STATE OF MUSCULOSKELETAL HEALTH 2018

Arthritis and other musculoskeletal conditions in numbers
Musculoskeletal conditions are extremely common, however many people whose lives affected by them are still not receiving recognition they deserve and support they need. Millions of people across the UK are limited by the pain, stiffness and fatigue caused by musculoskeletal conditions, such as arthritis or back pain.

These conditions affect all aspects of everyday life, by limiting what people can do and their ability to be independent. This in turn can have a devastating impact on a person’s overall quality of life. In fact, musculoskeletal conditions remain the leading cause of years lived with disability (YLDs) and the third largest cause of disability adjusted life years (DALYs) in the UK today.¹

Musculoskeletal conditions are a costly and growing problem. The prevalence of musculoskeletal conditions is expected to continue to increase, due to our ageing population, rising levels of obesity and physical inactivity. The latter two are major modifiable risk factors in the development of a musculoskeletal condition.

What is the state of musculoskeletal health?

This compendium of musculoskeletal health data is an important resource providing the best picture of the burden and impact of eight of the most prevalent musculoskeletal conditions in the UK. Where available, data refers to the whole of the UK, however due to gaps in coverage some findings are restricted to England.

The burden of musculoskeletal illness can be defined by the number of people affected by a condition and at risk of developing the disease, but also by its wider impact.

Musculoskeletal conditions can have a significant impact both on a personal and societal level. An individual’s home life, relationships and work can all be affected, causing repercussions for society and the wider economy, for example through the cost of treatment or lost productivity.

What methodology was used?

Evidence used in this report was gathered from the best available qualitative and quantitative data. Research articles were selected through systematic literature reviews and where possible restricted to UK population cohorts or comprehensive meta–analyses. This compendium presents data from sound data sources, including but not limited to:

1. national datasets, surveys and audits;
2. findings from observational, surveillance and modelling studies;
3. musculoskeletal sector charity reports.

Who is it for?

The State of Musculoskeletal Health 2018 is a resource for health professionals, policy makers, public health leads and anyone interested in musculoskeletal health. We believe that with the best information you can build awareness, make more informed decisions, feel more confident and ultimately help more people with musculoskeletal conditions.
**Arthritis** - a general term that most people use to mean painful joints. Medically, it refers to many different conditions leading to inflamed or damaged joints.

**Comorbidity** - any additional health conditions that people may have, beyond the main condition being addressed.²

**Disabled** - someone with a long-term condition that reports it reduces their ability to carry out day-to-day activities, as defined by the Equality Act 2010.³

**Disability adjusted life-year (DALY)** - A single metric of overall disease burden combining years of life lost (YLLs) due to mortality and years lived with disability (YLDs). One DALY can be thought of as one lost healthy life year.⁴

**Employment** - People aged 16 or over who did some paid work in the reference week (whether as an employee or self-employed); those who had a job that they were temporarily away from (e.g. on holiday); those on government-supported training and employment programmes and those doing unpaid family work (e.g. working in a family business).⁵

**Finished Consultant Episodes (FCEs)** - one episode of care within an inpatient stay under one responsible consultant.

**Fit note** - issued to patients by doctors following an assessment of their fitness for work. People who are off work sick for more than seven days will normally need to provide their employer with a fit note.

**Inactive** - Participating in less than 30 minutes of moderate intensity physical activity (any activity where the effort put in is enough to raise your breathing rate) per week.

**Incidence** - the rate of new (or newly diagnosed) cases of disease, generally reported as the number of new cases occurring within a period of time (e.g. per month or year).

**Literature review** - a review of information found in the literature related to a selected area or topic of research.

**Meta-analysis** - a study design that systematically combines and assesses previous qualitative and quantitative studies about a topic or research area in order to develop a single conclusion.

**Mortality** - a term used to describe the number of people who died within a population. A mortality rate is the number of deaths due to a specific cause divided by the total population over a given period.

**Multimorbidity** - a person living with multimorbidity has two or more long-term chronic conditions.²

**Musculoskeletal conditions** - a broad range of health conditions affecting bones, joints and muscles, pain syndromes and rarer conditions of the immune system.

**Prevalence** - the percentage of a population that is affected with a disease at a given time

**Risk Factor** - any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or disorder. Some risk factors are modifiable, because you can change them (e.g. smoking, obesity, diet) other risk factors are non-modifiable, because you can’t directly change them (e.g. age, sex, family history).

**Unemployment** - unemployment refers to people without a job who were able to start work in the two weeks following their Annual Population Survey (APS) interview and who had either looked for work in the four weeks prior to interview or were waiting to start a job they had already obtained.⁵

**Work days lost** - the number of work days lost for all people in employment aged over 16 years due to sickness absence.

**Work related musculoskeletal disorders (WRMSDs)** - a self-reported musculoskeletal condition which a person thinks has been caused or made worse by their current or past work.

**Years lived with disability (YLD)** - years of life lived with any short-term or long-term health loss.⁴
The term ‘musculoskeletal conditions’ is often used to include a broad range of health conditions affecting the bones, joints, muscles and spine, as well as rarer autoimmune conditions such as lupus. In fact, musculoskeletal conditions comprise over 100 different diseases and syndromes that interfere with people’s ability to carry out their normal daily activities. Common symptoms include pain, stiffness and a loss of mobility and dexterity.

Broadly speaking there are three groups of musculoskeletal conditions:6

- **Inflammatory conditions** (e.g. rheumatoid arthritis)
  - Affects any age.
  - Often rapid onset.
  - Common. (e.g. over 400,000 adults in the UK have rheumatoid arthritis).
  - Can affect and part of the body including skin, eye and internal organs.
  - Treated by suppressing the immune system.
  - Urgent specialist treatment needed usually provided in hospital outpatients.
  - Genetic factors, sex, smoking, obesity and diet.

- **Conditions of musculoskeletal pain** (e.g. osteoarthritis, back pain)
  - More common with rising age.
  - Gradual onset.
  - Very common. (e.g. 8.75 million people in the UK have sought treatment for osteoarthritis).
  - Affects the joints, spine and pain system.
  - Treated with physical activity and pain management, and in severe cases joint replacements.
  - Treatment based in primary care.
  - Age (late 40’s onwards), sex, genetic factors, physical injury, obesity and previous joint illness or injury.

