

Osteoarthritis of the Knee – the Case for Improvement

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Osteoarthritis of the Knee Clinical Care Standard

The *Osteoarthritis of the Knee Clinical Care Standard* aims to ensure that a person with knee osteoarthritis receives optimal management and treatment over the course of the condition following presentation to primary care.



- 1 Comprehensive assessment** – A patient with knee pain and other symptoms suggestive of osteoarthritis receives a comprehensive assessment that includes a detailed history of the presenting symptoms and other health conditions, a physical examination, and a psychosocial evaluation that identifies factors that may affect their quality of life and participation in their usual activities.



- 2 Diagnosis** – A patient with knee pain and other symptoms suggestive of osteoarthritis is diagnosed as having knee osteoarthritis based on clinical assessment alone. X-rays are considered only if an alternative diagnosis is suspected (for example, insufficiency fracture, malignancy). Magnetic resonance imaging (MRI) is considered only if there is suspicion of serious pathology not detected by X-ray.



- 3 Education and self-management** – A patient with knee osteoarthritis receives education about their condition and treatments for it, and participates in the development of an individualised self-management plan that addresses both their physical and psychosocial health needs.



- 4 Weight loss and exercise** – A patient with knee osteoarthritis is offered support to lose weight, if they are overweight or obese, and advice on exercise, tailored to their needs and preferences. The patient is encouraged to set weight and exercise goals, and is referred to services to help them achieve these, as required.



- 5 Medicines used to manage symptoms** – A patient with knee osteoarthritis is offered medicines to manage their symptoms according to the current version of *Therapeutic Guidelines: Rheumatology* (or concordant local guidelines). This includes consideration of the patient's clinical condition and their preferences.
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- 6 Patient review** – A patient with knee osteoarthritis receives planned clinical reviews at agreed intervals, and management of the condition is adjusted for any changing needs. If the patient has worsening symptoms with severe functional impairment that persists despite the best conservative management, they are referred for specialist assessment.
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- 7 Surgery** – A patient with knee osteoarthritis who is not responding to conservative management is offered timely joint-conservingⁱ or joint replacement surgery, depending on their fitness for surgery and preferences. The patient receives information about the procedure to inform their treatment decision. Arthroscopic procedures are not effective treatments for knee osteoarthritis, and therefore should only be offered if the patient has true mechanical locking or another appropriate indication for these procedures.ⁱⁱ
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i An example of joint-conserving surgery is high tibial osteotomy.^{1,2}

ii Examples of appropriate indications for arthroscopic procedures are true mechanical locking, septic arthritis, or investigations when MRI is not possible.³

Purpose

This document supports the implementation of the *Osteoarthritis of the Knee Clinical Care Standard* by highlighting what is known about the evidence, best practice and current practice, and the opportunities to bring these closer together.

The scope of the *Osteoarthritis of the Knee Clinical Care Standard* is care relating to patients aged 45 years and over who are suspected of having symptomatic knee osteoarthritis, and who usually present to primary care with ongoing knee pain, possible stiffness and joint swelling. It covers the initial clinical assessment in primary care, ongoing conservative management over the course of the condition, and referral to allied health or specialist care, such as a sport and exercise physician, a rheumatologist or a surgeon if required. Rehabilitation following knee joint replacement surgery is outside the scope of the clinical care standard, although the principles of conservative management of knee osteoarthritis continue to apply.

A clinical care standard is a small number of quality statements that describe the clinical care that a patient should be offered for a specific clinical condition. Each clinical care standard intends to support key groups of people in the healthcare system in the following ways:

- The public will have a better understanding of what care should be offered by the healthcare system, and will be better able to make informed treatment decisions in partnership with their clinician
- Clinicians will be better able to make decisions about appropriate care

- Health services will be better able to examine the performance of their organisation and make improvements in the care they provide.

While some international and local guidelines relate to the management of knee osteoarthritis⁴⁻⁷, not all patients in Australia are treated consistently, suggesting that there is a gap between knowledge and practice.

This document outlines the following for each quality statement:

- Why is the quality statement important?
- What is known about current practice?
- What could be achieved with more consistent application of the aspects of care described?

When possible, examples are provided showing how specific approaches or systems for implementing best practice have demonstrated measurable change.

