



the Translator

Canadian Pharmacy ► Research ► Health Policy ► Practice ► Better Health

Pharmacists can play a key role in osteoporosis screening and treatment

This issue of the Translator highlights the important role pharmacists can play in educating patients about and screening for osteoporosis.

- Pharmacists help identify patients at risk for osteoporosis using a community screening program
- Clinical pharmacists improve osteoporosis treatment initiation for the elderly
- Pharmacists play an important role in osteoporosis treatment compliance
- Patients are educated by pharmacists about the risk of glucocorticoid-induced osteoporosis

Pharmacists help identify patients at risk for osteoporosis using a community screening program

Yuksel N, Majumdar SR, Biggs C, Tsuyuki RT. Community pharmacist-initiated screening program for osteoporosis: randomized controlled trial. *Osteoporos Int.* 2010 Mar;21(3):391-8.

Issue: Osteoporosis affects 1 in 4 women over the age of 50, and at least 1 in 8 men in the same age range.¹ However, screening rates for osteoporosis remain low because the disease is relatively asymptomatic. As well, most patients with multiple risk factors are neither identified nor screened and, as a result, do not seek preventive care from their physicians. Further, more than 80% of fractures come as a consequence of osteoporosis. Fractures can lead to pain, deformity, loss of mobility, and institutionalization, resulting in costs of over \$1.3 billion to the health care system.²

A solution: Community pharmacies are accessible and provide an ideal setting for

Community pharmacists' interventions doubled the number of patients tested and treated for osteoporosis.

osteoporosis risk assessment and patient screening. In this randomized trial, community pharmacists provided patients with an enhanced care intervention that included information about osteoporosis risk factors, bone mineral density (BMD) testing, calcium and vitamin supplementation, and medications. Pharmacists performed a quantitative heel ultrasound (QUS) on patients to assess their risk for developing osteoporosis (rather than using the QUS as a diagnostic test). Phar-

macists subsequently notified family physicians that their patients were eligible for BMD testing as a result of the pharmacist screening for osteoporosis. Follow-up occurred at 2, 8, and 16 weeks.

Overall, patients who received enhanced care from their pharmacist reached the primary endpoint (a BMD test or initiation of a new osteoporosis medication) twice as often as compared to usual care patients (22% vs. 11%). Additionally, calcium intake increased more among patients in the intervention group as compared to the control group (30% vs. 19%). Also, patients with a QUS <-1, which is indicative of low bone mass at the heel, were more likely to receive a BMD test (71%).

The Translator is an initiative launched by the Canadian Pharmacists Association to support the knowledge translation between pharmacy practice research and health policy. Each issue selects a number of pharmacy practice research articles, briefly summarizes them and discusses the health care policy implications. These articles are submitted by researchers who have a strong desire to support evidence-based health care policy and best practices.

Pharmacists help identify patients at risk for osteoporosis using a community screening program

Implications: Community pharmacists are ideally placed to give patients timely and accurate information about osteoporosis and its risk factors. This study shows that a community pharmacist screening program for osteoporosis doubled the number of patients tested and treated

for osteoporosis by their physicians. Additionally, pharmacists' interventions also had an impact on increasing calcium and vitamin D intake. Although all patients were candidates for osteoporosis screening, the majority of patients did not appear to receive appropriate care

(patients did not receive a BMD test or osteoporosis pharmacotherapy). Further research is needed to identify more intensive interventions to help minimize the care gap in receiving osteoporosis care.

¹ Hanley DA, Josse RG. Prevention and management of osteoporosis: consensus statements from the Scientific Advisory Board of the Osteoporosis Society of Canada: 1. Introduction. *CMAJ*. 1996;155:921-3.

² Goeree ROB, Pettitt DB, Cuddy L, Ferraz M, Adachi J. An assessment of the burden of illness due to osteoporosis in Canada. *J Soc Obstet Gynaecol Can*. 1996;18(suppl July):15-24.

