DEVELOPMENT OF A PRIMARY CARE LOW BACK PAIN PATHWAY

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Abstract

Background: Due to the sexual misconduct crisis and the COVID-19 pandemic, the Canadian Armed Forces (CAF) faces a historic shortage of personnel, including healthcare professionals. A key focus during reconstitution is the retention of experienced personnel. Medical attrition accounts for a third of workforce departures within the organization; therefore, improving the medical management of personnel would contribute to improved retention. Low back pain (LBP) is CAF members' third leading cause of medical attrition. The leadership of a primary care clinic in southwestern Ontario identified the development of a care pathway as a potential opportunity to improve the local management of LBP patients in a resource-conservative manner. **Purpose**: To develop an evidence-based care pathway and improve LBP management of local CAF personnel, ultimately decreasing patient disability and increasing the number of personnel who can maintain operational fitness and meet medical employment standards. **Methods:** After conducting a literature review to determine the quality of evidence for LBP care plans, I consulted with representatives from each healthcare profession within the clinic and completed an environmental scan of grey literature. In addition, I engaged in ongoing discussions with the local medical director, enabling resource customization and refinement. **Results:** Findings from the literature review indicated that LBP care pathways positively impact indicators such as patient disability, pain, and health-related quality of life. This information supported the selection of the STarT Back stratified care screening tool as the appropriate foundation for the LBP care pathway to be used in the clinic. Prominent themes from the consultations and environmental scan included therapist dependence, resource abundance, the potential for safety net abuse, and realistic opportunities for practice improvement. Consultations also indicated that earlier versions of the original proposed care pathway were overly complex. These processes

cumulated into developing the Primary Care Low Back Pain Pathway. **Conclusion:** The Primary Care Low Back Pain Pathway is a resource that guides stratified care through categorizing risk for developing chronic back pain using the STarT Back screening tool. Based on the risk categorization, locally available resources are recommended.

Keywords*: Care Pathway, Low Back Pain, Armed Services Personnel, Stratified Care, Primary Care*

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Contents

As a result of the operational demands of the COVID-19 pandemic and the negative impact of the sexual misconduct scandal, the Canadian Armed Forces (CAF) is facing historic personnel shortages of over 10,000 Regular Force members (Canadian Broadcasting Corporation [CBC], 2022; Toronto Star, 2022). This shortage of personnel is acute within the branch responsible for providing health care, the Canadian Forces Health Services (CF H Svcs). The organization has reported that only 75% of Registered Nurse and 50% of physician positions are filled (CTV News, 2022). In response to these growing concerns, the Chief of Defense Staff released the *Directive for CAF Reconstitution* (Department of National Defense [DND], 2022a) with a renewed focus on recruitment, culture change, and retention of experienced personnel. As medical attrition accounts for almost a third of pre-mature workforce departures within the CAF (DND, 2022b), improving the management of common medical concerns can contribute to improved retention of personnel.

Low back pain (LBP) is the third leading cause of medical attrition for CAF members (DND, 2017) and one of the top three health complaints reported by CAF personnel (Statistics Canada, 2019). Additionally, LBP contributes to decreased organizational performance and is a leading cause of workplace absences and failure to deploy (DND, 2017; Herbert, 2016). Compared to the Canadian civilian population, personnel with a history of service in the CAF have a higher prevalence of self-reported back pain (Hall et al., 2022). The leadership of the local clinic stated there was a desire to optimize LBP patient management and reduce the decreased workplace performance caused by this issue.

The clinic leadership also suggested that developing a care pathway (CP) may be a practical approach to improve the management of LBP patients, given the success of the

COVID-19 CP utilized during the pandemic. Organizations such as the European Observatory on Health Systems and Policies (Busse, 2019) have recognized CPs as an effective tool for quality improvement. In a meta-analysis of 27 studies on CP performance, CPs were associated with improved quality of documentation and reduced complications such as infections, bleeding, and pneumonia (Rotter et al., 2012). Given the evidence from this meta-analysis and the previous success of the local COVID-19 CP, I decided to develop a CP to improve the clinic's management of LBP as my practicum project. This initiative aims to assist the local clinic in optimizing the management of patients with LBP. The initiative is intended to reduce patient suffering, increase organizational performance, and decrease medical attrition while preventing undue strain on limited health human resources. After completing a literature review, consultations with clinic stakeholders, and an environmental scan, the Primary Care Low Back Pain Pathway and accompanying instruction manual were developed.

Objectives

The overall goal of the practicum project was to improve the management of patients experiencing LBP at a CAF primary-care clinic in southwestern Ontario. I achieved this objective by developing an evidence-informed CP designed to support standardized stratified care and recommend locally available resources.

The key practicum objectives were:

1. Establish background knowledge on the prevalence and impact of LBP within the CAF by reviewing relevant literature.
2. Develop a locally relevant LBP CP informed by evidence from a literature review.
3. Customize the LBP CP by incorporating information from an environmental scan, stakeholder consultations, and feedback from the medical director.

4. Develop a multi-media resource manual to support the education of staff and future implementation of the LBP CP.
5. Demonstrate Advanced Nursing Practice (ANP) competencies such as the optimization of health systems, research utilization, leadership, as well as consultation and collaboration.

In the following section, I describe my methods to achieve these objectives.

Overview of Methods

Three data collection methods were employed to achieve the practicum objectives: an integrative literature review, consultations with key local stakeholders, and an environmental scan of grey literature on LBP management.

Canadian experts in organizational change within the healthcare context, Harrison and Graham (2021), recommend establishing an evidence base as the foundation for any quality improvement project. Thus, for the first step in my practicum project, I began the process with a literature review. With the assistance of a librarian, I searched the CINAHL, ProQuest, and PubMed databases, as well as Memorial University electronic holdings. My goal was to retrieve studies featuring an evaluation of a LBP CP within the primary care setting. Sixteen appropriate studies were retrieved for inclusion in the literature review. The quantitative studies were evaluated using the Public Health Agency of Canada (PHAC) Critical Appraisal Toolkit ([CAT], 2016), while the qualitative works were evaluated using criteria from the Joanna Briggs Institute (JBI) checklist (2020), as well as criteria from by Lincoln and Guba (1985; as cited in Polit & Beck, 2021). The literature evaluation enabled me to ascertain if the evidence supported the implementation of a LBP CP within the local context.

Following the literature review, I conducted in-person consultations with key stakeholders from the clinic. The consultations aimed to increase my knowledge regarding how

patients are currently managed, how to establish change drivers, potential barriers to change, and the appropriate direction for improvements. I also maintained an open dialogue with the clinic's medical director regarding the project's status.

The third method was an environmental scan, influenced by the work of Wilburn et al. (2016). Based on this approach, my goal was to review information sources, both internal and external to the organization, to understand current practices, service requirements, and potential barriers, as well as contributors to success. I aimed to analyze information regarding LBP management produced internally by CF H Svcs. I also attempted to solicit information from other Canadian Forces Health clinics but did not receive a response.

Taken together, the literature review, consultations, and environmental scan informed the development of the CP to ensure it was evidence-based and customized to fit the local setting. In the next section, I will describe the influence of *The Implementation Road Map* (Harrison & Graham, 2021).

Conceptual Framework

At the onset of the practicum, I did not formally select a conceptual framework, despite the recommendation from Polit and Beck (2021) to use a theory-based approach in nursing projects to ensure a rationale for how things are anticipated to unfold. However, as the practicum progressed, I observed my frequent reference to Harrison and Graham's (2021) conceptual framework, *The Implementation Road Map*, to explain my approach to CP development. Before initiating the practicum, I had completed a course that focused entirely on using this model to support the implementation of clinical practice guidelines, and this process influenced my approach to the practicum. Although the scope of the practicum project was limited to the

development of the resource rather than full-scale implementation, utilizing the first three steps of *The Implementation Road Map* (Harrison & Graham, 2021) enabled conceptual integration.

The Implementation Road Map (Harrison & Graham, 2021) is a conceptual framework designed to support the implementation of evidence-based guidelines into nursing practice. The fundamental phases involve identifying and clarifying issues, building solutions, testing and implementing, evaluating, and sustaining changes to clinical practice. Harrison and Graham (2021) describe their approach as a journey rather than concrete steps. While the authors encourage a dynamic process, the framework provided conceptual congruence throughout the practicum. For example, I focused on developing an evidence base for the intervention during the literature review. Throughout the consultations, I focused on creating buy-in and stakeholder engagement. When completing the environmental scan, I focused on ensuring the resource was customized to the local setting. This process supported the overall goal of developing an evidenced-based resource congruent with the clinical setting and deemed appropriate by the stakeholders. While resource implementation was not required for this practicum, utilization of *The Implementation Road Map* (Harrison & Graham, 2021) increased the potential for future successful implementation.

Summary of the Literature Review

The objective of the literature review was to examine research on primary care LBP CP and determine if adequate evidence existed to support a change in clinical practice. The literature review involved a search of databases, critical appraisal of the studies, and a final integrative analysis.

Both qualitative and quantitative articles were included in the search, while articles were excluded if they were not available in English, in full text, or published before 2000. The search

protocol and inclusion and exclusion criteria are delineated within the literature review, which can be found in Appendix A, along with the supporting literature tables. During the search, I retrieved a total of 59 articles. Based on the information in the abstracts, I excluded 43 articles that did not meet the inclusion criteria and included the remaining 16 articles in the analysis.

Of the included literature, 12 were quantitative, while four were qualitative. The research retrieved varied in terms of the CP evaluated, study design, outcomes, and quality of the evidence generated. Two main approaches were utilized in the quantitative research studies reviewed. The first approach involved exploring the impact on the patient or healthcare system after implementing a LBP CP. Concerning the patient, the primary outcomes assessed were patient-reported measures of disability, pain, health-related quality of life and healthcare-related costs. For the healthcare systems approach, the focus was whether implementing a CP decreased inappropriate referrals to spinal surgeons and the over-ordering of magnetic resonance imaging (MRI). In contrast, the qualitative research focused on the experiences of patients and healthcare providers during LBP CP implementation. The findings from these works provided insight into the difficulties and barriers faced during the implementation process of CPs.

The quantitative studies were critically appraised using the PHAC CAT (2016), while the qualitative works were evaluated for credibility using the JBI checklist (2020), as well as criteria from by Lincoln and Guba (1985; as cited in Polit & Beck, 2021) to assess trustworthiness. Most quantitative studies in the literature review utilized study designs rated as moderate, and most of the evidence was of moderate quality. The quality of the studies was impacted by misclassification bias, a failure to control confounding variables, the potential influence of attrition bias, and inadequacies related to the analysis.

The qualitative studies were rated as having medium credibility and moderately trustworthy. The credibility of the studies was impacted by the failure to report a cultural orientation and aspects of the study methodology being incongruent with the selected research tradition. Similarly, trustworthiness was impacted by shortcomings related to confirmability.

Summary of Key Findings

Based on an analysis of the studies retrieved utilizing the PHAC (2016) criteria, there is moderate evidence that implementing LBC CPs within primary care improves patient disability, pain management, and health-related quality of life in a manner that is superior to or equal to usual care. There is also moderate evidence that LBP CP facilitates the provision of cost-effective care and reduces healthcare wastage, such as inappropriate surgical consults and the overuse of MRIs.

The qualitative literature reported many pragmatic difficulties transitioning LBP CP from research into practice. The research indicated that patients experience dissatisfaction regarding the decreased focus on diagnostic imaging, and health professionals can find the navigation of LBP CP to be onerous.

Cumulatively, the literature review supported the selection of the STarT Back stratified care screening tool (University of Keele, 2021) as the appropriate foundation for the CP. This selection was made based on the support within the literature (Foster et al., 2014; Hill et al., 2011; Morsø et al., 2021; Murphy et al., 2016), as well as its simplicity, and endorsement from Public Health England (2017). The consultations and environmental scan supported the customization of the resource to ensure it was congruent with the needs of the stakeholders and appropriate for the local setting.

Summary of Consultations and Environmental Scan

Consultations with stakeholders and conducting an environmental scan are critical components of *The Implementation Roadmap* (Harrison & Graham, 2021). Engaging in these processes supported stakeholder engagement and buy-in by enhancing the clinic staff's collective understanding of LBP and enabling participation in the development of the CP. Similarly, environmental scans support the customization of the CP by ensuring the newly developed CP fits with the existing programs and organizational culture.

The consultations were conducted in a hybrid model, with participants physically present and participating via internet-based video conferencing. A representative of each profession within the clinic was present. I also met individually with key informants, such as the Medical Director and Athletic Rehabilitation specialist, for follow-up questions. As described previously, the goal of the consultations was to increase my knowledge regarding how LBP patients are currently managed, establish change drivers, barriers to change, and the appropriate direction for improvements. For the environmental scan, I reviewed policies from the organization's intranet repository to analyze information regarding LBP management produced internally by CF H Svcs. The search yielded nine documents that were then included in the environmental scan.

The information from the consultations and environmental scan was combined and catalogued based on the categorizations delineated in Praxie (2022) before being analyzed utilizing Bengtson's (2016) content analysis method. The six themes that emerged from synthesizing the combined findings were: *over-reliance on physiotherapy services*, *resource abundance, negative perception of the safety net, barriers to optimal practice, and realistic opportunities for improvement*. Appendix B contains a copy of the Environmental Scan and Consultation Report for additional elaboration. The themes from the consultations and

environmental scan informed the development of the Primary Care Low Back Pain Management Pathway and supporting instruction manual. Additionally, my ongoing dialogue with the Medical Director contributed to a reduction in CP complexity, thus making it more appropriate to the clinical setting. In the following section, I will summarize the Primary Care Low Back Pain Management Pathway and the supporting instruction manual.

Summary of the Primary Care Low Back Pain Management Pathway

The Primary Care Low Back Pain Management pathway is a clinical care algorithm designed to support a reduction in the number of clinic patients unfit for full duties. An instruction manual was also developed to accompany the pathway. The instruction manual was developed to address concerns identified during the consultations. Stakeholders stated that given the high staff turnover, there was a fear that institutional knowledge regarding the management of LBP would be lost. The CP and accompanying instruction manual can be viewed in Appendix C.

Primary Care Low Back Pain Management Pathway

The Primary Care Low Back Pain Management pathway allows healthcare team members (HCTMs) to offer stratified resources to patients with non-traumatic musculoskeletal LBP based on their score on the STarT Back Screening Tool (University of Keele, 2021). Additionally, there is an opportunity for patients with a concerning underlying cause of their LBP pain to be screened out and appropriately re-directed.

The intent is for the pathway to be initiated during the morning walk-in care hours. An HCTM, such as a Registered Nurse or Medical Technician, can screen patients and determine if they would be appropriate for inclusion. Patients who should not be included in this pathway include those with pain lasting longer than six weeks, patients who are less than 18 years of age,

those pregnant or breastfeeding, and patients who have completed spinal imaging or bloodwork. Many studies excluded the previously described patient populations within the literature review. It is unclear if the findings from the literature review could apply to these groups, and therefore, excluding these populations from the CP was warranted.

If the formerly defined requirements are satisfied, HCTMs should obtain a patient history, conduct a focused physical assessment, and screen for red flags. Red flags are potential causes of back pain that are not musculoskeletal and will require consultation with the duty physician or nurse practitioner. The literature review also informed the need to screen for red flags. Although 85% of patients presenting to primary care settings are experiencing idiopathic musculoskeletal LBP, HCTMs must remain vigilant for those who may have a concerning underlying etiology (Wheeler et al., 2021).

The next phase of the CP involves screening patients using the STart Back Screening tool (University of Keele, 2021) and assigning patients to a risk category based on their scores. There is a potential for patients to be classified as being at low, medium, or high risk for developing chronic back pain. These risks for developing chronic pain are based on a series of psychosocial risk factors described as yellow flags.

Resources are suggested in a stratified manner based on the patient's score from the STarT Back screening tool (University of Keele, 2021) and subsequent risk categorization. HCTMs can consider enrollment in a reconditioning program, an ergonomic assessment, medical employment limitations, or medication for low-risk patients. However, if patients are assessed as medium risk, HCTMs can consider physiotherapy services in addition to those suggested for low-risk patients. When patients are assessed as high risk, HCTMs are encouraged to consider recommending a session with mental health services to address the psychosocial aspect of LBP

or yellow flags. While consideration of psychosocial factors for an issue that is commonly perceived as a physical health issue may seem unusual, researchers who evaluated the STarT back program (Foster et al., 2014; Hill et al., 2011; Morsø et al., 2021; Murphy et al., 2016) found that patients benefited from care that addressed the psychosocial aspect of their LBP. Similarly, other researchers who have studied the CAF patient population found that psychosocial factors are also prognostic for continued service utilization (Glover, 2014).

After developing an appropriate care plan, HCTMs are encouraged to review the plan with the duty clinician, complete documentation in the electronic medical record, and engage in patient education. The CP is designed to be printed and displayed on the wall within the clinical setting. The accompanying instruction manual elaborates on critical concepts and reference information.

Primary Care Low Back Pain Pathway Instruction Manual

In response to the knowledge deficits about the resources locally available, an instruction manual was designed to accompany the CP. Knowledge deficits were identified during the consultations, and teaching resources found during the environmental scan were incorporated into the instruction manual.

The manual is subdivided into four sections and is designed to be hosted on the clinic's internal common drive. It is also available in hard copy. The manual opens with a discussion on LBP within the CAF, and an elaboration on red flags is provided. I have described health care CP within the second section, explicitly focusing on the STarT Back Pathway. The yellow flags prognostic for developing chronic low back pain is also illustrated. In the third section, I have given step-by-step directions on how to use the CP. Additionally, this section contains sample questions to ask during patient history taking and provides videos illustrating how to conduct a

focused physical assessment. The final section highlights locally available resources and provides patient engagement materials. Within the manual's Appendix is a resource directory for easy access to all the materials embedded throughout the document.

Advanced Nursing Practice Competencies

ANP synthesizes scientific evidence and the nursing theoretical approach (CNA, 2019). The CNA (2019) states that ANP can be demonstrated by nurses working across the profession and can be found in any domain, such as clinical practice, education, administration, or research. This practicum project allowed me to meet several ANP competencies, such as the optimization of health systems, research, leadership, as well as consultation and collaboration.

Optimization of Health Systems

Health system optimization involves facilitating improved healthcare delivery, focusing on a holistic approach and patient-centred equity (CNA, 2019). The activities I undertook during this practicum, such as developing a CP and implementing improvements in health delivery processes, are examples of this competency. By developing the LBP evidence-based CP, I contributed to the change process at the local health clinic and, hopefully, improved patient care, thus fulfilling this competency.

Research

Research competencies in ANP involve incorporating and applying evidence that has been critically evaluated from a nursing perspective (CNA, 2019). Nurses engaged in the research component of ANP are expected to demonstrate the ability to assess for an evidence-practice gap and act as a knowledge broker when appropriate. During the consultation phase of this practicum, I worked with stakeholders to determine areas of LBP management that are not congruent with best practices and would benefit from modification. I collected and collated this

data and provided resources from the literature to address these concerns. In this way, I determined an evidence-practice gap, acted as a knowledge broker, and fulfilled this competency.

Leadership

Leadership competencies are also a core component of ANP. Leadership in ANP involves promoting the advancement of nursing practice and serving as leaders within the organization (CNA, 2019). The association reports that this competency can be met by exhibiting self-awareness and aligning oneself with the profession's ethical values. Throughout this practicum, I reflected on the *Code of Ethics for Registered Nursing* (CNA, 2017) and ensured that all aspects of my practice reflected these values. For example, a core nursing value and ethical responsibility involves promoting health and well-being by recognizing the knowledge, skills, and perspectives of all. Throughout the practicum, I have focused on creating a resource that meets the needs of stakeholders and patients. In this way, I have valued their perspectives and engaged in ethical nursing practice. The leadership ANP competency can also be met through involvement in academic pursuits (CNA, 2019), such as participation in this Master of Science of Nursing program.

Consultation and Collaboration

The final ANP competency I demonstrated is engaging in consultation and collaboration. This competency is the capacity to collaborate with diverse inter-sectoral stakeholders and colleagues to resolve issues at various health system levels (CNA, 2019). Throughout this practicum, I continuously collaborated with local clinic stakeholders, the unit leadership, and the faculty advisor to explore issues related to LBP management within the organization. The group involved in this process is diverse and represents various healthcare backgrounds. I have met this

competency by demonstrating the ability to communicate, collaborate, and maintain respectful and effective relationships.

Next Steps

As the CP has been developed, there is an opportunity to examine the potential for the next steps in the *Implementation Roadmap* (Harrison & Graham, 2021) that would cumulate in full-scale implementation. The immediate next steps I will take to facilitate implementation include seeking leadership endorsement, forming a working group, conducting patient engagement, developing orientation materials, trial implementation, and conducting an evaluation.

Seeking leadership endorsement for this project will provide the necessary approval for the practice changes and support the enlistment of a multi-disciplinary working group. Based on the recommendations from Harrison and Graham (2021), the working group must include the patient population that will receive the care based on the practice change. Insight from the patient population can ensure that the LBP CP is developed to meet the needs of patients. Additionally, the patient representative would be well-positioned to support the development of patient engagement materials and facilitate buy-in from the population. The working group would intend to empower team members to take the lead in their respective practice areas. For example, the Reconditioning Manager can take the lead in discussing the role of reconditioning programs and how this approach can enhance the management of LBP. The currently developed materials can be expanded to create an in-person learning seminar chaired by various working group members.

The CP should be introduced as an initial one-year trial, with feedback sessions at one, six and 12 months. In addition to allowing for team members' insights, a trial will allow for real-life troubleshooting of issues and determining if components require modification. Finally, an

evaluation plan must be designed to measure clinical outcomes. For a quantitative evaluation, this would focus, for example, on the number of patients who can return to full duties following an episode of low back pain. The qualitative assessment would focus on the perceptions of improved care from patients and HCTMs and their experience regarding challenges, barriers, and enablers of CP implementation.

Conclusion

The CAF faces historic personnel shortages (CBC, 2022; Toronto Star, 2022), with an acute shortage within the CF H Svs (CTV News, 2022). As medical attrition accounts for almost a third of workforce departures within the CAF (DND, 2022b), improving the management of common medical concerns, such as LBP, can potentially retain experienced personnel. Given the previous successful implementation of the COVID-19 CP and the support within the literature (Rotter et al., 2012), the local clinic leadership suggested the development of a LBP CP to improve the management of patients with LBP. After conducting a literature review, consultations, and an environmental scan, I developed the Primary Care Low Back Pain CP and accompanying instruction manual. The CP provides recommendations for stratified care based on scores from the STarT Back screening tool (University of Keele, 2021). Completing the remaining steps in the *Implementation Roadmap* (Harrison & Graham, 2021) will enable the successful implementation of this practicum project.

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Appendix A: Literature Review

Management of Lower Back Pain in Primary Care

Management of Lower Back Pain in Primary Care:

A Literature Review

The COVID-19 pandemic has created a bow wave of patients with conditions such as lower back pain (LBP) that went undertreated during the pandemic and now require care (Oxentenko, 2022). Amelot et al. (2022) suggested that the pandemic may have caused patients with LBP to experience a decline in their well-being as the associated lockdowns contributed to general increases in anxiety and reduced opportunities for mobilization. Even before the COVID-19 pandemic, back problems were the third most common health concern reported by members of the Canadian Armed Forces (CAF) (Statistics Canada [StatsCan], 2019). LBP has negative implications for both CAF members and the organization overall. It contributes to failed fitness assessments, absenteeism, decreased operational readiness, and reduces the organization's ability to fulfill its mission mandate (Hebert, 2016). In the local context, the pandemic complicated LBP management for CAF primary care clinic patients in the greater Toronto area. The 777-day state of emergency (City of Toronto, 2022) and subsequent service lockdowns resulted in many patients being unable to access in-person assessments or treatment from their health care team.