This document will be of interest to a wide audience, including clinicians and health service organisations, policy makers, health system managers, researchers, the general public, people with knee osteoarthritis, and all those with an interest in the implementation of the *Osteoarthritis of the Knee Clinical Care Standard*.

Osteoarthritis of the Knee: the Case for Improvement

Introduction

Osteoarthritis of the knee, also known as knee osteoarthritis, affects the health of the knee joint and surrounding structures. Key risk factors include age (45 and over), female gender, overweight/obesity, and prior joint injury. While most people over 50 have some age-related structural changes in their knees, not all have symptoms. In those who do have symptoms, the experience of symptomatic knee osteoarthritis can be a major cause of disability, resulting in reduced workforce and social participation, and loss of quality of life.

With Australia's ageing population and increasing rates of obesity, there is an increasing demand for health services to effectively and efficiently manage this common chronic condition. Effective management strategies in primary care may increase the functional capacity and quality of life in people with symptomatic knee osteoarthritis, and may ultimately defer the need for joint replacement surgery.

Improving population health through public education and preventive health strategies such as reducing obesity rates and sport- or work-related injuries; closing evidence-practice gaps in clinicians' practice behaviours; and implementing evidence-informed models of care to guide health service delivery are important strategies to slow the projected rise of musculoskeletal health conditions facing Australia's health system in the coming years.^{8, 9}

Knee osteoarthritis is a major health burden

Knee osteoarthritis is common

Since 2002, osteoarthritis has been recognised as a National Health Priority Area (NHPA) in Australia. Despite official recognition of the disease burden associated with this condition, the prevalence and impact of osteoarthritis continue to rise in Australia.

Osteoarthritis is the most common form of arthritis in Australia, affecting approximately 2.1 million Australians.¹⁰ Projections indicate that this number will rise to 3.1 million Australians by 2030, with the highest prevalence expected in people aged 55 years and over.¹¹ At least a quarter of osteoarthritis cases are estimated to relate to the knee.^{12, 13} Based on US data, the lifetime risk of developing knee osteoarthritis for adults aged 25 years and over is 13.8% (or 1 in 7)¹⁴, with the risk substantially higher for obese women (23.9%, or almost 1 in 4).¹⁴

In 2013–14, osteoarthritis was the fourth most frequently managed health issue by general practitioners in Australia, and the second most frequently referred condition to a specialist medical practitioner.¹⁵ Knee osteoarthritis has major implications for hospital services, predominantly relating to knee joint surgery. In the decade leading up to 2014–15, the number of age-standardised total knee joint replacements increased by 29%, from 133 to 172 per 100,000 population.¹⁶ Based on Australian datasets, the lifetime risk of having a total knee joint replacement rose substantially between 2003 and 2013 (females: from 13.6% to 21.1%; males: from 9.8% to 15.4%).¹⁷

The cost of knee osteoarthritis is high

The cost of osteoarthritis includes healthcare costs and productivity (non-healthcare) costs, such as reduced workforce capacity, lost tax revenue, social, psychological and quality of life costs.^{18, 19} The impacts of symptomatic knee osteoarthritis can be a considerable burden on younger people, who are often in the peak income-earning years.¹⁹

The healthcare costs of musculoskeletal conditions (including osteoarthritis) account for about 37% of total expenditure, which exceeded \$55 billion in 2012.²⁰ The costs for osteoarthritis were \$3.75 billion in 2012 in Australia – an increase of almost 200% since 2007.²⁰

Productivity costs associated with musculoskeletal conditions account for about 63% of total expenditure. The impact of knee osteoarthritis in younger people, in particular, poses a significant threat to workforce productivity in Australia.^{21,19} Arthritis (the majority of which is osteoarthritis) was the second ranked chronic health condition (after back pain) contributing to lost workforce productivity in 2010 in people aged 45–64; this same relative ranking is predicted to continue to 2030.²¹

Variations in care

Peak bodies around the world have developed clinical practice guidelines to promote evidence-based management of knee osteoarthritis. Across these guidelines, consistent recommendations have been observed²², including:

- The critical role of patient education and support for self-management
- The importance of weight loss and exercise
- Use of appropriate medicines to manage symptoms of osteoarthritis.