- **Osteoporosis and fragility fractures** (e.g. fracture after fall from standing height)
  - Affects mainly older people.
  - Osteoporosis is a gradual weakening of bone. Fragility fractures are sudden discrete events.
  - Common. (e.g. 300,000 fragility fractures occur in the UK each year).
  - Hip, wrist and spinal bones are most common sites of fractures.
  - Medication to strengthen bones, falls prevention fracture treatment.
  - Prevention is based in primary and ambulatory care; fractures may require surgery.
  - Age, genetic factors, smoking, alcohol, inflammatory disorders, poor nutrition and low physical activity.
What is the scale of the problem?

An estimated **17.8 million** people live with a musculoskeletal condition in the UK. That’s around **28.9%** of the total population.\(^a\), \(^1\)

- **7.7 million males** have musculoskeletal conditions (male prevalence **25.9%**).\(^1\)
- **10.1 million females** have musculoskeletal conditions (female prevalence **31.8%**).\(^1\)

Of the total who have musculoskeletal conditions:\(^1\)

- **2.7m** are aged under 35 years (15.4%)
- **9.1m** are aged 35 to 64 years (51.1%)
- **6.0m** are aged 65 and over (33.5%)

**UK estimates by condition:**

**Inflammatory conditions**
- Over 400,000 people have rheumatoid arthritis.\(^7\)
- 12,000 children have juvenile idiopathic arthritis.\(^8\)
- 200,000 people have ankylosing spondylitis.\(^6\)
- 1.5 million people have gout.\(^7\)

**Conditions of musculoskeletal pain**
- Over 8.75 million people aged 45 and over have sought treatment for osteoarthritis.\(^10\)
- 10 million people in England and Scotland alone have persistent back pain.\(^7\)
- Up to 2.8 million people in the UK have fibromyalgia.\(^11\)

**Osteoporosis and fragility fractures**
- Around 3 million people in the UK have osteoporosis.\(^12\)
- Over 300,000 fragility fractures occur each year.\(^13\)

\(^a\)It is difficult to accurately determine how many people have arthritis only or arthritis and other musculoskeletal conditions in the UK. The data currently available on specific conditions comes from several different sources (e.g. hospital records, national survey’s, statistical models, and registers) and doesn’t always cover the same time periods. Additionally, when people have more than one condition there is a risk of double counting or of people being missed from the data if arthritis is not recorded as their primary condition. As a result, you cannot simply add the estimates above together and have an accurate total of the number with arthritis or musculoskeletal conditions. For these reasons we currently rely on the Global Burden of Disease study to provide us with an estimate of the total number of people with any musculoskeletal condition in the UK today.
The relationship between deprivation, age and prevalence.\(^b\)

People in the most deprived areas are much more likely to report arthritis or back pain than people in equivalent age groups who live in less deprived areas.\(^2\)

Long-term conditions are associated with social class and type of occupation. People in the poorest communities have a 60% higher prevalence of long-term conditions than those in the richest.\(^14\)

40% of men and 44% of women in the poorest households report chronic pain, compared to 24% of men and 30% of women in the richest households.\(^15\)

Among people aged 45–64 the prevalence of arthritis\(^c\) is more than double in the most deprived areas (21.5%) compared to the least deprived areas (10.6%).\(^2\)

Those people in the most deprived areas experience back pain\(^c\) at a relatively young age: people of working age (45–64 years) are almost twice as likely to report back pain (17.7%) as those from least deprived areas.\(^2\)

The following tools contain musculoskeletal health metrics to help local government and health service professionals plan for musculoskeletal care and services:

Artitis Research UK Musculoskeletal Calculator
Public Health England’s Fingertips Tool
NHS RightCare CCG focus pack tool
Local Government Association’s LG Inform

\(^b\)Findings based on England data only.
\(^c\)Based on Wave 2 of the England GP Patient Survey (June-September 2014) analysed by Arthritis Research UK.
Key factors affecting musculoskeletal health
Inactive people are at increased risk of developing a painful musculoskeletal condition in later life. 21-32% of adults (19+) in the UK do less than 30 minutes of physical activity per week.\textsuperscript{16, 17, 18, 19}

Around 16% of people aged 16-64 in England and Scotland are inactive vs. 40% of people aged over 65.\textsuperscript{20}

### Physical activity levels of adults (19+ years)\textsuperscript{d} in 2016

<table>
<thead>
<tr>
<th></th>
<th>Active 150+ minutes</th>
<th>Some 60-159 min</th>
<th>Low 30-59 min</th>
<th>Inactive 30 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>11%</td>
<td>4%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Scotland</td>
<td>11%</td>
<td>5%</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td>Wales</td>
<td>14%</td>
<td>32%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>13%</td>
<td>6%</td>
<td>26%</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{d}UK physical activity guidelines for adults 19+: Minimum of 150 mins of moderate intensity activity per week in bouts of 10 mins or more OR 75 mins of vigorous intensity activity spread across the week, or a combination of moderate and vigorous; Physical activity levels in Wales include people aged 16+.

### Percentage of people (16+) inactive with long-lasting\textsuperscript{e} musculoskeletal conditions\textsuperscript{20, 21}

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Scotland</th>
</tr>
</thead>
<tbody>
<tr>
<td>% in inactive</td>
<td>44.6%</td>
<td>41.2%</td>
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</table>

\textsuperscript{e}Illnesses lasting or expected to last 12 months or more.

33.4% of adults (40-60 years) in England with a limiting disability or illness are physically inactive, compared to 16.7% of able-bodied adults.\textsuperscript{22}

### Keeping physically active is important for musculoskeletal health.

Physical activity reduces the risk of developing joint and back pain by 25%.\textsuperscript{23}

Exercise generally reduces overall pain for people with a musculoskeletal condition.\textsuperscript{2} People who are physically active are less likely to report chronic musculoskeletal pain.\textsuperscript{23}

Low bone density can lead to a higher risk of osteoporosis and result in fractures – up to 50% of hip fractures could be avoided with regular physical activity.\textsuperscript{24}
Musculoskeletal problems constitute one of the greatest threats to the health of people who are obese.

