICRE, September 26, 2019.

Research **GRANTS**

The university hall was presented to
the Royal College of Physicians and Surgeons
of London
by William IV, Prince of Wales, 1830
and was opened in 1831
and is now the
hall of the College.
"May this hall ever be to the very best
in the service of our College."

Council
Room
Salle du
Conseil
290

*"Medicine is increasingly complex,
with exposure to representative
patient encounters occurring in
an ad hoc manner."*

—Dr. Sandra Monteiro

The Dr. Karen Mann Catalyst Grant in Medical Education Research – 2019 Recipient



Omar Selim, MD, MSc
Resident Physician PGY4, Division of Vascular Surgery, Faculty of Medicine, University of Toronto Research Fellow, Temerty-Chang Telesimulation Centre, University Health Network

The refinement of the diabetic wound assessment learning tool (DiWALT)

This work is important to medical education because ...
 "... of how it clearly shows the effectiveness of applying a knowledge-to-action (KTA) framework to medical education research. Developing and refining the diabetic wound assessment learning tool (DiWALT) within this framework has allowed us to build, in a relatively short span of time, a methodologically rigorous educational product. Secondly, diabetic foot wounds comprise a third of diabetes-related health care expenditures and are the primary cause of amputation in Canada. Few studies focus on how to teach and assess wound management. Given the importance of "assessment for learning" in CBD, the development and refinement of the DiWALT

"Our objective is to conduct a narrative inquiry exploring the transitional experiences of Indigenous learners and faculty across the medical education continuum."

—Dr. Sarah Burm

addresses the need for improved education on this disease process. The DiWALT can only also improve the outcomes for patients suffering from diabetic wounds."

Medical Education Research Grant – Recipients 2019



Sarah Burm, PhD
Assistant Professor, Faculty of Medicine, Continuing Professional Development and Medical Education, Dalhousie University

Tracing Indigenous learners' and physicians' experiences throughout medical training

How this work will inform research in medical education

"Although many medical schools have well-established programs aimed at supporting Indigenous medical workforce development, the number of Indigenous People entering medical training remains low and the Truth and Reconciliation Commission of Canada's recommendations reflect a need to do better. Meaningful representation of Indigenous health care professionals in medicine is about more than increasing the number of trainees; it requires understanding the lived experiences of Indigenous People as they join and navigate

the health care profession. Our objective is to conduct a narrative inquiry exploring the transitional experiences of Indigenous learners and faculty across the medical education continuum. We believe this research will complement the important work being done, nationally and regionally, to respond to the health care needs of Indigenous People and that it will contribute new ways of thinking about the recruitment and retention of Indigenous physicians."



Samantha Halman, MD, FRCPC, MMED
Assistant Professor of medicine, University of Ottawa, and General Internist, Department of Medicine, The Ottawa Hospital

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

How this work will inform research in medical education

"Rigorous assessments and constructive feedback about all aspects of performance should drive learning and professional development, but this may not be the case for faculty in independent practice. Although most evaluation processes focus on care provision and teaching abilities, much more is expected of clinical faculty. To be successful, they must also be excellent researchers, mentors, administrators and leaders; faculty receive limited, if any, formal and constructive feedback about

Research Grants

these domains. While problematic for all faculty, for those who are prone to self-doubt, lack of meaningful evaluations and credible feedback may hinder their career advancement and impact wellness. We aim to explore faculty members' perspectives about the role evaluations and feedback currently play in their professional development and how they obtain the insights necessary for performance improvement across multiple professional activities. This will provide opportunities to render evaluations more meaningful and impactful to faculty in practice."



Aliya Kassam, BSc (Hons), MSc, PhD
Research Lead, Office of Postgraduate Medical Education, and Assistant Professor, Department of Community Health Sciences, Cumming School of Medicine, University of Calgary

A national initiative to help ease the transition from medical school to residency: the Learner Education Handover Pilot Project (LEaPP)

How this work will inform research in medical education

"Current literature suggests that medical learners feel inadequately prepared for residency, particularly in terms of clinical experience, knowledge and skills. Faculty are often able to pinpoint where improvements are needed to help ease the transition; however, these are heavily based on technical deficits that need improvement and not in other competency domains.

By receiving advance notice (post resident matching but pre-entry) of specific educational, personal or accommodation needs, residency programs can proactively begin to plan and collaborate with incoming self-identified learners, using the Learner Education Handover (LEH), to achieve a more expeditious and effective learner program for them."



Sandra Monteiro, BSc, MD, PhD
Assistant Professor, Department of Health Research Methods, Evidence and Impact, McMaster University, and Director, Research and Analysis, Touchstone Institute

Evaluating rapid exemplar processing to improve diagnostic expertise

How this work will inform research in medical education

"Medicine is increasingly complex, with exposure to representative patient encounters occurring in an ad hoc manner. The proposed approach takes a systematic line to building efficiency into the system. Rapid exemplar learning serves as a theoretical approach to change the delivery of medical education that is largely unchanged for the last century. To date, the only way to acquire enough exemplars to

develop expert-level performance is through years of formal medical school curricula followed by informal training through 'seeing more patients.' This study applies modern theories of human visual statistical learning to evaluate a more time-efficient method for learning to categorize diagnostic images. We believe this approach can better prepare health professions' trainees to apply the skill of medical diagnosis."



Hatem Salim, MD, FRCPC
Assistant Professor, Division of General Internal Medicine, Department of Medicine, and Associate Program Director, Internal Medicine, Western University/London Health Sciences Centre

Is there more to it than reading around the case? A mixed-methods study of resident workplace preparation habits

How this work will inform research in medical education

"Intuitively, it is believed that better preparation habits would make for better resident performance; however, there is a paucity of research that documents how residents prepare, let alone evidence to confirm a causal relationship. The results of this study are important

"Current literature suggests that medical learners feel inadequately prepared for residency, particularly in terms of clinical experience, knowledge and skills."