Another important recommendation is the provision of a timely diagnosis of knee osteoarthritis in primary care settings facilitated through clinical examination alone, without the need for X-ray or magnetic resonance imaging (MRI) in the majority

of presentations to confirm a diagnosis of knee osteoarthritis.²³ While imaging may detect structural changes in the knee joint, such as loss of cartilage, bone lesions and sclerosis, joint space narrowing and meniscal degeneration, these changes are usually age-related and do not reliably correlate with pain and other osteoarthritis symptoms.^{24, 25} Imaging is only recommended when there is uncertainty that the diagnosis is osteoarthritis.

A large volume of evidence also supports discontinuing arthroscopic surgery as a primary treatment for knee osteoarthritis^{26–28}, and not prescribing opioids for pain management in most people.⁶

Despite evidence-based guidelines, there remains considerable practice variation in the management of knee osteoarthritis in Australia. For example, the landmark Australian *CareTrack* study identified that 3,517 of the 35,573 primary healthcare encounters studied in 2009–10 involved osteoarthritis, for which appropriate care was delivered in only an average of 43% of cases.²⁹ This finding is consistent internationally, as reported in a recent systematic review on the quality of osteoarthritis care in community-based settings.³⁰ The *CareTrack* study and other international studies clearly demonstrate scope for improvement in health service delivery for osteoarthritis care, particularly in primary care.

Despite growing evidence of the benefits of non-surgical and non-pharmacologic management of knee osteoarthritis³¹, such as incorporating weight loss (if required) and physical activity into a self-management plan³², studies suggest underuse of these key treatment strategies.^{33, 34} Compounding this problem are unhelpful beliefs held by patients that osteoarthritis will inevitably worsen, as well as assumptions that non-surgical and non-pharmacologic management strategies will be ineffective.^{35, 36}



Improving the patient experience

Better aligning models of service delivery with patients' expectations for information and care is likely to improve patients' experiences.³⁷ Providing patients with accurate and evidence-based information about their condition, and the benefits and harms of management options, is most likely to facilitate meaningful shared decision making, and improve satisfaction, outcomes and safety.^{37, 38} In some cases, patients' expectations for care do not align with best evidence, such as a belief they need imaging or that non-surgical options are not effective strategies for knee osteoarthritis.³⁵ In the case of total knee joint replacement surgery, up to one in three patients report dissatisfaction with outcomes of the procedure³⁹, highlighting the importance of addressing patients' expectations prior to surgery and optimising patient selection.^{40, 41}

Opportunities to positively influence patient and system outcomes

Education, weight loss (where required) and exercise are the cornerstones of management of knee osteoarthritis in primary care. Not only can they potentially reduce the need for surgery, they benefit patients who do go on to have surgery, both for pre-operative fitness and for rehabilitation. Accordingly, supporting patients to engage in these components of care in a sustained manner has the greatest opportunity to optimise outcomes for patients and the health system.^{11, 18} In many situations, providing care in a model that addresses physical, emotional and social components of care, with access to multidisciplinary providers as required, will deliver the best outcomes for patients.⁴²

For some people, joint replacement or joint-conserving surgery, such as an osteotomy, will be appropriate, so providing these interventions in a timely manner to patients who are most likely to benefit is likely to dramatically improve outcomes for these individuals.⁴³ Reducing the use of practices that are not supported by evidence will minimise potential harms to patients, and enable health resources to be more appropriately utilised.

At a systems level, the implementation of specific models of care for osteoarthritis may improve patient-centred and evidence-informed care.^{42, 44} Some Australian jurisdictions, including Western Australia⁴⁵, New South Wales (NSW)⁴⁶ and Victoria⁴⁷ have developed such models, with preliminary evidence supporting the system benefits of them.^{42, 48} The Australian Government's Health Care Homes initiative, introduced in late 2017, focuses on coordinating care for patients with chronic and complex conditions in the primary care sector, and may improve care delivery for people living with knee osteoarthritis.

Quality statement 1: Comprehensive assessment

A patient with knee pain and other symptoms suggestive of osteoarthritis receives a comprehensive assessment that includes a detailed history of the presenting symptoms and other health conditions, a physical examination, and a psychosocial evaluation that identifies factors that may affect their quality of life and participation in their usual activities.

Why is this important?