Background or research methods: This study involved 15 community pharmacies in Alberta. Patients were eligible for inclusion if they were 65 years and older or between ages 50 and 64 with at least one major risk factor. A major risk factor in this study was defined as a previous fracture, a family history of osteoporosis, systemic glucocorticoid use for more

than three months, or early menopause. The study included 262 patients who were randomized to receive intervention or usual care. The primary endpoint was either a BMD with central dual energy X-ray absorptiometry (DXA) or a new prescription for osteoporosis medication. (A BMD test with DXA is the gold standard for osteoporosis diagnosis,

according to national guidelines that appear on osteoporosis.ca.)

Financial support: Funding provided by a grant from the Institute of Health Economics (Edmonton) and Faculty Start Up Grant to Dr. Yuksel from the Faculty of Pharmacy and Pharmaceutical Sciences (University of Alberta).

Clinical pharmacists improve osteoporosis treatment initiation for the elderly

Nadrash TA, Plushner SL, Delate T. Clinical pharmacists' role in improving osteoporosis treatment rates among elderly patients with untreated atraumatic fractures. *Ann Pharmacother*. 2008 Mar;42(3):334-40.

Issue: Despite national guidelines for osteoporosis screening and management, osteoporosis detection and treatment following fractures, particularly in the elderly, is suboptimal. According to the Health Employer Data Information Set, a national quality assurance program, women 67 years of age or older, and those who have suffered a fracture, should have either a bone mineral density (BMD) test or be prescribed medication within 6 months following the fracture. Furthermore, suffering from a fracture often leads to a diagnosis of osteoporosis and is a primary predictor of future fractures.

A solution: Clinical pharmacists can be a resource to optimize patient screening and follow-up of osteoporosis. Pharmacists involved in this study reviewed the electronic medical records (EMR) of patients who had suffered an atraumatic fracture. With physician approval, pharmacists ini-

tiated osteoporosis medication and acted as a communication liaison between physicians and patients. Any recommendations pharmacists made were recorded in the EMR. Pharmacists contacted eligible patients by telephone and recommended alendronate, risedronate, or raloxifene, if appropriate. Additionally, all patients were advised to take calcium and vitamin D supplements. Patients were advised to undergo a BMD test only if they had a non-hip or non-spinal fracture had not had a test in the past year.

The study showed that hip, humerus, and wrist fractures were most common. It also showed a relatively high rate of pharmacotherapy initiation among patients (inpatient or ambulatory) at 34% compared to 2.5–11%, as reported in the literature. Overall, 50% of patients were either started on osteoporosis medication or received a BMD test. Of the 21 ambulatory patients who completed the test,

17 were osteoporotic; all of these patients were initiated on therapy.

Implications: This study demonstrates that within a collaborative model, a clinically significant portion of previously unscreened and untreated patients with atraumatic fractures were identified and placed on osteoporosis pharmacotherapy. The most common barriers for refusing to take medications were a lack of affordability (or generic alternatives), and the perceived unimportance of a drug that did not treat an acute problem. Since many older people suffer from several comorbid conditions and take multiple medications, they may be unwilling to take another medication. However, these barriers may be overcome by pharmacists educating patients about the benefits of treatment and the risks associated with the disease. The limitations of this study are its small sample size and lack of a control group.

Background or research methods: This study took place at Kaiser Permanente Colorado, a health maintenance organization, where pharmacists worked within a collaborative environment and were able to screen patients, initiate, and adjust pharmacotherapy. In this prospective quality improvement analysis, pharmacists identified a total of 137 patients

(40 hospitalized and 97 ambulatory) who were diagnosed with an atraumatic fracture but were not on osteoporosis therapy. Atraumatic fracture is defined as a fracture occurring from standing height without the presence of trauma. The primary outcome measured was the number of patients initiated on osteoporosis medication or who had a BMD test

completed within 6 months following the fracture.