—Dr. Aliya Kassam

as many programs are undertaking major educational change initiatives. Predominantly associated with the competency-based movement, programs are being asked to personalize learning without much in the way of guidance. Many programs struggle to figure out how best to help trainees prepare and learn in the workplace. Thus this study will fill this need not only from an academic perspective, it will also serve to support programs in being able to better identify preparation habits of trainees to customize learning activities and ensure continued progress.”



Lynfa Stroud, MD, MEd, FRCPC
Associate Professor, Department of Medicine, University of Toronto, and Staff Physician, Division of General Internal Medicine, Sunnybrook Health Sciences Centre

How academic advisors and residents develop learning relationships and make meaning of assessment data over time

How this work will inform research in medical education

“CBD has increased the number and frequency of low-stakes, formative assessments during residency training. To help residents synthesize and use the greater amount of assessment data and feedback, the Royal College of Physicians and Surgeons of Canada has recommended ‘coaching over

“Although much has been written about the medical learning environment; the patient, who is the focus of our care, has been systematically excluded from this discourse.”

—Dr. Cheryl Lynn Holmes

time,’ leading many residency programs to create the Academic Advisor (AA) role or similar coaching roles; however, research has yet to focus on the experience and impact of this new role. This work aims to better understand how AAs and residents interpret assessment data, and how they use the data together to plan learning trajectories, what language AAs use to document these encounters and how both AAs and residents perceive their relationship over time. The outcomes of this study will further inform CBD implementation and provide a greater understanding of longitudinal coaching relationships in residency training.”

Royal College/Associated Medical Services CanMEDS Research Development Grant – 2019 Recipients

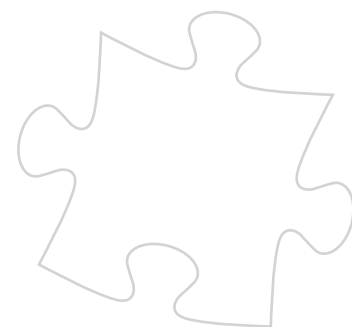


Cheryl Lynn Holmes, MD, FRCPC, MHPE
Clinical Professor, Department of Medicine and Division of Critical Care, and Associate Dean, Undergraduate Medical Education, Faculty of Medicine, University of British Columbia

**Exploring the patient’s role in the medical learning environment
How this work will inform research in medical education**

How this work will inform research in medical education

“Although much has been written about the medical learning environment; the patient, who is the focus of our care, has been systematically excluded from this discourse. Provision of patient-centred care seems to be de-emphasized as time with patients is eroded in busy clinical settings, whereas creating patient-present experiences solidifies the culture of medicine as patient-centred. Research in this area to date is limited, and an exploration into how patient involvement can improve and influence the medical learning environment is needed. The purpose of this study is to explore the role of the patient as an active participant, with agency, in an authentic medical learning environment from the standpoint of the learner, the faculty and most importantly the patient. We hope to gain insight into the reinforcement of positive professional values, such as patient-centred behaviours and a respectful environment.”





Kori LaDonna, PhD

Assistant Professor, Department of Innovation and Medical Education, and Department of Medicine, University of Ottawa

Exploring patient storytelling as a pedagogical strategy for training the intrinsic CanMEDS roles

How this work will inform research in medical education

“The intrinsic CanMEDS roles are essential components of compassionate, patient-centred care; yet, current pedagogical approaches may not sufficiently capture the complexities of tailoring these skills to individual patients. Every patient has a unique story about their health care journey that can provide key insights into gaps in medical training, and there is an increasing appreciation for the value of having patients actively participate as teachers and facilitators of learning. Unfortunately, concerns about feasibility, credibility and ethics limit patients’ formal and systematic engagement across postgraduate medical education. To address this, we’ve partnered with patient advisors at The Ottawa Hospital to design, implement and evaluate a storytelling curriculum to prepare patients to become effective medical educators. Our research is important because it will not only help patients tell stories that may usefully inform intrinsic role training, but it will also build the foundation for greater inclusion of patients in medical education.”

“Every patient has a unique story about their health care journey that can provide key insights into gaps in medical training, and there is an increasing appreciation for the value of having patients actively participate as teachers and facilitators of learning.”

—Dr. Kori LaDonna

Robert Maudsley Fellowship for Studies in Medical Education 2019



Kathryn Darras, MD, FRCPC

*PGY7 Nuclear Medicine Residency Program, Department of Radiology, Faculty of Medicine, University of British Columbia
PhD Candidate, Medical Education, School of Health Professions Education, Maastricht University, Netherlands*

Applied anatomy: impact of virtual dissection on medical student competence in clerkship

How this work will inform research in medical education

“In medical undergraduate curricula, radiology instruction is typically integrated with cadaveric anatomy teaching and primarily involves the use of ultrasound and two-dimensional images. However, with recent advances in technology-enabled learning, three-dimensional visualization systems, such as anatomy visualization tables (AVTs), can be used to teach radiological anatomy through virtual dissection. In virtual dissection, patient computed tomography (CT) scans are loaded onto the near life-size AVTs and, through powerful software interactions, learners can work

together to manipulate the data to perform their dissection virtually. Grounded in systems theory, this study will evaluate the impact of pre-clinical virtual dissection teaching on students’ anatomy, surgery and radiology competencies in clerkship. Through considering how multiple separate learning elements interact to form complex learning events in virtual dissection, we aim to better understand how to provide pre-clinical medical students with clinically relevant anatomy knowledge that will prepare them for clerkship and ultimately for clinical practice.”



