

# Training for Impact: PhD Modernization as a Key Resource for Learning Health Systems

Pour une formation qui a de l'impact :  
modernisation des études doctorales pour  
mieux connaître les systèmes de santé



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## Introduction

The Institute of Medicine (IOM) has articulated a vision of a learning health system (LHS) as one that provides the best care at lower costs and that constantly, systematically and seamlessly improves based on data and evidence (IOM 2013). The IOM identifies the four foundational characteristics of an LHS as the real-time use of data and informatics to capture the care experience, patient-clinician partnerships, incentives aligned for value and a leadership-instilled culture of learning (IOM 2013). Although much policy research and commentary has focused on informatics and incentives, relatively less has focused on the critical question of creating a culture of learning in these systems. And although its source is debated, most management gurus agree with the adage that “culture eats strategy for breakfast” (Cave 2017), which is why a focus on the cultural dimension is critically important. Some scholars have recognized the important role of human capital – and of front-line clinicians in particular – in the LHS (Verma and Bhatia 2016). In addition to clinicians, doctorally prepared individuals, such as those with a PhD in health services and policy research (HSPR) and fields such as health economics, epidemiology and health informatics, have the potential to make significant contributions to LHSs and health system reform (Bornstein 2016; Brown and Nuti 2016; CIHR-IHSPR 2016). But having a PhD in these fields is not the same as being prepared to support progress toward an LHS. As argued in other papers, substantial change in doctoral training is needed so that graduates can contribute to their full potential and help drive real innovation within the health system (Bornstein 2016; CIHR-IHSPR 2016; Reid 2016).

The collection of papers in this special issue of *Healthcare Policy/Politiques de Santé* is based on work led by the Canadian Institutes of Health Research’s Institute of Health Services and Policy Research (CIHR-IHSPR) and the Canadian Health Services and Policy Research Alliance (CHSPRA) in collaboration with many partners across the country (please see the Acknowledgements section at the end of this introduction for the full list of our partners). It represents a response to a pan-Canadian consensus effort to modernize HSPR doctoral and post-doctoral training for greater health system impact. These modernization efforts have focused on preparing a cadre of Canada’s PhD graduates for success as leaders of evidence-informed health system innovation in settings that bridge the academy and the health system at the juncture of health policy, health service delivery and LHSs. The papers cover emerging lessons learned from a new embedded fellowship program in Canada, the Health System Impact (HSI) Fellowship, as well as the Delivery System Science Fellowship in the US that inspired key design elements of the HSI Fellowship, both of which recognize the importance of experiential learning inside the health system. In line with the push-pull model suggested by Lomas and Brown (2009), these opportunities allow PhD trainees and post-doctoral fellows to apply and adapt their academic skills to real-world challenges – to embed evidence – into complex and dynamic settings. They also create a pull for more evidence by helping organizations whose leaders are committed to instilling a learning culture to experience first-hand the benefits that PhD talent can bring to problem solving,

innovation and decision-making. These experiences also help build leadership capacity in the trainees, primarily through supervision and mentorship from health system leaders who have taken on this role for every embedded fellow.

The issue opens with the first-ever study of HSPR PhD graduate career outcomes, which helps establish a case for training modernization efforts and programs such as the HSI Fellowship. Using social media sources, McMahon and colleagues (2019c) track the employment trajectories of 20 years of graduates from many of Canada's HSPR doctoral training programs. They find that employment in academic positions has declined over time and that today's graduates are more likely than past graduates to work in a variety of sectors and roles that stretch well beyond academia to include government, healthcare delivery and the not-for-profit and private sectors. This finding is in line with early work from the CHSPRA Training Modernization Working Group (TMWG), which described different career trajectories and role archetypes (Bornstein et al. 2018; CHSPRA TMWG 2015).

Canada is not alone in its commitment to modernizing HSPR training to better support and enable health system improvement. The second paper (McMahon et al. 2019a) examines an innovative fellowship program in the US, AcademyHealth's Delivery System Science Fellowship, and compares its key elements to those of Canada's HSI Fellowship in order to identify lessons learned from different approaches to a common goal and to propose future directions for training modernization in both jurisdictions.

The authors of the third paper, Blanchette and colleagues (2019), are members of the inaugural cohort of HSI fellows who were curious about the contributions they and their colleagues had made to their health system partner organizations in their first year of the program. Reflecting the desired culture of an LHS, they designed a research project to satisfy their curiosity and inform improvements to the HSI Fellowship program. The resulting eDelphi study reveals a strong consensus among fellows, health system supervisors and academic supervisors that fellows had made significant contributions to their respective health system partner organization, primarily through their research and analytic skills.

