London Borough of Ealing and NHS Ealing Clinical Commissioning Group

Ealing Joint Strategic Needs Assessment Musculoskeletal Health in Ealing 2017

Authors:
Ian Bernstein, Rutuja Kulkarni-Johnston, Mira Mangara, Louise Taylor, Jennifer Bull

Correspondence:
Dr Ian Bernstein FRCGP
Clinical Lead for Musculoskeletal Services, NHS Ealing CCG
ian.bernstein@nhs.net

Contents

1. Executive Summary

Musculoskeletal disorders comprise a heterogeneous collection of more than 200 separate conditions, which affect bones, joints, muscles and the spine, as well as rarer autoimmune conditions. Common symptoms include pain, stiffness and a loss of mobility and dexterity.

Section 2 describes the epidemiology and causes of musculoskeletal disorders. 15 million people live with musculoskeletal disorders. People live with musculoskeletal disorders for more years of their lives than any other condition. The prevalence of musculoskeletal disorders rises with age, and is higher in women than men at all ages. Half of the population over 75 will have a chronic musculoskeletal problem.

Section 3 details the health, co-morbidity and socioeconomic burden of musculoskeletal disorders in Ealing. 55,000 people in Ealing (16% of the total population) have chronic low back pain and 35,000 people (10% of the total population) have moderate or severe osteoarthritis of hips or knees. 87% of people with chronic pain will have another significant medical problem; the most frequent being cardiovascular disease and depression. 1,300 people were admitted with falls in Ealing. There is unexplained variation in the numbers of GP referrals to community musculoskeletal services, that is not accounted for by ethnicity or deprivation. 1,400 people in Ealing are claiming Incapacity Benefit and Employment & Support Allowance for musculoskeletal conditions.

Section 4 describes a life course approach to the promotion of musculoskeletal health, and the prevention of disease and disability. This section considers strategies to increase physical activity and reduce smoking.

Section 5 outlines the North West London Sustainability and Transformation Plan with respect to long term conditions, and the main projects in the Musculoskeletal Transformation Programme.

Section 6 covers existing services provided, costs and health-related value for money of interventions offered in Ealing for the prevention and treatment of musculoskeletal disorders. The Local Authority's physical activity opportunities and return to work partnership are described. Benchmarking demonstrates that the community musculoskeletal service offers a clinically effective service, but identified long waits for treatment. NHS Right Care data reveals an unexpectedly high readmission rate following elective and emergency orthopaedic surgery.

Section 7 identifies gaps in services and unmet needs. The most pressing needs are increasing physical activity, provision of falls prevention services, fracture liaison services and a community-based chronic pain service, as well as support to prevent readmission after surgery.

Section 8 summaries the recommendations for commissioners. The high priority recommendations are:

- Increase physical activity at all ages
- Reduce childhood and young persons' obesity
- Provide a falls prevention programme to reduce ambulance callouts, A&E attendances and admissions for falls in the elderly
- Provide a Fracture Liaison Service for secondary prevention of fragility fractures
- Provide a community-based chronic pain service, offering a physical and psychological approach to pain management
- Integrate community mental health services (IAPT) with physical therapies and chronic pain services
- Increase musculoskeletal conditions managed in primary and community care settings rather than hospital outpatients, where clinically appropriate by improving clinical integration

Top

2. Epidemiology and Pathophysiology

Musculoskeletal disorders comprise a heterogeneous collection of more than 200 separate conditions, including acute trauma, recurrent conditions and long term conditions.[1] Musculoskeletal conditions affect bones, joints, muscles and spine, as well as rarer autoimmune conditions. Musculoskeletal conditions interfere with people's ability to carry out their normal activities. Common symptoms include pain, stiffness and a loss of mobility and dexterity.[2]

The burden of musculoskeletal disease in England

- People live with painful musculoskeletal disorders for more years of their lives than any other condition (Years Lived with Disability - YLD) [3]
- 15 million people live with musculoskeletal conditions [3]
- 10 million people have back and neck pain [3]
- 8.5 million people have sought treatment for peripheral joint pain due to osteoarthritis [4]
- 4.9 million people have moderate or severe osteoarthritis [3]
- 3 million people in the UK have osteoporosis [5]
- 600,000 people have inflammatory arthritis [5]

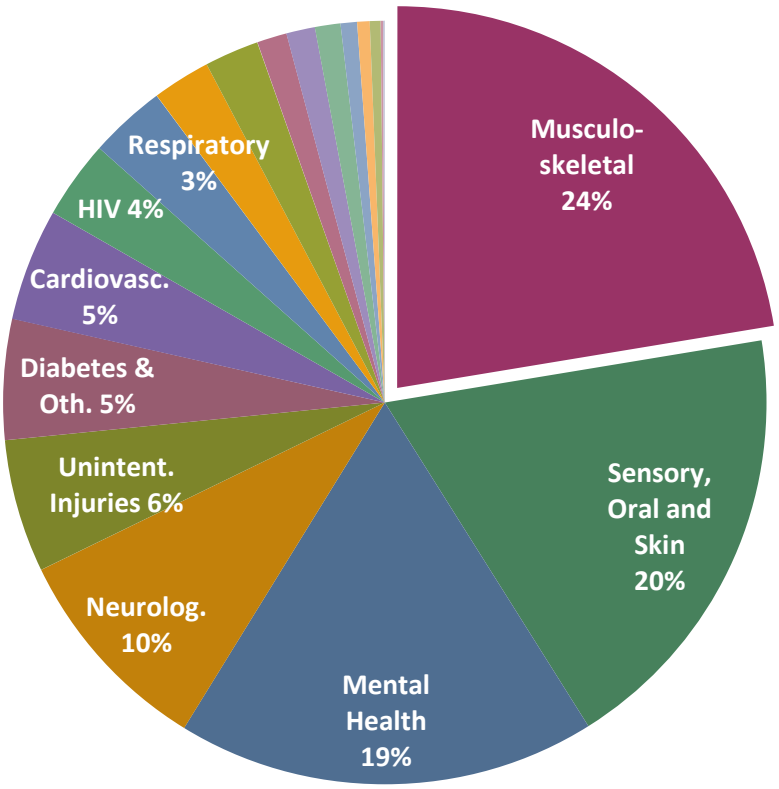
- Musculoskeletal disorders are the third-largest condition of all causes of Disability Adjusted Life Years (DALYs) [3]
- 180,000 people have osteoporotic fractures each year [6] of which 65,000 are hip fractures [5]
- 28.7% people die each year following a hip fracture [5], and 25% of these are directly related to the fracture [7]

> *"Risk factors such as obesity, poor diet and lack of physical activity are contributing to the rise [of musculoskeletal conditions] in the population. To combat this, we need health policies that focus on good lifelong bone, joint and muscle health, [to] prevent and manage these conditions."* Professor Anthony Woolf, Chair of ARMA [8]

- 24% of GPs' registered population consult annually with a musculoskeletal condition, accounting for 14% of all consultations [9]
- 30.8 million working days per year are lost through sickness absence in the UK due to musculoskeletal problems [10]

Top

Global Burden of Disease Study



Global Burden of Disease, England Dataset 2016 [3]

Figure 1: Years Lived with Disability

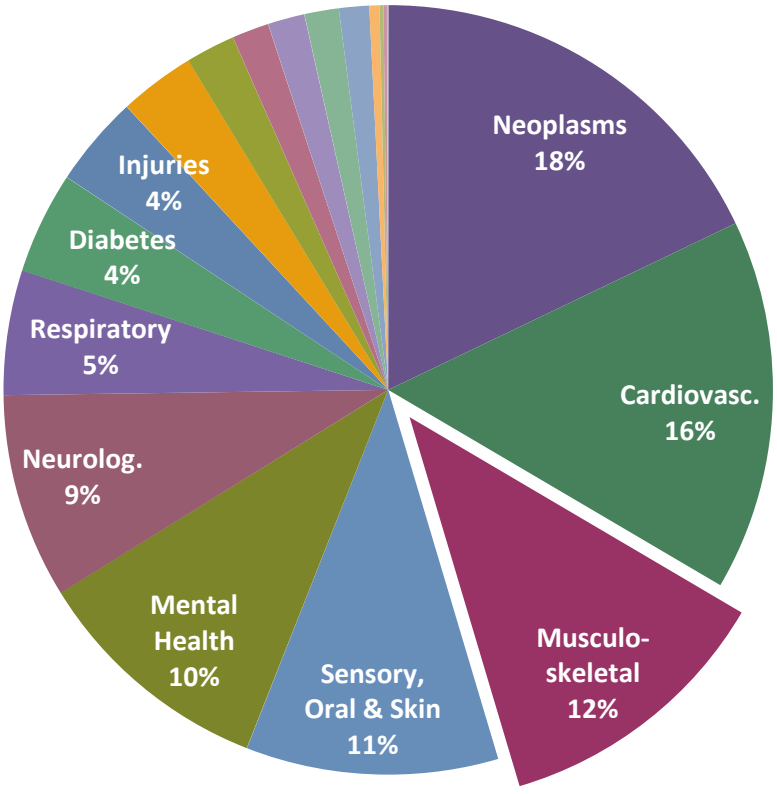
The Global Burden of Disease, England Dataset 2016 shows that people live with musculoskeletal disorders for more years of their lives than any other condition.[3]

Falls were the second leading cause of musculoskeletal-related Years Lived with a Disability (YLDs) [3] and have only increased in by 5% in London from 1990 to 2016, compared to 18% increase in England over the same period.[3]

Figure 2: Disability-Adjusted Life Years

Disability-Adjusted Life Years (DALYs) represents the gap between where the UK's health is now, and full or 'normative health'.[11] It is the sum of years lost to life through premature death due to disease, and the loss of quality of life for those living with a long term condition.[11]

Musculoskeletal disorders comprise the third highest cause of DALYs after cancer and cardiovascular disease, and ahead of mental health, respiratory diseases and diabetes.[3] Of course, this chart does not imply that resources should be allocated in the same proportions but does imply that, for many years, musculoskeletal disorders have been a 'hidden disease', whose impact has been difficult to demonstrate.



Global Burden of Disease, England Dataset 2016 [3]

The data in the following sections show that musculoskeletal disorders affect high numbers of patients, are associated with significant co-morbidity, consume a large proportion of the health service budget, have a significant impact on social care, independence, and results in a major effect on the economy through loss to the workforce.

World Health Organisation (WHO) Action Plan for Europe

The WHO Action Plan for Europe recognises the burden of musculoskeletal conditions and the importance of musculoskeletal health as a prerequisite for mobility, economic independence and active healthy ageing. [12] The Action Plan calls on all countries to:[12]

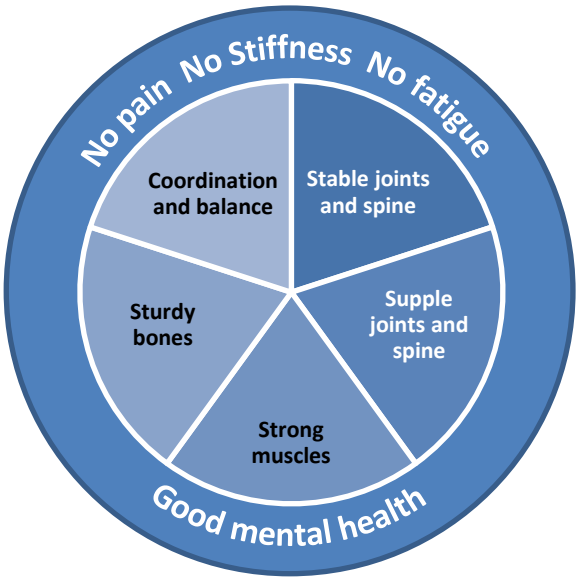
- Promote musculoskeletal health at all ages to improve physical function by increasing physical activity, reducing obesity and avoiding injuries
- Improve musculoskeletal health across the life-course by
  1. Supporting children and young people through their families and peer groups and promoting musculoskeletal health through preschool and school health programmes
  2. Integrating musculoskeletal health with health promotion and occupational health in the workplace
  3. Introducing systematic musculoskeletal health programmes for older people, including those living in residential care
- Build musculoskeletal health systems that allow timely access to person-centred care of musculoskeletal conditions, focusing on early intervention to restore and maintain function, and that enable people to self-manage their musculoskeletal conditions; and increase awareness of what can be achieved
- Strengthen surveillance; and develop a skilled, diverse workforce relevant to musculoskeletal health

Factors affecting musculoskeletal health

Several factors come together to produce musculoskeletal health.[13] Restoring musculoskeletal health should aim to address these pre-requisite factors: (Figure 3)

- Supple and stable spine and joints to support a wide range of movement
- Strong muscles to give power to movement
- Sturdy bones to absorb the knocks of daily living without breaking
- Healthy nervous system to oversee activity, co-ordinate and balance
- Good mental health to provide motivation and energy for being physically active without pain, stiffness or fatigue

Figure 3: Factors affecting Musculoskeletal Health



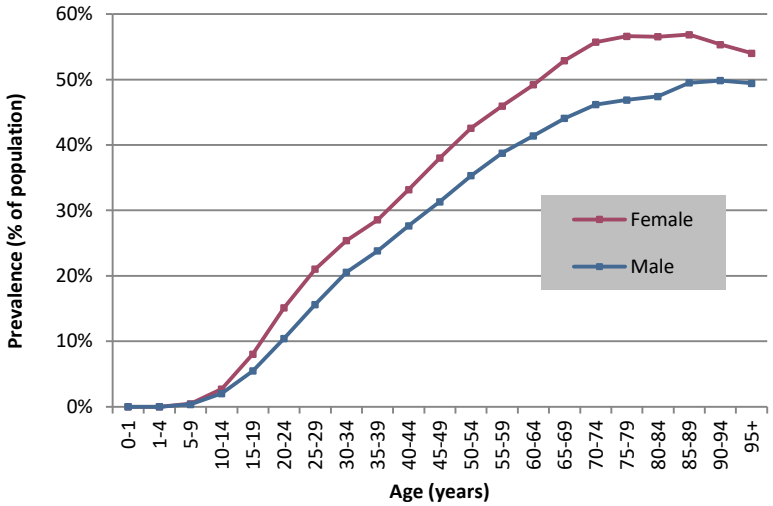
Public Health Guide-Musculoskeletal Health 2014 ARUK [13]

Prevalence

The prevalence of musculoskeletal disorders rises with age, and is higher in women than men at all ages. Half of the population over 75 will have a chronic musculoskeletal problem.[3] (Figure 4)

Top

Figure 4: Prevalence of Musculoskeletal Diseases

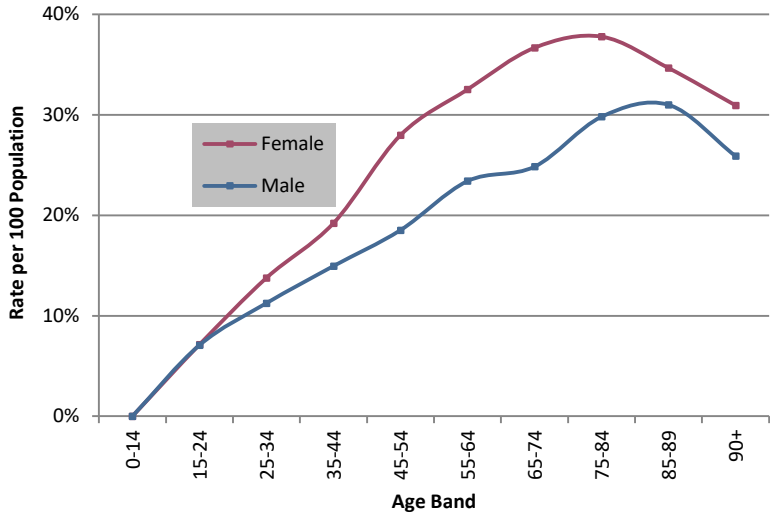


Global Burden of Disease, England Dataset 2016 [3]

In primary care, a quarter of the age-sex standardised registered population consulted at least once in a year with a musculoskeletal problem (2,405 per 10,000 persons).All consultations for musculoskeletal conditions accounted for 14% of all consultations. The rate increased with age and was slightly higher in females than males (female to male prevalence rate ratio 1.13),[9] mirroring national prevalence data.