Tina Hsu, MD, FRCPC, ABIM

*Medical Oncologist, The Ottawa Hospital Cancer Centre
Assistant Professor, University of Ottawa*

Training medical oncologists to care for the aging population

How this work will inform research in medical education

“There has been a significant increase in the development and use of electronic learning resources. Electronic learning allows educators to reach a wider audience, which is particularly useful for teaching subjects in which there are either a relatively small number of experts

in the field or limited expertise locally, such as geriatric oncology. Although oncology trainees report that geriatric oncology is important and additional training would be helpful, existing e-modules are rarely used by trainees. The reasons for the gap between trainees' expressed attitudes about the importance of geriatric oncology training and their usage of available e-learning resources is unclear. This project seeks to identify facilitators and barriers to uptake of non-mandatory, electronically delivered geriatric oncology curricula. This work is important because development of electronic resources requires time and money so understanding factors that influence utilization of electronic resources is important. The results of this study may subsequently inform the development of strategies to promote uptake of non-mandatory electronic learning materials in other educational contexts."



**Ariel Lefkowitz, CM, MD, FRCPC,
MEd Candidate**
*Clinical Associate, General Internal
Medicine, Department of Medicine,
University of Toronto*

"Developing meaningful therapeutic relationships with patients based on mutual respect and understanding is the cornerstone of practising good medicine, but it is difficult to construct educational curricula that promote these connections."

—Dr. Ariel Lefkowitz

Involving patients in narrative medicine to foster critical consciousness in learners

How this work will inform research in medical education

"Developing meaningful therapeutic relationships with patients based on mutual respect and understanding is the cornerstone of practising good medicine, but it is difficult to construct educational curricula that promote these connections. By connecting with patients and learning about their lived experience, trainees and faculty can be stimulated to engage in critical consciousness, reflecting on their own biases and assumptions and challenging oppressive social structures that negatively impact person-centred care. This work aims to explore the theoretical grounding and implementation of collaborating with patients, families and communities in the construction of medical narratives that will foster dialogue and critical consciousness. If successful, the resulting educational tools will encourage trainees and faculty to actively nurture equitable person-centred care in their medical practice and in systemic policy making."



Fareen Zaver, MD, FRCPC-EM, ABEM
*Clinical Assistant Professor, Emergency
Medicine, University of Calgary*

Challenges in the transition to independent practice

How this work will inform research in medical education

"This work is important to medical education because it will address the extremely challenging transition from the final year of residency into the first few years of clinical practice. Despite the advent of CBME, new staff will continue to experience challenges in the initial years of practice across all specialties. The wide range of clinical, administrative and management issues not covered during training can result in negative patient outcomes, low physician resiliency and high physician burnout."

2019 Strategic Initiative Grant Recipients



**Catharine Walsh, MD, MEd, PhD,
FRCPC**
*Clinician Scientist, SickKids Research
and Learning Institutes, Hospital for
Sick Children. Cross-appointed Scientist,
The Wilson Centre. Assistant Professor,
Department of Paediatrics, University
of Toronto*

Exploring supervisors' decisions about procedural entrustment in simulation-based and workplace-based settings

This work is important to medical education because

"This research will shed light on how clinical supervisors make entrustment decisions in workplace-based and simulation-based settings. While simulation has become commonplace in procedural skills training and assessment, how supervisors engage in observational and decision-making processes ('rater cognition') when assessing trainees in simulation-based settings remains unclear. With the introduction of *Competence By Design*, it is timely to explore how rater's cognitive processes may be similar or different in simulation-based and workplace-based assessment contexts, and what implications any similarities or differences may have for entrustment decision-making. We intend to study this using colonic polypectomy as a relevant entrustable professional activity in Gastroenterology which can be assessed in either context. The outcomes of this study will advance specialty medical education by informing when and how we use simulation in *CBD*-era assessments in the years to come."

"With the introduction of Competence By Design, it is timely to explore how rater's cognitive processes may be similar or different in simulation-based and workplace-based assessment contexts, and what implications any similarities or differences may have for entrustment decision-making."

—Dr. Catharine Walsh



Rose Hatala, MD, MSc, FRCPC
*Professor, Department of Medicine and
Director, Clinical Educator Fellowship,
Centre for Health Education Scholarship,
University of British Columbia*

Understanding the language of front-line faculty: gathering validity evidence for a construct-aligned rating of internal medicine residents

This work is important to medical education because

"Current evidence suggests that the construct of entrustment is enacted differently across specialties as clinical supervision and entrustment are grounded in specialty-specific working cultures and language. Our multi-institutional team (Andrea Gingerich [UBC], Shiphra Ginsburg and Lindsay Melvin [University of Toronto], David Taylor and Stephen Gauthier [Queen's University]) will undertake a validity study, using Kane's framework, to explore the specialty-specific language that captures the essence of clinical supervision in internal medicine and to develop and examine a

construct-aligned rating scale based on our findings. We will gain a richer understanding of clinical supervision in internal medicine, and the language used by supervisors, which may be harnessed in service of work-based assessment. This work could also serve as a guide for other disciplines to investigate the essence of clinical supervision in their contexts and to develop the related validity arguments for their assessment tools."



Susan Humphrey-Murto, MD, MEd, FRCPC
*Associate Professor of Medicine,
Department of Medicine
Acting Director, Education Research
Support Facility, Department of
Innovation in Medical Education,
University of Ottawa*

Training physicians and learners in the use of EHR: what have we learned? A case study of three hospitals

This work is important to medical education because

"Electronic Health Records (EHR) are being adopted in multiple healthcare settings. There are many reported benefits such as improved access to patient information, reduced medical errors, and improved efficiency. Despite widespread agreement about the importance of EHR, implementation has been challenging. One of the most important barriers to implementation has been the lack of proper education and training strategies for physicians.