Over half (62%) of adults (16+) in the UK are classified as being overweight or obese.\textsuperscript{16, 17, 18, 19}

In 2016, the average BMI of hip and knee replacement patients in the UK was 28.8 (overweight) and 31.0 (obese) respectively.\textsuperscript{30}

Obesity increases the risk of developing other musculoskeletal conditions. People who are obese are four times more likely to develop back pain than those with a healthy body weight.\textsuperscript{31, 32}

Adolescents who are obese are more likely to experience persistent or recurrent joint pain, including knee pain, and obesity is also associated with more severe pain overall.\textsuperscript{33}

Obese people are twice as likely to develop gout and tend to develop it at a younger age.\textsuperscript{34}

For reasons not well understood, being overweight or obese also significantly increases the risk of developing rheumatoid arthritis.\textsuperscript{35, 36}

**Percentage of people (16+) overweight or obese with long-lasting* musculoskeletal conditions**\textsuperscript{20, 21}

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Scotland</th>
</tr>
</thead>
<tbody>
<tr>
<td>No condition</td>
<td>73.7%</td>
<td>74.6%</td>
</tr>
<tr>
<td>Musculoskeletal condition</td>
<td>58%</td>
<td>60.2%</td>
</tr>
</tbody>
</table>

In 2016, the average BMI of hip and knee replacement patients in the UK was 28.8 (overweight) and 31.0 (obese) respectively.\textsuperscript{30}

**Obesity increases the risk of developing osteoarthritis and need for joint replacement.**

Obesity directly damages weight-bearing joints such as knees and hips because of the abnormally high loads they have to carry.\textsuperscript{25}

Obese people are more than twice as likely to develop osteoarthritis of the knee than those of normal body weight\textsuperscript{16}, with many estimates putting the risk between four and six times greater.\textsuperscript{27, 28, 29}

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*Illnesses lasting or expected to last 12 months or more
**Multimorbidity**

The number of people living with multimorbidity is growing.

By 65 years of age, most people have multimorbidity. Over half (54.0%) of the population aged over 65 in England have two or more long-term chronic conditions (multimorbidity).\(^3^7\)

In Scotland, the prevalence of people with multimorbidity\(^g\) increases from 64.9% among those aged 65–84 years to 81.5% among those aged 85 years or over.\(^3^8\)

There is a strong association between multimorbidity and deprivation: people in the most deprived areas develop multimorbidity 10–15 years earlier compared to those in the least deprived.\(^3^9\)

By the year 2025 the number of people living with one or more serious long-term conditions in the UK will increase by nearly **one million**, rising from **8.2 million** to **9.1 million**.\(^4^0\)

Musculoskeletal conditions are very common in multimorbidity.

Nearly **four out of ten** people (36%) with multimorbidity are living with a physical and a mental health condition.\(^2\)

Among people over 45 years of age who report living with a major long-term condition\(^h\), more than **three out of 10** also have a musculoskeletal condition.\(^2\)

By age 65 years, almost **five out of 10** people with heart, lung or mental health problems\(^h\) also have a musculoskeletal condition.\(^2\)

Pain and functional limitations of arthritis make it harder to cope with multimorbidity, causing fatigue and depression.

**Four out of five** people with osteoarthritis have at least one other long-term condition such as hypertension, cardiovascular disease or depression.\(^2\)

Depression is the most common comorbidity among people with rheumatoid arthritis, affecting **one in six people**.\(^4^1\)

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> Multimorbidity increases with age and over time\(^3^7\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of people aged over 45 years (%)</th>
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<tbody>
<tr>
<td>2015</td>
<td>45.7% (65-74) to 68.7% (85+)</td>
</tr>
<tr>
<td>2025</td>
<td>64.4% (65-74)</td>
</tr>
<tr>
<td>2035</td>
<td>67.8% (65-74)</td>
</tr>
</tbody>
</table>

> Based on data extracted from 314 medical practice in Scotland in March 2007.

> Based on Wave 2 of the England GP Patient Survey (June-September 2014) analysed by Arthritis Research UK.
What is the impact
The pain and disability caused by arthritis and other musculoskeletal conditions result in a substantial loss in quality of life.

- 78% of people with arthritis experience pain most days.
- 41% of people with arthritis can't stand up for long periods of time.
- 53% of people with arthritis feel they are a nuisance to their family.

Musculoskeletal conditions such as low back pain are the top causes of years that people live with disability.

- In 2016, 23.3% of years lived with disability were attributable to musculoskeletal conditions in the UK.
- Over half (52.4%) of all working age (16-64 years) disabled people in the UK experience musculoskeletal conditions.

Many people with musculoskeletal conditions rely on welfare benefits to cover the extra costs resulting from their condition.

- 42.4% of people (608,168) in ‘receipt of’ or ‘entitled to’ Attendance Allowance in GB were recorded with a musculoskeletal condition as their primary disability condition.
- One third (33.3%) of people (549,614) receiving Personal Independence Payment (PIP) in GB are recorded with musculoskeletal disease as their primary disability condition.

Of people receiving PIP in GB recorded with a musculoskeletal condition:

- 41.8% Arthritis
- 14.2% Chronic pain syndromes
- 23.6% Back pain
- 20.5% Other

People with arthritis and related conditions are not always aware of the welfare benefits they are entitled to.

- Nearly three out of 10 (27%) people with arthritis are not aware of their entitlements.
- Less than two out of 10 (17%) people with arthritis believed they were claiming all the benefits they were entitled to.
- Around four out of 10 (42%) people with arthritis believed they did not have welfare entitlements.

Depression is four times more common among people in persistent pain compared to those without pain.
People with musculoskeletal conditions are less likely to be in work than people without health conditions, and more likely to retire early.

63% of working age adults with a musculoskeletal condition are in work compared to 81% of people with no health conditions.52

Some musculoskeletal conditions can be caused or made worse by work over time.

39% (507,000) of all work-related illness cases in GB in 2016-17 are due to work related musculoskeletal disorders (WRMSDs), resulting in 8.9 million working days lost (17.5 days/case).53

The prevalence of musculoskeletal conditions in the workforce is set to increase.

By 2030, 40% of the working age population will have a long-term condition.48

In the coming years the workforce is projected to get older.48

Average age 2016: 39
Average age 2030: 43

Being in good employment is protective of health. Conversely unemployment contributes to poor health.47

One in eight of the working age population reported having a musculoskeletal problem.48

Musculoskeletal conditions are a leading cause of sickness absence. 30.8 million working days were lost in 2016, accounting for 22.4% of total sickness absence.69

Many people with musculoskeletal conditions want to work, but they need the right support.

