JSNA
JOINT STRATEGIC NEEDS ASSESSMENT

Bone Health

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KINGSTON
Healthier living, happier lives

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THE ROYAL BOROUGH OF
KINGSTON
UPON THAMES

Contents

Overview

The subject of bone health and falls amongst older residents of Kingston is a significant public health issue for individuals, families and agencies. People who have developed osteoporosis or osteoarthritis, and those at high risk of falls or who have sustained a fracture, can find their quality of life limited or severely restricted. In Kingston the number of older people (aged 65 and over) is currently 23,000 (13.2% of the population). This figure is predicted to rise significantly by 2030[1]. As the demography of the general population changes it is anticipated that the time, effort, and resources required to deal with the challenges of bone health will increase.

Osteoporosis poses a significant public health issue resulting in increased morbidity and mortality[2]. It is a disease characterised by low bone mass and structural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture. If people at risk can be identified it will allow both preventative and interventional measures to be put in place. According to the International Osteoporosis Foundation, one in three women and one in five men over the age of 50 will experience osteoporotic fractures. Using these figures and the 2015 mid-year estimates from the Office of National Statistics (ONS), the predicted prevalence in Kingston is estimated to be 8,400 females and 4,750 males.
Osteoarthritis is a degenerative disease affecting the joints. It causes pain and stiffness within the joint, often resulting in progressive limitation of movement. It is also highly prevalent in the UK, with one in five people over 45 estimated to develop osteoarthritis in their knee. Both osteoporosis and osteoarthritis can increase the public's use of primary and secondary care health services.

Falls represent an additional significant national public health challenge and, as the population ages, the incidence of falls is anticipated to increase. According to National Institute for Health and Care Excellence (NICE) Guidance CG 161, individuals aged 65 and older have the highest risk of falling, with 30% of people older than 65 and 50% of people older than 80 falling at least once a year. Falls have considerable impact on health service demand for both acute and long-term care provision. Falls and fractures in people aged 65 and over account for over 4 million hospital bed days each year in England alone[3]. 27.4% (6,162) of the population in Kingston aged 65 and over were predicted to have a fall in 2015, with 475 of these resulting in a hospital admission according to Projecting Older People Population Information (POPPI). Kingston data for injuries due to falls in people aged 65-79 and 80 years and over is lower than the London and England averages, however the number of injuries due to falls has increased by 34.7% from 2010/11 to 2014/15. Admission rates for injuries related to falls in people aged 65-79 and 80 years and over were also lower than the regional and national averages.

National guidelines (see *What Works* section) require the provision of integrated services for bone health, falls and fracture prevention and treatment across the UK. This JSNA has been written to capture the key issues relating to falls and bone health in Kingston.

[1] ONS 2015 Mid Year Estimates, published June 2016 and GLA 2015 Round Population Projections.
[2] Abrahamsen B, van Staa T, Ariely R, Olson M, Cooper C. Excess mortality following hip fracture: a systematic epidemiological review. Osteoporos Int 2009;20:1633-1650.
[3] Royal College of Physicians. 2011. Falling Standards, broken promises: report of the national audit of falls and bone health in older people 2010.

Introduction

Throughout a person's lifespan their bones are active. Bones are constantly remodelling and continue to grow in strength until a person is in their mid-twenties, at which point bone density reaches its peak. After the age of 35 old bone starts to be lost at a faster rate than new bone can be formed to replace it. An individual's bone health is characterised by various traits such as bone mineral content/density, bone turnover, bone geometry and microstructure, all of which evolve with time under the influence of genetic, hormonal, and lifestyle factors[4]. An ageing population, rising levels of obesity, and physical inactivity have all had an impact on the nation's bone health.

Musculoskeletal disorders (MSK) are a major cause of morbidity throughout the world, having a strong negative influence in terms of health-related quality of life. They cover any injury, disease or problem relating to muscles, bones or joints and are very common. Each year 20% of the general population see a GP about a musculoskeletal problem, and the majority of these are for back pain or osteoarthritis[5]. The NHS spends about £5 billion per year on treating musculoskeletal conditions[6].

Bone health issues can affect not only physical but psychological health. Regular exercise can reduce physical impairments and improve participation in everyday activities, however, many individuals who experience pain do not exercise because of their pain. Research shows that older adults with knee pain report low levels of exercise and physical activity. Low self-efficacy and ineffective pain coping strategies, as well as anxiety and depression, can also be common in chronic pain populations[7].

Services supporting individuals with their bone health should address key barriers that can prevent individuals from protecting their bones, such as assessing attitudes and beliefs about their health, addressing lifestyle changes, educating patients, increasing self-efficacy, and offering psychological support when necessary.

The main conditions affecting bone health are described below.

Osteoporosis and Osteopenia

Osteoporosis is a major global public health issue. Osteoporosis is a progressive, systemic skeletal disorder characterised by low bone mass and micro-architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture. Osteoporosis occurs when bone becomes thinner and weaker over time, which is associated with decreased physical and social function. As osteoporosis can initially go undetected, a fragility fracture can be the first sign of the presence of the disease. The most common types of fracture related to osteoporosis occur within the hip, vertebral column and wrist. The financial, social, and physical costs of osteoporotic fractures need to be considered in terms of taking preventative measures to protect bone health.

A milder form of reduced bone mass is called osteopenia. This is when bone mineral density is lower than expected, but not low enough to receive a diagnosis of osteoporosis. It is important for individuals to keep joints moving and muscles strong in order to maintain bone mass.

[4] R. Rizzoli, J.P. Bonjour, S.L. Ferrari Osteoporosis, genetics and hormones. J Mol Endocrinol, 26 (2001), pp. 79–94

[5] Arthritis Research UK (2008).Key facts about Arthritis.

[6] Department of Health (2011). England level programme budgeting data 2010-11.

The prevalence of osteoporosis is increasing worldwide[7]. Three million people in the UK are estimated to have osteoporosis, according to the National Osteoporosis Society (NOS)[8], and over 300,000 patients present with fragility fractures to hospitals in the UK each year[9]. Osteoporosis is most common in older white women, and after the menopause the prevalence of osteoporosis increases markedly with age, from approximately 2% at 50 years rising to more than 25% at 80 years. Recent figures indicate that every year hip fractures alone cost UK hospitals approximately £1.9 billion, not taking into account the high cost of social care often subsequently required for these patients. Additionally, there is some research to show that women aged over 45 years spend more days in hospital due to osteoporosis than diabetes, heart attack, or breast cancer[10].

The management of osteoporosis involves both the prevention and treatment of fractures, including the use of medication to strengthen bones. Due to the aetiology and risk factors of the condition, non-pharmacological primary prevention can also be beneficial and is an important aspect of management.

There are a variety of risk factors for developing osteoporosis, some of which can be controlled through lifestyle changes and others that are not controllable. Lack of exercise, insufficient calcium in the diet, smoking, and alcohol consumption can increase the risk of developing osteoporosis. Physical exercise, especially weight bearing activity, has been reported to have beneficial effects on the skeleton in both adolescents and the elderly[11].

Table 1: Risk factors for Osteoporosis

Female gender	Previous fragility fractures
Age	Rheumatological conditions
Oral corticosteroids	Parental history of hip fracture
Smoking	Body mass index of less than 19 kg/m^2
Alcohol	

Source: NICE, 2012

Osteoporosis is less common in men than in women, and its causes are somewhat different, although approximately 39% of new osteoporotic fractures estimated to have occurred worldwide in 2000 were in men.[12] Women are more susceptible to osteoporosis and suffering fractures because bone loss becomes more rapid for several years after the menopause, when sex hormone levels decrease[13].