As the local clinic has returned to being fully operational and providing in-person services, there is a desire from both the leadership team and front-line staff members to efficiently deliver care to this patient population in a manner that will prevent further patient suffering, enable an operational workforce, and be congruent with the available resources. Based on informal consultations and the success of the COVID-19 care pathway, developing a LBP care pathway (CP) has been suggested as an appropriate resource to facilitate the previously described objectives. To enable this process, I will review the literature to evaluate the existing

LBP CPs utilized in primary care. I will also provide a brief background on the issue of LBP management within the CAF and conclude with recommendations on a CP appropriate for adaptation to the local clinic.

Background

LBP is described as a discomfort, stiffness, or cramping on the posterior portion of the body that may range from above the gluteal folds to below the costal margins (Burton et al., 2006). In the literature review conducted by Wheeler et al. (2021), the authors approximated that 84% of adults experience back pain within their lifetime, with back symptoms accounting for one percent of primary care office visits in the US. The researchers reported that less than 10% of patients who presented to primary care would have a specific cause for their LBP, with four percent presenting with disc herniation or spinal stenosis. Less than one percent of patients seeking care suffer from concerning underlying etiologies such as spinal cord compression, cancer, or spinal infection (Wheeler et al., 2021). Wheeler et al. (2021) concluded that the vast majority, or 85% of patients presenting to primary care settings with back pain concerns, are described as suffering from non-specific back pain, meaning that the cause of the patient's discomfort is idiopathic. Patients often present for repeated treatment for exacerbations of chronic LBP, so it can be challenging to categorize the nature of the occurrence.

In the most recent Health & Lifestyle Information Survey (HLIS), 44% of the CAF Regular Force population reported suffering from either an acute or repetitive strain injury (RSI) (Department of National Defense [DND], 2016). Concerns related to the back were the leading causes of injury in both categorizations. Five percent of those injured in the last 12 months reported acute back pain, while 12.3% of personnel with an RSI suffer from LBP (DND, 2016). The Canadian Forces Health Services system has high service utilization, with 75% of the

population seeking care within the last 12 months (DND, 2016). Specifically, the HLIS reported that one-quarter of the population sought care for an acute or RSI. Therefore, improving the management of prominent concerns such as LBP could reduce service utilization and health system expenditures.

The risk factors for LBP in the general population include physical and psychological stress, obesity, smoking, low educational attainment, workers' compensation insurance utilization, and psychosocial components such as depression and anxiety (Wheeler et al., 2021). Given the physical demands, unpredictable tasks, and psychological strain of military employment, it is unsurprising that CAF members have reported higher instances of back pain than their civilian counterparts (Hall et al., 2020). Health researchers have evaluated LBP in the context of armed forces personnel and have identified risk factors and prognostic factors or yellow flags specific to this population. To et al. (2021) identified risk factors: having a history of LBP, exercising less than twice per week, being female, and classifying as a junior non-commissioned member. Regarding the CAF population specifically, Glover (2014) identified prognostic yellow flags such as fear of movement, previous history of health care seeking, an ongoing Veterans' Affairs claim, PTSD, prior history of LBP, and permanent disability status as risk factors for chronic pain. Patients with these characteristics were associated with poor outcomes and the requirement for continued LBP-related care from health care providers.

Advancements in LBP treatment could assist with retaining qualified personnel, as LBP is currently the third leading cause of medical attrition (DND, 2017). Finally, improved LBP care also has the potential to reduce economic expenditures related to disability benefits. In 2021, Veterans Affairs Canada (VAC) awarded over 639 million dollars to those with service-related disabilities, with LBP being the 10th most compensated health concern (VAC, 2022).

Care Pathways

During the COVID-19 pandemic, the clinic successfully implemented a COVID-19 CP. As a result of this success, clinic stakeholders and leadership recommended the development of a LBP CP to improve LBP management within the clinic. This approach is also congruent with the organization's strategic vision. As a component of the Surgeon General's Integrated Health Strategy, healthcare leaders are called to streamline care processes and reduce variations in treatment (DND, 2017).

CPs involve operationalizing evidence-based practice guidelines in the local clinical environment, providing specific steps or algorithms to guide the process and the goal of standardizing care for a particular problem. In the meta-analysis conducted by Rotter et al. (2012), the authors concluded that CPs are an effective tool for quality improvement and have demonstrated the ability to reduce in-hospital complications and improve care standardization and documentation without increasing hospital costs.

The collaborative development of a LBP CP with local stakeholders will allow me to examine current best practices and adapt recommendations to the local context. Many LBP CPs already exist and are used widely throughout various healthcare systems. A review of these systems will provide context for future CP development.

Prominent Lower Back Pain Care Pathways

Many LBP CPs utilize evidence-based guidelines and provide a decision-making structure for health care providers. In a recent review, Coeckelberghs et al. (2021) examined LBP CPs and identified six prominent CPs that target LBP management within the context of primary care. They include the *North of England Regional Back Pain and Radicular Pain Pathway* (NEESP), the *British Pain Society Low Back Pain Care Pathway* (LS), the *University*

Hospital Waterford Pathway (WSP), the *Saskatchewan Spine Pathway* (SSP), the *Toronto Spine Pathway* (TSP), and the *Plymouth Low Back Pain Clinical Pathway* (PSP). The researchers reported many similarities among the pathways. For example, all pathways involve a multidisciplinary or interdisciplinary approach and contain red flag screening, or the ability to screen out the 15% of patients with a concerning pathology. The pathways also include a mechanism for patient triage and consider psychosocial risk factors and their potential to contribute to patients having trouble with pain management. Besides the WSP, the CP also included prognostic yellow flags to help identify patients at higher risk for complicated LBP management and should be steered towards tailored interventions (Coeckelberghs et al., 2021). The pathways also incorporated approaches for reducing diagnostic imaging by providing decision points and guidance on which subpopulations would benefit from this intervention. Finally, the pathways included patient education as a vital process component. Patient education helps to manage unrealistic expectations regarding rehabilitation timelines and allows the patients to contribute to their treatment plan through participation in self-directed wellness activities such as exercise and stretching.

Review of the Literature

Methods

The review objective, focus, criteria, and rationale were detailed in advance and are outlined below.

Objective and Focus

In this literature review, I examined the evidence supporting the management of LBP CP within the primary care context. I assessed quantitative studies using the Public Health Agency of Canada (PHAC) Critical Appraisal Toolkit ([CAT], 2016) to determine if relevant evidence

exists to support the implementation of a LBP CP within the local context. Using the criteria within the PHAC CAT (2016), I evaluated quantitative studies based on their ability to support a clear association between the exposure and the outcome of interest without significant threats to the internal validity of the work. I evaluated the qualitative studies in this review for credibility using criteria from the Joanna Briggs Institute (JBI) checklist (2020). I also assessed the qualitative works for trustworthiness using the requirements established by Lincoln and Guba (1985; as cited in Polit & Beck, 2021). The concepts of credibility and trustworthiness refer to the overall quality and scientific rigour of qualitative work (Moralejo & Pike, 2020).

Criteria and Rationale

To address the objectives of this literature review, I retrieved studies of LBP CPs within the primary care context. I included only primary research articles in this review as I will explore grey literature and unpublished works separately in the environmental scan. I excluded articles from consideration if they were not available in English, in full text, or were published before 2000.

Search Strategy and Findings

I used the following databases for this literature review: CINAHL, ProQuest, Pubmed, and Memorial University electronic holdings. Keywords or Mesh terms used in the search were various combinations of the following: “Low Back Pain," “lower back pain,” “LBP,” “critical path,” “care path,” “care map, “infographic," “algorithm,” and “decision tree,” “stratified care,” “primary health care,” “North of England Regional Back Pain and Radicular Pain Pathway,” “North-East England” “British Pain Society Low back pain care pathway,” “London,” “University Hospital Waterford pathway,” “Waterford,” “Saskatchewan Spine,” “Interprofessional Spine Assessment and Education Clinics Low Back Pain Clinic,” “Toronto

Spine," "Plymouth Low Back Pain Clinical Pathway," "Plymouth Spine." I reviewed the reference lists of relevant articles and pursued suggestions for similar results generated by the various databases. I retrieved 59 articles from the initial database searches, and eight other articles were also based on their similarities with the retrieved articles. The articles' abstracts were screened per the previous criteria, and 50 were removed, leaving me with 17 articles. I excluded many of the works because they involved the implementation of a LBP CP within an inpatient setting or did not include an evaluation component. I read the remaining 17 articles in full and removed one systematic review per PHAC (2016) criteria because the heterogeneous nature of the material prevented the provision of a recommendation. In total, 16 studies were included in the review.

Results

Overview of Included Studies

The 16 studies retrieved were heterogeneous by nature; 12 were quantitative, while four were qualitative. They varied in design, type of LBP CP evaluated, approach, outcomes assessed, measures used to evaluate critical variables, and themes identified. The most frequently used study design from quantitative research was the cohort design. Four studies used variations of this methodology. The research by Wu et al. (2021) was a prospective cohort study, while the work by Wilgenbusch et al. (2014) was a retrospective cohort study. Both studies had equivalent comparison groups. In contrast, the retrospective cohort studies by Kindrachuk and Fourney (2014) and Zarrabian et al. (2017) had non-equivalent comparison groups. The subsequent most common designs were controlled before and after (CBA) design and variations of the randomized controlled trial (RCT) design. Three studies (Foster et al., 2014; Magel et al., 2018; Murphy et al., 2016) utilized a CBA design, while two studies (Hill et al., 2011; Morsø et al.,

2021) were RCTs, and a third work (Delitto et al., 2021) was a nonrandomized controlled trial (NRCT). Additionally, one study (McKeag et al., 2020) utilized an uncontrolled before and after design (UCBA).

One study (Martin et al., 2020) contained qualitative and quantitative research. The quantitative portion was an interrupted time series (ITS) with inadequate data points, while the qualitative used an approach grounded in normalization process theory (NPT). Two of the other qualitative studies (Igwsi-Chidobe et al., 2021; Sanders et al., 2011) also utilized NPT within the study design, although the work by Igwsi-Chidobe et al. (2021) incorporated a patient participatory action approach as well. The study by Ryan et al. (2020) differed from the others in that it utilized interpretive description for its philosophical perspective.

In their work on LBP CP, the researchers examined a variety of CP. Six studies (Delitto et al., 2021; Foster et al., 2014; Hill et al., 2011; Morsø et al., 2021; Murphy et al., 2016; Sanders et al., 2011) involved the STarT Back CP, whereas three studies (Kindrachuk & Fourney, 2014; Wilgenbusch et al., 2014; Wu et al., 2021) utilized the SSP. Other pathways examined were the TS (Zarrabian et al., 2017), LS (McKeag et al., 2020; Ryan et al., 2020), NEESP (Magel et al., 2018; Matin et al., 2020), and Rapid Access Care Pathway (Magel et al., 2018). Igwsi-Chidobe et al. (2021) explored the experience of those involved in direct physiotherapy referrals, a critical component of several pathways. No works were retrieved on the WSP or PSP, despite both being described by Coeckelberghs et al. (2021) as prominent LBP CP.

While there was some overlap, two main approaches were taken in the quantitative research. The first approach involved the implementation of a CP intending to decrease inappropriate referrals to spinal surgeons and the over-ordering of magnetic resonance imaging (MRI). Three studies (Kindrachuk & Fourney, 2014; Wilgenbusch et al., 2014; Zarrabian et al.,

2017) utilized this approach. Outcomes assessed by the studies included the number of successful surgical consults (Kindrachuk & Fourney, 2014; Wilgenbusch et al., 2014; Zarrabian et al., 2017), a reduction in wait times for surgical consults (McKeag et al.; 2020; Wilgenbusch et al., 2014; Wu et al., 2021; Zarrabian et al., 2017), and the number of MRIs ordered (Kindrachuk & Fourney, 2014; Magel et al., 2018; Zarrabian et al., 2017)

The second approach utilized within the quantitative literature on LBP CP involved exploring patient or healthcare system impact. This approach was utilized by Delitto et al. (2021), Foster et al. (2014), Hill et al. (2011), Magel et al. (2018), Martin et al. (2020), McKeag et al. (2020), Morsø et al. (2021), Murphy et al. (2016), and Wu et al. (2021). The primary outcomes assessed were patient-reported measures of disability, pain, healthcare-related costs, and health-related quality of life. To evaluate patient-reported measures of disability, four studies (Foster et al., 2014; Hill et al., 2011; Morsø et al., 2021; Murphy et al., 2016) used the Roland Morris Disability Questionnaire (RMDQ), and three studies (Delitto et al., 2021; McKeag et al., 2020; Wu et al., 2021) utilized the Oswestry Disability Index (ODI), while Magel et al. (2018) selected the physical function computer-adapted testing measure (PFCAT) to assess patient disability. For the assessment of pain, the visual analog scale (VAS) was used by McKeag et al. (2020), Murphy et al. (2016), and Wu et al. (2021). Similarly, Foster et al. (2014) and Martin et al. (2020) used the numerical rating scale (NRS) to measure pain. The studies (Foster et al., 2014; Hill et al., 2011; Morsø et al., 2021) that conducted cost analyses utilized local currency unadjusted for inflation. Only three studies (Martin et al., 2020; McKeag et al., 2020; Wu et al., 2021) evaluated patients' health-related quality of life. These studies used the EQ-5D-5L scale.

The qualitative research reviewed (Martin et al., 2020; Igwesi et al., 2021; Ryan et al., 2020; Sanders et al., 2021) focused on the experiences of patients receiving care, as well as the

experience of health care providers (HCPs), and administrators involved in the implementation of the pathways and provision of care. The findings from these works provided insight into the difficulties and barriers faced during the implementation process of CPs and highlighted components of the pathways that resulted in positive outcomes for both patients and providers.

Key Findings

The findings of the studies can be grouped into assessments of patient outcomes, resource allocation, and exploration of the implementation experience. Patient outcomes included disability, pain, and health-related quality of life. Resource allocation estimates included appropriate surgical consults, wait times, and measures of resource expenditures such as health care costs and MRI usage. Similarly, the findings on the implementation experience focused on the pragmatic difficulties in transitioning the LBP CP from the literature into practice.

Patient Outcomes

Disability.

Implementing a LBP CP provided a superior level or equal level of disability improvement compared to usual care (UC). Several studies found that LBP CP implementation resulted in superior disability management. In the RCT conducted by Hill et al. (2011), the authors concluded that implementing a STarT Back CP resulted in a more significant decrease in disability than UC. Similarly, in the CBA studies conducted by Murphy et al. (2016) and Foster et al. (2014), the authors reported that implementation of similar STarT BacK CPs resulted in a superior decrease in disability for patients triaged as high-risk when compared to similarly classified patients managed by UC. Additionally, when Magel et al. (2018) assessed the Rapid Access CP in their CBA study, the researchers also reported a superior decrease in patient disability compared to UC. While the UCBA study by McKeag et al. (2020) lacked a UC control

group, the authors reported that significant reductions in patient disability occurred following the implementation of the NEESP.

In contrast, several studies reported decreases in patient disability following the implementation of LBP CP, which was the same as those seen in UC. For example, in the RCT conducted by Morsø et al. (2021) and the cluster RCT conducted by Delitto et al. (2021), the authors reported that when compared to UC, there was no difference in the reduction of measures of patient disability following the implementation of a STarT BacK CP. Likewise, in the cohort study by Wu et al. (2020) evaluating the impact of the SSP implementation, the authors also reported no difference in measures of patient disability compared to UC.

Pain.

LBP CP provided pain management that was either superior or equal to UC. In the CBA evaluating STarT Back CP implementation conducted by Foster et al. (2014), the authors reported superior pain reduction for patients classified as high-risk compared to the management of similarly classified patients through UC. Two studies without control groups, the ITS conducted by Martin et al. (2020) and the UCBA conducted by McKeag (2020), reported significant reductions in pain following the NEESP and LS implementation, respectively. The CBA study conducted by Murphy et al. (2016) exploring the STarT Back CP had mixed findings. While medium-risk patients reported superior pain management, both high- and low-risk patients experienced pain management equivalent to UC patients.

While the previously mentioned studies reported that LBP CP promoted superior pain management, the results from the cohort study by Wu et al. (2020) indicated that patients receiving SSP-based care experienced the same level of pain management as those receiving UC. Similarly, participants in the qualitative study by Martin et al. (2020) reported that participation

in the NEESP did not decrease pain levels. However, the participants stated that they felt the education they received enabled them to manage the pain more effectively. They credited participation in pathway-based interventions with providing them with preventative stretches, mindfulness, and non-catastrophic thinking skills. While the interventions did not eliminate pain, they empowered patients with skills that reduced the negative impact of the pain on daily life (Martin et al., 2020).

Health-Related Quality of Life.

Analogous to the previously reported patient outcomes, studies indicated that LBP CP implementation improved health-related quality of life in a manner that was superior or equal to usual care. In the CBA portion of the study conducted by Martin et al. (2020), the authors stated that patients treated via the NEESP experienced more significant changes in health-related quality of life than those receiving UC. Similarly, in the UCBA undertaken by McKeag (2020), the authors reported that patients receiving care within the parameters of the LSP reported significant increases in health-related quality of life. While Wu et al. (2020) did not report superior pain management for SSP patients in their cohort study, the authors did note that patients treated through the SSP and UC had changes in health-related quality of life that were not significantly different.

Summary of Evidence on Patient Outcomes.

Based on the studies retrieved, there is moderate evidence that implementing LBP CP within primary care improves patient disability, pain management, and health-related quality of life that are superior to or equal to usual care.

Resource Utilization

Surgical Consults and Wait Times.

In the cohort studies conducted by Kindrachuk and Fourney (2014), Wilgenbusch et al. (2014), and Zarrabian et al. (2017), the authors reported that the implementation of LBP CPs improved the quality of referrals provided to surgical specialists. The authors reported that historically only 15% of patients referred for a surgical consultation by a primary care provider would be deemed a surgical candidate by a surgical specialist. Inappropriate referrals contribute to a prolonged patient waiting phase and create an undue delay for appropriate surgical candidates. Implementation of the SSP resulted in a two- or three-fold increase in the number of appropriate surgical referrals (Kindrachuk & Fourney, 2014; Wilgenbushch et al., 2014), while the implementation of the TSP resulted in nearly a six-fold increase in appropriate surgical referrals (Zarrabian et al., 2017). These authors also reported that LBP CP reduced surgical wait times. When compared to historic trends, the implementation of the TSP was credited with reducing wait times for surgery by 142 days (Zarrabian et al., 2017), and the implementation of the LSP was credited with reducing wait times for surgery by 658 days for 43% of the patient population (McKeag et al., 2020). In contrast, in the cohort studies by Wu et al. (2020) and Wilgenbusch et al. (2014), the authors reported that implementation of the SSP did not result in decreased wait times for patients to receive a surgical consultation.

Health Expenditures.

All the studies proposed that implementing a LBP CP would reduce healthcare expenditures; however, few researchers included this metric in their analysis. Many authors inferred that given the ability of LBP CP to improve patient outcomes, it would reduce service utilization and expenditures. For example, in the qualitative work by Igwsi-Chidobe et al. (2021),

there was consensus amongst HCP that direct access to physiotherapy would reduce unnecessary clinical consults.

Evidence from some quantitative studies supported the potential for a reduction in health expenditures. Three studies evaluated the STarT Back CP for potential cost-effectiveness. Two RCTs (Hill et al., 2011; Morsø et al., 2021) and one CBA (Foster et al., 2014) reported that when compared to UC, implementation of the STarT Back CP resulted in reduced resource utilization. Three studies reported that implementing a CP decreased the number of patients with LBP who received an MRI. These included the cohort studies examining SSP implementation (Kindrachuk & Fourney, 2014; Zarrabian et al., 2017) and the CBA (Magel et al., 2018) study evaluating the implementation of the Rapid Access pathway. The authors reported that MRIs are frequently required for surgical consults, and by increasing the selectivity of those requiring consults, the requirement for MRIs was also reduced, and thus expenditures would no doubt be reduced.

Not all stakeholders viewed reducing healthcare expenditures as a positive change. Ryan et al. (2020) reported that patients felt dissatisfied with the reduced access to diagnostic imaging and the ability to see specialists outside of the LS CP, as patients associated these interventions with better-perceived care. These findings may indicate that the implementation process may not have included affective patient education or stakeholder consultation, as the findings from the study suggest that patients did not understand the value of physiotherapy and why it would not benefit them to receive additional diagnostic interventions or specialist intervention.

Summary of Evidence on Resource Utilization.

Based on the studies retrieved, there is moderate evidence that implementing LBP CP within primary care facilitates the provision of cost-effective care that reduces healthcare wastage, such as inappropriate surgical consults and the over-ordering of MRIs. While reducing

healthcare expenditures benefits publicly funded healthcare systems, all stakeholders might not share the same view. Researchers such as Ryan et al. (2020) are critical of the neo-liberal over-reliance on the patient agency approach utilized in the LS CP. Some patient populations may face skill-based or socioeconomic barriers preventing self-directed intervention engagement. As the impact of socioeconomic factors on health is well documented (Government of Canada, 2022), future iterations of LBP CP should consider these factors.

Implementation Experience

A review of the qualitative literature illuminated many of the pragmatic difficulties in transitioning LBP CP from the literature into practice. Patients described CP-based care as confusing and burdensome (Igwsi-Chidobe et al., 2021; Ryan et al., 2020). Similarly, HCPs and administrators reported that many did not understand their roles or the required responsibilities (Martin et al., 2020; Sanders et al., 2011). Also, some HCP reported apathy towards CPs such as STarT Back, as they felt their decision-making and management were superior. Difficulty in the implementation process was also reported in the RCT conducted by Delitto, as only 35% of study participants received treatment per the CP.

Quality of the Evidence

Quantitative

Within the included research in this review, the study design's strengths and the studies' quality varied. Except for the RCTs (Hill et al., 2011; Morsø et al., 2021) and the NRCT (Delitto et al., 2021), the remainder of the studies included in this review employed study designs rated by PHAC (2016) as either moderate (Foster et al., 2014; Kindrachuk & Fourney, 2014; Magel et al., 2018; Murphy et al., 2016; Wilgenbusch et al., 2014; Wu et al., 2020; Zarrabian et al., 2017) or weak (Martin et al., 2020; McKeag, 2020).

In terms of quality, the cohort study by Wilgenbush et al. (2014) was evaluated as high quality. The included RCTs (Hill et al., 2011; Morsø et al., 2021), CBA studies (Foster et al., 2014; Magel et al., 2018; Murphy et al., 2016), one of the cohort studies (Wu et al., 2020), the UCBA (McKeag et al., 2020), and the ITS (Martin et al., 2020) were all evaluated as being of medium quality. Three studies were assessed as being of low quality. They included the NCRT conducted by Delitto et al. (2021), as well as the cohort studies conducted by Kindrachuk and Fourney, (2014), and Zarrabian et al. (2017)

The quality of the studies was impacted by misclassification bias, a failure to control for confounding variables, the potential influence of attrition bias, and inadequacies related to the analysis. In the works by Delitto et al. (2021) and Morsø et al. (2021), the researchers noted that not all patients in the intervention arm received the treatment or the treatment was delivered inconsistently. Thus, the actual effect of the intervention may have been impacted by misclassification bias.

