

A SELECTION OF TEN CURRENT READINGS ON TOPICS RELATED TO OSTEOPOROSIS

Some available as free full-text and some requiring payment

Selection of readings made by A/Prof Goh Lee Gan

READING 1 – FRACTURE LIAISON SERVICES IMPROVE OUTCOMES

Wu CH, Tu ST, Chang YF, Chan DC, Chien JT, Lin CH, Singh S, Dasari M, Chen JF, Tsai KS. Fracture liaison services improve outcomes of patients with osteoporosis-related fractures: A systematic literature review and meta-analysis. Bone. 2018 Jun;111:92-100.

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ABSTRACT

OBJECTIVES: This systematic review and meta-analysis evaluated the outcomes of patients with osteoporosis-related fractures managed through fracture liaison services (FLS) programs.

METHODS: Medline, PubMed, EMBASE, and the Cochrane Library were searched (January 2000-February 2017 inclusive) using the keywords 'osteoporosis', 'fractures', 'liaison', and 'service' to identify randomised controlled trials and observational studies of patients aged ≥ 50 years with osteoporosis-related fractures in hospital, clinic, community, or home-based settings who were managed using FLS. Risk of bias was assessed at outcome level. Meta-analysis followed a random-effects and fixed-effects model. Outcomes of interest were incidence of bone mineral density (BMD) testing, treatment initiation, adherence, re-fractures, and mortality due to osteoporosis treatment.

RESULTS: A total of 159 publications were identified for the systematic literature review; 74 controlled studies (16 RCTs; 58 observational studies) were included in the meta-analysis. Overall, 41 of 58 observational studies and 12 of 16 RCTs were considered of high quality. Compared with patients receiving usual care (or those in the control arm), patients receiving care from an FLS program had higher rates of BMD testing (48.0% vs 23.5%) and treatment initiation (38.0% vs 17.2%) and greater adherence (57.0% vs 34.1%). Unweighted average rates of re-fracture were 13.4% among patients in the control arm and 6.4% in the FLS arm. Unweighted average rates of mortality were 15.8% in the control arm and 10.4% in the FLS arm. Meta-analysis revealed significant FLS-associated improvements in all outcomes versus non-FLS controls, with BMD testing increased by 24 percentage points (95% confidence interval [CI] 0.18-0.29), 20 percentage points for treatment rates (95% CI 0.16-0.25), and 22 percentage points for adherence (95% CI 0.13-0.31) and absolute risk of re-fracture reduced by five percentage points (95% CI -0.08 to -0.03) and mortality reduced by three percentage points (95% CI -0.05 to -0.01).

CONCLUSION: FLS programs improved outcomes of osteoporosis-related fractures, with significant increases in BMD testing, treatment initiation, and adherence to treatment and reductions in re-fracture incidence and mortality.

READING 2 – PATIENTS' ADHERENCE TO RECOMMENDATIONS MADE BY FRACTURE LIAISON SERVICE

Luc M, Corriveau H, Boire G, Filiatrault J, Beaulieu MC, Gaboury I. Patient-Related Factors Associated with Adherence to Recommendations Made by a Fracture Liaison Service: A Mixed-Method Prospective Study. Int J Environ Res Public Health. 2018 May 9;15(5). pii: E944.

doi: 10.3390/ijerph15050944. PubMed PMID: 29747415.

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ABSTRACT

A Fracture Liaison Service (FLS) has been calculated to be a cost-effective model of care for patients with fragility fracture (FF). Cost-effectiveness can be achieved when adherence to bone health recommendations from FLS staff is high. This prospective study combined participants' telephone longitudinal survey data (intervention group, n = 354) and interviews with 16 individuals from FLS in three health regions of the province of Quebec (Canada).

Participants were recruited between January 2013 and April 2015.

Regression models were fit to examine the relationship between participant-related factors and adherence at 12 months to osteoporosis medication, vitamin D supplementation, and participation in physical activity.

Participants acknowledging FF as a consequence of osteoporosis were more likely to adhere to medication (odds ratio (OR) 2.5; p = 0.001) and vitamin D supplementation (OR 2.3; p = 0.01). Paradoxically, the same participants were less prone to engage in physical activity (OR 0.5, p = 0.01). Qualitative interviews suggested that feedback from FLS coordinators helped participants understand the underlying cause of their FF.

