### Other Research and Professional Activities

CLINICAL AND EDUCATION RESEARCH

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| 2007 - 2009 | **Co-Investigator**. City-Wide Medicine Grand Rounds- Does information technology create added value? Collaborator(s): Bell M, Base C, Russell A.<br>*This multiple format survey will explore what faculty perceive to be the benefits and limitations of video-conferencing, web-casting, and web-based archiving of city-wide medial grand rounds. These initiatives were put in place over a two year period to address a focal point in the department of medicine's strategic plan: Increasing city-wide integration*. |
| 2004 - 2009 | **Site Investigator**. Medical Error and Critical Care. Collaborator(s): Principal Investigator: Kennedy T.<br>*This observational and qualitative study looks at the incorporation of discussions of medical error and patient safety in clinical teaching settings. Third party observations are followed by focused interviews of teachers and students to determine their perspectives on inclusions of the emergency department and inpatient critical care locales will inform the development of a culture accepting of the disclosure and prevention of medical error in both the teaching and practice environments*. |
| 2002 - 2008 | **Principal Investigator**. Reliability and Validity of In-Training Emergency Medicine Oral and written Examinations: Do they provide the information we think they do?<br>*This project involves the psychometric analysis of the data derived from the thrice-yearly in-training oral and written examinations in the FRCP (EM) residency. I am testing the fundamental hypothesis that oral examiners, when provided with a structured scoring system, will be able to reliably assess residents' knowledge base (as measured by concurrent written examination performance) independent from their communication and patient management skills. The results of this study have implications for examination design and scoring to maximize reliability and predictive validity. (peer-review abstract #19)*. |
| 2000 - 2004 | **Site Investigator**. Canadian CT and C-Spine Study. Collaborator(s): Principal Investigator: Stiell I.<br>*A prospective derivation and validation study for a clinical decision rule around C-Spine and Brain Imaging post trauma. I supervised recruitment and protocol development and authored a paper on the relationship between physician judgment and the clinical decision rule. (Peer-reviewed abstract # 7)*. |

## C. Academic Profile

### 1. TEACHING PHILOSOPHY

My goal in a teaching encounter is to bring every learner at least a little further along in their trajectory towards expertise. In doing so, I adhere to the concrete models that I have developed through my original research (for example, the ED STAT model, in the case of emergency department teaching). However, the focus of my teaching over the years has changed and my philosophy has evolved from one adherent purely to Adult Learning Theory (ALT) to one that combines the principles of ALT with more recent developments in the areas of self-assessment and cognitive decision making. Just as the role of the physician is evolving away from a master of an immense factual knowledge base towards a masterful broker of knowledge and resources, I see the role of the clinical teacher not so much as to transmit knowledge as to encourage critical evaluation and nuanced application of knowledge. I find this approach to be particularly helpful in one-on-one and small-group teaching.

I remain convinced that the foundational element of an effective teaching encounter is a trusting and respectful teacher-learner relationship. In establishing this, I accept the responsibility to know as much about those I teach as I can, in order to understand what will be helpful to them as learners. My research has shown that interest in both the material and the learner as a person are critical to credibility and success as a teacher, particularly from the perspective of learners.

Accordingly I invest time up front to develop a learning agenda for the time I will spend with learners, which allows me to be efficient and effective in choosing my teaching points and approaches. Having learned more about the fallibility of self-assessment (a strong element of ALT), I now embellish learners' objectives with observations I make in the clinical field, and use the learners' experiences to demonstrate where learning opportunities that they did not recognize may exist. For example, I insist on learners making a commitment to a course of action and/or a conclusion before exploring the validity of their position. In establishing the commitment up front, the learner is more invested in the discussion.
I have also embedded some practices from the field of coaching into my regular teaching. Since every learner brings with them a breadth of personal experiences and knowledge, I see my role as that of 'fine tuning' their understanding or approach to an issue. I seek to help learners understand how new experiences become amalgamated with amassed old experiences to constantly refine their approaches and perspectives. Again, my goal is to advance them just a little further along in their knowledge, practice or understanding, rather than impart comprehensive factual material that can easily be obtained elsewhere.
Finally, I engage learners in meta-cognition exercises, in which I encourage them to think about their own thinking. I teach learners how to recognize and mitigate the effects of: repeated lapses in knowledge in specific areas; patterns of erroneous decision-making and their underlying biases and perceptions; and behaviours influenced by situational factors, such as ambient stress and competing cognitive demands.
Although these strategies are most obviously applicable to small group learning, I have embedded them in large groups, as well. Through various other approaches that involve the learner as an active partner, I encourage what has become known as 'facilitated self-directedness'. This approach helps the learner not only acquire new knowledge and understanding, but also enhances their understanding of how they themselves learn and view future opportunities as learning moments.
In sum, I view teacher-learner time as a precious resource and try to focus on learning that cannot easily be achieved through reading or other means. I see my value to learners as manifested through my ability to relate my experience and perspectives to theirs and equip them to be effective and efficient lifelong learners.

## 2. CREATIVE PROFESSIONAL ACTIVITIES STATEMENT

My academic goal is to advance the widespread integration of education theory and validated techniques into applied medical education, particularly in Emergency Medicine and Postgraduate Medical Education. I work clinically in an academic emergency department while teaching learners from across the medical education spectrum, hold advanced leadership roles related to my academic interests, participate in a number of national initiatives to advance education scholarship and engage in ongoing original research. These complimentary pursuits have allowed me to amass a Creative Professional Activity portfolio that has attracted interest and achieved impact nationally and internationally.

