Musculoskeletal health

Cornwall and Isles of Scilly

July 2015

Bone and Joint Research Office Research Development & Innovations Royal Cornwall Hospitals Trust
### Musculoskeletal conditions

**Musculoskeletal health**

*July 2015*
Executive Summary

Musculoskeletal disorders are a leading cause of pain and disability. They not only impact the lives of those affected and their families they also have a significant social and economic impact.

- It is estimated that one quarter of adults in England in the UK are affected by long term Musculoskeletal disorders and it is responsible for over 30% of all disability in the UK (1).
- Falls were the second leading cause of YLDs in the UK and have increased in absolute terms by 32% (95% UI 14–50) from 1990 to 2010.
- In 2012/2013 Cornwall and the Isles of Scilly PCT spent over £71.7 million on problems of the musculoskeletal system which is higher than the national average.
- In Cornwall and the Isles of Scilly, large employers report that 18-20% of all sickness absence is due to musculoskeletal disorders.
- In 2012, 35% of Disability Living Allowance claims in Cornwall were for musculoskeletal disorders and they were in the top five conditions for incapacity benefit (2).
Scope

The musculoskeletal system is made up of the body’s bones, muscles, joints, cartilage and other connective tissues. This system provides form, support, stability and movement to the body. A healthy musculoskeletal system is needed for mobility, dexterity and participation in work and activities of daily living.

Musculoskeletal conditions (MSC) are a diverse group of over 200 conditions which affect this system and are caused by a variety of causes including injury, illness and ageing. They can be self-limiting or long-term disabling conditions. Minor, often self-limiting episodes of pain around the joints, particularly the back, neck, shoulders and knees, are very common. Causal factors include accidents, occupational activities or injury. More disabling and/or chronic musculoskeletal disorders include:

- osteoarthritis and related disorders;
- osteoporosis and associated fragility fractures;
- the results of severe trauma, e.g. road traffic injuries, amputation of limb;
- rheumatoid arthritis and other chronic inflammatory diseases;
- other auto-immune rheumatic diseases such as systemic lupus erythematosus (SLE), scleroderma and vasculitis;
- chronic pain syndromes such as fibromyalgia.

As in the rest of the UK, the population in Cornwall is ageing and it is projected that by 2021 one quarter of people in Cornwall will be aged 65 or over (3). Population ageing, the rise in obesity and a decline in physical activity means that the number of people affected by musculoskeletal conditions in Cornwall is set to grow. This comes at a time when people are being expected to extend their working lives to older ages.

Helping the people of Cornwall to maintain their musculoskeletal health is key if we wish them to maintain their mobility and independence into old age. Improvements in musculoskeletal function have a great potential for delaying or eliminating the onset of disability and dependence (4, 5).

This report provides an overarching picture of musculoskeletal conditions in Cornwall and Isles of Scilly and highlights some of the social and economic impact on the health and wellbeing of the population.
National Context

The Global Burden of Disease Study 2010 shows that the musculoskeletal disorders (muscles, bones and joints) account for the largest cause of disability in the UK (measured in Years Lived with Disability-YLD), affecting 30% of the population. Musculoskeletal related disability is going to increase because of the ageing UK population, increased levels of obesity and lack of physical activity.

Additionally, musculoskeletal disorders comprise the third highest cause of Disability Adjusted Life Years (DALYS) after cancer and cardiovascular disease, and ahead of mental health, respiratory diseases and diabetes. DALYS 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.

The impact of musculoskeletal conditions on the health and wellbeing of an individual and the wider community is large. They give rise to significant health resource utilisation with associated health and non-healthcare costs for society. Musculoskeletal conditions are in the top five diagnostic groups in Europe in terms of health care costs.
Policy Context

A wide range of national policies and legislation are relevant to musculoskeletal conditions. This is a summary of some key information that is available:


- NICE guidelines on musculoskeletal conditions can be found here: https://www.nice.org.uk/guidancemenu/conditions-and-diseases/musculoskeletal-conditions/

- Guidelines from the following bodies are also key;
  - British Society for Rheumatology
  - National Osteoporosis Guideline Group (NOGG)
  - Arthritis Research UK
  - National Osteoporosis Society Bone Research Society
  - British Geriatrics Society
  - British Orthopaedic Association
  - Primary Care Rheumatology Society
  - The Chartered Society of Physiotherapists
  - The British Pain Society
  - Royal College of Physicians
Community Voice

A specific engagement process or call for community view on musculoskeletal conditions was not undertaken for this thematic paper.
What is happening in Cornwall and Isles of Scilly

Section 1.1 How many people are affected?

Given the high burden of musculoskeletal conditions it is surprising how little population data is available on these conditions. The lack of national and local routine data on the prevalence of musculoskeletal disorders makes assessing local need difficult. Therefore the burden of musculoskeletal symptoms and disability needs in Cornwall and Isles of Scilly need to be extrapolated from national and local data. The lack of appropriate indicators is in part because of the traditionally low priority given to musculoskeletal conditions but also a reflection of the difficulties in accurately measuring the wide and varied range of conditions many of which are chiefly cared for in primary care (6).

Evidence shows that musculoskeletal conditions are linked with aging, occupation type and lifestyle choices. As people age they are susceptible to bone fragility, loss of cartilage resilience and loss of muscular strength. Nearly a quarter (23%) of the population in Cornwall and Isles of Scilly are 65 years and older. By 2037 this population is expected to increase by 61%.

Figure 2: Older population projection, Cornwall and Isles of Scilly

Cornwall’s population aged 65 and older is projected to increase 61% by 2037

ONS 2012-based Subnational Population Projections

The increased body weight puts strain on the body's joints, especially the knees, increasing the risk of osteoarthritis (degeneration of cartilage and underlying bone within a joint). People who are obese are 14 times more likely to develop osteoarthritis than those who are healthy weight ¹. People who are obese are also likely to report pain of the lower back.

A survey carried out by the Royal College of GPs in 2006 is one of the most comprehensive studies conducted to date examining the prevalence of musculoskeletal conditions in the country(8). It estimated that in the UK 10.1 million patients consulted their GP at least once for musculoskeletal disorders and that one in seven of all recorded primary care consultations during 2006 were for a musculoskeletal problem. One in four of the registered population consulted a GP for a musculoskeletal problem in that year, rising to more than one in three of older adults. The back was the most common reason for consultation, followed by the knee, chest and neck (7). In the UK across all age groups a higher percentage of women than men consulted their GP for musculoskeletal disorders. In the 75 year and over age group more than 35% of female registered patients consulted their GP for a MSC in 2006. It is important to note that only includes those people who consulted their GP, it does not take into account the unknown level of unmet need and therefore it likely to underestimate the burden of musculoskeletal conditions in the community.

Figure 3: Adult obesity, Cornwall and Isles of Scilly

7 in 10 (69%) adults in Cornwall and Isles of Scilly are obese or overweight.

Health Survey for England (HSE)

Figure 4: GP consultations for MSC by age and gender, UK 2006

Source: Derived from Royal College of Practitioners, Birmingham Research Unit. Annual Prevalence Report 2006
There is no equivalent GP consultation data currently available for Cornwall. However, there is data available from the national NHS GP Patient Survey (9). This survey goes out to people who are registered with GP surgeries. The finding from this survey show;

- 58% of those surveyed in Cornwall reported having a long term condition,
- 15% reported having arthritis or a long term joint problem and 11% reported a long term back problem. The equivalent figures for England are 13% and 10%.

These figures do not include those who had a short term or recurrent musculoskeletal problems.

The graph below shows the percentage of patients reporting arthritis or long term joint problems and the percentage reporting a long term back problem by age group. The percentage reporting these conditions rises with age; nearly 50% of people aged 85 or over report arthritis or long term joint problems.

**Figure 5: Percentage of patients reporting arthritis/joint problem or a back problem by age Cornwall 2012-13**

Source: NHS GP Survey: https://gp-patient.co.uk/surveys-and-reports#december-2013

People, especially older people, often have more than one long term condition. Figure 6 shows the percentage of people with arthritis or a long term joint problem who also report having another long term condition. The most commonly reported condition is high blood pressure (28%), more than
a quarter of people with arthritis or a long term joint condition also report having a long term back problem.

**Figure 6: Percentage of patients with arthritis or long term joint problem reporting another long term condition, Cornwall 2012-13.**

<table>
<thead>
<tr>
<th>Percentage of patients with arthritis or long term joint problem reporting another long term condition Cornwall 2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Another long-term condition</td>
</tr>
<tr>
<td>Long-term neurological problem</td>
</tr>
<tr>
<td>Long-term mental health problem</td>
</tr>
<tr>
<td>Long-term back problem</td>
</tr>
<tr>
<td>Learning difficulty</td>
</tr>
<tr>
<td>Kidney or liver disease</td>
</tr>
<tr>
<td>High blood pressure</td>
</tr>
<tr>
<td>Epilepsy</td>
</tr>
<tr>
<td>Diabetes</td>
</tr>
<tr>
<td>Deafness or severe hearing impairment</td>
</tr>
<tr>
<td>Cancer in the last 5 years</td>
</tr>
<tr>
<td>Blindness or severe visual impairment</td>
</tr>
<tr>
<td>Asthma or long-term chest problem</td>
</tr>
<tr>
<td>Angina or long-term heart problem</td>
</tr>
<tr>
<td>Alzheimer's disease or dementia</td>
</tr>
</tbody>
</table>

Source: NHS GP Survey: https://gp-patient.co.uk/surveys-and-reports#december-2013

### 1.2 Back pain

It is estimated that low back pain probably affects around one-third of the UK adult population each year (10). Estimates of the prevalence of low back pain vary considerably between studies - up to 33% for point prevalence (a single episode), 65% for one year prevalence, and 84% for lifetime prevalence (11). There is little data available on trends in back pain. Data from the Health and Safety Executive (12) suggest that there has been a reduction in the incidence and prevalence of work related back disorders in Great Britain over the past decade which may reflect the efforts made by the health and safety community and other stakeholders to ameliorate this problem.

