

# Creating a Chiropractic Practice-Based Research Network (PBRN): Enhancing the management of musculoskeletal care

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## Introduction

Chiropractic is a regulated health profession currently serving approximately 10% of the Canadian population annually<sup>1</sup> with the aim to improve the health and well-being of Canadians, primarily with musculoskeletal disorders. Despite available evidence for optimal management of these disorders,<sup>2,4</sup> poor adherence to guidelines and wide variations in service delivery by clinicians have been noted across health care disciplines,<sup>3,5</sup> including chiropractic.<sup>6,7</sup>

Efforts to embrace and enhance evidence-based practice among chiropractors and develop opportunities for multi-disciplinary research collaboration have been hampered by a number of issues. Issues include: 1) limited research capacity in chiropractic with less than 1% of the chiropractic profession conducting research;<sup>8</sup> 2) fragmented integration of chiropractic into the health care system that has been hampered by discrepancies among practising chiropractors, chiropractic researchers, and regulatory bodies over scope and paradigm of practice (alternative or empiricist/experiential-based vs. evidence-based practice);<sup>9,10</sup> 3) over half of chiropractors are in solo practice<sup>11</sup> with solo providers having greater variation in accepted clinical practices;<sup>12</sup> and 4) perceived suboptimal coordination of efforts from professional associations, regulatory boards and chiropractic teaching institutions to successfully implement evidence into practice.

One strategy to address these issues is the creation of practice-based research networks (PBRNs). Primary care PBRNs bring together researchers and groups of clinicians and practices with the goal of improving health services delivery and closing the gap between research and practice.<sup>13-16</sup> The general aim is to stimulate the development of appropriate research that reflects the context of healthcare practice in a primary care setting.<sup>17</sup>

### *Do PBRNs provide an effective approach to develop and support research?*

While a number of approaches to assess the development and impact of primary care networks have been proposed,<sup>18,19</sup> there is currently no generic and validated tool that enables meaningful comparison between different network models.<sup>20</sup> Nonetheless, a growing body of research supports the role of PBRNs in promoting health care quality.<sup>15,21,22</sup> Still, a formal evaluation of the effectiveness of PBRNs in the area of musculoskeletal disorders is needed.

### *Perceived strengths and weaknesses of practice-based research networks*

A PBRN founded upon an integrated knowledge translation framework and a participatory approach can: 1) promote culturally and logistically appropriate and useful research; 2) enhance recruitment capacity in research; 3) generate professional capacity and competence in stakeholder groups; 4) result in productive conflicts followed by useful negotiation; 5) increase the quality and generalizability of research output, and offer numerous advantages to clinicians over time (e.g., growth of skills and expertise, sense of empowerment, increase satisfaction, career development); 6) increase the sustainability of project goals beyond funded time frames and during gaps in external funding; and 7) create system changes and new unanticipated projects and activities.<sup>23,24</sup> Primary care PBRNs provide a unique opportunity to engage clinicians in quality improvement activities, create an evidenced based practice culture, and improve patient care.<sup>14</sup>

PBRNs are well established in other primary health-care professions in Canada. Despite their acceptance, there are barriers that influence their sustainability. In family practice, perceived barriers that hamper participation in PBRN include lack of time, inadequate training in research methods, lack of collaborators and support staff, institutional review board hurdles, and community distrust of research.<sup>13,23</sup> Additional barriers that particularly face complementary and alternative health care providers include the lack of resources (e.g., funding, compensation, infrastructure and partnerships/linkages), environmental (e.g., the nature of a clinic's patient population) and logistical issues (e.g., the actual implementation of a research program and the applicability of research data).<sup>25</sup>