A lack of control for confounding variables impacted the quality of several studies. For example, five studies (Magel et al., 2018; McKeag et al., 2020; Martin et al., 2020; Kindrachuk & Fourney, 2014; Zarrabian et al., 2017) did not employ any randomization, matching, statistical analysis, or examination of potential confounding variables. Another three studies (Foster et al.,2014; Kindrachuk & Fourney, 2014; Zarrabian et al., 2017) did not assess the baseline similarity of the control and intervention groups, thereby ignoring the potential for baseline differences to influence outcomes. As a result of these shortcomings, it is difficult to rule out the possible influence of confounding variables on the results of the studies.

Another methodological shortcoming frequently observed was inadequate study subject follow-up and the potential influence of attrition bias. In the works by Delitto et al. (2021), Hill

et al. (2011,) Morsø et al. (2021), and Murphy et al. (2016), less than 80% of the research subjects completed the study. Although drop-out rates were generally balanced between the intervention groups and control groups, poor study retention may have impacted the actual effect of the intervention.

Finally, the quality of the statistical analysis impacted the appraisal of the works. In the studies by Kindrachuk and Fourney (2014) and Zarrabian et al. (2017), the authors deduced conclusions from crude comparisons between percentages. They did not conduct any statistical analysis to determine if the results were statistically significant. Additionally, concerns related to inadequate study power were observed in studies by Morsø et al. (2021) and Wu et al. (2022). Morsø et al. (2021) reported that an inadequate sample size impacted the ability to detect differences between sub-groups. These methodological shortcomings may partially explain why this work did not replicate the benefit for the high-risk group observed in previous studies. In Wu et al. (2022), the authors found no differences in the primary outcomes, the sample size was modest, and the researchers did not provide details on the sufficiency of the study's power. Thus, it is unclear if the results are a true reflection of the impact of exposure or are the consequence of an inadequate sample size.

Qualitative

The qualitative studies (Martin et al., 2020; Igwesi et al., 2021; Ryan et al., 2020; Sanders et al., 2021) were rated as having medium credibility. The credibility of the studies was impacted by the failure to report a cultural orientation and aspects of the study methodology being incongruent with the selected research tradition. All the studies (Martin et al., 2020; Igwesi et al., 2021; Ryan et al., 202; Sanders et al., 2021) were rated moderately trustworthy. The trustworthiness of these studies (Martin et al., 2020; Igwesi et al., 2021; Sanders et al., 2021) was

impacted by shortcomings related to confirmability, as the absence of detail regarding the analysis portion of the studies made it difficult to ensure undue influence from the authors in the final themes. Similarly, the credibility of the studies could have been enhanced by disclosing researcher credentials (Martin et al., 2020; Ryan et al., 2020; Sanders et al., 2021) and demonstrating reflexive practices (Igwesi et al., 2021; Sanders et al., 2021).

Discussion

In short, the literature examining LBP CP within the primary care context is diverse and heterogeneous. This deduction is congruent with other reviews evaluating LBP CP within various settings, such as the work by Fourney et al. (2011) and Murphy et al. (2022). Overall, there is moderate evidence that implementing LBC CPs improves patient disability, pain management, and health-related quality of life in a manner that is superior to or equal to usual care. There is also moderate evidence that LBP CP facilitates the provision of cost-effective care and reduces healthcare wastage, such as inappropriate surgical consults and the overuse of MRIs. Not all stakeholders view the implementation of CP as beneficial, as patients have reported dissatisfaction regarding decreased access to diagnostic imaging and specialist consultation (Ryan et al., 2020). Both patients and health professionals have indicated that the navigation of LBP CP can be complex and ambiguous (Igwsi-Chidobe et al., 2021; Ryan et al., 2020).

These findings provide valuable insight regarding the appropriate direction for developing a LBP CP within the local context; several models are inappropriate when considering the improved management of LBP locally. The macro-level models described by Coeckelberghs et al. (2021) involve changes throughout multiple healthcare system levels and are beyond my sphere of influence. However, the critical components of LBP CP discussed by Coeckelberghs et al. (2021) may guide local resource development. A pragmatic opportunity for

improving LBP management within the local clinic is implementing the modified version of the STarT Back CP described by Hill et al. (2008). The support for the STarT Back CP is consistent with other research showing that non-surgical methods such as exercise and physical conditioning effectively address non-specific LBP concerns (Chou et al., 2007; Hayen et al., 2005; Schonstein et al., 2003).

The STarT Back CP involves triaging patients and identifying prognostic yellow flags based on the STarT Back screening tool. Patients are categorized as low, medium, or high risk for developing chronic LBP (Hill et al., 2011). Patients then receive an intervention based on this classification. Patients within the low-risk group are provided with pain management and resources to support independent management through exercise and movement. Medium-risk patients are also provided with resources and six-physiotherapist sessions over three months. High-risk patients receive the previously described support and can receive psychologically informed care that targets psychosocial prognostic factors such as anxiety and catastrophizing. The STarT Back CP approach to LBP management is congruent with the local patient population. Considering psychosocial factors such as PTSD or anxiety impacts the prognosis of LBP for the CAF population (Glover, 2014) and thus warrants inclusion within the CP.

Enablers and Barriers

The local clinic's unique characteristics will support the implementation of this approach to LBP management. Both athletic therapists and mental health professionals are components of the care team. They will be able to participate in the exploration of the exercise and psychologically informed care aspects of the STarT Back CP. Although positive working relationships exist with these stakeholders, this is not true for all care team members. Current third-party contracting arrangements with physiotherapy services disincentivize approaches

involving patient empowerment as continued therapy dependence provides revenue. The success of this initiative may rely on healthcare providers changing physiotherapy referral patterns. Another potential barrier to implementation is resistance to change. Delitto et al. (2021) and Morsø et al. (2021) reported difficulty successfully implementing the STarT Back CP even within the limited research context. The STarT Back CP involves a multifaceted approach to LBP management (Hill et al., 2008) and deviations from usual care routines that some team members may view as threatening. Before implementing the resource, I will consult local stakeholders to gain insight regarding the degree of change within the comfort of team members and the appropriate direction for the change initiative.

Implementation

Rogers' diffusion of innovation theory provides a helpful framework when considering the future implementation of the customized STarT Back CP to the local clinic and the barriers and enablers that will impact this process. The theory includes five factors - relative advantage, compatibility, complexity, trialability, and observability, that will affect the degree of adoption of the LBP CP into the setting (BUMC, n.d.). Considering these factors, during the upcoming consultation phase, I will highlight the findings from the previous literature review that articulate the relative advantage of the CP-based approach and its compatibility with the patient population. The team is expected to be more receptive if this initiative is proposed as a trial. There may likely be some concerns regarding the complexity of CP implementation, as the findings from the qualitative research (Igwsi-Chidobe et al., 2021; Martin et al., 2020; Ryan et al., 2020; Sanders et al., 2011) indicated that both patients and health care professionals reported confusion regarding participation in LBP CPs. If similar concerns surface during the consultations, pre-emptive education sessions may be required to address these concerns. Martin

et al. (2020) and Sanders et al. (2011) recommended using primary care practitioner change champions, as these professionals are viewed as the linchpin of LBP CPs. Incorporating patient participation during consultations will also be of value (Harrison & Graham, 2021), as they can provide insight regarding aspects that may be perceived as confusing and suggest appropriate changes or patient-directed education. Observability is the final aspect that impacts adaption (BUMC, n.d.). Therefore, the implementation process will also involve communicating changes in patient outcomes to stakeholders.

Conclusion

Management of LBP is a leading healthcare concern for the CAF (StatsCan, 2019). At the individual level, LBP contributes to decreased workplace performance and absenteeism and reduces the number of personnel available to meet mission requirements (Herbert, 2016). As a result of the COVID-19 pandemic, many patients of a military healthcare clinic in the greater Toronto area have been experiencing LBP without in-person assessment or care.

A LBP CP has been suggested as an appropriate mechanism to efficiently treat LBP patients in a manner that does not over-tax limited healthcare resources. CP has been demonstrated to be an effective quality improvement initiative, as they enable the translation of guidelines to the local clinical context (Rotter et al., 2012). In this literature review, I evaluated the literature exploring LBP CP within the context of primary care. There is moderate evidence that compared to usual care, LBP CP enables superior or equal patient improvement and utilizes fewer health care resources. The STarT Back CP (Hill et al., 2008) emerged as the most appropriate CP for implementation in my local clinic. These findings are partly explained by STarT Back CP's consideration of the psychosocial aspect of LBP pain management, which is relevant for the military population (Glover, 2014). Implementation will likely face barriers

related to change resistance and concerns regarding the complexity of LBP CP implementation. The approaching consultation phase will provide an opportunity to assess readiness to change and give an in-depth analysis of barriers and barrier mitigation.

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Author	Methods	Key Results	Comments
Delitto et al. (2021) Design: Cluster RCT Aim: Assess the potential for STarT Back CP to decrease the % of those with acute LBP who develop chronic LBP compared to UC. ¶Results NOT statistically significant	N = 2300 (Sample generated from patients with high-risk LBP from 77 family practices in 4 care systems. Pts screened using STarT back <u>Country:</u> United States <u>Intervention Group **(SGC)**:</u> Pts allocated to a high-risk pathway and recommended psychologically informed physical therapy (PIPT) Baseline: 1236 patients (38 practices) 6 Months: 658 (38 practices) 12 Months (EMR Data): 1192 (38 practices) <u>Control Group **(UC)**:</u> Pts received the usual care Baseline: 1123 (37 practices) 6 Months: 635 (36 practices) 12 Months (EMR Data): 1069 (37 practices) <u>Main Outcomes</u>: • The transition from acute to chronic LBP as assessed on an adapted version of the NIH Task Force Questionnaire for LBP • Functional Disability as measured by Oswestry Disability Index at six months. <u>Secondary Outcomes</u>: • LBP-related care-seeking • Medical Utilization: Use of Diagnostic Imaging	Both the intervention and control groups had similar results. <u>6 Months ¶:</u> The transition from acute to chronic LBP **SGC**: *n* = 658 (47%) **UC**: *n* = 635 (51%) OR: 0.83, 95% CI (0.64, 1.09); p=0.18 Oswestry Disability Index Change: OR -2.1 95% CI (-4.9, 0.6); p=0.12 <u>12 Months¶:</u> LBP-related care seeking **SGC**: *n* = 556 (46.7%) (95% CI: 42.3-51.0%) **UC**: *n* = 529 (49.5% (95% CI: 45.0-54.1%) Medical Utilization **SGC**: *n* = 182 (15.3 %) (95% CI: 12.4-18.7%) **UC**: *n* = 182 (17.1 %) (95% CI: 13.8-20.9%)	<u>Strength of Design</u>: **Strong** <u>Quality of Evidence</u>: **Low** • Potential risk of misclassification bias as only 35.9% of those in the intervention group received PIPT as funding regulations prohibited the provision of services. • High risk for attrition bias as 40% of subjects dropped out of the study at four months, and enhanced retention may have resulted in different results.

Foster et al., (2014) Design: CBA Aim: Compare the impact a STarT Back CP intervention with UC †Results statistically significant ¶ Results NOT statistically significant	N = 867 (Pts from 64 GP practices) <u>Country</u>: Cheshire Region, England <u>(**SGC**) Stratified Group Care - Intervention Group</u> N = 550 • After completing the control group assessment, new LBP patients were recruited by physicians. • Pts were stratified into low, medium, & high-risk groups. Care was tailored based on classification. <u>**UC** – Control Group</u> N = 337 • LBP pts recruited by a physician and provided with UC. <u>Data Collection</u>: (Pt mailed questionnaires) Info collected at baseline & 12 weeks. <u>Main Outcomes</u>: RDMQ: Roland & Morris Disability Scale <u>Secondary Outcomes</u> NRS Rating: NRS Rating TSK: Fear Avoidance HADS Scale: Depression Absenteeism: Measured in days	Overall, when compared to UC, SGC patients had a superior reduction in disability, pain, and time off work. The high & medium-risk SGC sub-group also had increased improvement compared to similar cohorts within UC. The High-Risk SGC patients had superior improvement in scores of disability, pain, & depression, while Medium-Risk SGC patients had superior improvement in fear avoidance & less time off work. In the wide range of other secondary outcomes assessed, the UC & SGC patients did not have a significant difference. <u>High-Risk Patients</u> • Δ in RMDQ Score (p = 0.004) † **SGC**: 4.8 (6.8) vs. **UC**: 2.3 (5.8) • Δ in NRS rating (p = 0.02) † **SGC**: 2.9 (3.3) vs. **UC**: 1.9 (2.6) • Δ in HDS scale (p = 0.007) † **SGC**: 2.7 (3.6) vs. **UC**: 1.2 (4.3) <u>Medium Risk Patients</u> • Δ in TSK Score (p = 0.02) † **SGC:** 3.3 (7.5) vs. **UC**: 1.7 (7.6) • Absenteeism since baseline (p = 0.005) † **SGC:** 5.3 (18.7**)** vs. **UC**: 11.3 (26.3) <u>Estimated Effect of **SGC** Vs. **UC**</u> (Analysis supported by regression analysis adjusted for age, sex, GP, baseline RMDQ, duration of pain, and baseline value) • RCMQ Δ: 0.71 (95% CI: 0.06 to 1.36) p = 0.03† • TSK Δ: 1.58 (95% CI: 0.53 to 2.62) p = 0.03† Reduction in days off work: 0.47 (95% CI: 0.24 to 0.92) p = 0.03†	<u>Strength of Design:</u> **Moderate** <u>Quality of Evidence</u>: **Medium** • Sophisticated statistical analysis • Potential impact from attrition bias: at the six-month follow-up, <80% of **SGC** and **UC** provided data. Higher retention rates may have changed the level of effect.

Hill et al. (2011) Design: RCT Aim: Compare STarT BacK stratified care groups vs. UC management. †Results statistically significant	N = 851 (sample generated from patients with LBP from 10 family practice databases) <u>Country:</u> United Kingdom <u>Intervention Group</u> (STarT BacK stratified care group: **SGC**) Pts were screened using the STarT Back Screening tool & allocated to a low, medium, or high-risk treatment pathway. Baseline: n = 568 (67%) 4 Months: n = 466 (82 %) 12 Months: n = 440 (77 %) <u>Control Group (**UC**) :</u> Usual care based on clinician judgement. Baseline: n = 283 (33%) 4 Months: n = 223 (79 %) 12 Months: n = 209 (74 %) <u>Main Outcome</u>: RMDQ (0 – 24) High scores = Severe disability	A more significant change in RMDQ scores for the intervention group at 4 and 12 months <u>4 Months Δ in RMDQ</u> ($p < 0.001$)†: **SGC** :4.7 ±5.9 UC: 3.0 ±5.9 Participants with good outcomes*: OR: 1.85 (1.36 to 2-51) <u>12 Months Δ in RMDQ</u> ($p < 0.095$)†: **SGC**: 4.3 ±6.4 UC: 3.3 ± 6.2 Participants with good outcomes*: OR:1.48 (1.02 to 2.15) Mean differences were calculated using linear regression adjusted for age, sex, baseline RMDQ and duration of back pain. *Good outcome is at least a 30% change in RMDQ from baseline. OR was calculated using logistic regression adjusted for age, sex, baseline RMDC, and duration of back pain.	<u>Strength of Design</u>: **Strong** <u>Quality of Evidence</u>**:** **Medium** • Sophisticated statistical analysis and strong intervention integrity • Potential selection bias: only 56% of those approached agreed to participate. Those who participated may be more likely to benefit from an intervention. • Potential risk for attrition bias: < 80% of subjects completed the study, and slightly more of the UC (26%) left vs SGC (23%). Unclear if UC left the study to seek alternative care.

Igwsi-Chidobe et al. (2021) **Objective/ purpose**: Gain insight into the experiences of patients, GPs, physiotherapists & clinical commissioners participating in Direct Access Physiotherapy **Design/ Methodology** Normalization Process Theory (NPT) and Patient Participatory Action (PAR) approaches are employed within a qualitative design.	**Setting**: The NHS funded four practices with physiotherapy services in the UK. **Sample:** A convenience sample of health care professionals (n = 20) and patients (n = 22). HCP varied in terms of years of practice, gender, and MSK training. Patient participants were predominantly > 50yrs, with good health literacy and had a long-standing illness. One of the participants was an author of the paper and co-applicant in the funding proposal. **Data Collection:** • Semi-structured face-to-face interviews supported by interview guides (avg length: 40-90 min). NPT and PAR informed guides. Core tenants of NPT: *Coherence* – sense-making, *Cognitive participation* – relational work *Collective Action* – operational work *Reflexive Monitoring* – appraisal work • All interviews were conducted by a post-doctoral researcher with a physiotherapy background. • Interviews recorded & transcribed verbatim. Interviews were audited by a second researcher for quality control. **Data Analysis:** • Researchers developed themes from inductive thematic analysis. • Five researchers independently coded data. Random samples of interviews were compared to ensure consensus amongst the team. Coding informed by NPT. • Data saturation was achieved. • Participants verified the reliability of findings through member checking.	Direct Access Physiotherapy Services were considered valuable, although some patient populations struggled to transition from GPs being the first point of contact. Organizational processes such as paperwork and the inability of some professionals to access the electronic medical record represent barriers to this change implementation initiative. **Coherence** **Understanding Physiotherapy and Direct Access Pathway** HCP reported that patients were confused about when or how they could direct access physiotherapy services. Patients stated they sometimes felt their GP should decide if they needed physiotherapy. **Cognitive Participation** **Negotiating the Pathway** HCP viewed direct access as an opportunity to reduce unnecessary GP visits, yet some patients felt burdened with coordinating their own care. Additionally, patients reported they still needed to see their GP to receive sick notes for work. **Collective Action** **Making the Pathway Feasible** Participants reported that the direct access physiotherapy program had a low profile, contributing to the low participation. Additionally, physiotherapy was not incorporated into the EMR. As a result, physiotherapists lacked awareness of pre-existing healthcare conditions, and GPs could not maintain situational awareness of physiotherapy waitlists.	**JBI (2020) Credibility Criteria Assessment:** *Medium* The authors did not report a cultural orientation. **Trustworthiness (Lincoln and Guba's 1985 criteria)**: *Moderate* • Confirmability could have been enhanced by providing additional information regarding the data analysis and increasing the study sample's diversity. • Credibility could have been enhanced through the documentation of reflexive practices.

Kindrachuk et al., (2020) Design: Retrospective Cohort with a non-equivalent comparison group. Aim: Compared to UC, can using the SSP improve the number of surgical consults that lead to surgery and decrease the number of MRIs ordered?	N = 87 (pts drawn from the practice list of 1 spine surgeon) • 40 (46 % male) • 47 (54 % female) <u>Country:</u> Canada <u>Exposed Cohort (**SSP**):</u> N = 87 Pts managed per the SSP <u>Not Exposed Cohort (**UC**)</u>: Information provided from historical clinic files and billing records. <u>Main Outcomes</u>: • Number of surgical consults that lead to surgery • MRI utilization	The SSP may contribute to system optimization by increasing the percentage of successful surgical consults and reducing the number of MRIs ordered for low-risk patients. <u>Successful surgical consults</u>: UC: 15% SSP**:** 44% • The SSP produced a 3-fold increase in surgical yield. <u>MRI Utilization</u>: UC: 100% SSP: 56%	<u>Strength of Design</u>: **Moderate** <u>Quality of Evidence</u>: **Weak** • The inadequacy of statistical testing negatively impacted the validity of the findings. The authors made crude comparisons between percentages rather than conducting a statistical analysis to determine if the differences in UC & SSP were statistically significant. • Potential confounding variables were not considered or evaluated. Therefore, it is unclear the role potential confounding variables may have played in determining the effect of the intervention.

Magel et al., (2018) Design: CBA Aim: Compare the impact of the Rapid Access pathway to usual care (UC) †Results statistically significant ¶ Results NOT statistically significant	N = 400 • Study Pop. all had insurance supporting tx from physio without a physician referral. • Pts with LBP who called for an appointment were asked if they would like to join the RapidAccess group (intervention) or receive usual care (control). • Baseline analysis showed minor differences between the two groups. Country: Primary Care Clinic in the US **RapidAccess** Group N =124: received physio apt within 72hrs **Usual Care (UC)** N =276: booked apt for a physiatrist. Physiatrist later ordered physio for 34% of this group (*n* = 96) Data Collection: (Chart audit of EMR) Info collected at baseline & discharge. Main Outcomes: Physical function Δ & receipt of advanced intervention (AI) • PFCAT (Higher score = better physical function) • AI: X/Ray, MRI, Injection, surgical consult, surgical procedure, physiatry visit.	Pts placed in the Rapid Access pathway experienced a more significant improvement in physical function compared to the sub-group in usual care that was also referred to physio. The RapidAccess patients also required less advanced interventions. PFCAT Δ from baseline - discharge (Adjusted for baseline health) Rapid Access avg Δ 2.9 pts > Δ seen in UC (95% CI = 1.1–4.8, p = .002)† Requirement for Advanced Intervention: Rapid Access: 25.8% vs. 65.9% UC • MRI (p < 0.05)† Rapid Access: 8.9 % vs. 27.2 % UC • Steroid Injection (p < 0.05)† Rapid Access: 8.1 % vs. 29.0 % UC • Surgical Consult (p < 0.05)† Rapid Access: 25.8% vs. 65.9% UC • Surgical Procedure (p >0.05)¶ Rapid Access: 1.6 % vs. 2.5 % UC	Strength of Design: **Moderate** Quality of Evidence: **Medium** • Potential influence of selection bias. Pts who were more motivated to comply with directions may have been more willing to join the Rapid Access group & experience the program's benefits.

Martin et al. (2020) Design: Inadequate ITS (Primary Outcomes) CBA (Secondary Outcomes) Aim: Determine the changes in clinical outcomes after the implementation of the NEESP. †Results statistically significant	N = 2071 (pts referred from participating GP practices) • Only 667 study participants with outcome data (1404 pts excluded) • Study population assessed before and after entry into the care pathway. <u>Country:</u> UK <u>Main Outcomes</u>: • NRS: Pain (0-10) • ODI: Oswestry Disability Index (0-100) • EQ-5D: Health status/quality of life (1 to -0.594) • GAD-7: Generalized Anxiety Assessment (0-21) • PHQ-9: Depression (0-27) <u>Data Collection</u>: (Chart review) • Baseline • Discharge • 6mth • 12mths <u>Secondary Outcome</u>: Comparison of Δ in EQ-5D between pathway pts and control group	Pts treated through the pathway exhibited improvements in pain, disability, quality of life, anxiety, & depression. Compared to a control group, pathway pts had a greater improvement in health status. <u>Δ from baseline - discharge</u> ($p < 0.01$)† NRS: 6.8 (±1.8) - 4.2 (±2.6) ODI: 42 (±17) - 26 (±19) EQ5D: 0.45 (±0.25) - 0.68 (±0.23) GAD7: 6.8 (±5.9) - 4.0 (±5.2) PHQ-9: 8.3 (±7.0) - 4.8 (±6.0) <u>Δ from baseline- 6mths</u> ($p < 0.01$)† NRS: 6.6 (±1.9) - 5.0 (±2.6) ODI: 47 (±16) - 35 (±16) EQ5D: 0.47 (±0.23) - 0.59 (±0.25) <u>Δ from baseline- 12 mths</u> ($p < 0.01$)† NRS: 6.6 (±1.9) - 4.8 (±2.7) ODI: 49 (±15) - 36 (±12) EQ5D: 0.47 (±0.25) - 0.59 (±0.25) <u>Δ in EQ-5D b/t baseline & discharge adjusted for SES, age, & Sex</u> Pathway: 0.01 Control: 0.02 $p < 0.01$†	<u>Strength of Design</u>: **Weak** <u>Quality of Evidence</u>: **Medium** • Potential influence of maturation bias. The absence of a control group makes it unclear if the changes in outcomes were the result of the pathway or the result of the natural resolution of the LBP. • Potential influence of selection bias. Differences were noted between the study population and the patient population.