Financial support: A portion of this project was funded by an educational grant from Merck and Co. and the remainder was provided by the Kaiser Permanente Colorado Pharmacy Department.

Pharmacists play an important role in osteoporosis treatment compliance

Hall LN, Shrader SP, Ragucci KR. Evaluation of compliance with osteoporosis treatment guidelines after initiation of a pharmacist-run osteoporosis service at a family medicine clinic. *Ann Pharmacother.* 2009 Nov;43(11):1781-6.

Issue: Complications arising from fractures and falls result in increased institutionalization and morbidity. The prevalence of osteoporosis rises from 6% at 50 years of age to over 50% at 80 years of age.¹ However, chronic medical conditions such as osteoporosis are generally not perceived to be urgent and thus may not be adequately addressed by health care professionals. Even with guidelines outlining the management of osteoporosis, screening, diagnosis, treatment, and follow-up remain poor.²

A solution: Pharmacists can play a pivotal role in providing care to patients with osteoporosis. This study was designed to evaluate short-term compliance with treatment guidelines including appropriate dual energy X-ray absorptiometry (DXA) scan frequency (every 2 years), osteoporosis medication management, calcium and vitamin D supplementation, and patient education. Four pharmacists

Of the patients seen by pharmacists, 77% were taking osteoporosis medication and 100% were taking calcium and vitamin D.

conducted an initial patient assessment in the clinic and followed up with each patient on an individual basis. The intervention consisted of providing general education about the disease; counselling in areas to reduce modifiable risk factors (smoking cessation, nutrition, exercise, and fall prevention); initiating or modifying osteoporosis pharmacotherapy; and ordering DXA scans (considered the gold standard for osteoporosis diagnosis).

The results are telling (prior to the service vs. after the service): 8 (36%) vs. 18 (82%) received a DXA scan within an appropriate time frame; 7 (32%) vs. 17 (77%) were taking appropriate osteoporosis medication; 9 (41%) vs. 22 (100%)

were taking calcium and vitamin D; and 0 (0%) vs. 22 (100%) had documented patient counselling regarding the reduction of risk factors. All these results are significant ($p < 0.05$).

Implications: Overall, an enhanced pharmacist-run osteoporosis service significantly improved short-term compliance with guidelines, including DXA scan frequency, compliance to prescribed medications, calcium and vitamin D supplementation, and patient education. Pharmacists are in a prime position to align the care of osteoporotic patients with national guidelines to improve outcomes. This study shows that the opportunity exists to implement a multi-disciplinary approach in the management of osteoporosis. A limitation of this study is that the small sample size may not allow for the generalizability of the results. Future studies should focus on whether these changes improve long-term outcomes such as fracture reduction.

¹ Looker AC, Orwoll ES, Johnston CC Jr, Lindsay RI, Wahner HW, Dunn WL, et al. Prevalence of low femoral bone density in older US adults from NHANES III. *J Bone Miner Res.* 1997;12: 1761-8.

² Hall LN, Shrader SP, Ragucci KR. Evaluation of compliance with osteoporosis treatment guidelines after initiation of a pharmacist-run osteoporosis service at a family medicine clinic. *Ann Pharmacother.* 2009 Nov;43(11):1781-6.

Background or research methods: A pharmacist-run osteoporosis service was implemented in two family medical clinics at the Medical University of South Carolina. A retrospective chart review was conducted and patients served as their own controls, since osteoporosis data was compared before and after the use of the service. Progress notes and

interventions were documented using electronic medical records. Of 42 referred patients, 22 were eligible for inclusion: adults over 18 years of age with a prior diagnosis of osteoporosis who had been seen by the medical clinic at least once in the last year (signifying active follow-up). This study evaluated short-term compliance with treatment guidelines including

appropriate DXA scan frequency (every 2 years), osteoporosis medication management, calcium and vitamin D supplementation, and patient education.