One in five fit notes1 (466,556) issued to patients by GPs in England in 2015-16 were for musculoskeletal conditions, second to mental health and behavioural disorders.50

41.9% of fit note episodes1 for musculoskeletal conditions last 5 or more weeks.50

25.4% (6,360) of people receiving Access To Work to support them to be in work had a musculoskeletal problem, but many more could benefit.51

30.8m working days lost

22.4%
Musculoskeletal conditions are largely managed in primary and community-based care, however services are accessed across all levels of care.

One in five people (20%) consult a GP about a musculoskeletal problem every year.\(^{54}\)

Musculoskeletal problems are addressed in one in eight (12%) GP appointments.\(^{55}\)

In primary care, people with multimorbidity are frequent users of services: six out of 10 (58%) patients have multimorbidity, but account for eight out of 10 (78%) GP consultations.\(^{56}\)

1.36 million admissions to consultant care were due to musculoskeletal conditions in England in 2016-17, resulting in 2.27 million bed days. That’s 8.2% of all admissions to consultant care.\(^{57}\)

### Osteoarthritis is the primary cause of 90% and 99% of primary hip and knee replacements.\(^{27}\)

- **101,651 hip replacements\(^{k}\)** carried out in 2016\(^{30}\) (+3.5% since 2015)
- **108,713 knee replacements\(^{k}\)** carried out in 2016\(^{30}\) (+3.8% since 2015)

\(^{k}\)England, Wales, Northern Ireland and the Isle of Man.

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### The mean average wait times for hip and knee replacements in 2015 in England:\(^{58}\)

- **Hip** - **105.2 days** (103.2 days in 2014, +1.4% change)
- **Knee** - **105.4 days** (107.0 days in 2014, –1.5% change)

In the UK, about 75,000 hip fractures occur annually. The incidence is projected to increase by 34% in 2020, with an associated increase in annual expenditure.\(^{59}\)

Rate of hip fractures in people aged 65 and over in England is 575 per 100,000 population in 2016-17.\(^{60}\)

Fracture Liaison Services (FLS) reduce the risk of subsequent fractures by up to 50% in people with fragility fractures.\(^{61}\)

Only 42% of healthcare organisations in the UK provide an FLS to routinely assess people who have broken a bone for osteoporosis.\(^{62}\)

Half (51%) of gross local authority expenditure on adult social care is on people over 65 years, of which a substantial number will have a musculoskeletal condition.\(^{63}\)
Musculoskeletal ill-health results in significant costs that fall on individuals, employers, the health service and the wider economy.

Musculoskeletal conditions account for the third largest area of NHS programme spending at £4.7 billion in 2013-14. The total annual cost to the UK economy of working-age ill health, including direct health costs and indirect (lost productivity, sickness absence, informal care) costs was estimated to be £103–129 billion.

Treating the two most common forms of arthritis—osteoarthritis and rheumatoid arthritis—is estimated to cost the economy £10.2 billion in direct costs to the NHS and wider healthcare system this year. Cumulatively, the healthcare cost will reach £118.6 billion over the next decade.

Back pain cost the UK economy an estimated £1.6 billion direct and £10 billion indirect costs in 2000.

The hospital costs of hip fractures alone are estimated at £2 billion per year in the UK.

The cost of ankylosing spondylitis in the UK was estimated at roughly £19,016 per person per year in direct and indirect costs in 2010. That’s an estimated total cost of £3.8 billion.

Approximately 33.5 million prescriptions (+0.2% in 2015) were dispensed for musculoskeletal and joint diseases in England in 2016, costing approximately £205.8 million (+8.0% in 2015).

Conditions such as back pain account for around 40% of all sickness absence in the NHS and costs around £400 million per year.

The cost of working days lost due to osteoarthritis and rheumatoid arthritis was estimated at £2.58 billion in 2017 rising to £3.43 billion by 2030.

Costs of presenteeism (attending work while ill) are estimated to be £30 billion annually.


This includes direct costs (NHS healthcare and other medical costs (i.e. prescriptions, home care)).

This includes direct costs (NHS healthcare, community care and private services) and indirect costs (work loss, absenteeism, reduced productivity and informal care).
Economic benefits of musculoskeletal research

Every £1 invested in medical research delivers a return equivalent to around 25p every year, forever.\(^1\)

Investment into musculoskeletal research is money well spent.

A new study estimating the returns generated by public and charitable investment for musculoskeletal research in the UK has found that research into musculoskeletal conditions, such as osteoarthritis, rheumatoid arthritis and back pain, not only results in improved health outcomes but also generates economic gain for the UK.

Every £1 invested in musculoskeletal research leads to 7p of direct health benefits with a further 15-18p in benefits to the wider economy (i.e. spill over) every year, forever.\(^1\)

£1.6 billion of research funding in the UK was invested by medical research charities in 2016.\(^72\)

Government and charity research funding dedicated to musculoskeletal conditions remains disproportionately small compared to the disease burden attributed by conditions like arthritis and back pain.

Although musculoskeletal conditions account for around 9% of Disability Adjusted Life Years (DALYs) in the UK they received only 2.8% of research funding in 2014.\(^73\)

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*Figure for mental health research subject to greater uncertainty than others, due to methodology.
Condition specific statistics

Prevalence, risk factors, comorbidities, and impact
Axial spondyloarthritis (including ankylosing spondylitis)

Axial spondyloarthritis (axSpA) is an umbrella term used to describe a spectrum of long-term (chronic) inflammatory conditions primarily affecting the spine and/or sacroiliac joints, resulting in the main symptom of chronic back pain. It includes both people who have the visible changes or damage of the sacroiliac joints as seen on x-ray (ankylosing spondylitis) as well as people who have the symptoms of chronic back pain without the classic changes or damage seen on ordinary x-rays of the sacroiliac joints (non-radiographic axSpA).

Inflammation of the spinal joints and surrounding structures causes pain, stiffness and limitation in the flexibility of the back and causes new bone to grow at the sides of the vertebrae. Eventually the individual bones of the spine may link up and fuse. Non-radiographic axial spondyloarthritis progresses to ankylosing spondylitis at a rate of about 12% over 2 years.74

To understand more about the causes, diagnosis and treatment of ankylosing spondylitis download our information booklet. Read more
Who is affected?