The graph below shows the percentage of patients surveyed in Cornwall (as part of the NHS GP Patient Survey) reporting a long term back problem by...
age group and gender. Other than ages 35-54 a lower percentage of men in Cornwall report having a long-term back problem than women. Nearly one in 5 women over 75 report having a long term back problem. In the working age group 45-64 over one in ten men and women report long term back problems.

Figure 7: Percentage of patients reporting long-term back problems by age and sex, Cornwall 2012-13.

1.3 Osteoarthritis

Osteoarthritis (OA) refers to a clinical syndrome of joint pain accompanied by varying degrees of functional limitation and reduced quality of life. There is loss of the cartilage covering of the joint surface. The hands, knee and hips are most often affected. OA is one of the most disabling chronic conditions worldwide (13). It causes pain and stiffness which results in reduced mobility and reduced ability to perform everyday tasks and to participate in work and leisure activities. It is associated with depression, anxiety, low self-esteem and reduced quality of life.

Osteoarthritis is commonly perceived to be an inevitable and incurable consequence of ageing which leads to increasing pain and disability. In fact, osteoarthritis is not necessarily a progressive disease or an inevitable feature of ageing. The prognosis varies with the joints affected. Hand OA has a generally good prognosis whilst the prognosis for knee OA is variable (14). Hip OA has a poorer outcome than the hand or knee and a significant proportion of people with hip OA will require hip replacement within 5 years of symptom onset (14).

Another commonly held perception is OA can only be managed with medication or surgery. Clinical guidelines for the management of OA, in the
UK and globally (15), recommend exercise and self-management as key elements in the effective management of OA. People with OA have excess cardiovascular disease risk independent of their OA due to weight gain and high levels of physical inactivity.

Osteoarthritis is the most common musculoskeletal condition in older people. Approximately one third of people aged 45 years and over in the UK, have sought treatment for osteoarthritis (6). Between 1990 and 2010 disability due to osteoarthritis in the UK is estimated to have increased by 16% (1). The burden of osteoarthritis is set to grow as the population becomes older and as obesity rates increase.

OA is usually defined radiologically by characteristic changes of joint space loss associated with pain. There may be associated with restricted joint movement. However people with joint damage as seen on x-ray may experience quite different levels of pain, from none to severe. Population data on prevalence therefore depends on the definition used. In practice, diagnosis is often made on clinical features alone without x-ray confirmation. Variability in diagnosis between GPs is high. Standardised collection of OA data is also hampered by the fact that GPs often use symptom labels such as “knee pain” rather than a diagnostic label of osteoarthritis.

A team from Keele University have been addressing these difficulties. They have used a high quality primary care database (CiPCA) which records the consultations of patients in 11 practices in North Staffordshire covering a registered population of just under 95,000 people (6). Using this data they have calculated consultation prevalence rates for osteoarthritis. Whilst it is important to recognise that there are number of caveats in using these estimates they do allow us to make a useful estimate of the number of consultations for osteoarthritis that would be expected in Cornwall.

Figure 8 shows the estimated consultation prevalence per 100 registered population for osteoarthritis by age and gender as derived from the CiPCA dataset.
This consultation prevalence was applied to the 2013 population of GP registered patients in Cornwall. Table 1 shows the estimated number of people consulting about osteoarthritis in Cornwall per year by age and gender. This estimates that over 93,000 people a year aged 45 and over visit their GP due to osteoarthritis. Over 54% of these consultations are for osteoarthritis of the knee and 24% are for osteoarthritis of the hip.

<table>
<thead>
<tr>
<th>Gender</th>
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<th>45-64</th>
<th>65-74</th>
<th>75+</th>
<th>45-64</th>
<th>65-74</th>
<th>75+</th>
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<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>2617</td>
<td>5515</td>
<td>4612</td>
<td>5231</td>
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</tbody>
</table>

Source: Derived from 2013 population of GP registered patients in Cornwall (KCCG) & estimated consultation prevalence rates for OA (6).
1.4 Rheumatoid arthritis

Rheumatoid arthritis is an inflammatory disease that causes pain and swelling in the joints. Hands, feet and wrists are commonly affected, but it can also affect other parts of the body. Rheumatoid arthritis is characterised by joint swelling, joint stiffness and feeling generally unwell and tired. Symptoms usually vary over time, and range from mild to severe. The condition can sometimes be very painful. Movement and everyday tasks are difficult. Symptoms can vary, and when they become worse, this is known as a flare-up or flare. A flare is impossible to predict, making rheumatoid arthritis difficult to live with.

Rheumatoid arthritis is much less common than osteoarthritis with a prevalence in the UK of around 1% (16). However it can affect people of all ages including children and causes progressive joint damage and disability unless treated effectively. Rheumatoid arthritis is estimated to affect over 580,000 people in England and Wales and occurs more frequently in women than men. It is most common between the ages of 40 and 70. Forty five percent of people with RA are of working age (17). Over 3,000 people resident in Cornwall have a diagnosis of RA. People with RA face the challenge of adapting to and living with a condition that is not life threatening but is life changing and which can affect many aspects of their daily life. The reduction of disability and improvement of participation for those with long term conditions such as RA are important aims of national health policy.

There is no known cure for rheumatoid arthritis. However, early diagnosis and treatment can control symptoms and help prevent disability. In recent years the treatment of RA has changed dramatically with new treatment options and management strategies leading to greatly improved clinical outcomes for many patients with reduced disability (18).

1.5 Osteoporosis and fragility fractures

Osteoporosis is a condition that affects the bones. There is loss of bone density and deterioration of the microarchitecture, causing them to become weak and fragile and more likely to break (fracture) following low energy trauma, commonly a fall. These fractures (fragility fractures) most commonly occur in the spine, wrist and hips but can affect other bones such as the arm or pelvis. Fragility fractures are associated with substantial pain and suffering, disability and even death causing substantial costs to both individuals and society. Women in particular experience loss of bone density after menopause due to reduced oestrogen levels but osteoporosis can also affect men, younger women and children. In one recent study it was estimated that approximately 536,000 new fragility fractures were sustained in the UK in 2010 with estimated direct and indirect costs of £3,496 million (19).
The burden of fractures in the UK was estimated to increase by 24% to £5,465 million by 2025 (20). The most common fragility fracture is a hip fracture which is one of the most common and serious problems affecting older people and which is mostly commonly caused by a fall. Older people are at higher risk of falling than younger people and because they are also more likely to have osteoporosis or osteopenia they are more likely to sustain an injury as the result of a fall. In the UK, falls are the leading cause of mortality resulting from injury in people aged above 75 (21).

1.6 Hip fractures

About 70,000 to 75,000 hip fractures (proximal femoral fractures) occur annually in the UK (22) with an estimated cost (including medical and social care) of £2 billion a year. Demographic projections indicate that the UK annual incidence rate will rise to 101,000 by 2020 (22). The majority of the expenditure will be accounted for by hospital bed days followed by the cost of health and social after care. Currently about a quarter of patients with hip fracture are admitted from institutional care and approximately 10-20% of those admitted from home will move to institutional care (22).

In Cornwall the number of hip fracture admissions has increased by 15.5 per cent, from 46,495 admissions in 2001/02 to 53,694 admissions in 2010/11. In 2012 the directly standardised rate of patients admitted for hip fracture in Cornwall who return to their usual place of residence on discharge per 100,000, 65+ was 288 which is significantly better than the national average (23).

Hip fracture is a major cause of disability and the leading cause of mortality due to injury in older people aged 75 and over. Hospital admissions for fracture neck of femur are a good proxy measure of the incidence of hip fracture in older people. The directly age standardised rate of hospital admissions per 100,000 for fractured neck of femur in the elderly in Cornwall in 2008/09 was 460 per 100,000, this compares to 479 per 100,000 in England for the same period (24).

1.7 Quality of care for hip fracture

The National Hip Fracture Database (NHFD) is a clinically led, web-based audit of hip fracture care and secondary prevention (25). All 186 eligible hospitals in England, Wales and Northern Ireland, including Royal Cornwall Hospital, regularly upload data to it. Care is audited against standards defined by the British Orthopaedic Association and British Geriatrics Society which are known as the Blue Book Standards. They are:
• % of patients admitted to an orthopaedic ward within four hours. As part of a hip fracture programme, patients should be admitted directly to an appropriate ward at the earliest opportunity. A&E care should take less than 4 hours to complete, and delays suggest either poor A&E organisation or the absence of bed capacity on appropriate wards.
• % receiving surgery within 48 hours
• % reported as having developed pressure ulcers
• % reported as assessed pre-operatively by an orthogeriatrician
• % discharged on bone protection medication
• % received a falls assessment prior to discharge

The timing of surgery is an early marker of a patient’s progress following a hip fracture. Theatre capacity must be adequate to allow prompt surgery, even when there are fluctuations in hip fracture numbers or other demands on theatre time. A formal collaborative relationship between the orthopaedic and orthogeriatric teams is a fundamental part of the hip fracture programme that NICE recommends.

Table 2 shows the performance of individual hospitals in the Southwest region for various key measures of hip fracture care for the period January 1st – 31 December 2013. The Royal Cornwall Hospital is above the England average for all the Blue Book Standards, it is above the Southwest average for all except surgery within 48 hours. The table shows that Cornwall has higher rates of mortality and lower rate of return home from home within 30 days. Whilst above average the rate of mortality RCHT is not statistically significant. Ideally, hospitals help patients to return to their usual place of residence, encouraging them to retain their independence whenever possible, returning directly home is considered nationally to be the preferred pathway.