Financial support: No external funding provided.

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In the hands of decision makers!



The Honourable Carolyn Bertram, Minister of Health and Wellness, PEI (right)

Ms. Betty Lou Hutt, CPhA Board Member (left)

At the 2010 PEI Pharmacists Association Annual Meeting and Continuing Education Conference, Charlottetown, PEI

Patients are educated by pharmacists about the risk of glucocorticoid-induced osteoporosis

McDonough RP, Doucette WR, Kumera P, Klepser DG. An evaluation of managing and educating patients on the risk of glucocorticoid-induced osteoporosis. *Value Health*. 2005 Jan-Feb;8(1):24-31.

Issue: The chronic use of glucocorticoids is common in patients with inflammatory disorders such as rheumatoid arthritis, asthma, and inflammatory bowel disease. However, prolonged use of glucocorticoids is the most common cause of secondary osteoporosis. It is estimated that 30–50% of patients on long-term glucocorticoid therapy will experience fractures,^{1,2} with the incidence of hip fractures increasing 2-fold in women and 2.6 fold in men.³ Rapid bone deterioration is most often seen in the first 6 months of therapy with doses of prednisone greater than 7.5 mg/day. Despite the presence of published guidelines, many patients still do not receive appropriate education and preventative therapy for glucocorticoid-induced osteoporosis.

A solution: Community pharmacists are an ideal resource to identify and manage patients at risk for glucocorticoid-induced osteoporosis. In this study, pharmacists provided patients in the treatment group

Patients at risk of glucocorticoid-induced osteoporosis increase calcium supplementation following interactions with community pharmacists.

with education and pamphlets explaining the risks of developing glucocorticoid-induced osteoporosis and the importance of bone mineral density (BMD) testing. They monitored the patients' drug therapy to identify and resolve any drug therapy problems related to their glucocorticoid use. Particularly, pharmacists checked to see if patients were on any medications used to prevent osteoporosis. Any drug therapy problems identified were communicated to the physician.

There was a significant change in the proportion of patients taking calcium supplements between the treatment (17.1%) and control group (-6.9%). After 9 months, fewer patients in the treatment group reported a low calcium diet, and

the incidence of bisphosphonate, estrogen and calcium supplementation was greater. There was also a significant difference in patient awareness of the risks of glucocorticoid-induced osteoporosis between the treatment and control groups. The treatment group's higher awareness was based on patients indicating the need for BMD testing.

Implications: This study demonstrates that patients at risk for glucocorticoid-induced osteoporosis increase calcium supplementation following interactions with community pharmacists. By examining patient records, pharmacists are ideally placed to identify patients at risk for glucocorticoid-induced osteoporosis and educate them about the risks associated with the disease. Further, when pharmacists educate patients and communicate with physicians, management of at-risk patients improves. Further studies are required to determine the generalizability of these results.

¹ Reid IR. Glucocorticoid osteoporosis—mechanisms and management. *Eur J Endocrinol*. 1997 Sep;137(3):209-17.

² Adachi JD. Corticosteroid-induced osteoporosis. *Am J Med Sci*. 1997 Jan;313(1):41-9.

³ International Osteoporosis Foundation. Facts and statistics about osteoporosis and its impact. Available: www.iofbonehealth.org/facts-and-statistics.html (accessed July 6, 2010).

Background or research methods: This study involved 96 patients on long-term glucocorticoid therapy across 15 community pharmacies in Iowa. It utilized a randomized controlled design whereby pharmacies were randomized to treatment ($n=8$) or control ($n=7$). Pharmacists screened patient profiles and recruited

eligible patients: adults (18 years or older) who had been on prednisone 7.5 mg or an equivalent dose for greater than 6 months. This study evaluated changes in frequency of bisphosphonate therapy, estrogen therapy, calcium supplementation, and included a discussion of risk factors. Data were collected at baseline

and at 9 months.

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