Prevalence
Estimates suggest 0.3-1.2% of the adult (18–80 years) UK primary care population has axial spondyloarthritis, depending on the classification criteria used.75

Approximately 200,000 people in the UK have ankylosing spondylitis.76

Common risk factors

Age
Ankylosing spondylitis usually occurs between 20–30 years of age, the average age of onset is 24 years.78 90–95% of people are aged less than 45 years at disease onset.75

Sex
Approximately 50% of non-radiographic axial spondyloarthritis patients are female,79, 80 however, males are more likely to progress to have the structural changes of ankylosing spondylitis compared to females.81

Genetics
Ankylosing spondylitis is more common in people with the human leukocyte antigen HLA–B27 gene. A person who is HLA–B27 positive has a 5–6% chance of developing ankylosing spondylitis and this risk is increased if a first degree relative has the disease.82,83

Smoking
Smoking is associated with higher disease activity, increased structural damage on MRI and as a result lower physical functioning in people with ankylosing spondylitis.84, 85
Axial spondyloarthritis (incl. ankylosing spondylitis)

Common comorbidities

**Osteoporosis and fragility fractures**
People with ankylosing spondylitis are at increased risk of experiencing loss in bone mineral density (BMD) and osteoporosis, which can lead to spinal fractures.

1–9% of people with ankylosing spondylitis experience spinal fractures, thus increasing the need for surgery.86

19–62% of people with ankylosing spondylitis have decreased BMD. High rates have even been reported in patients with <10–year disease duration.86

Up to 25% of people with ankylosing spondylitis eventually develop complete fusion of the spine which leads to substantial disability and restriction, increasing risk of fractures.88, 89

**Depression**
People with ankylosing spondylitis experience high rates of self–reported depressive symptoms often in response to the pain and functional limitations caused by their condition.90

10% of people with ankylosing spondylitis have doctor–diagnosed depression compared to 6% of the general population seeking healthcare during a 13–year observation period.91

Impact on quality of life and work capacity

**Disability**
The most prevalent quality of life concerns in people with ankylosing spondylitis include stiffness, pain, fatigue and poor sleep.92

**Work**
Withdrawal from work is three times more common in people with ankylosing spondylitis than in the general population, increasing from 5% during the first year of diagnosis to over 20% at 10 years and 30% at 20 years.93, 94

10% of people with ankylosing spondylitis have doctor–diagnosed depression

10% of people with ankylosing spondylitis have doctor–diagnosed depression

inflammatory conditions
Gout is a painful inflammatory condition, caused by the build-up of uric acid in the bloodstream. This is partly inherited, but lifestyle factors such as alcohol consumption, diet and obesity are major risk factors. High uric acid levels lead to crystals forming in the joints. These crystals can trigger sudden painful episodes of severe joint inflammation (‘attack’). If untreated these attacks get more common, spread to involve new joints and can cause long-term cartilage and bone damage.

To understand more about the causes, diagnosis and treatment of gout, download our information booklet. Read more
Who is affected?

Prevalence

Around one in 40 people (2.49%) in the UK have gout. That’s equivalent to around 1.5 million people. Between 1997–2012, both the prevalence and incidence (new cases) of gout increased significantly in the UK by 64% and 30% increases respectively.9

The prevalence of gout is highest in the North East 3.11% and Wales 2.98% and lowest in Scotland 2.02% and Northern Ireland 2.15%.86

Common risk factors

Age
3–6% of people with gout experience disease onset before 25 years of age.95 Men can develop gout as early as their mid-20s and it becomes more common in women after menopause.96

Sex
Gout is generally three to four times more common in men than women.89

Obesity
Obese people are twice as likely to develop gout and tend to develop it at a younger age.31

Alcohol
Regular consumption of alcohol (predominantly beer but also spirits) has been associated with a threefold higher risk of new cases of gout among women and twofold higher risk in men, compared to those with no alcohol intake or ≤1 ounce/week.90,91 Moderate wine consumption has not been linked to an increased risk.

Risk of gout through regular alcohol consumption compared with no alcohol intake

Men
- No alcohol: 1x higher risk
- 1x higher risk

Women
- No alcohol: 1x higher risk
- 1x higher risk

2x higher risk
- 2x higher risk

3x higher risk
- 3x higher risk
Gout

Impact on quality of life and work capacity

Work
23% of working-age people with gout say they had to give up work and 18% had taken early retirement.104

Quality of life
Gout is significantly associated with poor overall quality of life, even after adjusting for comorbidities.105

Common comorbidities

54% of people with gout are expected to have one or more comorbidities within five years of first being diagnosed.100

Cardiovascular diseases
People with gout are 50% more likely to develop high blood pressure than people without gout putting them at higher risk of stroke.100

The incidence of heart failure and reduced ability of the heart’s ventricles to contract is two to three times higher in people with gout compared to people without gout.101

Kidney disease
People with gout are three times more likely to develop kidney disease than people without gout.100

Type 2 diabetes
There are almost 3.6 million people who have been diagnosed with type 2 diabetes in the UK.102

Women and men with gout are 71% and 22% more likely to develop type 2 diabetes.103

Liver disease
People with gout are almost two times more likely to develop liver disease than people without gout.100

Depression
People with gout are 19% more likely to have diagnosed depression than people without gout.100
Juvenile idiopathic arthritis affects children under the age of 16 and is an autoimmune disease that causes inflammation in the joints. It’s one of the most common rheumatic diseases of childhood. There are six different types of juvenile idiopathic arthritis and symptoms vary between the different types.

To understand more about the causes, diagnosis and treatment of juvenile idiopathic arthritis visit our website.

Read more
Juvenile idiopathic arthritis

Who is affected?