In Ealing, the raw age-sex distribution of referrals to community musculoskeletal services also reflects the rising prevalence with age, and the higher prevalence in women. The referral rates in the very elderly age bands fall. This may be because the very elderly find it difficult to attend a community clinic, or are not referred because of low expectation (by patient or referring clinician) of benefit from referral.[14] (Figure 5)

Figure 5: Rate of Patients Referred to Community Musculoskeletal Services by Age Band



Bernstein 2015 London North West Healthcare NHS Trust [14]

3. Level of Need in Ealing

Health burden and local context of musculoskeletal disorders

The long term musculoskeletal conditions can be divided into three exemplar areas to allow local planning for primary and secondary prevention.[2]

Musculoskeletal Dashboard for Ealing

Table 1: The burden of musculoskeletal disorders in Ealing

Exemplars	Specific Conditions	Available metrics	Ealing Estimate (Rounded)	Units	% of Ealing Population (All ages)
Painful musculoskeletal conditions	All musculoskeletal conditions	Incapacity and ESA benefit claims (all musculoskeletal conditions) 2017 [15]	‡ 1,400	People 16-64	0.4%
		ONS Sickness absence (All musculoskeletal conditions) (Days lost) 2016/17 [10]	‡ 210,000	Working days lost per year	
	Low back pain	ARUK Musculoskeletal Calculator [16]	* 55,000	People	15.7%
		HSE Labour Force Survey: Self-report work related back pain 2016/17 [17]	‡ 1,400	People 16-64	0.4%
		Incapacity and ESA benefit claims (back pain) 2017 [10,17]	‡ 500	People 16-64	0.2%
	Hip and knee osteoarthritis	ARUK Musculoskeletal Calculator [16]	* 35,000	People	9.9%
		Hip and Knee Replacements (SUS) 2017 [18]	† 535	People	0.2%
	Admissions for Falls age >55	Ealing residents admissions data (SUS) 2017 [19]	† 1,300	People 65+	0.4%
Osteoporosis	Osteoporosis	Shipman A. Osteoporosis Population Distributions [20]	* 8,000	Women 35+	2.2%
	Hip fractures age >65	Ealing Health Profile, Public Health England 2015/16 (4.14i) [21]	* 210	People	0.1%
Inflammatory conditions	Rheumatoid arthritis	ARUK Musculoskeletal Calculator [16]	* 2,500	People	0.7%

* Indirectly standardised for the age-sex distribution for Ealing
† Directly counted raw numbers for Ealing population
‡ Crude (non-standardised) estimate

Mortality and morbidity

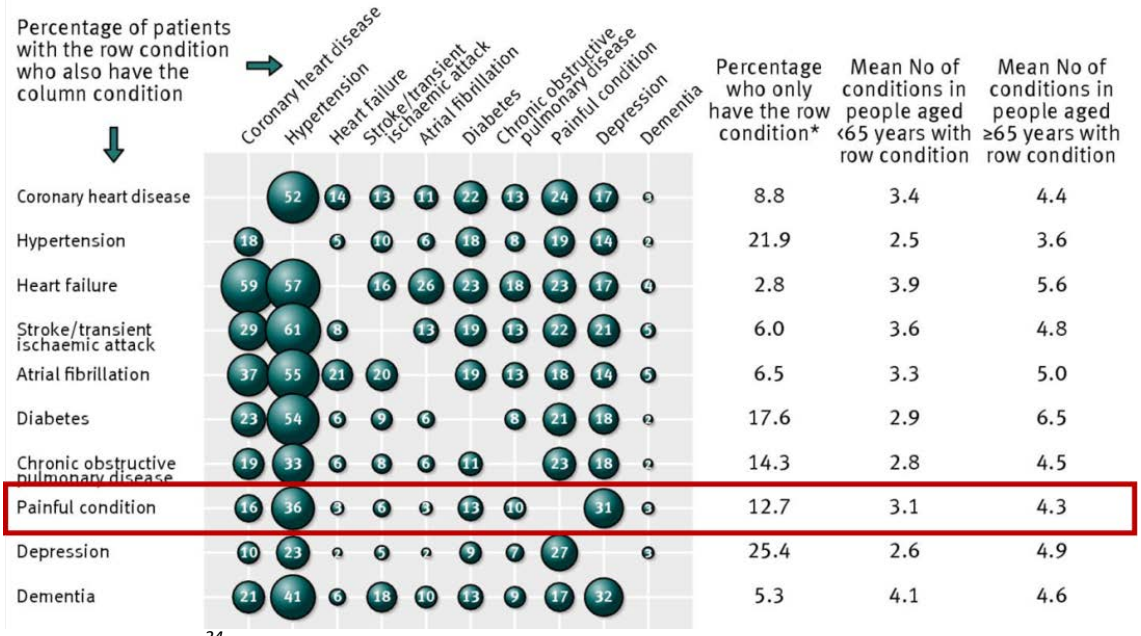
Mortality from fragility fractured neck of femur is 20% at four months and 30% at one year;[22] double the background mortality rate.[23] However, the greatest burden from musculoskeletal disorders comes from the longterm morbidity due to pain and loss of function, leading to reduced quality of life.[2] In Ealing, 16% of the local population have long-term back pain (> 3 months) and 10% have troublesome pain and symptoms due to lower limb osteoarthritis. (Table 1)

Top

Co-morbidity

Musculoskeletal conditions account for 68% of chronic painful conditions.[24] 87% of people with chronic pain will have another significant medical problem (i.e. a co-morbidity).[25] The bubble chart, Figure 6 below, shows how frequently one condition is associated with another in the same patient. For example, in patients with painful conditions, 31% will also have depression. The size of the bubble represents the percentage of people that have both conditions. Painful conditions, most of which are musculoskeletal conditions, are highlighted on the chart. The table to the right of the chart shows that, on average, people under 65 will have 2 other significant co-morbidities in addition to their chronic pain, and people over 65 will have 3 other significant co-morbidities.[25]

Figure 6: Taking Account of Multiple Morbidity



Guthrie 2012 BMJ [24]

Improving musculoskeletal health through exercise will also improve the outcome for many of these co-morbidities.[26] Patients with musculoskeletal disorders should therefore be assessed and treated holistically rather than using a disease-based approach. Health services and staff training should be planned accordingly.

Effect of increasing age and obesity on healthcare need projections

Two factors are projected to increase the prevalence of osteoarthritis and joint replacement surgery: longevity and obesity. Longevity increases the prevalence of painful osteoarthritis: 30% of people over age 45 and 50% of people over age 75 seek treatment for osteoarthritis.[27] Obesity is a strong risk factor for knee osteoarthritis, with obese people 14 times more likely to develop the condition than those of a healthy weight.[28] Weight control is important to people who have problems with their musculoskeletal system because increased weight puts extra load on joints leading to aggravated pain and discomfort.[29] Modest weight loss (of 4-7kgs) combined with physical activity is likely to relieve symptoms and delay disease progression of knee osteoarthritis.[30] Weight reduction can improve pain in people with rheumatoid arthritis where there is associated osteoarthritis.[31] Observational studies link low back pain with obesity,[32] and surgical weight reduction in severe obesity reduces low back pain.[32] Population projections estimate that the number of patients consulting with osteoarthritis will rise by 3.1% per annum between 2010 and 2035.[27] This is in line with projections from the Musculoskeletal Framework, 2006 that projected a 3.5% increase in hip and knee replacements per annum due to population factors.[33]

Physical activity levels

DALYs are the sum of years lost to life through premature death due to disease, and the loss of quality of life for those living with a long term condition.[11] The loss of health (DALYs) due to modifiable risk factors can be estimated.[3] Physical inactivity accounts for 1.3% of all Disability Adjusted Life Years (DALYs) in England.[3] High body mass index accounts for 8% of DALYs in England,[3] and is closely related to physical inactivity.[26] In addition to the life course benefits of physical activity (Table 5, p18), regular activity can reduce the risk of diseases including coronary heart disease, stroke, cancer, type 2 diabetes and obesity, and improves mental health and well-being.[26]

Table 2

Physical activity levels in England [34]	**England**
% of adults who are active (>150 minutes physical activity per week)	61%
% of adults who are inactive (<30 minutes physical activity per week)	26%

Table 3

Demographic variation in physical activity levels [34]	
Age	Inactivity increases with age, with those aged over 75 most likely to be inactive (54%)
Gender	Inactivity greater amongst females (27%) than amongst males (24%)
Ethnicity	Inactivity greater in Asian, Black and Chinese ethnic groups (~31%) than those from White and Mixed ethnic groups (25%)
Socio-economic	Long term unemployed or never worked were most likely to be inactive (37%); managerial, admin and professional occupations were the least likely to be inactive (17%)

Table 4

Physical activity levels in Ealing and London [35]	**Ealing**	**London**
% of adults who would like to do more exercise than they currently do	61%	65%
% of adults who are active (>150 minutes physical activity per week)	56%	58%
% of adults who are inactive (<30 minutes physical activity per week)	28%	28%
% of adults who participate in 30 minutes of organised activity once a week	39%	38%
% of adults who participate in 30 minutes of organised activity three times a week	19%	18%

Variation in physical activity levels with ethnicity

Levels of physical activity show an association with ethnicity. With the exception of Black Caribbean and Irish populations, all other minority ethnic groups have lower rates of adherence to the CMO's recommendations on physical activity for adults. [34,36] Of particular relevance in Ealing, inequalities are greatest for South Asian women. Only 11% of Bangladeshi and 14% of Pakistani women were reported to have done the recommended amounts of physical activity, compared with 25% in the general population.[36]

Fracture and falls prevention: Maintaining independence in older life

Declining muscle mass and strength, and painful joints coupled with loss of bone density with age make it more likely that older people will have falls and sustain injuries.[37] One in three adults over 65 have falls each year and fear of falling can lead to loss of confidence.[37] In turn this can lead to loss of independence and social isolation.[2] Exercise (at all ages) can reduce the age-related loss of muscle mass, maintain strength, bone density and reduce pain in joints.[2] This in turn reduces the risks of falls and fractures.[2] About 1,300 Ealing residents aged over 65 are admitted following a fall each year.[19] This is the tip of the iceberg: 7% of people who fall attend A&E, 7% of people who fall are picked up off the floor by ambulance and 3% of people who fall are admitted.[38] The Department of Health estimates that patients participating in falls prevention programmes following falls (by referral for exercise or balance classes, and for multi-factorial assessment) can reduce their subsequent number of falls by between 15-30%.[38]

Fracture liaison services are being developed as part of the NW London Sustainability and Transformation Plan (STP). These aim to prevent secondary fragility fractures due to falls in people with osteoporosis.

Detailed modelling and a business case are being developed with support from the National Osteoporosis Society. The services are expected to roll out across NW London during 2018.[39]

Working age and retirement

Functional capacity declines progressively with age.[40] Factors other than chronological age per se, such as the level of physical activity and the demands of the work, contribute to the susceptibility to musculoskeletal disorders in older workers.[40] Of 7.2 million people older workers aged 50-64 who are employed, 42% are living with a health condition or disability.[41]

Retirement is associated with a decrease in overall activity levels and a decline in musculoskeletal health.[2] People with musculoskeletal conditions are more likely to retire early.[5] However, the effect of the rising retirement age is mixed. Activity levels may be maintained for longer but more people of working age will be affected by osteoarthritis, so losing productivity and increasing time lost from work due to musculoskeletal conditions.[27] Maintaining good musculoskeletal health through reducing obesity, good nutrition and opportunities for exercise will be important in maintaining the workforce as the retirement age rises, and beyond into retirement.[2]

Musculoskeletal health inequalities in ethnic and deprived areas

53% of the registered population in Ealing is non-white compared to 43% across greater London and 14% across England and Wales.[42,43] The deprivation index ranks Ealing 87 out of 326 local authorities in England; lower rank is more deprived.[44]

Pain and deprivation

Access to joint replacement surgery falls by 26% across socio-economic groups.[33] The prevalence of musculoskeletal pain rises significantly with increasing deprivation at all ages, and is associated with a significant increase in global disability at ages 45-64.[45] Environmental factors associated with the variation in musculoskeletal disease expression include: poor housing; the type of employment, which influences musculoskeletal symptoms at certain sites; and stress and depression.[45] The difference in physical disability between socio-economic groups is only seen in middle age.[45] This may be because "people of working age are financially disadvantaged by their disability and therefore more likely to live in poorer areas."[45]

People on low incomes are more likely to be obese, smoke and suffer worse health, including osteoarthritis.[46] Rationing access to joint replacement surgery by applying thresholds for weight and smoking is likely to disproportionally affect those on low incomes, deepening health inequalities.[46]

Pain, ethnicity and cultural background.

The perception and effect of chronic pain are shaped by a person's experience, learning and cultural background.[47] A cultural group's expectations and acceptance of pain as a normal part of life influence whether pain is seen as a problem that requires a clinical solution.[47] Therefore differences in health-seeking behaviour may, in part, be related to a person's cultural background.[47]

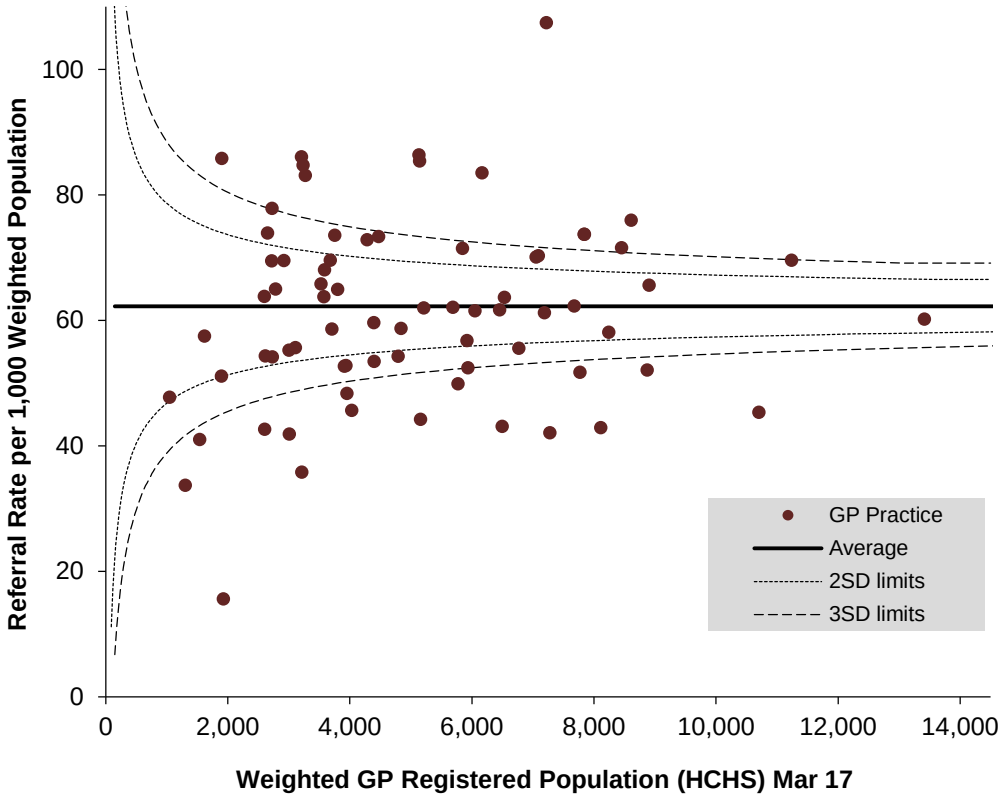
Musculoskeletal pain prevalence in the general population is higher in ethnic groups (63-89%) than white subjects (53%) at ages 45-64.[48] Pain affecting 3 or more joints is reported by 21% of white people and 28-63% of ethnic people.[48] Compared to the white group (prevalence 60.3%), persons identified as mixed (66.3%), south Asian (71.8%), black (70.2%), or other (71.5%) were more likely to report pain.[48] Relationships were similar for chronic pain, although less strong.[48] Disability prevalence due to musculoskeletal pain is significantly higher in Indian and Bangladeshi people than white people.[48] The symptoms that are presented in clinical consultations are subject to major cultural influences.[48] Contextual factors include differing pain thresholds and the experience of pain, the effect of change of culture and migration, and mental health issues. "Widespread pain might be an indication of mental distress. Migration, rather than ethnicity, is a key factor."[48] It will therefore be important to plan integration with mental health services for people presenting with chronic pain.

Top

Access to community musculoskeletal services

Figure 7 shows the referrals from each GP practice in Ealing to the community musculoskeletal services.[49] The number of patients registered at each practice is shown on the horizontal axis; smaller practices are on the left. The vertical axis shows the referral rate. Smaller practices will have more random variation in the number of people who present with a musculoskeletal problem compared to larger practices. The funnel plot adds control limits (dotted lines) that vary with practice size. Smaller practices would be expected to show a wider random, normal-cause variation from larger practices. Practices above and below the control limits are significantly different from the mean and have a special cause for variation e.g. the practice may make more referrals direct to hospital or private physiotherapists (low rate) or may refer inappropriately (high rate). The chart shows that 16 out of 77 practices are referring less patients than would be expected due to random variation in incidence and 11 practices are referring more than expected. The CCG may wish to explore this unexpected variation to ensure that the patients are referred appropriately for a specialist opinion.

Figure 7: Referral Rates to Community Musculoskeletal Services by GP Practice, Ealing CCG, 2017



Bernstein 2017 Ealing CCG [49]

Referrals and shared care for inflammatory arthritis

Rheumatoid arthritis is a multi-system disorder, affecting about 2,500 people in Ealing.[16] (Table 1) About 15% of these patients will have severe disease [50] and 30% of patients will have severe disabilities.[31] Early confirmation of the diagnosis by a specialist is recommended as early treatment within three months of the onset of symptoms can significantly reduce joint damage.[31] For people with established disease, NICE recommends that a named member of the multidisciplinary team (e.g. specialist nurse) should be responsible for co-ordinating care and access to therapy.[31] Rheumatoid arthritis is associated with increased risk of co-morbidities such as hypertension, ischaemic heart disease, osteoporosis and depression.[31] NICE recommends that screening for co-morbidities, poor disease control and side-effects of medication should occur in primary care.[31]

The National Audit Office (NAO) commented that "there is a lack of integration between primary care and secondary care and recommended that NHS should re-examine the costs and benefits of a balanced combination of primary and secondary care settings for people with rheumatoid arthritis.[51] The NAO made three recommendations to improve early diagnosis and referral: a national programme to raise public awareness, a programme to raise awareness of the guidelines amongst GPs, and a CPD programme with on-line resources for GPs.[51] The NAO also recommended that the NHS should support people with rheumatoid arthritis to remain in or return to work by strengthening the links between the NHS and return to work schemes.[51]

Local trends in access to joint replacement surgery

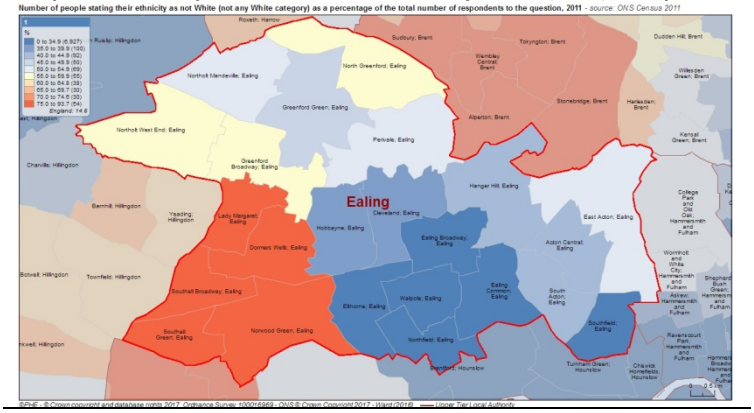
Geospatial data for Ealing suggests that admission rates for knee replacements are higher in areas of both high deprivation and areas of increased non-white ethnicity,[52] which is consistent with the association of higher prevalence of osteoarthritis in areas of higher deprivation.[53]