“Reframing assessment as potentially beneficial to assessors could enhance faculty engagement in assessment activities through recognition of learning in continuing professional development and maintenance of competence processes.”

—Dr. Renate Kahlke

Considering the billions of dollars spent in EHR implementation, it is notable that education research to develop effective training programs receives very little attention. The implementation of EHRs across three academic hospitals in Ontario offers a unique opportunity to identify current challenges and successes in workplace learning. The purpose of our study is to describe and critically analyze the similarities and differences in EHR implementation and training across these sites. Lessons learned will help characterize best educational practices and resources to support sustainable long-term training programs.”



Tammy Shaw, MD, CCFP, FRCPC
*Lecturer, Department of Medicine,
University of Ottawa*

Leaner handover: What do learners think?

This work is important to medical education because ...

“... it has the potential to identify new insights about learner handover from the learner’s perspective.

Learner handover, the process of sharing information about the learner between faculty supervisors involved in the learner’s education, has been a source of debate mainly due to fears of introducing bias to assessments and stigmatization. However, its potential to facilitate the longitudinal assessment fundamental to CBME, often hindered by our current rotation-based system, has caused renewed interest in its practice. As such, national organizations in North America have been developing learner handover tools for the transition between undergraduate to postgraduate medical education to improve institutional preparedness for incoming learner needs, patient safety, professional development, mentorship and resident wellness. Despite the learner-centered focus, much of what we know about learner handover comes from faculty. This project has the potential to increase our understanding of learner handover from Canadian and American learners ultimately ensuring learner-centred practices as implementation becomes imminent.”

Acknowledgment:

This study is a collaborative effort between the University of Ottawa and University of California, San Francisco.

Royal College Intramural Grant Program Recipient



Renate Kahlke, PhD
*Research Associate, Research Unit
Royal College of Physicians and Surgeons
of Canada*

Reframing learning and assessing: How do assessors learn in the context of workplace-based assessment?

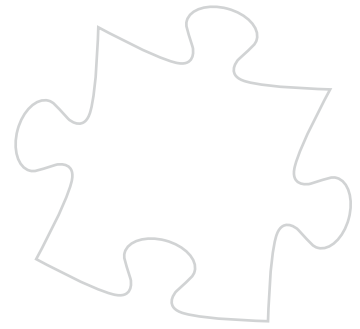
This work is important to medical education because

“With the advent of CBME, there has been significant attention paid to the workload placed on clinician assessors. At the same time, we know that clinicians often struggle to ensure that they regularly engage in meaningful continuing professional development. This research aims to investigate the conditions under which acting as a clinical assessor might catalyze learning for clinicians, offering continuing professional development grounded in the workplace. Reframing assessment as potentially beneficial to assessors could enhance faculty engagement in assessment activities through recognition of learning in continuing professional development and maintenance of competence processes. Such recognition can thus increase assessor retention and the sustainability of assessment practices within CBME.”

Publications & AWARDS

January-December 2019

Royal College Staff (clinician or simulation or CPD educator)



Awards (Staff/Educators)

Chiu M. *uOttawa Department of Anesthesiology and Pain Medicine Clinical Educator Award.* This award is presented to a faculty member in the Department of Anesthesiology and Pain Medicine to recognize their contribution to excellence as a clinical educator. This faculty member is recognized for their qualities related to professionalism, motivation, knowledge, commitment to teaching and abiding by the department's mission and vision. May 2019.

External Funding

Slinger P (PI); **Campbell C** (Collaborator); *CPD by the minute: An innovative use of mobile technology to improve continuing medical education and physician self-assessment.* The Academic Health Science Center (AHSC) Alternate Funding Plan (AFP) Innovation Fund. \$189,581.88

Kahlke R (PI); Co-I(s): LaDonna K, Cristancho S, Maggio L, **Horsley T**, Varpio L. *Interview elicitation techniques in health professions education research: An integrative review.* Directors of Research in Medical Education (SDRME) Research Review/Synthesis Paper grant. \$5,000

Kahlke R (PI); Co-I(s): McConnell M, **Campbell C**, Bryson G, Pugh D, Maniate J, Humphrey-Murto S. *Reframing learning and assessing: How do assessors learn in the context of workplace-based assessment?* Royal College Intramural Grant.

Peer-reviewed Publications (Staff)