**Prevalence**
An estimated 12,000 children (one in 1,000) under the age of 16 have juvenile idiopathic arthritis in the UK.\(^8\)

**Incidence**
**One in 10,000** children are being diagnosed with juvenile idiopathic arthritis in the UK each year. That’s around 1,000–1,500 children.\(^8\)

Common comorbidities

**Eye inflammation**
10–20% of children with juvenile idiopathic arthritis will develop an inflammatory eye condition called uveitis, which can cause reduced vision and blindness if not treated.\(^{107, 108, 109, 110}\)

**Fragility fractures**
41% and 34% of children with juvenile idiopathic arthritis have low bone mineral content and low bone mineral density respectively, putting them at increased fracture risk.\(^{111}\)

Common risk factors

**Genetics**
Risk factors for juvenile idiopathic arthritis are not clear, however studies have shown strong evidence for genetic susceptibility. The probability that identical twins will both have the same genetic component fundamental to the susceptibility of juvenile idiopathic arthritis ranges between 25–40%.\(^{106}\)

Impact on quality of life

**Quality of life**
Children with juvenile idiopathic arthritis have significantly lower physical well-being and psychosocial health (mental, emotional, social and spiritual well-being) compared to those without. Intensity of pain has the greatest influence on their psychosocial health.\(^{112}\)

**Adulthood**
At least one third of children with juvenile idiopathic arthritis will have ongoing active disease in adulthood.\(^{113}\)
Between 30% and 56% of people with juvenile idiopathic arthritis will experience severe limitations in dexterity and mobility in adulthood because of their arthritis, such as finding it very difficult or not possible to grasp small objects or walk 400 meters.\(^{114}\)
Rheumatoid arthritis is an autoimmune disease that causes inflammation in the joints. As a result, the joint becomes painful, stiff and swollen. This inflammatory activity can ultimately cause irreversible damage. The sooner one starts treatment for rheumatoid arthritis, the more effective it’s likely to be, so early diagnosis and intensive treatment is important.

To understand more about the causes, diagnosis and treatment of rheumatoid arthritis, download our information booklet.

Read more
Who is affected?

Prevalence
There are over 400,000 adults aged 16 and over living with rheumatoid arthritis in the UK.7

The Musculoskeletal Calculator estimates:7

0.84% of adults aged over 16 years in England live with rheumatoid arthritis. That’s approximately 380,000 people.

0.78% of adults aged over 18 years in Scotland live with rheumatoid arthritis. That’s approximately 37,000 people.

Do you want to know how many people have rheumatoid arthritis in your area? Visit the MSK Calculator online tool.

Common risk factors

Age
Rheumatoid arthritis affects adults of any age yet prevalence increases with age, with peak age of onset between 40–60 years and is highest at age 70 years and over.116, 117

Around three quarters of people with rheumatoid arthritis are of working age when they are first diagnosed.117

Sex
Rheumatoid arthritis is two to three times more common among women than men.115, 116, 117

Genetics
Rheumatoid arthritis develops because of a combination of genetic and environmental factors. The main genetic risk factor for rheumatoid arthritis is the HLA–DRB1 gene, however this gene accounts for only around one–third of the genetic susceptibility to the disease.118

Obesity
Being overweight or obese significantly increases the risk of developing rheumatoid arthritis.35, 36

Studies have shown that:

BMI ≥25 kg/m² (overweight/obese) significantly increased the risk of developing rheumatoid arthritis by 15%, compared to BMI <25 kg/m² (normal range/underweight).

BMI ≥30 kg/m² (obese) significantly increased the risk of developing rheumatoid arthritis by 21% to 31% compared to having a BMI of 18.5–24.9 kg/m² (normal range).

Smoking
Cigarette smoking significantly increases the risk of developing rheumatoid arthritis.119, 120

The risk of developing rheumatoid arthritis is approximately 2 times greater for male smokers than for non-smokers and 1.3 times greater for female smokers than for non-smokers.121

The MSK Calculator is a local estimates prevalence model developed by Imperial College London in partnership with Arthritis Research UK. Prevalence estimates for Wales and Northern Ireland are currently not available.
Common comorbidities

Cardiovascular disease
Cardiovascular disease is the main cause of premature mortality and sudden death in patients with rheumatoid arthritis.122

Around one in 20 people (6%) with rheumatoid arthritis have cardiovascular disease. 123,124

The risk of heart attack is doubled for people with rheumatoid arthritis compared to the general population.125

The risk of stroke is 30% higher for people with rheumatoid arthritis than the general population.126

Lung disease
Lung disease is a major contributor to morbidity and mortality in rheumatoid arthritis. Evidence suggests one in 10 people with rheumatoid arthritis will be diagnosed with interstitial lung disease over the lifetime of their disease, putting them at increased risk of death.127, 128

Osteoporosis & fragility fractures
Rheumatoid arthritis itself, along with reduced mobility and steroids used to treat rheumatoid arthritis increase the risk of developing osteoporosis and falls.129

The rate of osteoporosis can be up to twice as high among rheumatoid arthritis patients compared to the general population.130

Around 36% of people with rheumatoid arthritis aged over 18 report falling at least once annually.131

People with rheumatoid arthritis have 2 times the risk of hip fracture and 2.4 times the risk of vertebral fracture, compared to those without a history of rheumatoid arthritis.132

Impact on quality of life and work capacity

Mortality
People with rheumatoid arthritis have a 47% increased risk of death compared to the general population.133

31% of early death from rheumatoid arthritis is due to cardiovascular disease, followed by pulmonary problems (including respiratory infection and lung cancer) responsible for 29% of all deaths.128

Depression
Around one in six people (16.8%) with rheumatoid arthritis have major depressive disorder.41

Depression in rheumatoid arthritis patients is associated with increased levels of pain and functional disability.134

A 10% reduction in the ability to perform activities important to an individual with rheumatoid arthritis may be followed by a sevenfold increase in depression over the subsequent year.134

Work
A third of people with rheumatoid arthritis will have stopped working within two years of onset and half are unable to work within 10 years.135

Physical inactivity
Approximately 68% of rheumatoid arthritis patients in the UK are physically inactive. Low physical activity in patients with rheumatoid arthritis becomes a vicious cycle of disease progression and increased pain, thus affecting both physical and mental health.136
Osteoarthritis

Osteoarthritis is a condition in which the joints of the body become damaged, stop moving freely and become painful. Osteoarthritis results from a combination of the breakdown of the joint and the body’s attempted repair processes. Pain is the main symptom of osteoarthritis and can have a devastating impact on people’s lives. The knee is the most common site in the body for osteoarthritis, followed by the hip and hands/wrists.

To understand more about the causes, diagnosis and treatment of osteoarthritis, download our information booklet. Read more
Who is affected?

Prevalence
An estimated 8.75 million people aged 45 years and over (33%) in the UK have sought treatment for osteoarthritis. 60% female, 40% male.