This study highlighted the key roles of FLS staff in helping patients to recognize FF as a sign of underlying bone disease and encouraging adherence to care recommendations.

READING 3 – COMORBIDITIES AND MEDICATION USE ASSOCIATED WITH INCREASED FRACTURE RISK

Vranken L, Wyers CE, Van der Velde RY, Janzing HM, Kaarsemaker S, Geusens PP, Van den Bergh JP. Comorbidities and medication use in patients with a recent clinical fracture at the Fracture Liaison Service. Osteoporos Int. 2018 Feb;29(2):397-407.

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ABSTRACT

In this cross-sectional study, two-thirds of Fracture Liaison Service (FLS) patients had comorbidities and medications associated with increased bone- or fall-related fracture risk. Bone-related and fall-related fracture risk (BRR and FRR) were associated with age and fracture type, but not with gender or BMD. Systematic evaluation of these factors leads to a more profound assessment in FLS care.

INTRODUCTION: This study is a systematic evaluation of comorbidities and medications associated with increased fracture risk in patients aged 50-90 years with a recent fracture visiting the FLS.

METHODS: In this cross-sectional cohort study, comorbidities were classified according to ICD-10 and medications according to the Anatomic Therapeutic Chemical (ATC) classification and further categorized into those associated BRR and FRR.

CONCLUSION: Comorbidities and medications associated with increased fracture risk are present in two-thirds of patients visiting the FLS. In addition, the proportion of patients having a combination of BRR and FRR increased significantly with age, BMI, and fracture severity. This indicates that systematic evaluation of these factors is important for a more profound assessment of subsequent fracture risk in FLS care.

READING 4 – MEDICATION-RELATED OSTEONECROSIS OF JAW IN OSTEOPOROTIC PATIENTS

Chan BH, Yee R, Puvanendran R, Ang SB. Medication-related osteonecrosis of the jaw in osteoporotic patients: prevention and management. Singapore Med J. 2018 Feb;59(2):70-75.

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ABSTRACT

Osteoporosis is a major, growing healthcare issue. This is especially of concern in an ageing population like that of Singapore. Osteoporotic patients are at risk of fractures, which can result in increased morbidity and mortality. The use of antiresorptive therapy with bisphosphonates or denosumab has been proven to reduce fracture risk. However, the use of these medications has rarely been associated with the development of osteonecrosis of the jaw, a potentially debilitating condition affecting one or both jaws. Appropriate understanding of the patient's antiresorptive therapy regime, as well as early institution of preventive dental measures, can play an important role in preventing medication-related osteonecrosis of the jaw (MRONJ). Regular monitoring and prompt referral to specialist care is warranted for patients with established MRONJ.

READING 5 – PREVENTION AND TREATMENT OF OSTEOPOROSIS

Compston J, Cooper A, Cooper C, Gittoes N, Gregson C, Harvey N, Hope S, Kanis JA, McCloskey EV, Poole KES, Reid DM, Selby P, Thompson F, Thurston A, Vine N; National Osteoporosis Guideline Group (NOGG). UK clinical guideline for the prevention and treatment of osteoporosis. Arch Osteoporos. 2017 Dec;12(1):43.

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ABSTRACT

INTRODUCTION: In 2008, the UK National Osteoporosis Guideline Group (NOGG) produced a guideline on the prevention and treatment of osteoporosis, with an update in 2013. This paper presents a major update of the guideline, the scope of which is to review the assessment and management of osteoporosis and the prevention of fragility fractures in postmenopausal women and men age 50 years or over.

METHODS: Where available, systematic reviews, meta-analyses and randomised controlled trials were used to provide the evidence base. Conclusions and recommendations were systematically graded according to the strength of the available evidence.

RESULTS: Review of the evidence and recommendations are provided for the diagnosis of osteoporosis, fracture-risk assessment, lifestyle measures and pharmacological interventions, duration and monitoring of bisphosphonate therapy, glucocorticoid-induced osteoporosis, osteoporosis in men, postfracture care and intervention thresholds.

CONCLUSION: The guideline, which has received accreditation from the National Institute of Health and Care Excellence (NICE), provides a comprehensive overview of the assessment and management of osteoporosis for all healthcare professionals who are involved in its management.