An enriched core competency framework that emphasizes traditional research and analytic skills but also professional skills such as leadership, change management and project management is at the foundation of the HSI Fellowship program (see Bornstein et al. 2018 for details). In the fourth paper, McMahon and colleagues (2019b) analyze the extent to which fellows' competencies improved over the course of the first year. Whereas Blanchette and colleagues found that fellows' research and analytic skills made the biggest contribution to health system organizations, McMahon and colleagues suggest that the program provides fellows with an opportunity to develop the full suite of enriched core competencies, particularly the professional competencies that are not currently emphasized in most HSPR doctoral curricula.

Finally, Bornstein and colleagues (2019) examine the role and value of mentorship by health system leaders in the training and professional development of embedded fellows. They find that the fellows' health system supervisors developed a range of innovative,

individualized and effective approaches for guiding their fellows. They also identify opportunities for improvement, such as strengthening the relationship between fellows' health system and academic supervisors for team-based co-mentorship.

Although the first years of the HSI Fellowship program appear to be a success, that is not sufficient in itself to create and sustain a culture of learning across our health system, for several reasons. First, culture needs to be enabled and reinforced for it to be lasting. This is why there are four foundational characteristics to an LHS, as highlighted above. Just as a culture of learning helps organizations use data, forge partnerships and respond appropriately to incentives, these factors can stimulate the development of a learning culture and sustain it beyond any one individual's fellowship. Second, the HSI Fellowship is in its formative phase. Although it is a remarkably fast-growing program, the HSI Fellowship can cover only a small part of what is a very large sector of our economy with many universities, health system organizations and employees. Others have noted that for programs such as the HSI Fellowship to succeed, the academic context in which they are situated must also evolve to value and support a diversity of career trajectories, performance measures that extend beyond peer-reviewed publications and partnerships with the health system (Hunter 2019; McKee 2019). Finally, the new fellows are in the early stage of their careers. Although their mentors are invariably senior leaders in their field, they also represent a small component of the overall leadership cohort in our health system. To accelerate progress toward an LHS through a leadership-instilled culture of learning, we will need to pay attention to the full career trajectories of a wide range of leaders in our system.

Despite Canada's sizable annual investment in healthcare (in 2015, 10.9% of GDP), our health system continues to rank average or below compared to other countries, regardless of whether we use Organisation for Economic Co-operation and Development (OECD), Commonwealth Fund or other rankings (Najafizada et al. 2017; OECD 2017; Schneider et al. 2017). We have a tremendous opportunity for improvement in the way healthcare is financed, organized and delivered and for research and innovation to be key enablers of this improvement. PhD-trained individuals can be a critical element of this improvement while building impactful careers within and outside the academy.