At Royal Cornwall Hospital the pathway involves the use of community hospitals for rehabilitation, which is why there appears to be a lower rate of discharges back to home. The 30 day follow-up provides important information relating to mobility, return home and osteoporosis treatment compliance. The 30 day follow-up completion rate is lower than average at Royal Cornwall Hospital, this is due to lack of capacity.
<table>
<thead>
<tr>
<th>Hospital Code</th>
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</tr>
</tbody>
</table>

Key: Red = worse than national average, Amber = national average, Green = better than national average

Source: National Hip Fracture Database Extended Report 2014
1.8 Mortality after hip fracture

Several studies have shown that mortality in hip fracture patients is high (22). People with acute hip fracture are found to have an excess 30-day mortality compared with the general population. Most deaths in the 12 months after acute hip fracture are due to co-morbidities rather than the fracture itself with the fall and fracture being a signal of ill-health. The NHFD 2014 national report (25) showed that overall 30-day mortality for hip fracture for the period 2010-2013 was 8.4%. The national trend in 30-day mortality after an acute hip fracture episode is falling, from 9.4% in 2008/09. Royal Cornwall Hospitals trust has a higher 30-day mortality rate compared to the national rate (crude and case-mix adjusted) but this is not statistically significant. Figure 9 shows there has been a slow and steady reduction in mortality over the last year and that it now falls below the NHFD mean for 2013. In hip fracture patients, operative delay beyond 48 hr after admission significantly increases the odds of 30-day and one year all-cause mortality (26). As we saw above Royal Cornwall Hospital has better than the national average time to surgery. Focus should be on further increasing the percentage of people who get timely surgery (within 36 hrs as a key performance indicator, within 48 hrs for the evidence in relation to mortality).

Figure 9: Averaged mortality rate and averaged hours to operation for hip fractures operations at Royal Cornwall Hospital April 2011- August 2014

Source: National Hip Fracture Database 2014
1.9 Hip replacement and revision

Hip replacement is undertaken predominantly for osteoarthritis but also following fractured neck of femur. The long term results of joint replacement are very good. Recent National Joint Registry data describes survival rates for total hip replacement (THR) of 95% at 9 years. The rate of admissions for hip revisions and hip replacements in Cornwall is higher than the national average.

Figure 10: Hospital procedures: primary hip replacement, indirectly age and sex standardised rates per 100,000 persons 2002/03-2011/12

Source: Compendium of Population Health Indicators (indicators.ic.nhs.uk or www.indicators.ic.nhs.uk). Note: "Coastal and Countryside" refers to a cluster of similar local authorities as defined by the Office of National

Since 2007/08 the rates of primary hip replacement in Cornwall have been significantly higher than the national average (at the 99.8% confidence interval level). The reasons for this require further study.

Figure 11 shows readmission following discharge from hospital for people with primary hip replacement surgery, when readmission was not part of the originally planned treatment. Previous analyses have shown that around 6% of patients discharged from NHS hospitals following elective hip replacement surgery are readmitted as an emergency within 28 days. There is wide variation between similar NHS organisations in rates of such
emergency readmissions. From the period starting 2006/07 in Cornwall the emergency readmissions were significantly lower than the national average (at the 99.8% confidence interval level). Again the reasons for this require further study. In 2012 the rate of emergency hospital readmissions for hip fractures, in persons aged 65 and over, per 100,000 was 387 which is better than the national average.

**Figure 11:** Emergency readmissions to hospital within 28 days of discharge: primary hip replacement surgery (indirectly age and sex standardised percent, all ages, 3-year average)

Figure 12 shows that since 2007/08 the rate of hip replacement revisions in Cornwall has been significantly higher than the national average (at the 99.8% confidence interval level).
1.10 Knee replacement

The admissions rates for knee replacements in Cornwall are lower than the national average (27).

Map 1: Admissions Rate Knee Replacements, indirectly age standardised per 100,000, 2010-11


Section 2.1  Inequalities

Inequalities in health care can arise from a number of factors. Health beliefs, perceptions of need and previous health care experiences affect health seeking behaviour and how people utilise health care services. For example people may consider that joint pain is a natural part of ageing and believe that it cannot be treated. In a UK survey of 1,400 people with a confirmed diagnosis of RA (17) one third of people who were finally diagnosed with RA delayed going to their GP for 6 months or more after their symptoms appeared. The attitudes and beliefs of healthcare providers can also act as a barrier to care (50). The cost of health care itself or costs associated with accessing health care (for example transport costs or those associated with missed work or childcare) can act as a barrier to accessing health care. Socioeconomic status is also important. Individuals with lower socioeconomic status have:

- Higher prevalence of chronic musculoskeletal complaints (51)
- Higher prevalence of osteoarthritis (52, 53)
- More severe disease and worse disease progression in rheumatoid arthritis (54, 55)
- Studies in the US, Canada and the UK have found relationships between total joint arthroplasty (TJA) and socioeconomic status. Patients with lower income have TJA less frequently than those with higher socioeconomic status (56)
- A UK study showed that residents in the most deprived areas got less provision relative to need for total hip replacement and total knee replacement than those in the least deprived areas (57)
- In England it was found that a socioeconomic gradient of 25.9% difference existed for in-hospital hip fracture mortality in 2008 (58).

2.2 Pre-treatment health status and deprivation

A patient-reported outcome measure (PROM) is a series of questions that patients are asked in order to gauge their views on their own health (for more information about PROMS see Appendix 2). Patients are asked to complete questionnaires shortly before and some months after surgery. In the NHS these questions include the EQ5D which measures health in terms of the effect of any given state of health on the ability to function and enjoy life. The focus is on the impact that a person’s state of health has on his or her overall life. Patients answer five questions, each on a different dimension of their health. In addition, they are asked to provide an overall assessment of their health, on a scale ranging from the worst possible health to the best possible health. A patient in full health would have an EQ-5D Index score equal to 1. PROMS (Patient Reported Outcomes Measures) data shows that more deprived patients have lower pre-treatment health status for all procedures. For hip and knee replacement surgery more deprived patients have lower pre-treatment health status and have fewer procedures than less deprived patients.
For knee replacements in England, the average pre-treatment health status of the most deprived 10% of patients is 0.30 compared to 0.46 for the least deprived 10% (59).

**Figure 13: Knee Replacement: pre-treatment health status by deprivation band, England 2009-10**

![Graph showing pre-treatment health status by deprivation band for knee replacements in England 2009-10](image)

Source: DoH. Analysis of Patient Reported Outcomes Measures Pre-Operative Health Status Data April 2009 to March 2010 Commissioning Analysis and Intelligence & System Management and New Enterprise

The figure below shows for hip replacements, the average pre-treatment health status of the most deprived 10% of patients is 0.24 compared to 0.40 for the least deprived 10%.
The number of procedures also varies with deprivation level of patients. More deprived patients have fewer procedures than less deprived patients for knee and hip replacements. The most deprived 10% of patients have less than half the number of procedures of the least deprived 10% of patients for hip replacements.
2.3 Age, gender and ethnicity

As we saw earlier, age is a risk factor for musculoskeletal problems. A UK study of the provision of total hip replacement and total knee replacement showed that compared with people aged 50-59, those aged 60-84 got more provision relative to need, while those aged ≥85 received less total hip replacement and less total knee replacement (57). In certain occupation groups young age is associated with increased risk of musculoskeletal conditions- this could be a result of young people being engaged in more physically demanding activities or due to older workers leaving these occupations due to the physical demands. PROMS data shows that pre-treatment health status also varies with age of patients.
In relation to gender, studies have shown that women have a higher prevalence of OA, a lower rate of total joint arthroplasty and a greater

Musculoskeletal health
July 2015
unmet need for TJA than men (60). In one study men received more provision relative to need for total hip replacement and total knee replacement than women (57). In a study by Hawker et al. (2000) women were more than 3 times less likely to undergo arthroplasty than men despite reporting equal willingness to have the procedure. PROMS data shows that males report higher average pre-treatment health status than females.

Table 2 Average pre-treatment health status (EQ-5D Index) England 2009-10.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee replacement</td>
<td>0.44</td>
<td>0.36</td>
</tr>
<tr>
<td>Hip replacement</td>
<td>0.38</td>
<td>0.31</td>
</tr>
</tbody>
</table>

Source: Hospital Episode Statistics (HES) / PROMs, The NHS Information Centre for Health and Social Care, Provisional Data, April 2009 to March 2010

2.4 Regional inequalities in access to MSC health care

There are very few studies looking at regional differences in access to health care services and care in relation to musculoskeletal conditions. A report by the Royal College of Surgeons (61) showed that there was a 17-fold difference in the rate of knee replacements for the over-75s, depending on where a patient lives. The 2010 study by Judge et al (57) showed that there were substantial regional differences in access to total hip replacement and total knee replacement in England. For hip replacement the level of equity for people living in Cornwall was mixed but for knee replacement the level of equity was worse than the average national level with people in need of knee surgery being less likely to get an operation than in other areas of the country. This study is interesting and raises questions about equity of access however it should be noted that the levels of equity are based on modelling with pre-2010 data and may not reflect the true current picture of access to hip and knee surgery.

Map shows the variation in pre-treatment health status by PCT for hip and knee replacement 2010-11. The degree of variation is clear.
Map2: Joint Replacement: PCT Level variation in pre-treatment health 2010-11

Hip replacement

Knee replacement
2.5 What is the economic burden in the workplace?

Musculoskeletal health problems are one of the leading causes of absenteeism and presenteeism in the workplace in the UK and in Cornwall. Musculoskeletal problems are common and are caused by injury, illness and ageing. Many workers have musculoskeletal health problems some of which are causally related to their work.

How common are musculoskeletal conditions in the workplace?

Those musculoskeletal conditions that arise due to a work related activity are usually known as musculoskeletal disorders (MSDs). Musculoskeletal disorders can affect muscles, joints and tendons in all parts of the body. Most work-related MSDs develop over time and can also result from fractures sustained in an accident. When people think of work related musculoskeletal conditions or injuries they often think of jobs which include heavy lifting or other physical jobs however those with desk jobs with prolonged keyboard use can also develop long term musculoskeletal problems.