READING 6 – OSTEOSARCOPENIA AS NEW GERIATRIC SYNDROME

Hassan EB, Duque G. Osteosarcopenia: A new geriatric syndrome. Aust Fam Physician. 2017 Nov;46(11):849-853.

PubMed PMID: 29101922.

ABSTRACT

BACKGROUND: Longevity, the increase in the ageing population and a lifestyle of minimal physical activity come with a hefty price. Consequently, two diseases are increasingly becoming a concern for the welfare of patients and the health industry: osteoporosis and sarcopenia. These conditions are usually interrelated through several mechanisms and metabolic pathways, and comprise a syndrome called osteosarcopenia. OBJECTIVE: As patients with osteosarcopenia represent an important subset of frail individuals at higher risk of institutionalisation, falls and fractures, the aim of this review is to further familiarise general practitioners with osteosarcopenia as a new geriatric syndrome that requires early diagnosis and effective therapeutic interventions. DISCUSSION: The most important aspects of osteosarcopenia are discussed here. These include pathogenesis, prevalence, diagnostic criteria, management and follow-up. Finally, the role of multidisciplinary clinics for the care of patients with osteosarcopenia is discussed in brief.

READING 7 – EFFICACY AND SAFETY OF TERIPARATIDE

Yoshiki F, Nishikawa A, Taketsuna M, Kajimoto K, Enomoto H. Efficacy and safety of teriparatide in bisphosphonate-pretreated and treatment-naive patients with osteoporosis at high risk of fracture: Post hoc analysis of a prospective observational study. J Orthop Sci. 2017 Mar;22(2):330-338.

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ABSTRACT

BACKGROUND: Teriparatide is the first anabolic agent shown to reduce the risk of fractures in patients with osteoporosis. In Japan, teriparatide is prescribed to treat patients at high risk of fracture. Given that bisphosphonates are commonly used prior to teriparatide as treatment for osteoporosis, information on the effectiveness and safety of teriparatide with or without previous bisphosphonate treatment is helpful for physicians in clinical practice. This study aims to report the effectiveness and safety of teriparatide in treatment-naive and bisphosphonate-pretreated patients in Japan as real-world evidence.

METHODS: A post hoc analysis of a postmarketing surveillance study was conducted in Japanese patients with osteoporosis at high risk of fracture who received 24-month treatment of daily teriparatide. Changes in bone turnover biomarkers and bone mineral density and incidence of new fractures were analyzed in treatment-naive as well as bisphosphonate-pretreated patients.

RESULTS: The analysis included 1433 patients (treatment-naive, n = 659; bisphosphonate-pretreated, n = 774). Bone mineral density increased significantly from baseline at 24 months in both treatment-naive (lumbar spine, 13.45%; femoral neck, 5.16%; total hip, 4.46%) and bisphosphonate-pretreated (lumbar spine, 11.20%; femoral neck, 2.22%; total hip, 0.67%) patients. The incidence rates of new vertebral and nonvertebral fractures at 24 months were 1.69% and 3.37%,

respectively, in treatment-naïve patients and 3.60% and 5.56%, respectively, in bisphosphonate-pretreated patients. The incidence of adverse drug reactions was 6% in treatment-naïve patients and 10% in bisphosphonate-pretreated patients. The most common adverse drug reaction in treatment-naïve and bisphosphonate-pretreated patients was nausea (0.91%) and hyperuricaemia (1.81%), respectively.

CONCLUSIONS: In this post hoc analysis, no new safety concerns and similar effectiveness of teriparatide were observed in Japanese patients with osteoporosis at high risk of fracture, regardless of their previous treatment status with bisphosphonates.

READING 8 – SYSTEMS-BASED INTERVENTION IN FRAGILITY FRACTURES

Bunta AD, Edwards BJ, Macaulay WB Jr, Jeray KJ, Tosi LL, Jones CB, Sietsema DL, Kaufman JD, Murphy SA, Song J, Goulet JA, Friedlaender GE, Swiontkowski MF, Dirschl DR. Own the Bone, a System-Based Intervention, Improves Osteoporosis Care After Fragility Fractures. J Bone Joint Surg Am. 2016 Dec 21;98(24):e109.