The Musculoskeletal Calculator estimates:

England
4.11 million (18.2%) of adults aged over 45 years in England have osteoarthritis of the knee. 6.1% of whom are affected by the severe form of the condition.

2.46 million (10.9%) of adults aged over 45 years in England have osteoarthritis of the hip. 3.2% of whom are affected by the severe form of the condition.

Scotland
420,000 (16.6%) of adults aged over 45 years in Scotland have osteoarthritis of the knee. 4.1% of whom are affected by the severe form of the condition.

256,000 (10.1%) of adults aged over 45 years in England have osteoarthritis of the hip. 2.5% of whom are affected by the severe form of the condition.

Do you want to know how many people have osteoarthritis in your area? Visit the MSK Calculator online tool.

Consultation prevalence of Osteoarthritis (%)

Common risk factors

Age
Risk of developing osteoarthritis increases with age. A third of women and almost a quarter of men between 45 and 64 have sought treatment for osteoarthritis, this rises to almost half of people aged 75 and over.

Sex
The prevalence of osteoarthritis is generally higher in women than men. The difference is most apparent for hand and knee osteoarthritis and among people over 50 years of age.

Women accounted for roughly 60% of hip and knee replacement operations over 90% of whom are due to osteoarthritis.
Common risk factors

**Obesity**
The risk of developing osteoarthritis throughout life increases with rising BMI.\(^{138}\)
People who are overweight or obese are approximately 2.5 and 4.6 times more likely to develop knee osteoarthritis than those of normal body weight.\(^{139,140}\)

The average BMI of hip and knee replacement patients in 2016 was 28.8 (overweight) and 31.0 (obese) respectively.\(^{30}\)

**Occupation**
Knee osteoarthritis is more frequently observed in people with occupations that require squatting and kneeling, hip osteoarthritis is associated with prolonged lifting and standing.
Hand osteoarthritis is more frequent in people with occupations requiring increased manual dexterity.\(^{141}\)

**Joint abnormalities**
People with abnormal hip shape caused by developmental problems, have greatly increased risk of developing osteoarthritis. Abnormal hip shape accounts for nearly one in 10 primary hip replacements in adults, rising to nearly one in three hip replacements in people under the age of 60 years.\(^{142}\)

**Genetic factors**
Genetic factors account for 60% of hand and hip osteoarthritis and 40% of knee osteoarthritis.\(^{143}\)

60% hand and hip

40% knee

Common comorbidities

**Cardiovascular disease**
Women and men over 65 years of age who have osteoarthritis are at 17% and 15% increased risk of hospitalisation for cardiovascular disease.\(^{144}\)

**Metabolic syndrome**
Metabolic syndrome is prevalent in 59% of people with osteoarthritis compared to 23% of people without osteoarthritis, putting them at increased risk of developing cardiovascular disease and diabetes.\(^{145}\)

**Depression**
Around 20% of people with osteoarthritis experience symptoms of depression and anxiety.\(^{146}\)

Impact on quality of life and work capacity

**Pain**
Nearly three quarters of people with osteoarthritis report some form of constant pain, with one in eight describing their pain as often unbearable.\(^{147}\)

**Joint replacements**
Osteoarthritis was recorded as the main indication for surgery in 90% of primary hip and 99% of primary knee replacement patients in 2016.\(^{30}\)

After joint replacement surgery only 21.4% of knee replacement and 17.5% of hip replacement patients reported moderate or severe pain in the past four weeks, compared to 93.9% and 93.0% of patients before they received surgery.\(^{148}\)

**Work**
A third of people with osteoarthritis retire early, give up work or reduce hours.\(^{10}\)
Back pain is a common condition often caused by a simple muscle, tendon or ligament strain and not usually by a serious problem. Back pain can be acute, where the pain starts quickly but then reduces after a few days or weeks, or chronic (severe), where pain might last on and off for several weeks or even months and years.

To understand more about the causes, diagnosis and treatment of back pain, download our information booklet. Read more
Who is affected?

Prevalence
Back pain affects around one third of the UK adult population at some point each year.\(^{149, 150}\)

Between **one in four** and **one in seven** young people have long-term low back pain.\(^{151, 152}\)

**The Musculoskeletal calculator** estimates:

- **9.11 million (16.9%)** people in England have back pain, 5.5 million of whom have severe back pain.
- **910,000 (19.1%)** of adults aged over 18 years in Scotland have back pain, 564,000 of whom have severe back pain.

Do you want to know how many people have back pain in your area? Visit the MSK Calculator online tool.

Common risk factors

**Obesity**
People who are obese are **four times** more likely to develop back pain than those with a healthy body weight.\(^{31, 32}\)

**Depression**
The odds of back pain in people with symptoms of depression have been shown to be **50%** higher than in those without symptoms of depression.\(^{153}\)

**Smoking**
The prevalence of low back pain is approximately **50%** higher in daily smokers compared to non-smokers.\(^{154, 155}\)

**Deprivation**
People aged 45–64 years of age (working age) in the most deprived areas are almost twice as likely to report back pain (17.7%) as those from the least deprived areas (9.1%).\(^2\)

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\(^1\)The MSK Calculator is a local estimates prevalence model developed by Imperial College London in partnership with Arthritis Research UK. Prevalence estimates for Wales and Northern Ireland are currently not available.
Common comorbidities
Musculoskeletal and mental health conditions
People with chronic low back pain have been shown to have a significantly higher frequency of musculoskeletal and neuropathic pain conditions and common sequelae of pain such as depression (13.0% vs. 6.1%), anxiety (8.0% vs. 3.4%) and sleep disorders (10.0% vs. 3.4%), compared to people without low back pain.\textsuperscript{156}

Impact on quality of life and work capacity

Disability
Low back pain was the top cause of years lived with disability (YLDs) in the UK in both 1990 and 2016.\textsuperscript{1}

Low back pain patients generally stop seeking medical attention within three months, however 60\% to 80\% of people still report pain or disability a year later and up to 40\% of those who have taken time off work will have future episodes of work absence.\textsuperscript{157, 158}

Work limitation
Back pain is the second most common cause of short-term absences after minor illnesses (such as colds, flu and sickness).\textsuperscript{159}

68.3\% of people return to work one month after an episode of back pain, rising to 85.6\% at one to six months and 93.3\% at more than six months.\textsuperscript{160}
Fibromyalgia is a long-term (chronic) condition causing many symptoms including widespread body pain and fatigue. It’s quite common – up to one person in every 25 people may be affected. The exact causes of fibromyalgia are still not known, but research suggests that there’s an interaction between physical, neurological and psychological factors. Fibromyalgia in itself doesn’t cause any lasting damage to the body’s tissues. However, it’s important to build up and maintain physical activity levels to avoid and address weakening of the muscles (deconditioning) which could lead to worsening pain and fatigue.