The latest estimates from the Labour Force Survey (2013/14) show that in Great Britain in 2013/14 an estimated 2 million people were suffering from an illness (long standing as well as new cases) they believed was caused or made worse by their current or past work. Around 80 per cent of new work-related conditions were musculoskeletal disorders or stress, depression or anxiety. The total number of MSD cases in 2013/14 was 526 000 out of a total 1 241 000 for all work-related illnesses (see Figure 18).
There has generally been a downward trend in the rate of total cases and new cases of work-related MSDs as recorded in the Labour Force Survey since 2001/02, although 2013/14 has a statistically significant higher rate than in 2011/12 (see Figure 19). The number of new cases of MSDs in 2013/14 was 184 000, up from 141 000 in 2011/12.
Activities in specialised construction, agriculture, postal and courier and health care had higher rates of total cases of MSDs compared to the average across industries. Building trades, nurses, personal care and skilled agriculture trades had higher rates of total cases of MSDs compared to the average across all occupations. General practitioners in the THOR-GP reporting scheme identify heavy lifting, keyboard work and manipulating materials as the main tasks associated with the development of work-related musculoskeletal disorders reported in their clinics.

The prevalence rate (total cases) and incidence rate (new cases) of MSDs in GB can be broken down under the categories of Back disorders, Upper limb disorders (ULDs) and Lower limb disorders (LLDs). ULDs include a large number of different work-related musculoskeletal complaints in the hand, wrist, arm, elbow, shoulder and neck. LLDs are the least commonly reported musculoskeletal disorders and often tend to be associated with musculoskeletal conditions in other areas of the body such as the hips, legs or feet.
The Health & Safety Executive produce data on absence due to work related illness or injury for Great Britain (44). This shows that the number of working days lost per worker due to work related illness or injury has also generally followed a downward trend since 2000-02, with a corresponding fall in the total number of working days, from 39.8 million in 2000/02 to 28.2 million in 2013/14. In 2013/14, 23.5 million days were lost due to work-related ill health and 4.7 million due to workplace injuries. There has generally been a downward trend in the average days lost per worker due to MSDs since 2001/02. The total number of working days lost due to MSDs in 2013/14 was 8.3 million, an average of 15.9 days per case of MSDs, equating to approximately 0.34 days per worker. Table 3 shows the estimated working days lost due to MSDs in Great Britain in 2013/14. The highest number of days lost is due to Upper Limb Disorders which is cause of the highest proportion of lost days per worker. Lower Limb Disorders cause the largest average number of lost work days.
Table 3: Estimated numbers of working days lost, average number of lost work days and average lost days per worker by musculoskeletal disorder, Great Britain 2013/14

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Estimated working days lost (million)</th>
<th>Average number of lost work days</th>
<th>Average lost days per worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back</td>
<td>2.8</td>
<td>12.3</td>
<td>0.11</td>
</tr>
<tr>
<td>Upper Limb Disorder</td>
<td>3.2</td>
<td>15.9</td>
<td>0.13</td>
</tr>
<tr>
<td>Lower Limb Disorder</td>
<td>2.3</td>
<td>24.3</td>
<td>0.095</td>
</tr>
</tbody>
</table>

Source: Derived from Musculoskeletal Disorders in Great Britain, HSE 2014; [link expired]

The prevalence of MSDs varies by industry and occupation, those with statistically significant higher estimated prevalences rates (averaged over the years 2010/11-2013/14, with no ill health data in 2012/13) are shown in Table 4.

Table 4: Industries and occupations with the highest estimated prevalences rates (averaged over the years 2010/11-2013/14, with no ill health data in 2012/13) by disorder

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Industry</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back</td>
<td>Specialised construction; Human health &amp; residential care</td>
<td>Health professional; Skilled trade (particularly skilled construction); Services &amp; leisure; Agriculture &amp; related trades</td>
</tr>
<tr>
<td>ULD</td>
<td>Human health</td>
<td>Skilled construction &amp; building trades; Health &amp; social care assoc professions</td>
</tr>
</tbody>
</table>

No data available for LLDs

Source: Derived from Musculoskeletal Disorders in Great Britain, HSE 2014; [link expired]

The prevalence rate for MSDs in those who are self-employed (on own or with partner but no employee) was statistically significantly higher than the average across all those working in 2013/14. The estimated prevalence of back disorders amongst this group was 35 000 cases.
Musculoskeletal conditions and work in Cornwall

The Health and Safety Executive do not produce county level data on work loss and it is difficult to obtain data for Cornwall. However it is important to note that as we saw above activities in specialised construction, agriculture, postal and courier and health care had higher rates of total cases of MSDs compared to the average across industries. The self-employed also had higher levels of MSD. There is a very high level of self-employment in Cornwall, in 2011/12, 15.5% of the working age population were self-employed in Cornwall and IoS, the fourth highest in the country (45). The proportion of employed people working in construction or agriculture is higher than the average for Great Britain (see Figure 21).

Figure 21: Employment and self-employment by sector, Cornwall 2011.

The table below summarises the features of employment and self-employment for each of the broad sectors in Cornwall in 2011.

<table>
<thead>
<tr>
<th>Broad sector</th>
<th>Total employment</th>
<th>2008 - 2011 change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(number)</td>
<td>(%)</td>
</tr>
<tr>
<td>Accommodation &amp; food services</td>
<td>33,800</td>
<td>14%</td>
</tr>
<tr>
<td>Retail</td>
<td>32,400</td>
<td>13%</td>
</tr>
<tr>
<td>Health</td>
<td>30,900</td>
<td>12%</td>
</tr>
<tr>
<td>Education</td>
<td>20,300</td>
<td>8%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>19,700</td>
<td>8%</td>
</tr>
<tr>
<td>Construction</td>
<td>16,700</td>
<td>7%</td>
</tr>
<tr>
<td>Arts, entertainment, recreation &amp; other services</td>
<td>13,700</td>
<td>6%</td>
</tr>
<tr>
<td>Agriculture, forestry &amp; fishing</td>
<td>12,400</td>
<td>5%</td>
</tr>
<tr>
<td>Business admin &amp; support services</td>
<td>12,300</td>
<td>5%</td>
</tr>
<tr>
<td>Professional, scientific &amp; technical</td>
<td>12,100</td>
<td>5%</td>
</tr>
<tr>
<td>Transport &amp; storage (inc postal)</td>
<td>9,600</td>
<td>4%</td>
</tr>
<tr>
<td>Wholesale</td>
<td>8,200</td>
<td>3%</td>
</tr>
<tr>
<td>Public administration &amp; defence</td>
<td>7,800</td>
<td>3%</td>
</tr>
<tr>
<td>Motor trades</td>
<td>5,300</td>
<td>2%</td>
</tr>
<tr>
<td>Property</td>
<td>3,700</td>
<td>1%</td>
</tr>
<tr>
<td>Information &amp; communication</td>
<td>3,500</td>
<td>1%</td>
</tr>
<tr>
<td>Financial &amp; insurance</td>
<td>3,200</td>
<td>1%</td>
</tr>
<tr>
<td>Mining, quarrying &amp; utilities</td>
<td>2,700</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>248,300</strong></td>
<td></td>
</tr>
</tbody>
</table>

2.6 What is the burden on social support in Cornwall?

The Disability Living Allowance (DLA) is a benefit for people who are so disabled as to have personal care needs and/or mobility needs and who claim before their 65th birthday. In 2012 there were more than 3.2 million people in UK receiving DLA (46). Of these, 500,000 received only payment to help with mobility, while the remainder are also given some contribution towards the cost of care. In general Disability Living Allowance is not paid on the basis of a particular disability or health condition, but according to the impact of a disability. The two most common main medical conditions of Disability Living Allowance recipients, are arthritis (18%) and mental health conditions (14%) back ailments and other musculoskeletal conditions make up another 11% (47).

In the South West in 2013 29% of those claiming DLA were doing so because of musculoskeletal conditions (48). There were 29,150 people claiming DLA in Cornwall in November 2012, almost 8% of the adult population aged 16+. The number of DLA claimants in Cornwall (for all causes) has grown by 44.4% since November 2002, higher than the 33.5% growth nationally (England) but lower than the 50.5% growth in the South West region. In November 2012, the DLA claimant rate for the 16+ population in Cornwall was 6.5%, compared with 5.1% in the South West and 5.5% nationally. The most prevalent conditions for DLA claimants in Cornwall were musculoskeletal disorders such as arthritis, back pain or spondylitis (35%) followed by mental health disorders (15%) and learning difficulties (9%).

People with a MSC are often unable to work. Incapacity and Employment & Support Allowance (ESA) benefits are paid to non-employed adults of working age (16-59 years for women and 16-64 years for men) who are deemed too ill or disabled to be required to look for work. In the South West in February 2013 17.6% of incapacity benefits were claims for musculoskeletal conditions. This has stayed at around 17% for the past 5 years. Figures for Cornwall are not currently available but are being sought from the Department for Work and Pensions (DWP).

As Figure 2 shows in Cornwall musculoskeletal conditions ranks second in the top five conditions for health-related incapacity payment claimants (this includes employment support allowance, incapacity benefit and severe disablement allowance). The percentage of claimants who have diseases of the musculoskeletal system and connective tissue is higher than that for Great Britain (49).
Musculoskeletal health

Figure 22: Top five conditions for health-related incapacity payment claimants, Cornwall 2012

Disability Living Allowance is paid whether or not the person is in employment. In Cornwall in February 2012 there were 18,510 working age people claiming Disability Living Allowance (49) 4,880 people were claiming Disability Allowance for musculoskeletal conditions (Figure 23).

Figure 23: Disability Living Allowance by disabling condition, Working age population, Cornwall 2012.

Section 3.1 Musculoskeletal services in Cornwall and Isles of Scilly

People with musculoskeletal conditions need a wide range of high-quality support and treatment from simple advice to highly technical, specialised medical and surgical treatments. In 2006 the Department of Health published the Musculoskeletal Services Framework (28). This is a framework for the provision of high-quality information, support and treatment to those with musculoskeletal conditions. It recommends that support and treatment should be offered as close to home as possible and be holistic in approach, addressing physiological, psychological and social needs. Central to the framework is the provision of multidisciplinary interface services which act as a one-stop shop for assessment, diagnosis, treatment or referral to other specialists. A diagram of the framework is on page 21.