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ABSTRACT

BACKGROUND: The goal of this study was to evaluate the effectiveness of the American Orthopaedic Association's Own the Bone secondary fracture prevention program in the United States.

METHODS: The objective of this quality improvement cohort study was dissemination of Own the Bone and implementation of secondary prevention (osteoporosis pharmacologic and bone mineral density [BMD] test recommendations). The main outcome measures were the number of sites implementing Own the Bone and implementation of secondary prevention, i.e., orders for BMD testing and/or pharmacologic treatment. The 177 sites participating in the program were academic and community hospitals, orthopaedic surgery groups, and a health system; data were obtained from the first 125 sites utilizing its registry, between January 1, 2010, and March 31, 2015. It included all patients, aged 50 years or older, presenting with fragility fractures (n = 23,132) who were enrolled in the Own the Bone web-based registry. The interventions were education, development of program elements, dissemination, implementation, and evaluation of the Own the Bone program at participating sites.

RESULTS: A growing number of institutions implemented Own the Bone (14 sites in 2005-2006 to 177 sites in 2015). After consultation, 53% of patients had a BMD test ordered and/or pharmacologic therapy for osteoporosis.

CONCLUSIONS: The Own the Bone intervention has succeeded in improving the behaviors of medical professionals in the areas of osteoporosis treatment and counseling, BMD testing, initiation of pharmacotherapy, and coordination of care for patients who have experienced a fragility fracture.

READING 9 – CLINICAL MANAGEMENT OF OSTEOPOROSIS

Inderjeeth CA, Inderjeeth AJ, Raymond WD. Medication selection and patient compliance in the clinical management of osteoporosis. Aust Fam Physician. 2016 Nov;45(11):814-817.

PubMed PMID: 27806451.

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ABSTRACT

BACKGROUND: Osteoporosis contributes significantly to morbidity and mortality. Antiresorptive therapy is effective in primary and secondary fracture prevention, but compliance with bisphosphonate therapy is poor, resulting in poorer patient outcomes.

OBJECTIVE: The objectives of this article are to aid clinicians' treatment selection and improve patient adherence.

DISCUSSION: A literature review of treatment options and factors contributing to poor patient treatment adherence was conducted for this article. The effectiveness of osteoporosis treatment is reduced because of poor adherence. This is associated with a lack of patient understanding of their condition, perception of fracture risk and concerns about adverse events. Appropriate treatment selection and novel oral and parenteral options may help improve compliance. Increasing treatment adherence requires clinicians to improve patient education. Discussion around patient preferences, implications of fragility fractures, minimising side effects and efficacy of treatment is essential despite the lack of any tangible 'symptom' benefit.

READING 10 – PREVENTIVE CARE IN THE ELDERLY

Tazkarji B, Lam R, Lee S, Meiyappan S. Approach to preventive care in the elderly. Can Fam Physician. 2016 Sep;62(9):717-21. Review.

PubMed PMID: 27629666

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ABSTRACT

OBJECTIVE: To guide family physicians in creating preventive screening and treatment plans for their elderly patients.

SOURCES OF INFORMATION: The MEDLINE database was searched for Canadian guidelines on primary health care and the elderly; guidelines or meta-analyses or practice guidelines or systematic reviews related to mass screening in those aged 80 and older and the frail elderly, limited to between 2006 and July 2016; and articles on preventive health services for the elderly related to family practice or family physicians, limited to English-language publications between 2012 and July 2016.

MAIN MESSAGE: Estimating life expectancy is not an easy or precise science, but frailty is an emerging concept that can help with this. The Canadian Task Force on Preventive Health Care offers cancer screening guidelines, but they are less clear for patients older than 74 years and management plans need to be individualized. Estimating remaining years of life helps guide your recommendations for preventive screening and treatment plans. Risks often increase along with an increase in frailty and comorbidity. Conversely, benefits often diminish as life expectancy decreases. Preventive management plans should take into account the patient's perspective and be mutually agreed upon. A mnemonic device for key primary care preventive areas-CCFP, short for cancer, cardiovascular disease, falls and osteoporosis, and preventive immunizations-might be useful.

CONCLUSION: Family physicians might find addressing the following areas helpful when considering a preventive health intervention: age, life expectancy (including concept of frailty), comorbidities and functional status, risks and benefits of screening or treatment, and values and preferences of the patient.