### *Creating a chiropractic practice-based research network in Canada*

There is a growing need to establish a formal **network of Canadian chiropractors** to facilitate the translation of research into practice to improve the quality and safety of patient care, primarily in the management of musculoskeletal conditions. In 2014, we plan to assemble key stakeholders, including academics, elected professional provincial and national leaders, clinicians, government policy advisors, insurers, and patients, to explore the factors critical to establishing and implementing a Canadian chiropractic PBRN. The mission of this PBRN is to im-

prove chiropractic health care delivery and patient health in Canada through research and quality-improvement initiatives. A PBRN that includes a formal collaboration between patients, health professionals, elected professional provincial and national leaders and health researchers from across Canada can help bridge the gap between research evidence and health care practice.<sup>26,27</sup>

### Targeted health conditions and strategy to improve care within the proposed PBRN

#### *Burden of musculoskeletal disorders*

Musculoskeletal conditions are one important reason patients consult primary care professionals including general practitioners and chiropractors.<sup>28</sup> Musculoskeletal conditions (spinal pain, consequences of injuries, osteoporosis, and arthritis) result in enormous social, psychological, and economic burden to society.<sup>28-37</sup> They are a leading cause of pain and disability, resulting in extensive utilization of Canadian health care resources.<sup>38-40</sup> In Canada, the total economic burden of musculoskeletal conditions ranks second only to cardiovascular disease and are the most costly disease for women and third most costly for men.<sup>41</sup> The total economic burden has been estimated to be about \$16.4 billion when considering both indirect costs (\$13.7 billion) and direct costs (\$2.6 billion)<sup>41</sup> per year. The largest component of expenditures is related to morbidity and long-term disability. The substantial burden associated with musculoskeletal disorders is compounded by suboptimal clinical management and the risk of clinical iatrogenesis.<sup>42-44</sup> This highlights the need for rigorous knowledge translation science in the primary care setting to improve chiropractic patient outcomes. PBRNs provide an infrastructure for the dissemination and implementation of research evidence. PBRNs are particularly useful considering the highly heterogeneous therapeutic approaches offered by chiropractors and other primary care professionals when dealing with musculoskeletal conditions.<sup>3,5-7</sup>

#### *How can we improve process of care and patient outcomes?*

Clinical Practice Guidelines (CPGs) are an important way to improve the quality and safety of healthcare through the implementation of research findings.<sup>45</sup> The Canadian chiropractic profession has been proactive in developing

CPGs over the past two decades.<sup>46-48</sup> However, simple dissemination of CPGs cannot overcome the various barriers to clinician adherence.<sup>49</sup> Instead, their successful implementation is more likely when evidence is scientifically robust; clinically relevant; the context is receptive to change within sympathetic cultures; and appropriate monitoring, feedback systems and strong leadership are in place.<sup>50</sup> Recent advances in methods to conduct knowledge synthesis, derive evidence-based recommendations, adapt high quality guidelines, and increase the uptake of CPGs have prompted an update of the structure, methods and procedures for the development, dissemination and implementation of CPGs in chiropractic in Canada.<sup>51</sup>

One approach to improve the uptake of CPGs is accessing PBRNs. PBRNs have the potential to increase the uptake of best practice because they “aim to share information and create new knowledge, strengthen research and communication capacity among members, and identify and implement strategies to engage decision makers more directly.”<sup>52</sup> Currently, routinely collecting administrative and clinical outcomes in Canadian chiropractic practices is not feasible. In part this is due to limited coverage from provincial health plans and the rare use of electronic medical records (EMR). Establishing a PBRN can provide the structure to recruit clinicians, profile chiropractic practice, identify knowledge-practice gaps, monitor practice change, and evaluate the impact of knowledge translation (KT) strategies to increase uptake of evidence-based practice. Collectively, CPGs and PBRNs can provide the structure and processes to improve care delivery and patient outcomes.

#### Relevance to national health research priorities

The national chiropractic research agenda is harmonious with the Canadian Institutes of Health Research’s (CIHR) mandate (CIHR is the major health research funding agency in Canada). Its mandate is to “excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health care system.”<sup>53</sup> This mandate is congruent with the need to develop a well-articulated national chiropractic research agenda. The agenda should include the facilitation of collaborative, multi-disciplinary health research designed to improve the way chiropractic services are or-

ganized, managed and delivered to improve the quality and effectiveness of care provided to Canadians.<sup>54,55</sup> The development of this research agenda is supported by the Consortium of Canadian Chiropractic Research Centres whose main purpose is to coordinate chiropractic research capacity in Canada and facilitate the development of new chiropractic knowledge through multi-disciplinary and multi-institutional collaboration, and its dissemination to health providers and health policy makers with eventual integration into the health care system.<sup>54</sup> A Canadian PBRN can provide a strategic framework from which to operationalize the above agendas.