In addition, women tend to have smaller bones than men and in general live longer, with loss of bone tissue continuing for longer, making fragility fractures more likely. Potential causes for osteoporosis in

[7] Babatunde OO, Forsyth JJ (2013) Quantitative Ultrasound and bone's response to exercise: a meta analysis. Bone 53:311–318
[8] Calculated using mid 2013 population data[i] and osteoporosis incidence from Office of National Statistics (2014). *Annual Mid-year Population Estimates, 2013*.
[9] British Orthopaedic Association (2007). The care of patients with fragility fracture.
[10] Kanis JA. Guidelines for Diagnosis and Management of Osteoporosis. OI 1997; 390–406
[11] Qin L, Au SK, Choy WY, et al. Regular Tai Chi exercise may retard bone loss in postmenopausal women—a case control study. Arch Phys Med Rehabil 2002;83(10):1355–9
[12] Johnell O, Kanis JA. An estimate of the worldwide prevalence and disability associated with osteoporotic fractures. Osteoporos Int 2006;17:1726–33.

males can be secondary, the most common being corticosteroid use, excessive alcohol use, and hypogonadism[13], however more population based data is needed in order to get a clearer picture.

Psychological Impact

Osteoporosis can have a profound impact on an individual's life. In a survey conducted by National Osteoporosis Society (NOS) in 2014, 42% of people who had experienced fractures are in long-term pain which they don't think will ever go away, and 42% of people said their osteoporosis has made them feel socially isolated[14]. Research conducted by Bianchi (2005) showed that 42% of women with osteoporosis experience depression, 58% a reduced sense of well-being, and 41% a reduced quality of life[15].

Diagnosis and Risk Identification of Osteoporosis

Progress has been made in understanding the pathophysiology and management of osteoporosis, though it remains under-diagnosed and under-treated[16], especially in men[17]. The diagnosis of osteoporosis relies on the quantitative assessment of bone mineral density (BMD), usually by central dual energy X-ray absorptiometry (DXA). DXA scanning is a diagnostic tool used in the diagnosis and management of osteoporosis. A referral from a healthcare provider is needed for a DXA scan. Individuals on bone protection medication should have frequent repeat bone density tests.

Fractures

Osteoporotic fractures are defined as fractures associated with low bone mineral density (BMD) and include clinical spine, forearm, hip and shoulder fractures. It is often referred to as a low-trauma fracture; that is, a fracture sustained as the result of a force equivalent to the force of a fall from a height equal to, or less than, that of an ordinary chair.
Osteoporotic fragility fractures can cause substantial pain and severe disability, often leading to a reduced quality of life, and hip and vertebral fractures are associated with decreased life expectancy.
Although many factors contribute to fractures the most significant causes are reduction in bone mass, structural deterioration, and increased frequency of falls[18].

The risk of osteoporotic fractures increases with age among individuals aged 50 years and over[19]. According to the National Osteoporosis Society, one in two women and one in five men over the age of 50 will break a bone[20]. As mentioned previously, the occurrence of a fragility fracture is often the first sign that an individual has osteoporosis and is at a higher risk of sustaining a future fracture. Postmenopausal women with an initial fracture are at substantially greater risk of subsequent fractures. Fragility fractures are responsible for 300,000 annual UK emergency department

[13] Kaufman, J., Reginster, J., Boonen, S., Brandi, M. L., Cooper, C., Dere, W. Rizzoli, R. (2013). Treatment of osteoporosis in men. *Bone, 53*(1), 134-144. doi:10.1016/j.bone.2012.11.018
[14] National Osteoporosis Society, 2014. Life with Osteoporosis: the untold story.
[15] Bianchi ML et al. Quality of life in post-menopausal osteoporosis. Health Qual Life Outcomes 2005; 3: 78
[16] Teng GG, Curtis JR, Saag KG. Quality health care gaps in osteoporosis: how can patients, providers, and the health system do a better job? Curr Osteoporos Rep 2009;7:27–34.
[17] Ebeling PR. Clinical practice. Osteoporosis in men. N Engl J Med 2008;358: 1474–82.
[18] Weaver, C. M. (01.01.2016). "Calcium plus vitamin D supplementation and risk of fractures: an updated meta-analysis from the National Osteoporosis Foundation". *Osteoporosis international (0937-941X)*, 27 (1), p. 367.
[19] Ensrud, K.E.(2013) Epidemiology of fracture risk with advancing age. J Gerontol A Biol Sci Med Sci 68:1236–1242
[20] van Staa T, Dennison E, Leufkens H and Cooper C, 2001. Epidemiology of fractures in England and Wales. Bone 29, pp.517-522

attendances[21], including 70,000 hip fractures, amounting to around £2 billion a year. Direct medical costs from fragility fractures to the UK healthcare economy were estimated at £1.8 billion in 2000, with the potential to increase to £2.2 billion by 2025, with most of these costs relating to hip fracture care[22]. According to NICE, hip fractures are also associated with increased mortality; estimates of the relative mortality risk vary from two to greater than 10 in the 12 months following hip fracture. However, it is unclear to what extent this can be attributed to fracture alone as opposed to pre-existing comorbidity. Hip fractures in men are associated with twice the mortality rate of women[23], although the average age at which osteoporotic fractures occur in men is approximately five to ten years later than in women depending on fracture type[24].

Table 2: Lifetime risk of osteoporotic fracture by gender, UK

Fractures	Males %	Females %
Hip	3%	14%
Spine	6%	28%
Wrist	2%	13%

Source: Harvey, Dennison & Cooper, 2010[25].

Osteoarthritis

Osteoarthritis (OA) is a condition in which the joints of the body become damaged, stop moving freely, and become painful. OA results from a combination of the breakdown of the joint and the body's attempted repair processes. It can cause pain and stiffness in any joint in the body and is the most prevalent joint disease in older adults[26]. It is the leading cause of persistent knee pain in people over 50 years old[27].The majority of patients present to primary care with symptoms of pain and stiffness, this reduces mobility and is associated with a reduction in quality of life.

There is currently no cure for osteoarthritis, however there are many ways to slow down the progression of the condition. Most patients will not need surgery, their symptoms can be adequately controlled by non-surgical measures as outlined by NICE Guidance CG59. Although causes are not yet fully understood, there are a number of risk factors for the development of osteoarthritis including increasing age, female sex, genetic factors, occupation, joint abnormalities, obesity, bone density, and previous joint injury[28]. Osteoarthritis is a chronic, degenerative, musculoskeletal disease with

[21] Kanis JA, Oden A, Johnell O et al. The burden of osteoporotic fractures: a method for setting intervention thresholds. Osteoporos Int 2001; 12: 417–427.
[22] Burge RT, Worley D, Johansen A, et al. The cost of osteoporotic fractures in the UK: projections for 2000–2020. Journal of Medical Economics 4: 51–52.
[23] Abrahamsen B, van Staa T, Ariely R, Olson M, Cooper C (2009) Excess mortality following hip fracture: a systematic epidemiological review. Osteoporos Int 10:1633–1650
[24] Campion JM, Maricic MJ. Osteoporosis in men. Am Fam Physician 2003;67: 1521–6.
[25] Harvey N, Dennison E, Cooper C. Osteoporosis: impact on health and economics. Nat Rev Rheumatol 2010;6:99–105
[26] Lawrence et al National Arthritis Data Workgroup (2008) Estimates of the prevalence of arthritis and other rheumatic conditions in the United States: Part II. Arthritis Rheum 58(1):26–35
Vos T, et al (2012) Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990? 2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 380(9859):2163–2196
[27] Felson DT, Lawrence RC, Dieppe PA, Hirsch R, Helmick CG, Jordan JM, Kington RS, Lane NE, Nevitt MC, Zhang Y, Sowers M, McAlindon T, Spector TD, Poole AR, Yanovski SZ, Ateshian G, Sharma L, Buckwalter JA, Brandt KD, Fries JF: Osteoarthritis: new insights. Part 1: the disease and its risk factors. *Ann Intern Med* 2000,133(8):635–646
[28] Chaganti, R. K., & Lane, N. E. (2011). Risk factors for incident osteoarthritis of the hip and knee. *Current Reviews in Musculoskeletal Medicine*, *4*(3), 99–104.

global prevalence of 10% of men and 20% of women aged 60 years and over[29]. Osteoarthritis is more common in women than in men for the majority of joints. According to Arthritis UK, it is estimated that over 6.5 million people have sought treatment from their GP for osteoarthritis of the hip and knee. Approximately one in five adults over 45 years in England have osteoarthritis of the knee and one in nine adults have osteoarthritis of the hip. These figures vary between local authorities areas in England.