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## References

- Blanchette, M.-A., M. Saari, K. Aubrecht, C. Bailey, I. Cheng, M. Embrett et al. 2019. "Making Contributions and Defining Success: An eDelphi Study of the Inaugural Cohort of CIHR Health System Impact Fellows, Host Supervisors and Academic Supervisors." *Healthcare Policy* 15(Special Issue): 49–60. doi:10.12927/hcpap.2019.25980.
- Bornstein, S. 2016. "Modernizing Our Doctoral and Post-Doctoral Training Programs: Bold New Initiatives." *HealthcarePapers* 16(Special Issue): 55–58. doi:10.12927/hcpap.2016.24727.
- Bornstein, S., M. Heritage, A. Chudak, R. Tamblyn, M. McMahon and A. Brown. 2018. "Development of Enriched Core Competencies for Health Services and Policy Research." *Health Services Research* 53(5 Suppl. 2): 4004–23. doi:10.1111/1475-6773.12847.
- Bornstein, S., M. McMahon, V. Yiu, V. Haroun, H. Manson, P. Holyoke et al. 2019. "Exploring Mentorship as a Strategy to Build Capacity and Optimize the Embedded Scientist Workforce." *Healthcare Policy* 15(Special Issue): 73–84. doi:10.12927/hcpap.2019.25978.
- Brown, A.D. and S. Nuti. 2016. "The Continuing Relevance of Academics to Health System Reform." *HealthcarePapers* 16(Special Issue): 4–6. doi:10.12927/hcpap.2016.24718.
- Canadian Health Services and Policy Research Alliance, Training Modernization Working Group (CHSPRA TMWG). 2015. *Modernizing Health Services and Policy Research Training: A Pan-Canadian Strategy*. Ottawa, ON: Canadian Institutes of Health Research. Retrieved December 4, 2018. <[https://docs.wixstatic.com/ugd/5adc92\\_4b4c942ad529449489953892703473cc.pdf](https://docs.wixstatic.com/ugd/5adc92_4b4c942ad529449489953892703473cc.pdf)>.
- Cave, A. 2017, November 9. "Culture Eats Strategy for Breakfast. So What's For Lunch?" Retrieved February 13, 2019. <<https://www.forbes.com/sites/andrewcave/2017/11/09/culture-eats-strategy-for-breakfast-so-whats-for-lunch/#46e2b6a47e0f>>.
- CIHR Institute of Health Services and Policy Research (CIHR-IHSPR). 2016. *Strategic Plan 2015–19: Health System Transformation through Research Innovation*. Ottawa, ON: Author. Retrieved February 13, 2019. <[http://www.cihr-irsc.gc.ca/e/documents/ihspr\\_strat\\_plan\\_2015-19-en.pdf](http://www.cihr-irsc.gc.ca/e/documents/ihspr_strat_plan_2015-19-en.pdf)>.
- Hunter, D.J. 2019. "Meeting the Challenge of the 'Know-Do' Gap; Comment on 'CIHR Health System Impact Fellows: Reflections on 'Driving Change' Within the Health System.'" *International Journal of Health Policy and Management* 8(8): 498–500. doi:10.15171/ijhpm.2019.37.
- Institute of Medicine (IOM). 2013. *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America*. Washington, DC: The National Academies Press.
- Lomas, J. and A.D. Brown. 2009. "Research and Advice Giving: A Functional View of Evidence-Informed Policy Advice in a Canadian Ministry of Health." *The Milbank Quarterly* 87(4):903–26. doi:10.1111/j.1468-0009.2009.00583.x.
- McKee, M. 2019. "Bridging the Gap Between Research and Policy and Practice; Comment on 'CIHR Health System Impact Fellows: Reflections on "Driving Change" Within the Health System.'" *International Journal of Health Policy and Management* 8(9): 557–59. doi:10.15171/ijhpm.2019.46.

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- McMahon, M., S. Bornstein, A. Brown, L.A. Simpson, L. Savitz and R. Tamblyn. 2019a. "Training for Health System Improvement: Emerging Lessons from Canadian and US Approaches to Embedded Fellowships." *Healthcare Policy* 15(Special Issue): 32–45. doi:10.12927/hcpap.2019.25981.
- McMahon, M., A. Brown, S. Bornstein and R. Tamblyn. 2019b. "Developing Competencies for Health System Impact: Early Lessons Learned from the Health System Impact Fellows." *Healthcare Policy* 15(Special Issue): 61–72. doi:10.12927/hcpap.2019.25979.
- McMahon, M., B. Habib and R. Tamblyn. 2019c. "The Career Outcomes of Health Services and Policy Research Doctoral Graduates." *Healthcare Policy* 15(Special Issue): 16–33. doi:10.12927/hcpap.2019.25982.
- Najafizada, S.A.M., T. Sivanandan, K. Hogan, D. Cohen and J. Harvey. 2017. "Ranked Performance of Canada's Health System on the International Stage: A Scoping Review." *Healthcare Policy* 13(1): 59–73. doi:10.12927/hcpol.2017.25191.
- Organisation for Economic Co-operation and Development (OECD). 2017. *Health at a Glance 2017: OECD Indicators*. Paris, France: OECD Publishing. <[http://dx.doi.org/10.1787/health\\_glance-2017-en](http://dx.doi.org/10.1787/health_glance-2017-en)>.
- Reid, R.J. 2016. "Embedding Research in the Learning Health System." *Healthcare Papers* 16(Special Issue): 30–35. doi:10.12927/hcpap.2016.24724.
- Schneider, E.C., D.O. Sarnak, D. Squires, A. Shan and M.M. Doty. 2017, July 14. "Mirror, Mirror 2017: International Comparison Reflects Flaws and Opportunities for Better U.S. Health Care." Retrieved February 14, 2019. <<https://interactives.commonwealthfund.org/2017/july/mirror-mirror/>>.
- Verma, A. and S. Bhatia. 2016. "A Policy Framework for Health Systems to Promote Triple Aim Innovation." *Healthcare Papers* 15(3): 9–23. doi:10.12927/hcpap.2016.24469.