Geospatial data also demonstrates good equity of access for joint replacement surgery in Ealing. No reduction in access to hip and knee replacements in areas with higher prevalence of ethnic minority or deprivation can be seen, other than a small pocket of slightly lower than expected hip replacements in Northolt.[52] (Figure 8)

Figure 8: Ethnicity, Deprivation, Knee and Hip Replacements

Proportion of People from a Black or Minority Ethnic (BME) Group

Number of people stating their ethnicity as not White (not any White category) as a percentage of the total number of respondents to the question, 2011 - source: ONS Census 2011

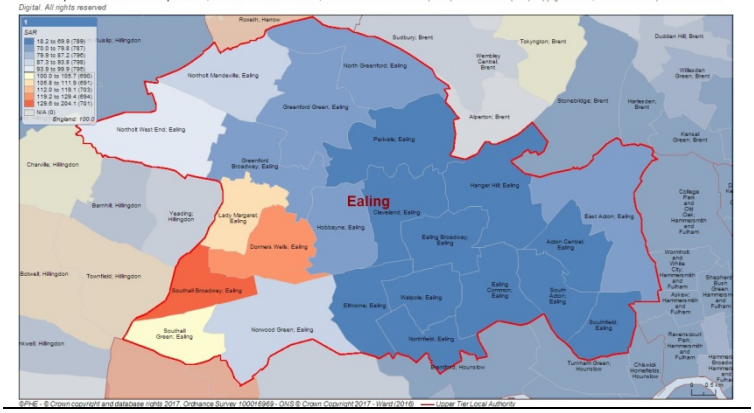


Index of Multiple Deprivation

Deprivation Score - Index of Multiple Deprivation 2015 - source: Department for Communities and Local Government

Elective Knee Replacements Standardised Admission Ratio

Elective hospital admissions for knee replacement, standardised admission ratio, 2011/12-2015/16 - source: Hospital Episode Statistics (HES) Copyright © 2017, Re-used with the permission of NHS Digital. All rights reserved



Elective Hip Replacements Standardised Admission Ratio

Elective hospital admissions for hip replacement, standardised admission ratio, 2011/12-2015/16 - source: Hospital Episode Statistics (HES) Copyright © 2017, Re-used with the permission of NHS Digital. All rights reserved

Public Health England 2017 [52]

Top

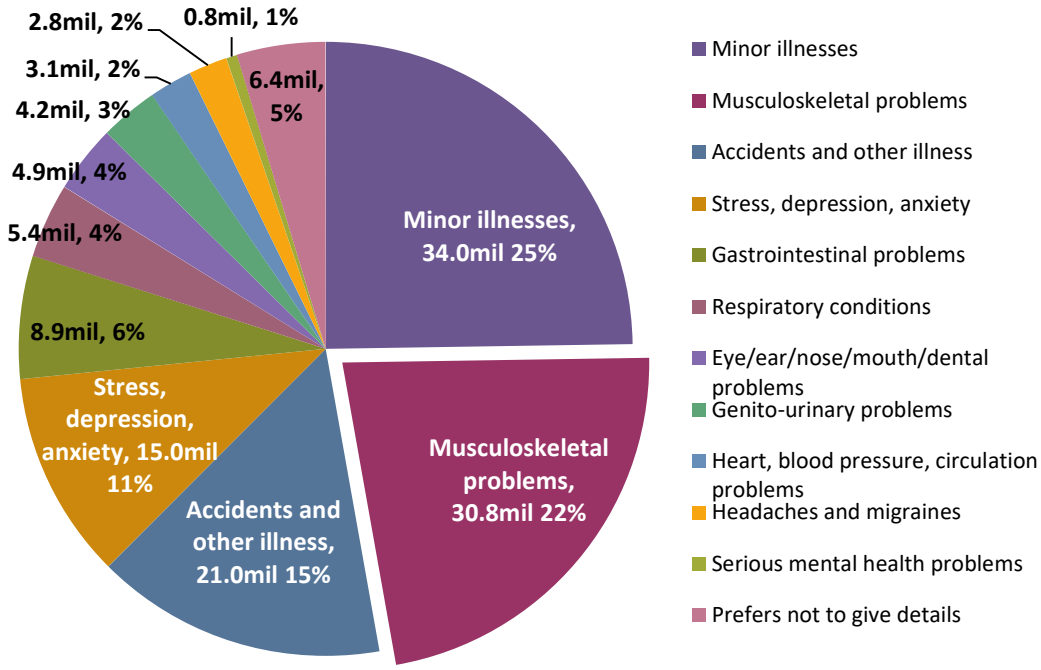
Socio-economic and Employment Data

"Good musculoskeletal health is integral to a full working life. It supports functional mobility and dexterity, balance and co-ordination, and contributes to muscular strength and endurance; essential to nearly all forms of work. This enables people to stay physically and mentally fit and reduce the occurrence of other health problems." [54] Prompt access to rehabilitation can help prevent chronicity, supports people to manage their condition and help address ideas that exercise might be harmful.[55] Early access to vocational rehabilitation will enable more people with musculoskeletal conditions to remain or return to work.[54]

Work related musculoskeletal disorders place significant burdens on employers and employees accounting for 39% of all work related ill-health.[56] Estimates of the impact in Ealing are given in Table 1. Work related musculoskeletal disorders are associated with work patterns that include: fixed or constrained body positions, continual repetition of movements, force concentrated on small parts of the body, such as the hand or wrist, pace of work that does not allow sufficient recovery between movements.[56] Additionally workplace psychosocial risk factors include the organisational culture, the health and safety climate, and human factors.[56]

The Office for National Statistics (ONS) report into sickness absence from work (2016) showed that musculoskeletal disorders caused the second greatest number of days lost from work.[10] The most common reason for time lost from work (reported by a greater number of people, albeit of short duration) was minor illnesses such as coughs and colds.[10] (Figure 9)

Figure 9: Number of Working Days Lost (millions) 2016

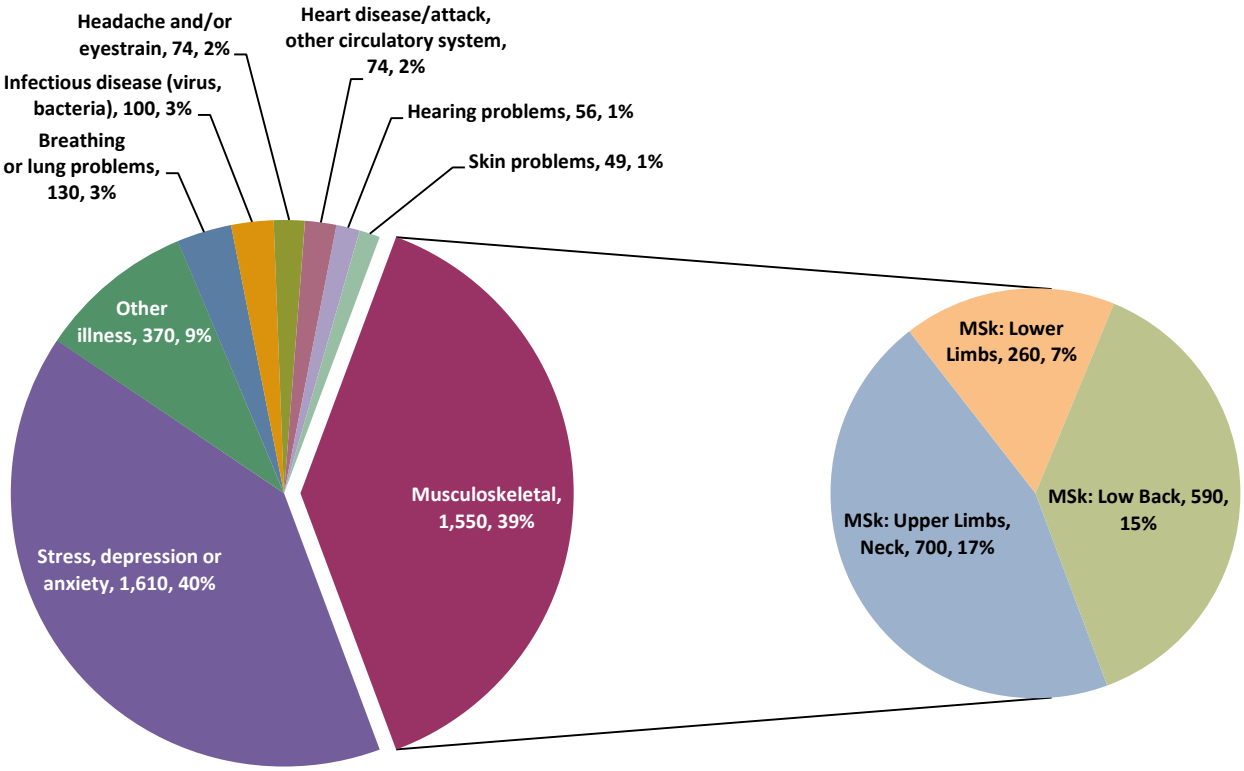


Sickness Absence from Work 2016 ONS [10]

Back pain was the leading single cause of musculoskeletal disorders self-reported as being caused or made worse by work.[17] (Figure 10) Looking at the different occupational groups, those working in the caring (including health and social care services), leisure and other service occupations lost 2.7% of working hours due to sickness due to any cause.[57] "This group is dominated by women, who are more likely to have a spell of sickness than men"[58] People working in hospitals had the second highest rate of back pain caused or made worse by their work (second to construction workers).[59]

Top

Figure 10: Self-Reported Illness Rate Caused or Made Worse by Work per 100,000 employed in last 12 months

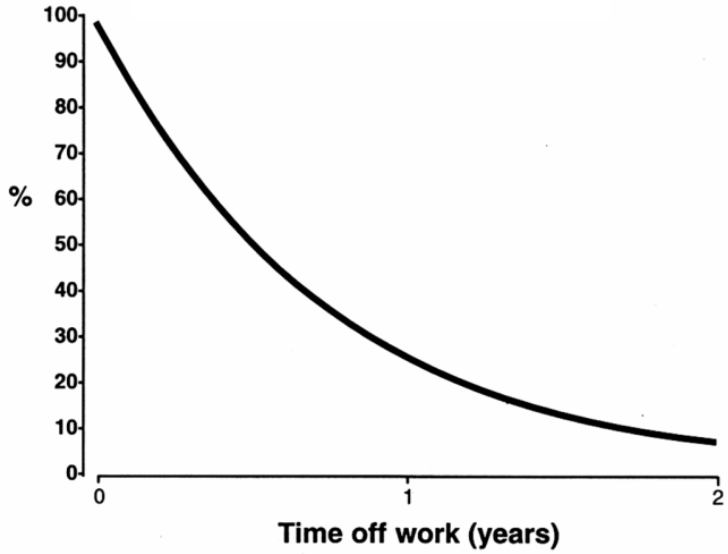


Labour Force Survey 2017 Health and Safety Executive [17]

Ill Health Benefit Claims

In Ealing, 11,200 people aged 16-64 were claiming Education and Support Allowance and Incapacity Benefit for all medical causes in 2016; both close to the claimant rate for London and lower than claimant rate for England.[60] About 13% of these claims are for musculoskeletal conditions.[15] Table 1 shows the numbers of benefit claimants in Ealing with musculoskeletal disorders, or with back pain.

Figure 11: Probability of Return to Work after Absence due to Back Pain



Clinical Standards Advisory Group on Back Pain 1994 [61]

Nationally, the probability of returning to work following an episode of low back pain falls dramatically from 90% at one month to 15% at 18 months.[61] (Figure 11, p16). The Clinical Standards Advisory Group on Low Back Pain (1994) therefore recommended early access to physical therapies (within 2-6 weeks) and a holistic biopsychosocial assessment for those off work for more than three months to improve rehabilitation and return to work rates.[61]

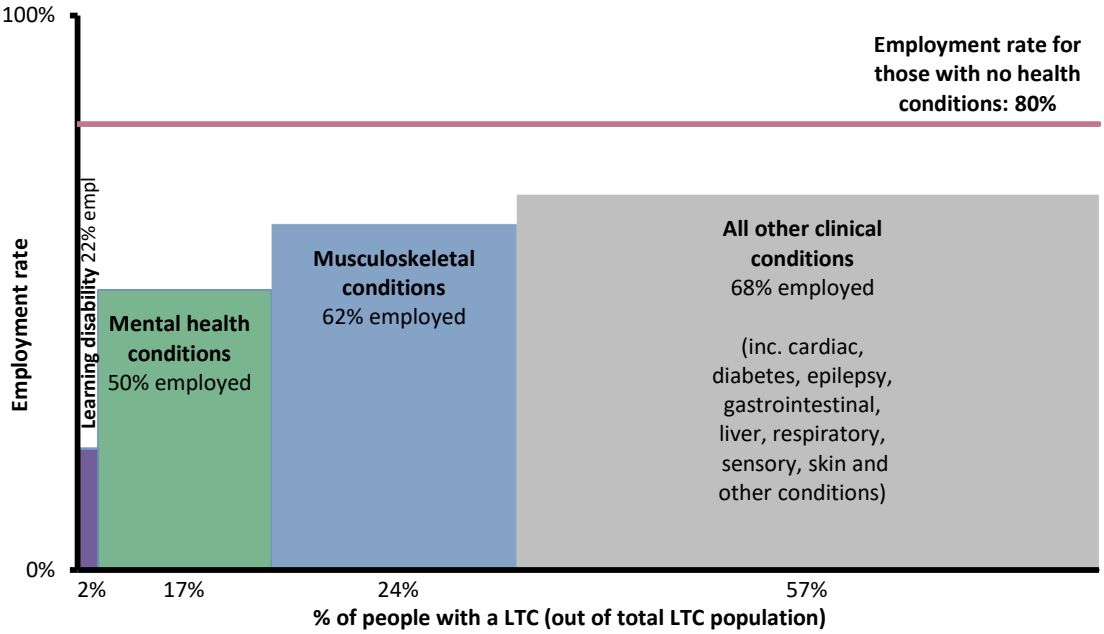
The NHS Mandate for 2017-18 states that the NHS is required to [62]

- Contribute to reducing the disability employment gap
- Contribute to the Government's goal to increase integrated working between health services and work-related interventions, including through increasing the use of Fit for Work

Disability Employment Gap

The disability employment gap is a measure of worklessness due to disability and ill-health. Musculoskeletal conditions are major contributor to this gap (Figure 12).[63] This is in part due to injuries attributed to work, (Figure 10, p16), and partly due to the interaction of people with chronic musculoskeletal disorders such as back pain and osteoarthritis and their work environment, (Figure 9, p15). In addition, there are people present at work, but unable to carry out their full duties (presenteeism), not captured by these statistics.

Figure 12: Health related worklessness



ONS Labour Force Survey, June 2017 [63]

Ealing Primary Care Standard

The new Ealing Primary Care Standard is a 3½ year investment programme from mid-2017, to improve access and outcomes for people with health conditions in Ealing.[64] GPs can help patients to reduce 'threats' to musculoskeletal health in the workplace, including recommending adapting physical environments and modifications to working practices, as well as early interventions to facilitate remaining or returning to work. Standard 6 states:[64] "Refer people off work for a musculoskeletal condition for more than four weeks, when clinically appropriate, to the 'Fit for Work' scheme[65] or an equivalent occupation health review."

4. Health promotion and prevention of musculoskeletal disability

Life course approach

Public Health England recommends a life course approach to improving musculoskeletal health.[2,26] (Table 5)

Table 5: Life course approach to musculoskeletal health [2]

Stage of Life	Risk Factors	Associated condition	Opportunities	Priority or Unmet Need in Ealing
Maternal Health	Low birth weight	Osteoporosis, Reduced muscle strength	Tackle maternal smoking	Yes
	High levels of vigorous activity during pregnancy	Osteoporosis, Reduced muscle strength	Promote appropriate physical activity during pregnancy (The risk is with overactivity).	Midwife education
	Maternal nutrition	Osteoporosis, Reduced muscle strength	Low pre-conception BMI, Promote adequate nutrition (e.g. Vitamin D)	Midwife and GP education.
	Maternal smoking	Osteoporosis, Reduced muscle strength	Tackle maternal smoking	Yes
Childhood and young persons	Hip dysplasia	Osteoarthritis	Screening for developmental dysplasia	Already undertaken at 6 week checks
	Poor early childhood growth and young persons' eating disorders	Osteoporosis	Promote healthy childhood nutrition	GP, practice nurse and health visitor education.
	Obesity	Musculoskeletal pain, Osteoarthritis, Back pain	Reduce obesity	Yes, multi-agency (see Ealing Health Profile)[66]
	Physical inactivity	Osteoporosis	Exercise to promote greater bone density and muscle strength in later life	Yes, multi-agency (See Ealing Health Profile)[66]
Adult	Musculoskeletal Injury	Osteoarthritis	Modify high-risk environments in sports and workplaces Early access to high quality treatment after injury	Yes, improve liaison between employers, HSE and GPs. Improve access to rehabilitation.
	Obesity	Osteoarthritis, Back pain, Musculoskeletal pain, Gout	Reduce obesity	Yes, particularly in patients with chronic musculoskeletal pain
	Smoking	Rheumatoid arthritis, Musculoskeletal pain, Osteoarthritis, Gout	Lifestyle changes	Yes
	Physical inactivity	Musculoskeletal pain, Osteoarthritis, Osteoporosis	Improve overall musculoskeletal health High impact physical activity to promote strengthening of the bones	Yes, multi-agency [35,66]
Older Life	Poor nutrition	Increased falls risk, Osteoporosis	Maintain healthy nutrition and body weight	GP, practice and community nurse education.
	Obesity	Osteoarthritis, Back pain, Gout	Reduce obesity	Yes, particularly in patients with chronic musculoskeletal pain
	Physical inactivity	Increased falls risk, Osteoporosis, Musculoskeletal pain,	Increase physical activity to strengthen bones, muscles and joints and improve balance and co-ordination Remove barriers that prevent older people engaging in activity (inaccessible, lack of transport, social fears)	Yes, multi-agency (See LBE Sport and Physical Activity Strategy) [67]

Symptoms that appear later in life, such as osteoarthritis and osteoporosis, have their origin much earlier in life. Whilst some factors are inherited, or acquired but not avoidable, there is significant scope for

modification of lifestyle and nutrition throughout life, which will modify the appearance and disability relating to musculoskeletal disorders at a population level.[2]

Musculoskeletal health promotion and prevention strategies

ARUK have identified three exemplars of musculoskeletal disorders.[2] The health promotion and prevention activities that map to these disorders are shown in Table 6.