1. Smith KA, Setlhare S, DeCaen A, Donoghue A, Mensinger JL, Zhang B, Snow B, Zambo D, Ndlovu K, Littman-Quinn R, **Bhanji F**, Meaney PA. *Feasibility and preliminary validity evidence for remote video-based assessment of clinicians in a global health setting.* PLoS One. 2019 Aug;14(8):e0220565. doi: 10.1371/journal.pone.0220565. eCollection 2019.
2. Nolan JP, Berg RA, Andersen LW, **Bhanji F**, Chan PS, Donnino MW, Lim SH, Ma MH, Nadkarni VM, Starks MA, Perkins GD, Morley PT, Soar J; Utstein Collaborators. *Cardiac Arrest and Cardiopulmonary Resuscitation Outcome Reports: Update of the Utstein Resuscitation Registry Template for In-Hospital Cardiac Arrest: A Consensus Report From a Task Force of the International Liaison Committee on Resuscitation (American Heart Association, European Resuscitation Council, Australian and New Zealand Council on Resuscitation, Heart and Stroke Foundation of Canada, InterAmerican Heart Foundation, Resuscitation Council of Southern Africa, Resuscitation Council of Asia).* Circulation. 2019 Oct;140(18):e746-57. doi: 10.1161/CIR.0000000000000710.
3. Soar J, Maconochie I, Wyckoff MH, Olasveengen TM, Singletary EM, Greif R, Aickin R, **Bhanji F**, Donnino MW, Mancini ME, Wyllie JP, Zideman D, Andersen LW, Atkins DL, Aziz K, Bendall J, Berg KM, Berry DC, Bigham BL, Bingham R, Couto TB, Böttiger BW, Borra V, Bray JE, Breckwoldt J, Brooks SC, Buick J, Callaway CW, Carlson JN, Cassan P, Castrén M, Chang WT, Charlton NP, Cheng A, Chung SP, Considine J, Couper K, Dainty KN, Dawson JA, de Almeida MF, de Caen AR, Deakin CD, Drennan IR, Duff JP, Epstein JL, Escalante R, Gazmuri RJ, Gilfoyle E, Granfeldt A, Guerguerian AM, Guinsburg R, Hatanaka T, Holmberg MJ, Hood N, Hosono S, Hsieh MJ, Isayama T, Iwami T, Jensen JL, Kapadia V, Kim HS, Kleinman ME, Kudenchuk PJ, Lang E, Lavonas E, Liley H, Lim SH, Lockey A, Lofgren B, Ma MH, Markenson D, Meaney PA, Meyran D, Mildenhall L, Monsieurs KG, Montgomery W, Morley PT, Morrison LJ, Nadkarni VM, Nation K, Neumar RW, Ng KC, Nicholson T, Nikolaou N, Nishiyama C, Nuthall G, Ohshimo S, Okamoto D, O'Neil B, Yong-Kwang Ong G, Paiva EF, Parr M, Pellegrino JL, Perkins GD, Perlman J, Rabi Y, Reis A, Reynolds JC, Ristagno G, Roehr CC, Sakamoto T, Sandroni C, Schexnayder SM, Scholefield BR, Shimizu N, Skrifvars MB, Smyth MA, Stanton D, Swain J, Szyld E, Tijssen J, Travers A, Trevisanuto D, Vaillancourt C, Van de Voorde P, Velaphi S, Wang TL, Weiner G, Welsford M, Woodin JA, Yeung J, Nolan JP, Fran Hazinski M. *2019 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation, and Teams; and First Aid Task Forces.* Circulation. 2019 Dec;140(24):e826-80. doi: 10.1161/CIR.0000000000000734.

4. Patocka C, Cheng A, Sibbald M, Duff JP, Lai A, Lee-Nobbee P, Levin H, Varshney T, Weber B, **Bhanji F**. *A randomized education trial of spaced versus massed instruction to improve acquisition and retention of paediatric resuscitation skills in emergency medical service (EMS) providers*. Resuscitation. 2019 Aug;141:73–80. doi: org/10.1016/j.resuscitation.2019.06.010.
5. Fernando SM, Fox-Robichaud AE, Rochweg B, **Cardinal P**, Seely AJ, Perry JJ, McIsaac DI, Tran A, Skitch S, Tam B, Hickey M, Reardon PM, Tanuseputro P, Kyeremanteng K. *Prognostic accuracy of the Hamilton Early Warning Score (HEWS) and the National Early Warning Score 2 (NEWS2) among hospitalized patients assessed by a rapid response team*. Crit Care. 2019 Feb 21;23(1):60. doi: 10.1186/s13054-019-2355-3.
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. 2019 Jan;49(1):12–8. doi: 10.1097/NNA.0000000000000701
7. **Campbell C**, Lockyer J. *Categorising and enhancing the impacts of continuing professional development to improve performance and health outcomes*. Med Educ. 2019 Nov;53(11):1066–9. doi: 10.1111/medu.13995.
8. Sockalingam S, *Tavares W*, Charow R, Youssef A, **Campbell C**, Davis D, Giuliani M, Okrainec A, Papadakos J, Silver I, Wiljer D. *Examining associations between physician data utilization for practice improvement and lifelong learning*. J Contin Educ Health Prof. 2019 Fall;39(4):236–42. doi: 10.1097/CEH.0000000000000268.
9. *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. 2019 Jan;94(1):101–14. doi: 10.1097/ACM.0000000000002396.
10. *Hall AK*, Woods R, **Frank JR**. *Changing the culture of residency training through faculty development*. CJEM. 2019 Jul;21(4):446–8. doi: 10.1017/cem.2019.351.
11. *Hall AK*, Rich J, Dagnone JD, Weersink K, Caudle J, Sherbino J, **Frank JR**, Bandiera G, *Van Melle E*. *It's a marathon, not a sprint: rapid evaluation of CBME program implementation*. Acad Med. 2019 Oct 15. doi: 10.1097/ACM.0000000000003040. [Epub ahead of print]
12. Landreville JM, *Cheung WJ*, Hamelin A, **Frank JR**. *Entrustment Checkpoint: Clinical Supervisors' Perceptions of the Emergency Department Oral Case Presentation*. Teach Learn Med. 2019 Jun-Jul;31(3):250–7. doi: 10.1080/10401334.2018.1551139.
13. Landreville J, *Cheung W*, **Frank J**, Richardson D. *A definition for coaching in medical education*. Can Med Educ J. 2019 Nov 28;10(4):e109–e110. eCollection 2019 Nov.
14. Odorizzi S, *Cheung WJ*, Sherbino J, Lee AC, Thurgur L, **Frank JR**. *A signal through the noise: do professionalism concerns impact the decision-making of competence committees?* Acad Med. 2019 Oct 1. doi: 10.1097/ACM.0000000000003005.
15. Odorizzi S, *Cheung W*, Sherbino J, Lee A, Thurgur L, **Frank J**. *LO55: Signal & noise—do professionalism concerns impact decision-making of competence committees?* CJEM. 2019;21(S1):S27. <https://doi.org/10.1017/cem.2019.98>.
16. *van Melle E*, **Frank JR**, Holmboe ES, Dagnone D, Stockley D, Sherbino J; International Competency-based Medical Education Collaborators. *A core components framework for evaluating implementation of competency-based medical education programs*. Acad Med. 2019 Jul;94(7):1002–9. doi: 10.1097/ACM.0000000000002743.
17. *Wong BM*, Baum KD, Headrick LA, Holmboe ES, Moss F, Ogrinc G, Shojania KG, Vaux E, Warm EJ, **Frank JR**. *Building the bridge to quality: an urgent call to integrate quality improvement and patient safety education with clinical care*. Acad Med. 2020 Jan;95(1):59–68. doi: 10.1097/ACM.0000000000002937.
18. Wong MKY, Medor MC, Labre KY, Jiang M, **Frank JR**, Fischer LM2, *Cheung WJ*. *Gaps in public preparedness to be a substitute decision-maker and the acceptability of high school education on resuscitation and end-of-life care: a mixed-methods study*. CMAJ Open. 2019 Sep;7(3):E573–81. doi: 10.9778/cmajo.20190037.
19. **Harris KA**, Nousiainen MT, Reznick R. *Competency-based resident education-The Canadian perspective*. Surgery. 2020 Apr;167(4):681–4. doi: 10.1016/j.surg.2019.06.033.
20. **Horsley T**. *Tips for Improving the Writing and Reporting Quality of Systematic, Scoping, and Narrative Reviews*. J Contin Educ Health Prof. 2019 Winter;39(1):54–7. doi: 10.1097/CEH.0000000000000241.

