Recommended Musculoskeletal Indicator Set

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Forewords

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Professor Peter Kay, National Clinical Director for Musculoskeletal Services for NHS England

Painful musculoskeletal conditions are a leading cause of lost quality of life, work absence, and health and social care costs. Each year, the NHS in England spends around £4.7 billion supporting and treating people living with these conditions.

Moreover, an ageing population, combined with rising levels of obesity and physical inactivity, is likely to dramatically increase the number of people whose lives are affected, putting further strain on diminishing resources. As health services globally strive to achieve more with less, the relentless quest for better value demands that outcomes are measured, reported and improved at every opportunity.

Evaluating improvement of outcomes requires detailed data recorded uniformly across commissioning areas. Currently, however, indicator sets and outcome measures for musculoskeletal conditions are fragmented, and will differ between localities. This undermines a system-wide drive for improvement and does not provide the data to identify unacceptable variations in care throughout the country.

Arthritis Research UK and the musculoskeletal community have been at the forefront of meaningful change in this area. The new Recommended Musculoskeletal Indicator Set, developed in collaboration across the musculoskeletal community, is underpinned by a shared vision for musculoskeletal services: multidisciplinary in nature and informed by shared decision-making, while maximising opportunities for community-based care closer to home.

The Recommended Musculoskeletal Indicator Set is aimed primarily at those who are responsible for shaping services – commissioners and providers – while also being relevant and meaningful to clinicians and people with arthritis. The indicators will create a system wide view which describes the value (in terms of quality and cost) of services.

Capturing such data will enable and support quality improvement conversations on issues such as early diagnosis, delivering of co-ordinated care and empowering people with arthritis to self-manage.

The Recommended Musculoskeletal Indicators Set can ultimately provide the underpinning data to enable the creation of a system that delivers improved clinical and personal outcomes, as defined by the person with arthritis. And a system which is responsive to the challenges facing the health and care system.

Forewords

Professor John Newton, Chief Knowledge Officer, Public Health England

Musculoskeletal conditions, such as osteoarthritis and back pain, are the leading cause of disability in adults in England. They are a prime cause of workplace sickness absence, with 30.8 million working days lost in the UK in 2016. They also cause pain and functional limits in the people that live with them.

Meaningful data are key to commissioning high value musculoskeletal services, just as for many other long term conditions. It is essential for understanding the health needs of local populations, the activity performed by services – as well as their cost – and the outcomes they deliver.

However, despite the prevalence of musculoskeletal conditions there remain substantial gaps in the information we have about them, especially in outpatient, community and primary care settings.

This can lead to variation in quality of healthcare for the millions of people living with long-term and painful musculoskeletal conditions, reducing their quality of life. It can also be a barrier to understanding whether treatments are of good value.

For instance, biologic drug therapies used to treat inflammatory forms of arthritis are amongst the most expensive drugs prescribed. People who do not respond initially to first-line drug therapies, which cost around £500 per year, require biologics treatment costing £5,000 – £10,000 annually. Better collection of data about the rate at which people with these conditions are identified, referred and treated would help reduce long term pain and disability, and therefore the need for expensive biologics.

Improving the scope and quality of data will not only help to improve the quality of health and care services, but also the capacity of the NHS and wider public health workforce to identify and treat musculoskeletal conditions, and implement effective and efficient prevention programmes.

It is to this end that Public Health England welcomes the valuable work done by Arthritis Research UK and the musculoskeletal community in developing this new Musculoskeletal Indicator Set.

Indicator sets, such as these, can help the public health community understand how well musculoskeletal health is being improved and protected.

They can help those responsible for planning, managing and improving services to better understand the activity of these services and the outcomes they deliver.

And they can help to establish high quality musculoskeletal services so that people with these conditions can reduce and manage their symptoms, and restore their quality of life.

Forewords

Dr Liam O'Toole, Chief Executive Officer, Arthritis Research UK

Arthritis impact on all aspects of person's life. The symptoms experienced by people living with musculoskeletal conditions – pain, joint stiffness, inflammation, depression and fatigue – rob people of their independence, attacking what it means to live.

Arthritis Research UK is dedicated to improving quality of life for people with arthritis and data can play a prominent role in helping to achieve this aim. Capturing data across a local health and care system about the quality of services can generate useful intelligence, enabling conversations about quality improvement across the wide variety of MSK services that people use.

However, there are a lack of data about people with musculoskeletal conditions within health and care services. This makes it difficult to identify problems and focus quality improvement on the right areas, which in turn can impact on the system's ability to improve health outcomes.

The Recommended Musculoskeletal Indicator Set was borne out of collaboration across the musculoskeletal sector to address these problems. This collaboration has produced a data set which we hope will deliver timely, integrated, holistic patient-centred care, tailored to the needs and wishes of the individual and delivered by skilled and appropriately trained healthcare practitioners.

This indicator set is only one example of our partnership working to help to improve health outcomes for people with arthritis. Arthritis Research UK has a strong interest on improving the quality of data and working with collaborators to do so.

In partnership with NHS England, we co-funded the development of a generic musculoskeletal patient reported outcome measure – the Musculoskeletal Health Questionnaire (MSK–HQ) – which allows people with a musculoskeletal condition to report their symptoms and quality of life in a standardised way. This has, for the first time, created a uniformly operated and validated tool which can be used in multiple clinical settings to capture a person's musculoskeletal health outcomes.

And in partnership with Imperial College London, we produced much-needed prevalence figures for four major musculoskeletal conditions: hip and knee osteoarthritis, back pain, rheumatoid arthritis and fragility fractures. These data have been distributed to Local Authorities in partnership with Public Health England and to Clinical Commissioning Groups via Commissioning for Value packs.

We are eager to continue the conversation and work to improve the quality of services. We will continue to facilitate discussion on data and, in so doing, support improvement in the quality of life for people with arthritis and musculoskeletal conditions.

Executive summary

Executive summary

Musculoskeletal (MSK) conditions, such as osteoarthritis, rheumatoid arthritis, back pain and fragility fracture are the largest cause of pain and disability in the UK. The devastating impact of these conditions goes beyond those affected and their families. Each year around one in five of the population consults a GP about musculoskeletal problem. These conditions are the leading cause of sickness absence in the UK, resulting in 30.8 million working days lost in the UK in 2016. In 2013/14, musculoskeletal conditions accounted for the third largest area of NHS programme spending at £4.7 billion.

High quality musculoskeletal services can help people with these conditions to reduce and manage their symptoms, and restore their quality of life. Healthcare systems need to commission and provide person-centred services that are effective and affordable for the populations they serve. The use of appropriate indicators can help those responsible for planning, managing and improving services to better understand the activity of these services and the outcomes they deliver.

A good indicator can help determine the extent to which services are improving quality of life (effectiveness), sensitive to people's needs (person centred) and represent good value for money (cost effective). By adopting a standard musculoskeletal indicator set, unwarranted variation can be monitored and outliers identified. This should help identify best practice that can be shared, and highlight areas to focus on for improvement.

This report summarises the outputs of the Indicators Advisory Group (IAG), established by Arthritis Research UK to develop, agree and recommend a core set of 20–25 musculoskeletal system indicators. The group comprised of primary and specialist care clinicians, people with arthritis, commissioners, public health experts and policymakers.

The core set of indicators was to meet the need of people with musculoskeletal conditions, commissioners, clinicians and policymakers while supporting the work of the Musculoskeletal Clinical Networks. The ultimate vision was to improve health outcomes for people with these conditions, by supporting efforts to improve quality of services locally and nationally.

These indicators are not intended to criticise or blame services. Neither should scores for a particular indicator be necessarily judged as "good" or "bad". Instead variation should lead to local analysis to understand the reasons for difference. Finally, the indicator list should not itself be static – through using it we will learn more about how these indicators perform individually and as a set. They should then be reviewed, refined and improved.

If used well, indicators can support great learning and improvement. Musculoskeletal services need to develop and embed a culture of using, presenting and analysing information in a way that is transparent and meaningful.