3.2 Rheumatology

Rheumatologists are trained in the medical management of the spectrum of musculoskeletal conditions. They deal with a variety of problems including patients with short-term problems that benefit from specific therapy or procedures, such as regional pain syndromes; patients requiring diagnosis, assessment, advice or counselling usually for chronic disorders, such as osteoarthritis, gout, fibromyalgia and back pain, which can be managed in the community; patients with progressive musculoskeletal conditions, such as inflammatory joint disease, autoimmune disorders and other chronic progressive diseases that require close supervision to ensure the best treatment outcome.

Over the past decade, significant developments in treatments have led to a reduction in the need for inpatient care. The inflammatory rheumatic diseases are particularly associated with co-morbidities and are often treated with immunosuppressives needing careful monitoring so there is likely to be a continuing need for inpatient and day-patient facilities. However shared care across primary and secondary care continues to grow.

The main rheumatology clinic in Cornwall is at the Royal Cornwall Hospital, some patients living in the east of the county access the rheumatology clinic at Derriford Hospital in Plymouth. These clinics provide access to multi-disciplinary teams including rheumatologists and rheumatology specialist nurses, occupational therapists, physiotherapists and pharmacists. In addition to the main clinic there are satellite clinics in Bodmin, Falmouth, Newquay, Penzance, St Austell and St Mary’s (Isles of Scilly). For more information on rheumatology services in Cornwall see cornwallarthritis.org.uk/
Figure 24: Musculoskeletal Services Framework

Source Department of Health. The musculoskeletal services framework 2006.
### 3.3 Orthopaedic services

Many patients with musculoskeletal conditions need surgical intervention, commonly for the alleviation of symptoms of arthritis or the treatment of injuries, but also for the treatment of a range of more complex disorders. Surgical intervention has the ability, in a large number of cases, to restore normal or near-normal function to those with musculoskeletal injuries or disabilities. Hip and knee replacements are expensive but have been shown to be very cost effective.

The Orthopaedic department at Royal Cornwall Hospital deals with all musculoskeletal conditions and works closely with the rheumatology department. The work of the department is split into trauma (emergency work) and elective orthopaedics (planned work), both take place on the same site and share outpatient and operating theatre facilities. Patients undergo surgery at both the Royal Cornwall Hospital and St Michaels Hospital in Hayle. The orthopaedic department offers in-patient and day case surgery with all of the necessary out-patient back up services throughout the County. Patients also access orthopaedic services at the Duchy Hospital (Truro), Derriford Hospital (Plymouth) and North Devon District Hospital (Barnstaple).

### 3.4 Rehabilitation services

People with musculoskeletal conditions often need rehabilitation. Although there are hospital based specialists such as Rheumatology occupational therapists and physiotherapists most rehabilitation is provided in community and primary care settings, or in the individual’s own home by a range of care professionals. Social care and other local authority services and facilities play a key role through, for example, home care, swimming pools and leisure centres.

### 3.5 Physiotherapy

Patients with Musculoskeletal disorders are the largest patient population group treated by physiotherapists. In 2010/11 in England, physiotherapy outpatient services managed 1.9 million adults with a first appointment and 4.8 million follow up appointments for musculoskeletal disorders (29). Rapid access to musculoskeletal physiotherapists can reduce the amount of time people are off sick and is vital in preventing a new acute problem becoming chronic and long lasting (30). Physiotherapy plays an important role in managing musculoskeletal disorders. It can help patients maintain independence through improving mobility, strength and flexibility. Used along with medication it can also help to minimise pain. Physiotherapists have a detailed understanding of the body and movement. They work with people with limited mobility – from injury, arthritis or another condition – providing advice, guided exercises and referral to other services. Physiotherapists can devise simple exercise programmes that patients can practise at home. After an assessment the physiotherapist will offer and
design a personalised treatment plan. This may include comprehensive advice, exercises, manual therapy, hydrotherapy and other pain relieving techniques which may include acupuncture if appropriate.

The Rheumatology Department at Royal Cornwall Hospital has a Specialist Rheumatology Physiotherapist who has expert training in caring for people with arthritis and other musculoskeletal conditions. In addition the Physiotherapy Service at Royal Cornwall Hospitals Trust offers a broad range of treatments to Inpatients and Outpatients, including general rehabilitation, exercise therapy, manual therapy, hydrotherapy and general advice and education. The physiotherapists work with all the various specialties in the Trust and provide rehabilitation for a large variety of patients, some with complex conditions. The outpatient physiotherapy service treats patients who may have been referred by their GP or by their consultant following inpatient treatment. Physiotherapists are based at the Royal Cornwall Hospital Trust sites in Truro, Penzance and Hayle.

The Therapy Department has specialist orthopaedic physiotherapists with interests in shoulders and feet. They can offer specialist assessment and treatment for patients with musculoskeletal problems affecting these joints. There is a specialist Hand Therapy team consisting of physiotherapists and occupational therapists who treat a variety of hand problems. They are based at Royal Cornwall Hospital but run satellite clinics at Penzance, Bodmin, Camborne and St Austell. Physiotherapy for patients with back and neck pain is also offered under the Any Qualified Provider (AQP) Scheme.

In addition to physiotherapy services provided by Royal Cornwall hospital there are also those provided by Peninsula Community Health (PCH) which delivers NHS adult community health services in Cornwall and Isles of Scilly. The PCH musculoskeletal outpatient Physiotherapists are based in most of the community hospitals. Patients can access these services through self referral as well as GP referral. These offer:

- A wide range of treatment modalities including manual therapy and electrotherapy
- Acupuncture (as a treatment modality)
- Manipulation (Grade V)
- Hydrocortisone Injection Therapy
- Direct referral for X-ray investigation at Royal Cornwall Hospital Trust facing sites and Stratton
- Self referral at all departments
- ‘Drop in’ clinics at Bodmin, Newquay and Helston Hospitals
- Telephone assessment and advice
- ‘Back to fitness’ classes for back pain
- Direct access to Extended Scope Physiotherapists, integrated within local teams
- Direct onward referral to the Msk Interface Service, staffed by Extended Scope Physiotherapists and GPs with Special Interest in musculoskeletal conditions
• Clinical intervention from experienced Musculoskeletal Specialist Physiotherapists.

3.6 Occupational therapy

Occupational therapy (OT) is the use of treatments to develop, recover, or maintain the daily living and work skills of people with a physical, mental or developmental condition. Occupational therapy interventions focus on adapting the environment, modifying the task, teaching the skill, and educating the patient/family in order to increase participation in and performance of daily activities.

The role of the Specialist Rheumatology Occupational Therapist (OT) is to help the patient to achieve and maintain maximum function, whilst avoiding damage to joints and/or other vulnerable structures. In patients with arthritis the OT can assess activities of daily living such as washing and cooking and may suggest ways of making these easier, as well as providing aids such as resting or working splints for inflamed joints.

3.7 Occupational Therapy Bracing

This service is based at Royal Cornwall Hospital with a clinic at West Cornwall Hospital. The service provides and fits braces for all joints. Patient groups include those with orthopaedic, rheumatological and neurological disorders. The braces are used to realign the joint, relieve pain and allow continued function for people with conditions including osteoarthritis and osteoporosis.

3.8 Rehabilitation in the community

Peninsula Community Health provides the Rehabilitation Service (also known as the Integrated Therapy Service) in the community. The Rehabilitation Service is available for all adults over the age of 16, registered with a Cornish GP who:

• have long term or chronic conditions
• require rehabilitation following surgery or major trauma
• have had a severe medical event such as a head injury
• require therapy or equipment support to maintain independence
• are terminally ill

Referrals for rehabilitation, home adaptation and/or equipment come from a range of health and social care professionals. The rehabilitation service carries out home assessments, where appropriate, and modifications to the patient’s home or the provision of equipment. The Rehabilitation Service is delivered by a team of Occupational Therapists, Physiotherapists and support workers including Technical Instructors, Rehabilitation Technicians, Occupational Therapy Assistants and Technical Officers. Physiotherapy for neck and back pain is also offered by a number of smaller independent providers under the Any Qualified Provider (AQP) scheme.
3.9 Musculoskeletal Interface Service

The Musculoskeletal Interface Service is a countywide service for patients with hip, knee and shoulder conditions. It is also currently running a Spinal Interface Pilot in the West of Cornwall. The Service is suitable for patients where there is a diagnostic uncertainty or where the patient is not ready, willing or able to undergo surgery. The Musculoskeletal Interface Service is staffed by Orthopaedic Specialist Physiotherapists and GP’s with Special Interest (GPwSI). They carry out:

- assessment
- diagnosis
- relevant investigations
- soft tissue and joint injections
- knee bracing
- tailored exercise programmes and self-management plans.

They work closely with the Orthopaedic Surgeons to ensure that when a patient is referred to them, all of the relevant information is provided and the patient is fully aware of the next steps in the process. All referrals are reviewed by a clinician when they are received by the service and some are sent straight on to see an Orthopaedic Surgeon without waiting to see an Interface clinician. 60% of all patients seen by the Musculoskeletal Interface Service are managed within primary care (Activity Review 2012-13). Referral rates to this service have been increasing.

Clinics are held throughout Cornwall and patients are offered an appointment in a location of their choice within 4 weeks of being referred by their GP. The MSK Interface Service also provides specialist Occupational Therapy intervention for both home assessment and specialist bracing.

Clinics for Hip, Knee & Shoulder patients are held at the following locations:

<table>
<thead>
<tr>
<th>Liskeard</th>
<th>Truro Health Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saltash</td>
<td>Falmouth Hospital</td>
</tr>
<tr>
<td>Launceston</td>
<td>Falmouth Health Centre</td>
</tr>
<tr>
<td>Bodmin</td>
<td>West Cornwall Hospital</td>
</tr>
<tr>
<td>St Austell</td>
<td>Helston Community Hospital</td>
</tr>
<tr>
<td>Newquay</td>
<td>Camborne &amp; Redruth Community Hospital</td>
</tr>
</tbody>
</table>

Clinics for Hip & Knee patients only are held at: Stratton, Hayle & Newlyn

3.10 Orthotics

Patients with arthritis frequently have difficulty with footwear and the orthotist or surgical appliance officer is trained provide suitable orthoses or arrange for surgical shoes to be made. For example, insoles may be provided to correct a flat foot deformity if this is causing symptoms. Other types of orthoses may be required, for examples splints.
The orthotics service is based at Royal Cornwall Hospital with clinics in the community hospitals. The service accepts GP referrals. It supplies and fits bespoke items including braces (for whom standard sizes provided by the Occupational therapy bracing service does not fit), footwear and hosiery.