Table 6: Levels of prevention in musculoskeletal health [2]

	Conditions of musculoskeletal pain (e.g. Osteoarthritis, back pain).	Systemic inflammatory conditions (e.g. Rheumatoid arthritis).	Fragility fractures and osteoporosis.
Primary prevention (Reducing the risk of the condition developing).	Reducing obesity across the whole population to reduce the number of people who develop osteoarthritis and back pain.	Reducing smoking prevalence to reduce the proportion of people who develop rheumatoid arthritis.	Increasing high impact physical activity in childhood to reduce risk of fractures in adult life.
	Increasing appropriate physical activity across the whole population to reduce the number of people who develop osteoarthritis and back pain.		Identifying adults who are at high risk of a fracture (for example due to medication, or illness) and promoting adequate nutrition, increasing physical activity and considering medication.
Secondary prevention (Stopping condition worsening once it has developed).	Increasing physical activity among people with osteoarthritis and back pain to reduce pain and disability in people with these conditions.	Rapid referral of people with early rheumatoid arthritis to begin urgent, intensive therapy to control the disease and prevent joint damage.	Ensuring that people who have had a fragility fracture receive treatment and support to prevent another fracture.
	Decreasing obesity among people with osteoarthritis and back pain to reduce pain and disability in people with these conditions.	Cardiovascular risk screening and bone health assessment for people with rheumatoid arthritis.	Reducing the risk of further falls by participation in falls prevention programme consisting of exercise, balance training and a multifactorial assessment.
Tertiary prevention (Reducing the impact of the condition on the person affected).	Occupational health services to support people to remain at, or to return to, work. Physical therapy services to improve functional capacity for patients with lower limb osteoarthritis.[68]	Services such as podiatry, physiotherapy and occupational therapy to help people remain active and independent.	Promoting recovery from fracture with re-enablement services after a hip fracture to support return to independent living.

Effect of increasing age and obesity on health and social care needs

10% of the local population are estimated to have troublesome pain and symptoms due to osteoarthritis of the hip and knee.[27] (Table 1opulation projections estimate that the number of patients consulting with lower limb osteoarthritis will rise by 3.1% per annum between 2010 and 2035.[27] Projections were calculated for the local health and social care resources needed to meet the increased prevalence of musculoskeletal conditions due to longevity and increasing obesity (not just for those needing surgery).[69] In addition, increases in drug expenditure for osteoporosis and inflammatory joint disease (such as biologics) should be anticipated as a result of new fracture liaison services and the implementation of NICE guidelines. The resources required may be partially mitigated by local prevention strategies to maintain healthy weight and musculoskeletal health into older age. Nevertheless, resources required to maintain musculoskeletal health are expected to outstrip funding based purely on demographic growth because of the additional effects of aging on disease expression, obesity, co-morbidity and frailty. CCGs will therefore need to consider how to configure services and other resources to meet the projections of future health needs.

Top

Self-care and prevention

The Arthritis and Musculoskeletal Alliance policy position paper states: "At every age *people should be supported* to maintain and improve the health of their joints, bones and muscles. Prompt information, education programmes and physical activity are key to enabling people to live well with a musculoskeletal condition."[29] NHS England established the Self-Care Support Programme in 2016 to help people to manage their own health by "staying healthy, making informed choices [about] treatment, managing conditions and avoiding complications."[70] Measuring patient activation is a central theme of the Self-Care Support Programme, to enable providers of health and social care to develop support systems for people to manage their own health.[70]

Self-management support can be viewed in two ways:

- A portfolio of techniques and tools to help people choose healthy behaviours
- A transformation of the patient-caregiver relationship into a collaborative partnership[71]

An NIHR survey in the UK concluded that self-care support for people with long term conditions, is more likely to be part of a care plan provided by a nurse practitioner and not as a single response provided by other means.[72] Modest evidence of benefit from these self-care interventions was identified, with some improvement in self efficacy, knowledge of illness and physical functioning.[72] However, the return on investment for these programmes is equivocal.[73]

The NW London Sustainability and Transformation Plan (STP) commits to developing programmes to support self-care for people with long term conditions.[74]

Shared Decision Making

"Shared Decision Making (SDM) is a process in which patients, when they reach a decision crossroads in their health care, can review all the treatment options available to them and participate actively with their healthcare professional in making that decision."[75] Shared Decision Making should be embedded at all decision points in the patient pathway.[75] The benefits are:[75]

1. More involved and informed patients, allowing them to make decisions with more confidence and comfort
2. Improved outcomes for patients, including better compliance with treatment plans
3. Recognised as good clinical practice and an ethical requirement
4. Reduction in surgery rates and severity of interventions, as patients tend to choose less invasive treatment options
5. Improved value and cost-effectiveness at the level of an individual patient, for example patients being more likely to stick with treatment plans

NHS RightCare have been commissioned to provide support to embed shared decision making in training programmes, to collate high quality decision aids, and explore how to operationalise shared decision making.[76] There is an opportunity for the STP Musculoskeletal Transformation Programme to link with local NHS RightCare Delivery Partner to embed shared decision making in the programme.[76]

Strategies for increasing physical activity

> *"Those who think they have no time for bodily exercise will sooner or later have to find time for illness."* Edward Stanley (1826-1893) [77]

Opportunistic advice by healthcare professionals

Opportunistic advice by GPs, practice nurses, physiotherapists should identify people who are inactive (using a validated tool such as GPPAQ).[26] The CMO report advises:[26]

1. Adults should aim to be active daily. Over a week, activity should add up to at least 150 minutes (2½ hours) of moderate intensity activity in bouts of 10 minutes or more. One way to approach this is to do 30 minutes on at least 5 days a week.
2. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week or a combination of moderate and vigorous intensity activity.
3. Adults should also undertake physical activity to improve muscle strength on at least two days a week.
4. All adults should minimise the amount of time spent being sedentary (sitting) for extended periods.
5. Older adults (65 years and over) who are at risk of falls should incorporate physical activity to improve balance and coordination on at least 2 days a week.
6. Individual physical and mental capabilities should be considered when interpreting the guidelines, but the key issue is that some activity is better than no activity.

NICE recommends the clinicians should deliver and follow up on brief advice given to people who are inactive.[78] NICE recommends that advice on physical activity is incorporated into care pathways for cardiovascular disease, type 2 diabetes, stroke, mental health, and groups that are particularly likely to be inactive.[78] This includes people aged 65 years and over, people with a disability and people from certain minority ethnic groups.[78]

NICE also recommends that the joint strategic needs assessment, the joint health and wellbeing strategy and other local needs assessments and strategies take into account opportunities to increase walking and cycling:[79]

- Public health directors, local authorities and clinical commissioning groups should also consider how impediments to walking and cycling can be addressed
- Ensure walking and cycling are considered, alongside other interventions, when working to achieve specific health outcomes in relation to the local population (such as a reduction in the risk of cardiovascular disease, cancer, obesity and diabetes, or the promotion of mental wellbeing)
- Ensure walking and cycling are included in chronic disease pathways
- Ensure all relevant sectors contribute resources and funding to encourage and support people

Local authority strategies

Concerted action is needed to create environments and conditions that make it easier for people to be active, and this should feed into policy decisions by the council and CCG at all levels.[26,80,79] Examples of action that could be taken include adopting strong pro-bicycle policies and infrastructure and promoting activity in the workplace (e.g. using stairs not lifts, providing showers and changing facilities, and encouraging active commuting).[26]

Investments in community-level programmes such as parks, playgrounds, conservation schemes, walking clubs and support for local sports clubs can help to influence social norms around health and activity, and help to improve facilities and environments to enable people to become more active.[26]

Exercise referral schemes

Exercise referral schemes have a limited effect. They increase activity levels in the short term (12 weeks), but evidence of increased activity or health benefits in the longer term (>12 months) is lacking (due to lack of evidence, not evidence of no benefit).[81] In contrast, there is increasing evidence that all patients with chronic disease (e.g. heart disease, COPD) should be referred to a rehabilitation programme which includes an exercise intervention.[82]

Physical activity in specific groups

Promoting exercise in young people, particularly from ethnic minorities needs consideration.[36] Female young persons may need the opportunity to exercise in single-sex environments, and have activities tailored to preferences such as dance,[80] rather than competitive sports. For adults, activities that can be integrated into daily life are likely to be easier to adopt, such as walking part of a journey to work or using the stairs at work.[26,80] In older people, reduced mobility and social isolation needs to be considered.[2] Transport to social and exercise groups should be planned.[26] Activities that promote mobility, posture, balance, strength and cardiovascular fitness should be included, such as dancing and Tai Chi.[26]

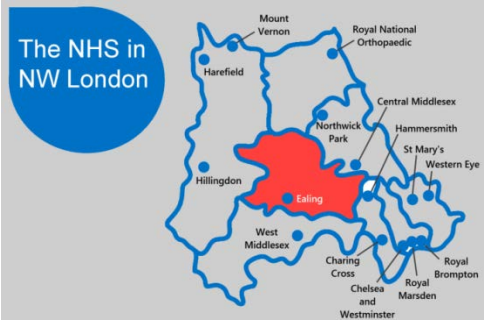
Strategies for reducing smoking prevalence

Smoking prevalence in adults in Ealing is 15.4%, close to the London (15.2%) and England average (15.2%).[83]

Smokefree Ealing

Smokefree Ealing is a Service commissioned by Ealing Council and provided by West London Mental Health Trust (WLMHT).[84] It is part of the 'One You Ealing' suite of healthy lifestyle interventions promoted by Ealing Council. The service provides stopping smoking services from pharmacies and clinics, as well as some specialised services such as working with young people and people with mental health problems. The service trains health professionals to deliver the smoking cessation programmes.

5. NW London Sustainability and Transformation Plan (STP)



Musculoskeletal Transformation and Outpatient Programmes

The NW London Sustainability and Transformation Plan (STP) was published in October 2016.[74]

The key priority for improving musculoskeletal health is:

Reducing unwarranted variation in the management of long term conditions [74]

The STP has five delivery areas (DA), two of which cover musculoskeletal services

- DA2: Eliminating unwarranted variation and improving Long Term Condition management
- DA5: Ensuring we have safe, high quality sustainable acute services

The Musculoskeletal Programme is a component of the STP. The projects included in the programme in April 2017 were:[85]

- Fragility fracture liaison services
- Musculoskeletal pathways and standards of care
- Post-surgery early supported discharge, including 'Discharge to Assess'
- Theatre productivity
- Trauma instruments and supplies procurement
- Virtual fracture clinics

The musculoskeletal programme is receiving support from 'Getting it Right First Time', NHS Right Care, NHS Resolution and Imperial College Health Partners.

Frailty Programme

Frailty is defined as a group of characteristics including: unintentional weight loss, reduced muscle strength, reduced gait speed, self-reported exhaustion and low energy expenditure.[86] The cumulative deficit model of frailty also includes psychological and social factors.[87]

Poor musculoskeletal health can contribute to falls and frailty in people aged 65 years and over.[37] Falls can be a consequence of musculoskeletal-related pain and the impact of these conditions on mobility.[37] Falls lead to pain, distress, loss of confidence and lost independence. In around 5% of cases a fall leads to fracture and hospitalisation.[88] Falls also impact on mental as well as physical health.[89] There is an increased prevalence of fear of falling amongst both older individuals who have fallen and those that have not.[90] A multifactorial intervention programme, including strength and balance training, reduces the risk of falls, and improves outcomes for older people.[37]

The STP aims to develop an older persons (frailty) service for Ealing and Charing Cross Hospitals, as part of a fully integrated older persons service.[74] Delivery Area 3 (DA3) in the STP aspires to 'Achieving better outcomes and experiences for older people.'[74] The Local Authority and CCG are assessing the health and wellbeing of people with frailty in Ealing, and this will be published as a JSNA chapter in 2018.

Top

Home First - Discharge to Assess

In June 2017, Ealing Hospital began working with Ealing Local Authority and community based services, such as Homeward, to deliver a new approach to help get patients home from hospital as soon as they are well enough.[91] This new way of working is called Home First.[91]

Home First supports patients who require home based health or social care support, in order to return home, after a hospital stay.[92] Patient included in this scheme are those with admitted with musculoskeletal disorders such as falls and fractures.[92] Patients are assessed by an occupational therapist or social worker at home within 2 hours of discharge, a support/care plan is initiated, with a review again within 5 days.[92] Whilst under the care of Home First, patients are provided with the Homeward (Ealing's Intermediate Care Service) single point of access number to contact for support if required.

Home First is considered a key approach by NHS England and NHS Improvement in supporting improved hospital flow and performance, and as such, they mandated delivery nationally by October 2017.[93] Home First has had encouraging results across the country with key findings including: reduced delayed transfers of care,[94] reduced length of stay,[94] and reduced care home admissions.[95]

Why is Home First better for patients?

- Patients who are medically fit to leave hospital go home sooner [92]
- Patients who go home as soon as they are well enough, recover better, and are less likely to go back into hospital [94]
- Patients are less likely to catch an infection, fall or get pressure ulcers at home than in hospital [96]

London North West Healthcare NHS Trust is piloting a similar 'early supported discharge' scheme for people admitted for elective orthopaedic surgery, such as hip and knee replacements. This is part of the STP Musculoskeletal Transformation Programme.[85]

6. Current Interventions in Ealing

Local health services

114,000 adult patients registered with Ealing GPs were seen by the NHS in 2016-17 with a musculoskeletal disorder, including trauma, representing 27% of the population.[97,98,99] The cost of NHS treatment for these patients was £43 million in 2016-17, accounting for 8% of the total programme budget for Ealing; a spend of £124 per head of population.[100,101,102]

Prevention of Musculoskeletal Conditions

The Local Authority commissions physical activity and balance programmes, and collates web-based information and directories of services to support healthier lifestyles. The Local Authority also commissions the training of health care professionals to deliver health promotion advice through the 'Making Every Contact Count' programme.[103,104] The CCG maintains a template for GP practice websites in Ealing, to provide easy access to directories of resources to support self-management, including physical activity opportunities, home exercise programmes and advice to support living with chronic pain.[106]

Supporting self-management

As part of the STP, Ealing CCG and Local Authority commissions voluntary sector organisations to provide support for self-care.

- Ealing CCG, in conjunction with Ealing Community Education Provider Network, developed a new website template for general practices in Ealing in 2017.[105] The pilot website offers self-care advice and self-help options, guides patients to see the right person at the practice for appointments and provides a directory of local support services available in Ealing.[106]
- Ealing Community and Voluntary Sector (CVS) organisations provide chair-based exercises, healthy walks, yoga, relaxation therapies, massage, and healthy cooking and eating sessions. The Ealing CVS website maintains a directory of voluntary sector projects and advice about healthy living.[107]

Settings of care

Primary care

The majority of musculoskeletal care occurs in primary and community settings. (Figure 13) 20% of the general practitioner (GP) registered population consult each year with a musculoskeletal disorder[97] and about 68% of these patients are managed in primary care without onward referral. (Figure 13) Community musculoskeletal services see a further 13% of patients. (Figure 13) The NHS costs for seeing patients in these different settings for care are shown in Figure 14.

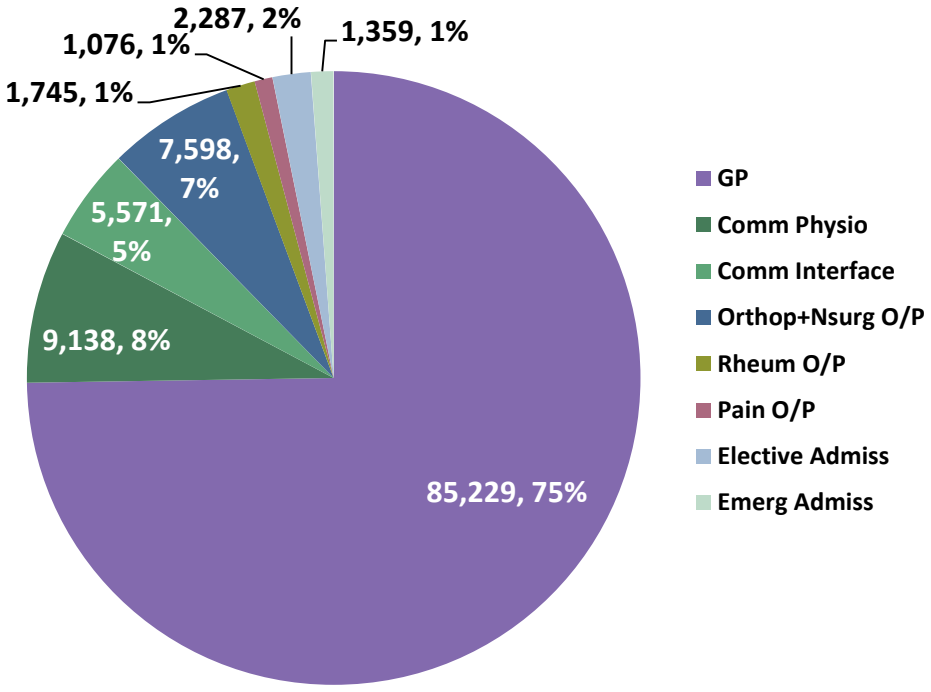
Community care

A fifth of the adult population attend the community musculoskeletal service at least once over a five year period. For adults over age 65, the proportion attending rises to a third.[14] This represents a significant opportunity for nudging lifestyle changes through the 'Making Every Contact Count' (MECC) initiative.[103] The Local Authority provides MECC training for community physiotherapists and the community voluntary sector workers, to discuss lifestyle interventions with their patients and clients.[104]

Secondary care

The population of Ealing is served by four acute NHS Hospital Trusts on 10 sites within a 7 mile radius in West London.[108] London North West Healthcare NHS Trust provides all community physiotherapy and interface services, 45% of outpatient activity and 26% of elective inpatient activity for patients with musculoskeletal disorders.[99] Imperial College Healthcare NHS Trust provides a further 33% of elective orthopaedic inpatient activity.[99]