Patient-centred care is recognised as a guiding principle of healthcare quality and is associated with improved health outcomes and greater patient satisfaction.^{49, 50} In Australia, patient-centred care is one of three key principles specified for safe and high quality care⁵¹, and underpins the *Osteoarthritis of the Knee Clinical Care Standard*. For clinicians to deliver patient-centred care, a thorough understanding of an individual's health literacy and beliefs about the condition, as well as their unique care needs, expectations and goals to manage their knee osteoarthritis is necessary⁴ – and indeed what consumers expect.^{37, 52} For example, what is important and achievable for a 45-year-old professional with knee osteoarthritis may be quite different in the case of a 75-year-old retiree. Importantly, cultural and linguistic background may also influence patients' needs and expectations.

The prevalence of comorbid health conditions in people with osteoarthritis (for example, cardiovascular disease, obesity, depression, asthma, diabetes or other musculoskeletal symptoms such as back pain) is significantly greater than the general population, even after adjusting for age.⁵³ The 2014–15 Australian National Health Survey identified that 51% and 18% of people with osteoarthritis also reported

comorbid cardiovascular disease and mental health problems respectively, compared with 15% and 11% of people without osteoarthritis, respectively.⁵³ In this context, assessment of joint symptoms alone will inadequately address a patient's complete healthcare needs and capacity to engage in care options. For example, a patient with comorbid cardiovascular disease may have exercise tolerance limitations, while a patient with significant depression may need additional support to sustain engagement in a weight loss program, or their weight gain may be due to medication for depression. Physical, emotional and social assessment is important to address the possible multidimensional impacts of osteoarthritis and guide the development of a management plan that aligns with a patient's goals and capacities. While this approach to assessment is important across all care settings, it is fundamental in primary care where a patient's care journey most often commences.

What is current practice?

Current practice, particularly in primary care, suggests that comprehensive, multidimensional assessments (i.e. addressing physical, emotional and social needs) are not undertaken systematically^{29, 54}, yet knee osteoarthritis is a condition that can be managed well in primary care for most patients. The appropriateness of referrals to orthopaedic outpatient departments is a notable example^{34, 55}, where patients are often inappropriately referred for specialist review without a comprehensive assessment or patient education being provided in primary care. Comprehensive assessment, such as that recommended by



professional consortia⁵⁶⁻⁵⁸, is time-consuming and not necessarily achievable in a brief consultation with a general practitioner, particularly when other comorbidities may be discussed.⁵⁹ This is likely to explain, in part, dissatisfaction with consultations for osteoarthritis experienced by patients. Specifically, patients have reported dissatisfaction when clinicians have downplayed osteoarthritis symptoms as ‘wear and tear’, without providing a clear diagnosis or adequate information about managing the condition.^{59, 60} Describing osteoarthritis as ‘wear and tear’⁵⁹ is likely to be unhelpful for patients, as they may perceive structural degradation of the joint, inevitability of deterioration³⁶, and limited opportunity for improvement.

Evidence points to the effectiveness of non-surgical care options that can be delivered and coordinated in primary care.^{4, 5, 61, 62} Such an approach to care in Australia, however, is not routinely implemented.

Typically, patients are referred by general practitioners to public hospitals with orthopaedic clinics or private medical specialists for further assessment and management instead of being offered appropriate and adequate primary care level interventions as an initial management approach.^{30, 54}

What could be achieved?

Comprehensive, multidimensional assessment in primary care of a patient with knee osteoarthritis is more likely to inform appropriate clinical decision

making and lead to more holistic care planning and timely delivery of individualised care that considers conservative management options.⁴

With a comprehensive assessment, referral to other clinicians or health services to help manage critical components of care where required, such as weight loss or psychological and social wellbeing, may occur earlier. Identification and coordination of tailored components of osteoarthritis care can improve health outcomes and reduce unnecessary or early referrals to secondary care. Where surgery is indicated, identifying and managing comorbidities – such as obesity, psychological impairments or other conditions that increase surgical risk – can improve fitness for surgery and surgical safety.^{41, 47}

There are a number of tools that clinicians can use to support comprehensive assessment and reliably monitor a patient’s health over time.⁴⁷ Some of these are listed in the *Osteoarthritis of the Knee Clinical Care Standard*. Health services can also use pooled assessment data for quality assurance or population monitoring activities. Comprehensive assessment also facilitates objective communication amongst clinicians and provides trustworthy benchmarks for consumers. Data can be captured using electronic records, online self-report tools (such as [MyJointPain](https://www.myjointpain.org.au/)ⁱⁱⁱ, [painHEALTH](https://painhealth.csse.uwa.edu.au/)^{iv}), or digitised paper-based forms to minimise the burden on practitioners.⁶³

iii <https://www.myjointpain.org.au/>

iv <https://painhealth.csse.uwa.edu.au/>

Quality statement 2: Diagnosis

A patient with knee pain and other symptoms suggestive of osteoarthritis is diagnosed as having knee osteoarthritis based on clinical assessment alone. X-rays are considered only if an alternative diagnosis is suspected (for example, insufficiency fracture, malignancy). Magnetic resonance imaging (MRI) is considered only if there is suspicion of serious pathology not detected by X-ray.