Publications & Awards

21. **Horsley T**, Custers E, Tolsgaard MG. *Fundamentals of randomized designs: AMEE Guide No. 128*. Med Teach. 2019 Dec 27;1-7. doi: 10.1080/0142159X.2019.1681389. [Epub ahead of print]
22. Kaba A, Van Melle E, **Horsley T**, *Tavares W*. *Chapter 59: Evaluating simulation programs throughout the program development life cycle*; Chiniara G, editor, in Clinical Simulation (2nd ed.). Academic Press, Elsevier. doi: 10.1016/B978-0-12-815657-5.00060-7.
23. Grimshaw JM, Ivers NM, Linklater S, Foy RC, Francis JJ, Gude WT, Hysong SJ, on behalf of the Audit and Feedback MetaLab: Alderson S, Boet S, Brehaut J, Brown B, Clarkson J, Colquhoun H, de Keizer N, Desveaux L, Dobell G, Dunn S, Farrin A, Foy RC, Francis JJ, Greenberg A, Grimshaw JM, Gude WT, Hartley S, **Horsley T**, Hysong SJ, Ivers NM, Landis-Lewis Z, Linklater S, London J, Lorencatto F, Michie S, O'Connor D, Peek N, Presseau J, Ramsay C, Sales AE, Sprague A, Stanworth S, Sykes M, Taljaard M, Walker TK, Walwyn R, Weiss D, Willis TA, Witteman H. *Reinvigorating stagnant science: implementation laboratories and a meta-laboratory to efficiently advance the science of audit and feedback*. BMJ Qual Saf. 2019 May;28(5):416-23. doi: 10.1136/bmjqs-2018-008355.
24. Mydlarski PR, Parsons LM, Pierscianowski TA, Humphrey S, Kirchoff MG, Powell J, Rosen CF, **Huck E**, **Conway J**, **Kouri A**. *Dermatologic training and practice in Canada: a historical overview*. J Cutan Med Surg. 2019 May/Jun;23(3):307-18. doi: 10.1177/1203475419840630.
25. **Kahlke KM**, McConnell MM, Wisener KM, Eva KW. *The disconnect between knowing and doing in health professions education and practice*. Adv Health Sci Educ Theory Pract. 2020 Mar;25(1):227-40. doi: 10.1007/s10459-019-09886-5.
26. Harty C, Chaput AJ, Trouton K, Buna D, **Naik VN**. *Oral medical assistance in dying (MAiD): informing practice to enhance utilization in Canada*. Can J Anaesth. 2019 Sep;66(9):1106-12. doi: 10.1007/s12630-019-01389-6.
27. Ding JZ, Casey G, Kekewich M, Wiesenfeld L, **Naik VN**. *Medical assistance in dying: a structured postgraduate elective to build confidence in caring for patients*. Can J Anaesth. 2019 Sep;66(9):1121-2. doi: 10.1007/s12630-019-01406-8.
28. **Sheikh Hassani M**, Green JR. *Multi-view Co-training for microRNA Prediction*. Sci Rep. 2019 Jul;9(1):10931. doi: 10.1038/s41598-019-47399-8.
29. Akdemir N, Malik RF, Walters T, **Taber S**, Hamstra SJ, Philibert I, Scheele F. *Using Gamification to Understand Accreditation in Postgraduate Medical Education*. J Grad Med Educ. 2019 Aug;11(4 Suppl):207-10. doi:10.4300/JGME-D-19-00051.