Figure 13: Numbers (%) of Patients Seen with Musculoskeletal Conditions, Ealing 2017



Bernstein 2017 Ealing CCG [97,98,99]

Comparison of settings of care vs. costs

Primary care

- 75% of patients with musculoskeletal conditions are manged in primary care, costing 13% of the budget including prescribing costs

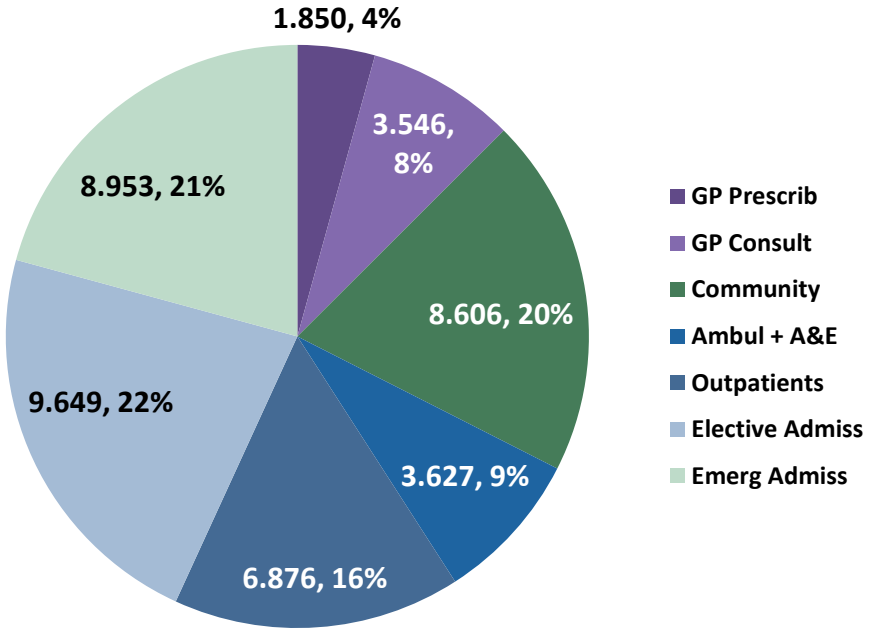
As patients are seen in more specialist settings of care, the costs increase, as expected

- 22% of patients are seen in community, outpatient and A&E settings, costing 44% of the budget
- 3% of patients are admitted for elective or emergency surgery, or inpatient care, costing 43% of the budget

Figure 13,Figure 14

Small efficiencies in hospital-based care will release funds for improved care in community and GP settings, and this underpins the funding for the Musculoskeletal Transformation Programme for NW London.85

Figure 14: NHS Cost for Patients Seen with Musculoskeletal Conditions, Ealing 2017 (£ millions)



Bernstein 2017 Ealing CCG [100,101,102]

Primary Care and the Ealing Primary Care Standard

The new Ealing Primary Care Standard is a 3½ year investment programme from 2017, to improve access and outcomes for people with health conditions in Ealing.[64] There are 12 activities that primary care will be expected to deliver to improve musculoskeletal health, including: primary and secondary prevention, referral management, chronic pain management, reducing worklessness related to musculoskeletal conditions and upskilling (workforce training) to manage musculoskeletal conditions in primary care.[64]

Community musculoskeletal services

The development of musculoskeletal interface services was promoted by The Musculoskeletal Services Framework,[33] which made recommendations for: offering more care closer to home, improving access to diagnostic tests, and reducing waiting times for orthopaedic services, particularly for people requiring surgery. Most CCGs in NW London have now implemented some form of interface service offering triage advice and investigations, and some additionally providing treatments.[109]

London North West Healthcare NHS Trust, and its predecessor organisations have provided community musculoskeletal services in Ealing since 1995.[110] The service provides assessment and treatment for adults with problems with their muscles, ligaments, tendons, joints, discs or nerves.[111] Most referrals come from General Practitioners. Two services are provided: a musculoskeletal physiotherapy service and musculoskeletal interface service.[112,113]

Physiotherapy Service [114]
The physiotherapy service helps people to regain movement and strength following illness, accident, injury, or as a consequence of the ageing process. The physiotherapists assess how the condition affects the person's health and well-being and will work with them to help set and achieve personal goals to support return to fitness.

Interface Service [114]
The musculoskeletal interface service provides specialist input in a community setting of care. The service is therapist-led, and is staffed by a consultant physiotherapist with a team of extended-scope physiotherapists, musculoskeletal physicians and with visiting sessions from orthopaedic consultants. The interface service assesses people with more complex rehabilitation needs, chronic pain or those people that might need surgery. The extended scope therapists have expert treatment and diagnostic skills for more complex problems, are able to order investigations such as blood tests, X-rays, MRI scans, and can offer joint injections. The interface service can refer people for a hospital consultant opinion, including a surgical opinion, and ensures that all the necessary tests and investigations are performed beforehand.

Elective orthopaedic procedures

The most common elective (planned) orthopaedic procedures are shown in Table 7. These six procedures account for 64% of the budget for elective admissions.[18] These common procedures are subject to the NW London Planned Procedures with Threshold (PPwT) criteria to ensure that patients are only offered these where there is good clinical and cost-effective evidence of benefit.[115]

Table 7: Elective orthopaedic procedures, Ealing CCG 2017

Leading admissions and day case elective procedures	Numbers	PBR Tariff (£ k)
Guided injections for pain relief	802	554
Knee Arthroscopy	429	971
Knee Replacements	338	2,430
RF Ablation	283	193
Hip Replacements	160	1,091
Revision Joint Replacements	37	415
Total	2049	5,654
Percentage of all elective procedures	57.9%	64.3%

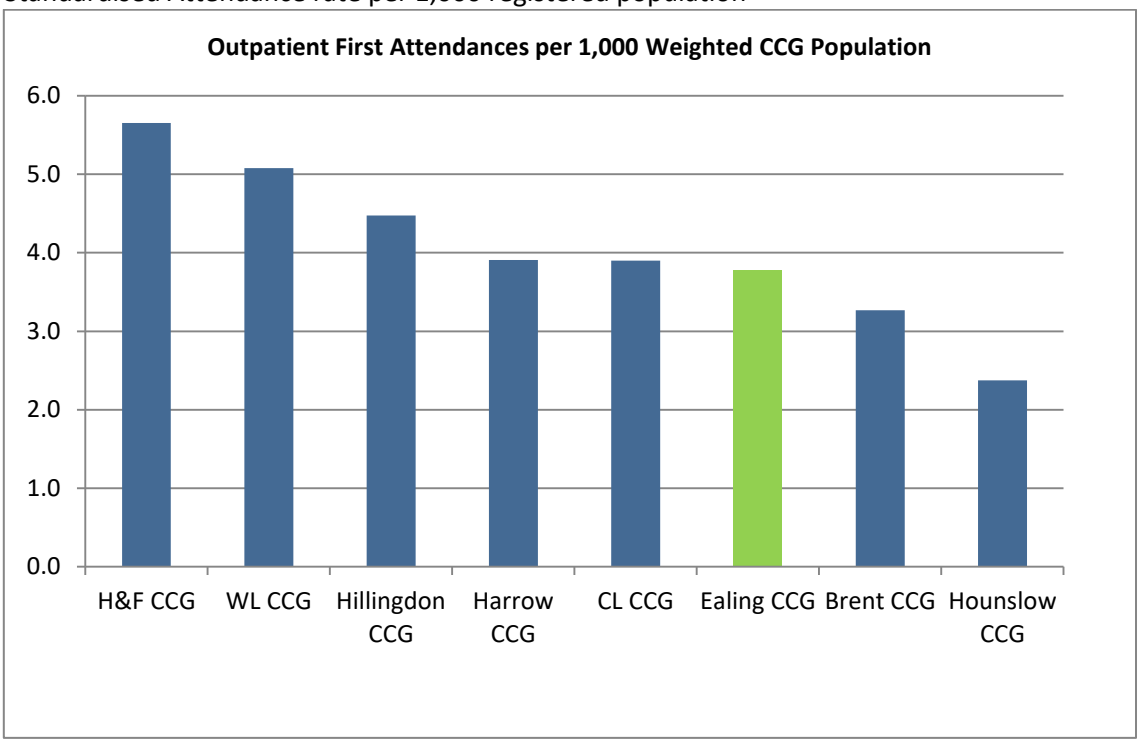
Bernstein 2017 Ealing CCG [18]

Chronic pain services, mental health and wellbeing

About 8.5% of the adult population have severe chronic musculoskeletal or neurological pain.[24] One in four patients in primary care with chronic musculoskeletal pain have major depressive symptoms, often unrecognised,[116] and conversely, 41% of patients with major depression have disabling chronic pain.[117] Co-morbid anxiety and depression are prognostic of poorer outcomes for musculoskeletal pain, but are amenable to treatment.[116] Successful strategies require a combination of physical, psychological, pharmacological and surgical treatments.[118]

There is no community or hospital pain service in Ealing. Patients have to travel outside the borough to access pain physicians or combined physical and psychological pain management programmes. As a consequence, patient have more difficulty accessing pain services compared to the majority of surrounding CCGs in the NW London sector (Figure 15).

Figure 15: Pain Clinic Activity (New + Follow Up) 2016-17
Standardised Attendance rate per 1,000 registered population



Bernstein 2017 Ealing CCG [99]

Improving access to community pain services locally would allow the psychological aspects of pain management to be addressed alongside physical treatments provided in the community musculoskeletal clinics. A local community pain management service would also support people to self-manage their condition, reduce their reliance on medication and reduce secondary care attendances.[119]

Ealing IAPT Service

The Ealing IAPT service (Improving Access to Psychological Therapies) offers support for common mental health problems such as depression, anxiety and panic.[120] The service is provided by West London Mental Health NHS Trust for anyone over the age of 18 who is registered with a GP in Ealing. Patients can be referred by a health professional or self-refer. The service has therapists who speak a number of languages (Urdu, Punjabi, Polish, Hindi, French and Spanish) and can also provide interpreters. Of particular relevance, the IAPT service offers cognitive behavioural therapy (CBT) to help change the unhelpful patterns of thoughts and behaviours that could be perpetuating low mood, depression, anxiety, catastrophizing and somatising in the context of musculoskeletal pain.[120] The IAPT service also runs a number of groups including stress control, overcoming low self-esteem, and a long term conditions group (LTC) for patients with anxiety and depression who also suffer from a long-term health condition.[120]

NHS England is committed to transforming mental health care, and expects IAPT services to expand the number of people who access services from 16.8% in 2017 to 25% by 2021.[121] The costs of providing these services are expected to be offset by reductions in physical health co-morbidity, including chronic pain.[121] The Ealing Mental Health and Wellbeing Strategy for Adults signals a 60% expansion of psychological support to include a people with a wider variety of long term conditions, such as musculoskeletal conditions from 2018.[122]

Liaison between the Ealing IAPT Service and community musculoskeletal services started in 2016. Extended scope physiotherapists in the musculoskeletal interface service can help patients to self-refer or can formally refer them to the IAPT service. This could be a prelude to providing a community chronic pain service offering a combined physical and psychological approach as recommended by NICE.[118]

Local authority initiatives

The Council is committed to making Ealing a safer, greener and healthier place to live and work.[123] There is an emphasis on projects that enable more walking and cycling to improve public health,[67] tackle congestion, reduce carbon emissions and improve the local environment.[123]

Exercise opportunities and schemes

The London Borough of Ealing Sport and Physical Activity Strategy estimates the activity levels of adults in Ealing and sets out an action plan to reduce inactivity.[67] Ealing CCG, in conjunction with Ealing Community Education Provider Network, developed a new website template for general practices in Ealing in 2017. The websites provide directories of local physical activity opportunities.[106] It is important to ensure that first-contact clinicians are aware and publicise the directory. There are a number of schemes funded by Ealing Council and Ealing CCG.[124,125]

- The Ealing Health Walks Programme offers a minimum of health walks weekly across the borough, and the programme changes on a quarterly basis. The walks are rated for a range of difficulty and are targeted giving people who are sedentary the opportunity to get more active in a social setting. The programme is run by the One You Ealing Service with funding from the Ealing Council Public Health Team.
- Falls prevention/strength and balance programme. A 10-week programme aims to develop the skills to improve the key areas of strength and balance through the Later Life OTAGO exercise programme framework with further sessions available for individuals to take up. A Falls Risk Assessment Tool (FRAT) has been developed for use by professionals to refer on for support and sign post those at risk.
- Ealing Everyone Active Exercise on Referral. A 12-week tailor made package of exercise sessions, especially for people with, or at risk of developing health problems. Participants will work with fully qualified instructors to develop an activity programme suitable to their conditions. A GP or other healthcare professional can refer to the scheme. There are charges to participants but it is more cost effective than a standard membership.

- Direct Support for Cycling is a cycling promotion programme and includes on road cycle training, maintenance classes and bike buddying. It deals with obstacles to everyday cycling such as the lack of ability to achieve correct positioning on the road, be aware of basic rights and responsibilities, and locate and use local bike shops.

Back to work schemes

West London Mental Health NHS Trust [126] and Twining Enterprise [127] offer rehabilitation and return to work services for people with mental health problems. A similar scheme involving local employers could be helpful for people with musculoskeletal disorders, and would complement the Ealing Primary Care Standard, which aims to reduce worklessness due to musculoskeletal disorders.[64] A directory of self-help and resources for those out of work due to ill health is available from Fit for Work.[65]

Patient feedback about community musculoskeletal services

A service review in May 2017 highlighted positive comments from patient satisfaction surveys in 2016-17.[128] Examples include: "Lovely to have the time to explain my condition to me, and for me to ask questions", "Thorough and comprehensive treatment. Couldn't think of anything which could have been improved. Definitely best physio I ever had. Many thanks."

- 99.6% of patients reported their overall care in the physiotherapy service was good or excellent [128]
- 97% of patients were satisfied with their care in the interface service [128]

The review also reported that formal complaints from service users were low (12-15 complaints per year).[128] The main themes reflect the referrer not managing patient expectations about the referral. As a consequence, these patients were expecting massage rather than exercise-based therapies, and to have MRI scans to diagnose their symptoms. There were also complaints about the waiting times.

Clinical and cost-effectiveness of musculoskeletal services

Clinical Outcomes

Patient Reported Outcome Measures (PROMS)

Service audits from the community musculoskeletal service show:

- 98% of patients receiving physiotherapy showed a significant improvement in function and 96% showed a significant improvement in symptoms using the Measure Yourself Medical Outcome Profile (MYMOP) score [129]
- 80% of patients seen significantly improved their MYMOP score [128]

A lower percentage improvement would be expected in the interface service as this includes patients who have failed to progress with initial management, so their scope for improvement is smaller.

Healthcare Utilisation: Surgical Conversion Rates, Outpatient Referrals and Imaging Requests

The clinical effectiveness of community musculoskeletal services can also be benchmarked by comparing healthcare utilisation elsewhere on the patient pathway for musculoskeletal conditions. Three benchmarks were reported in the service review in May 2017.[128]

The surgical conversion rate is the rate of having surgery as a proportion of the people referred for a surgical opinion. Higher rates suggest that the musculoskeletal service is selecting people who are likely to need, and willing to have surgery. The local service has an 80% surgical conversion rate,[128] which is typical for this type of service nationally.[130] This contrasts with GPs who refer their patient directly to hospital, where the conversion rate is only 33%.[131] This benchmark suggests that the community musculoskeletal service is clinically effective at triaging patients who might need surgery. The CCG therefore encourages GPs to refer to the community clinics, rather than directly to hospital, to make best use of clinical resources and improve the outcomes for patients.[64]

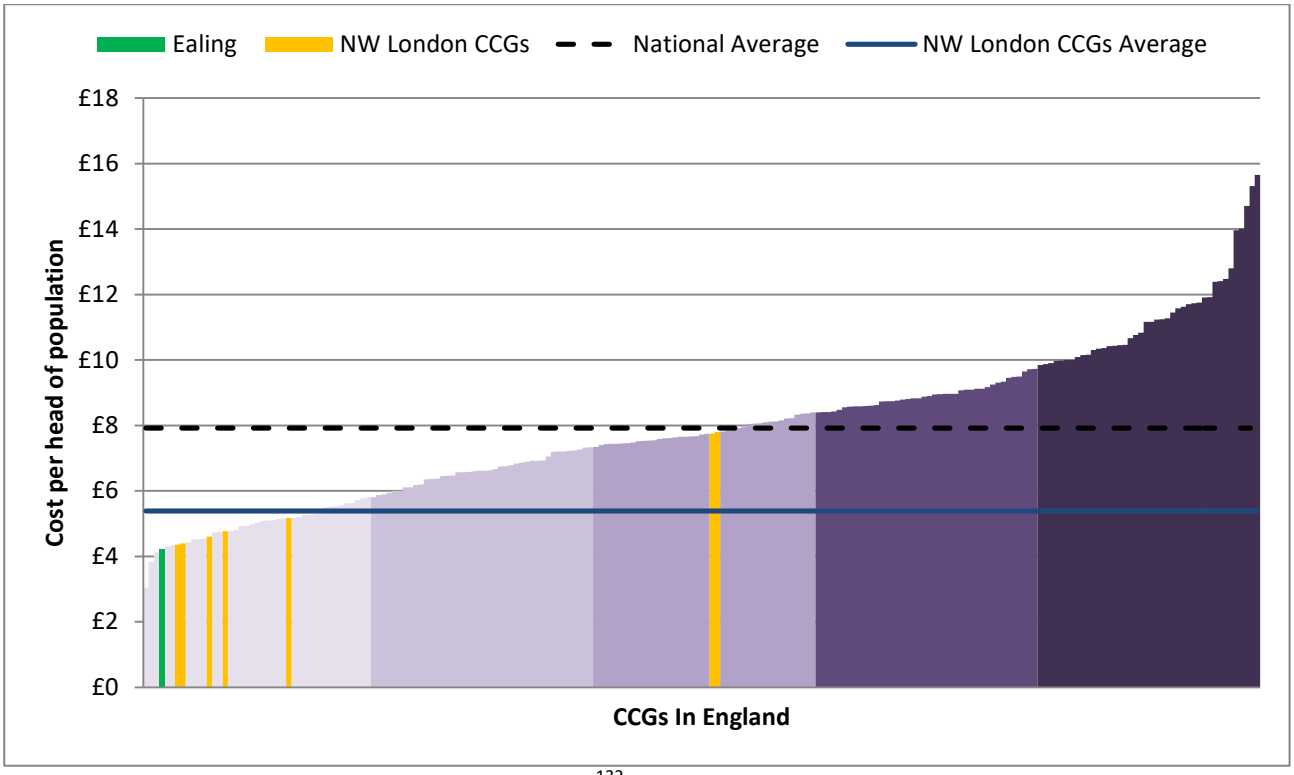
The service review also demonstrated that the interface service has a low utilisation of other health care resources: 20% of patients were referred on to hospital for a consultant opinion, and 20% of patients required MRI scanning.[128] This is similar to other good practice schemes.[75,130]

Healthcare Utilisation: Secondary Care

Some conditions, such as back pain and sciatica, rarely need admission for surgery or other invasive treatments. The effectiveness of community clinics in managing people with these conditions can be assessed by comparing hospital utilisation rates in different CGGs. Figure 16 below shows the cost of admissions for back pain procedures by CCG, highlighting the Ealing and NW London CCGs.[132]

Top

Figure 16: Cost of Back Pain Admissions per Head of Population Apr14-Mar15
All Admission Methods, by CCG



NHS North East Quality Observatory Service 2016 [132]

As cost and activity are linked by the national tariff, this cost data (Figure 16) reflects the hospital activity for these conditions. Ealing CCG is has the 4th lowest hospital expenditure, and therefore activity, per head of population for back pain procedures. This provides evidence to support the clinical effectiveness of the community musculoskeletal service.