Osteoarthritis in the hips or knees can restrict mobility, limit walking, climbing stairs, bathing and personal care, and driving a car. Osteoarthritis in the hands can impact an individual's ability to carry out day to day activities.
The annual cost of osteoarthritis to the health service is £5.2 billion. Along with the economic costs associated with high levels of primary and secondary care for treatment and management of osteoarthritis, personal financial costs of managing OA can also be high for those individuals who must adapt their lives and homes to the condition, and potential loss of productivity[30]. Between 1990 and 2010, disability due to osteoarthritis in the UK increased by 16%[31].

The incidence of osteoarthritis is expected to increase both as the population ages and with the growing incidence of obesity throughout the world[32] .
Prevention of painful osteoarthritis can be addressed by tackling common risk factors such as obesity and physical inactivity. Exercise is important because it can help to ease stiffness, improve joint movement, strengthen muscles, help individuals to lose weight thereby putting less strain on the joints, and maintain bone density[33].

Diagnosis
As there is no simple test for osteoarthritis, diagnoses can vary greatly between individual GPs and across general practices. Because of this, many people can remain undiagnosed. Radiography is often used as the 'gold standard', but it is not the only marker as OA is influenced by a broad range of factors[34]. NICE guidelines recommend a diagnosis of OA if the patient:

- is aged 45 or over **and**
- has activity-related joint pain **and**
- has either no morning joint-related stiffness or morning stiffness that lasts no longer than 30 minutes.

Psychological factors and impact of osteoarthritis

[29] Hiligsmann M, Cooper C, Arden N et al. Health economics in the field of osteoarthritis: An Expert's consensus paper from the European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO). Sem Arthritis Rheumat 2013; 43: 303–13.
[30] Altman RD. Early management of osteoarthritis. Am J Manag Care. 2010;16 (Suppl Management):S41–7.
[31] Murray C et al. (2013). UK health performance: findings of the Global Burden of Disease Study 2010, Lancet 381 (9871), 970-972.
[32] Chaganti, R. K., & Lane, N. E. (2011). Risk factors for incident osteoarthritis of the hip and knee. *Current Reviews in Musculoskeletal Medicine*, *4*(3), 99–104. http://doi.org/10.1007/s12178-011-9088-5
[33] Fransen M, McConnell S. Exercise for osteoarthritis of the knee. Cochrane Database Syst Rev 2008;4:CD004376.
[34] Parsons, C., Clynes, M., Syddall, H., Jagannath, D., Litwic, A., van der Pas, S.. . the EPOSA research group. (2015). How well do radiographic, clinical and self-reported diagnoses of knee osteoarthritis agree? findings from the hertfordshire cohort study.*Springerplus, 4*(1), 1-5. doi:10.1186/s40064-015-0949-z

Since osteoarthritis is a common reason for utilising health care resources, an understanding of the factors involved is important for patients with OA as well as for healthcare professionals and commissioners. As the diagnosis is associated with increased pain, decreased function and elevated disability, the psychological impact of managing the pain and limitations in social functioning can be difficult, and have a profound impact on people's lives. 68% of people with osteoarthritis report depression when the pain is at its worst. Depressive symptoms were highlighted as a potential barrier to physical activity for people with osteoarthritis in a recent systematic review conducted in 2015[35]. Addressing psychological factors should be built into interventions.

Falls

A fall is defined as an event which results in a person coming to rest inadvertently on the ground or floor or other lower level[36]. Falls and fall-related injuries are a common and serious problem for older people. Falls contribute to fractures - 90% of hip fractures result from falls[37]. People aged 65 and older have the highest risk of falling, with 30% of people older than 65 and 50% of people older than 80 falling at least once a year. Falls are estimated to cost the NHS more than £2.3 billion per year.

Falls are a major reason for admission to hospital or a residential care setting, even when no serious injury has occurred. There are a number of factors which increase the risk of falling such as: age, being on multiple medications, visual impairments, nutritional deficiencies, loss of muscle strength and power, and extrinsic factors such as poor lighting and slippery or uneven surfaces. The human cost of falling includes distress, pain, injury, loss of confidence, loss of independence, and mortality. Falls are the most serious and frequent home accident among older people. Around one in 10 older people who fall become afraid to leave their homes in case they have another fall[38]. Two out of three previous fallers will fall in the subsequent year[39]. A further consequence of falls in older people that require hospital admission is the potential need for residential or nursing care.

Falls become problematic when they:

- occur doing ordinary and necessary activities
- induce fear of falling, which restricts activity and leads to loss of independence
- are recurrent
- cause injuries.

An important objective for health and social care services across England is to aim to prevent falls and fractures. The National Institute for Health and Clinical Excellence (NICE) suggests a number of intrinsic factors most predictive of falling, these are considered separately for community dwelling older people and people cared for in extended care settings (NICE, 2004). Factors can include:

- dementia and cognitive impairment
- mobility issues
- visual impairment

[35] Stubbs B, Hurley M, Smith T. What are the factors that influence physical activity participation in adults with knee and hip osteoarthritis? A systematic review of physical activity correlates. Clin Rehabil 2015; 29: 80–94.
[36] World Health Organisation, Falls Factsheet 344, October 2012.
[37] Tinetti ME (2003) Clinical practice. Preventing falls in elderly persons. N Engl J Med 348:42
[38] Help the Aged, 2008. Spotlight Report 2008
[39] Department of Health (2011) Healthy Lives, Healthy People

- stroke
- learning difficulties.

Falls in Hospital

Falls in hospital are the most commonly reported patient safety incidents with more than 240,000 reported in acute hospitals and mental health trusts in England and Wales every year (over 600 a day) [40].

DRIVERS FOR CHANGE

There are several relevant policies and guidelines that set out measures to reduce the number and impact of falls in older people, as well as improve bone health. These are outlined in What Works below.

[40] National Patient Safety Agency. Slips trips and falls data update. London: NPSA, 2010.

Local Picture

The older population (aged 65 and over) in Kingston continues to grow, with over 22,984 (13.2% of the population) aged 65 and over, and 3,493 (2.0% of the population of Kingston) of these aged 85 and over. The proportion of older people within Kingston's population was higher than in London (11.5%) and England (17.7%)[41].

This growth in the older population will also see increased numbers of individuals with osteoporosis, osteoarthritis, falls, and fractures. Addressing falls and bone health enables older people in Kingston to increase healthy life expectancy and prevent bone health issues.

Osteoporosis

Since 2012, general practices have been maintaining a register for patients aged 50 to 75 years, keeping a record of fragility fractures and any diagnosis of osteoporosis confirmed on a DXA scan. The age limits for a patient to be on the osteoporosis disease register were removed in 2014 and we now have local information for people aged 75 and over.