Why is this important?

Timely clinical assessment of knee pain in primary care is important so that an appropriate care pathway can be initiated. Contemporary, best-practice guidelines recommend an efficient and valid approach to assessment of knee pain by qualified clinicians to determine the likelihood of symptomatic knee osteoarthritis.^{4, 23} Specifically, this approach supports the use of clinical assessment alone, without the use of medical imaging, when knee osteoarthritis is first assessed and diagnosed. Weight-bearing X-rays, followed by MRI if necessary, are recommended for atypical presentations. X-rays are also recommended following patient review if a patient's symptoms do not improve or worsen.

Using routine imaging to confirm a diagnosis of knee osteoarthritis is not recommended because structural changes identified in imaging studies do not reliably correlate to symptoms of knee pain and impaired function^{24, 25, 64}, and imaging does not significantly add to the clinical diagnostic process.⁶⁵ Further, reliance on imaging may initiate pathways of care that are not necessarily indicated and are potentially harmful and costly.⁶⁶

A systematic review of studies reporting the relationship between X-ray results and clinical symptoms in knee osteoarthritis found that 15%–76% of patients with knee pain had radiographic evidence of osteoarthritis.²⁴ Among people who showed radiographic evidence of knee osteoarthritis, 15%–81% reported pain. This suggests that X-ray findings do not reliably indicate that knee pain or disability will be present.²⁴

Similarly, in a study of 991 people aged 50–90 years, MRI-identified meniscal tears were present in people both with and without osteoarthritis. Prevalence of meniscal tears increased with age,

which suggests limited clinical relevance to a diagnosis of knee osteoarthritis.²⁵

Patients with normal, age-related changes detected on imaging may be unduly alarmed by imaging results and may form unrealistic beliefs about their prognosis and expectations for care.³⁶ In many cases, focusing on structural changes identified on imaging is not helpful for optimising patients' understanding about typical age-related changes in the knee and the cause of knee symptoms. The detection of abnormalities such as meniscal tears on MRI may also be a catalyst for initiating unhelpful pathways of care.⁶⁶

What is current practice?

Current practice in Australia suggests that requests for imaging for knee osteoarthritis are common, with about 45 imaging requests (most likely X-rays) per 100 encounters for new primary care presentations of knee pain suspected of being osteoarthritis.⁵⁴ Imaging referrals have increased over time in Australia despite evidence demonstrating that this diagnostic procedure is not associated with improvements in the clinical management of knee osteoarthritis⁶⁷, which mirrors data from 2002 in the United Kingdom relating to the use of general practitioner-ordered X-rays in people presenting with knee pain. The increase in the UK came despite recommendations at the time from the Royal College of Radiologists that the routine use of X-rays in patients with knee pain was inappropriate.⁶⁸ These trends may reflect both expectations from patients and a lack of knowledge by clinicians in appropriate diagnostic approaches for knee osteoarthritis. The latter may partly be attributed to a lack of awareness of contemporary diagnostic and management guidelines^{69, 70}, such as

the recommendations from the National Institute for Health and Care Excellence (NICE) and European League Against Rheumatism (EULAR).^{4, 23}

From 1 November 2013, the Australian Government introduced a Medicare Benefits Schedule (MBS) item (63560/63561) allowing general practitioners to refer for diagnostic MRI related to knee trauma with inability to extend the knee or with suspected anterior cruciate ligament tear in persons aged 16 years and older. Figure 1 shows the rapid early uptake and subsequent upward trend in referrals for this service. This shows there were 515,199 MBS payments to a value of \$204,225,924 from 1 November 2013 to 30 April 2017. These data suggest an increasing reliance on MRI studies for knee pain presentations in primary care. It is unlikely that the incidence of these specific trauma-related conditions accounts for this number of MRI scans, which suggests that MRIs are being requested for non-trauma indications, particularly in people aged 35–74 years. Additionally, the rate of requests for MRI scans by specialists have only marginally decreased, suggesting that the high rate of general practitioner-ordered MRIs is not due to a shift in the point of care when an MRI is ordered.