### 3.11 Musculoskeletal Podiatry

The Musculoskeletal Podiatry Service in Cornwall aims to diagnose and treat musculoskeletal conditions of the foot and ankle as well as musculoskeletal conditions in other parts of the body resulting from foot and ankle dysfunction.

Musculoskeletal clinics take place in all the larger podiatry clinics, throughout Cornwall. They are coordinated by the specialist musculoskeletal podiatrists within their respective regions for Liskeard Hospital, Bodmin Hospital, St Austell Community Hospital, Falmouth Health Centre, Newquay Hospital, Truro Health Park, Camborne Redruth Community Hospital and West Cornwall Hospital.

### 3.12 Pain management

Pain is a common and sometimes disabling symptom in many musculoskeletal conditions – the estimated number of people experiencing musculoskeletal pain varies from 7 to 16 million (28). Most pain management services are based in primary care. In some circumstances, the pain might be so incapacitating, or caused by conditions (for example acute prolapsed intervertebral disc) that endanger other body functions, that hospital medical or surgical intervention is needed. Many patients have combined problems of severe pain and moderate to severe mental health disturbance as a result of pain. Such patients require a combined medical and psychological approach.

The Pain Service at Royal Cornwall Hospital is multi-professional and is provided by consultants, pain nurses, acupuncturists, physiotherapists and psychologists. It offers a service for both acute and chronic pain problems. The main aim of the pain clinic is to reduce the intensity of the patient’s pain as much as possible, and ideally to get rid of it completely. It’s often impossible to completely ease the pain and so the next aim of the clinics is to reduce the impact the pain has on the patient’s life. Wide ranges of treatments are available in pain clinics, including drugs, physical therapies and psychological support.

The pain service also offers a pain management programme which aims to lessen the impact of long-term pain. Pain management can assist musculoskeletal patients by providing information about their pain and their condition; using psychological techniques, as well as practical strategies, to manage pain and remain active despite pain; and improving their physical function and quality of life, while helping to reduce emotional distress and misplaced fears about the implications of pain. The pain management unit offers a full physiotherapist and psychologist assessment and management
within a cognitive - behavioural approach towards chronic pain. A Pain Management Programme aims to teach patients to self-manage their pain problems. It shows patients how to acquire the necessary skills and knowledge to reduce disability, become more physically active, and improve quality of life.

Inpatient treatments and day surgical procedures are undertaken at Royal Cornwall Hospital and St Michaels Hospital, Hayle. The outpatient service for patients with chronic pain problems are held at Treliske, St Austell, and West Cornwall Hospitals. Acupuncture clinic at St Austell and Procedure List at West Cornwall.

### 3.13 Services for children

Musculoskeletal conditions are the biggest cause of disability in children, accounting for failure to reach educational, social and physical milestones for many of those affected. In Cornwall there are paediatric rheumatology and orthopaedic services and a paediatric orthopaedic physiotherapy clinic. The paediatric service offers expert assessment, diagnosis and treatment of specific paediatric conditions e.g. Perthes, scoliosis and back pain, slipped upper femoral epiphysis, tip-toe walking. Alongside regular clinics at Royal Cornwall Hospital there are satellite clinics run at Wadebridge, St Austell, Camborne and Penzance.

### 3.14 Self management

Many musculoskeletal conditions such as osteoarthritis are long-term life changing conditions which can impact on people's lives in many ways and require long-term adjustments. NICE guidelines recommend the use of the “self-management” for conditions such as osteoarthritis (15). The Expert Patient Programme in Cornwall runs self-management courses which provide training and support for adults who are living with a long-term health condition. Through the programme clients are helped to manage their condition, develop confidence in daily management of their specific condition, meet others to share similar experiences and helped to develop more effective relationships with healthcare professionals. The courses are delivered by a team of trained volunteers who themselves have a long term condition and run over six weekly sessions of two and half hours. The course covers managing pain and fatigue, stress and relaxation, exercise and healthy eating, communication and action planning.

The Expert Patient Programme team run 6-8 courses a year across the whole county with the locality and dates depending on venues and availability of tutors. People with long term conditions are encouraged to self refer.
Section 4.1 Impact on the Individual

Musculoskeletal conditions can profoundly affect many aspects of the life of the individual, including physical and mental well-being, economic well-being and physical and emotional relationships. They impact not only on the life of the individual but also on carers, family and friends.

Chronic pain and physical disability impair social functioning and emotional well-being which seriously impacts on quality of life. People with chronic musculoskeletal conditions experience pain, reduced mobility, physical disability, fatigue and depression (31). The psycho-social needs of people with long term physical conditions such as these are often overlooked (32).

In a UK survey of people with arthritis (33) the majority of respondents reported experiencing severe levels of pain on a regular basis. The survey indicates that people have to endure significant limitations on everyday life due to unmanaged pain (33).

Coping on a daily basis with a chronic musculoskeletal condition can have a negative impact on mental health. Depression has been found to be more common in people with rheumatoid arthritis than in controls (34). In rheumatoid arthritis an important aspect is the unpredictability of the condition with patients experiencing acute "flare-ups" and changes in their reactions to treatment. Pain during flare-ups and fatigue can lead to low mood, depression and anxiety (35). Depression can also rise because of reduced ability to carry out "normal" household tasks, social interaction and recreational activities (36).

A study by Blake et al (37) found that compared to those without arthritis those with arthritis had a greater loss of sexual satisfaction over time with fatigue and joint symptoms being major factors. In a more recent study 56% of patients with rheumatoid arthritis reported that fatigue and pain placed limitations on sexual intercourse (38).

A large survey study in the Netherlands (39) which compared health related quality of life (using SF-36 or SF-24) across a wide range of long term conditions found that people with musculoskeletal conditions (included are back impairments, rheumatoid arthritis, osteoarthritis/other joint complaints) reported the lowest levels of physical functioning, role functioning and pain.

In recent years new treatment options for rheumatoid arthritis have emerged. Access to therapies has also increased. This has led to improvements in the quality of life of those with this condition including a reduction in the effect on work and functional ability (40).

A project carried out in 2012 looked at the experiences of people in Cornwall living with rheumatoid arthritis (www.cornwallarthritis.org.uk). The lack of public awareness about rheumatoid arthritis was raised as important issue that people have to tackle on a daily basis. Whilst some respondents
talked about the high levels of support they received from their families and partners others felt that sometimes their partner suffered from “carer’s fatigue”. A theme that emerged strongly was the need for support from those who are not family members or partners. There are no arthritis support groups in Cornwall (although there are plans to launch a group in November 2014) however for those living in the southeast of the county there is a support group in Plymouth.

Some women with rheumatoid arthritis spoke about the demands they faced as mothers. One person with a young family said that resting is often not an option. She found it difficult because when she felt unwell she had to ask other people to help but felt uncomfortable because she didn’t know when or whether she would be able to reciprocate. For some respondents the need to adapt their familiar roles was uncomfortable.

Participants reported significant barriers to participation in employment in Cornwall for people with rheumatoid arthritis. It was suggested that a local campaign be run to increase employer’s awareness of conditions such as RA which can be unpredictable and affect people’s ability to work. It was also suggested that more information be made available to people with RA on what their employment rights are and how to access benefits such as DLA or PIP which can make it more financially viable for people to stay in employment by working less hours.

Due to the rural nature of the county, the scattered population and the long distances involved one of the most important challenges is transport. For people with mobility problems transport in Cornwall can be difficult and expensive. Using mobility aids such as scooters and walkers can be difficult in villages and rural areas where there may be no or narrow pavements and high kerbs.
Section 5.1 Cost to the NHS

Musculoskeletal disorders lead to substantial healthcare costs. PCTs in England annually spend £5.3 billion on their management and treatment (41). Expenditure on Musculoskeletal conditions has increased rapidly in the past 5 years and in 2012/13 MSCs were the fourth highest area of NHS spending in England after mental health, problems of the circulation, and cancer. Direct medical costs such as drug treatments, imaging techniques and the number of individuals who receive joint operations have increased over time. The ageing of the population, obesity and the unit cost trends suggest that the costs of musculoskeletal health problems may rise in the future. In 2012/13 Cornwall and Isles of Scilly PCT spent 71.7 million on problems of the musculoskeletal system.

Figure 25: Musculoskeletal spend in Cornwall & IoS compared with other programme budgeting categories 2012-13

The spend on MSC by Cornwall & IoS PCT for 2012-13 ranks fourth after mental health (£103 million), circulation (£76 million) and cancer (£62 million). Cornwall and Isles of Scilly spends more on musculoskeletal conditions than the national average, as shown in Figure 25. It is also higher than the Office for National Statistics (ONS) cluster average.
Figure 26: Variation from the national average in MSK spend in comparison with other programme budgeting categories within Cornwall & IoS PCT 2012-13

Source 2 NHS England Programme Budgeting
http://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/

Figure 27 shows how the Cornwall & IoS spend on musculoskeletal conditions compares with that of other PCTs within the ONS cluster. Of the cluster PCTs only Blackpool PCT has higher spending.
**Figure 27: All PCTs expenditure per 100,000 populations for MSK conditions 2012-13**

Source: NHS England Programme Budgeting  
[https://www.england.nhs.uk/prog-budgeting/](https://www.england.nhs.uk/prog-budgeting/)

Figure 28 shows spending on musculoskeletal problems in Cornwall (Kernow CCG) compared to 10 similar CCGs and to the average across England. It shows that spend on all secondary admissions and the spend on elective and day case admissions is significantly higher than the average spent by 10 similar CCGs and in the worse quartile for England. The spend on FHS prescribing for musculoskeletal problems is significantly higher than the average spent by 10 similar CCGs.
### Figure 28: Musculoskeletal system data for Cornwall and Isles of Scilly (NHS Kernow CCG) 2011/12