A PBRN also promotes the exchange of knowledge between partners of the Network. Establishing a Canadian chiropractic PBRN aligns well with CIHR's Strategy for Patient-Oriented Research (SPOR) vision to improve health outcomes and enhance the health care experience for patients through the integration of evidence at all levels of the health care system, focus on patient-oriented research networks, and improve guideline development, dissemination and uptake.<sup>27</sup> This SPOR Network will support evidence-informed transformation and delivery of more cost-effective and integrated health care to improve clinical, population health, health equity, and health system outcomes.

The Patient-Oriented Community-Based Primary Healthcare (CBPHC) is one of eight Roadmap Signature Initiatives recently announced by CIHR.<sup>56</sup> CBPHC Network is one of several networks that will be funded as part of Canada's Strategy for SPOR. CBPHC covers a range of services across the continuum of care – primary prevention (including public health) and primary care services from health promotion and disease prevention, chronic disease diagnosis, treatment and management to rehabilitation support, home care and end-of-life care. Networks under this initiative will be expected to obtain funding from multiple sources and to engage national associations, health charities, clinicians, industry, patients and the public.

### Proposed approach

PBRN's have been successfully created in the US<sup>57-59</sup>, in Denmark<sup>60</sup>, and in Canada<sup>61</sup> for more than 15 years. Researchers have identified the necessary components for a PBRN as infrastructure (including training in data collection by a full-time coordinator), practitioner-researcher

partnership, centralized data management by the research centre, and standardized quality assurance measures.<sup>60,62,63</sup> Other desirable elements of a PBRN infrastructure include support staff, electronic medical records, multiuser databases, mentoring and development programs, mock study sections, and research training.<sup>64</sup> The infrastructure of the proposed chiropractic PBRN will be elaborated based upon these recommendations.

Furthermore, a number of procedures used for planning and implementing PBRN research studies will be adapted from previous work<sup>60,65</sup>, including how to select fundable, feasible studies; compose the study team; recruit and select sites; and train practice staff and clinicians. Clinicians will be involved throughout the process from identifying research questions whose answers may lead to improvements in clinical practice, recruitment of patients, and data collection.<sup>66,67</sup> Various existing primary care PBRN-relevant toolkits proposed by the Agency for Healthcare Research Quality may also be used.<sup>68</sup> These include: implementing the chronic care model; health literacy and research toolkits, informed consent and authorization for minimal risk research, patient safety, practice facilitation handbook and manual, state-specific health care quality information, office survey on patient safety culture, workflow assessment for health IT, and a written materials toolkit.

Peterson et al. recently described a model for the development of an electronic infrastructure to support clinical research activities in primary care PBRNs.<sup>69</sup> The authors suggest that the potential for introducing a fast and efficient infrastructure to facilitate PBRN research offers the possibility of rapid advances in a wide variety of areas including comparative effectiveness research, patient safety, event monitoring for drugs and devices, and clinical trials. The Canadian Memorial Chiropractic College has successfully pilot-tested an EMR system within its six outpatient clinics. In the future, a similar EMR may be implemented across participating PBRN practices to ease data collection.

Types of outcome indicators used to assess the success of PBRNs include structural (organizational), process and clinical indicators.<sup>20,24</sup> PBRN members will identify a core set of indicators felt to be most relevant to the objectives of the chiropractic PBRN. Structural indicators may include the number of active clinicians/practices, a multidisciplinary membership, creating research lead-

ers, embedding a research culture in the organization, and providing career development opportunities. Process indicators could include the degree of research awareness, numbers of trained members in research method, success rate in grant applications, number of collaborative projects and completed research projects, numbers of peer-reviewed publications and conference presentations. Clinical or quality of care outcome indicators (e.g., appropriate x-ray utilization rate for back and neck pain) and important patient reported health outcomes (e.g., levels of pain and disability, return to work and satisfaction with care) will also be identified.