Recommended Musculoskeletal Indicator Set

Musculoskeletal health system	**Indicator 1**	Percent of total Clinical Commissioning Group (CCG) annual spend which is on services for musculoskeletal (MSK) conditions.
	Indicator 2	Ratio of MSK–related clinical specialist consultants (trauma & orthopaedics, spinal surgeons, rheumatology, pain medicine) to MSK–specialist allied health professionals (AHPs).
	Indicator 3	Spend on pain medications (excluding paracetamol, weak opiates) per CCG population.
	Indicator 4	Percent of people with a long-term musculoskeletal-related problem who state they have a written, personalised, specified, care plan which is reviewed regularly within a specified period.
	Indicator 5	Time from referral (GP, self, or other health professional) to first allied health professional review for MSK patients.
Musculoskeletal health promotion	**Indicator 6**	Percent of patients with osteoarthritis who have a body mass index of 30 and above (obese).
	Indicator 7	Percent of adults with osteoarthritis and rheumatoid arthritis who receive advice on participating in muscle strengthening and aerobic exercise.
Osteoarthritis	**Indicator 8**	Hip replacement surgery rate: number of elective primary hip replacements per expected prevalence of severe hip osteoarthritis (OA).
	Indicator 9	Knee replacement surgery rate: number of elective primary knee replacements per expected prevalence of severe knee osteoarthritis (OA).
	Indicator 10	Mean length of stay for elective hip and knee replacement patients.
	Indicator 11	Percent of patients who have emergency readmission to hospital within 28 days of either elective primary hip or knee replacement.
	Indicator 12	Rate of knee arthroscopy in patients aged 60 years and over.
Back Pain	**Indicator 13**	Number of Accident and Emergency attendances with a recorded primary diagnosis of back pain, per modelled population prevalence of back pain.
	Indicator 14	Number of facet joint injections per prevalence of back pain.
Rheumatoid arthritis	**Indicator 15**	Percent of patients with suspected rheumatoid arthritis who are referred to, and assessed in, a rheumatology service for confirmation of diagnosis within three weeks of referral.
	Indicator 16	Spend on biologic therapies per expected prevalence of rheumatoid arthritis.
Fragility Fractures	**Indicator 17**	Rate of hip fracture people among people aged 70 years and over.
	Indicator 18	Percent of hospital inpatient admissions for hip fracture which qualify for fragility hip fracture conditional best practice tariff payments.
	Indicator 19	Percent of patients with hip fracture, admitted to hospital from own home, returning home within 30 days.
Musculoskeletal health outcomes	**Indicator 20**	Change in health utility score from initial presentation to six–months after management (EQ–5D or Musculoskeletal Health Questionnaire: MSK–HQ).
	Indicator 21	Percent of people of working age locally who are receiving Employment Support Allowance due to a musculoskeletal problem.
	Indicator 22	Patient experience of musculoskeletal health care services.

Case studies

Ashford Clinical Commissioning Group (CCG)

Ashford CCG wanted to ensure it was making maximum use of its available resources in order that patients were receiving the best possible care.

Use of comparative information through the RightCare approach identified high numbers of people with MSK conditions being referred to secondary care services. This resulted in increasing waiting times for hospital specialist outpatient appointments at a time when patients were often in considerable pain and discomfort. At the same time some primary care services were underutilised. The process had a knock on effect in that many patients either had to wait longer for inpatient treatment or in some cases were referred back for community services, the need for which could have been identified earlier.

The CCG examined individual GP data and found variations in referral rates to secondary care. Following discussion with GPs about the services, a locally designed and managed triage approach was adopted for all new referrals to secondary care to ensure patients were receiving appropriate care for their particular circumstances.

The approach resulted in a reduction of some 30% in referrals to secondary care with annual savings of £1 million in this small CCG. Importantly the outcomes for patients were improved with more being seen in the right setting and, as a result of reducing the waiting times, far quicker than under the previous arrangements.

A full report on this case-study is available.[1]

Pennine Musculoskeletal Network

Data from the back pain pathway for the network revealed quite high numbers of spinal injections done in secondary care, as a result of which a review of pain services was undertaken. The work has resulted in a significant reduction in the numbers being referred to hospital for pain reduction and hence improving services to patients.

Patient satisfaction rates for knee arthroplasties was low, with 19% of patients expressing negative views, or ambivalence to the surgery. In Oldham it was decided to implement a Shared Decision Making (SDM) approach to improving care. As a result, by monitoring patient reported outcome measures (PROMs), it was found that Oldham's knee replacement patients received an average health gain of 0.27 in 2009/10 and 0.35 by 2011/12, well above the national average. The improvement was introduced within financial constraints. Involving patients in treatment decision making also led to better outcomes.[2]

Pennine Musculoskeletal Network (rheumatology)

People who develop rheumatoid arthritis need urgent, intensive therapy to prevent long-term pain, disability and joint damage. Indicator 15 of the Recommended Indicator Set looks at the percent of patients with suspected rheumatoid arthritis seen in a rheumatology service for confirmation of diagnosis within three weeks of referral.

Waiting times for patients with suspected rheumatoid arthritis in Oldham averaged 6–9 months, largely as a result of disinvestment in MSK services in local secondary-care providers and the consequent lack of capacity to deal with the throughput of patients. Pennine MSK Partnership, working with the CCG and the local community, took control of the programme budget for the MSK pathway. New patients are now triaged within 24 hours to identify the appropriate pathway, and assessed within 1–3 weeks to initiate specialist care. NICE Quality Standards are now achieved through effective triage and nurse-led care which enables consultants to focus on diagnosis, caring for patients with complex needs and supporting their multi-disciplinary team to deliver high-quality care. As a result, 97% of current patients strongly agreed or agreed that they had a good experience of care overall (measured at the end of the first three months of care as part of the national RA audit).

Perspectives

The impact of indicators

Person with arthritis

I developed osteoarthritis ten years ago. When I was diagnosed I didn't know anything about the condition, it was all new to me. What started off as an initial bit of pain, quickly resulted in two new hips. I was physically and emotionally exhausted, but at the same time I had to find my own way around the maze that is the NHS. It was daunting, but luckily I had an excellent GP, a helpful physiotherapist and information booklets from Arthritis Research UK.

For me, it would have been useful to have had a good knowledge of my local services and systems, so I knew what to expect. Without this I really felt that I was in the dark. Ideally I'd have liked to have been able to predict where the path would be smooth, and where it was going to be bumpy, so I could plan accordingly. That's why I think the Recommended Musculoskeletal Indicators Set is really valuable. I can use these indicators to see what's happening in my local area, especially what's going well and where there are difficulties. I also think it's great that the indicators recognise that arthritis can impact on every aspect of your life, and encompass work and public health. Moving forward I can use the results from my local area, to compare my treatment with other places in the UK. I'll use this information to hold my local decision makers to account for the quality of musculoskeletal services they are delivering.

The value of indicators

Jess Simpson, Planned Care & Mental Health Programme Manager, NHS Hammersmith & Fulham Clinical Commissioning Group

I want to ensure that everyone in my community has access to high quality services, which provide good value for money. As a commissioner it's my responsibility to ensure this happens consistently across the area I cover. I think the Recommended Musculoskeletal Indicator Set will be a great tool, supporting me to monitor local services against clear, standardised measures.

I believe there are several benefits of a tool like this. In our local system, these indicators can be used to procure services, allowing us to assess providers against an agreed set of standards. They will help me ensure that the provider who demonstrates the highest quality, and value for money, is awarded the contract. Secondly, indicator information can be used in contract monitoring meetings when we're assessing how a provider is doing. The indicators will allow me to provide accurate feedback about the level of quality being achieved, and ensure that standards are being met across the board. Thirdly, these indicators analyse the entire system and highlight areas where it would be useful to know more information. So if necessary, I or my colleagues can request a deep dive as part of a quarterly audit, or annual review, within the life of a contract.

Nationally, by collecting Recommended Musculoskeletal Indicator Set across the country, we'll be able to scrutinise and benchmark services against similar provision in other local areas. This will enable me to analyse the quality and value of our musculoskeletal services with comparable peer localities. Overall, this can assure commissioners that the NHS funding we're responsible for is being invested correctly, and that we're delivering the most effective care to our local population.

1. Introduction

1.1 Background

1.1.1 Musculoskeletal Clinical Networks Project

The motivation to produce a set of indicators to help improve services for musculoskeletal (MSK) conditions emerged from the MSK Clinical Networks Project.

The MSK Clinical Networks Project was launched in 2014 by the MSK community with the aim of improving health and wellbeing outcomes for people with MSK conditions and populations. Under the leadership of the Arthritis and Musculoskeletal Alliance (ARMA) and Professor Peter Kay, National Clinical Director for Musculoskeletal Services for NHS England, a model was developed whereby a series of local networks would be formed over time, working to improve the quality of local services.[3] The network will identify problems and apply solutions to address local priorities for MSK health.

The network includes broad representation including: patients, carers and patient charities; care co-ordinators, medical doctors, allied health professionals, and social and community care professionals; and clinical commissioning groups, local health and wellbeing boards, and public health professionals.

1.1.2 Shared vision for musculoskeletal services[4]

Through extensive consultation with people with arthritis and other MSK conditions, health professionals and managers, in addition to a comprehensive literature review and other desk research, the MSK Clinical Networks Project identified the key elements of what a high quality MSK service looks like.

A high quality service is one which:

- Delivers timely, integrated, **holistic patient-centred care**, tailored to the needs and wishes of the individual and delivered by skilled and appropriately trained healthcare practitioners
- Ensures **early intervention** via the accurate and speedy diagnosis of MSK conditions, with prompt referral for specialist treatment as appropriate
- Delivers **improved clinical and personal outcomes**, as defined by people with MSK conditions
- Is **multidisciplinary in nature** and underpinned and informed by s**hared decision-making**
- Delivers **coordinated care** via the provision of effective and personalised care planning
- **Empowers the patient** to self-manage and take control of their condition(s) via high-quality **information** and signposting to validated sources of additional support (e.g. charities)
- Maximises the opportunities for **community-based care and care closer to home**, including post-initial intervention
- Has excellent **communication channels** and links with and between all health providers and commissioners, patients and other interested professional and voluntary groups has effective and accurate **monitoring systems** in place to enable quality care, and improvements to services, to be easily assessed and continually improved as necessary.