What could be achieved?

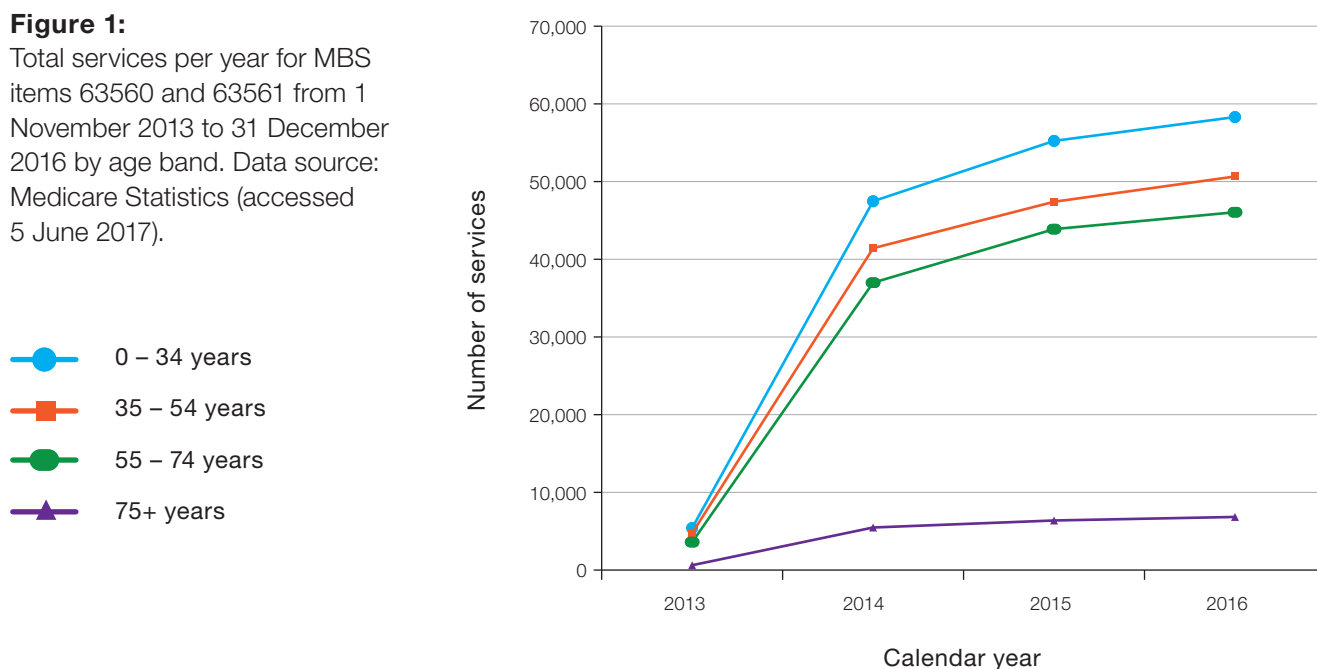
Adopting a diagnostic approach by clinical assessment alone will reduce the time between a patient's initial presentation to primary care and the establishment of an appropriate care pathway. Additionally, this approach facilitates the opportunity for clinicians to address patients' expectations by educating them about the relationship between structural changes in the knee joint, pain and function, and by reinforcing that imaging is not required in most cases.

Additional benefits for both the patient and the health system include:

- The time and cost burden for patients for both the imaging and the return visit to the general practitioner to discuss the results is eliminated
- Patient anxiety about clinically irrelevant degenerative findings found on imaging is reduced
- Patients are not exposed to the ionising radiation of X-rays
- Costs to the health system are reduced.

Figure 1:

Total services per year for MBS items 63560 and 63561 from 1 November 2013 to 31 December 2016 by age band. Data source: Medicare Statistics (accessed 5 June 2017).



Quality statement 3: Education and self-management

A patient with knee osteoarthritis receives education about their condition and treatments for it, and participates in the development of an individualised self-management plan that addresses both their physical and psychosocial health needs.

Why is this important?