Activity

The CCG commissioned a 50% increase in physiotherapy capacity from 2013 as capacity prior to this was significantly below national benchmarks.[133,134] The increased capacity was funded by CCG in-year savings and by reducing expenditure on clinically unnecessary MRI scans.[133] A GP-guided self-referral pilot in 2017 reduced the proportion of people who never contact the service to take up an appointment after referral by their GP by 34%, improving the booking service efficiency.[135] Both the CCG and the provider have committed to rolling out GP-guided physiotherapy self-referral for all GP practices. This will reduce wasted time for patients, therapists and admin staff in arranging unwanted appointments.

The NHS Benchmarking Network Community Services Report allows a comparison between the community musculoskeletal service in Ealing and a basket of 73 community NHS musculoskeletal service providers.[136] This shows that the Ealing community musculoskeletal service is receiving a similar number of referrals per 100,000 population to the benchmark. (Table 8) The Ealing community musculoskeletal service has 57% of the staffing level of the national benchmark. This may explain why the service offers less face-to-face contacts per 100,000 population. In addition, waiting times are double the national benchmark. The CCG and community musculoskeletal service provider are working to improve contacts and waiting times.[137]

Table 8: Benchmarking Ealing Community Musculoskeletal Service Provision

Metric	Ealing	NHS Benchmark
Referrals per 100,000 population	6,004	6,000
Clinical Whole Time Equivalent per 100,000 population	6.6	11.5
Face to Face Contacts per 100,000 population	12,770	15,778
Average waiting time (days)	60	34

Bernstein 2017 Ealing CCG [98,133,136]

Waiting Lists

The numbers of patients waiting and waiting times for musculoskeletal physiotherapy and interface services at the beginning of 2017 are shown in Table 9.[138] Over 4,000 patients were waiting for treatment in early 2017.[138] The CCG and the provider are reviewing how best to reduce waiting times whilst maintaining clinical outcomes, for instance by making more use of group exercise classes in accordance with NICE guidelines.[4,118]

Table 9: Waiting lists and waiting times for community musculoskeletal services, 2017

Musculoskeletal Services	Physiotherapy	Interface
Numbers waiting	3,101	1,259
90th percentile waiting time	16 weeks	12 weeks

Bernstein 2017 Ealing CCG [138]

Expenditure

Musculoskeletal conditions now account for the third largest area of NHS spending, with a programme budget spend £43mil in Ealing CCG in 2016-17, accounting for 8% of the overall spend.[100,101,102] This is equivalent to a spend of £124 per head of population compared to the total spend on NHS care of £1,519 per head of population in Ealing.[100,101,102] The NHS Benchmarking Network Community Services Report provides median costs for community physiotherapy and interface services.[136] However, no service-line costs for the Ealing community musculoskeletal service are available for comparison as these are part of a larger community services block contract.

Health gain v. expenditure

Linking funding for musculoskeletal services to health outcomes may be important to guard against supply-led demand.[139] Metrics available include health status,[140] admissions for falls,[141] and worklessness.[63]

NHS RightCare data combines activity, cost and outcome data for secondary care with national benchmarking.[76] This allows CCGs to review areas where there might be unexpected variation. In general, Ealing CCG is not an outlier for care for people with musculoskeletal disorder, but a number of areas were highlighted for review.[142]

Table 10: NHS Right Care: Activity Opportunities for Ealing CCG

Activity outlier	Opportunity	
Trauma and injuries – Rate of bed days	937	bed days
Injuries due to falls in people age 65+	324	no. of injuries
Injuries with admissions in people 0-24yrs	217	no. of admissions
All fracture admissions	57	no. of admissions
% fracture femur patients returning home with 28 days	23	% patients admitted

Right Care Musculoskeletal Commissioning for Value Pack 2017 [142]

Table 11: NHS Right Care: Cost Opportunities for Ealing CCG

Expenditure outlier	Opportunity (£000s)
Elective and day case admissions for orthopaedic conditions	£133k
Non-elective admissions for orthopaedic conditions	£724k

Right Care Musculoskeletal Commissioning for Value Pack 2017 [142]

Interpretation

The opportunity for reducing non-elective admissions is driven by an above-expected number of injuries and admissions due to falls in people over 65, particularly where this involves delayed discharges following admission for fragility hip fractures. Further analysis of RightCare data shows that the opportunity for

elective and day-case admissions (Table 11) is principally driven by emergency readmissions with 28 days of surgery (Table 10).The CCG and providers are working to improve discharge planning pre-operatively for *non-elective admissions*;[91] and improve post-operative community rehabilitation and support for *elective admissions*.[85]

- Injuries due to falls in older people are related to lack of physical activity, including strength and balance.[37] Improving uptake of physical activity to reduce falls and injuries will improve health and quality of life, as well as reducing expenditure for non-elective admissions.[37] Increasing physical activity is therefore a key priority for implementation.

Return on Investment

Public Health England reviewed the return on investment (ROI) for 7 interventions for the prevention and treatment of musculoskeletal conditions.[143] The ESCAPE pain study combined exercise, education and psychological approach in a group setting for the management of chronic knee pain.[144] The ROI tool for Ealing showed that from an NHS perspective, for every £1 spent on the ESCAPE pain programme in Ealing, the NHS is estimated to save £5.20 due to improved pain control.[145] The community musculoskeletal provider is increasing the number of groups for patients with knee pain.

The other six interventions had positive point estimates from an NHS or societal perspective, but either the confidence limits crossed the line of no effect, or could not be calculated.[145] Therefore there is considerable uncertainty, reflecting a weak evidence base. Public Health England advise in these circumstances that the investment may not outweigh the cost, representing poor value for money for these other interventions.[145]

7. Gap analysis

A gap analysis was undertaken from the data presented in this JSNA, and from the discussions in the Ealing MSk Core Strategy Group; a local clinical network consisting of commissioners and providers. (Table 12)

Table 12: Interventions identified by gap analysis

Theme	Intervention	How Identified
Primary Prevention	Support for self-care and prevention	ARMA 2017 [29], NHSE 2016 [70] Kings Fund 2015 [73]
	Making Every Contact Count (MECC) to maximise support for population behaviour change, and help individuals and communities significantly reduce their risk of disease	Making Every Contact Count (MECC) Consensus Statement 2016 [146]
	Increase physical activity at all ages; Complete self-assessment tool for physical activity provision	PHE 2017 Health Profile Ealing [66] DH, PHE 2017 Physical Activity Provision [147]
	Reduce obesity in children and young persons	PHE 2017 Health Profile Ealing [66]
	Reduce adult obesity in those with lower limb osteoarthritis	NICE 2014 CG177 Osteoarthritis [4]
	Reduce risk of injury in construction workers, nursing staff and other carers	Labour Force Survey 2017 [59]
	Provide nutritional advice in antenatal period and in the elderly	ARUK 2014 Public Health Report [2]
	Reduce smoking prevalence	PHE 2017 Health Profile Ealing [66]
Secondary Prevention	Provide a falls prevention programme to reduce ambulance callouts, A&E attendances and admissions for falls in the elderly	Ealing Falls Prevention Programme. [148] Cost Benefit Analysis for Falls Prevention Programme [149]
	Fracture Liaison Service (for secondary prevention of fragility fractures)	PHE 2017 [150] STP Musculoskeletal Transformation Programme [85]
	Improve access to physical activities and physical therapies for patients in areas with high deprivation, or from ethnic backgrounds	Ealing 2017 MSk Core Strategy Group [151] DH 2011 Start Active, Stay Active [26]
	Reduce unwarranted variations in GP referral rates for musculoskeletal services; improve workforce training and feedback on referrals	Variation in GP referrals [49] Ealing 2017 MSk Core Strategy Group [151]
Tertiary Prevention	Survey residents of Ealing about quality of services, waiting times, and support provided to self-manage their condition	JSNA Leadership Group [152]
	Provide a community-based chronic pain service offering a combined physical and psychological approach	HQIP 2012 National Pain Audit [24] Ealing 2017 MSk Core Strategy Group [151]
	Integrate community mental health services (IAPT) with physical therapies and chronic pain services	Ealing 2017 MSk Core Strategy Group [151] Ealing Mental Health and Wellbeing Strategy for Adults [122]
	Improve the links between the NHS and return to work schemes – reducing the disability employment gap	NHS Mandate 2017/18 [62]
	Increase patients seen in primary care, and community interface services rather than hospital outpatients, where clinically appropriate (orthopaedics and rheumatology)	NHS England 2017 [153]
	Improve efficiency and cost effectiveness of community musculoskeletal services by reducing non-take up rates and waiting times	Ealing CCG 2017 [137] NHS Benchmarking Network data [136]
	Ensure planning for increased demand for musculoskeletal services (including joint replacements) due to longevity and rising obesity	DH 2006 Musculoskeletal Framework [33] ARUK 2013 [27]
	Signposting and support to reduce worklessness related to musculoskeletal conditions	Ealing Primary Care Standard 2017 [64]
	Early supported discharge for elective and non-elective orthopaedic admissions	NHS RightCare [142]

8. Recommendations for Commissioners

General Principles

The general principles for developing interventions and services for improving musculoskeletal health are:

- Keep the person or patient as the guiding principle at the centre of decision-making
- Use a life course approach to health prevention and local authority strategies
- Consider the high level of co-morbidity of musculoskeletal disorders with other conditions, and that interventions such as increasing activity levels, reducing smoking prevalence and improving nutrition, as well as providing effective treatment for musculoskeletal conditions will benefit the co-morbidities too
- Consider how to engage particular groups with interventions to improve musculoskeletal health and reduce health inequalities; viz. ethnic minorities, GPs and practice nurses in areas of higher deprivation, pregnant women and people caring for young children, elderly people and people with mental health problems resulting in poor nutrition and social isolation, and people at risk of injury in the workplace such as construction workers and nurses

Key Priorities

Table 13 shows specific key priorities for implementing the JSNA for musculoskeletal health.

Table 13: Key priorities for implementation

Priority	Theme	Intervention	Action	Cost Implications
High	**1°**	Staff training to support behaviour change, patient activation and shared decision making, action planning	Ealing CEPN training to support the Local Authority and Ealing CCG	Funding available
High	**1°**	Increase physical activity at all ages	Ealing Public Health Department & Local Authority: Complete the DH/PHE Diagnostic Checklist for commissioners – detailed gap analysis. Information programme for GPs, practice nurses , physios. Resources for the public. Coordination of exercise opportunities, physical activity schemes and sports participation schemes. Maintenance of an easy to use web-based directory for people and health professionals, with links to referral forms.	Pending business case
High	**1°**	Reduce obesity in children and young persons	Ealing Public Health Department & Local Authority	Pending business case

Priority	Theme	Intervention	Action	Cost Implications
High	**2°**	Provide a falls prevention programme to reduce ambulance callouts, A&E attendances and admissions for falls in the elderly	Integrated Care Programme, Ealing CCG Commissioning Support. Ealing Council: Increase participation in the Strength and Balance scheme	Invest to save: savings anticipated in 2-4 years (LB Ealing Business Model 2014)
High	**2°**	Provide a Fracture Liaison Service for secondary prevention of fragility fractures	NW London STP Delivery Board to implement	Outline business case approved. Detailed modelling and gain-share details in progress
High	**3°**	Provide a community-based chronic pain service, offering a physical and psychological approach to pain management	Ealing CCG to provide a local pain service with medical input	Business case completed. Awaiting opportunity to invest in a new service.
High	**3°**	Integrate community mental health services (IAPT) with physical therapies and chronic pain services	Clinical integration to be explored by the Ealing CCG and Community Providers	Cost neutral, reduced GP consultations and medication usage
High	**3°**	Increase musculoskeletal conditions managed in primary and community care settings rather than hospital outpatients, where clinically appropriate by improving clinical integration	NW London STP Delivery Board to implement	Project management resources. Cost neutral or releasing efficiency savings.
Med	**1°**	Ongoing training and reinforcement of 'Making Every Contact Count'	Ealing CCG to integrate into contractual requirements. Ealing Public Health Department to continue funding for training.	Business case completed
Med	**1°**	Reduce adult obesity in those with lower limb osteoarthritis	Information programme for GPs, practice nurses and physiotherapists.	Low, funded by existing GMS resources.
Med	**1°**	Reduce smoking prevalence	Ealing Public Health Department & Local Authority, Ealing CCG	Pending business case
Med	**2°**	Improve access to physical activities for people in areas with high deprivation, or from ethnic backgrounds	Ealing Public Health Department & Local Authority	Pending business case
Med	**2°**	Reduce unwarranted variations in care offered on musculoskeletal pathways including unnecessary diagnostics and prescribing, and referrals along the pathway where patients could be managed in primary and community care, as clinically appropriate	Ealing CEPN training to support STP-led musculoskeletal pathway development	Funding available

Priority	Theme	Intervention	Action	Cost Implications
Med	**2°**	Reduce waiting times for community physiotherapy, falls services and interface services	Ealing CCG and Community Service Provider	Improve existing provider efficiency where possible. Likely to require investment to save, based on STP priorities and NHS Benchmarking.
Med	**3°**	Survey residents of Ealing about quality of services, waiting times, and support provided to self-manage their condition	Healthwatch Ealing to survey residents.	Funding available
Med	3°	Early supported discharge for elective and non-elective orthopaedic admissions	NW London STP Delivery Board to implement (elective surgery) Ealing CCG and Hospitals (non-elective surgery)	Pending business case (elective). Utilise existing resources (non-elective)
Med	**3°**	Improve links between NHS and return to work schemes	Ealing CCG: 'Fact finding' and publicising to GPs. Training on referrals to 'Fit for Work' scheme	Project management resources.
Med	**3°**	Ensure planning for increased demand for community and hospital musculoskeletal services (including joint replacements) due to longevity and rising obesity	Ealing CCG and NW London STP Commissioning Intentions	Consider moving money between programme budgets from areas where expenditure less cost effective
Low	**1°**	Reduce risk of injury in construction workers, nursing staff and other carers	Ealing Public Health Department & Local Authority: Information programme for Employers, GPs, practice nurses , physios, job centres, benefits advisors. Resources for the public. Maintenance of a web-based directory for people off work due to illness or injury with details of physical, mental and social skills rehab schemes, with links to referral forms.	Pending business case
Low	**1°**	Provide nutritional advice in antenatal period and in the elderly	Ealing Public Health Department and Ealing CEPN: Information programme for GPs, practice nurses, midwives, health visitors and physiotherapists	Pending business case
Low	**3°**	Embed Shared Decision Making framework into training and service provision	NW London STP Delivery Board to liaise with NHS Right Care and operationalise	Pending business case
Low	**3°**	Reduce unwarranted variations in hospital activity	NW London STP Delivery Board to implement 'Getting it Right First Time' (GRIFT) reviews for each hospital trust	Outline business case approved.

9. Acknowledgements

We wish to acknowledge Arthritis Research UK for the life course approach to musculoskeletal health, and the design and contents of Table 5 and Table 6. We also wish to acknowledge Arthritis Research UK for the methodology for producing the musculoskeletal dashboard (Table 1). We have extensively used their publication *Musculoskeletal Health. A Public Approach* [2] to guide us. We wish to thank the Arthritis and Musculoskeletal Alliance (ARMA) for their work in initiating the key areas to populate the musculoskeletal dashboard.

This final version is published on the London Borough of Ealing website:www.ealing.gov.uk/

I wish to thank the Ealing MSk Core Strategy Group: Alex Fragoyannis, Stephanie Griffiths, Michael Naughton and Henry Penn for peer review.

