

Addressing the Osteoporosis Health Care Gap in British Columbia with Fracture Liaison Services

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Citation info: UBCMj. 2015; 7.1 (33-35)

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abstract

Fracture liaison services have been developed in parts of Canada, the United States, and other countries around the world and have proven to be a cost-effective means of managing osteoporosis and reducing recurrent fractures. Such a service has not been implemented in British Columbia. As a result, there exists a large gap in osteoporosis care. This gap costs the health care system millions of dollars, and it puts many older adults through needless pain and suffering. Recently, a knowledge translation research project has begun to assist in the development and implementation of a fracture liaison service in B.C.

facing the facts

Low-trauma fractures, classified as fractures that occur with minimal trauma (e.g., falls from a standing position or from coughing/sneezing), are common among Canadian older adults, particularly those over 65 years of age.^{1,2} Nationally, B.C. has the largest percentage of fall-related hospitalizations, with fractures accounting for 78% of all fall-related injuries.³ Additionally, B.C. has the fourth-highest population growth rate of older adults in the country, and this rate could increase by 23.8% by 2036.⁴ Older adults are more susceptible to low-trauma fractures, which are often the consequence of osteoporosis.^{5,6} Compared to the younger population, older adults present to the emergency room (ER) more frequently with fractures and have longer lengths of stay.⁵ In Canada, annual direct costs associated with hip fractures can reach \$600 million and mortality within one year of a hip fracture is 28% for women and 37% for men.^{6,7} The Canadian Multicentre Osteoporosis Study concluded that hip fractures are the most costly of fragility fractures to the health care system; however, minor fractures, such as wrist and vertebral fractures, can also have major impacts on disability, chronic pain, and lost working days.⁸

what needs to be done

Developing a program directly addressing the current post-fracture care gap among older Canadians is urgently needed. While a primary fracture can be difficult to prevent, these fractures should be treated as a warning sign of osteoporosis.^{9,10} However, this is often not done, as fractures are usually treated and recognized as an acute injury by medical professionals. Indeed, fewer than 20% of women and 10% of men receive therapies to prevent future fractures.¹¹ Fracture liaison services (FLS) are programs that can be implemented in a clinical setting and are designed to bridge this gap by taking a prophylactic approach to secondary fractures, thereby improving post-fracture care and avoiding future fractures that can be even more debilitating. A FLS model strives to meet three objectives, often referred to as the three "i's": identification, investigation, and initiation.^{12,13} An FLS model that includes all three of the listed objectives, referred to as a type A model, shows the best increases in the percentage of patients actually receiving osteoporosis treatment compared to models that only address one or some of the objectives.¹⁴

Care provided by FLS differs from the standard general practice and care. Current fracture care often begins in the ER, where patients receive good fracture

care but do not receive any investigation or appropriate treatments for osteoporosis or falls prevention.^{15,16} The orthopedic surgeons who follow-up on patients tend to focus on the immediate fracture care and rehabilitation but not on the prevention of future fractures.^{15,16} On the other hand, FLS begins by identifying all people over the age of 50 with low-trauma fractures for risk factors for osteoporosis and future fractures.^{12,15,16} Appropriate investigations include ordering bone mineral density (BMD) tests and calculating future fracture risk scores, while initiation of treatment is fulfilled by providing osteoporosis medication and education regarding falls prevention and bone health.^{11,16}

FLS programs in other provinces and countries have proven to be cost-effective in preventing future fractures. The Osteoporosis Exemplary Care Program from the St. Michael's Hospital in Toronto is one program currently in place that follows the FLS model. This program has been successful in reducing the number of subsequent hip fractures, with a net hospital cost savings of \$48,950.¹⁷ Likewise, the Concord FLS in Sydney, Australia has seen positive gains by focusing on active identification of low-trauma non-vertebral fractures and post-fracture management.¹⁸ Results following implementation of the Concord FLS showed only 4.1% new fractures and a dramatic reduction of