Author and Year Martin et al. (2020) **Objective/purpose**: Develop a thorough understanding of NEESP implementation and how and for whom the pathway works. **Design/ Methodology** Normalization Process Theory (NPT) was employed within a qualitative design.	**Setting**: The health districts of South Tees, Hambleton, Richmondshire, and Whitby, UK. **Sample:** Purposive sample of key decision-makers (n=9), health professionals (n=15), and patients (n=15) of the combined physical and psychological programs. **Data Collection:** • Individual semi-structured interviews and one focus group. • Interview guides for decision makers & healthcare providers were developed based on core tenants of NPT: ○ *Coherence* – the ability to make sense to stakeholders, ○ *Cognitive participation* – stakeholder engagement and buy-in, ○ *Collective Action* – implementation within the work environment ○ *Reflexive Monitoring* – evaluation of the implementation process, the project, and the project's sustainability. • Interviews took place in person at work or at home. • Interviews were recorded, transcribed verbatim, and re-checked for accuracy. **Data Analysis:** • Authors engaged in data submersion by re-reading transcripts. • Data managed in NVivo qualitative research software. • Interviews from decision-makers & health care providers were mapped to tenants of NPT, while interviews for patients were analyzed using thematic analysis. • Researchers developed themes from deductive reasoning.	Large-scale changes require collaboration, accountability, and oversight of the change process. Before implementation, healthcare providers must clearly understand their roles and responsibilities. **1) Decision Makers** ○ *Coherence* – participants reported confusion about their new responsibilities and roles. ○ *Cognitive participation* – GP buy-in viewed as critical. ○ *Collective Action* – Practices not involved in pathway development were resistant to implementation. ○ *Reflexive Monitoring* – implementation could be optimized by initiating it at the beginning of the fiscal year. **2) Health Care Providers** ○ *Coherence* –recommendations for patients with chronic pain were confusing. ○ *Cognitive participation* –participants reported engaging in the pathway. ○ *Collective Action* – pathway described as time-consuming. ○ *Reflexive Monitoring* –Patient outcomes & system savings recommended as evaluation matrix. **3) Patient perspective** ○ *Nature of pain* –the pain was resistant to other interventions. ○ *Treatment Expectations* – patients were skeptical. ○ *Perception of Care* – most had a positive experience. ○ *Experience aftercare* – patients felt better equipped to self-manage. ○ *Spread the Word* – patients recommended the program to others.	**JBI (2020) Credibility Criteria Assessment:** *Medium* The authors did not report on cultural orientation or discuss strategies to reduce potential researcher influence, such as having a second researcher verify audio transcriptions or data analysis. **Trustworthiness (Lincoln and Guba's 1985 criteria)**: *Moderate* • Confirmability could have been enhanced by providing additional information about the analysis process and theme development. • Credibility could have been enhanced through the disclosure of researcher credentials.

McKeag et al. (2020) Design: CUBA Aim: Evaluate the impact of receiving nerve root injection, as a component of the LS CP †Results statistically significant	N = 75 (All pts from a single GP practice) • 27 (36.0 % male) • 48 (64.0 % female) <u>Country:</u> U.K. <u>Intervention:</u> Pts managed per NHS LB & PP. 15.5 wks after referral, pts received a nerve root injection from an orthopedic physiotherapist <u>Primary Outcome</u>: Pain and quality of life as measured via: • VAS: Mean visual analogue pain score • ODI: Oswestry disability index • EQ-5D: EuroQol Group 5 Dimension self-report <u>Secondary Outcomes</u>: Waitlist reduction Outside the LS pathway, patients wait for an avg of 109 wks for a surgical consult without the opportunity for an orthopedic physiotherapist assessment or nerve root injection.	Pts who entered the NHS LB&PP and received a nerve root injection experienced reduced symptoms. <u>Main Outcomes:</u> <u>VAS:</u> (p<0.0001) † Pre-intervention: 7.4 Post:4.8 <u>ODI:</u> (p = 0.024) † Pre-intervention: 58.4 % Post: 49.7 % <u>EQ-5D:</u> (p < 0.001) † Pre-intervention: 0.2 Post:0.4 <u>Secondary Outcomes</u> In the 1 yr follow-up, 43% (32) of the pts did not report requirements for additional care after root injection. Given the standard wait time of 109 wks for those in usual care, the authors reported that the intervention reduced wait time by 94 wks for 43% of the patients.	<u>Strength of Design</u>**:** **Weak** <u>Quality of Evidence</u>**:** **Medium** • In the absence of a control group receiving UC, it is unclear if the injection resulted in reduced symptoms or if this was simply the resolution of the condition over time. Similarly, it is unclear if the pathway decreased the wait times or if patients would have been removed from the referral list when symptoms resolved. • The role of confounding variables was not considered, and no statistical analysis of confounding variables was conducted.

Morso et al., (2021) Design: RCT Aim: Compare the impact of a STarT Back CP intervention with UC Results statistically significant ¶ Results NOT statistically significant	N = 334 (Pts from 10 different GP & physio practices) <u>Country</u>: Denmark Pts with LBP recruited by GP or physio triaged based on STaRT back and stratified into low, medium & high-risk groups. Pts were randomized 1:1 to either the control or intervention group. <u>Control Group – **UC:**</u> N = 164 • Pts provided with UC. • Clinicians blinded to STaRT back score and classification. <u>Intervention Group - Stratified Group Care (**SGC**)</u>: N = 167 • Care tailored based on STaRT Back classification. <u>Data Collection</u>: (Pt mailed questionnaires) Info collected at baseline, three months, & 12 mths <u>Main Outcomes</u>: RDMQ: Roland & Morris Disability Scale <u>Secondary Outcomes</u> Health Resource Utilization	There was no difference in patient outcomes between the UC and SGC at 3 or 12 mths. SGC was associated with fewer treatment sessions and lower healthcare expenditures. <u>3 Months</u> RMDQ Score **SGC: 5.93 (-5.6)** vs. UC: 5.2 (5.89) Mean difference -0.45 (95% CI: -1.82-0.93) (p = 0.52)¶ <u>12 Months</u> RMDQ Score **SGC: 6.09 (6.10)** vs. UC: 6.5 (5.38) Mean difference 0.06 (95% CI -1.49-1.61) (p = 0.94)¶ <u>Health Care Costs in Euros</u> • Physiotherapy (p = 0.001)† **SGC: 130.08 (95% CI: 120.76-130.41)** vs. UC: 140.26 (130.91-140.61) • GP Visits (p = 0.001)† **SGC: 120.67 (95% CI: 120.31-130.03)** vs. UC: 130.96 (130.47-140.35)	<u>Strength of Design:</u> **Strong** <u>Quality of Evidence:</u> **Medium** • Potential misclassification bias as the researchers noted the actual delivery of stratified care varied at various practices. • The researchers reported that an inadequate sample size impacted the ability to detect differences between sub-groups. The small sample size may partially explain why the benefit for the high-risk group observed in previous studies was not replicated in this work.

Murphy et al., (2016) Design: CBA Aim: Compare the impact of STarT Back CP Intervention with UC †Results statistically significant ¶ Results NOT statistically significant	N = 881 Country: Waterford, Ireland Stratified Group Care (**SGC**)- Intervention group N =371 • LBP pts recruited from consult clinic in 2012/13 • Pts are stratified into low, medium, & high-risk groups. Care is tailored based on classification. UC – Control Group N = 516 • LBP pts recruited from consult clinic in 2008/11 • This group was also stratified into low, medium & high-risk groups. Therapists were unaware of classifications & care was based on the clinician's professional judgement. Groups matched on several criteria. Minor differences were noted between baseline characteristics of the stratified & UC group. Data Collection: (Pt questionnaires) Info collected at baseline & 12 wks Main Outcomes: RDMQ: Roland & Morris Disability Scale (0-24: high scores = severe disability) Secondary Outcomes VAS: (1-10: 10 = worst pain) BBQ: Back Beliefs Questionnaire (9-45: high scores = pessimistic views of LBP)	The high-risk SGC had superior Δ in RDMQ score, while the medium & low-risk groups had the same outcomes as UC. The medium-risk SGC had less of a decrease in pain than UC. Otherwise, there were no significant differences between SGC and UC in the 2° outcomes. Δ in RDMQ scores from baseline -12wks • Low Risk (p = 0.993)¶ SGC: 1.31 (3.94) vs. UC:2.48 (3.92) • Med Risk (p =0.125) ¶ SGC: 3.76 (4.99) vs. UC:3.6 (5.10) • High Risk (p =0.031)† SGC: 5.48 (5.78) vs. UC: 3.58 (5.78) Δ in VAS scores from baseline-12wks • Low Risk (p = 0.057)¶ SGC: 0.05 (2.12) vs. UC: 0.79 (2.06) • Med Risk (p =0.125)† SGC: 2.09 (2.56) vs. UC: 1.32 (2.74) • High Risk (p =0.110)¶ SGC: 2.17 (2.95) vs. UC: 1.45 (2.58) Δ in BBQ scores from baseline-12wks • Low Risk (p = 0.212)¶ SGC: 2.53 (6.44) vs. UC: 1.07 (6.27) • Med Risk (p =0.378) ¶ SGC: 3.58 (6.56) vs. UC: 2.93 (6.27) • High Risk (p =0.440) ¶ Stratified: 3.49 (6.75) vs. UC: 2.57 (6.50)	Strength of Design: **Moderate** Quality of Evidence: **Medium** • Potential influence of attrition bias as 33% of study subjects did not complete the study & enhanced retention may have resulted in different results. • Although historical matched controls were used, regression analysis could have enhanced control of confounding.

Author and Year Ryan et al. (2020) **Objective/purpose**: Explore the experience of patients with sciatica being managed within the LS pathway. **Design/ Methodology** A qualitative design with an Interpretive Description approach.	**Setting**: A publicly funded musculoskeletal physiotherapy clinic in the UK. **Sample:** Purposive sample of patients > 18 years old diagnosed with sciatica and managed per the LS CP (*n*=14). Patients were of various ages, work statuses, and stages of pathway progressions. **<u>Data Collection:</u>** • Individual semi-structured interviews lasting 38-117 minutes (median: 82.6 minutes) • Interviews were conducted between October 2015 and May 2016. • Semi-structured interviews took place at the clinic and were conducted by the lead investigator. • Transcripts were recorded and transcribed verbatim. • The authors did not claim to reach data saturation; instead, the sample provided adequate information for a detailed response to the research question. **<u>Data Analysis:</u>** • Data were analyzed using Braun and Clarke's approach. • The analysis involved line-by-line coding, developing descriptive themes, and then analytical themes. • Three researchers completed thematic analysis. • Themes developed inductively. • Authors reported using reflexive memos to facilitate understanding.	Patients were dissatisfied with the care they were receiving. Patients were frustrated with the clinical decision-making process, gatekeeping practices, and the lack of patient education. **1) Problems with the Pathway: Absence of Person-centered Care** • *Absence of Transparency* -Patients had difficulty understanding what would happen next or the potential options available. • *Paternalistic care* – most decisions were clinician-led. • *Protocol-driven* – exploring options or specialists outside of the protocol was primarily shut down. • *Absence of collaboration* – patients felt that different care providers frequently did not communicate with each other. **2) Required Agency** • Patients were required to be *independent and proactive.* • Agency and self-action were required to be a *good patient*. **3) Burden of Agency** • The pain and discomfort of sciatica were *an obstacle* to engaging in mobilization or other aspects of self-management. • Patients reported they *lacked the skills* to find the appropriate information and guide their care. • Others reported they lacked the *financial resources* required for aspects of their care.	**JBI (2020) Credibility Criteria Assessment:** *Medium* • The authors did not report a cultural orientation. • Additionally, the use of coding in the analysis was incongruent with the Interpretive Description approach (Thorne et al., 1997) **Trustworthiness (Lincoln and Guba's 1985 criteria)**: *Moderate* • Credibility could have been enhanced through the disclosure of researcher credentials.

Author and Year Sanders et al. (2011) **Objective/ purpose**: Explore the dynamics within healthcare organizations that create barriers or enablers for General Practice Physicians during the implementation of the LS pathway. **Design/ Methodology** Normalization Process Theory (NPT) was employed within a qualitative design.	**Setting**: General Practice clinics from five districts within one Primary Care Trust in the UK. **Sample:** Maximum diversification sample of GPs from the five districts Pre-intervention: n = 32 Post-intervention: n = 9 **<u>Data Collection:</u>** Pre-implementation of pathway: • Semi-structured interviews conducted over the telephone (avg length: 10-15 min) Post-implementation of pathway: • Semi-structured interviews – means not specified (avg length: 30-40 min) Interview guides based on core tenants of NPT: • *Coherence* – sense-making, • *Cognitive participation* – dissemination and interpretation of knowledge • *Collective Action* –the division of labor • *Reflexive Monitoring* – organizational & social context. **<u>Data Analysis:</u>** • Interviews were recorded, transcribed, and entered in NVivo qualitative research software. • The constant comparative method was used for the analytical process. • A coding scheme was developed, and three researchers independently coded transcripts. • NPT was used to guide analysis, but authors also considered alternative broader insights. • Researchers developed themes from deductive reasoning.	Data from the quantitative sister study indicated that only 1/2 – 1/3 of GPs utilized the LS pathway to manage patients with LBP. Based on this qualitative study, the authors attributed the implementation failure to be the result of inadequate practical coherence amongst GPs and administrations' lack of consideration of care routines and work patterns, as well as the impact on interpersonal relationships with peers. **<u>Practical Coherence</u>** **1) Management of LBP was seen as a low priority** Current practices were viewed as acceptable. **2) LS Pathway did not account for the art of medicine** GPs reported there was no point in even referring some patients to physio. **3)GPs lacked adequate knowledge to properly use LS Pathway** Many did not access the tool after the initial training. **4) Incentives did not exist for using the system.** **5)GPs did not view the system as benefiting their decision-making.** Some viewed the system as obstructive and non-congruent with personal practice. **<u>Relational Coherence</u>** **6) The system was not discussed among peers.** GPs stated they never discussed this outside of the learning seminars. **7) System-impacted collaborative relationships** GPs did not want to overwhelm the physio or send inappropriate referrals to orthopedic services.	**JBI (2020) Credibility Criteria Assessment:** Medium • The authors did not report a cultural orientation. • There was an incongruity between the research methodology and data analysis. Researchers employing NPT analyze data in consideration of components of the theory and use content analysis (May et al., 2018) vice the broad approach to analysis and use of constant comparison in this study. **Trustworthiness (Lincoln and Guba's 1985 criteria)**: *Moderate* • Confirmability could have been enhanced by providing information about the analysis portion of the study.

Wilgenbusch et al., (2020) Design: Retrospective Cohort with equivalent comparison groups Aim: Compared to UC, can the use of the SSP improve the number of surgical consultations that lead to surgery and decrease the wait time for patients to receive an MRI? †Results statistically significant	N = 215 (pts drawn from the practice list of 2 spine surgeons) • 125 (58 % male) • 100 (42 % female) <u>Country:</u> Canada <u>Exposed Cohort (**SSP**):</u> N = 66 <u>Not Exposed Cohort (**UC**)</u>: N = 149 <u>Group Characteristics</u> UC & SSP were similar in terms of age, sex, as well as baseline measures of health and back pain. Minor variations were noted between the two groups' distribution of back pain sub-classifications. <u>Main Outcomes</u>: • Number of surgical consults that lead to surgery. • Wait time for MRI (days) • Wait time for Surgical consult (days)	The SSP may contribute to system optimization by improving the percentage of successful surgical consultations and enabling patients who require an MRI or a surgical consult to receive them earlier. <u>Successful surgical consults:</u> (p = 0.003)† **SSP:** 59.1% UC: 37.6% <u>MRI Wait time</u>: (p <0.0001)† **SSP:** 27.4 ± 23.0 UC: 63.5 ± 42.2 <u>Surgical Consult Wait time</u>: (p = 0.0001)† SSP: 69.1 ± 73.7 UC: 129.6 ± 109.1	<u>Strength of Design</u>: **Moderate** <u>Quality of Evidence</u>: **Medium** • A historical bias may have influenced the assessment of MRI and surgical consult wait times. As a component of the provincial government's implementation of the SSP program, pts referred through the process were provided with prioritized access to MRI appointments and surgical consults. • Control of confounding variables and analysis could have been improved by utilizing regression analysis to determine the potential impact of confounding variables.

Wu et al. (2020) Design: Prospective Cohort Aim: Determine if post-op pain and quality of life differ for those referred for surgery (Sx) through the SSP vs. UC ¶ Results NOT statistically significant †Results statistically significant	N = 150 (pts drawn from the practice list of 2 spine surgeons • 89 (59 % male) • 61 (41 % female) <u>Country:</u> Canada <u>Exposed Cohort (**SSP**):</u> N = 75 Referred for Sx via SSP <u>Not Exposed Cohort (**UC**)</u>: N = 75 Referred for Sx via usual means. <u>Baseline Characteristics</u>: Cohorts were matched to control for potential confounding variables. No statistically significant differences between groups in terms of sex distribution, age, BMI, SSP type, surgery offered, baseline pain, and quality of life. <u>Primary Outcomes</u>: Post-operative pain and quality of life • VAS: Mean visual analogue back pain score • ODI: Oswestry disability index • EQ-5D: EuroQol Group 5 Dimension self report <u>Secondary Outcomes</u>: • Wait time to see the surgeon. • MRI wait time. Utilization of non-operative tx strategies	Changes in VAS, ODI & EQ-5D, or wait for surgical consults did not differ between SSP & UC cohorts. The SSP cohort had higher utilization of non-operative strategies and faster access to MRI. <u>VAS Δ:</u>(p =0.072) ¶: SSP: 5.5 ±2.3 to 2.7± 2.3 UC: 5.5 ±2.3 to 2.9± 2.7 <u>ODI Δ:</u> (p =0.046) ¶ SSP: 21.8 ±6.9 to 10.7± 8.5 UC: 21.1 ±8.1 to 9.9± 9.4 <u>EQ-5D Δ :</u> (p =0.14)¶ SSP: 57.6 ±21.3 to 80.0± 14.7 UC: 60.6 ± 20.3 to 75.6± 19.0 <u>Total wait time to see a surgeon</u> (p =0.34) ¶ SSP: 83.0 ±77.6 UC: 100.3 ± 86.3 <u>MRI Wait time</u> (p<0.0001)† SSP: 16.8 ± 26.2 UC: 63.0±41.3 <u>Utilization of non-operative tx strategies</u>† • Physiotherapy: 63% SSP vs. 42% UC, p = 0.03 • Chiropractic treatment: 46% SSP vs. 27% UC, p = 0.03 • Massage: 47% SSP vs. 27% UC, p = 0.04 Acupuncture: 29% SSP vs. 12% UC, p =0.02	<u>Strength of Design:</u> **Moderate** <u>Quality of Evidence:</u> **Medium** • The authors did not report the number of subjects required to ensure the study was adequately powered. Given that many of the primary outcomes did not have significant differences, it is unclear whether outcomes resulted from actual effect or inadequate sample size.

Zarrabian et al., (2017) Design: Retrospective Cohort with non-equivalent comparison groups Aim: When compared to UC, can the use of the TSP improve the number of surgical consults that lead to surgery and decrease the number of MRIs ordered ?	N = 422 (surgical candidates drawn from 3 ISAEC clinics) • Sex breakdown unknown <u>Country:</u> Canada <u>Sites</u>: Toronto Hamilton Thunder Bay <u>Exposed Cohort</u> (TSP surgical candidates): N = 422 Inclusion Criteria: • Unmanageable LBP • 6wks < LBP < 52 wks Exclusion: • Pain disorder, narcotic dependency, pregnancy/post-partum, or patients with complex ideologies requiring immediate intervention. <u>Not Exposed Cohort:</u> (**UC**) Information provided pre-TSP implementation trends at the same sites. <u>Main Outcomes</u>: • Number of surgical consults that lead to surgery. • MRI utilization. • Surgical consults wait time.	The TSP may contribute to system optimization by improving the percentage of successful candidates and reducing the number of MRIs ordered. <u>Successful surgical consults</u>: UC: 15% **TSP:** 93% <u>MRI Utilization</u>: UC: 100% TSP: 79% <u>Surgical consults wait-times:</u> UC: 6 months **TSP**: 38 days	<u>Strength of Design</u>: **Moderate** <u>Quality of Evidence</u>: **Weak** • The inadequacy of statistical testing negatively impacted the validity of the findings. The authors made crude comparisons between percentages rather than conducting a statistical analysis to determine if the differences in UC & ISAEC were statistically significant. • Potential confounding variables were not considered or evaluated. Therefore, it is unclear the role potential confounding variables may have played in determining the effect of the intervention.

Appendix B: Report on Consultations and Environmental Scan

Management of Lower Back Pain in a Canadian Armed Forces Primary Care Clinic: Results from Environmental Scan and Consultations

Lower back pain (LBP) is the third leading cause of medical attrition within the Canadian Armed Forces (CAF) and is one of the top five complaints reported by CAF personnel (Department of National Defense, 2017; Statistics Canada [StatsCan], 2019a). Research suggests that the pandemic may have caused patients with LBP to experience a decline in their well-being as the associated lockdowns contributed to general increases in anxiety and reduced opportunities for mobilization (Amelot et al., 2022). Within the local CAF primary healthcare clinic where I am employed, healthcare providers desire to engage in a quality improvement (QI) initiative and enhance the management of patients with LBP. Based on the success of the local COVID-19 care pathway (CP) as well as evidence from health literature (Busse et al., 2019; Rotter et al., 2012), the development and implementation of an evidence-based, customized LBP CP were deemed by the clinic leadership and stakeholders as the most effective way to address this concern.

To support the development of this resource, I drew information from three sources: a literature review, a grey literature review or environmental scan, and consultations with local stakeholders. Experts in healthcare-related change implementation advocate for consultations, as the process enables developers to understand potential barriers and proactively mitigate these concerns (Harrison & Graham, 2021). Additionally, these authors report that stakeholders develop increased engagement and understanding of the issue through participation in the consultation process. Similarly, environmental scans also contribute to the success of QI initiatives by providing decision-makers with information regarding currently existing programs (Charlton et al., 2021). In this report, I will present the findings from the stakeholder

consultations and an environmental scan. I have previously submitted the results from the literature review on this topic. Here, I will synthesize the themes from the environmental scan and consultations in light of the literature review findings and their potential impact on future resource development, implementation, and evaluation.

Methods

I have previously articulated the methodological aspects of the consultation process and environmental scan in separate consultation and environmental scan plans. An abridged version is presented below.