### **Members of the Network**

A PBRN should engage four groups including patients (citizen engagement), clinicians (knowledge-users), leaders and decision-makers (provincial and national leaders in the profession and decision-makers from insurance and government), and researchers including CPG developers and KT experts.

**i) Patients:** Meaningful patient involvement can be ensured by recruiting individuals who are familiar with the diversity of the chiropractic profession and have been involved in previous chiropractic forums. Patient (public) members at 'Level Three' should be included, as described in the Health Council of Canada's "Primer on Public Involvement" (2006).<sup>70</sup> The intent of citizen engagement is to: *'encourage end users participation throughout the research process so that they can inform the study question and research plan, and be involved in interpreting the findings, in crafting the dissemination messages, and in applying the results'*.<sup>71</sup>

**ii) Clinicians:** Canadian chiropractors interested and involved in clinical research will be actively engaged in various activities and projects of the PBRN. Participating clinicians will be involved throughout the process from identifying research questions whose answers lead to improvements in clinical practice and patient health outcomes, recruitment of patients, and data collection.<sup>66,67</sup> Participating in a PBRN can be rewarding in many ways. These include an opportunity to connect with likeminded and unlike minded colleagues, help the profession build the evidence base for its patients and colleagues, and allow for an increased likelihood of successful uptake of new knowledge into practice for the benefit of patients.

**iii) Professional provincial and national leaders and**

**Government and insurance policy advisors:** Leaders/decision makers from the thirty-six chiropractic organizations in Canada should also be included to improve coordination of efforts toward implementing evidence into practice and to provide congruent messages to clinicians. These individuals include elected leaders and representatives from: national and provincial chiropractic associations and regulatory boards; the professional liability insurance group; and Canadian chiropractic academic institutions. Policy advisors from insurance and government agencies could identify and provide input to challenges and knowledge-practice gaps in current policy impacting the creation or sustainability of PBRN; identify possible funding opportunities; and be informed about role of evidence in chiropractic practice.

**iv) Researchers:** Researchers with expertise in quantitative, qualitative, mixed, and advocacy/participatory approaches to research should be involved to support a range of projects. Projects can range from observational studies, through intervention studies, clinical trials, and quality of care research, to large-scale practice change interventions. Members of the Guideline Initiative (responsible to develop, disseminate and implement CPGs for patients with musculoskeletal disorders among chiropractors and supported by national and provincial professional associations and regulatory boards), and scientists with academic affiliations should also be included.<sup>60</sup>

### **In summary**

The main goal of the proposed PBRN is to optimize process of care delivery and patient outcomes by ensuring clinical decisions are informed by evidence, patients' values and preferences, and engaged clinicians. A PBRN can create a vital link between researchers, clinicians, patients, and professional leaders. It can serve as a research and KT network. Specifically, the PBRN could become a mechanism to link the chiropractic community around research and best practices and identify practice-based problems requiring research (from the patient and provider perspective). The PBRN could also mobilize researchers and facilitate conducting clinical research on these issues. When evidence exists, the PBRN could focus on developing and promoting uptake of best practices/guidelines. Such strategies could address issues relevant to chiropractors and their patients, link chiropractors via databases to facilitate research and outcome measurement, and build capacity of

the chiropractic profession to participate in, conduct and use research.

Interested in becoming a member of the first Canadian Chiropractic Practice-Based Research Network? For more information, please contact Dr. Andr e Bussi eres DC, PhD at: [andre.bussieres@mcgill.ca](mailto:andre.bussieres@mcgill.ca) or Ms Sareekha Singh, CCA Research Manager at: [SSingh@chiropractic-canada.ca](mailto:SSingh@chiropractic-canada.ca).

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