The observed prevalence (QOF prevalence) of osteoporosis in Kingston during 2014-15 was 0.15%. 88.4% of diagnosed patients aged between 50 and 75 years and 90% of diagnosed patients aged above 75 years were treated with an appropriate bone-sparing agent. The local prevalence of osteoporosis is lower than the regional (0.16%) and national (0.17%) averages.

Table 1: Prevalence of Back pain, Hip and Knee Osteoporosis in Kingston and England

	Kingston	England
Back Pain	14.7%	16.9%
Back Pain (severe)	8.1%	10.2%
Hip OA	10.1%	10.9%
Hip OA (severe)	2.7%	3.2%
Knee OA	15.9%	18.2%
Knee OA (severe)	4.8%	6.1%

Source: Musculoskeletal Calculator, Arthritis Research UK, 2017

General practice records are usually recognised as a potentially rich source of morbidity data that can be used for assessing local health needs. However, primary care consultations do not reflect all the health problems in the population since many of these may not be brought to their attention.

[41] 2015 Mid-year population estimates, Office of National Statistics, 2016

Falls and Fractures in Kingston

Falls are the largest cause of emergency hospital admissions for older people and they significantly impact on long term health outcomes. NICE states that the highest risk of falls is in those aged 65 and above. It is estimated that nationally about 30% of people (2.5 million) aged 65 and above living at home and about 50% of people aged 80 and above living at home or in residential care will experience an episode in which they fall at least once a year. However, all falls do not require hospitalisation and some may not even require treatment. Data from A&E and hospital admissions provides an estimate of the number of people who require medical care as a result of falling. Season has been shown to affect the incidence of fracture type in the elderly population. Slipping on ice and snow seems to be a causal mechanism behind the seasonal effect. Preventive measures targeting this causal mechanism are likely to reduce the risk of fracture, but the size of the effect is difficult to estimate with certainty.

Injuries due to falls

Table 2 shows that the rate of hospital admissions for injuries due to falls in people aged 65 and over was lower in Kingston than the regional and national averages during 2013/14. Female admission rates were higher than those of males during the same period.

While fluctuating trends are in seen in the emergency hospital admission rates for falls in Kingston between 2010/11 and 2014/15 (Table 3), they are consistently lower than the regional and national average.

Table 2: Age and sex standardised rate of emergency hospital admissions per 100,000 for injuries due to falls in people aged 65 and over in Kingston, London and England, 2013/14

	Kingston	London	England
Male	1,236.0 (1,014.0 to 1,493.0)	1,829.0 (1,786.0 to 1,873.0)	1,661.0 (1,648.0 to 1,675.0)
Female	2,070.0 (1,831.0 to 2,331.0)	2,565.0 (2,523.0 to 2,606.0)	2,467.0 (2,454.0 to 2,480.0)
Persons	1,653.0 (1,488.0 to 1,831.0)	2,197.0 (2,167.0 to 2,227.0)	2,064.0 (2,055.0 to 2,074.0)
65-79 years	931.0 (781.0 to 1,102.0)	1,098.0 (1,073.0 to 1,123.0)	989.0 (982.0 to 997.0)
80+ years	3,747.0 (3,281.0 to 4,257.0)	5,385.0 (5,294.0 to 5,477.0)	5,182.0 (5,153.0 to 5,211.0)

Values in brackets denote 95% confidence Interval
Source: Public Health England: Data from the Health and Social Care Information Centre - Hospital Episode Statistics (HES) and Office for National Statistics (ONS) - Mid Year Population Estimates, 2015

Table 3: Trends in emergency hospital admissions per 100,000 for injuries (age and sex standardised rates) due to falls in people aged 65 and over in Kingston, London, and England, persons, 2010/11 to 2014/15

Period	Kingston	London	England
2010/11	1,445 (1,283 to 1,621)	2,194 (2,163 to 2,225)	2,030 (2,020 to 2,039)
2011/12	1,653 (1,487 to 1,823)	2,281 (2,253 to 2,313)	2,035 (2,026 to 2,045)
2012/13	1,466 (1,808 to 2,242)	2,242 (2,211 to 2,272)	2,011 (2,002 to 2,020)
2013/14	1,653 (1,488 to 1,831)	2,197 (2,167 to 2,227)	2,072 (2,063 to 2,082)

Source: Public Health England, 2015
Values in brackets denote 95% confidence Interval

Hip Fracture

Hip fracture is a debilitating condition, only one in three sufferers return to their former levels of independence and one in three ends up leaving their own home and moving to long-term care. Hip fractures are almost as common and as costly as strokes and the incidence is rising.

The average age at which a person sustains a hip fracture is 83 years, with approximately 73% of fractures occurring in women. There is a high prevalence of co-morbidity in people with hip fracture[42].

Table 4 Trends in emergency hospital admissions per 100,000 for Hip Fractures (age and sex standardised rates) in People aged 65 and over in Kingston, London, and England, 2010/11 to 2014/15

Period	Kingston	London	England
2010/11	442 (357 to 540)	550 (535 to 566)	580 (575 to 585)
2011/12	580 (484 to 689)	543 (528 to 558)	576 (571 to 581)
2012/13	532 (442 to 635)	532 (517 to 547)	568 (563 to573)
2013/14	576 (481 to 683)	530 (516 to 545)	583 (579 to 588)
2014/15	572 (479 to 677)	517 (503 to 531)	571 (567 to 576)

Values in brackets denote 95% confidence Intervals
Source: Public Health England, 2016

[42] National Hip Fracture Database (NHFD), National Hip Fracture Database National report 2013

Table 4 shows that the rate of emergency admissions for hip fracture has fluctuated over time in Kingston. In 2010/11, the rate in Kingston was significantly better than the England average, however, the rate in Kingston during 2011/12 to 2014/15 was not significantly different to the England average. Kingston data have a very wide confidence interval indicating a larger standard error, which is associated with the small number of admissions involved.

Femur fractures

The majority of hip fractures are neck of femur fractures. Table 5 illustrates the admissions rate for fractured neck of femur in people aged 65 and over. The rate of admissions for people aged 80 and over was significantly higher than that for people aged 65-79 years and the overall rate for people aged 65 years and over.

The admission rate for hip fractures in Kingston (573 per 100,000 people) for people aged 65 and over was not significantly different from the England average (580 per 100,000 people) but higher than the regional average (530 per 100,000 people).

Table 4: Age standardised rate of emergency admissions for fractured neck of femur in those aged 65+ per 100,000 population in Kingston, London and England, 2013/14

	Kingston	London	England
65 to 79	269 (191 to 368)	221 (210 to 233)	240 (236 to 244)
80 and over	1,453 (1,171 to 1,780)	1,425 (1,378 to1,472)	1,566 (1,550 to 1,582)
65 and over	573 (478 to 680)	530 (515 to 545)	580 (575 to 585)

Values in brackets denote 95% confidence interval
Source: Public Health England, 2015

Table 5 shows the indirectly standardised admission rates of hip replacement in Kingston and compares them with the regional and national average. The admission rate in Kingston was significantly higher than the regional rate but lower than the national admission rate. A similar pattern is seen for knee replacements (Table 6) where the rate of admissions was higher in Kingston (131.2) than the regional rate (112.3) but slightly lower than the national rate (132.9).