Peer Reviewed Publications (Educators)

1. Cortel-LeBlanc M, Landreville J, *Cheung W*, Pan A. (2019). *P026: Dominating the vent: A flipped classroom approach to enhance emergency medicine resident ventilator management*. CJEM. 2019;21(S1):S72. doi: 10.1017/cem.2019.217.
2. Parks A, Eagles D, Ge Y, Stiell IG, *Cheung WJ*. *Barriers and enablers that influence guideline-based care of geriatric fall patients presenting to the emergency department*. Emerg Med J. 2019 Dec;36(12):741-7. doi: 10.1136/emermed-2018-208260. [Epub 2019 Sep 24]
3. *Cheung W*, *Gofton W*, Wood T, Duffy M., Dewhirtst S, *Dudek N*. *LO84: Ready to run the show: development of a new instrument for assessing resident competence in the emergency department*. CJEM. 2019;21(S1):S38. doi: 10.1017/cem.2019.126.
4. 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. 2019 Apr-May;31(2):146-53. doi: 10.1080/10401334.2018.1503961. [Epub 2018 Dec 4]
5. *Dudek N*, *Gofton W*, Rekman J, McDougall A. *Faculty and resident perspectives on using entrustment anchors for workplace-based assessment*. J Grad Med Educ. 2019 Jun;11(3):287-94. doi: 10.4300/JGME-D-18-01003.1.
6. Dagnone D, Stockley D, *Flynn L*, Egan R, van Wylick R, McEwan L, Walker R, Reznick R. *Delivering on the promise of competency based medical education - an institutional approach*. Can Med Educ J. 2019 Mar 13;10(1):e28-38. eCollection 2019 Mar.
7. Sheahan G, Reznick R, Klinger D, *Flynn L*, Zevin B. *Comparison of personal video technology for teaching and assessment of surgical skills*. J Grad Med Educ. 2019 Jun;11(3):328-31. doi: 10.4300/JGME-D-18-01082.1.
8. *Thoma B*, Turnquist A, Zaver F, Hall A, Chan TM. *Communication, learning, and assessment: exploring the dimensions of the digital learning environment*. Med Teach. 2019;41(4):1-6. doi: 10.1080/0142159X.2019.1567911

9. Collings L, Szulewski A, Hopman W, Hall A. LO53: *The correlation of workplace-based assessments with periodic performance assessment of emergency medicine residents*. CJEM. 2019;21(S1):S26–7. doi: 10.1017/cem.2019.96.
10. Rich JV, Fostaty Young S, Donnelly C, Hall AK, Dagnone JD, Weersink K, Caudle J, Van Melle E, Klinger DA. *Competency-based education calls for programmatic assessment: But what does this look like in practice?* J Eval Clin Pract. 2019 Dec 9. doi: 10.1111/jep.13328. [Epub ahead of print]
11. McKaigney C, Bell C, Hall A. LO85: *Development of a competency based assessment tool for emergency department point of care ultrasound*. CJEM. 2019;21(S1):S38–9. doi: 10.1017/cem.2019.127.
12. Kester-Greene N, Hall A, Walsh C. LO43: *Simulation curricular content in postgraduate emergency medicine: a multicenter delphi study*. CJEM. 2019;21(5):667–75. doi: 10.1017/cem.2019.348.
13. Weersink K, Hall AK, Rich J, Szulewski A, Dagnone JD. *Simulation versus real-world performance: a direct comparison of emergency medicine resident resuscitation entrustment scoring*. Adv Simul. 2019;4(1): 9. doi: 10.1186/s41077-019-0099-4.
14. LeBlanc VR. *The relationship between emotions and learning in simulation-based education*. Simul Healthc. 2019 Jun;14(3):137–9. doi: 10.1097/SIH.0000000000000379.
15. Razack S, Risør T, Hodges B3 Steinert Y. *Beyond the cultural myth of medical meritocracy*. Med Educ. 2020 Jan;54(1):46–53. doi: 10.1111/medu.13871.
16. Razack S, Philibert I. *Inclusion in the clinical learning environment: building the conditions for diverse human flourishing*. Med Teach. 2019 Apr;41(4):380–4. doi: 10.1080/0142159X.2019.1566600.
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19. Wang XR, Hillier T, Oswald A, Lai H. *Patterns of performance in students with frequent low stakes team based learning assessments: do students change behavior?* Med Teach. 2020 Jan;42(1):111–3. doi: 10.1080/0142159X.2019.1670339.
20. Nordquist J, Hall J, Caverzagie K, Snell L, Chan MK, Thoma B, Razack S, Philibert I. *The clinical learning environment*. Med Teach. 2019 Apr;41(4):366–72. doi: 10.1080/0142159X.2019.1566601.
21. Chan MK, Snell L, Philibert I. *The education avenue of the clinical learning environment: a pragmatic approach*. Med Teach. 2019 Apr;41(4):391–7. doi: 10.1080/0142159X.2019.1566602
22. Hutchinson T, Snell LS, Wiseman J, Lubarsky S. *Applying adaptive expertise for students' clinical decision making*. Med Educ. 2019 Nov;53(11):1141–2. doi: 10.1111/medu.13969.
23. Masson V, Snell L, Dolmans D, Sun NZ. *Exploring the evolving concept of 'patient ownership' in the era of resident duty hour regulations-experience of residents and faculty in an internal medicine night float system*. Perspect Med Educ. 2019 Dec;8(6):353–59.
24. Leyenaar MS, McLeod B, Penhearow S, Strum R, Brydges M, Mercier E, Brousseau AA, Besserer F, Agarwal G, Tavares W, Costa AP. *What do community paramedics assess? An environmental scan and content analysis of patient assessment in community paramedicine*. CJEM. 2019 Nov;21(6):766–75.1-10. doi: 10.1017/cem.2019.379.
25. Tavares W. *Roads less traveled: understanding the "why" in simulation as an integrated continuing professional development activity*. Adv Simul (Lond). 2019 Nov;4:24. doi: 10.1186/s41077-019-0111-z.
26. Tavares W, Kuper A, Kulasegaram K, Whitehead C. *The compatibility principle: on philosophies in the assessment of clinical competence*. Adv Health Sci Educ Theory Pract. 2019 Nov. doi: 10.1007/s10459-019-09939-9. [Epub ahead of print]
27. Tavares W, Young M, Gauthier G, St-Onge C. *The effect of foregrounding intended use on observers' ratings and comments in the assessment of clinical competence*. Acad Med. 2019 Nov 12. doi: 10.1097/ACM.00000000000003076. [Epub ahead of print]