Setting and Sample

The setting for this quality improvement project was a CAF primary care clinic in urban southwestern Ontario. The consultations occurred during a staff meeting at the clinic. I facilitated the discussion in a hybrid manner, with offsite personnel participating via Microsoft Teams and onsite personnel gathered in a classroom within the work site. To ensure all stakeholders provided input, a representative of each profession within the clinic was asked to attend by myself and the Senior Medical Authority. Participants included registered nurses, physicians, nurse practitioners, medical technicians, Personnel Support Program (PSP) athletic therapists, and clinical leadership. I purposefully selected these stakeholders for their knowledge regarding their respective roles in managing LBP within the clinic as they held leadership positions.

For the environmental scan, my approach was informed by the work of Wilburn et al. (2016). I aimed to collect, organize, and analyze information impacting LBP management produced internally by the Department of National Defense (DND) and its affiliates and literature within the public domain. The environmental scan involved searching the organization’s intranet for internal policies, directives, publications, formal communique, and

meeting minutes published within the last ten years. I also utilized Google to search for relevant information posted within the public domain. I inquired with other CF H Svcs clinics regarding their experiences with developing or implementing A LBP CP. As a quality assurance measure, only documents approved by the organization or published by a third-party agency were included, and self-published information was excluded. The environmental scan was also influenced by the business-based approach taken by Praxie (2022). This organization advocates categorizing information on a topic within political, economic, social, technological, and patient/customer focus domains. Political factors are the overarching regulatory frameworks that may impact the CP, while economic factors relate to remuneration methods or insurance policies that may influence stakeholders. Social factors pertain to the patient, provider, and organizational culture, while technological factors entail using equipment, software, or other devices (Praxie, 2022). Finally, Praxie (2022) describes patient-related factors as those that entail patients' expectations, needs, and desires. I similarly categorized the information when cataloging information received during the environmental scan.

Data Collection

As the leader of this quality improvement project, I conducted the consultations on July 6th. I have over fifteen years of experience in CF H Svcs and have previously held the role of patient safety lead before transitioning into nursing management. I conducted group consultations in an informal manner using a previously developed interview template. To reduce the potential of positional influence, I conducted the consultations in a separate classroom from the formal workspace and provided refreshments to contribute to the informal atmosphere. A total of 10 stakeholders were present. I posed questions in an open-ended manner and invited the group to respond. If some participants were not saying much, I would ask them for their

perspectives. My assistant kept detailed notes during the proceedings. After the proceedings, I reviewed and updated the notes with any missing information. Some stakeholders were sent follow-up questions via e-mail to clarify points made during the consultation. For example, I met with the lead PSP athletic therapist to inquire about their offered programs and services. I also reviewed the themes with the Senior Medical Authority to determine if additional information should be included.

For the environmental scan, I reviewed any policies from the DND intranet containing the search terms “medical release,” "back," or "back pain." Given my background in the organization, I also selected policies that I considered relevant such as the CAF Spectrum of Care (GOC, 2019). I reviewed the minutes from the organization’s strategic level clinical council for potentially relevant insights published within the last 12 months. The search and retrieval of documents occurred on July 7th. As a result of this process, I retrieved nine resources. In addition to the CAF Spectrum of Care website (GOC, 2019), seven other sources were deemed relevant. They included the Flight Surgeon Guideline (FSG) 1100-100 on the *Management of Musculoskeletal injuries for Aircrew* (Aerospace Medical Authority [AMA], 2021), two Defense Administrative Orders and Directives (DND 2022a/2022b), the policy on sick leave entitlement (GOC, 2022) as well as information from Veterans Affairs Canada (VAC, 2020) and Service Income Security Insurance Plan (SISIP, 2022), which provides third party insurance for CAF personnel. I also retrieved one relevant article published in McClean’s magazine (Geedes, 2018).

I located the local Base Surgeon OneNote within the clinic, which contained resources for LBP management. The national clinical council published no relevant information. Following the approach recommended by Praxie (2022), I cataloged the retrieved information as a political, economic, social, technological, or patient influence. The Spectrum of Care website

(Government of Canada [GOC], 2019), as well as the information from SISIP (2022), VAC (2020), GOC (2022), and Geedes (2018), was cataloged within the economic domain as these sources described the services and benefits available to those impacted by LBP or medical conditions in general. The local Base Surgeon OneNote was classified as other, as it contained two pamphlets recommending stretches for patients with LBP and did not fit into the classification system described by Praxie (2022). I classified the remaining documents (AMA, 2021; DND, 2022a/2022b) as being within the political domain, as they described employment regulations that could impact personnel with LBP.

Data Analysis

I transferred the data obtained during the consultations from the original Microsoft Word document into a Microsoft Excel spreadsheet. The information I retrieved for the environmental scan was also categorized within a separate Microsoft Excel document. I reviewed both data sets twice to familiarize myself with the information. The data sets underwent separate decontextualization and recontextualization using Bengtson's (2016) content analysis method. Next, I combined the data for the categorization and compilation phases, and the final themes were developed. This process is illustrated in Appendix A.

Findings

During the consultations, I explored how members of the care team viewed the provision of care related to LBP and how care could be improved. The discussions focused on managing patients with generalized mechanical back pain, as research indicates that this group represents 85% of patients with LBP (Wheeler et al., 2021). The six themes that emerged from a synthesis of findings from the environmental scan and consultations were: over-reliance on physiotherapy

services, resource abundance, negative perception of the safety net, barriers to optimal practice, and realistic opportunities for improvement.

Over-Reliance on Physiotherapy Services

Stakeholders reported that there was a perceived over-reliance on physiotherapy services. The over-reliance on physiotherapy services occurred amid the pandemic restrictions. The healthcare team did not have the opportunity to conduct a full assessment, and patients were sent to physiotherapy for prolonged treatment. Stakeholders felt that the interventions provided by physiotherapy services were sometimes inadequate and that using the in-house athletic rehabilitation program offered through PSP would be more appropriate. This program would enable patients to develop core strength and increase exercise tolerance. Some participants mentioned that patients perceived physiotherapy as the most appropriate intervention and were less inclined to be satisfied with the care that involved self-directed interventions compared to the passive care interventions provided by physiotherapy. There was a consensus that the healthcare team did not consider the psychosocial aspects of pain, such as anxiety or mental health comorbidities, until first-line interventions such as physiotherapy were unsuccessful.

Resource Abundance

Results from the environmental scan and consultations confirmed that CAF personnel have access to abundant resources to assist with managing LBP. The regulations delineated under the spectrum of care state that when recommended by a health care professional, CAF members have annual access to 20 physiotherapy sessions, ten acupuncture treatment sessions, ten osteopathy treatments, paid sick time, and PSP-directed athletic rehabilitation (GOC, 2019). Health care and treatment sessions are accessed during working hours and do not result in salary reductions (GOC, 2022). Additionally, CAF members can access onsite training facilities with

cardiovascular and weight training equipment. Athletic trainers also provide lunchtime calisthenic classes (CF Morale & Welfare Services, 2022). Stakeholders reported that when members were injured, they could receive expedited access to diagnostic imaging because of reimbursement arrangements. Overall, stakeholders felt abundant resources were available to prevent LBP and support injured members.

Potential for Abuse of Safety Net

All CAF members must maintain the ability to perform general military duties and successfully meet the CAF Common Military Tasks Fitness evaluation standards (AMA, 2021; DND, 2022a). If a medical condition such as LBP is unresponsive to treatment and prevents a CAF personnel from meeting these standards, CAF personnel are medically released from the organization (DND, 2022b). As the reduction in physical capabilities and loss of employment is often a difficult transition, various programs have been established as a safety net for the ill and injured members of the CAF. Members who are medically released are entitled to 75% of their income for two years from the CAF and additional compensation from Veteran's Affairs if their injury is attributable to military service (SISIP, 2022; VAC, 2020). Over the last decade, there has been a steady increase in the number of members who are medically released from the organization, with current figures estimating that nearly one-third of those who leave the CAF are medically released (Geddes, 2018).

Some stakeholders reported that some patients appear unmotivated to address their LBP; they desire time off work instead of engaging in treatment or injury self-management. There is concern that the current compensation system and available safety net de-incentivize the rehabilitation process, as some patients may view receiving a medical pension as more desirable than returning to the demanding military work environment. Other stakeholders proposed that

failure to engage in the LBP rehabilitation process may result from factors related to the psychosocial domain, as low motivation is often associated with mental health conditions such as depression. This perspective was congruent with the findings from Wheeler et al. (2021). In their literature review on LBP, the authors reported that psychosocial factors such as depression and anxiety could exacerbate LBP symptoms.

Realistic Opportunities for Improvement

The stakeholders recognized LBP management as a concerning issue within the clinic, and their suggestions for improvement of practice included: patient population engagement, early engagement with athletic rehabilitation, and early consideration of psychosocial aspects of pain management.

Stakeholders reported that patients have a poor understanding of LBP prognosis, with many patients developing therapist dependence for pain management rather than seeking tools for self-management. Additionally, stakeholders reported that patients desire a “quick fix” or are adamant regarding the requirement for diagnostic imaging. Similar findings also emerged during the literature review on LBP CP. For example, Martin et al. (2020) reported that patients were skeptical about the potential to experience improved LBP from non-surgical or non-pharmacological interventions. Additionally, Ryan et al. (2020) reported that many patients were dissatisfied with approaches to LBP management that curtailed access to diagnostic imaging or required utilization of self-agency. The author reported that patients with socioeconomic status or health literacy barriers might require higher support from the healthcare system. The HCP stakeholders reported that population-level patient engagement and a communication strategy might help improve the population's understanding of LBP and expectations regarding care.

Igwsi-Chidobe et al. (2021) also recommended population-directed communication so that patients can understand the services available and how to engage best.

Another suggestion from the healthcare stakeholders was increased engagement with the PSP athletic therapists. Some stakeholders reported that they often forget about the services they offer or are not fully aware of the types of services PSP provides. The PSP athletic therapists echoed that they often felt forgotten and reported that they could double the number of patients they support.

Stakeholders also suggested that there may be an opportunity for increased consideration of the psychosocial factors during LBP pain management. In the STaRT Back model, the physiotherapists tailored treatment plans to target those experiencing low motivation or fear related to movement (Hill et al., 2011). It is impossible to modify the care provided by physiotherapy services as a third-party external agency provides it. However, the PSP athletic therapist reported that their profession has expertise and experience working with patients impacted by similar psychosocial factors. Additionally, the mental health team offered to provide an education session to the primary care providers regarding the relationship between psychosocial factors and pain.

Barriers to Optimal Practice

After reflecting on these opportunities for improvement, stakeholders identified barriers to practice optimization, including the requirement for patient self-management, patient expectations, and high staff turnover.

Stakeholders reported that patients might resist transitions in care that require increased active engagement rather than passive treatment. For example, patients prefer to receive time off work and medication rather than engage in a physical rehabilitation program directed by the PSP

athletic therapists. While the LBP CPs discussed in the literature are grounded in a self-management-based approach, the evidence from the health literature suggests that this may not be appropriate for all members of the patient population. In a qualitative thematic review on self-management in chronic illness, Dwarsward et al. (2015) concluded that patients do not engage in self-management alone but rather require support from their healthcare team and extended social networks involving family, friends, and other patients. Similarly, Ven der Gagg (2022) reported that skills such as health literacy and system navigation were required for core aspects of health self-management. Considering these concerns, resource development should ensure adequate support for those with low health literacy or without social networks. These additional supports may include increased supervision from the PSP athletic therapists or more frequent follow-ups from the primary care provider.

Stakeholders also reported that patients' expectations regarding the need for diagnostic imaging might contribute to resistance toward resource implementation. In their systematic review of the information needs of patients with LBP, Lim et al. (2019) reported similar findings and concluded that patients' expectations regarding the requirement for diagnostic imaging, such as MRIs were not congruent with best practice. The authors recommend providing information to the population in a suitable tone and understandable language. Patient stakeholders would be well-suited to help develop appropriate messaging (Harrison & Graham, 2021).

In addition to patient resistance, the nature of the healthcare system may also result in a barrier to optimal practice. For the last two years, the clinic has experienced a turnover of 70% of staff. Stakeholders reported that these changes have made improvements to clinical practice difficult. The development of standard operating procedures was suggested to mitigate this issue.

Discussion

Conducting the environmental scan and consultations in a parallel manner was a success. As the project lead, I increased my understanding of existing programs and utilized the knowledge from the resources retrieved to inform my understanding of the feedback provided by the stakeholders. I also achieved the goals of the consultation process described by Harrison and Graham (2021) in that I established the call to action and communicated the necessity for a change in practice regarding managing patients with LBP. Stakeholders demonstrated buy-in towards the project and provided insight regarding the appropriate direction for the intervention and potential barriers and opportunities for barrier mitigation. Participants provided detailed and thoughtful suggestions during the process and volunteered to contribute further to the project. The consultations also allowed stakeholders to exchange ideas and enhance their interprofessional knowledge. Stakeholder buy-in was bolstered by the clinic leadership's commitment, who have supported this project. However, leadership engagement in the consultation process may have been a double-edged sword, as it may have prevented stakeholders from voicing their opposition to any changes in LBP management. Despite this potential shortfall overall, the process was beneficial and provided valuable insight regarding the direction for change and implementation considerations.

Direction for Change

Feedback from the environment scan and the consultations resulted in a change in the planned resource development. The stakeholders indicated that it is not reasonable to implement the full-fledged STarT Back Care Plan, as Hill et al. (2011) described. The STarT Back Care Plan involves implementing a specialized physiotherapy treatment plan tailored to patients based on whether they have been identified as low, medium, or high risk for the development of

chronic pain. It is impossible to modify the services physiotherapy provides as a third-party contractor delivers them. It is also common for patients to select a physiotherapist based on the proximity to their home rather than consider the physiotherapist's expertise. A modified version of the STarT Back Care Plan may be more appropriate. A modified care pathway would involve using the STarT Back triage tool to sort patients into low, medium, or high risk for developing chronic LBP (Hill et al. 2011) and subsequently providing stratified care. Like the STarT Back Care plan, low-risk patients focus on self-management. The PSP athletic therapists are well-positioned to help this group develop a physical exercise program supporting lower back health. Medium-risk patients would be directed to physiotherapy and PSP athletic therapy services. High-risk patients would receive similar care, with their primary care provider considering the psychosocial factors related to LBP and the potential for a mental health consultation. Providers would also consider the need for additional support for patients without social support or low health literacy.

Another opportunity to improve the management of LBP that I did not previously consider was incorporating the patient perspective and planning for a patient communication strategy. Incorporating the patient perspective would help ensure that the resource is customized appropriately to the population (Harrison & Graham, 2021). Additionally, including the patient's perspective in developing the patient communication strategy would ensure that changes in the delivery of health services are communicated appropriately. This approach may mitigate some of the burden patients may potentially feel in navigating health care services, as described in Igwsi-Chidobe et al. (2021), as well as the dissatisfaction with the reduced use of magnetic resonance imaging (MRI) and specialist consultation described by Ryan et al. (2020). As a novice in resource development, I chose not to include patients as stakeholders as I did not want to create

unrealistic external expectations regarding the final resource. However, as I have learned, future QI projects would benefit from incorporating representatives from the patient population as key stakeholders.

Engaging with the patient population may also allow the re-prioritization of physical activities. While physical fitness is a core value within the CAF (DND, 2022c), a recent survey indicated that 42.2% of members were not allotted work time for physical activity (StatsCan, 2019b). Supervisors may reprioritize the allocation of work time for physical activity if they know the potential for core strengthening and stretching to reduce the risk of LBP (Chou et al. 2007; Hayen et al. 2005; Schonstein et al. 2003) and the subsequent decrease in operational capability.

Implementation Considerations

Experts in implementing health-related organizational change processes, Harrison and Graham (2021) recommend developing a plan to implement and sustain an intervention during the initial planning process. The authors report that this reduces the potential for an intervention to be unsustainable. As previously discussed in the literature review, Rogers' theory of diffusion of innovation ([DOI] BUMC, n.d.) provides a helpful framework when considering implementing the customized STarT Back CP. The theory includes five factors - relative advantage, compatibility, complexity, trialability, and observability, that will affect the degree the LBP CP will be adopted into the setting.

Relative Advantage

Congruent with Rogers' theory of DOI (BUMC, n.d.), if the clinic staff views the STarT Back CP as more effective than the current approach to LBP management, they will be more adept to begin using the tool within their practice. During the STarT Back Care Plan orientation,

I can share the findings from the literature review so that staff are aware of the advantage of this approach. Additionally, the evidence (Chou et al., 2007; Hayen et al., 2005; Schonstein et al., 2003) for intervention components, such as exercise and physical conditioning, can be shared with the team to provide substantiation for this approach.

Compatibility

Another factor that will impact the potential successful implementation is the degree to which the intervention is congruent with the values and needs of stakeholders (BUMC, n.d.). A core component of the intervention focuses on the benefits of engaging in physical activities. As the value of physical fitness is already embraced by the organization (DND, 2022c) and supporting infrastructure is in place (CF Morale & Welfare Services, 2022), the LBP CP resource I will develop will most likely be congruent with organization values.

Regarding the needs of healthcare provider stakeholders, the consultation and environmental scan were instrumental in shaping the development of the intervention to ensure that it was congruent with the local context. These processes ensured the LBP CP was compatible with the resources available, healthcare provider stakeholders' expectations, and the organization's policies. As previously discussed, the consultations did not involve engagement with patient stakeholders. Future QI initiatives should engage with this group to ensure the intervention is compatible with the expectations and needs of patients.

Complexity

A realistic concern identified during the literature review was related to the difficulty in implementing a LBP CP in the clinical setting, as several authors (Igwsi-Chidobe et al., 2021; Martin et al., 2020; Ryan et al., 2020; Sanders et al., 2011) indicated the complexity of the CP marred successful implementation. To mitigate this concern, the resource I will develop is a

simplified approach to LBP management compared to the CPs I explored in the literature review. Despite these modifications, resource implementation will require a patient communication strategy and staff education (Harrison & Graham, 2021). Staff education must be sustainably developed so that when stakeholders and I are transferred, the changes to the management of LBP are continued. Sustainability can be addressed by capturing program information within a written format.

Trialability

Rogers stated that the degree to which an organizational change can be trialled or field tested prior to implementation would impact its potential success for sustainment (BUMC, n.d.). Harrison and Graham (2021) also advocated for trial runs of interventions before widespread implementation. These authors stated that the use of trials provides resource developers with the opportunity to assess the impact of staff education and the ability of clinic personnel to execute the use of the resource in the clinical environment. Additionally, field tests provide the opportunity to work out small-scale details that may have been overlooked during the conceptual development of the resource (Harrison & Graham, 2021). Considering these recommendations, the initial implementation of the resource should entail a short-term one-year trial. One year will be long enough for staff to implement the tool and provide beneficial feedback regarding the value of the care pathway. A survey will be distributed at the end of the trial to collect information from healthcare providers and patients regarding their experience during the implementation process. The survey and subsequent modification to the resource will help mitigate outlying potential difficulties in implementation, such as those described in the literature review.

Observability

As the final component of Rogers' theory of DOI (BUMC, n.d.), the theorist stated that the degree to which stakeholders such as patients, staff, and clinic administrators view an improvement, the more likely a resource such as the LBP CP would be integrated into the clinical environment. For a quality improvement project, it may be difficult to clearly articulate the improvements in LBP management as the initial number of patients at the local clinic LBP is unknown and would be difficult to determine. Additionally, the number of patients reporting for care may be impacted by the operational demands of the CAF, the resumption of post-pandemic services, and the proposed population engagement campaign. The most helpful metric may include following the outcomes of the patients managed during the trial phase and measuring their ability to return to service.

Conclusion

LBP is the third leading cause of medical attrition within the CAF and is one of the top five complaints reported by CAF members (DND 2017; StatsCan, 2019a). Within the local CAF primary health care clinic where I am employed, there is a desire to engage in a QI initiative and enhance the management of patients with LBP through developing a CP.

To support the development of this resource, I drew upon information from three sources: a literature review, a grey literature review or environmental scan, and consultations from key informants. This document articulates the findings from the environmental scan and consultations while considering the findings from the previous literature review on the topic. The six themes that emerged were: over-reliance on physiotherapy services, resource abundance, negative perception of the safety net, barriers to optimal practice, and realistic opportunities for improvement. The future direction for change and implementation considerations based on

Rogers' DOI theory (BUMC, n.d.) was also discussed regarding how this CP will be implemented within the local context. Overall, the environmental scan and consultations provided invaluable insight that will be used to develop a customized STarT Back CP for future implementation at the local clinic.

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Sample of Analysis Process

Component of Analysis	Meaning Unit	Condensed Meaning Unit	Theme
Consultations	o Paid sick days can also be a weakness o Sometimes, patients want an expedited process or face pressure from their supervisor to improve. o Lack of motivation to get better o Leads to many sessions with physical therapists, but no progress o Pension with LBP = "win"	CAF personnel are required to meet stringent fitness standards and operational capability. If members cannot meet these standards, they are no longer employable in the organization. If their injury can be attributed to their military service, the members will become eligible for a pension through Veterans Affairs. As nearly 1/3 of transitions out of the military result from medical release, some health care professionals feel that this de-incentives LBP recovery, as military members that recover must return to their demanding military occupation.	A negative perception of Safety Net
Environmental Scan	DAOD 5023-1, Minimum Operational Standards Related to Universality of Service A CAF member is required to successfully complete the Fitness for Operational Requirements of Canadian Armed Forces Employment (FORCE) Evaluation, which is the approved predictor for the CMTFE, as set out in DAOD 5023-2, Common Military Tasks Fitness Evaluation and as further detailed in the FORCE Operations Manual.		
Environmental Scan	DAOD 5023-0, Universality of Service The universality of service or "soldier first" principle holds that CAF members are liable to perform general military duties and common defence and security duties, not just the duties of their military occupation or occupation specification. This may include but is not limited to, the requirement to meet the CAF Common Military Tasks Fitness Evaluation standards and be employable and deployable for general operational duties.		
Environmental Scan	Flight Surgeon Guideline 1100-01: Prior to return to flying or controlling duty, a focused physical exam is to be carried out, and the following wording is to be included in the CFHIS note “physically capable of safely carrying out all flight duties including egress and emergency actions.”		