1.2 Establishing a musculoskeletal Indicators Advisory Group (IAG)

Arthritis Research UK was approached by the MSK Clinical Networks Project to lead the work around the development of a recommended set of indicators relevant to MSK networks. These indicators were to be useful to commissioners of MSK services, to providers of MSK services and to people with MSK conditions. They would be support the work of the MSK networks locally and nationally.

The recommended indicator set would reflect the agreed objectives for musculoskeletal health systems and would be a mixture of generic and condition-specific indicators and include both process and outcome measures.

As well as supporting quality improvement activities within each network, a standard indicator set would allow comparisons to be made over time and between geographical areas, and provide useful information to the public about the quality of musculoskeletal health services.

1.2.1 Aims and priorities

The overall aim of this project was to agree and define a concise set of indicators that could populate a musculoskeletal dashboard. It is intended that the indicators will be of use and interest to people with a musculoskeletal condition, commissioners, clinicians and policymakers while supporting the work of the musculoskeletal clinical networks.

To achieve this, a number of principles were agreed:

- Develop a balanced indicator of set of around 20–25 items that reflect the concerns and information needs of people with a musculoskeletal condition, commissioners, clinicians and policy makers
- Focus on developing indicators that can be used to help improve services
- The main audience for the indicator set was to be those who are responsible for shaping services (in the current NHS organisation in England this means commissioners and providers as well as the Musculoskeletal Clinical Networks)
- Wherever possible, these indicators should also be relevant and meaningful to clinicians and patients
- Consider including relevant metrics including structure, process and outcome measures, including education and training as well as non-traditional outcomes such as work participation, or use of social care
- Ensure that any metrics used are meaningful, useful and necessary, and make efficient use of existing data in order to limit the need for additional data capture
- Map the indicators against broader national frameworks, including the Clinical Commissioning Group Outcomes Indicator Set (CCG OIS)[5], National Institute for Health and Care Excellence (NICE) quality standards[6], and the Public Health England (PHE) Indicators Assurance Process.[7]

1.3 Musculoskeletal conditions and their impact

1.3.1 Overview of musculoskeletal conditions

Arthritis and musculoskeletal conditions are disorders of the joints, bones and muscles (including back pain) along with rarer systemic autoimmune diseases such as lupus.

There are three broad groups of musculoskeletal conditions:

- The first group is made up of **inflammatory conditions** such as rheumatoid arthritis and ankylosing spondylitis. In these conditions the immune system attacks and destroys the joints and sometimes the internal organs. These conditions require specialist care from rheumatologists using drug treatments to suppress the immune system
- The second group includes conditions of **musculoskeletal pain** such as osteoarthritis and back pain. In osteoarthritis there is painful wear and degeneration of joints. These conditions are normally treated by GPs in primary care, affect large numbers of people, and management usually involves physical activity and pain management. Severe osteoarthritis can result in the need for joint replacement, which can relieve pain and give people back their mobility
- The third group includes **osteoporosis and fragility fractures**. Osteoporosis is a painless condition of bone weakening. Fragility fractures occur when frail or weak bones (often caused by osteoporosis) break, often after a trip or fall from a standing height. Fragility fractures affect large numbers of people causing pain and disability. Treatment of people at risk of fragility fracture usually takes place in primary care, and can include bone strengthening medication. Bone fractures can require surgical treatment in hospital.

Many musculoskeletal conditions including rheumatoid arthritis and osteoarthritis are long-term conditions. These conditions can be treated but not yet cured, so people often have the conditions for many years, even decades.

1.3.2 Impact on individuals

Arthritis and other musculoskeletal conditions are the biggest cause of pain and disability in the UK.[8] Nearly three-quarters of those living with the most common form of arthritis, osteoarthritis, report some form of constant pain, with one in eight describing their pain as unbearable.[9] Rheumatoid arthritis, another common form of arthritis, is a progressive condition that can impair people's ability to plan their lives. A third of people with this condition will have stopped work within two years of its onset.[10] Back pain is a major cause of pain and disability. Though it is often self-limiting, one in six adults aged over 25 years reports back pain lasting over three months in the last year.[11]

People with musculoskeletal conditions often have fluctuation in their symptoms with flares (periods of severe symptoms) between periods of mild symptoms. People with some musculoskeletal conditions, including gout and some back pain, can be completely free of symptoms between flares, and flares can be completely prevented for many people with effective treatment.

1.3 Musculoskeletal conditions and their impact

1.3.3 Impact on health services

Musculoskeletal conditions account for the third largest NHS programme budget spend in England in 2013/14[12] and each year one in five people consult a GP about a musculoskeletal problem.[13] The majority of these primary-care consultations are for osteoarthritis and back pain and these account for a substantial volume of GPs' work. About 8.75 million people in the UK over 45 years of age have sought treatment from their GP for osteoarthritis.[14] Rising obesity and an ageing population will cause this number to increase requiring additional primary-care capacity to provide high-quality care. Good data are available for surgery such as joint replacements for osteoarthritis or to treat a hip fracture.

There were 89,288 primary hip replacement procedures (with an osteoarthritis diagnosis for 90% of patients) and 95,958 primary knee replacements (with an osteoarthritis diagnosis for 98% of patients) undertaken in England and Wales in 2015.[15] There are a lack of data collected for people with severe arthritis who visit specialists in hospitals. Yet each year in England there are around 1.5 million hospital specialist consultations with rheumatologists for people with severe arthritis.[16]

1.3.4 Impact on wider economy

MSK conditions are the leading cause of sickness absence in the UK, resulting in 30.8 million working days lost in the UK in 2016.[17] Costs of musculoskeletal conditions fall on employers and the wider economy. Rheumatoid arthritis has been estimated to cost the UK economy between £3.8–4.8 billion per year,[18] the combined indirect costs of rheumatoid arthritis and osteoarthritis £14.8 billion[19] with a further £10 billion of indirect costs are attributable to back pain.[20]

1.3 Musculoskeletal conditions and their impact

Figure 1: Three groups of musculoskeletal conditions

Group	1 Inflammatory conditions	2 Conditions of musculoskeletal pain	3 Osteoporosis and fragility fractures
Example	Rheumatoid arthritis.	Osteoarthritis, back pain.	Fracture after a fall from a standing height.[A]
Age	Any.	More common with rising age.	Mainly affects older people.
Progression	Often rapid onset.	Gradual onset.	Osteoporosis is a gradual weakening of bone. Fragility fractures are sudden discrete events.
Prevalence	Common (e.g. around 400,000 adults in the UK have rheumatoid arthritis).[21]	Very common (e.g. 8.75 million people in the UK have sought treatment for osteoarthritis).[14]	Common (e.g. around 89,000 hip fragility fractures occur each year in the UK).[22]
Symptoms	Common musculoskeletal symptoms include pain, joint stiffness and limitation of movement. Symptoms often fluctuate in severity over time.		Osteoporosis itself is painless. Fragility fractures are painful and disabling.
Extent of disease	Can affect any part of the body including skin, eyes and internal organs.	Affects the joints, spine and pain system.	Hip, wrist and spinal bones are the most common sites of fractures.
Main treatment location	Urgent specialist treatment is needed, and usually provided in hospital outpatients.	Primary/community care for most people; joint replacement requires hospital admission.	Primary care for prevention, Hospital for treatment of fractures.
Medical treatment	Medication to suppress the immune system.	Pain management; for severe cases joint replacement may be necessary.	Bone strengthening drugs; fractures may require surgery.
Physical activity benefits	Generic, self-determined and prescribed exercises are an important adjunct to medical therapy.	Generic, self-determined and prescribed exercises are the core treatment approach.	Generic, self-determined and prescribed exercises prevent falls, strengthen bone and enhance recovery after a fracture.
Modifiable risk factors	Smoking.	Injury, obesity, physical inactivity.	Smoking, alcohol intake, poor nutrition including insufficient vitamin D, physical inactivity.

A Osteoporosis is a condition of bone weakening which in itself is painless. Fragility fractures caused by osteoporosis happen when frail bones break, causing pain and disability. Bone fractures can also occur due to injury.

1.4 Indicators of health system performance

Indicators are measurable data items that provide information about the performance of a service. These can either be quantitative or qualitative, and can relate to the structures, processes (interpersonal or clinical) and outcomes of care. Used well, indicators can contribute to a performance assessment of health and social care services. This in turn should inform quality improvement activities to deliver high-value services and improve health outcomes for people with arthritis.

1.4.1 Categories of indicators

This project considers five different categories of indicators:

1. **Preventive and population medicine indicators**
   These describe the need for musculoskeletal health and care services and for public health promotion interventions which aim to reduce the impact of musculoskeletal ill health on individuals and populations.

2. **Outcome indicators**
   These describe the outcomes that musculoskeletal services are intended to deliver, for example, survival (mortality), ill health (morbidity), health-related quality of life, and patient satisfaction. Information about these processes can come from individual patients reporting symptoms such as pain or quality of life (patient reported outcome measures), or from system data, for example, the percent of patients admitted from home with a hip fracture returning home within 30 days, or the proportion of people remaining at work.