10. References

[Links accessed 25 November 2017]

1 Parsons S, Ingram M, Clarke-Cornwell A, Symmons D. *A Heavy Burden: the occurrence and impact of musculoskeletal conditions in the United Kingdom today.* Univ Manchester; 2011. https://www.escholar.manchester.ac.uk/uk-ac-man-scw:123774 (Accessed 25.11.17)

2 Arthritis Research UK. Musculoskeletal Health. A Public Approach. Chesterfield: ARUK; 2014. http://www.arthritisresearchuk.org/~/media/Files/Policy%20files/2014/public-health-guide.ashx (Accessed 25.11.17)

3 Institute for Health Metrics and Evaluation (IHME). *GBD Compare Data Visualization.* Seattle, WA: IHME, University of Washington; 2016. http://vizhub.healthdata.org/gbd-compare (Accessed 25.11.17)

4 National Clinical Guideline Centre. Osteoarthritis Care and management in adults. NICE Clinical Guideline CG177. London: Royal College of Physicians, 2014. https://www.nice.org.uk/guidance/cg177/evidence/full-guideline-pdf-191761311 (Accessed 25.11.17)

5 Arthritis Research UK. *State of Musculoskeletal Health 2017.* Chesterfield: ARUK; 2017. https://www.arthritisresearchuk.org/~/media/Files/Policy%20files/Reports/State-of-musculoskeletal-health-2017.ashx (Accessed 25.11.17)

6 National Institute for Health and Care Excellence. *Alendronate, etidronate, risedronate, raloxifene and strontium ranelate for the primary prevention of osteoporotic fragility fractures in postmenopausal women.* London: NICE Technology Appraisal TA160; 2008. https://www.nice.org.uk/guidance/ta160/resources/alendronate-etidronate-risedronate-raloxifene-and-strontium-ranelate-for-the-primary-prevention-of-osteoporotic-fragility-fractures-in-postmenopausal-women-pdf-82598368491205 (Accessed 25.11.17)

7 Kanis J, Oden A, Johnell O et al. The components of excess mortality after hip fracture. Bone 2003;32:468-473. http://dx.doi.org/10.1016/s8756-3282(03)00061-9 (Accessed 25.11.17)

8 Woolf A. *Bone, joint and muscle conditions are now leading cause of disability in the UK.* Press release, Arthritis and Musculoskeletal Alliance; 12 Oct 2017. http://arma.uk.net/leading-cause-disability/ (Accessed 25.11.17)

9 Jordan K, Kadam U, Hayward R et al. Annual consultation prevalence of regional musculoskeletal problems in primary care: an observational study. BMC Musculoskeletal Disorders 2010;11. http://dx.doi.org/10.1186/1471-2474-11-144 (Accessed 25.11.17)

10 Comer M. *Sickness absence in the labour market: 2016.* Office for National Statistics; 09 Mar 2017. https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/sicknessabsenceinthelabourmarket/2016/pdf https://www.ons.gov.uk/file?uri=/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/sicknessabsenceinthelabourmarket/2016/sicknessabsencetables.xls (Accessed 25.11.17)

11 Murray C, Vos T, Lozano R et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The Lancet 2012;380:2197-2223. http://dx.doi.org/10.1016/s0140-6736(12)61689-4 (Accessed 25.11.17)

12 World Health Organisation. *Action plan for the prevention and control of noncommunicable diseases in the WHO European Region.* Copenhagen, Denmark; 2016. http://www.euro.who.int/__data/assets/pdf_file/0011/315398/66wd11e_NCDActionPlan_160522.pdf?ua=1 (Accessed 25.11.17)

13 Arthritis Research UK. *Musculoskeletal Health. A Public Approach.* Chesterfield: ARUK; 2014. http://www.arthritisresearchuk.org/~/media/Files/Policy%20files/2014/public-health-guide.ashx (Accessed 25.11.17)

14 Bernstein I. *Who's coming to see us? An audit of the demographic characteristics of referrals and pathways within LNWH Community Musculoskeletal Services.* London North West Healthcare NHS Trust; May 2015.

15 Department of Work and Pensions. *DWP Quarterly statistical summaries 2017.* Supporting data tables 9 & 12; Aug 2017. https://www.gov.uk/government/statistics/dwp-statistical-summaries-2017 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/637743/quarterly-stats-summary-august-2017-data-tables.zip (Accessed 25.11.17)

16 Arthritis Research UK. *Musculoskeletal Calculator.* http://www.arthritisresearchuk.org/arthritis-information/data-and-statistics/musculoskeletal-calculator.aspx. (Accessed 25.11.17)

17 Health and Safety Executive. *LFS - Labour Force Survey - Self-reported work-related ill health and workplace injuries: Index of LFS tables.* Work-related Illness - Type of illness (LFSILLTYP) http://www.hse.gov.uk/statistics/lfs/lfsilltyp.xlsx http://www.hse.gov.uk/statistics/lfs/

18 Ealing CCG Business Intelligence Team. *2017-2018-0399 - MSK JSNA Chapter - Elective Admissions And Outpatient Procedures.* NHS Ealing CCG, SUS data 01/04/2016-31/03/2017; 2017.

19 Ealing CCG Business Intelligence Team. *2016-17 - All admissions relating to falls for 55 and Over_Ealing Residence only*. (Primary or secondary diagnosis is related to a fall). NHS Ealing CCG, SUS data 01/04/2016-31/03/2017; 2017.

20 Shipman AJ, et al. Vertebral bone mineral density, content and area in 8789 normal women aged 33-73 years have never had HRT. *Osteoporosis Int* 1999; 9:420-426. https://link.springer.com/content/pdf/10.1007%2Fs001980050166.pdf (Accessed 25.11.17)

21 Public Health England. *Public Health Profiles, 4.14i - Hip fractures in people aged 65 and over (Persons).* https://fingertips.phe.org.uk/search/hip%20fractures#page/1/gid/1/pat/6/par/E12000007/ati/102/are/E09000009 (Accessed 25.11.17)

22 NHS Institute for Innovation and Improvement. *Focus on: Fracture Neck of Femur.* Coventry: NHS III, 2006. http://webarchive.nationalarchives.gov.uk/20091106170843/http://www.institute.nhs.uk/images/documents/Quality_and_value/Focus_On/DVQ_path_fracturefemurPROOF_Nov.pdf (Accessed 25.11.17)

23 Goldacre MJ, et al. Mortality after admission to hospital with fractured neck of femur: database study. *BMJ* 2002; 325(7369):868–869. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC129634/pdf/868.pdf (Accessed 25.11.17)

24 Healthcare Quality Improvement Partnership, The British Pain Society, Dr Foster Intelligence. *National Pain Audit Final Report 2010-2012.* http://www.nationalpainaudit.org/media/files/NationalPainAudit-2012.pdf (Accessed 25.11.17)

25 Guthrie B, et al. Adapting clinical guidelines to take account of Multimorbidity. *BMJ* 2012;345:e6341. http://dx.doi.org/10.1136/bmj.e6341 (Accessed 25.11.17)

26 Department of Health. *Start Active, Stay Active: A report on physical activity from the four home countries' Chief Medical Officers.* London: DH Physical Activity Team, 2011. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216370/dh_128210.pdf (Accessed 25.11.17)

27 Arthritis Research UK. *Osteoarthritis in General Practice. Data and perspectives.* Chesterfield: ARUK; 2013. http://www.arthritisresearchuk.org/arthritis-information/data-and-statistics/~/media/EFAEFCE432734F3AA5FB1C64329E02D1.ashx (Accessed 25.11.17)

28 Coggon D, et al. Knee osteoarthritis and obesity. *Int J Obesity.* 2001: 25; 622-627. http://www.nature.com/ijo/journal/v25/n5/pdf/0801585a.pdf (Accessed 25.11.17)

29 Arthritis and Musculoskeletal Alliance. *Policy Paper: Prevention of Musculoskeletal Conditions.* London: ARMA; 2017. http://arma.uk.net/wp-content/uploads/2017/08/Policy-Paper-Prevention_interactive2.pdf (Accessed 25.11.17)

30 Arthritis Research UK. *Musculoskeletal Conditions and Multimorbidity.* Chesterfield: ARUK; 2017. http://www.arthritisresearchuk.org/~/media/Files/Policy%20files/Reports/musculoskeletal-conditions-and-multimorbidity-report.ashx?la=en (Accessed 25.11.17)

31 National Collaborating Centre for Chronic Conditions. *Rheumatoid Arthritis: National clinical guideline for management and treatment in adults.* NICE Clinical Guideline CG79. London: Royal College of Physicians; 2009. https://www.nice.org.uk/guidance/cg79/evidence/full-guideline-pdf-242191265 (Accessed 25.11.17)

32 Roffey D, Budiansky A, Coyle M et al. Obesity and Low Back Pain: Is There a Weight of Evidence to Support a Positive Relationship?. *Current Obesity Reports* 2013;2:241-250. http://dx.doi.org/10.1007/s13679-013-0058-7 (Accessed 25.11.17)

33 Department of Health. *The Musculoskeletal Services Framework.* London: Department of Health; 2006. http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4138412.pdf

34 NHS Digital. *Statistics on Obesity, Physical Activity and Diet.* England; 2017. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/613532/obes-phys-acti-diet-eng-2017-rep.pdf (Accessed 25.11.17)

35 Sport England. *Active People Survey Analysis Tool.* http://activepeople.sportengland.org (Accessed 25.11.17)

36 Department of Health. *General Practice Physical Activity Questionnaire.* London: DH Physical Activity Team, 2009. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/192453/GPPAQ_-_guidance.pdf (Accessed 25.11.17)

37 Centre for Clinical Practice at NICE. *Falls: Assessment and prevention of falls in older people.* NICE Clinical Guideline CG161. National Institute for Health and Care Excellence; 2013. https://www.nice.org.uk/guidance/cg161/evidence/full-guideline-pdf-190033741 (Accessed 25.11.17)

38 Department of Health. *Falls and fractures. Developing a local joint strategic needs assessment.* London: Department of Health; 2009. http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@pg/documents/digitalasset/dh_103147.pdf (Accessed 25.11.17)

39 North West London Musculoskeletal Services Transformation Delivery Board. *MSk Delivery Board 05.09.17, DA5 Productivity Programme, Commissioning Intentions 2018-19.* NW London Collaboration of CCGs; 2017.

40 Okunribido O, Wynn T. Ageing and work-related musculoskeletal disorders. Health and Safety Executive. Research Report RR799: Derbyshire; 2010. http://www.hse.gov.uk/research/rrpdf/rr799.pdf (Accessed 25.11.17)

41 Public Health England. *Health and Work Infographics.* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/618541/Health_and_work_infographics.pdf PHE; 2016. (Accessed 25.11.17)

42 Custom Age Range Creator Tool for GLA Ethnic Group Population Projections, Borough: Greater London Authority: 2015; Projection to 2016. https://data.london.gov.uk/dataset/gla-population-projections-custom-age-tables/resource/878a6b5a-5ee5-4e43-81cb-9b38c065c8ea/download (Accessed 25.11.17)

43 Office for National Statistics. *Ethnicity and National Identity in England and Wales 2011.* London: ONS; 2012. http://www.ons.gov.uk/ons/dcp171776_290558.pdf (Accessed 25.11.17)

44 Department for Communities and Local Government. *Indices of Deprivation 2015.* https://data.london.gov.uk/dataset/indices-of-deprivation-2015 (Accessed 25.11.17)

45 Unwin M, et al. Estimating the burden of musculoskeletal disorders in the community: the comparative prevalence of symptoms at different anatomical sites, and the relation to social deprivation. *Ann Rheum Dis* 1998;57:649–655. http://dx.doi.org/10.1136/ard.57.11.649 (Accessed 25.11.17)

46 Arthritis and Musculoskeletal Alliance. *Policy Paper: 'Rationing' Access to Joint Replacement Surgery and Impact on People with Arthritis and Musculoskeletal Conditions.* London: ARMA; 2017. http://arma.uk.net/wp-content/uploads/2017/08/Policy-Position-Paper-Surgery_v5_Interactive.pdf (Accessed 25.11.17)

47 Peacock S, Patel S. Cultural Influences on Pain. Reviews in Pain 2008;1:6-9. http://dx.doi.org/10.1177/204946370800100203 (Accessed 25.11.17)

48 Allison T et al. Musculoskeletal pain is more generalised among people from ethnic minorities than among white people in Greater Manchester. *Ann Rheum Dis* 2002;61:151-156. http://dx.doi.org/10.1136/ard.61.2.151 (Accessed 25.11.17)

49 Ealing CCG Business Intelligence Team. *2017-2018-0398 - MSK JSNA Chapter - Referrals.* NHS Ealing CCG, Provider data 01/04/2016-31/03/2017; 2017.

50 NHS Employers. *2016/17 General Medical Services (GMS) contract Quality and Outcomes Framework (QOF), Guidance for GMS contract 2016/17.* Leeds: NHS Employers; 2016. http://www.nhsemployers.org/~/media/Employers/Documents/Primary%20care%20contracts/QOF/2016-17/2016-17%20QOF%20guidance%20documents.pdf (Accessed 25.11.17)

51 National Audit Office. *Services for people with rheumatoid arthritis.* London: NAO; 2009. http://www.nao.org.uk/wp-content/uploads/2009/07/0809823.pdf (Accessed 25.11.17)

52 Public Health England, *Local Health.* Small Area Geospatial Data 2015. http://www.localhealth.org.uk/ (Accessed 25.11.17)

53 Reyes C, Garcia-Gil M, Elorza J et al. Socio-economic status and the risk of developing hand, hip or knee osteoarthritis: a region-wide ecological study. *Osteoarthritis and Cartilage*. 2015;23:1323-1329. http://www.sciencedirect.com/science/article/pii/S1063458415008626 (Accessed 25.11.17)

54 Business in the Community. *Musculoskeletal health in the workplace: a toolkit for employers.* Public Health England, Arthritis and Musculoskeletal Alliance. BITC; 2017. http://wellbeing.bitc.org.uk/sites/default/files/business_in_the_community_musculoskeletal_toolkit.pdf (Accessed 25.11.17)

55 Neumann V. *Musculoskeletal Rehabilitation. Report of a working party convened by the British Society of Rehabilitation Medicine.* BSRM; 2004. https://www.bsrm.org.uk/downloads/musculo53-080904-11.30.pdf (Accessed 25.11.17)

56 Health and Safety Executive. Work-related Musculoskeletal Disorders (WRMSDs) Statistics in Great Britain 2017. http://www.hse.gov.uk/statistics/causdis/musculoskeletal/msd.pdf (Accessed 25.11.17)

57 Comer M. *Sickness absence in the labour market: 2016.* Office for National Statistics; 2017. https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/sicknessabsenceinthelabourmarket/2016/pdf (Accessed 25.11.17)

58 Office for National Statistics. *Full Report: Sickness Absence in the Labour Market, February 2014.* London: ONS; 2014. http://webarchive.nationalarchives.gov.uk/20160110042747/http://www.ons.gov.uk/ons/dcp171776_353899.pdf (Accessed 25.11.17)

59 Health and Safety Executive. *LFS - Labour Force Survey - Self-reported work-related ill health and workplace injuries: Index of LFS tables.* Work-related Illness - Industry (LFSILLIND) http://www.hse.gov.uk/statistics/lfs/lfsillind.xlsx http://www.hse.gov.uk/statistics/lfs/

60 Office for National Statistics. *NOMIS Official Labour Market Statistics, Labour Market Profile - Ealing*; Nov 2016. https://www.nomisweb.co.uk/reports/lmp/la/1946157266/report.aspx https://www.nomisweb.co.uk/reports/lmp/la/1946157266/report.pdf? (Accessed 25.11.17)

61 Clinical Standards Advisory Group Committee. *Back pain: report of a CSAG committee on back pain.* London: HMSO; 1994.

62 Department of Health. *The Government's mandate to NHS England for 2017-18.* DH: London; 2017. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/601188/NHS_Mandate_2017-18_A.pdf (Accessed 25.11.17)

63 Office for National Statistics. *Quarterly Labour Force Survey, April- June 2017.* ONS; 2017. http://nesstar.ukdataservice.ac.uk/webview/ (Accessed 25.11.17)

64 NHS Ealing Clinical Commissioning Group. In: Papers for the Governing Body Meeting 26.07.17. *Paper 4A Primary Care Offer Appendices: The Ealing Standard. Quality Framework for Primary Care 2017-18- 2020/21.* London: Ealing CCG; 2017. http://www.ealingccg.nhs.uk/media/130133/Paper-4a-Primary-Care-Offer-Appendices.pdf (Accessed 25.11.17)

65 Health Management Ltd. *Fit for Work*. http://fitforwork.org (Accessed 25.11.17)

66 Public Health England. *Health Profile 2017, Ealing.* PHE; 2017. http://fingertipsreports.phe.org.uk/health-profiles/2017/e09000009.pdf (Accessed 25.11.17)

67 London Borough of Ealing. *Sport and Physical Activity Strategy 2013-2018.* LBE; 2013. https://www.ealing.gov.uk/download/downloads/id/6789/ealing_sport_and_physical_activity_strategy.pdf (Accessed 25.11.17)

68 Zhang W, Moskowitz R, Nuki G et al. OARSI recommendations for the management of hip and knee osteoarthritis, Part II: OARSI evidence-based, expert consensus guidelines. *Osteoarthritis and Cartilage* 2008;16:137-162. http://dx.doi.org/10.1016/j.joca.2007.12.013 (Accessed 25.11.17)

69 Bernstein I. Referral Forecast: Forecast Baseline GP Musculoskeletal Referrals Apr14-Mar15.psf; MSk Referral factors 2014-15s.xlsx. In: Minutes of (Ealing) MSK Core Strategy Group 18th February 2014. London: Ealing CCG; 2014.