Table 5: Indirectly standardised rates of Hip Replacement per 100,000 population, all ages, persons, in Kingston, London and England, 2011/12

	Kingston	London	England
2011/12	123.3 (105.0 to 143.8)	86.6 (84.3 to 89.0)	125.9 (125.0 to 126.9)

Values in brackets denote 95% confidence Interval
Source: The NHS Indicator Portal, 2015

Table 6: Indirectly standardised rates of knee replacement per 100,000 population, all ages, persons, in Kingston, London and England, 2011/12

	Kingston	London	England
2011/12	131.2 (112.2 to 152.5)	112.3 (109.6 to 115.1)	132.9 (131.9 to 133.8)

Value in brackets denote 95% confidence Interval
Source: The NHS Indicator Portal, 2015

Osteoarthritis

The Musculoskeletal Calculator (accessible via Arthritis UK) was designed to produce prevalence estimates for musculoskeletal conditions amongst people aged 45 and above.

Total osteoarthritis includes all cases of osteoarthritis of the hip or knee. Severe osteoarthritis includes cases that would require special attention and additional resources from healthcare providers and commissioners.
In Kingston the prevalence of osteoarthritis of the hip (10.09%) is slightly lower than the national average (10.92%). Kingston estimates are also lower than the national average for osteoarthritis of the knee (15.87% compared to 18.20%). Kingston estimates of severe osteoarthritis of the hip and knee are both lower than the regional and national averages.

For more information on the underlying data sets and creation of prevalence models please check the musculoskeletal calculator.

Table 7: Population Prevalence of Osteoarthritis (Knee and Hip) in Kingston by Age Group

		45-64	65-74	75 and above
Hip	Male	1,370 (7.5%)	407 (7.7%)	264 (6.6%)
	Female	2,384 (12.7%)	748 (13.2%)	713 (11.4%)
Knee	Male	2,705 (14.8%)	801 (15.0%)	485 (12.1%)
	Female	3,311 (17.6%)	1,037 (18.3%)	922 (14.8%)

Note: The above table shows prevalence estimates as on date, Dec 2016
The numbers and percentages from the Musculoskeletal Calculator are estimates based on statistical models. Figures may not add due to rounding

Source: Musculoskeletal Calculator, Arthritis UK, Accessed Dec 2016

Weight and Exercise

In the most obese, there is a 14 times higher risk of developing knee osteoarthritis compared to those with a healthy body weight. Kingston has a significantly lower proportion of adults who are overweight or obese compared to the England average. The percentage of people aged 65 and over in Kingston participating in at least 30 minutes of exercise a week was 18.4% in 2014/15, which is slightly higher than the regional and national percentages (both 17.5%).

Table 8: Population prevalence of Hip osteoarthritis (total) and Knee osteoarthritis (total) of selected risk factors (physical activity) in Kingston, 2015

	Knee osteoarthritis		Hip osteoarthritis	
Moderate physical activity (90-149 minutes)	805	14.1%	516	9.1%
Sedentary (< 30 minutes activity)	2,999	22.6%	1891	14.2%
High physical activity (150+ minutes)	3,997	12.2%	2559	7.8%
Low physical activity (30-89 minutes)	1,459	22.6%	920	14.2%

Note: The above table shows prevalence estimates as on date, Dec 2016
The numbers and percentages from the Musculoskeletal Calculator are estimates based on statistical models. Figures may not add due to rounding

Source: Musculoskeletal Calculator, Arthritis UK, Accessed Dec 2016

As illustrated in Table 8 the larger majority of those with knee and hip arthritis are sedentary or have low levels of physical activity, despite evidence to show that exercise helps with weight control and joint pain.

Alcohol

Long term alcohol consumption can interfere with bone growth and remodelling, resulting in decreased bone density and increased risk of fractures .This is a public health concern at all ages, however as age increases so does the risk of falls and fractures.
The Kingston Lifestyle Survey conducted in 2014, was completed by 267 people aged 65 and over. The survey found that 19.4% of people aged 65-74 drank alcohol every day and this increased to 23.3% amongst those aged 75 and over.

Hospital Falls Risk Assessment (Patients)

The Royal College of Physicians (RCP) National Falls and Bone Health Organisational Audit Report 2015 collected data on whether patients had been assessed for all risk factors contributing to falls as identified by NICE CG161, and whether there had been appropriate interventions to prevent falls. The aim was to provide reliable, relevant and timely data suitable to facilitate local improvements in clinical practice and patient safety in acute hospitals in order to reduce inpatient falls. The RCP identified risks that were felt to be particularly indicative of good practice and achievable aims for quality improvement. These were chosen by a multidisciplinary advisory group, which includes patient representation. The seven key indicators identified are outlined below.
For all indicators, there should be an aim for 100% of responses showing assessment and interventions of the relevant falls risks. Cut-off values of 0–49% (red), 50–79% (amber) and 80–100% (green) were selected to enable organisations to see where they need to concentrate their interventions and action plans.

Table 10: Kingston RCP audit, proportion of patients who received Hospital falls assessment, 2015

	Percentage	Scores					
Site Name	Delirium	BP	Medication	Vision	Mobility Aid	Continence CP	Call Bell
Kingston Hospital	**42.9**	**4.2**	**17.4**	**56.7**	**44.4**	**15.4**	**73.1**

Key to proportion of patients who received assessment/intervention

80–100%
50-79%
0-49%

Source: Royal College of Physicians, 2015

Kingston scored red for the proportion of patients receiving assessment/intervention for: Delirium (assessed for the presence or absence of delirium), Blood Pressure (measuring of lying and standing blood pressure), Medication (an assessment for medications that increase falls risks), Mobility Aid (appropriate mobility aid in reach) and Continence CP (continence or toileting care plan).
Kingston scored amber for assessments of vision and for call bells being in sight and in reach of patient.

What Works

There are many steps individuals and health services can take to help keep bones healthy and prevent falls. Some of the key national policies and guidelines on fracture prevention, and prevention and management of osteoporosis and osteoarthritis have emerged in recent years and these are outlined below.

The National Service Frameworks for Older People (NSF), launched in March 2001, developed the guiding principles of:

- person centred care
- whole system working
- timely access to specialist care
- promoting health and active life.

Key suggested interventions include:

- prevention of falls including public health strategies to reduce the incidence of falls and the identification, assessment and prevention measures taken for those at most risk of falling
- prevention and treatment of osteoporosis: preventing osteoporosis in those at high risk and treating existing osteoporosis
- the standard also recommended a service which interlinks falls and osteoporosis.

In 2009 the Department of Health launched Falls and fractures: Effective interventions in health and social care. This publication produced commissioning guidance for the NHS in the falls and fractures section of the Prevention Package for Older People. It looks at developing services to achieve these four objectives:

- improve patient outcomes and improve efficiency of care after hip fractures through compliance with core standards
- respond to a first fracture and prevent the second – through fracture liaison services in acute and primary care settings
- early intervention to restore independence – through falls care pathways, linking acute and urgent care services to secondary prevention of further falls and injuries
- prevent frailty, promote bone health and reduce accidents – through encouraging physical activity and healthy lifestyle, and reducing unnecessary environmental hazards.

As the area of bone health is broad we have broken this section into osteoporosis, osteoarthritis, and falls prevention as outlined below.

Osteoporosis

The desired outcome of all treatment regimens is to improve bone strength. Current approved therapies for osteoporosis are effective at increasing bone mineral density and lowering fracture risk.

NICE Osteoporosis: assessing the risk of fragility fracture

These NICE guidelines offer evidence-based advice on the assessment of fragility fracture risk in adults. Recommendations include:

Consideration of assessment of fracture risk:

- in all women aged 65 years and over and all men aged 75 years and over
- in women aged under 65 years and men aged under 75 years in the presence of risk factors

- using FRAX and QFracture as a risk assessment tool. In the UK, the National Institute of Health and Care Excellence (NICE) recommends the use of two risk assessment tools for osteoporosis identification: QFracture or FRAX® [37].