Appendix C: The Primary Care Low Back Pain Pathway and Instruction Manual

Primary Care Low Back Pain Pathway

Exclusion Criteria[1]

Not intended for use with the following patients:

- Pain for >4-6 weeks
- Age < 18 years
- Pregnant or breastfeeding
- Workup (spinal imaging and/or bloodwork) completed

Start of Process
Red Flag Screening[1,3]
STarT Back Screening Tool[2]
Suggested Resources
Referral Point

Patient presents to sick parade with new onset backpain that is musculoskeletal in nature. Complete the following:

☐**Patient history**

☐**Focused Physical Assessment**

Red Flag Screening [1,3]

Refer Outside Pathway

Start Back Screening Tool

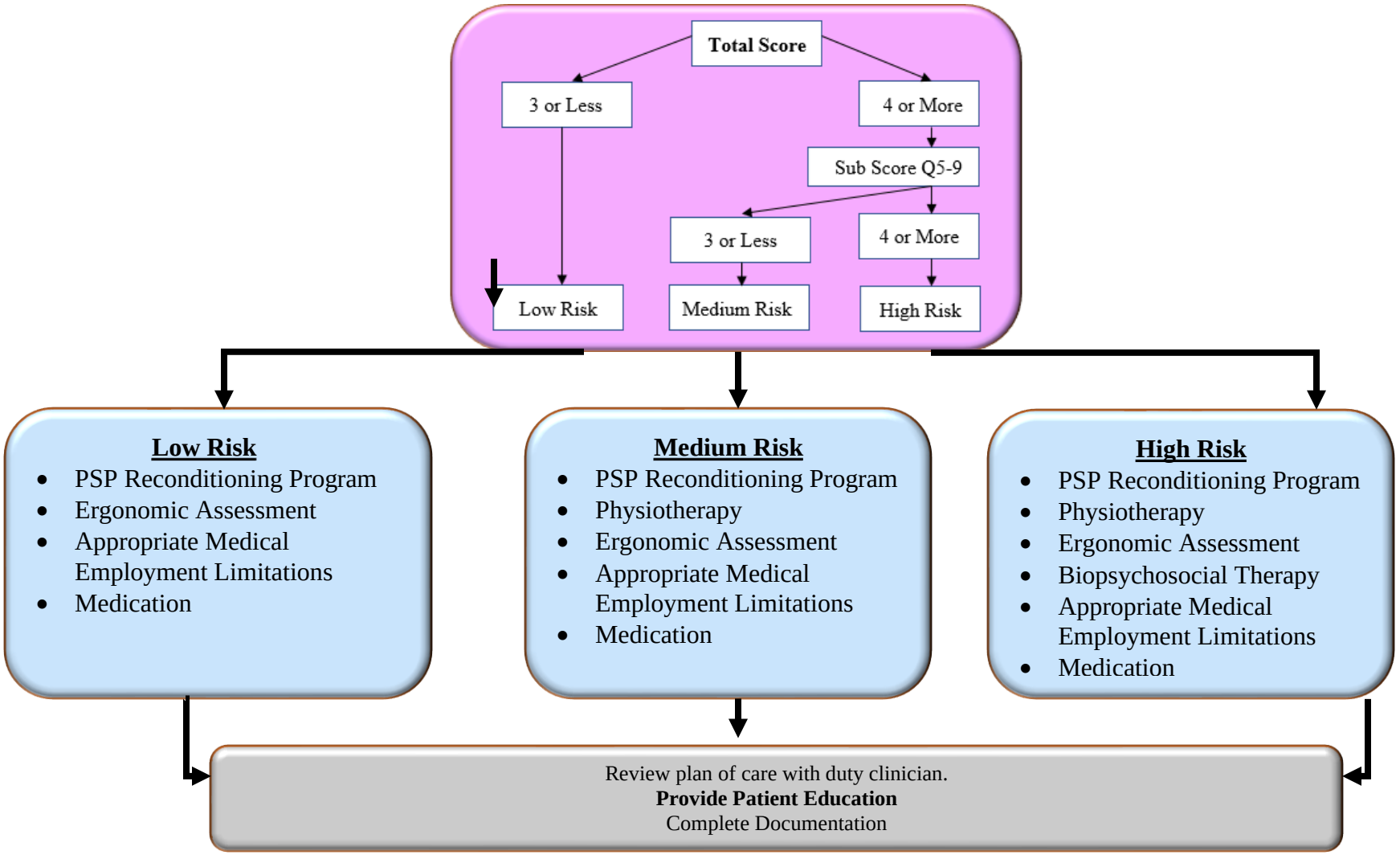
Ask the patient to reflect on the last two weeks and respond to the following questions[1]

	Disagree	Agree
	0	1
1) My back pain has spread down my leg(s) at some time in the last 2 weeks	□	□
2) I have had pain in the shoulder or neck at some time in the last 2 weeks	□	□
3) I have only walked short distances because of my back pain	□	□
4) In the last 2 weeks, I have dressed more slowly than usual because of back pain	□	□
5) It's not really safe for a person with a condition like mine to be physically active	□	□
6) Worrying thoughts have been going through my mind a lot of the time	□	□
7) I feel that my back pain is terrible and it's never going to get any better	□	□
8) In general I have not enjoyed all the things I used to enjoy	□	□

9) Overall, how bothersome has your back pain been in the last 2 weeks?

Not at all	Slightly	Moderately	Very much	Extremely
□	□	□	□	□
0	0	0	1	1

Total score (all 9): _____ Sub Score (Q5-9):_____



This Care Pathway is intended to facilitate stratified care for patients impacted by non-traumatic low back pain that is believed to be musculoskeletal. It is presented as a guide regarding therapeutic options and does not represent a replacement for clinical judgment.

1. Atlas, S., Deyo, R., Jarvik, J., Staiger, T., Wheeler, S., & Wipf. (2022). Low back pain: Initial evaluation of an adult with acute, nontraumatic low back pain *UpToDate Pathways*. Retrieved 10 Jan 2023, from https://pathways.uptodate.com/pathway/120424?source=toc&redirect=true&dl_node=5c82672c51031200100425cf&rid=63be01f83b16cb7f3769cef7
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Primary Care Low Back Pain Pathway Instruction Manual

An Accompaniment to the Low Back Pain Care Pathway for Health Care Team Members Employed Within Primary Care

Source. From Microsoft Word Stock Images

Author: Kathryn Brett, BN RN CD

March 2023

Primary Care Low Back Pain Pathway

Exclusion Criteria[1]

Not intended for use with the following patients:

- Pain for >4-6 weeks
- Age < 18 years
- Pregnant or breastfeeding
- Workup (spinal imaging and/or bloodwork) completed

Start of Process
Red Flag Screening[1,3]
STarT Back Screening Tool[2]
Suggested Resources
Referral Point

Patient presents to sick parade with new onset backpain that is musculoskeletal in nature. Complete the following:

☐**Patient History**

☐**Focused Physical Assessment.**

Red Flag → **Refer Outside Pathway**

STarT Back Screening Tool

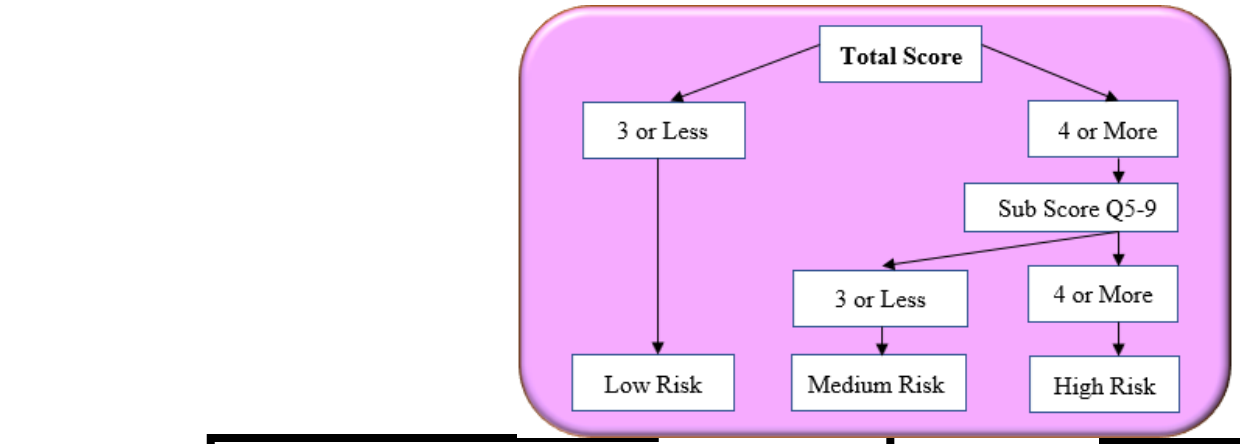
Ask the patient to reflect on the last two weeks and respond to the following questions[1]:

	Disagree 0	Agree 1
1) My back pain has spread down my leg(s) at some time in the last 2 weeks	□	□
2) I have had pain in the shoulder or neck at some time in the last 2 weeks	□	□
3) I have only walked short distances because of my back pain	□	□
4) In the last 2 weeks, I have dressed more slowly than usual because of back pain	□	□
5) It's not really safe for a person with a condition like mine to be physically active	□	□
6) Worrying thoughts have been going through my mind a lot of the time	□	□
7) I feel that my back pain is terrible and it's never going to get any better	□	□
8) In general I have not enjoyed all the things I used to enjoy	□	□

9) Overall, how bothersome has your back pain been in the last 2 weeks?

Not at all	Slightly	Moderately	Very much	Extremely
□	□	□	□	□
0	0	0	1	1

Total score (all 9): _____ Sub Score (Q5-9):_____



Start of Process
Red Flag Screening[1,3]
STarT Back Screening Tool[2]
Suggested Resources
Referral Point

Low Risk

- PSP Reconditioning Program
- Ergonomic Assessment
- Appropriate Medical Employment Limitations
- Medication

Medium Risk

- PSP Reconditioning Program
- Physiotherapy
- Ergonomic Assessment
- Appropriate Medical Employment Limitations
- Medication

High Risk

- PSP Reconditioning Program
- Physiotherapy
- Ergonomic Assessment
- Mental Health
- Appropriate Medical Employment Limitations
- Medication

Review plan of care with duty clinician.
Provide Patient Education
Complete Documentation

This Care Pathway in intended to facilitate stratified care for patients impacted by non-traumatic low back pain that is believed to be musculoskeletal in nature. It is presented as a guide regarding therapeutic options and does not represent a replacement for clinical judgement.

1. Atlas, S., Deyo, R., Jarvik, J., Staiger, T., Wheeler, S., & Wipf. (2022). Low back pain: Initial evaluation of an adult with acute, nontraumatic low back pain *UpToDate Pathways*. Retrieved 10 Jan 2023, from https://pathways.uptodate.com/pathway/120424?source=toc&redirect=true&dl_node=5c82672c51031200100425cf&rid=63be01f83b16cb7f3769cef7
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3. *Ontario Ministry of Health (2015) Low back pain strategy: Clinically organized relevant exam (Core) back tool.* https://health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_edutools.aspx

Foreword

This Primary Care Low Back Pain Pathway Instruction Manual is designed to educate members of the health care team on the appropriate use of the accompanying ***Primary Care Low Back Pain Pathway***. It was constructed for use by the primary care staff employed at 32 Canadian Forces Health Services Centre. The use of this instruction manual and Primary Care Low Back Pain Pathway can augment the provision of evidenced-based stratified care and increase healthcare team members' knowledge regarding the resources that are available locally. The foundation of these educational materials was based on a literature review, a review of resources available from Canadian Forces Health Services, and interviews with clinic members.

This instruction manual has four separate sub-sections. The manual opens with a discussion on the background of low back pain within the Canadian Armed Forces. The second section discusses Care Pathways with a specific focus on the STaRT Back Pathway[1], the foundation of the Primary Care Low Back Pain Pathway. The third section provides step-by-step directions on how to use the pathway. The final section overviews locally available resources and patient engagement materials.

While it is hoped that this instruction manual and the Primary Care Low Back Pain Pathway support care provision, the information is presented as a guide regarding therapeutic options; it does not represent a replacement for clinical judgment.

Source. From Microsoft Word Stock Images

Table of Contents

Section One: Backpain in the Canadian Armed Forces

Section One: Background on Backpain in the Canadian Armed Forces

In this section of the instruction manual, you will develop an understanding of the nature of back pain and its impact on Canadian Armed Forces personnel. The concept of pain will be defined, and the prevalence of low back pain within the organization will be discussed. This section also introduces the management of low back pain within the primary care context and highlights specific red flags that may indicate an underlying problem.

Key Points

After reading this section, you will be able to:

1. Understand the common etiology of idiopathic mechanical back pain.
2. Understand low back pain in the context of the Canadian Armed Forces.
3. Define low back pain.
4. Identify critical red flags in the management of low back pain.

Low Back Pain

Low Back Pain is discomfort, stiffness, or cramping on the posterior portion of the body that may range from above the gluteal folds to below the costal margins[2]. Modern theories on pain view this phenomenon as an experience impacted by an individual's emotional and cognitive processes, as well as contextual factors such as culture and environment[3].

Prevalence

Source. From Microsoft Word Stock Images

Recent literature indicates that 84% of adults experience low back pain at some point in their lives[4]. The World Health Organization (WHO) states that low back pain is the leading cause of disability in over 160 countries[6]. The WHO also reported that this ailment contributes to premature global workforce departure.

Research has indicated that more than 85% of patients in the American primary care setting with low back pain do not have an underlying cause, with the majority experiencing musculoskeletal pain[4]. These authors estimated that less than 1% of patients within the primary care setting have a serious underlying cause for their back pain. Healthcare team members should remain alert to **red flags** so patients can be appropriately re-directed. Patients with a concerning etiology for their back pain frequently have symptoms associated with red flags rather than back pain in isolation[4]. These patients should not be managed through the Primary Care Low Back Pain Pathway.

RED FLAG

Red Flags are potential causes of backpain that are not musculoskeletal and will require consultation with the duty physician, nurse practitioner, or physician assistant for additional investigation[4,5]. Patients with an identified red flag should not be managed through the low back pain pathway. Red Flags include the following conditions:

1) **Spinal Cord or cauda equina compression**
2) **Metastatic Cancer**
3) **Spinal cord infection**
4) **Spinal compression fracture**

Red Flag Description

Table 1.1 Descriptions of Concerning Etiologies for Backpain[4,5]

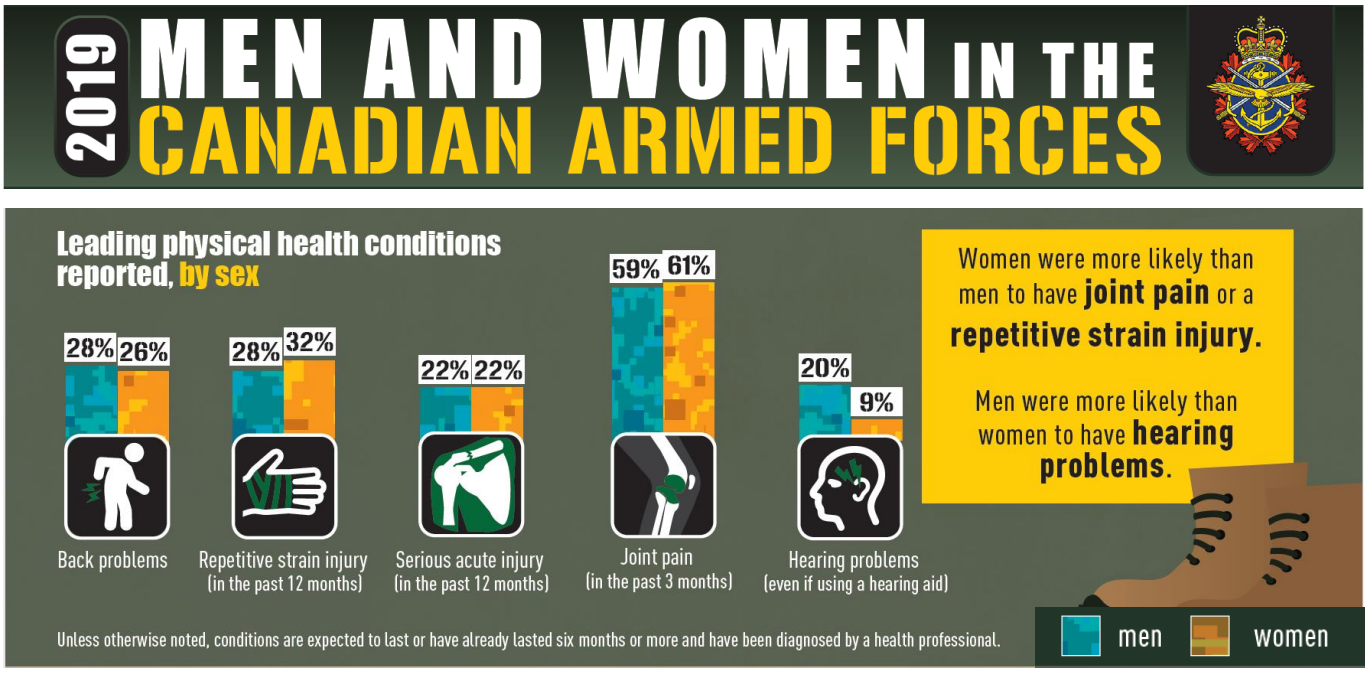
Red Flag	Description	Assessment	Concerning Finding

Spinal cord or cauda equina compression	Cauda equina involves the compression of nerve roots within the spine. The most reported causes are herniation of the intervertebral disc and inflammation of the joints and ligaments of the spine. Other reported cases include lumbar puncture, trauma, and tumour.	• Patient history
		• Neurological Exam
			• Neurological deficits and/or sensory and/or motor weakness. Specifically:
			  ○ Low body weakness
			  ○ Gait instability
			  ○ New urinary retention or incontinence
			  ○ New fecal incontinence
			  ○ Saddle Anesthesia

Metastatic Cancer	The spine is a common site of metastasis for those with cancer or a history of cancer.	• Patient history • Inspection, palpation/ percussion of the spine. • Observation of posture	• The patient is currently experiencing cancer. • History of cancer. • Suspicion of cancer-based on physical assessment and presence of risk factors such as advanced age, smoking, family history, recent weight loss, and pain on examination.
Spinal cord infection	Common causes of spinal cord infection include epidural abscess and vertebral osteomyelitis.	• Patient history and physical assessment • Neurological exam	• Fever • History of recent bacterial infections • Hemodialysis • Endocarditis • Use of injection drugs • Immunosuppression • History or current use of corticosteroid medications • Recent history of epidural or spinal procedures

Red Flag	Description	Assessment	Concerning Finding
Spinal compression fracture	Fracture of a bone within the spinal column	• Patient history • Physical assessment	• Advancing age (65+) • Previous fracture • Glucocorticoid therapy • Parental history of hip fracture • Low body weight (127lb/58 kg) • Current cigarette smoking • Excessive alcohol consumption • Rheumatoid arthritis • Secondary osteoporosis (e.g., hypogonadism or premature menopause, malabsorption, chronic liver disease, inflammatory bowel disease)
Ankylosing Spondylitis	Inflammatory arthritis of the spine, usually presenting in males at age 15-35	• Patient History	• Night pain • Morning stiffness lasting over an hour that resolves after movement • Decreased mobility of the lumbar spine

Figure 1.1 Physical Health Concerns within the Canadian Armed Forces

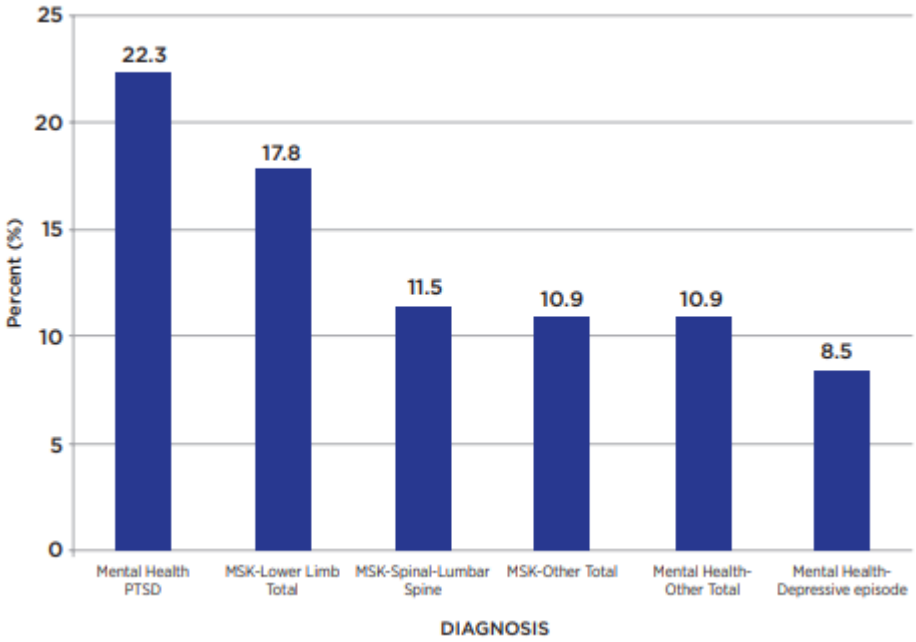


Source. Statistics Canada[7]

In the 2019 Canadian Armed Forces Health Survey conducted by Statistics Canada, back problems were the third most common ailment reported by members of the Canadian Armed Forces[7]. Researchers have found that service personnel report back pain more commonly than the general civilian population[8]. Within the military population, risk factors for developing back pain include exercising less than twice per week, being female, and being classified as a junior non-commissioned member[9].

In addition to the negative impact of low back pain at the individual level, this health concern also has an organizational impact. LBP has been identified as a leading cause of workplace absences, failure to deploy, and medical attrition[10]. This negative effect on operational capability has resulted in the labelling of low back pain and other musculoskeletal injuries as a potentially hidden threat to the CAF[10]. In addition to contributing to decreased operational capability, low back pain is the third highest contributor to medical attrition[11] (Figure 1.2) and the 10th leading medical requirement for a disability pension from Veterans Affairs Canada[12].

Figure 1.2 Leading Causes of Medical Attrition within the Canadian Armed Forces in 2016



Source. Department of National Defense[11]

Improving the management of low back pain can improve the quality of life for members of the Canadian Armed Forces, increase the number of personnel available for operational activities, decrease medical attrition, and decrease the potential development of long-term disability amongst service personnel.

Conclusion

Low back pain is a complex health issue affecting soldiers, sailors, and air personnel. In addition to the negative impact at the individual level, low back pain decreases the number of personnel who can participate in operational activities[10]. Understanding the red flags associated with back pain will help healthcare team members appropriately direct patient management. In the following sections, you will learn about the provision of stratified care, local resources that can support the management of low back pain, and available patient education materials to help patients understand their role in low back pain management.

Source. From Microsoft Word Stock Images

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Section Two: Background on the Primary Care Low Back Pain Pathway

Section Two: Background on the Primary Care Low Back Pain Pathway

This section aims to provide an understanding of the underlying concepts contributing to the Primary Care Low Back Pain Pathway. In the opening section, the benefits of pathways within healthcare are discussed, followed by a discussion of the STaRT Back[1] screening tool. The rationale for incorporating the STarT Back[1] screening tool is also highlighted. There are two YouTube videos embedded within this section. The first YouTube video summarizes the approach to low back pain management discussed thus far, while the second video provides information on using the STaRT Back[1] screening tool. The information provides the foundation for the directions on how to use the Primary Care Low Back Pain Pathway in Section Three.

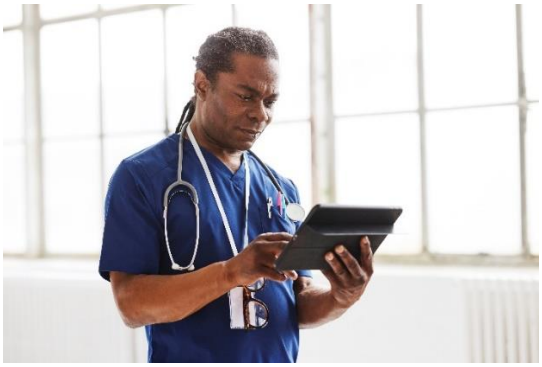
Key Points

After reading this section, you will be better able to:

1. Define clinical pathways and understand their role in providing quality health care.
2. Understand the rationale behind selecting the STarT back screening tool[1] for the foundation of the Primary Care Low Back Pain Pathway.
3. Discuss Yellow Flags associated with low back pain management.
4. Demonstrate familiarity with the concept of stratified care.
5. Comprehend the main points for the management of low back pain.