3. **Financial and economic indicators**
   These describe either the overall amount of money spent on musculoskeletal services, or compare spend to outcome measures to describe cost effectiveness, or value for money, of services.

4. **Service structure and organisation indicators**
   These describe the available resources within services, such as personnel, facilities or appointment slots.

5. **Clinical process indicators**
   These describe clinical care processes, such as referral, clinical review, diagnosis or treatment and any associated waiting times. Information about these processes can come from individual patients (patient reported experience measures) or from data about the performance of the service (service-level process measures).

Outcomes indicators are appealing because they describe the desired achievements of services, reflecting the overall effect of the multiple contributory factors to quality, including the ones that are difficult to measure, such as technical expertise and operator skill.

It can be difficult to determine what local factors determine health outcome indicators. This can limit their practical usefulness in deciding what elements in the health and social care services need changing. For example, differences in patient outcomes from treatment in musculoskeletal services may be due to differences in many factors including patient characteristics and clinical severity (called ‘case mix’), data collection problems or lack of data completeness, chance, or actual issues in quality of care.

Process indicators are generally easier to measure, and can be assumed to lead to differences in the quality of care. They can also be helpful where true health outcomes do not emerge until many years after care is delivered.

Those who commission, deliver, monitor and improve musculoskeletal services locally need to use a mixture of comparable musculoskeletal indicators. These can help them to examine the process and outcomes quality of local services, to explore why these may be different to similar services elsewhere and to identify actions for improvement.

2. Methods

2.1 Leadership and external support

2.1.1 Core project team

Arthritis Research UK commissioned the Public Health Action Support Team (PHAST), a Social Enterprise Organisation, to support Arthritis Research UK to deliver the project.

The core project team was Benjamin Ellis, Senior Clinical Policy Advisor to Arthritis Research UK and the PHAST team: Richard Gibbs, Richard Willmer, David Lawrence and Samanta Adomaviciute (research literature review).

2.1.2 Establishing the IAG

To oversee and support the project, Arthritis Research UK established the IAG (Appendix 1) which included representatives of NHS agencies (NHS England, Department of Health, NICE and Public Health England); patient representative charities (Arthritis Care, National Rheumatoid Arthritis Society), professional associations (British Society for Rheumatology, British Orthopaedic Association, Chartered Society of Physiotherapy), health service commissioners and the Arthritis & Musculoskeletal Alliance (ARMA).

The project required close working between the core team, the IAG and representatives from the wider musculoskeletal community, including the patient and public perspective, clinical leadership and commissioners. This includes workshops and individual meetings (Appendix 2).

The IAG provided expert advice on all aspects of the project through regular teleconferences.

- Reflect the shared vision for excellent musculoskeletal services
- Be relevant to clinicians and patient
- Be a mixture of process and outcome information
- Cover both specific and generic aspects of services and be representative of the system as a whole
- Be based on currently available data or data that could (and should) reasonably be set up and collected in the next three years.

Arthritis Research UK is grateful for the time and ideas from members of the IAG and others interviewed during the process. We thank PHAST for their work on the process of research, classifying indicators and stakeholder engagement which contributed significantly to the wide acceptance of the results.

2.1.2 Scope and coverage of indicators

The Core Team and IAG agreed to consider indicators using the following key categories:

- **Disease group coverage:** osteoarthritis, back pain, rheumatoid arthritis, fragility fracture
- **Indicator type:** outcomes, process, cost, patient experience, prevalence
- **Audience:** patients, clinicians, commissioners, local authorities, including public health departments.

2.1 Leadership and external support

In order to classify indicators into the relevant categories, the group used the following checklist of indicator attributes:

1. Rationale for and purpose of the indicator
    - To monitor effectiveness of services
    - To improve quality of services
    - To monitor expenditure and activity
    - To monitor organisation, management and interconnectedness of musculoskeletal services
    - To monitor the extent of patient centeredness, e.g. care planning, self-management support.
2. Level of collection of the indicator
    - Geographical area or population
    - Organisations
    - Individual patients.
3. Intended audience for the indicator
    - Commissioners of services
    - Clinicians
    - Managers of services patients
    - Patients and carers
    - Local authorities
    - Community.
4. Musculoskeletal conditions covered by the indicator
    - Osteoarthritis of the hip or hip pain
    - Osteoarthritis of the knee or knee pain
    - Back pain
    - Pain (as a result of a musculoskeletal condition)
    - Rheumatoid and inflammatory arthritis
    - Fragility fracture.
5. Technical quality of the indicator
    - Validity: fitness for purpose, measures what it purports to do
    - Responsiveness: sensitivity to changes in true events
    - Reliability: obtaining same result on repeated application.
6. Usefulness of indicator in routine practice
    - Clarity of the meaning of the indicator
    - Practicality of use, including difficulty of interpretation
    - Cost of collection
    - Difficulty of collection
    - Cost of using.

2.2 Deriving the long and short list of indicators

Over 250 potential candidate indicators (Appendix 3) were identified through reviews of the formal and grey literature, IAG recommendations, informal consultation with experts and core group expertise.

To derive a short list of 15–25 indicators, the core group ranked indicators based on data quality, ease and cost of data collection, and evidence of use in practice.

Discussions were then held with stakeholder groups through:

a) monthly IAG teleconferences for advice and discussions on process and detail

b) one-to-one discussions with experts

c) small group workshops including clinical, managerial, analytical, and patient/public representatives

d) musculoskeletal community workshops.

Because of the complexity and heterogeneity of different kinds of indicators, and in many cases the lack of evidence on their practical use and usefulness, the short-listing process used the principles of the above method, but in a flexible way.

In a number of cases, multiple candidate indicators were identified for a given point in musculoskeletal systems. The work to resolve these issues involved discussions with stakeholders to solicit a range of expert views on the strength and usefulness of various indicators in relation to the indicator attributes stated above.

Given the different perspectives presented by those questioned, in many areas complete consensus was not possible when compiling the short list. The final selection was based on multiple comments across the different professions and disciplines. Where necessary the core project team made the final decision.

There was recognition throughout the project that, since this is a pioneering practical project (and not a pure academic exercise), it is likely that when these indicators are tried in practice some will work better than others. Indicators that are less successful could then be substituted with a similar indicator from the long indicator resource. It is expected that indicators can be improved by means of putting them into practice and collecting information on their strengths and limitations.

3. Results

3.1 Structure of Recommended Musculoskeletal Indicator Set

The recommended short list of indicators was divided into seven segments:

1. Overall musculoskeletal health systems structure
2. Musculoskeletal health promotion
3. Osteoarthritis
4. Back pain
5. Rheumatoid arthritis
6. Fragility fractures
7. Musculoskeletal health outcomes.

To demonstrate the range of indicator types, these were further classified by type:

- Population and preventive medicine indicators (process)
- Population and preventive medicine indicators (outcome)
- Cost/cost effectiveness indicator (structure)
- Organisational resources indicator (structure)
- Clinical quality indicators (process)
- Administration quality indicator (process)
- System-level outcome measures (outcome)
- Patient-reported outcome measures (outcome)
- Patient-reported experience measure (outcome).

3.2 Final Recommended Musculoskeletal Indicator Set

The final recommended set of 22 indicators is set out in the following list which outlines the considerations that were used in sifting out those indicators that were not eventually included from the long list (appendix 3).

Coverage: Musculoskeletal health system

Indicator 1

Percent of total clinical commissioning group (CCG) annual spend which is on services for musculoskeletal (MSK) conditions

Rationale:
This is a measure of CCG spend on MSK services as share of total CCG spend, compared to spend in earlier years and compared to the CCG spend on other clinical areas. It can also be used to compare with size of MSK spend in other CCGs.

Indicator type:
Cost/cost effectiveness indicator (structure).

Definition:
Numerator: annual CCG programme budget spend which is on: (1) all MSK services, plus (2) chronic pain services attributable to MSK conditions, plus (3) trauma services attributable to fragility fractures.

Denominator: total annual CCG programme budget spend.[23]

Availability:
Spend data are produced for the programme budgeting spend tool (formerly these data were available as part of the spend and outcome tool item 15, spend on problems of the MSK system).

Caveats:
It might be difficult to obtain the specified programme budgeting spend data as required for the above definition.

Long-list indicators not included and reasons for exclusion:
There was one other possible need/spend indicator to compare MSK systems: Number of expected MSK cases (from MSK prevalence estimates) divided by MSK programme budget spend. This was rejected as too complicated.

Lay explanation:
This indicator looks at how much is being spent locally on musculoskeletal services compared with local spend on all NHS services.

Lay interpretation:
Total spend on its own does not determine quality – a service could spend a lot because of high local need, or spend less because it's very efficiently run. Comparing musculoskeletal spend between similar populations would be more useful. An unexpected figure (high or low) needs looking at. It could also be useful to look at trends – whether local spend is going up, or falling – and trying to understand why.

Coverage: Musculoskeletal health system

Indicator 2

Ratio of musculoskeletal (MSK)-related clinical specialist consultants (trauma & orthopaedics, spinal surgeons, rheumatology, pain medicine) to MSK-specialist allied health professionals

Rationale:
Indication of the balance between various members of the clinical MSK teams.