fracture rates (80%) over a four-year period in patients referred to FLS intervention, compared to a control group, which had an increased refracture rate and 19.7% new fractures.¹⁸ In 2012, the Southern California Permanente Medical Group developed the Kaiser Permanente Healthy Bones Program, a comprehensive osteoporosis management program that encourages pharmacological management of osteoporosis and patient engagement.^{19,20} This program saw not only a significant decrease in the risk of hip and distal radius fractures, but also a decrease in overall costs to the health system and an increase in patient quality of life.^{19,21} Similar health-economic benefits were demonstrated in an FLS randomized control trial conducted in Edmonton, Alberta.²² The intervention group was more likely to receive appropriate osteoporosis treatment (67% vs 26% in control group), and was found to have gained quality adjusted life years.²² With the modest cost of \$56 per patient, this FLS program saved the healthcare system \$260,000 over a two-year time period.²²

what is being done now

B.C. has a unique set of circumstances that could make the implementation of an FLS a challenge. One barrier is the limited access to BMD testing and osteoporosis medication through public drug plans and B.C. Osteoporosis Guidelines.¹¹ Another is cost; most of the expenses incurred to implement a type A FLS in B.C. involve the hiring of a nurse practitioner (NP) at 27 full-time equivalents (37.5 hours/week).²³ However, a cost-effectiveness analysis for B.C. by Osteoporosis Canada predicts that even with the cost of hiring a NP, the reduction of future fractures and potential long-term care admissions would lead to a savings of over \$3 million by year one and \$60,135,755 by year eight.²³ A prototype FLS is currently underway at Peace Arch Hospital (PAH) in White Rock, B.C.¹⁶ This prototype program is working in collaboration with the Centre for Hip Health and Mobility (CHHM), a University of British Columbia research centre.¹⁶ Funding for the research and evaluation component of the program is being managed by the CHHM with funding provided by the Ministry of Health of B.C. and PAH Foundation.^{16,24} PAH provides health care to a community within

Fraser Health that has a high proportion of older adults (29%) as well as a high prevalence of osteoporosis.²⁵ The objective of the study is to demonstrate that a FLS in B.C. can break the cycle of recurrent fractures and to provide a FLS framework for dissemination to other health authorities.¹⁶ As a pre- and post-quasi experimental design, the FLS prototype will have two independent cohorts of patients, the control group and the intervention group. Using the above-mentioned type A model, patients in the intervention group will be identified at the PAH Orthopedic Cast Clinic, while a NP will begin the initiation and intervention.¹⁶ In B.C., NPs can order most diagnostic tests, prescribe medications, and communicate with family physicians for a successful transition from the FLS to the community.²⁶ Patients in both groups will be contacted for a six-month follow-up.¹⁶ During this time, primary outcome measures will be considered fulfilled if one of the following had been achieved: BMD had been ordered, referral to an osteoporosis consultant had taken place, or the patient was started on osteoporosis medication.^{13,16}

Although the prototype FLS is being implemented within the Fraser Health Authority, the potential to disseminate to other health authorities throughout B.C. is high. FLS analyzes fractures through a larger lens, by focusing on secondary prevention rather than viewing fractures as a single acute event. This has led to decreased recurrent fracture rates and health care costs in jurisdictions that have implemented FLS programs widely.¹¹ The current B.C. FLS project has the potential to create a strong FLS prototype that could be expanded across B.C. and improve the health of older adults in British Columbia.

disclosures

The author received funding from Amgen Inc.

acknowledgements

Thank you to Dr. Sonia Singh MD, Principal Investigator for the project, Breaking the Cycle of Recurrent Fracture: A Prototype Fracture Liaison Service at Peace Arch Hospital, for review of the manuscript.

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The Healing Garden. Baillie Redfern, Vancouver Fraser Medical Program, UBC Faculty of Medicine, Vancouver, BC

Traditional medicines have been used for thousands of years by Indigenous people in Canada, with demonstrated efficacy in treating a wide range of health issues. Many of the medicines in contemporary biomedical treatments are derived from plants and herbs used by Indigenous people throughout the world. "The Healing Garden" beadwork piece includes both traditional Indigenous medicines and traditional Chinese medicines. I created this piece to reflect the reality of being an Indigenous medical student living, working and studying in Vancouver. The amount of material medical students are responsible for is sometimes described as 'drinking from a fire hose' but it's important to remember the demographic you serve as a physician and the teachings that a garden can grow.