Care Pathways

Like other safety-sensitive and highly specialized fields such as engineering and aviation, algorithms or care pathways have been developed within healthcare to guide complex processes. Research has indicated that using care pathways within the clinical setting supports the reduction of in-hospital complications and costs while contributing to improved care standardization and provider documentation[2]. Even though the literature on Care Pathways for managing back pain is heterogenous, this approach to care can reduce both patient disability and pain while providing care in a cost-effective manner[3,4]. Although there are apparent benefits to using a care pathway, healthcare team members should understand that they do not replace clinical judgement[5,6]. Care should be based on a patient's clinical presentation and may require deviation from the care pathway to ensure that individual requirements are considered.



Source. From Microsoft Word Stock Images

The STarT Back Screening Tool: The Foundation of the Primary Care Backpain Pathway

The Primary Care Back Pain Pathway was conceptualized to incorporate stratified care while re-directing patients with red flags. After an extensive literature review, the STaRT Back screening tool developed by Keele University[1] was selected as the foundation for the Primary Care Back Pain Pathway. This screening tool was chosen because of its congruence with the local context, substantial evidence base, and demonstrated successful implementation in other managed care settings. An illustration of the STarT Back screening tool is shown in Figure 2.1.

Figure 2.1 Illustration of the STarT Back Screening tool

Thinking about the **last 2 weeks** tick your response to the following questions:

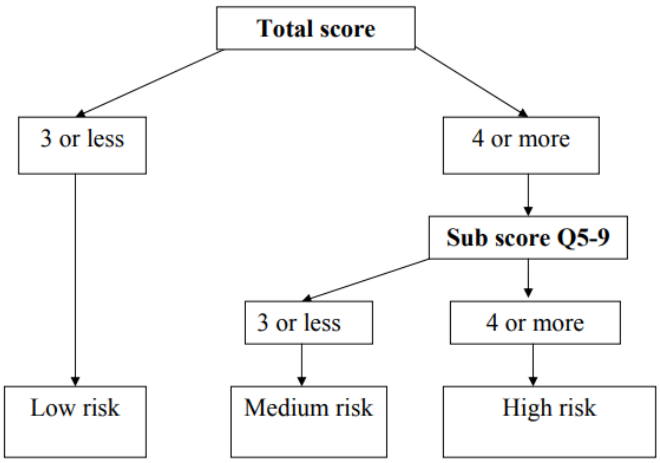
		Disagree 0	Agree 1
1	My back pain has **spread down my leg(s)** at some time in the last 2 weeks	☐	☐
2	I have had pain in the **shoulder** or **neck** at some time in the last 2 weeks	☐	☐
3	I have only **walked short distances** because of my back pain	☐	☐
4	In the last 2 weeks, I have **dressed more slowly** than usual because of back pain	☐	☐
5	It's not really safe for a person with a condition like mine to be physically active	☐	☐
6	**Worrying thoughts** have been going through my mind a lot of the time	☐	☐
7	I feel that **my back pain is terrible** and **it's never going to get any better**	☐	☐
8	In general I have **not enjoyed** all the things I used to enjoy	☐	☐

9. Overall, how **bothersome** has your back pain been in the **last 2 weeks**?

Not at all	Slightly	Moderately	Very much	Extremely
☐ 0	☐ 0	☐ 0	☐ 1	☐ 1

Total score (all 9): _____ **Sub Score (Q5-9):**_____

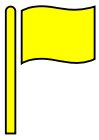
The STarT Back Tool Scoring System



Source: START BACK: Evidence-based implementation of stratified care. https://startback.hfac.keele.ac.uk/training/resources/[1]

The STaRT Back screening tool triages patients based on their potential for developing chronic low back pain[1]. These prognostic factors or **yellow flags** include patients' attitudes toward their back pain and potentially unhelpful beliefs, which may hinder recovery. Examples of yellow flags include a view of back pain as disabling, mobility avoidance, a negative disposition or tendency towards social withdrawal and isolation, and an over-reliance on a therapist based approach[1,7]. This approach is congruent with the unique requirements of the CAF patient population. Research has indicated that psychosocial factors are important prognostic indicators for this group[8]. The triage process enables patients to be placed in a low, medium, or high-risk group for developing persistent symptoms and chronic low back pain. The groups receive stratified levels of care that correspond with their risk categorization. This optimization of resources is congruent with the Surgeon General's Integrated Health Strategy[9,] which directs healthcare leaders to optimize the delivery of healthcare and decrease redundancies.

Yellow FLAG



Yellow flags are potential risk factors that a patient's back pain will transition into chronic or long-term pain[1,7].

1) Belief that back pain is harmful or disabling

2) Fear of exercise or mobility

3) Negative disposition

4) Therapist dependence

The use of the STarT Back approach for managing low-back pain has demonstrated the ability to decrease patient pain[10], disability [10,11,12], time off work[10], and health care expenditures[13]. Additionally, the STarT Back approach of self-management guided by health professionals supports a decreased focus on imaging[1], as research has indicated that routine imaging for patients with low back pain does not support improved outcomes[14,15].

Source. From Microsoft Word Stock Images

Low Back Pain Management Summary

These sections have frequently mentioned evidence-based management of low back pain. Click on the link below to view the YouTube video developed by Dr. Evans from the Centre for Effective Practice[7] for a summary of the points discussed so far.
https://www.youtube.com/watch?v=BOjTegn9RuY

Source. Low Back Pain from https://www.youtube.com/watch?v=BOjTegn9RuY[5]

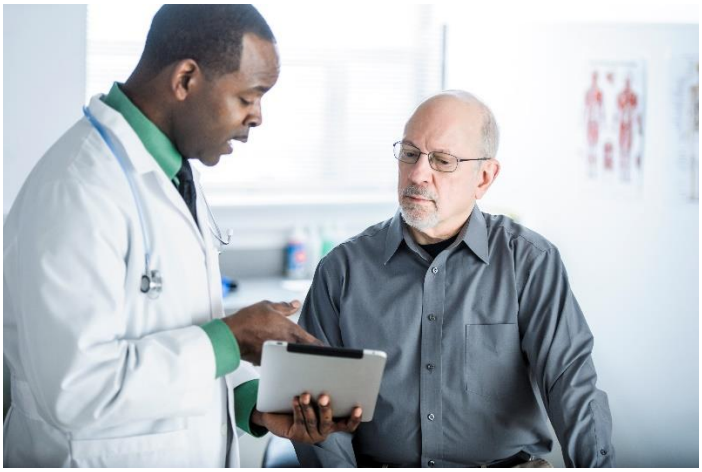
There is also a YouTube video providing an overview of the use of the STaRT Back screening tool[16] that can be accessed here: https://www.youtube.com/watch?v=r9wEgy4La4o&list=PLm6S_-wsxg6C-Qnqal7A96AAWZBYVH-fW

Source: Keele STarT Back- in practice[1] https://www.youtube.com/watch?v=r9wEgy4La4o&list=PLm6S_-wsxg6C-Qnqal7A96AAWZBYVH-fW

If you are interested in learning more about the STarT Back approach to stratified care and accessing additional resources, you can visit this website: https://startback.hfac.keele.ac.uk/

Conclusion

Care pathways have the potential to improve health care[2]. The Primary Care Low Back Care Pathway incorporates screening for red flags warnings and the potential to provide stratified care by screening for yellow flags. Stratified care enables healthcare team members to match patients with the appropriate care they require based on their potential to develop chronic pain.



Source. From Microsoft Word Stock Images

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Section Three: How to Use the Primary Care Low Back Pain Care Pathway

Section Three: How to Use the Primary Care Low Back Pain Pathway

Section Three aims to empower healthcare team members to use the Primary Care Low Back Pain Pathway. Healthcare team members are given a step-by-step process of working through the pathway and indicating when patients should be referred to the duty physician, nurse practitioner, or physician assistant. Critical elements of the pathway are reviewed, including exclusion criteria, history taking, the physical exam, screening for red flags, and developing a care plan. Three YouTube videos are embedded within this section to provide a detailed review of how to conduct a focused assessment of low back pain within the primary care context.

Key Points

After reading this section, you will be able to:

1. Ensure appropriate selection of patients for management via the Primary Care Low Back Pain Pathway while remaining aware of exclusion criteria.
2. Be confident in asking appropriate questions during the history interview.
3. Complete a focused physical exam for a patient experiencing low back pain within the primary care context.
4. Identify red flags associated with low back pain and the need for duty physician, nurse practitioner, or physician assistant consultation.
5. Engage in patient assessment and care plan development with a multidisciplinary team.

Pathway Initiation

The Primary Care Low Back Pain Pathway was developed to streamline the management of patients experiencing low back pain, which is non-traumatic and musculoskeletal. The goal is to maximize collaboration amongst healthcare team members and empower all members to work to their full scope of practice. This care pathway incorporates the screening of Red Flags discussed in Section One and the STarT Back screening tool[1] covered in Section Two.

The Primary Care Low Back Pain pathway was designed for a specific patient population. The pathway was not designed to manage patients listed in the exclusion criteria below.

IMPORTANT

Exclusion Criteria[2]

The Primary Care Low Back Pain Pathway was not intended for use with the following patients:

- Pain for >4-6 weeks
- Age < 18 years
- Pregnant or breast feeding
- Work up (spinal imaging and/or bloodwork) completed

History

Obtaining a focused history will enable healthcare providers to gain insight into the nature of low back pain. Suggested questions include[3]:

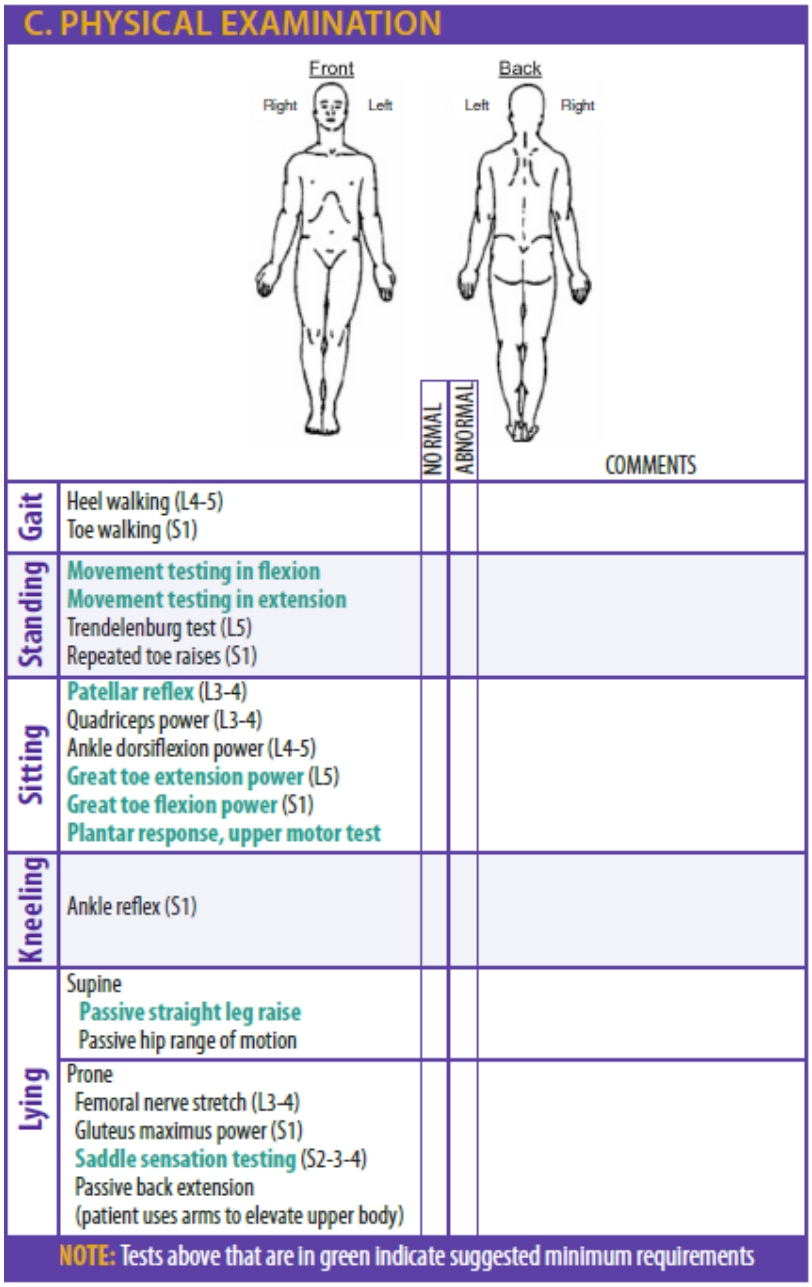
- Can you indicate where you are feeling the pain?
- How long have you been experiencing the pain?
- What do you think caused the pain?
- How severe is the pain?
- Have you experienced back pain in the past? If yes, how does this compare to your previous experiences?
- Is your low back pain related to your work environment?

Source. From Microsoft Word Stock Images

Physical Exam

A focused physical exam should also be conducted. Figure 2.2 illustrates the *Low Back Pain Strategy Clinically Organized Relevant Exam Back* tool developed by the Ontario Ministry of Health[4] for assessment of low back pain. This template illustrates the core components that must be assessed.

Figure 2.2 Illustration of the Physical Exam for Low Back Pain



Source. Ontario Ministry of Health[4]
https://health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_edutools.aspx

For a review of how to conduct a focused back exam in the primary care context, you can access educational YouTube videos from the Institute for Work and Health[5] using this link:https://www.iwh.on.ca/publications/3-minute-primary-care-low-back-pain-examination
The first YouTube video provides an overview of the process, while the second and third videos

provide additional detail while highlighting key elements.

Source. 3-Minute Primary Care Low Back Exam (Part I)[5]
https://www.youtube.com/watch?v=by3cBYXxXew

Source. 3-Minute Primary Care Low Back Exam (Part II)[5]
https://www.youtube.com/watch?v=by3cBYXxXew

Source. 3-Minute Primary Care Low Back Exam (Part III)[5]
https://www.youtube.com/watch?v=rF3fvvbEP2E

Screening for Red Flags

After completing the history assessment and physical examination, ensure to screen for Red Flags[3] by either reflecting on the information gathered or conducting additional assessments to address the following:

1) Concerns related to **spinal cord compression** or **cauda equina compression,** such as[2]:

- Loss of sense of feeling or ability to move the legs, feet, or perineum
- The feeling of low body weakness or instability
- Loss of bowel or bladder control
- History of falls or difficulty walking

2) Concerns related to **spinal metastasis** caused by cancer[2]:
Healthcare team members should maintain an index of suspicion for spinal metastasis from cancer if there is a family history or a personal recent (5-10 year) history of cancer. The following cancers are most likely to be associated with spinal metastasis.

- Breast
- Lung
- Prostate
- Thyroid
- Kidney
- Multiple myeloma

3) Concerns related to the potential for **cancer**[2]:
Based on the risk factors listed below and clinical judgment, determine if the patient is at risk for cancer:

- Advanced age (greater than 60)
- Smoking history
- Family history
- Recent unexplained weight loss

4) Concerns about the potential for **Spinal Cord Infection**[2]:

Based on the risk factors listed below and clinical judgment, determine if the patient is at risk for spinal cord infection.

- Fever
- Immunosuppression caused by medication or another health condition
- Hemodialysis
- Injection drug use
- Endocarditis
- Invasive epidural/spinal procedure
- Sepsis/Bacteremia
- Previous spinal infection

5) Concerns about the potential for **Vertebral Compression Fracture**[2]**:**

Based on the risk factors listed below and clinical judgment, determine if the patient is at risk for a vertebral compression fracture.

<u>High-Risk Factors</u>

- Older age (e.g., >70 years)
- Previous fracture

<u>Other Risk Factors</u>

- Osteoporosis
- Long-term glucocorticoid therapy
- Low body weight (less than 127 lb/58 kg)
- Parental history of hip fracture
- Cigarette smoking
- Excess alcohol intake

6) Concerns about the potential for ankylosing spondylitis[4]:
Patients who report morning back stiffness for more than 30 minutes and are between the ages of 15-35 should be considered at risk for ankylosing spondylitis. Typically, the pain worsens at night for these patients, and exercise provides relief.

If any red flags are identified, the patient should be referred to the duty physician, nurse practitioner, or physician assistant for further investigation outside the purview of the Primary Care Low Back Care Pathway.

Source. From Microsoft Word Stock Images

Develop a Plan of Care

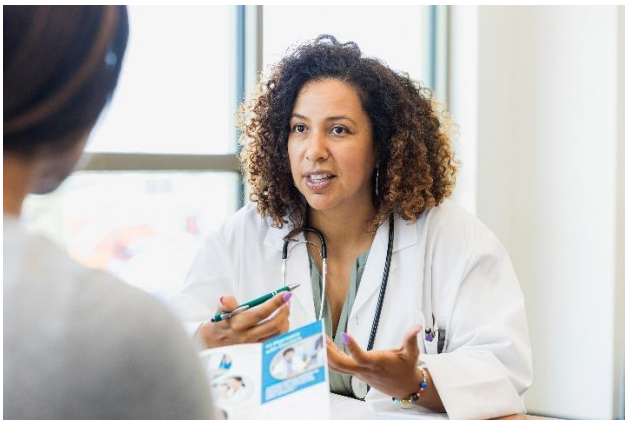
After ensuring the absence of red flags, healthcare team members should have the patient complete the STarT back questionnaire[1], which can be printed from the embedded document below, accessed here https://startback.hfac.keele.ac.uk/training/resources/startback-online/ alternatively, found in Appendix A.

Appendix A STarT Back Questionaire.p

Once completed, score the questionnaire to determine the risk category. Based on the patient's results and clinical judgment, consider using the locally available resources from the corresponding risk category. Medical Technicians and Registered Nurses can review their care plans with the duty physician, nurse practitioner, or physician assistant as required while ensuring they are prepared to modify the plan. The healthcare team members can also engage in

patient education supported by materials in subsequent sections of this instruction manual.

Patient Education



Source. From Microsoft Word Stock Images

One of the final components of the pathway is Patient Education. Patient education involves a discussion with the patient to ensure they understand their health condition, how to manage symptoms, and an opportunity to set expectations for rehabilitation. While patient education is essential for all clinical encounters, it is of particular significance within the context of low back pain management. Research has indicated that patients' mentality regarding recovery is strongly associated with future workplace engagement and clinical recovery[6]. Patient education may provide the opportunity to provide accurate information, manage unrealistic expectations, and support patients' development of an empowered mindset.

Research on patient education within the context of low back pain recommends focusing on these points with patients [7]:

- Remain in physical activities and return to the previous exercise routine immediately.
- Reduce back pain-related anxiety or catastrophizing.
- Accept the presence of a sore back at times.
- Develop an understanding of how to prevent future back pain.

Findings from a meta-analysis on patient education interventions indicated that effective interventions were 2.5 hours in length[7]. Conducting a long patient education seminar within the clinical setting may be incongruent with the demands of the workplace. However, healthcare team members can engage in a targeted discussion covering the previously discussed points and supplement with educational videos, handouts, and a consultation with the Personnel Support Program (PSP) Reconditioning Program. The STarT Back patient educational handout[8] is a valuable tool (available here https://startback.hfac.keele.ac.uk/wp-content/uploads/2021/11/Digital-startback-leaflet-03.02.20.pdf and within Appendix B) as it covers questions frequently posed by patients.

Digital-startback-leaflet-03.02.20.pdf

Conclusion

This section provided detailed directions on how to use the Primary Care Low Back Pain Pathway. Concrete examples of questions to ask during a history assessment were provided, and a review of the focused physical assessment for patients with low back pain was illustrated. The following section will present an overview of available consultation and patient engagement resources.

Source. From Microsoft Word Stock Images

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Section Four: Additional Information Regarding Available Resources

Section Four: Additional Information Regarding Available Resources

Throughout the literature, there are many recommendations regarding managing low back pain. This section will provide an overview of the locally available resources. The healthcare team members can review the available services and risk stratification assessment from the Primary Care Low Back Pain Care Plan to determine what is appropriate for each individual. Locally available resources include the PSP reconditioning program, ergonomic assessments, physiotherapy, and mental health consultation. Patient education leaflets have also been included in this section of the manual.

Key Points

After reading this section, you will:

1) Be knowledgeable of locally available resources.
2) Understand which resources are associated with each respective risk group.
3) Recognize the strengths and limitations of each resource.
4) Be increasingly confident in engaging patients with the support of various educational handouts.

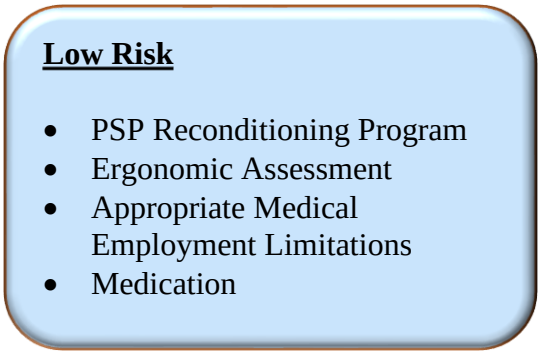
PSP Reconditioning Program

The PSP Reconditioning offers personalized exercise programs for members of the Canadian Armed Forces recovering from low back pain or other injuries[1]. This customized approach ensures the development of an exercise program tailored to the patient's needs. The PSP Reconditing program is staffed by certified clinical exercise physiologists[1]. They are trained to support members as they recover from injury and return to their previous level of performance. The expertise of exercise physiologists enables them to work with severely injured personnel safely.

The professional background of PSP Reconditioning staff also enables the team to manage patients facing psychosocial barriers to movement, such as low motivation, depression, or mental illness. Canadian Armed Forces personnel are engaged in physically demanding roles[2]. The PSP reconditioning program can help ensure that members are prepared to meet the demands of their occupation, both physically and mentally.

Exercise therapy is recommended for all patients with low back pain, as it has been found to reduce pain and disability[3,4]. Research has indicated that compared to the direction for bedrest, patients who remain active experience less pain and greater functional improvement[5]. As a result, all risk categorizations (as illustrated in Figure 4.1) within the Primary Care Low Back Pathway consider the PSP Reconditioning Program's services.

Figure 4.1 Illustration of the Recommend Resources for Risk Categorizations



Medium Risk

- PSP Reconditioning Program
- Physiotherapy
- Ergonomic Assessment
- Appropriate Medical Employment Limitations
- Medication

High Risk

- PSP Reconditioning Program
- Physiotherapy
- Ergonomic Assessment
- Mental Health Consult
- Appropriate Medical Employment Limitations
- Medication

Patients comfortable with continuing a modified version of their current physical activity regimen may benefit from viewing some of the health promotion YouTube videos developed by PSP. Members of the health care team can share the following two YouTube videos with patients via e-mail to support exercise-based self-management: https://www.youtube.com/watch?v=047oIXbl2-0&feature=youtu.be, https://www.youtube.com/watch?v=fM7mg6nPbvQ

Source. Canadian Forces Morale and Welfare Services: Strategies for a healthy spine with Lucas https://www.youtube.com/watch?v=047oIXbl2-0[6]

Source. Canadian Forces Morale and Welfare Services: Lower Back Health https://www.youtube.com/watch?v=fM7mg6nPbvQ[7]

Some patients may not have the knowledge or skills to independently develop a self-directed modified exercise program and may benefit from a referral to the PSP reconditioning program. Depending on the patient's needs, reconditioning can be recommended early in the care plan or after the initiation of physiotherapy services. If the patient is interested in participating in a PSP rehabilitation program, a referral form is available here: https://cfmws.ca/getmedia/fe612dde-2a00-447d-a4c8-ad7312609075/1-PSP-RP-Referral-Form-2022.pdf. Referrals can also be sent through the Fitness, Sports and Recreation Office website: https://cfmws.ca/toronto/toronto-contact-us

As patients return to participation in physical activity, they should be encouraged to engage in activities that will support their rehabilitation rather than further aggravate or exacerbate their low back pain. A resource that can help support this approach is the *Injury Reduction Strategies for Sports and Physical Activity: Strategies for Action*[8]. The brochure is included in Appendix B and is also embedded below.