Indicator type:
Organisational resources indicator (structure).

Definition:
Numerator: numbers of trauma and orthopaedic plus rheumatology plus pain consultants in CCG catchment area hospitals.

Denominator: Number of MSK-specialist allied health professionals in CCG catchment area and number in each community health organisation/hospital.

Availability:
Data will need to be collected from organisations' human resources departments and the number of consultant and allied health professional staff serving each CCG estimated using the percent of patients in the catchment area of each organisation which are from each CCG.

Caveats:
Obtaining these data and the analyses might not be straightforward.

Long-list indicators not included and reasons for exclusion:
The three long list indicators consider of number of individual specialist groups were considered to be less useful.

Lay explanation:
This indicator looks at the balance between different types of health professionals, specifically between specialist doctors, and other professions that support people with musculoskeletal conditions, such as physiotherapists, podiatrists and others.

Lay interpretation:
It is important to make sure there's a good mix of professionals available locally so that people with musculoskeletal conditions can get the treatment and support they need. Over-reliance on one particular type of professional would be unexpected (though it could be for very good reasons) and is worth investigating.

Coverage: Musculoskeletal health system

Indicator 3

Spend on pain medications (excluding paracetamol, weak opioids) per CCG population

Rationale:
Allows analysis of variations in prescribing and in use of resources.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: spend on pain medications, e.g. strong opioids, including tramadol, GABA-analogues, amitriptyline/nortriptyline (excluding paracetamol, weak opioids) in primary and specialist care per CCG area.

Denominator: age-sex-standardised CCG area population.

Availability:
Data should be available from medication spending data, but this needs testing.

Caveats:
The implications of various patterns of spend require investigation.

Long-list indicators not included and reasons for exclusion:
This indicator replaced 15 separate indicators covering various aspects of pain medication.

Lay explanation:
This indicator looks at how much is being spent by general practitioners (GPs) on prescriptions for second-line medicines for treating pain.

Lay interpretation:
Many people living with painful musculoskeletal conditions can benefit from pain-relieving medication and this should be provided. However, there are also other important aspects to pain-management, and overreliance on second-line pain medications can suggest these are being overlooked.

Coverage: Musculoskeletal health system

Indicator 4

Percent of people with a long-term musculoskeletal (MSK)-related problem who state they have a written, personalised, specified, care plan which is reviewed regularly within a specified period

Rationale:
High-quality primary care services should work with people with an MSK condition to develop an agreed, defined care plan which is reviewed (at least) annually.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: number of people in CCG area with MSK condition who have a care plan regularly reviewed. Denominator: number of people in CCG area with an MSK condition.

Availability:
Good – Numerator from GP Patient Survey (GPPS)[24] Q59, all parts. Denominator – number of people in GPPS reporting arthritis or back pain.

Caveats:
The proportion of people with an MSK condition who respond that they have a care plan is about 12% and there might be problems with low prevalence and low variation in the numbers of patients who respond. Further, the existence of a care plan does not in itself demonstrate high-quality care planning.

Long-list indicators not included and reasons for exclusion:
Following discussions with commissioners, this indicator was seen as likely to be the best indicator of good patient-centred personalised process quality, from 120 indicators of musculoskeletal service process quality in the long list.

Lay explanation:
This indicator looks at whether people have a personalised care plan – a summary of their personal health problems and goals and the plan to address them, mutually agreed between them and their clinician and usually reviewed annually.[25]

Lay interpretation:
Care plans are an important way of enabling coordinated, personalised care. People with long-term conditions who want one are entitled to have a care plan as part of their NHS care. Low uptake of care planning suggests that people are not being offered this opportunity to participate in decisions about their health and care.

Indicator 5

Time from referral (GP, self or other) to first allied health professional review for musculoskeletal (MSK) patients

Rationale:
Indicator of the quality of MSK primary and specialist services and their co-ordination. Measure of quality and efficiency of interface between primary and specialist MSK care.

Indicator type:
Administration quality indicator (process).

Definition:
Mean number of days, and distribution of the time in days, from patient referral (from GP or other professional or self-referral) that patients with a musculoskeletal condition wait before first allied health professional review.

Availability:
Should be available from the Community Information Data Set (CIDS). However CIDS is due to be retired and replaced by the Community Services Data Set (CSDS).[26]

Caveats:
Availability needs checking and usefulness in practice needs testing in a pilot.

Long-list indicators not included and reasons for exclusion:
From 12 indicators in the long list covering administrative quality (process), this indicator was selected because of its breadth of application across clinical areas and the clinical importance of early assessment and treatment.

Lay explanation:
This indicator looks at how long people are waiting to see a physiotherapist (or other allied health professional such as podiatrist, or hand therapist) after the initial referral, whoever makes the referral (including in areas where people can refer themselves directly to physiotherapy).

Lay interpretation:
A long waiting time to see a physiotherapist (or other allied health professional) is usually sub-optimal healthcare. People have troublesome symptoms they need help with may be unable to work or participate in their usual activities during that time, and problems left for longer become harder to treat.

Coverage: Musculoskeletal health promotion

Indicator 6

Percent of patients with osteoarthritis or with rheumatoid arthritis who have a body mass index (BMI) of 30 and above (obese)

Rationale:
Indicates the need for obesity reduction interventions for secondary prevention of musculoskeletal conditions.

Indicator type:
Population and preventive medicine indicators (outcome).

Definition:
Numerator: number of patients on GP registers in CCG area with osteoarthritis, plus number of patients with rheumatoid arthritis, who have a BMI 30 and above. Denominator: number of patients on GP registers in CCG areas with osteoarthritis plus number of patients on GP registers in CCG areas with rheumatoid arthritis.

Availability:
Not yet routinely produced.

Caveats:
The data for this indicator will require extraction of data items from GP registers.

Long-list indicators not included and reasons for exclusion:
Other candidate indicators were mainly modelled prevalence of musculoskeletal conditions, rather than indicating a need for a local preventive service.

Lay explanation:
This indicator looks at how much obesity there is among people with two of the most common forms of arthritis (BMI compares height to weight to estimate overweight/obesity).

Lay interpretation:
People who are overweight and obese generally have more severe arthritis symptoms than people of a healthy body weight, and tend to respond less well to treatment. Good musculoskeletal health systems will support people with arthritis to maintain healthy body weight to minimise symptoms and improve response to treatment.

Coverage: Musculoskeletal health promotion

Indicator 7

Percent of adults with osteoarthritis who receive advice on participating in muscle strengthening and aerobic exercise

Rationale:
An indicator of care quality: good care of osteoarthritis patients includes appropriate exercise advice.

Indicator type:
Population and preventive medicine indicators (process).

Clinical quality indicators (process).

Definition:
Numerator: number of people in the CCG area with a diagnosed osteoarthritis condition who receive advice on muscle strengthening and aerobic exercise.

Denominator: number of people in the CCG area with diagnosed osteoarthritis.

Availability:
Not currently routinely available.

Caveats:
Data for the numerator will probably require new data collection from primary care or MSK service provider records. Denominator data will require special data collection from GP records.

Long-list indicators not included and reasons for exclusion:
Other candidate process indicators for population and preventive medicine were mainly modelled prevalence of musculoskeletal conditions, rather than indicating a need for a local preventive service. This indicator also covers process aspects of clinical quality.

Lay explanation:
This indicator looks at whether people with the most common forms of arthritis are receiving the advice they need on how to improve their symptoms through physical activity.

Lay interpretation:
Appropriate physical activity reduces symptoms for people with arthritis. Clinicians should routinely offer brief advice about physical activity to tackle myths that exercise is bad for joints and that people with arthritis should rest, and to support people to improve their own musculoskeletal health.

Coverage: Osteoarthritis

Indicator 8

Rate of elective primary hip replacement per expected prevalence of severe hip osteoarthritis (OA)

Rationale:
Allows analysis of variation in healthcare use of resources. Large variation, especially very high or low rates, indicates need for investigation. Based on hip replacement rate per head of estimated population with severe hip osteoarthritis.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: number of primary hip replacements per year for patients aged 55–80 resident in a CCG area. Denominator: prevalence (number of people, modelled estimate) of severe hip osteoarthritis for patients aged 55–80 in CCG area from the Arthritis Research UK MSK Calculator.[27]

Availability:
Good – numerator data are available from Hospital Episode Statistics[28] and denominator data from the Arthritis Research UK MSK Calculator.[27]

Long-list indicators not included and reasons for exclusion:
This indicator was selected from the 32 long list Indicators relating to clinical process quality for osteoarthritis services, as being most useful and easy to collect and use.

Caveats:
High or low rates by themselves don't necessarily indicate low or high rates of patient clinical severity thresholds of listing for surgery.

Lay explanation:
This indicator looks at how likely it is that people with severe hip osteoarthritis will have their hip replaced.

Lay interpretation:
Hip replacement surgery is a very effective treatment for people with hip osteoarthritis. Low rates of surgery could mean that people who could benefit are being left in severe pain. High rates of surgery could suggest that other, non-surgical treatment options, are unavailable or not being explored with patients. There is no "correct" rate of surgery and, as always, it is essential to explore the local reasons for any variation, rather than making assumptions about the cause.