Osteoporosis NICE Quality Standard

This quality standard covers managing osteoporosis in adults (aged 18 and over), including assessing risk and preventing fragility fractures. It describes high-quality care in priority areas for improvement.

Statement 1 Adults who have had a fragility fracture or use systemic glucocorticoids or have a history of falls have an assessment of their fracture risk.

Statement 2 Adults at high risk of fragility fracture are offered drug treatment to reduce fracture risk.

Statement 3 Adults prescribed drug treatment to reduce fracture risk are asked about adverse effects and adherence to treatment at each medication review.

Statement 4 Adults having long-term bisphosphonate therapy have a review of the need for continuing treatment.

Diet

Diet appears to have a moderate relationship to osteoporosis, however, calcium and vitamin D are specifically noted to be of importance in the diet of the older population. The National Osteoporosis Society (NOS) advise a well-balanced diet, supplying a wide range of nutrients from a wide range of foods[38].

Calcium

Calcium is one of the main bone-forming minerals and an appropriate supply to bone is essential at all stages of life. As individuals get older their body is less efficient at absorbing calcium. Calcium intake has long been believed to be an essential element for osteoporosis prevention. Accumulating evidence from interventional studies supports the validity of calcium supplements and dairy food supplementation for preserving areal bone mineral density (aBMD). Observational studies provide evidence of beneficial associations between dietary calcium intake and dairy food consumption and higher aBMD[39]. World Health Organisation recommend countries with a high fracture incidence require a minimum of 400-500 mg of calcium intake per day to prevent osteoporosis. When consumption of dairy products are limited, other sources such as fish with edible bones, green vegetables high in calcium, legumes, and tofu are recommended. Efficacy of calcium as a treatment for osteoporosis depends on medication adherence.

Vitamin D

Vitamin D is essential for the health of bones in general and to optimise the absorption of calcium in particular[40]. Vitamin D is obtained either from the diet or, more readily, by synthesis in the skin under the action of sunlight. In adulthood and later life not getting enough vitamin D can lead to

[37] National Institute for Health and Care Excellence (2012) NICE Clinical Guideline 146. Osteoporosis: assessing the risk of fragility fracture
[38] National Osteoporosis Society (2011) Healthy bones – facts about food.
[39] Heany RP (2000) Calcium, dairy products and osteoporosis. J Am Col Nutr 19:83S–99S
[40] DeLuca HF. Overview of general physiologic features and functions of vitamin D. Am J Clin Nutr 2004 Dec- 80 (6 Suppl.): 1689S-96S.

osteomalacia (softening of the bones). Poor vitamin D status in the elderly, has been linked to age-related bone loss and osteoporotic fracture.
NICE (2014) have issued guidance on promoting Vitamin D supplements in at risk groups including older people.

Pharmacological Interventions for Osteoporosis

Bone protecting treatments, many of which are available on the NHS, have been shown to reduce an individual's chances of fracture by up to 50% . However, compliance can be a problem and literature suggests that 45 to 50% of individuals discontinue treatment within 12 months of initiation[43]. Whether or not a postmenopausal woman with osteoporosis is offered one of these drugs to prevent bone fractures will depend on age, bone density, and how many risk factors for fracture and indicators of fragile bones have been identified.
NICE have advised who should be treated with bone protection medication in relation to their bone health:

- Alendronate, etidronate, risedronate, raloxifene and strontium ranelate for the primary prevention of osteoporotic fragility fractures in postmenopausal women
- Alendronate, etidronate, risedronate, raloxifene, strontium ranelate and teriparatide for the secondary prevention of osteoporotic fragility fractures in postmenopausal women

Only alendronate (once-daily tablets) and risedronate (once-weekly tablets) are licensed for use in men.
Because of concerns about rare but serious side-effects of long-term anti-resorptive therapy, many physicians prescribe these drugs for a finite period of time, usually three to five years.

Osteoarthritis

NICE guidelines [CG177] 2014 for osteoarthritis care and management include recommendations for access to appropriate information, activity and exercise, weight loss interventions when necessary, and patient self-management techniques. A holistic assessment is advised, taking co-morbidities into account within the management plan.

Exercise for osteoarthritis of the hip (April 2014), Self-management education programmes for osteoarthritis. This report suggests that any type of exercise program that is done regularly and is closely monitored by health professionals can improve pain and physical function related to knee OA in the short term. Exercises include individual physiotherapy-led sessions, exercise classes to home-based programs. Exercise programs that involved more than 12 directly supervised sessions were associated with greater improvements in knee pain and physical function. Meta-analysis results are limited to evaluating immediate symptomatic benefits. There is still no clear evidence for the effect of regular therapeutic exercise on disease progression in people with knee OA in the longer term.

[43] Cramer JA, Amonkar MM, Hebborn A, Altman R. Compliance and persistence with bisphosphonate dosing regimens among women with post- menopausal osteoporosis. Curr Med Res Opin . 2005;21(9):1453-1460.

British Orthopaedic Association (2013) Commissioning guide for osteoarthritis of the knee outlines recommended pathways for arthritis of the knee in primary and secondary care, and appropriate use of NICE guidelines within pathways for commissioners.

Arthritis Research UK (2013) Musculoskeletal health: a public health approach provides guidance on bone health from a public health perspective. This guide includes recommendations such as:

- local and national population health assessments must include musculoskeletal health (in particular in JSNAs and Joint Health and Wellbeing Strategy)
- programmes targeting lifestyle factors such as obesity and physical activity should explicitly include impact on musculoskeletal health
- health promotion messages should emphasise the benefits of physical activity to people with musculoskeletal conditions
- public health activity must be underpinned by high-quality data about musculoskeletal health.

Falls and Fractures

Falls in Older People (2015): This guidance covers assessment after a fall and preventing further falls (secondary prevention) in older people living in the community and during a hospital stay.

Recommendations from this guidance include targeting older people:

- living in the community who have a known history of recurrent falls are referred for strength and balance training
- who present for medical attention because of a fall have a multifactorial falls risk assessment
- who fall during a hospital stay have a medical examination
- who fall during a hospital stay and have signs or symptoms of fracture or potential for spinal injury are moved using safe manual handling methods
- who fall during a hospital stay are checked for signs or symptoms of fracture and potential for spinal injury before they are moved
- who are admitted to hospital after having a fall are offered a home hazard assessment and safety interventions.

Royal College of Physicians National audit of inpatient falls report 2015

This UK audit provides four recommendations covering the Falls and Bone Health pathway for local services and recommends the following:

- falls steering groups for all trusts and health boards
- falls multidisciplinary working group development for all trusts and health boards
- review of falls pathway, and **cease** the use of falls prediction tools (in hospitals)
- audit bed rail use
- review multifactorial falls risk assessments
- recommendation of key indicators to be assessed and utilised in hospitals such as: dementia and delirium, blood pressure, medication review, visual impairment, walking aids, continence care plans and call bells.

Exercise

Numerous studies have shown the benefits of Tai Chi in falls prevention. There is strong evidence for the prevention of falls through the use of a safe exercise programme[44].

Falls and Fractures: Assessment and Intervention

Although individual falls are complex and multifaceted, a number of factors can help with risk assessment.

NICE Falls in older people: assessing risk and prevention (2013) recommend that older people who present for medical attention because of a fall, or report recurrent falls in the past year, or demonstrate abnormalities of gait and/or balance should be offered a multifactorial falls risk assessment. This assessment should be performed by a healthcare professional with appropriate skills and experience, normally in the setting of a specialist falls service. This assessment should be part of an individualised, multifactorial intervention. Multifactorial assessment may include the following:

- identification of falls history
- assessment of gait, balance and mobility, and muscle weakness
- assessment of osteoporosis risk
- assessment of the older person's perceived functional ability and fear relating to falling
- assessment of visual impairment
- assessment of cognitive impairment and neurological examination
- assessment of urinary incontinence
- assessment of home hazards
- cardiovascular examination and medication review.