Injury Prevention.pdf

Ergonomic Considerations

Source. From Microsoft Word Stock Images

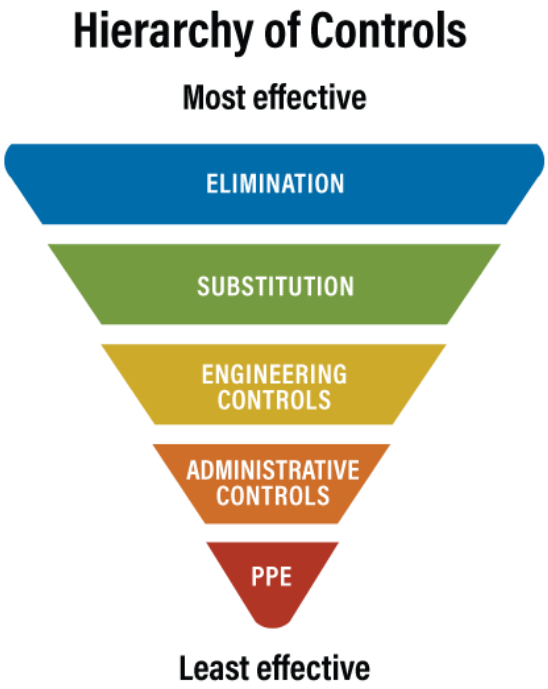
During the history portion of the examination, the patient may indicate that workplace ergonomics contributed to their low back pain. If this is the case, the patient must complete a *Department of National Defense/Canadian Armed Forces Hazardous Occurrence Investigation Report* (DND 663)[9] and a *Report of Injury, Disease, or Illness* (CF-98) [9]. These forms are in Appendix B, embedded below, or in the Department of National Defense Forms Catalogue.

Appendix B DND CAF Hazardous Occ

Appendix C Report of Injury Disease of

When reflecting on principles of workplace safety (Figure 4.2), eliminating a hazard is described as the most effective means to protect within the workplace environment[10]. The health care team members can contribute towards eliminating ergonomic hazards within a patient's environment by recommending an ergonomic assessment[11]. The recommendation for an ergonomic assessment should be included in the patient's medical employment limitations (MELs). In addition to providing a copy of the MEL to their workplace supervisor, the patient should inform their Unit General Safety Officer of the requirement for an ergonomics assessment. The Unit General Safety Officer is responsible for facilitating the ergonomic assessment[10].

Figure 4.2 Illustration of the Hierarchy of Controls



Source. Canadian Centre for Occupational Health and Safety[10]

A variety of patient engagement materials available can support an improved ergonomic environment. Canadian Forces Morale and Welfare Services developed the YouTube video featured below. It provides information regarding appropriate workstation posture and movements that can mitigate the negative impact of sitting. It can be accessed by clicking here: https://www.youtube.com/watch?v=KVnbS4J4yRU.

Source. Canadian Forces Morale and Welfare Services: Improving Posture https://www.youtube.com/watch?v=KVnbS4J4yRU[12]

Additional print resources include the *DND/CF Guide to Office Ergonomics*[13]. The document is embedded below and is also available in Appendix B.

Appendix D DND CF Guide to Office E

Physiotherapy Services

Patients considered medium to high risk for developing chronic low back pain should be considered for consultation with physiotherapy services. Canadian Armed Forces members are entitled to receive up to 20 physiotherapy sessions when recommended by a nurse practitioner, physician assistant, or family physician[14]. Physiotherapists can treat low back pain with various modalities such as spinal manipulation, assisted stretching, or massage[15]. In contrast to the other approaches, research indicates that spinal manipulation can decrease patient pain and improve function[16]. During consultations, healthcare team members indicated that patients often select physiotherapy services based on proximity to their homes. While convenience is valuable, reviewing the clinician's background to ensure spinal manipulation is included may improve patient-clinician congruence.

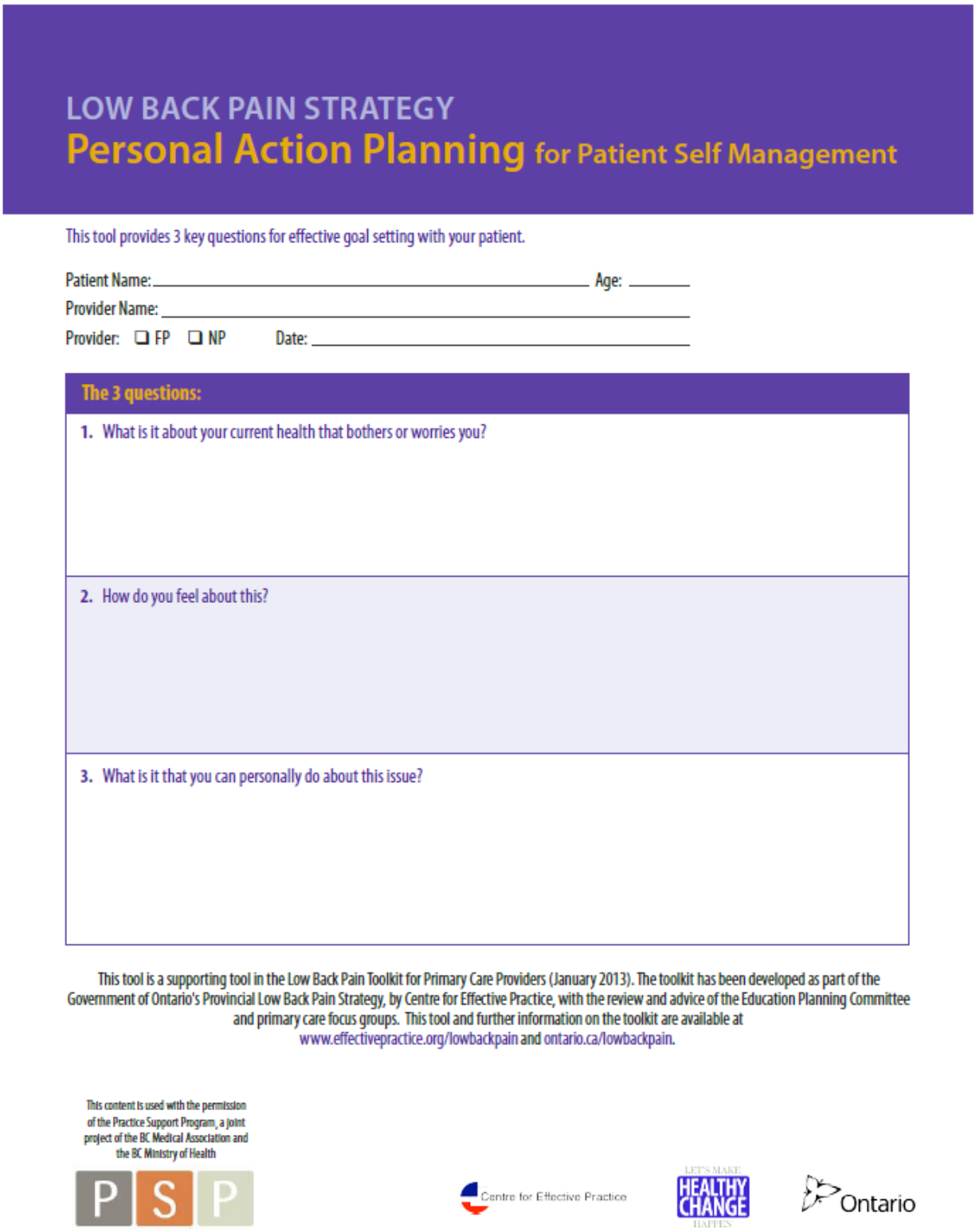
Source. From Microsoft Word Stock Images

Mental Health Consultation

Source. From Microsoft Word Stock Images

In the original description of the STarT Back approach to stratified care, the high-risk group was referred to as psychologically informed physiotherapy[17]. These physiotherapists attended nine training days to gain the necessary skills to support patients in addressing psychosocial barriers to rehabilitation, such as a negative outlook towards recovery and a tendency for isolation. Within the local context, it is impossible to modify physiotherapy services as they are provided through third-party arrangements. Potential evidence-based alternatives to this approach that have been shown to support patients experiencing subacute low back pain include cognitive-behavioural therapy, mind-body therapies that promote progressive relaxation,[18] or therapy that targets patients' psychological issues[19]. For patients categorized as high risk for developing chronic pain, the healthcare team members can consider a consultation with a mental health professional for biopsychosocial therapy to address psychosocial concerns. Potential goals of care include reduction of catastrophizing, anxiety management, or goal setting related to rehabilitation. Figure 4.3 illustrates an example of goal setting within the context of low back pain management developed by the Ontario Ministry of Health20 to address psychosocial barriers to low back pain management.

Figure 4.3 Illustration of Goal Setting within the Context of Low Back Pain Management



LOW BACK PAIN STRATEGY

Personal Action Planning for Patient Self Management

This tool provides 3 key questions for effective goal setting with your patient.

Patient Name: _____ Age: _____

Provider Name: _____

Provider: ❑ FP ❑ NP Date: _____

The 3 questions:

1. What is it about your current health that bothers or worries you?

2. How do you feel about this?

3. What is it that you can personally do about this issue?

This tool is a supporting tool in the Low Back Pain Toolkit for Primary Care Providers (January 2013). The toolkit has been developed as part of the Government of Ontario's Provincial Low Back Pain Strategy, by Centre for Effective Practice, with the review and advice of the Education Planning Committee and primary care focus groups. This tool and further information on the toolkit are available at www.effectivepractice.org/lowbackpain and ontario.ca/lowbackpain.

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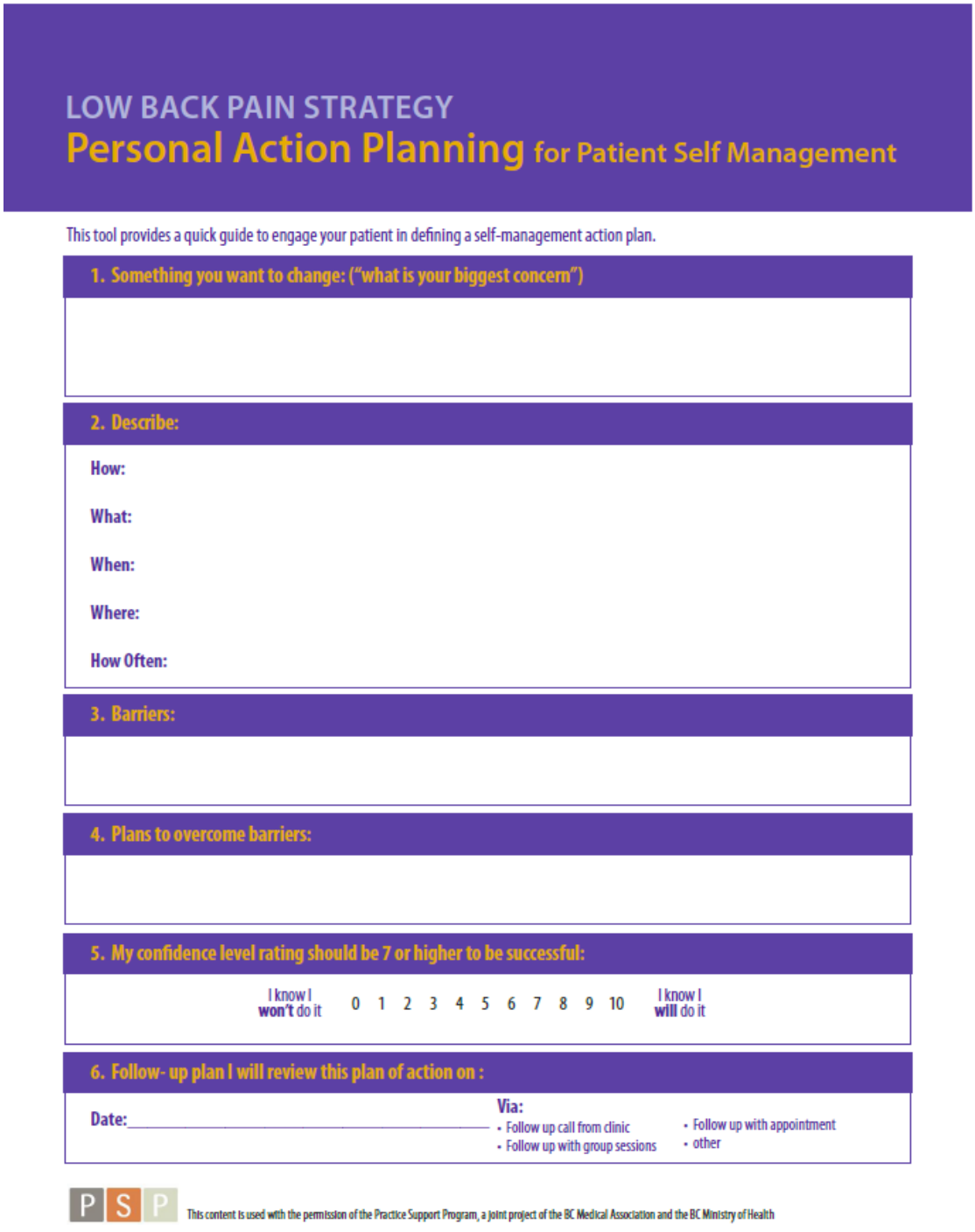
PSP

Centre for Effective Practice

LET'S MAKE HEALTHY CHANGE HAPPEN

Ontario



LOW BACK PAIN STRATEGY

Personal Action Planning for Patient Self Management

This tool provides a quick guide to engage your patient in defining a self-management action plan.

1. Something you want to change: ("what is your biggest concern")

2. Describe:

How:

What:

When:

Where:

How Often:

3. Barriers:

4. Plans to overcome barriers:

5. My confidence level rating should be 7 or higher to be successful:

I know I **won't** do it 0 1 2 3 4 5 6 7 8 9 10 I know I **will** do it

6. Follow- up plan I will review this plan of action on :

Date:_____

Via:

- Follow up call from clinic
- Follow up with group sessions
- Follow up with appointment
- other

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Source. Ontario Ministry of Health[20]

https://health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_edutools.aspx

Medical Employment Limitations

Given the demanding nature of the workplace within the Canadian Armed Forces, patients may likely require a modification to their workplace duties. Modification of workplace duties can be accomplished through a Medical Employment Limitation. When approaching sick leave, a common approach advocated in the occupational health literature is the SPICE approach [21].

Source. From Microsoft Word Stock Images

SPICE[21] Approach to Medical Employment Limitations

Simplicity: Do not over pathologize the condition.

Proximity: Keep the member within the workforce. Consider half days or light administrative duties.

Immediacy: Address concerns promptly rather than allowing them to build.

Centrality: Maintain communication with other members of the care team and keep aware of goals.

Expectancy: Set expectations for return to full duties rather than an indefinite workplace hiatus.

Unfortunately, some healthcare providers believe you can not help people unwilling to help themselves. This approach does not consider individuals' many barriers, such as a lack of knowledge, resources, or expertise. If a lack of time to engage in physical activity is identified as a barrier to addressing low back pain, consider the possibility of a MEL such as "must be

provided with one hour during the workday to attend a reconditioning program or participate in self-directed physical training." This approach may address concerns about a lack of time to engage in the physical activity required to support low back health.

Medication

Many resources recommend nonsteroidal anti-inflammatories such as ibuprofen (Advil®) or naproxen (Aleve®) for the initial management of back pain[18]. Healthcare team members should consult an alternative resource for more in-depth recommendations regarding the pharmacological management of low back pain.

Source. From Microsoft Word Stock Images

Conclusion

This instruction manual section provides detailed information regarding the resources available within the local context. Healthcare team members should use their clinical judgment and the outcome from the Primary Care Low Back Pain Care Pathway to select resources and develop an appropriate treatment plan. Healthcare team members can also utilize the embedded patient engagement materials to supplement the available resources.

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Appendix

Appendix A

The STarT Back Screening Tool

Patient name: _____ Date: _____

Thinking about the **last 2 weeks** tick your response to the following questions:

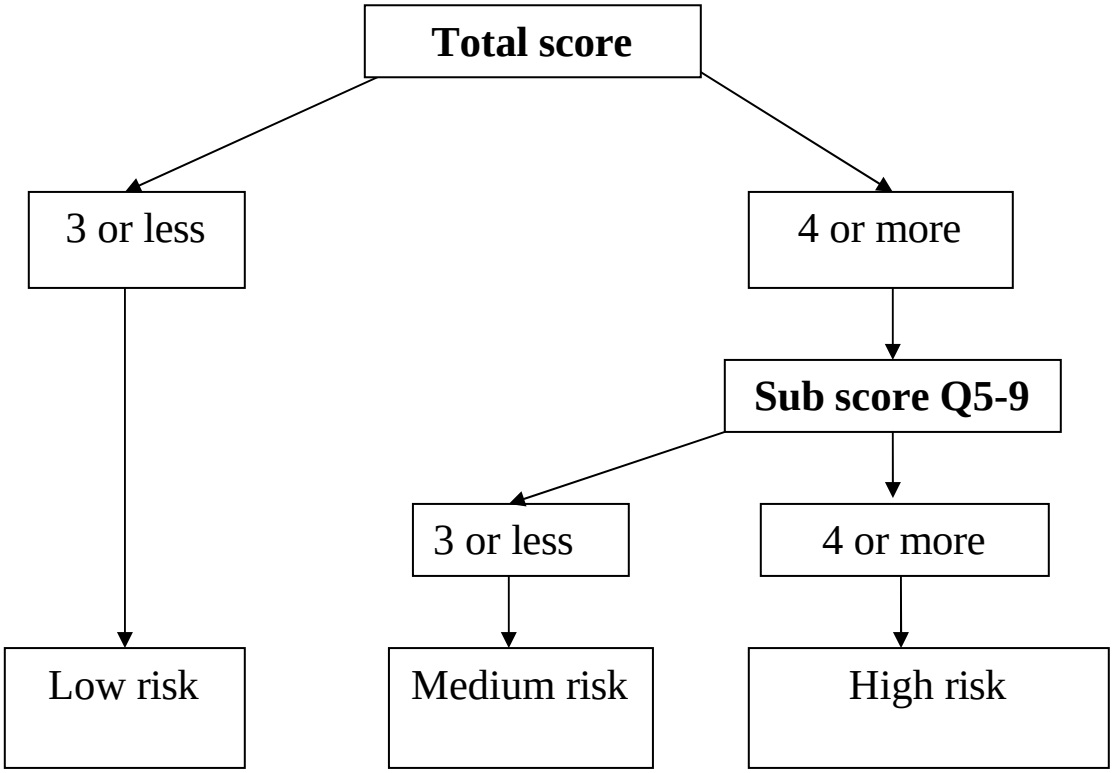
		Disagree 0	**Agree** 1
1	My back pain has **spread down my leg(s)** at some time in the last 2 weeks	☐	☐
2	I have had pain in the **shoulder** or **neck** at some time in the last 2 weeks	☐	☐
3	I have only **walked short distances** because of my back pain	☐	☐
4	In the last 2 weeks, I have **dressed more slowly** than usual because of back pain	☐	☐
5	It's not really safe for a person with a condition like mine to be physically active	☐	☐
6	**Worrying thoughts** have been going through my mind a lot of the time	☐	☐
7	I feel that **my back pain is terrible** and **it's never going to get any better**	☐	☐
8	In general, I have **not enjoyed** all the things I used to enjoy	☐	☐

9. Overall, how **bothersome** has your back pain been in the **last 2 weeks**?

Not at all	Slightly	Moderately	Very much	Extremely
☐	☐	☐	☐	☐
0	0	0	1	1

Total score (all 9): _____ Sub Score (Q5-9):_____

The STarT Back Tool Scoring System



Appendix B

Resource Directory

Resource	Description	Link
STarT Back Screening Tool	Evidence-Based Approach to assess for potential risk for chronic back pain.	https://startback.hfac.keele.ac.uk/training/resources/startback-online/
Low Back Pain Self-Management Video	YouTube video for patients on self-management techniques for low back pain.	https://startback.hfac.keele.ac.uk/training/resources/startback-online/
Kelle STarT Back – In practice	YouTube video for healthcare team members on incorporating STarT Back into their practice.	https://www.youtube.com/watch?v=r9wEgy4La4o&list=PLm6S_-wsxg6C-Qnqal7A96AAWZBYVH-fW
STarT Back Web Site	Website created by the developers of STarT Back at the University of Keele.	https://startback.hfac.keele.ac.uk/
Ontario Ministry of Health Low Back Pain Toolkit	A variety of clinical tools and patient education materials for the management of low back pain.	https://health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_edutools.aspx
3-Minute Primary Care Low Back Exam	Instructions for healthcare team members on conducting a physical assessment for low back pain in primary care.	https://www.iwh.on.ca/publications/3-minute-primary-care-low-back-pain-examination
STarT Back Patient Education Handout	STarT Back's developers designed Leaflet to answer many of the questions faced by patients with low back pain.	https://startback.hfac.keele.ac.uk/wp-content/uploads/2021/11/Digital-startback-leaflet-03.02.20.pdf
Strategies for	Patient education	https://www.youtube.com/watch?v=047oIXbl2-0

a healthy spine with Lucas	video on exercises that can mitigate low back pain.	
Lower Back Health	Patient education video on exercises that support low back health.	https://www.youtube.com/watch?v=fM7mg6nPbvQ7
PSP Re-habilitation Referral Form	This form is used to refer patients to PSP Reconditioning Program. To find the current Reconditioning Manager, see the website below.	https://cfmws.ca/getmedia/fe612dde-2a00-447d-a4c8-ad7312609075/1-PSP-RP-Referral-Form-2022.pdf
Website for Fitness, Sports, and Recreation Office	Website lists the current PSP reconditioning manager	https://cfmws.ca/toronto/toronto-contact-us
Injury Reduction Strategies for Sports and Physical Activity: Strategies for Action	Patient education leaflet of strategies to prevent sports-related injuries, including back injury.	Reduce injuries during sports and physical activity - Canada.ca [DWAN Only]
Department of National Defense/ Canadian Armed Forces Hazardous Occurrence Investigation Report	DND 663	Form Search - Defence Forms Catalogue (DFC) (mil.ca) [DWAN Only]
Report of Injury, Disease, or Illness	CF 98	Form Search - Defence Forms Catalogue (DFC) (mil.ca) [DWAN Only]
Improving Posture	Patient education video on appropriate posture, spinal	https://www.youtube.com/watch?v=KVnbS4J4yRU

	alignment, and exercises that can promote back health.	
CF Guide to Office Ergonomics	Patient education brochure on ergonomic hazards, appropriate workstation set-up and exercises to reduce ergonomic issues.	https://cfmws.ca/CFMWS/media/images/documents/8.0%20About%20Us/Employee%20Content/OHS%20EN/ergonomics-guide_eng.pdf