Coverage: Osteoarthritis

Indicator 9

Rate of elective primary knee replacement per expected prevalence of severe knee osteoarthritis (OA)

Rationale:
Allows analysis of variation in healthcare use of resources. Large variation, especially very high or low rates, indicates need for investigation. Based on knee replacement rate per head of estimated population with knee arthritis from the Arthritis Research UK MSK Calculator.[27]

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: number of primary knee replacements per year for patients aged 55–80 resident in CCG area.

Denominator: prevalence (number of people, modelled estimate) of severe knee osteoarthritis for patients aged 55–80 resident in a CCG area from the Arthritis Research UK MSK Calculator.[27]

Availability:
Good – numerator data are available from Hospital Episode Statistics[28] and denominator data from the Arthritis Research UK MSK Calculator.[27]

Caveats:
High or low rates by themselves don't necessarily indicate low or high rates of patient clinical severity thresholds of listing for surgery.

Long-list indicators not included and reasons for exclusion:
This indicator was selected from the 32 long list Indicators relating to clinical process quality for osteoarthritis services, as being most useful and easy to collect and use.

Lay explanation:
This indicator looks at how likely it is that people with severe knee osteoarthritis will have their knee replaced.

Lay interpretation:
Knee replacement surgery is a very effective treatment for people with knee osteoarthritis. Low rates of surgery could mean that people who could benefit are being left in severe pain. High rates of surgery could suggest that other, non-surgical treatment options, are unavailable or not being explored with patients. There is no “correct” rate of surgery and, as always, it is essential to explore the local reasons for any variation, rather than making assumptions about the cause.

Coverage: Osteoarthritis

Indicator 10

Mean length of stay in hospital for elective hip and knee replacement patients

Rationale:
Indicator of implementation of enhanced recovery for surgery procedures. Allows analysis of variation in use of resources.

Indicator type:
Clinical quality indicators (process).

Definition:
Mean length of stay in operating hospitals for all primary elective hip and knee replacement patients resident in a CCG area, per year, standardised by age and sex and co-morbidities (using case mix analysis).

Availability:
Good, from Hospital Episode Statistics.[28]

Caveats:
None.

Long-list indicators not included and reasons for exclusion:
This indicator was selected from the 32 long list Indicators relating to clinical process quality for osteoarthritis services, as being most useful and easy to collect and use.

Lay explanation:
This indicator looks at the number of days on average that a patient spends in hospital after being admitted as an inpatient to have either their hip or their knee replaced.

Lay interpretation:
For most people, it is good to be back on their feet and home as soon as possible after a joint replacement and this promotes a good recovery – many health organisations have implemented enhanced recovery programmes to achieve this. Longer stays generally aren't good for patients, and suggest that care is less streamlined and costs more money.

Coverage: Osteoarthritis

Indicator 11

Percent of patients who have non-elective re-admission to hospital within 28 days of either elective primary hip or knee replacement

Rationale:
Indicator of surgical quality: after adjusting for age, sex and co-morbidities (using case mix analysis) from Hospital Episode Statistics diagnosis coding, higher re-admission rates after 28 days indicate lower quality.

Indicator type:
Service reported outcome measures (outcome).

Definition:
Numerator: number of patients in the period resident in a CCG area re-admitted (excluding elective admission) to hospital within 28 days of undergoing either primary hip or knee replacement.

Denominator: number of patients in the period from CCG area undergoing elective primary hip or elective knee replacement.

Availability:
Good, from Hospital Episode Statistics.[28]

Caveats:
None bar the need to test for variable procedure and diagnostic coding of hospital data from each hospital.

Long-list indicators not included and reasons for exclusion:
This indicator was selected from the 32 long list Indicators relating to clinical process quality for osteoarthritis services, as being most useful and easy to collect and use.

Lay explanation:
This indicator looks at how likely it is that a person who has had either their hip or knee replaced needs to be re-admitted to hospital as an emergency within 28 days of being discharged after their operation. It only includes people who have had their natural joint removed and replaced, not the replacement of an artificial one that has worn out.

Lay interpretation:
If the surgery and after-care goes well, then there shouldn't be any reason why people need to be back in hospital within the month. Being re-admitted as an emergency suggests a problem or a complication, such as an infection or a blood clot in the leg.

Coverage: Osteoarthritis

Indicator 12

Rate of knee arthroscopy in patients aged 60 years and over

Rationale:
High knee arthroscopy rates in patients aged 60+ years may be perceived as an indicator of less than optimal treatment and thus a poor use of resources.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: number of patients resident in a CCG area aged 60+ having planned knee arthroscopy in period.

Denominator: number of patients aged 60+ resident in a CCG area.

Availability:
Good, from Hospital Episode Statistics.[28]

Caveats:
The usefulness of this formulation of the indicator in assessing poor use of resources needs to be tested in a pilot.

Long-list indicators not included and reasons for exclusion:
This indicator was selected from the 32 long list Indicators relating to clinical process quality for osteoarthritis services, as being most useful and easy to collect and use.

Lay explanation:
This indicator looks at how many people aged over 60 years have had keyhole surgery (arthroscopy) for their knee.

Lay interpretation:
Keyhole surgery (arthroscopy) for normal knee osteoarthritis is relatively ineffective. High rates of this procedure in people aged over 60 years suggests poor use of resources.

Coverage: Back pain

Indicator 13

Accident and Emergency (A&E) attendances secondary to back pain per population prevalence of back pain

Rationale:
The number of hospital A&E attendances per period is a possible indicator of quality of community services for back pain; comparatively high rates indicate the need for investigation.

Indicator type:
Clinical quality indicators (process).

Definition:
Number of hospital A&E attendances with a diagnosis of back pain as the cause of attendance in the period in the CCG area.

Availability:
From Hospital Episode Statistics A&E data set.[28]

Caveats:
In practice, diagnosis fields might not be recorded sufficiently and uniformly well across England to be of practical use. Therefore the use of this indicator requires piloting. Alternatives include "the number of unplanned hospital admissions with a primary or secondary recorded diagnosis of back pain".

Long-list indicators not included and reasons for exclusion:
This was the only long list indicator of quality of MSK services specifically for back pain.

Lay explanation:
This indicator looks at how likely it is that a person with back pain attends A&E because of their back pain.

Lay interpretation:
People only go to A&E for their back pain if things have become extremely bad or if they've been unable to access appropriate services elsewhere – both of which shouldn't be common if there are good community musculoskeletal services for people with back pain, including self-management support. A high level of A&E attendance for back pain suggests a problem with these services.

Coverage: Back pain

Indicator 14

Rate of facet joint injections

Rationale:
Variation from the mean, especially comparatively high rates, warrants investigation: use of facet joint injections as a treatment (not diagnostic procedure), isn't supported by the evidence base.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: number of facet joint injections in period for patients in CCG area.

Denominator: number of people in CCG area in period with estimated population of back pain from the Arthritis Research UK MSK Calculator.[27]

Availability:
Good – numerator data are available from Hospital Episode Statistics[28] and denominator from the Arthritis Research UK MSK Calculator.[27]

Caveats:
Some facet joint injections are diagnostic, and are clinically appropriate; testing the use of this indicator in practice is required to determine whether the indicator needs to be revised to take this into account.

Long-list indicators not included and reasons for exclusion:
There were no other long list indicators specifically on the use of low-value interventional procedures for back pain.

Lay explanation:
This indicator looks at how likely people with back pain are to have a specialist injection into one of the small joints in the spine.

Lay interpretation:
Although facet joint injections for back pain are sometimes appropriate, for example to make a diagnosis, for most people as a treatment they are ineffective. Very low numbers could suggest that some people that need them aren't getting them. High numbers suggest overuse of this procedure and may imply lower-quality back pain services.

Coverage: Rheumatoid arthritis

Indicator 15

Percent of patients with suspected rheumatoid arthritis seen in a rheumatology service for confirmation of diagnosis within three weeks of referral

Rationale:
If a patient presents with suspected rheumatoid arthritis then they should be assessed in a rheumatology service for confirmation of diagnosis within three weeks after the onset of symptoms (NICE QS33)[29] to improve health outcomes.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: number of patients with suspected rheumatoid arthritis in the period seeing a specialist in a rheumatology service for confirmation of diagnosis within three weeks of referral.

Denominator: number of patients seen by rheumatology service in the period with suspected rheumatoid arthritis.

Availability:
From the British Society for Rheumatology/ Healthcare Quality Improvement Partnership audit: National clinical audit for rheumatoid and early inflammatory arthritis.[30]

Caveats:
The audit ran from 2014 to 2015, and is due to restart in 2017.

Long-list indicators not included and reasons for exclusion:
This is one of two rheumatoid arthritis indicators included in the Recommended Musculoskeletal Indicator Set, chosen for their usefulness. This was decided by the IAG from a long list of 34 rheumatoid arthritis indicators identified on various aspects of rheumatoid arthritis care.

Lay explanation:
This indicator looks at how likely it is that someone is seen by a specialist within three weeks of referral if they are suspected to have developed rheumatoid arthritis.