Publications & Awards

28. *Tavares W, Eppich W, Cheng A, Miller S, Teunissen PW, Watling CJ, Sargeant J. Learning conversations: an analysis of their theoretical roots and their manifestations of feedback and debriefing in medical education.* Acad Med. 2019 Jul 30. doi: 10.1097/ACM.0000000000002932. [Epub ahead of print]
29. Batt AM, *Tavares W, Williams B. The development of competency frameworks in healthcare professions: a scoping review.* Adv Health Sci Educ Theory Pract. 2019 Dec 3. doi: 10.1007/s10459-019-09946-w. [Epub ahead of print]
30. Leyenaar MS, Strum RP, Batt AM, Sinha S, Nolan M, Agarwal G, *Tavares W, Costa AP. Examining consensus for a standardised patient assessment in community paramedicine home visits: a RAND/UCLA-modified Delphi Study.* BMJ Open. 2019 Oct;9(10):e031956. doi: 10.1136/bmjopen-2019-031956.
31. Tannenbaum ER, *Tavares W, Kuper A. Performance is in the eye of the beholder.* Med Educ. 2019 Aug;53(8):759–62. doi: org/10.1111/medu.13873.
32. Agarwal G, Pirrie M, McLeod B, Angeles R, *Tavares W, Marzanek F, Thabane L. Rationale and methods of an Evaluation of the Effectiveness of the Community Paramedicine at Home (CP@home) program for frequent users of emergency medical services in multiple Ontario regions: a study protocol for a randomized controlled trial.* Trials. 2019 Jan;20(1):75. doi: 10.1186/s13063-018-3107-4.
33. Zereshkian A, Wong R, Leifer R, Schneeweiss S, *Tavares W, Paton M, Soliman H, Di Prospero L, Harnett N, Szumacher E. Continuing professional development needs amongst University of Toronto's Department of Radiation Oncology faculty.* J Cancer Educ. 2019 Aug 24. doi: 10.1007/s13187-019-01607-1. [Epub ahead of print]
34. Griffiths J, Dalgarno N, Schultz K, Han H, *van Melle E. Competency-based medical education implementation: Are we transforming the culture of assessment?* Med Teach. 2019 Jul;41(7):811–8. doi: 10.1080/0142159X.2019.1584276.
35. Born KB, Moriates C, Valencia V, Kerssens M, *Wong BM. Learners as leaders: a global groundswell of students leading choosing wisely initiatives in medical education.* Acad Med. 2019 Nov;94(11):1699–703. doi: 10.1097/ACM.0000000000002868.
36. Myers JS, *Wong BM. Measuring outcomes in quality improvement education: success is in the eye of the beholder.* BMJ Qual Saf. 2019 May;28(5):345–8. pii: bmjqs-2018-008305. doi: 10.1136/bmjqs-2018-008305.
37. Tseng EK, Mukerji G, Weinerman A, Fuller J, McLeod A, *Wong BM, Kuper A, Stroud LS. Choosing words wisely: residents' use of rhetorical appeals in conversations about unnecessary tests.* Acad Med. 2020 Feb;95(2):275–82. doi: 10.1097/ACM.0000000000002980.

Non-Peer Reviewed/Technical Reports/E-learning Modules (Staff/Educators)

1. Blair P, McLeod B, **Barton G**, *Matlow A, Brien S, Chiu M, Microys S, Kaufmann M, Nelson G. Little Things Make Big Differences: Recognizing and Managing Disruptive Behaviour in the Clinical Environment.*
2. **Fréchette D, Shrichand A, Manogaran M.** *Employment Patterns of Canada's Newly Certified Medical Specialists: Findings from the Royal College Employment Study.* May 2019. <http://www.royalcollege.ca/rcsite/health-policy/employment-study-e>
3. Harty C, Chaput AJ, Buna D, Trouton K, **Naik VN.** *The Oral MAiD Option in Canada: Part 1 – Medication Protocols.* Canadian Association of MAiD Assessors and Providers (CAMAP) <https://web.camapcanada.ca/wp-content/uploads/2019/01/OralMAiD-Med.pdf>
4. Harty C, Chaput AJ, Buna D, Trouton K, **Naik VN.** *The Oral MAiD Option in Canada: Part 2 – Processes for Providing.* Canadian Association of MAiD Assessors and Providers (CAMAP) <https://web.camapcanada.ca/wp-content/uploads/2019/01/OralMAiD-Process.pdf>
5. **The Indigenous Health Writing Group of the Royal College.** (June 2019). *Indigenous Health Primer.* Ottawa: Royal College of Physicians and Surgeons of Canada.
6. **The Indigenous Health Writing Group of the Royal College.** (June 2019). *Indigenous Health Values and Principles Statement.* Ottawa: Royal College of Physicians and Surgeons of Canada.
7. **Slade S, Shrichand A, DiMillo S.** 2019. *Health Care for an Aging Population: A Study of how Physicians Care for Seniors in Canada.* Ottawa, Ontario. The Royal College of Physicians and Surgeons of Canada.

"I would like to put forward an alternative form of medical perception apart from the usual objectifying medical gaze: listening. Deep listening is a way to reimagine our interactions with patients, ourselves, learners and our communities, and can create more inclusive structures for healing and learning."

—Dr. Lisa Richardson

Dr. Lisa Richardson, opening plenary:
Deep listening: Dialogues for inclusion
and transformation in health care,
September 26, 2019.



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