70 NHS England. *Patient Activation: At the heart of self-care support.* Patient Activation Narrative, NHSE; 2016. https://www.england.nhs.uk/wp-content/uploads/2016/04/patient-activation-narrative.pdf (Accessed 25.11.17)

71 Bodenheimer T, MacGregor K, Sharifi C. *Helping Patients Manage Their Chronic Conditions.* California HealthCare Foundation; 2005. http://www.chcf.org/~/media/MEDIA%20LIBRARY%20Files/PDF/PDF%20H/PDF%20HelpingPatientsManageTheirChronicConditions.pdf (Accessed 25.11.17)

72 Challis D, Hughes J, Berzins K, et al. *Self-care and Case Management in Long-term Conditions: The Effective Management of Critical Interfaces.* Report for the National Institute for Health Research Service Delivery and Organisation programme. HMSO; London: 2010. http://www.pssru.ac.uk/pub/MCpdfs/SCCMfr.pdf (Accessed 25.11.17)

73 Naylor C, Imison C, Addicott R, et al. *Transforming our health care system. Ten priorities for commissioners.* The Kings Fund; 2015. https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/10PrioritiesFinal2.pdf (Accessed 25.11.17)

74 North West London Collaboration of Clinical Commissioning Groups. *STP October submission 2016, NW London Sustainability and Transformation Plan.* NWL CCS; 2016. https://www.healthiernorthwestlondon.nhs.uk/documents/sustainability-and-transformation-plans-stps/stp-october-submission-2016 (Accessed 25.11.17)

75 NHS England. *Demand Management Good Practice Guide Version 1.1.* NHSE; 2016. https://www.england.nhs.uk/wp-content/uploads/2016/12/demand-mgnt-good-practice-guid.pdf (Accessed 25.11.17)

76 NHS England. *What is NHS RightCare?* https://www.england.nhs.uk/rightcare/what-is-nhs-rightcare/ (Accessed 25.11.17)

77 Wikiquote. https://en.wikiquote.org/wiki/Talk:Exercise (Accessed 25.11.17)

78 National Institute for Health and Care Excellence. *Physical activity: brief advice for adults in primary care.* NICE Public Health Guideline PH44. London: NICE; 2013. http://www.nice.org.uk/Guidance/PH44 (Accessed 25.11.17)

79 National Institute for Health and Care Excellence. *Walking and cycling: local measures to promote walking and cycling as forms of travel or recreation.* NICE Public Health Guideline PH41. London: NICE; 2012. http://www.nice.org.uk/guidance/ph41 (Accessed 25.11.17)

80 London Borough of Ealing. *Sport and Physical Activity Strategy 2013 to 2018.* London: LBE; 2013. https://www.ealing.gov.uk/download/downloads/id/6789/ealing_sport_and_physical_activity_strategy.pdf (Accessed 25.11.17)

81 Pavey TG, et al. Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: systematic review and meta-analysis. *BMJ* 2011;343:d6462. http://dx.doi.org/10.1136/bmj.d6462 (Accessed 25.11.17)

82 Williams N. Editorial. Promoting physical activity in primary care. *BMJ* 2011;343:d6615. http://dx.doi.org/10.1136/bmj.d6615 (Accessed 25.11.17)

83 Public Health England. *Local Tobacco Control Profiles.* https://fingertips.phe.org.uk/profile/tobacco-control/data#page/3/gid/1938132885/pat/6/par/E12000007/ati/102/are/E09000009/iid/92443/age/168/sex/4 (Accessed 25.11.17)

84 Ealing Council. *Smokefree Ealing, One You Ealing.* http://oneyouealing.org/smoking/ (Accessed 25.11.17)

85 North West London Collaboration of Clinical Commissioning Groups. *Report of the NW London CCGs' collaboration board – July 2017.* Strategy and Transformation Meeting 27 April 2017. NW London CCGs; 2017. http://www.ealingccg.nhs.uk/media/127632/12-Collaboration-Board-update.pdf (Accessed 25.11.17)

86 Fried L, Tangen C, Walston J et al. Frailty in Older Adults: Evidence for a Phenotype. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 2001;56:M146-M157. http://dx.doi.org/10.1093/gerona/56.3.m146 (Accessed 25.11.17)

87 Rockwood K. A global clinical measure of fitness and frailty in elderly people. *Canadian Medical Association Journal* 2005;173:489-495. http://dx.doi.org/10.1503/cmaj.050051

88 Rubenstein L. Quality Indicators for the Management and Prevention of Falls and Mobility Problems in Vulnerable Elders. *Annals of Internal Medicine* 2001;135:686. http://dx.doi.org/10.7326/0003-4819-135-8_part_2-200110161-00007 (Accessed 25.11.17)

89 Parry S, Bamford C, Deary V et al. Cognitive–behavioural therapy-based intervention to reduce fear of falling in older people: therapy development and randomised controlled trial – the Strategies for Increasing Independence, Confidence and Energy (STRIDE) study. *Health Technology Assessment* 2016;20:1-206. http://dx.doi.org/10.3310/hta20560 (Accessed 25.11.17)

90 Public Health England. *Falls and fracture consensus statement.* PHE; 2017. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/586382/falls_and_fractures_consensus_statement.pdf (Accessed 25.11.17)

91 NHS Ealing CCG. *Chief Officer's Report to the Governing Body, September 2017.* In papers of Governing Body Meeting 20.09.2017. CWHHE; 2017. http://www.ealingccg.nhs.uk/media/131953/05b-Chief-Officer%E2%80%99s-Report-to-the-GB-Sep2017.pdf (Accessed 25.11.17)

92 North West London Collaboration of Clinical Commissioning Groups. *Home First (D2A) in NW London. Update for MSK Clinical Network.* Strategy and Transformation Team, NWL CCGs; 2017.

93 NHS England. *Next steps on the NHS Five Year Forward View.* NHSE 2017. https://www.england.nhs.uk/wp-content/uploads/2017/03/NEXT-STEPS-ON-THE-NHS-FIVE-YEAR-FORWARD-VIEW.pdf (Accessed 25.11.17)

94 The Health Foundation. *Improving the flow of older people.* THF; 2013. https://www.england.nhs.uk/wp-content/uploads/2013/08/sheff-study.pdf (Accessed 25.11.17)

95 Moeller M, Turnbull B, Davies F, et al. *Discharge to Assess in Tower Hamlets.* Tower Hamlets Together 2016. https://londonadass.org.uk/wp-content/uploads/2016/10/DToC-Roadshow-18.10.16-D2A.pdf (Accessed 25.11.17)

96 Lewis R, Edwards N. *Improving length of stay: what can hospitals do?* Nuffield Trust, London; 2017. https://www.nuffieldtrust.org.uk/files/2017-01/improving-length-of-stay-hospitals-web-final.pdf (Accessed 25.11.17)

97 Musculoskeletal Matters Bulletin 1. *What Do General Practitioners See?* Keele; 2009. https://www.keele.ac.uk/media/keeleuniversity/ri/primarycare/bulletins/MusculoskeletalMatters1.pdf (Accessed 25.11.17)

98 NW London Collaboration of CCGs. *Community Services 2016-17 Information Schedule.* NWL CCGs and LNWH; 2017.

99 NW London Collaboration of CCGs. *NW London Advanced Analytics Reports 2016-17.* NWL CCGs; 2017.

100 NHS Ealing CCG. *Net Expenditure by Care Setting & Programme Category 2016-17.* Ealing CCG; 2017.

101 NHS Digital. *NHS Payments to General Practice, England* . NHS Digital; 2017. https://digital.nhs.uk/media/29212/NHS-Payments-to-General-Practice-England-2015-16-Annex-1-Tables/Any/nhspaymentsgp-15-16-ann1 (Accessed 25.11.17)

102 Information Services Division, GP Consultations / Practice Team Information (PTI) Statistics. *Top 10 conditions, ranked by annual contact rate per 1,000 population; 2012/13, with 95% confidence intervals.* ISD Scotland; 2013. https://www.isdscotland.org/Health-Topics/General-Practice/Publications/2013-10-29/PTI_Oct13_Fig8_top10Conditions.xls (Accessed 25.11.17)

103 Health Education England and Public Health England. *Making Every Contact Count.* HEE 2016. http://www.makingeveryconthealth practcount.co.uk/ (Accessed 25.11.17)

104 NHS Ealing CCG and LB Ealing. *Ealing Local Plans: Our five year plan for Ealing residents to be well and live well.* ECCG; 2016. http://www.ealingccg.nhs.uk/media/1848/ealing_ccg_local_plan_working_document_2016.pdf (Accessed 25.11.17)

105 Sagoo J. *New GP Websites.* PowerPoint presentation, NHS Ealing CCG, Ealing CEPN. London; 2017.

106 Gordon House Surgery pilot website. https://www.gordonhouse.nhs.uk/local-support/?service=health-education-wellbeing (Accessed 25.11.17)

107 Ealing CVS. *Health.* http://www.ealingcvs.org.uk/health/ (Accessed 25.11.17)

108 NHS Ealing CCG. *Our plans. Shaping a healthier future.* ECCG 2014. http://www.ealingccg.nhs.uk/about-us/our-plans/shaping-a-healthier-future.aspx (Accessed 25.11.17)

109 NHS England. *MSK Triage Data Pack, North West London STP.* NHSE; 2017. (MSK Triage - NWLondon STP – FINAL)

110 Bernstein I. Specialist Musculoskeletal Provision in Primary Care: Cost-Effectiveness. *Journal of Orthopaedic Medicine* 1998;20:2-9. http://dx.doi.org/10.1080/1355297x.1998.11719867 (Accessed 25.11.17)

111 London North West Healthcare NHS Trust. *Musculoskeletal specialist and physiotherapy service.* http://www.lnwh.nhs.uk/services/ealing-community-services/musculoskeletal-specialist-service-and-physiotherapy-service/ (Accessed 25.11.17)

112 Bernstein I, Griffiths S. An introduction to musculoskeletal service redesign in Ealing. *Guidelines in Practice* 2015;18(6):58-62. https://www.guidelinesinpractice.co.uk/musculoskeletal-and-joints-/an-introduction-to-musculoskeletal-service-redesign-in-ealing/352621.article (Accessed 25.11.17)

113 Back from the Brink: Return to Function British Institute of Musculoskeletal Medicine Spring Symposium 2009. *International Musculoskeletal Medicine* 2009;31:86-94. http://dx.doi.org/10.1179/175361409x412638 (Accessed 25.11.17)

114 London North West Healthcare NHS Trust. *Community Musculoskeletal Service.* http://www.lnwh.nhs.uk/EasySiteWeb/GatewayLink.aspx?alId=2028 (Accessed 25.11.17)

115 Collaboration of North West London CCGs. *Planned Procedures with Threshold (PPwT).* NHS Hounslow CCG; 2017. http://www.hounslowccg.nhs.uk/news,-publications-and-policies/publications.aspx?n=2136 (Accessed 25.11.17)

116 Bair M, Robinson R, Katon W et al. Depression and Pain Comorbidity. *Archives of Internal Medicine* 2003;163:2433. http://dx.doi.org/10.1001/archinte.163.20.2433 (Accessed 25.11.17)

117 Arnow B, Hunkeler E, Blasey C et al. Comorbid Depression, Chronic Pain, and Disability in Primary Care. *Psychosomatic Medicine* 2006;68:262-268. http://dx.doi.org/10.1097/01.psy.0000204851.15499.fc (Accessed 25.11.17)

118 National Institute of Health and Care Excellence. *Low back pain and sciatica in over 16s: assessment and management.* NICE Guideline NG59; 2016. https://www.nice.org.uk/guidance/ng59 (Accessed 25.11.17)

119 Clare A, Andiappan M, MacNeil S et al. Can a pain management programme approach reduce healthcare use? Stopping the revolving door. *British Journal of Pain* 2013;7:124-129. http://dx.doi.org/10.1177/2049463713484907 (Accessed 25.11.17)

120 West London Mental Health NHS Trust. *Ealing IAPT.* http://www.wlmht.nhs.uk/service/ealing-iapt/ http://www.ealingiapt.nhs.uk/ (Accessed 25.11.17)

121 NHS England. *Implementing the Five Year Forward View for Mental Health.* NHSE; 2016. https://www.england.nhs.uk/wp-content/uploads/2016/07/fyfv-mh.pdf (Accessed 25.11.17)

122 London Borough of Ealing and NHS Ealing CCG. *Ealing Mental Health and Wellbeing Strategy for Adults. 2017-2022.* LBE & ECCG; 2017. *https://www.ealing.gov.uk/download/downloads/id/11233/ealing_mental_health_and_wellbeing_strategy_for_adults_2017_-_2022.pdf* (Accessed 25.11.17)

123 London Borough of Ealing. *Corporate Plan 2014-2018.* LBE 2014. https://www.ealing.gov.uk/download/downloads/id/550/corporate_plan_2014-18.pdf (Accessed 25.11.17

124 London Borough of Ealing. *Sports and leisure.* https://www.ealing.gov.uk/info/201201/health_and_wellbeing (Accessed 25.11.17)

125 London Borough of Ealing. *Health and wellbeing.* https://www.ealing.gov.uk/info/201201/health_and_wellbeing (Accessed 25.11.17)

126 West London Mental Health NHS Trust. *Taking Work Rehab into the Community.* http://www.wlmht.nhs.uk/week-in-focus/taking-work-rehab-into-the-community/

127 Twining Enterprise. *Twining provides a range of services in Ealing.* http://www.twiningenterprise.org.uk/help_for_you/ealing

128 Griffiths S. *Deep Dive Presentation for MSK – Brent and Ealing Service/Team.* PowerPoint presentation, London North West Healthcare NHS Trust; 2017.

129 Griffiths S. Personal Communication. Email 05.12.17.

130 Lennox C. The Community Musculoskeletal Service. *Journal of Trauma and Orthopaedics* 2013;01:60-66. https://www.boa.ac.uk/wp-content/uploads/2014/05/The-Community-Musculoskeletal-Service.pdf (Accessed 25.11.17)

131 North West London Collaboration of Clinical Commissioning Groups. *Orthopaedic PPwT Conversion Audit 2017.* IFR Team, NWL Collab of CCGs; 2017.

132 North East Quality Observatory Service. *Back Pain Reports. Ealing - June 2016.* NEQO; 2016. https://www.neqos.nhs.uk/wp-content/uploads/2016/07/Ealing-June-2016.pdf (Accessed 25.11.17)

133 Ealing CCG. *Musculoskeletal Business Case.* In: Papers for the Meeting of the Ealing Clinical Commissioning Group Governing Body Meeting. London: Ealing CCG; 2013. http://www.ealingccg.nhs.uk/media/1645/Paper-9-MSK_Business_Case_v5-1-20130319-JW-sign-off.pdf (Accessed 25.11.17)

134 NHS Ealing Professional Executive Committee. In: *Papers for the Meeting of the PEC Management Board.* London: NHS Ealing; 2010. https://www.webarchive.org.uk/wayback/archive/20110504145714/http://www.ealingpct.nhs.uk/Library/Pec_papers/PECBoard2010/March2010/AGENDA%2017%20March%202010.doc (Accessed 25.11.17)

135 Griffiths S. *Ealing MSK Physiotherapy Service: Self-Referral Pilot Report.* LNWH; 2017.

136 NHS Benchmarking Network. *Community Services Dashboard Report.* NHSBN; 2016. https://www.nhsbenchmarking.nhs.uk/ (Accessed 25.11.17)

137 NHS Ealing Clinical Commissioning Group. *MSk Service Improvement Plan 2 draft 31.10.17.* Ealing CCG; 2017.

138 London North West Healthcare NHS Trust. *PTL Snapshot 20616.12.31.* LNWH; 2017.

139 McShane M. *Toffee Popcorn.* The BMJ Opinion; 2011. https://blogs.bmj.com/bmj/2011/06/03/martin-mcshane-toffee-popcorn/ (Accessed 25.11.17)

140 Hill J, Kang S, Benedetto E et al. Development and initial cohort validation of the Arthritis Research UK Musculoskeletal Health Questionnaire (MSK-HQ) for use across musculoskeletal care pathways. *BMJ Open* 2016;6:e012331. http://dx.doi.org/10.1136/bmjopen-2016-012331 (Accessed 25.11.17)

141 Public Health England. Public Health Profiles, *2.24i - Emergency hospital admissions due to falls in people aged 65 and over (Persons).* https://fingertips.phe.org.uk/search/falls#page/1/gid/1/pat/6/par/E12000007/ati/102/are/E09000009 (Accessed 25.11.17)

142 NHS RightCare and Public Health England. *Commissioning for Value, Where to Look pack, NHS Ealing CCG January 2017.* NHS RightCare; 2017. https://www.england.nhs.uk/rightcare/wp-content/uploads/sites/40/2017/01/cfv-ealing-jan17.pdf (Accessed 25.11.17)

143 Public Health England. *Return on Investment of Interventions for the Prevention and Treatment of Musculoskeletal Conditions. Final Report.* PHE; 2017. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/653736/musculoskeletal_conditions_return_on_investment_final_report.pdf (Accessed 25.11.17)

144 Hurley M, Walsh N, Mitchell H et al. Long-term outcomes and costs of an integrated rehabilitation program for chronic knee pain: A pragmatic, cluster randomized, controlled trial. *Arthritis Care & Research* 2012;64:238-247. http://dx.doi.org/10.1002/acr.20642 (Accessed 25.11.17)

145 Public Health England. *Return on investment of Interventions for the prevention and treatment of musculoskeletal (MSK) conditions. ROI Tool.* PHE; 2017. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/653738/musculoskeletal_conditions_return_on_investment_tool.xlsm (Accessed 25.11.17)

146 Public Health England. *Making Every Contact Count (MECC): Consensus statement.* PHE; 2016. http://mecc.yas.nhs.uk/media/1014/making_every_contact_count_consensus_statement.pdf (Accessed 25.11.17)

147 Department of Health. *Providing physical activity interventions for people with musculoskeletal conditions.* DH, PHE, ARUK; 2017. http://www.arthritisresearchuk.org/~/media/Files/Policy%20files/Reports/physical-activity-and-MSK-health-report.ashx?la=en (Accessed 25.11.17)

148 London Borough of Ealing. *JSNA Chapter 6: Enabling older people to maximise their capabilities and have a control over their lives.* LBE; 2014. https://www.ealing.gov.uk/download/downloads/id/9353/jsna_2014_-_older_people.pdf (Accessed 25.11.17)

149 London Borough of Ealing. *Cost-benefit analysis of a falls prevention intervention for older people admitted to A and E or acute hospitals with falls.* London: LBE, Unpublished 2014.

150 Public Health England *Local Health and care Planning: Menu of preventative interventions.* PHE; 2016. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/565944/Local_health_and_care_planning_menu_of_preventative_interventions.pdf (Accessed 25.11.17)

151 Ealing MSk Core Strategy Group. In: Notes from MSk Core Strategy Group 08.09.17. *MSk JSNA update: gap analysis and priorities.* Ealing 2017.

152 London Borough of Ealing. Minutes from: *Joint Strategic Needs Assessment Leadership Group, 22.11.17.* LBE 2017.

153 NHS England. Transforming musculoskeletal and orthopaedic elective care services. A handbook for local health and care systems. NHSE; 2017. https://www.england.nhs.uk/wp-content/uploads/2017/11/msk-orthopaedic-elective-care-handbook-v1.pdf (Accessed 25.11.17)