Lay interpretation:
Rheumatoid arthritis is a rapidly progressive condition that causes irreparable damage to the joints. People who develop this need urgent, intensive therapy to prevent long-term pain, disability and joint damage.

Coverage: Rheumatoid arthritis

Indicator 16

Spend on biologic therapies/drugs per expected prevalence of rheumatoid arthritis

Rationale:
Allows analysis of variations in prescribing and in use of resources; variations in biologic need may reflect standards of care.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: spend on specified anti-rheumatic biologic drugs.

Denominator: expected (modelled) prevalence of rheumatoid arthritis.

Availability:
Precise data on biologic drug spend for rheumatoid arthritis are not routinely available, but within programme budgets there is a “high-cost drug” line in musculoskeletal programme budget which may be a reasonable proxy.

Caveats:
The implications of various patterns of spend require investigation.

Long-list indicators not included and reasons for exclusion:
This is one of two rheumatoid arthritis indicators included in the Recommended Musculoskeletal Indicator Set, chosen for their usefulness. This was decided by the IAG from a long list of 34 rheumatoid arthritis indicators identified on various aspects of rheumatoid arthritis care.

Lay explanation:
This indicator looks at how likely it is that a person with rheumatoid arthritis will receive a regular injection with a specialist biological therapy as their treatment.

Lay interpretation:
Biological therapies are high-cost, injected treatments that are used when other approaches haven’t worked. Conventional, relatively inexpensive, drugs (DMARDs) for rheumatoid arthritis are most effective when used intensively, very early on in the course of rheumatoid arthritis. So low use of biological therapies could be due to very effective use of DMARDs, or because of a failure of a service to start them in people who really need them.

Coverage: Fragility fractures

Indicator 17

Prevalence rate of hip fracture

Rationale:
Indicator of the need for primary and secondary prevention of osteoporosis, falls prevention.

Indicator type:
Population and preventive medicine indicators (outcome).

Definition:
Rate of hospital admissions for hip fracture/ fractured neck of femur per person per year for defined CCG area, standardised by age and sex.

Availability:
Good.

Caveats:
None.

Long-list indicators not included and reasons for exclusion:
There were no other long list indicators specifically on the prevalence of hip fracture.

Lay explanation:
This indicator looks at how likely it is for an older person to fall and break their hip.

Lay interpretation:
People over 70 years old who have osteoporosis (a condition which causes the bones to become thin) are at much greater risk of breaking bones such as the hip from seemingly minor falls. A broken hip can greatly impact mobility, independence and quality of life.

Coverage: Fragility fractures

Indicator 18

Percent of hospital inpatient admissions for hip fracture which qualify for fragility hip fracture conditional best practice tariff payments

Rationale:
Taken together the components of the fragility hip fracture conditional best practice tariff indicate co-ordinated, appropriate, timely fragility fracture inpatient care.

Indicator type:
Clinical quality indicators (process).

Definition:
Numerator: number of hospital admissions in period qualifying for conditional best practice tariff for fragility hip fracture (Payment by Results).[31]

Denominator: number of hospital inpatient admissions in period for hip fracture for CCG area.

Availability:
Good.

Caveats:
None.

Long-list indicators not included and reasons for exclusion:
The long list includes over 50 hip or fragility fractures process quality indicators. The above indicator was chosen as most representative and the easiest to collect.

Lay explanation:
This indicator looks at how likely it is that someone with a broken hip gets all the components of best practice care.

Lay interpretation:
There are a number of actions which should occur during the treatment and hospital care of the patient, for example surgery within 36 hours of admission and specialist older persons' assessment. People getting all these components are more likely to have a good health outcome following their broken hip.

Coverage: Fragility fractures

Indicator 19

Percent of patients with hip fracture, admitted to hospital from own home, returning home within 30 days

Rationale:
This indicator helps inform the degree of effectiveness of treatment for a hip fracture, including rehabilitation support after discharge.

Indicator type:
System-level outcome measures (outcome).

Definition:
Numerator: number of patients from CCG area in the National Hip Fracture Database[32] (NHFD) extract who return home within 30 days by area.

Denominator: patients in the NHFD from CCG area.

Availability:
Good.

Caveats:
The completeness and quality of the National Hip Fracture Database (NHFD) data items will need to be tested.

Long-list indicators not included and reasons for exclusion:
There were 10 service outcome indicators on hip or other fragility fractures, of which this one was considered to best indicate overall outcomes.

Lay explanation:
This indicator looks at how likely it is for someone living in their own home when they broke their hip to return to live in their own home within a month.

Lay interpretation:
The goal of care for a person with a broken hip is to restore them to their previous health. Low numbers of people managing to return home within a month of their fracture, for example because they have had to be admitted to a care home or are needing prolonged inpatient rehabilitation, suggests poorer care.

Coverage: Musculoskeletal health outcomes

Indicator 20

Change in health utility score from baseline to six-months post treatment

Rationale:
Indicator of level of health-related quality of life change related to clinical musculoskeletal care.

Indicator type:
Patient-reported outcome measures (outcome).

Definition:
Mean per patient of (musculoskeletal health utility questionnaire score after six months' musculoskeletal services care minus musculoskeletal health utility questionnaire score at first MSK consultation) in period for patients resident in a CCG area.

Availability:
Will require special data collection.

Caveats:
The usefulness of this indicator requires testing. Outcomes of piloting the Musculoskeletal Health Questionnaire (MSK-HQ)[B] are now available and have shown to be more sensitive than the EQ-5D. However, there is a need to further understand how it can be used.

Long-list indicators not included and reasons for exclusion:
There are 33 health-related quality of life outcome indicators in the long list. The EQ5D/MSK-HQ were chosen as most appropriate for indicating musculoskeletal outcomes, having coverage of all musculoskeletal conditions.

Lay explanation:
This indicator looks at how much additional "health" people gain from the services and treatments they receive.

Lay interpretation:
Musculoskeletal services aim to improve health for people with arthritis. The Arthritis Research UK Musculoskeletal Health Questionnaire[33] (MSK-HQ) is a short questionnaire that asks people to rate their symptoms and quality of life – pain/stiffness, independence, mobility, mood, sleep, ability to take part in usual activities etc. (EQ-5D is similar, but shorter and not specific for musculoskeletal problems). Scores should improve with treatment, and the better the improvement, the bigger the change in scores.

[B] You can access the MSK-HQ from the Arthritis Research UK website here: http://www.arthritisresearchuk.org/msk-hq

Coverage: Musculoskeletal health outcomes

Indicator 21

Percent of people of working age locally who are receiving Employment Support Allowance (ESA) due to a musculoskeletal (MSK) problem

Rationale:
Important indicator of service outcome – the proportion of working-age people who have not had their MSK health needs sufficiently met for them to remain at, or return to, work.

Indicator type:
System-level outcome measures (outcome).

Definition:
Numerator: number of people resident in a local area in period collecting ESA due to a musculoskeletal condition.

Denominator: number of people of working age resident in the local area with a musculoskeletal condition.

Availability:
Numerator: the Department of Work and Pensions (DWP) has data on numbers of people on ESA by medical condition. Denominator: from modelled prevalence data for osteoarthritis, rheumatoid arthritis and back pain.

Caveats:
Numerator data: the practicality of obtaining the ESA data at local level broken down by musculoskeletal conditions will need to be tested; ESA numbers are based on what is recorded at the point of claim and not as an output of the assessment.

Denominator data: these will depend on the availability of modelled prevalence estimates for the specific musculoskeletal conditions. Use of this indicator for comparison purposes may be best done between local areas with similar unemployment/deprivation rates and should be tested.

Long-list indicators not included and reasons for exclusion:
This was chosen from the four indicators in the work outcome section in the long list as having widest meaningful coverage and an existing data source.

Lay explanation:
This indicator looks at how likely it is that people are receiving state benefits because they are unable to work due to a musculoskeletal condition.

Lay interpretation:
An important goal for musculoskeletal services is to support people to carry out their usual daily activities. For people of working age, this includes remaining in (or returning to) employment. High levels of ESA suggest this aspect of musculoskeletal care isn’t being effectively provided.

Coverage: Musculoskeletal health outcomes

Indicator 22

Rheumatic conditions care patient service experience scores

Rationale:
An important aspect of the quality of musculoskeletal (MSK) services can be indicated by the quality of patient experience as recorded by individual patients.

Indicator type:
Patient-reported experience measure (outcome).

Definition:
Commissioning for Quality in Rheumatoid Arthritis's (CQRA) 'Rheumatic Conditions Patient Service Experience Questionnaire'[34] for CCG areas mean score per person after three months' care.

Availability:
Not routinely collected.

Caveats:
Data collection at the patient level is not easy and takes patient and staff time. These data haven't been collected routinely and will have to be tested in a pilot to determine how far patients' responses accurately represent their actual experiences.

Long-list indicators not included and reasons for exclusion:
This indicator was chosen from 7 patient experience measures because it is specifically designed for "rheumatic" (musculoskeletal) conditions and osteoarthritis and its validity has been tested.