Multifactorial Interventions

Research indicates that multifactorial interventions to prevent fall incidents can have positive effects[45,46]. NICE[47] cost-effectiveness analysis shows that multifactorial interventions are cost-effective compared to a control group.

Minimising falls and fractures risk through strength, flexibility, and balance training is also a central core of this demand[48]. NICE recommend that successful multifactorial intervention programmes containing the following specific components are common (against a background of the general diagnosis and management of causes and recognised risk factors):

- strength and balance training
- home hazard assessment and intervention
- vision assessment and referral
- Medication review with modification/withdrawal.

[44] Department of Health (2009a) Falls and Fractures. Effective Interventions in health and social care.
[45] Gillespie LD, Gillespie WJ, Robertson MC et al. Interventions for preventing falls in elderly people. The Cochrane Library, issue 2, 2004.
[46] Moreland J. A meta-analysis of fall prevention programs for the elderly: how effective are they? Nurs Res 2002; 51: 1–8.
[47] NICE. Clinical practice guideline for the assessment and prevention of falls in older people. 2013
[48] Babatunde OO, Forsyth JJ (2013) Quantitative Ultrasound and bone's response to exercise: a meta-analysis. Bone 53:311–318.

Fracture Liaison Services (FLS)

A Fracture Liaison Service model is considered the best practice model for preventing further fractures. The role of an FLS is to systematically identify, treat and refer to appropriate services all eligible patients, over 50 years of age, within a local population who have suffered fragility fractures, with the aim of reducing their risk of subsequent (or secondary) fractures. Despite the service model being proved to be clinically and economically effective, only 42% of local health economies in the UK provide any form of FLS.

Current Services

Better Bones

Kingston Public Health provide community based group exercise and education programme across the borough that is fourteen weeks long to improve knowledge and physical functioning for those with or at risk of osteoporosis and osteoarthritis. Education sessions consist of lifestyle changes and nutrition information, as well as bone maintenance through exercise, and managing pain. Residents are screened using FRAX scores. The exercise classes are delivered by physiotherapists and exercise specialists.

Table 1 Better Bones Kingston Osteoporosis classes 2014-2016

Year	Individuals signed up for an exercise class and FRAX completed	Education sessions attendance	Retention (% attending 8+ sessions)
2015/16	224	210	64.25%
2014/15 (Q3,Q4)	119	103	76.8%

Table 2: Better Bones Kingston Osteoarthritis (knee) classes 2015/16

Year	Individuals accessed classes	Referrals
2015/16	32	129

Kingston Falls Prevention Service

The falls service is a physiotherapy-led service delivered by Your HealthCare that provides information, assessment, advice and treatment for people who have fallen in the last 12 months, are at risk of falls, or are fearful of falling. The service is based in the community for those over 65 years old, registered with a Kingston GP and are able to walk indoors without supervision. The aims of the service are to:

- reduce the risk of falls among older people in Kingston
- improve their health and mobility
- help them maintain their independence.

Table 3: Your Healthcare, Kingston Community Falls Prevention Service data 2011-2015

Falls Service referrals	Total of number of individuals referred	Number of individuals received an Multi Factorial Risk Assessment (MFRA)	Number of individuals received a gait and balance assessment	Number of individuals attending falls service exercise clinics
2011/12	164			77
2012/13	419	56	5	159
2013/14	523	312	86	181 Otago (home based strength and balance exercise programme) 83 balance group
2014/15	621	308	132	170 Otago home programme 108 balance group

A multifactorial risk assessment is conducted at home with a physiotherapist who examines the physical, medical, and environmental factors that contribute to risk of falling.
Otago is an evidence based strength and balance exercise programme to reduce falls in frailer older people. It is individually prescribed and delivered at home by trained instructors.

Kingston Outpatient Musculoskeletal Physiotherapy Service

This provides comprehensive, high quality musculoskeletal physiotherapy services for the local population.
Physical means are used to asses, diagnose, treat, and prevent injury or disease, in order to enable individuals to achieve their maximum level of function and independence. The service also works closely with the Musculoskeletal Triaging services at Kingston Hospital, accepting referrals for physiotherapy into the community.

Kingston Hospital

Kingston Hospital also has a DXA scanner on-site, and a rheumatology department both in the hospital and community setting. The physiotherapy team assess and manage a wide range of orthopaedic, musculoskeletal, and rheumatology conditions. Clinics are located in the Physiotherapy Department, Kingston Hospital. There is also a pain management service within Kingston Hospital.

Kingston Falls Navigator

The Falls Navigator role was piloted in 2012/13 and has been in effect and jointly funded by Kingston from 2013/14 until March 2016. The post has been enabling community Falls Services and Bone Health Services to follow up patients within the community setting who have presented to hospital and then been identified as being at risk of falls upon discharge. This is a positive step in reducing the morbidity of falls within the Kingston population.
Referrals via hospital to community services are now being managed by community providers, and a pathway has been developed between the hospital and community services.

Table 4: Number of referrals to community falls services from Kingston Hospital 2014-2016

	April	May	June	July	August	September	October	November	December	January	February	March	Total
Kingston 2014/15	43	40	58	0	20	53	4	42	26	36	21	32	375
Kingston 2015/16	20	24	20	32	21	15	20	30	42	29	22	28	303
Month Total	63	64	78	32	41	68	24	72	68	65	43	60	678

Kingston Adult Social Care offer assessments and care for residents in the borough who:

- have difficulties to do with illness or old age
- have a sight, hearing or physical impairment
- have mental health difficulties
- have a learning disability
- have drug or alcohol problems
- have serious and long term health problems including HIV and AIDS
- need to stay safe and free from harm
- are carers supporting someone to keep independent, safe and well.

Community Voice

Public Health Kingston asked residents that had attended Better Bones Classes for feedback on the service. Participants were aged 50 and over and had amber and red FRAX scores (predictor of 10 year fracture probability).

Have you significantly changed your level of physical activity since the programme? If yes, describe the changes you made? If no, please do let us know if there were any barriers

A large majority had changed and maintained their exercise regimes after the course ended, but a number of barriers were getting in the way of developing an exercise regime. These are listed below

- Bereavement
- Hip replacement
- Location
- Back pain
- Flu
- Fracture
- Caring responsibilities

What were the positive aspects of the exercise programme?

This yielded interesting responses, sharing experiences and meeting others with similar health conditions was really important for those accessing the classes.

Below is a list of the main themes from the responses:

- Learning appropriate exercise techniques
- Learning about balance and falls prevention
- Peer support/group experience
- Learning about lifestyle factors to address
- Prevention and management of osteoporosis
- Music

Public Health Kingston asked 132 residents (aged 50 and over) who accessed bone health services**:**

Are you getting enough Calcium and Vitamin D?

Lots of those participating were unsure if they were getting sufficient levels of calcium and Vitamin D. This can be addressed through education and raising awareness in primary care and bone health services.

Yes	No	Maybe
65	7	60

Public Health Kingston asked 70 residents aged 45 and over:

Are you aware of falls services in the borough of Kingston?

Yes	16
No	41
No answer	12

Have you had a fall in the last 3 years?

Yes	30
No	37
No answer	3

What impact did the fall have on you?

More careful about moving around	The fall did not impact me	Worry	Prevented me from leaving home
21	5	10	7

Other comments

"Worried about crossing road."
"Pain. Not able to do usual exercise."
"Recovering from falls can set back general fitness because the body moves less when recovering from broken bones"
"Watching where I am going on the stairs".