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>England</th>
<th>Similar 10</th>
<th>Best 5 of 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Musculoskeletal System Problems (Excludes Trauma)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal - Spend on all secondary care admissions</td>
<td>46,452</td>
<td>39,092</td>
<td>41,337</td>
<td>37,380</td>
</tr>
<tr>
<td>Musculoskeletal - Spend on elective and day-case admissions</td>
<td>42,574</td>
<td>35,464</td>
<td>37,540</td>
<td>33,752</td>
</tr>
<tr>
<td>Musculoskeletal - Spend on non-elective admissions</td>
<td>3,885</td>
<td>3,608</td>
<td>3,794</td>
<td>3,190</td>
</tr>
<tr>
<td>Musculoskeletal - Spend on FHS prescribing</td>
<td>6,131</td>
<td>5,862</td>
<td>5,739</td>
<td>5,197</td>
</tr>
<tr>
<td>Musculoskeletal - All secondary care admissions</td>
<td>15.4</td>
<td>16.2</td>
<td>16.4</td>
<td>14.3</td>
</tr>
<tr>
<td>Musculoskeletal - Elective and day-case admissions</td>
<td>13.7</td>
<td>14.3</td>
<td>14.4</td>
<td>12.4</td>
</tr>
<tr>
<td>Musculoskeletal - Non-elective admissions</td>
<td>1.70</td>
<td>1.87</td>
<td>2.03</td>
<td>1.64</td>
</tr>
<tr>
<td>Musculoskeletal - Hip replacement, EQ-5D index, average health gain</td>
<td>0.39</td>
<td>0.42</td>
<td>0.43</td>
<td>0.44</td>
</tr>
<tr>
<td>Musculoskeletal - Knee replacement, EQ-5D index, average health gain</td>
<td>0.31</td>
<td>0.30</td>
<td>0.29</td>
<td>0.31</td>
</tr>
<tr>
<td>Musculoskeletal - Hip replacement, Oxford score, average health gain</td>
<td>19.9</td>
<td>20.1</td>
<td>21.0</td>
<td>21.6</td>
</tr>
<tr>
<td>Musculoskeletal - Knee replacement, Oxford score, average health gain</td>
<td>16.4</td>
<td>15.2</td>
<td>15.5</td>
<td>16.2</td>
</tr>
</tbody>
</table>

Source: NHS [link expired]
The spend on MSC in relation to outcomes for 2011-12 can be seen in Figure 29. This shows that Cornwall and IoS has a higher spend on MSC but the patient reported outcomes are not better when compared to other PCTs. However the difference between Cornwall and other PCTs is not statistically significant. NHS Kernow CCG has no areas where it is an outlier on spend or outcome. Here the outcome measure is the Hips EQ-5D Health Gain which compares the EQ-5D score before and after hip replacement.

The EQ-5D Index is a standardised measure of health status developed by the EuroQol Group in order to provide a simple, generic measure of health for clinical and economic appraisal. Applicable to a wide range of health conditions and treatments, it provides a simple descriptive profile for health status that can be used in the clinical and economic evaluation of healthcare as well as in population health surveys. The EQ-5D™ Index comprises the following five dimensions: Mobility; Self-care e.g. washing and dressing; Usual activities e.g. work, study, housework, family or leisure activities; Pain/discomfort; Anxiety/depression. Each dimension has three levels: no problems, some problems, severe problems.
Using the health gain after a knee replacement as the outcome measure the health gain relative to the spend is better although this is not statistically significant.
Figures 30 and 31 below show, for musculoskeletal problems, the percentage of expenditure across the different areas of health care in Cornwall IoS PCT compared to the ONS Cluster average and the national average. The largest proportion of money spent on MSK was in secondary care amounting to just over £63 million. This is 88% of the total spend on musculoskeletal conditions which compares to an average of 76.2% for all PCTs in England. The largest single expenditure of just over £43 million has been on in-patient care (elective & day case). This constitutes 60.4% of all spending on MSK care for Cornwall and Isles of Scilly, this compares to an average of 43.8% for all PCTs in England. The proportional expenditure across secondary care settings in Cornwall and Isles of Scilly is higher when compared with the average proportional expenditure for similar PCTs within the ONS cluster, and is also higher than the average expenditures for England.
Figure 31: Expenditure on musculoskeletal problems, percentage splits across care setting compared to benchmark; Cornwall & IoS PCT vs ONS Cluster average 2011-12.

Source: NHS England Programme Budgeting 2012-13
http://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/
No data is available on the cost to the NHS in Cornwall of low back pain. However we have national data which indicates the heavy burden to the NHS. Treating all types of back pain costs the NHS more than £1000 million per year. Most patients with low back pain will have resolution of their back pain with simple measures including simple analgesia, manipulation and exercise advice. However, the major part of the cost of back pain, is from the small proportion of persons with low back pain whose symptoms become chronic.
Effective Intervention

The following measures have been recommended by European Action Towards Better Musculoskeletal Health (62) as ways in which to prevent musculoskeletal ill health. They will also have many other health benefits for other chronic conditions such as cardiovascular disease. For some of these measures there is a strong evidence base, other interventions have less evidence of effectiveness, however, the research base is growing daily.

Bone health - the importance of a good start

Bone is living tissue that changes constantly, with old bone being removed and replaced by new bone. The amount of bone tissue in the skeleton is known as bone mass. Up to 90% of peak bone mass is acquired by age 18 in girls and age 20 in boys, which makes youth the best time to “invest” in bone health and optimise peak bone mass. The bone mass attained in childhood and adolescence is an important determinant of lifelong skeletal health. Health habits formed as children have an important impact on their risk of osteoporosis as an adult.

Peak bone mass is influenced by a variety of factors including gender, nutrition and physical activity. Before puberty, boys and girls develop bone mass at similar rates. After puberty, however, boys tend to acquire greater bone mass than girls. Women are at greater risk of osteoporosis therefore it is particularly important that girls build as much bone as possible to protect against this disease in later life.

The two most important lifelong bone health habits to encourage in children are proper nutrition and plenty of physical activity. Eating for healthy bones means getting plenty of foods that are rich in calcium which is an essential nutrient for bone health. A well-balanced diet including adequate amounts of vitamins and minerals such as magnesium, zinc, and vitamin D is important. Most children do not get enough calcium in their diets to help ensure optimal peak bone mass (for more information on bone health and the recommended calcium intake see https://nos.org.uk/). The best kind of physical exercise for children’s bones are weight-bearing activities like walking, running, dancing, tennis and football (children who tend to play outside will also have higher vitamin D levels). Normal sex hormone levels are also important for developing and maintaining bone health.

Physical activity to maintain musculoskeletal fitness

Physical activity is essential for good musculoskeletal health. It can increase bone density in adolescents, maintain it in adults and slow its decline in old age. Physical activity reduces the risk of fracture - the risk of hip fracture is lower in active people, reduced by up to 68% at the highest level of physical activity (63, 64). Various levels of walking are linked to a risk reduction of osteoarthritis ranging from 22% to 83% (63). A broad range of physical activities can reduce pain, stiffness and disability, and increase general mobility, gait, function, aerobic fitness and muscle strength in older adults with osteoarthritis (65).
There is growing evidence that improved musculoskeletal fitness is associated with an improvement in overall health status and a reduction in the risk of chronic disease and disability (4, 5). Musculoskeletal fitness appears to be particularly important for elderly people and their ability to maintain functional independence because reduced musculoskeletal fitness leads to inactivity and further dependence.

Maintain an ideal weight

There is a strong association between obesity and musculoskeletal conditions; evidence indicates that childhood obesity can have a significant effect on the musculoskeletal system in adulthood (66). Obesity and being overweight have long been recognised as potent risk factors for osteoarthritis, especially osteoarthritis of the knee (67). A US study demonstrated that women who lost about 5kg had a 50% reduction in the risk of development of symptomatic knee osteoarthritis (67). The same study also found that weight loss was strongly associated with a reduced risk of development of radiographic knee OA.

A balanced diet including daily allowance for calcium and vitamin D

Good nutrition and in particular an adequate intake of calcium and Vitamin D is essential for bone formation and the maintenance of musculoskeletal health.

Don’t smoke

Smoking is a well-established risk factor for the development of rheumatoid arthritis (68, 69). The relationship between smoking and osteoarthritis is less clear (70) but not starting or giving up has significant benefits for overall health which can in turn affect musculoskeletal health for example the ability to be physically active or additional income to eat a balanced diet.

The balanced use of alcohol and avoidance of alcohol abuse
Alcohol leads to an increased risk of some skeletal conditions, such as fractures and muscle diseases (71).

Promoting accident prevention programmes to avoid musculoskeletal injury

Musculoskeletal injuries have not only short term but also long term effects, for example they may increase the risk of osteoarthritis in later life. Prevention work around slips, trips and falls is already a priority in Cornwall and IoS and can deliver many benefits for those who take part including increased confidence, independence and better quality of life.

Wider health promotion

Health promotion in the workplace and related to sports activities is beneficial in avoiding abnormal and overuse of the musculoskeletal system.

Greater public awareness of the problems that relate to the musculoskeletal system and good quality information on what can be done to prevent or effectively manage the conditions is also beneficial.
What can interventions to prevent musculoskeletal ill-health achieve?

A comprehensive public health approach to the prevention of musculoskeletal conditions needs to involve people in many sectors including health care, health promotion, employers and policy makers. There is little research on the cost effectiveness of implementing the prevention measures discussed above. Appropriate data collection strategies are needed using epidemiological and economic expertise to understand where best to target prevention efforts.

For some measures the evidence of effect is clear. For example, research shows that the risk of knee osteoarthritis increases progressively with increased obesity. Very obese people with a BMI of 36 or more are 14 times more likely to develop osteoarthritis than those within the healthy BMI range (72). Weight loss of as little as 5 kg reduces the risk of developing knee osteoarthritis among women by 50% (67). It is estimated that if everyone in the community were physically active (leaving everything else unchanged), the number of osteoporosis cases would decrease by 27% (73).