To understand more about the causes, diagnosis and treatment of fibromyalgia, download our information booklet. Read more
Who is affected?

Prevalence
It’s not entirely clear how many people are affected by fibromyalgia alone, as it can be a difficult condition to diagnose. Estimates suggest around 1.2-5.4% of adults in the UK are affected by fibromyalgia depending on the classification criteria used. That’s equivalent to up to 2.8 million people.11

2.8m people

UK adults affected by fibromyalgia

Common risk factors

Age and Gender
Fibromyalgia prevalence increases with age, reaching a peak around 75 years, and is more common in women than in men at every age.11

Genetics
Fibromyalgia develops because of a combination of biological, psychological and social factors. Family studies have identified a link between genetic markers, supporting the genetic background of the disease, however key hereditary factors have not yet been identified.161

Other musculoskeletal conditions
Fibromyalgia commonly co-occurs with a number of physical conditions, including rheumatoid arthritis and systemic lupus erythematosus.162

Impact on quality of life and work capacity
People with fibromyalgia often experience mental and physical disabilities and a significantly impaired quality of life.172

Comorbidities

Depression and anxiety
Depression and anxiety are more prevalent in people with fibromyalgia than individuals without.163, 164, 165, 166

Lifetime prevalence of depression and anxiety in people with fibromyalgia go up to 70% and 60%, respectively.163, 167

High levels of depression and anxiety in people with fibromyalgia are associated with more physical symptoms and poorer functioning than lower levels.168

Post-traumatic stress disorder
People with Fibromyalgia are six times more likely to report post-traumatic stress disorder compared to people with two stomach conditions (achalasia and dyspepsia).169

Irritable Bowel Syndrome (IBS)
Studies have shown fibromyalgia and irritable bowel syndrome coexist in many patients.170, 171
Osteoporosis & fragility fractures

Osteoporosis means spongy (porous) bone. Everyone has some degree of bone loss as we get older, but the term osteoporosis is used only when the bones become quite fragile. When bone is affected by osteoporosis, the holes in the honeycomb structure become larger and the overall density is lower, which is why the bone is more likely to fracture.

To understand more about the causes, diagnosis and treatment of osteoporosis & fragility fractures, download our information booklet. Read more
Who is affected?

More than 3 million people in the UK are estimated to have osteoporosis.\(^{12}\)

More than 300,000 fragility fractures occur each year in the UK.\(^{13}\) In England and Wales, around 180,000 of the fractures presenting each year are the result of osteoporosis.\(^{173}\)

In 2016, over 65,000 people aged 60 or older presented to hospital with a hip fracture in England, Wales and Northern Ireland.\(^{174}\)

Common risk factors

**Age**

After the third decade of life, bone naturally begins to decline at the rate of 0.3% of bone per year.\(^{175}\)

Prevalence of osteoporosis increases markedly with age, from 5% at 50 years to over 30% at 80 years.\(^{176}\)

**Sex**

One in two women and one in five men over the age of 50 are expected to break a bone during their lifetime.\(^{177}\)

**Genetics**

Parental history of fracture is associated with an increased risk of fracture, independent of bone mineral density.\(^{178}\)

**Menopause**

After the onset of menopause, women can lose an average of 2.5% of their bone per year for the first five years, due to the decrease in oestrogen production, putting them at increased risk of developing osteoporosis.\(^{179}\)

**Smoking**

Smoking is associated with low bone mineral density osteoporotic fractures.\(^{180}\)

People who smoke are at 25% increased fracture risk compared to those who had never smoked.\(^{181}\)

**Low vitamin D and calcium levels**

Elderly patients who consume adequate vitamin D and Calcium supplements are at decreased fracture risk.\(^{182}\)

**Previous fracture**

People who have had one fracture remain at greater risk of sustaining a secondary fracture. After a first fracture the risk of fracturing again is increased by two to threefold.\(^{183, 184}\)

**Alcohol**

People who consume more than two alcoholic drinks per day are associated with higher risk of hip fracture compared with those who don’t drink.\(^{185}\)

**Low BMI**

People with a BMI of less than 18.5 kg/m² are at increased fracture risk.\(^{186, 187}\)
## Common comorbidities

### Diabetes
People with type 1 diabetes have a six times greater risk of hip fracture compared to those without.\(^{188,189}\)

### Chronic inflammatory bowel disease
Chronic inflammatory bowel disease (IBD) has been shown to be associated with an increased risk of fractures.\(^{190}\) The incidence of fractures among patients with chronic inflammatory bowel disease is approximately 40% higher than in the general population.\(^{191}\)

### Coeliac disease
Patients with coeliac disease are at a higher risk of fractures compared to the general population.\(^{192}\)

### Hyperthyroidism
Mild (subclinical) hyperthyroidism is associated with an increased risk of hip and other fractures, especially among those with thyroid-stimulating hormone (TSH) levels of less than 0.10 mIU/L.\(^{193}\)

### Rheumatoid arthritis
The rate of osteoporosis can be up to twice as high among rheumatoid arthritis patients compared to the general population.\(^{130}\) Around 36% of people with rheumatoid arthritis aged over 18 report falling at least once annually.\(^{131}\) People with rheumatoid arthritis are at 2 times the risk of hip fracture and 2.4 times the risk of vertebral fracture, compared to people without rheumatoid arthritis.\(^{132}\)

## Impact on quality of life and work capacity

### Mortality
A month after suffering a hip fracture, one in 15 people (6.7%) died in 2016 (7.1% in 2015) and over half (66.1%) returned home by 120 days.\(^{174}\)

**One in four people** (28.7%) die within a year of suffering a hip fracture.\(^{194}\)

### Pain
**One in three people** who have long-term pain from fractures describe it as severe or unbearable.\(^{195}\)

### Disability
Research has found that 43% of people who were previously independent are unable to walk independently in the year after a hip fracture.\(^{196}\)
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