Lay explanation:
This indicator looks at the quality of experience for people using musculoskeletal services.

Lay interpretation:
As well as improving musculoskeletal health, services should be pleasant and acceptable for those who use them. Questionnaires, such as the rheumatic conditions care patient service experience scores, ask individual patients about their experiences. Services that rate highly are generally providing their patients with a good experience.

4. Using the Recommended Musculoskeletal Indicator Set

4 Using the Recommended Musculoskeletal Indicator Set

Musculoskeletal health is a varied and important clinical area. These recommended indicators are not designed to meet every possible requirement of those with an interest in improving musculoskeletal services. Instead they provide a significant opportunity to help with improvements in service delivery to enhance value and improve health for people with musculoskeletal conditions.

These indicators should be particularly useful for those planning and managing musculoskeletal services for the benefit of patients, for example Clinical Commissioning Groups, Sustainability and Transformation Plan (STP) footprint areas, local authorities, and community and specialist services.

The recommended indicator set should provide information for discussions by local service development and planning groups, such as the Musculoskeletal Clinical Networks. The indicators should be used to inform work intended to optimise health benefit and patient experience, while minimising waste and remaining within budget.

It can be tempting to try to assign to indicators a value of "what is right?" and "what indicates good care?". However, the purpose of the majority of the indicators selected is to highlight variation between areas and organisations over time. Identifying outliers on a given indicator should prompt further examination as to the reason before any judgement is made. There may be good reasons for being an outlier, including delivering excellent-value care. The purpose of the recommended indicator list is therefore to stimulate and support service improvement, and not to find fault with services. The culture regarding use of the data and of taking this work forward should reflect the detail and the spirit of the purpose of this work outlined in the introductory sections.

Indicators should not generally be used in isolation, but are best looked at in combination to produce an overall picture of the local situation.

By using these in conjunction with other locally available data, organisations can undertake a 'deep dive' into areas of interest. This more structured approach should be used to uncover the deeper reasons underlying variation, identify opportunities for improvement and support the necessary work to deliver high-value services for people with musculoskeletal conditions.

5. Future directions

5 Future directions

Arriving at the Recommended Musculoskeletal Indicator Set marks the beginning of this work, rather than the end. Now activity must shift into encouraging adoption of these indicators into routine use and promoting the take up of the information to benefit people with musculoskeletal conditions.

Recognising that indicator development work is a process of continual learning and improvement, stakeholders are encouraged to promote early adoption and dissemination across the musculoskeletal community and should encourage action and learning in the testing and use of these indicators:

Evaluation and improvement

- Improve understanding of the burden and practicalities of indicator data collection
- Adopt national and local approaches to address gaps in the current collection and reporting of data to populate the indicators
- Evaluate and improve individual components of the indicator set
- Employ ongoing review of the contents of the indicator set to take into account new policy developments, such as uptake of the Arthritis Research UK Musculoskeletal Health Questionnaire (MSK-HQ).

Promoting uptake, understanding and use

- Explore opportunities to present and disseminate the information, including working with relevant agencies (e.g. NHS RightCare and the Musculoskeletal Clinical Networks)
- Develop learning opportunities and guidance for indicator interpretation for commissioners, managers, clinicians and patients
- Understand how Musculoskeletal Clinical Networks can use the information from the indicators to identify and spread best practice
- Test different ways of presenting and explaining these indicators, taking into account the different audiences who may wish to review them
- Monitor uptake and use of these indicators among different audiences, including patients/public, commissioners, service providers and clinical communities.

Understanding impact

- Characterise (through case studies) the usefulness of the indicator data in improving services
- Demonstrate patient and public benefit from use of these indicators
- Identify and mitigate against any unintended consequences from implementation of the indicator set.

Appendices

Appendix 1:
IAG membership*

Stephen Atkinson, Policy Advisor, Domain 2 Clinical Services, Department of Health

John Battersby, Consultant in Public Health, Public Health England

Ailsa Bosworth, Chief Executive, National Rheumatoid Arthritis Society (NRAS)

Ann Clare, NHS Confederation

Zoe Cole, Consultant Rheumatologist, British Society for Rheumatology

Lorraine Comley, NHS England

Senga Cree, National Lead, MSK Programme Scotland

Elisabeth Davies, Director of Strategy & Engagement, Arthritis Care

Peter Devlin, Clinical Director, Brighton & Hove Integrated Care Service

Benjamin Ellis (Chair), Senior Clinical Policy Advisor, Arthritis Research UK

Jonathan Field, Royal College of Chiropractors

Niki Gabb, Professional Advisor (Health Informatics), Practice & Development, Chartered Society of Physiotherapy

Richard Gibbs, Associate, PHAST

Maureen Grossman, Public/Patient Representative

Ollie Hart, Musculoskeletal Clinical Lead, Sheffield CCG

Nikki Hill, Director of Communications, Policy & Information, Arthritis Care

Peter Kay, National Clinical Director for Musculoskeletal Services, NHS England

David Lawrence, Associate Consultant, Public Health Action Support Team

Liz Lingard, Joint Deputy Director, North East Quality Observatory System (NEQOS)

Tracey Loftis, Head of Policy & Public Affairs, Arthritis Research UK

Jill Lomas, MSK Programme Manager, Sheffield Teaching Hospitals NHS Trust

Tom Margham, Lead for Primary Care, Arthritis Research UK

Alastair Mew, Senior Commissioning Manager, Sheffield CCG

Mark Minchin, Associate Director, National Institute for Health & Care Excellence

Ben Morgan, Information Analyst, National Osteoporosis Society (NOS)

Federico Moscogiuri, Chief Executive, Arthritis & Musculoskeletal Alliance (ARMA)

Richard Owen, Senior Strategy Advisor, Person-Centred Care, NHS England

Claude Pinnock, UK Implementation, ICHOM

Hannah Pugh, Orthopaedic Clinical Specialist Nurse, SONT

Mike Reed, Consultant Orthopaedic Surgeon, British Orthopaedic Association

Ali Rivett, Director of Clinical Affairs, British Society for Rheumatology

Julie Scrivens, Lead for Planned Care, Hammersmith & Fulham CCG

Bryn Shorney, Senior Lead – Analytical Services (Policy & Commissioning) NHS England

Anne Thurston, Health Sector Relations Manager, National Osteoporosis Society (NOS)

Steve Tolan, Head of Practice & Development, Chartered Society of Physiotherapy

Julia Trusler, Quality Outcomes in Orthopaedics Programme Director, British Orthopaedic Association

Philip Wilcock, Senior Manager – Analytical Service, NHS England

Richard Willmer, PHAST

**Titles and affiliations are accurate to the time of the creation of the IAG*

Appendix 2:
Consultation: Discussions and Workshops*

Individual discussions

Matthew Barker, British Orthopaedic Association

Ailsa Bosworth, National Rheumatoid Arthritis Society

Kit Brogan, Orthopaedics Clinician

Zoe Cole, Consultant Rheumatologist, & British Society for Rheumatology

Joanne Greenhalgh, Associate Professor, University of Leeds, & Patient Reported Outcome measures expert

Maureen Grossman, Patient representative

Colin Howie, Consultant Orthopaedic Surgeon, Edinburgh, & British Orthopaedic Association

Peter Kay, Consultant Orthopaedic Surgeon & National Clinical Director for MSK & Professor at Manchester University

Steven Laitner, General Practitioner & Freelance Health Consultant

Liz Lingard, Joint Deputy Director/Consultant Epidemiologist, North East Quality Observatory System (NEQOS)

Tom Margham, General Practitioner & Primary Care Lead, Arthritis Research UK

Federico Moscogiuri, Arthritis and Musculoskeletal Alliance

Julie Scrivens, Lead for Planned Care and Mental Health at Hammersmith & Fulham Clinical Commissioning Group

Michael Soljak Senior Clinical Research Fellow, Faculty of Medicine, School of Public Health Imperial College, London

Steve Tolan, Chartered Society of Physiotherapy

Phil Wilcock, Senior Manager – Analytical Service, Department of Health

Workshops

London, 27 November 2015
Diane Bell, Director of Insight, COBIC

Maureen Grossman, Patient Representative

Grant Kelly, General Practitioner, Sussex NHS 111 Clinical Governance Lead

Steve Laitner, General Practitioner, Freelance consultant

Michael Soljak, Imperial College London

Richard Willmer, David Lawrence, Marion Deacon, PHAST

Sheffield, 1 December 2015
Sheffield Clinical Commissioning Group: Chris Blundell, Simon Buckley, Ollie Hart, Mark Hobson, Jill Lomas, James Maxwell, Alastair Mew, Nick Plunkett, Rachel Tattersall, Sarah Withers.

PHAST: David Lawrence, Richard Willmer

**Titles and affiliations are accurate to the time of the discussions and workshops*

Appendix 3:
Musculoskeletal indicators long list

The musculoskeletal indicators long list is a list of all the indicators taken into consideration for the final list of 22 indicators. Due to the level of detail in this list, it has not been included in this report and it can be found in a separate document on the Arthritis Research UK website here: **http://www.arthritisresearchuk.org/policy-and-public-affairs/msk-indicators.aspx**.

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