Everyone is at risk of developing musculoskeletal conditions but their impact on people of all ages can be minimised by reducing obesity, increasing physical activity and by introducing interventions to avoid work place and sports injuries. Maintaining physical capability and musculoskeletal function as we grow older are important aspects of healthy ageing, enabling people to be active and independent for longer. Improving the musculoskeletal health of the people of Cornwall would result not only in improved individual health and well-being but would also result in substantial savings for the NHS, social care and employers.
Table 6. Prevention strategies for specific musculoskeletal conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Well population</th>
<th>At risk population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of prevention</td>
<td>To prevent incident disease</td>
<td>To prevent progression to established disease</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>Prevent corticosteroid–induced osteoporosis</td>
<td>Prevent first fracture in people at high risk for example: Osteoporosis prophylaxis</td>
</tr>
<tr>
<td></td>
<td>Weight-bearing and resistance exercises</td>
<td>Calcium &amp; vitamin D physical activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prevent falls and injuries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Support attendance at an educational programme</td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>Promote awareness of the risks of smoking</td>
<td>Ensure early recognition of symptoms and prompt referral to specialist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initiate disease-modifying therapy early</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Support attendance at an educational programme</td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td>Promote awareness of the need for weight control and joint injury prevention</td>
<td>Promote weight control and joint injury prevention</td>
</tr>
<tr>
<td></td>
<td>(sport, recreational &amp; occupational)</td>
<td></td>
</tr>
<tr>
<td>Back pain</td>
<td>Regular exercise, maintaining good posture and lifting correctly will all help.</td>
<td>Encourage the person to be physically active and continue with normal activities as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>far as possible. Reduce stress, anxiety and tension</td>
</tr>
<tr>
<td>Occupational musculoskeletal</td>
<td>Identify occupational risk factors</td>
<td>Adaptation of work place and organisation</td>
</tr>
<tr>
<td>injuries</td>
<td>Participation in accident awareness and prevention campaigns</td>
<td></td>
</tr>
</tbody>
</table>
References

27. NHS Atlas of Variation;


47. DWP Tabulation Tool. http://tabulation-tool.dwp.gov.uk/100pc/dla_ent/tabtool_dla_ent.html

48. DWP Tabulation Tool.


**Musculoskeletal health**

July 2015

Useful links

Health and Safety Executive Musculoskeletal Disorders http://www.hse.gov.uk/MSD/
Global Burden of Disease http://www.healthdata.org/gbd
Arthritis Research UK http://www.arthritisresearchuk.org/
Appendix 1

Programme budgeting

Programme budgeting is the analysis of NHS expenditure on specific healthcare conditions, such as cancer and mental health problems. There are currently 23 programme budgeting categories, which are based on the World Health Organisation (WHO) International Classification of Disease (ICD10). It is a retrospective appraisal of resource allocation broken down into ‘programmes’—with a view to influencing and tracking future expenditure in these programmes. Programme budgeting data are made available in a number of tools which support effective commissioning, such as the benchmarking spreadsheet, the programme budgeting Atlas and the Spend & Outcomes Tool.

How to interpret SPOT data

Each dot represents a programme budget category. The three largest spending programmes nationally (Mental Health, Circulatory Diseases and Cancer) are represented by larger dots.

The source data for the outcome measures shown on the chart can be found in the Spend and Outcome Tool (see http://www.rightcare.nhs.uk/index.php/resourcecentre/ccg-spend-and-outcomes-tool/).

Z score:
Spend: By population, Population: Unified Weighted
A programme lying outside the solid +/- 2 z scores box, may indicate the need to investigate further. If the programme lies to the left or right of the box, the spend may need reviewing, and if it lies outside the top or bottom of the box, the outcome may need reviewing. Programmes outside the box at the corners may need a review of both spend and outcome.
Programmes lying outside the dotted/thin +/- 1 z score box may also warrant further exploration.
A z score essentially measures the distance of a value from the mean (average) in units of standard deviations. A positive z score indicates that the value is above the mean, whereas a negative z score indicates that the value is below the mean. A z score below -2 or above +2 may indicate the need to investigate further.
Appendix 2

PROMS

A patient-reported outcome measure (PROM) is a series of questions that patients are asked in order to gauge their views on their own health. The name is fairly self-explanatory: PROMs are completed by patients themselves. The purpose of PROMs is to get patients’ own assessment of their health and health-related quality of life – PROMs questionnaires do not ask about patients’ satisfaction with or experience of health care services, or seek their opinions about how successful their treatment was.

The questionnaires that patients are asked to complete shortly before and some months after surgery comprise a disease-specific instrument, a generic instrument, and a series of additional questions about the patient’s health and symptoms. Those currently in use are shown below.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Condition-specific PROM</th>
<th>Generic PROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee surgery</td>
<td>Oxford Knees Score</td>
<td>EQ-5D</td>
</tr>
<tr>
<td>Hip surgery</td>
<td>Oxford Hips Score</td>
<td>EQ-5D</td>
</tr>
</tbody>
</table>

Generic PROMs measure health in terms of the effect of any given state of health on the ability to function and enjoy life. The focus is on the impact that a person’s state of health has on his or her overall life. The most widely used instrument of this sort in the United Kingdom and Europe is the EQ-5D (Brooks 1996). Patients answer five questions, each on a different dimension of their health. In addition, they are asked to provide an overall assessment of their health, on a scale ranging from 0 (worst possible health) to 100 (best possible health).

The PROMS data used in this report is from “Hospital Episode Statistics (HES) / PROMs, The NHS Information Centre for Health and Social Care, Provisional Data, April 2009 to March 2010” which states “This analysis covers approximately 40% of all procedures, as there is a 60% response rate to questionnaires and 68% of returned questionnaires are successfully linked to HES data to allow analysis of patient characteristics. “
Appendix 3
National Hip Fracture Database

The National Hip Fracture Database (NHFD) is a clinically led, web-based quality improvement initiative commissioned by the Healthcare Quality Improvement Partnership (HQIP) and managed by the Royal College of Physicians (RCP). All 182 eligible hospitals in England, Wales and Northern Ireland are now regularly submitting data to NHFD, the largest hip fracture database in the world, with:
• a third of a million cases recorded since its launch in 2007
• over 95% of all new hip fracture cases being documented
• 5,700 records being added every month.

This report describes casemix, care and outcomes for 64,838 people who were admitted with a hip fracture between 1 January 2013 and 31 December 2013, along with a casemix-adjusted analysis of 30-day mortality for the three calendar years 2011–13. Outcome after a hip fracture depends on the overall health of the individual patient. Regional variations in the age/sex distribution of the population, in levels of socio-economic deprivation and in patterns of public health are well recognised. Fair comparisons of outcome between hospitals should take such variation in casemix into account.

Most patients with hip fracture are elderly, but age is only one marker of frailty, and inter-hospital variation in anaesthetic grade, normal residence, walking ability, fracture type and mental test score have all been described. The NHFD uses casemix adjustment to help ensure that units dealing with an older or a frailer case load are judged fairly against others with younger or fitter patients.

Length of stay (LOS) is the main determinant of the initial economic impact of a hip fracture. Previous reports have documented progressive reductions in this, reflecting improvements in surgical care, rehabilitation, discharge planning and post-discharge care.

NICE published its clinical guideline The management of hip fracture in adults (CG124)1 in 2011 and its quality standard (QS16)2 in 2012. The NHFD audits patient care against several of the QS16 standards.
Standard 3: People with hip fracture have their cognitive status assessed, measured and recorded from admission
Standard 5: People with hip fracture have surgery on the day of, or the day after, admission
Standard 7: People with displaced intracapsular fracture receive cemented arthroplasty, with the offer of total hip replacement if clinically eligible.
Standard 11: People with hip fracture are offered a multifactorial risk assessment to identify and address future falls risk, and are offered individualised intervention if appropriate.
Standard 12: People with hip fracture are offered a bone health assessment to identify future fracture risk and offered pharmacological intervention as needed before discharge.

Casemix adjustment
The Clinical Effectiveness Unit (CEU) at the Royal College of Surgeons of England (RCS) has developed models of casemix adjustment specific to hip fracture. These models have been used in analysing two key measures: death within 30 days of admission with hip fracture, and return to own home within 30 days.

Best Practice Tariff

The Department of Health (England) introduced BPT in 2010 as part of their ‘payment by results’ strategy. Care is measured against a number of criteria and, if all are achieved, then an additional tariff is paid to the provider hospital. BPT for hip fracture care was one of the first payments by results to be paid on an individual patient basis (currently £1,335 per patient), rather than based on achieving a target level and receiving an all-or-nothing payment. It was hoped that this would safeguard patients requiring a period of optimisation prior to surgery.
Appendix 4

NICE Quality Standard for Hip Fracture

1 People with hip fracture are offered a formal hip fracture programme from admission.
2 The hip fracture programme team retains a comprehensive and continuing clinical and service governance lead for all stages of the pathway of care, including the policies and criteria for both intermediate care and early supported discharge.
3 People with hip fracture have their cognitive status assessed, measured and recorded from admission.
4 People with hip fracture receive prompt and effective pain management, in a manner that takes into account the hierarchy of pain management drugs, throughout their hospital stay.
5 People with hip fracture have surgery on the day of, or the day after, admission.
6 People with hip fracture have their surgery scheduled on a planned trauma list, with consultant or senior staff supervision.
7 People with displaced intracapsular fracture receive cemented arthroplasty, with the offer of total hip replacement if clinically eligible.
8 People with trochanteric fractures above and including the lesser trochanter (AO classification types A1 and A2) receive extramedullary implants such as a sliding hip screw in preference to an intramedullary (IM) nail.
9 People with hip fracture are offered a physiotherapist assessment the day after surgery and mobilisation at least once a day unless contraindicated.
10 People with hip fracture are offered early supported discharge (if they are eligible), led by the hip fracture programme team.
11 People with hip fracture are offered a multifactorial risk assessment to identify and address future falls risk, and are offered individualised intervention if appropriate.
12 People with hip fracture are offered a bone health assessment to identify future fracture risk and offered pharmacological intervention as needed before discharge from hospital.