In the last 6 years, my clinical work has been limited by my leadership roles in medical education and as a Department Chief (SMH ED); I have nevertheless worked approximately 264 clinical EM shifts, most of which involve teaching between 1 and 3 learners. Research has shown that about 30% of a typical shift is spent in direct teacher-learner contact per learner; this resonates with my impressions. Thus, since my last promotion, I have contributed approximately 1040 hours of direct clinical teaching and over 2100 hours of indirect supervision. In addition, I have taught in numerous formal activities across multiple modalities and levels. In this same period, I have received (as principal investigator, co-investigator or supervisor) over $350 000 in grant funding and been an author on 36 peer-review papers focused on medical education ($602 000 in grants and 50 peer-reviewed manuscripts over my career). Since 2008, I have presented 86 invited lectures, workshops or seminars related to education in addition to my core teaching responsibilities within my division (34 international, 18 national, and 34 provincial/regional). I believe, however, that my most significant contributions have arisen through my advanced leadership roles as I am committed to enabling evidence-informed innovation and systems-level change. My CPA activities are concentrated in a) Professional Innovation and Creative Excellence, and b) Contributions to the Development of Professional Practices.

a) Professional Innovation and Creative Excellence
My original research focuses on three related areas: assessment, curriculum development and cognitive reasoning. I have lead multiple research studies looking at the psychometric properties of selection practices and in-training assessment of learners. This work has been disseminated at national symposia and via peer-reviewed manuscripts and has led to numerous invitations to consult and teach around evidence-based assessment. It has also been foundational for some of the policy and consensus work highlighted later under b). I have been a collaborator on several national initiatives to develop curriculum and new educational models. I assumed a leadership role in the National Future of Medical Education in Canada MD project analyzing and writing two synthesis papers on the role of basic sciences in undergraduate medical

curricula and ambient trends in selection processes for medical school. The former has recently been published in Medical Teacher and drew an invitation for a Best Evidence in Medical Education piece. I was thereafter approached to participate in a number of consensus initiatives to develop competency-based curricula in EM. I functioned as senior responsible author on an innovative Delphi-based consensus project on competency-based curriculum for undergraduate EM rotations in Canada, which resulted in one publication on methodology and one on results and have since been invited to participate in the development of two international EM Curriculum consensus documents (Undergraduate and Postgraduate). Finally, I have been involved as a collaborator and supervisor in a series of studies looking at the roles of stress, distraction and team-based functioning on individual performance. This work has generated significant interest in academic and lay audiences interested in how the medical education establishment is addressing impediments to physician performance. I have also been careful to reserve time to support other early investigators as a collaborator and supervisor (Drs. Riley, Penciner, Dev, Probyn, Chenkin, and Kester-Greene), and participated on two thesis committees (Drs. Esther Boonrath core committee and Timothy Dwyer PhD transfer external examiner).

b) Contributions to the Development of Professional Practices.
My work here is categorized as follows: 'Advancing Best Practices in Education Nationally and Internationally', 'Defining and Creating Capacity for Education Scholarship', 'Defining the Future of Medical Education', and 'International Standards for Residency Education'.

In my administrative roles I have raised the profile of education and embedded evidence in policy and process improvements. Through a sequence of advancing leadership positions (Residency Program Director, Departmental Education Director, Hospital Education Director, and currently Associate Dean, PGME), I have used my own research detailed above and systematic protocols to influence policy and practices at the organizational level, affecting all 79 residency programs at the University of Toronto. Much of this work has been presented as abstracts and workshops at prominent education meetings.

I have worked collaboratively on several initiatives seeking to define education scholarship and support the development of education scholars. My involvement has manifested in working groups, task forces, many faculty development workshops, and my Presidency of the Canadian Association for Medical Education. I was an inaugural member of the new Clinician-Educator Diploma Program Committee of the Royal College and a lead discussant at the first Canadian Association of Emergency Physicians Academic Section Consensus Conference. As department chief, my primary objective is to bolster our academic productivity, particularly in education scholarship and quality improvement. I was recently re-appointed for a second term with re-affirmed support from university and hospital leadership and the hospital board.

I have worked extensively on future models of education, particularly on the Royal College CanMEDS Competency Based framework that is used for all residency programs in Canada and has been adapted in multiple jurisdictions worldwide. I am currently on both the National Advisory Committee and consultant e-panel for the CanMEDS 2015 revision. I am also involved in the implementation phase of the Future of Medical Education initiative and several standing administrative committees as Associate Dean PGME. For the last four years I have been Vice-Chair of the Specialty Committee for Emergency Medicine in Canada. This committee sets the training requirements and supporting documentation for the national specialty and provides content expertise on decisions that affect specialty training in Canada such as scope of practice requirements and entry routes for specialties. In this role I have been instrumental in revising the training and pre-accreditation documents for Emergency Medicine. I have assumed the role of Chair for this committee as of July 2014.

Finally, I have been extensively involved in accreditation of residency programs locally and across Canada. Through a combination of leadership roles in the PGME program in Toronto and the Royal College and faculty development activities for those running residency programs, my efforts have been directed at stimulating change in residency accreditation systems, advancing the standards for residencies, and enabling program leads to take an evidence-based approach to their programs. Many of the initiatives I have lead have been translated into national policy and informed international dialog around accreditation.

In undertaking the above endeavours, I have attempted to add rigour and scholarship to medical education program design and evaluation and to encourage a culture of innovation in education. I am happy that I have had the chance to bring much of what we are doing in Toronto to the attention of other program directors and leading education organizations in North America.