What support did you receive?

For those who had a diagnosis of osteopenia, osteoporosis, or osteoarthritis we asked what support their GP offered to them.

Medication	24
No support	8
X-ray/Hospital referral	9
Exercise referral	4
Lifestyle advice	2
Regular check	1
Leaflets	1

We asked residents that were amber or red on the FRAX algorithm:

Have you had a DXA scan in the last three years?

Yes	No	No answer
31	27	10

Suggestions to improve Kingston services given by those accessing bone health exercise classes:

- Continue publicity.
- Work with doctor surgeries and develop information sheet for bone health
- I think it is important that people with a family history of osteoporosis should be able to have a DXA scan. I have asked for a scan 2 or 3 times and been refused
- Refer those over 65 for exercise
- Make sure pavements are not uneven. Roads are being repaired but not pavements as if cars are more important than humans.
- Classes out of work hours for people like me who work

- Talks in local area gives a lot of information
- More classes because we all fall by the wayside if left to ourselves.
- Inform more people about available services.

Recommendations

CCG and Public Health: Pathway and Strategy

1. Local prevalence of Osteoarthritis and Osteoporosis calculated to quantify level of unmet need.
2. Conduct an audit of falls pathway from hospital to community services, including GPs. Update the falls, osteoporosis and osteoarthritis care pathways for use across Kingston.
3. Improved understanding about maintaining bone health across all ages in primary and secondary care, as well as in community settings.

CCG: Pathway and Strategy

4. Development of a Bone Health Strategy with all agencies including CCG, Hospital services, Public Heath, Adult Social Care, GPs, service users, carers, voluntary sector.
5. Investigate the implementation of a Fracture Liaison Service (FLS) as part of a Bone Health Strategy.
6. Commissioners to ensure that services and pathways are consistent with NICE guidance (CG161 and CG146), and recommendations in the Royal College of Physicians audit report and the **Osteoporosis NICE Quality Standard**

CCG and Hospital

7. Clear management, referral protocols and care pathways upon hospital discharge to ensure appropriate follow up for fallers in accordance with NICE guidance.
8. Maintain improvement of hospitals in the management of hip fractures and hospital falls.
9. Ensuring hospital falls prevention policy or policies include informing GPs of inpatient falls and/or identified falls risk.
10. Seek to improve in key performance indicators for falls prevention outlined in RCP Audit.

CCG: Primary Care

11. Ensure risk factors for osteoporosis, such as smoking, alcohol consumption, calcium deficiency and vitamin D deficiency are identified and managed within primary care settings.
12. Using GP practice lists to identify people at high risk for osteoporosis. Fracture risk is currently assessed opportunistically.
13. Early prevention - those with osteopenia or at risk of diagnosis have access to health information and bone protection education, as well as exercise classes.
14. Fracture risk should be assessed in postmenopausal women and in men aged 50 years or more with the risk factors outlined where assessment would influence management.

CCG and Public Health: Primary Care

15. Osteoarthritis: measures to promote physical exercise, tackle obesity, and to identify and provide support for the mental health needs of people with osteoarthritis, including management of depression in Kingston. Patients should be referred to lifestyle service interventions.
16. More engagement within primary care to raise awareness of falls to ensure that fallers are identified in general practice and consequently undergo initial assessment

and receive appropriate follow up. This may be delivered through better information and training for GPs and other primary care professionals.

17. Older people who have fallen receive effective treatment and rehabilitation and, with their carers, receive advice on exercise.

CCG and RBK (including Public Health and Adult Social Care)

18. Older people in contact with healthcare professionals should be asked routinely whether they have fallen in the past year and asked about the frequency, context and characteristics of the fall/s, as per NICE guidelines.
19. Longer-term social and emotional support may be required to minimise any loss of independence that may have arisen by the effects of the fall. This may include provision of personal or domestic care services or introduction to social activities to prevent social isolation and depression.

CCG and RBK: Care Homes

20. Collate information on falls and bone health from Kingston care homes.
21. Residential homes promoting bone health in residents - through implementing safe exercise programmes, ensuring a healthy diet including adequate dietary calcium and reviewing the need for vitamin D supplements.

CCG and Public Health: Community

22. Continuation of funding for Falls and Bone Health Community Services.
23. Raise awareness of osteoporosis and falls with older people, their carers, staff who work with them and other health care providers. This should include the promotion of healthy lifestyles.
24. Integration of Falls Prevention Community Services and Bone Health Services within Kingston.
25. Awareness of bone health and falls in the community should be raised. Such awareness raising activity should be culturally sensitive and delivered in a range of settings.

Glossary

Standardisation is a set of techniques used to remove as far as possible the effects of differences in age or other confounding variables when comparing two or more variables.

Direct Standardisation is using is a population distribution.

Indirect standardisation is commonly used when age specific rates are unavailable. In this method, instead of taking one population structure as standard and applying sets of rates to it to estimate expected events, a set of rates from a standard population is applied to each of the populations being compared to calculate standardised morbidity/mortality ratios.

Age-standardisation is a technique used to enhance the comparability of event rates from different populations or different sub-populations over time by making adjustments for the confounding effects of differences in age structure between the populations being compared. Age-standardised rates are hypothetical rates that would have been observed if the populations being studied had the same age distribution as the standard population, while all other factors remained unchanged.

Directly age-standardised rate is defined as the weighted average of event rates, with the weights being equal to the proportion of people in each age group in a chosen standard population

Indirectly age standardised rate is defined as the weighted average of the age-specific rate ratios, where the weights are the expected number of events in each age group of the population in comparison.

Sex adjusted rate is the rate that would occur if the observed sex specific rates in the population were present in a population with the sex distribution of the standard.

Multifactorial intervention is an intervention with multiple components that aims to address the risk factors for falling that are identified in a person's multifactorial assessment.

Bone Mineral Density (BMD) A bone density test measures the density of minerals (such as calcium) in the bones using an X-ray. This information is used to estimate the strength of the bones.

Risk prediction tool / risk screening tool is a tool that aims to estimate a person's risk of falling, either in terms of 'at risk/not at risk', or in terms of at 'low/medium/high risk'. Use of these tools is not recommended.

Useful Links

Kingston Upon Thames Prevalence of Osteoarthritis and Back Pain in England and Local Authorities Arthritis Research UK

Kingston upon Thames: Prevalence of back pain in England and local authorities Arthritis Research UK

Deaths from Unintentional Injury 20008-2010

National Patient Safety Agency: Essential Care after an inpatient fall

National Audit of Inpatient Falls 2015, Royal College of Physicians

Kingston Lifestyle Survey, 2015

National Osteoporosis Society

NICE Guidelines (PH56) Vitamin D: increasing supplement use in at-risk groups (2014)

NICE Guidelines (TA160) Alendronate, etidronate, risedronate, raloxifene and strontium ranelate for the primary prevention of osteoporotic fragility fractures in postmenopausal women

Arthritis Research UK

AGE UK, Falls Prevention Resource

NICE Guidelines, Falls in older people: assessing risk and prevention (2013)

Escape-pain programme

Commissioning Guide: Painful Osteoarthritis of the knee, Royal College of Surgeons

Department of Health: Effective Interventions in health and social care

Help and Information

- Better Bones Kingston
- What You Need To Know About Preventing Falls Taking Positive Steps, Kingston Hospital
- Preventing Falls and Maintaining Bone Health, Kingston Council
- Your Healthcare Services Information
- Arthritis Care
- National osteoporosis Society
- NHS Choices information on falls prevention
- National Osteoporosis Foundation