Knee osteoarthritis is a long-term condition with potentially multiple physical and psychological impacts on a patient. As such, its management, like other chronic health conditions, requires sustained and active involvement on the part of the patient to self-manage the condition with the support of healthcare providers.⁷¹ As patients' physical and mental health profiles, and goals for management of the condition vary, tailored education and self-management support is important for addressing individual needs. This may come from multidisciplinary healthcare providers. A patient's ongoing engagement with a package of care that relies largely on active self-management (such as specific weight loss goals and exercise prescriptions) is more likely to be successful when, firstly, it is co-developed between the patient and their clinicians, secondly, it is supported by their clinicians, carers and family members^{35, 72}, and thirdly, it is undertaken over several months.

Evidence suggests that osteoarthritis self-management education programs are not effective for producing clinically meaningful outcomes for most people.⁷³ This is likely due to a focus on education, rather than support for initiating and maintaining active management strategies. Comprehensive, tailored information provided by healthcare providers, and coupled with time and support from clinicians, is critical to empower patients' adopt helpful activities, increase satisfaction with their care and attain their individual self-management goals for the condition.⁷⁴⁻⁷⁶

To actively and effectively participate in care, and to meaningfully develop a self-management plan, patients need to understand both general and

specific information about their condition. Key concepts include^{6, 76}:

- Symptoms of knee osteoarthritis are not an inevitable part of ageing
- Knee osteoarthritis usually has a fluctuating course, with symptoms coming and going; a flare-up of symptoms does not necessarily mean the condition is worsening
- Symptoms commonly impact on physical and mental wellbeing; it may be helpful to identify triggers that affect physical and mental health, as well as actions that minimise the impacts (such as pacing activities in a time-contingent, rather than pain-contingent manner)
- The presence of pain is not an indication to discontinue movement and activity
- Discomfort during exercise does not infer damage ('hurt does not mean harm')
- The safety and effectiveness of therapeutic options vary
- Appropriate self-management strategies can be effective for managing the condition.

What is current practice?

A typical care pathway for Australians with knee osteoarthritis overemphasises the use of analgesic medicines and referral for orthopaedic review.^{30, 77, 78} Comprehensive and coordinated patient education and self-management support are not common practice for osteoarthritis management, highlighting a key area for improvement.⁷⁹ In a study of community-dwelling Australians with hip or knee osteoarthritis, 50% of subjects currently used weight loss strategies but 38% had never tried this approach, while 18% currently used muscle

strengthening strategies but 56% had never tried this.³³ These trends are reflected in clinical practice, where data suggest that care delivery is at odds with best-practice recommendations for patients to self-manage their condition.^{29, 54, 80} For example, in a study of Australian general practitioner encounters for osteoarthritis between 2005 and 2010, the most common non-pharmacologic management strategy was on-referral to another health practitioner; most commonly orthopaedic surgeon (68.1% of referrals). Advice, education, and counseling (primarily around diet, exercise, and lifestyle) was provided for 15% of contacts while an overall lifestyle management approach (including at least one of: a referral to a physiotherapist or dietitian/nutritionist, counseling/advice/education, or therapeutic exercises/rehabilitation) was provided in 18% of contacts.⁵⁴ In a recent international review of adherence to quality indicators for osteoarthritis care in community settings, only 35.4% of patient encounters involved education and self-management, and 34.1% included information about risks of prescribed medicines.³⁰ Collectively, these data suggest that there are opportunities to improve self-management support using non-surgical and non-pharmacologic management strategies for patients with knee osteoarthritis, particularly in primary care.^{30, 78} The data may also suggest that both clinicians and patients need additional education and support in initiating and sustaining lifestyle management interventions.

What could be achieved?

An increased focus on providing early and appropriate information about osteoarthritis⁷⁶ and promoting self-management through education, behaviour change approaches and development of an individualised self-management plan are likely to lead to improved patient outcomes, such as better function and pain coping skills.⁸¹ In particular, an increased understanding of the typical course of the

condition, the mechanisms of persistent pain and effective approaches to coping with pain is likely to increase physical function, mental wellbeing, quality of life, and realistic expectations about living well with osteoarthritis. Health system efficiencies are also likely to be achieved. For example, in program evaluation of the NSW Osteoarthritis Chronic Care Program, which has a strong focus on clinician-supported self-management of the condition, an average of 10.7% of patients awaiting knee joint replacement surgery who completed the program were removed from the surgical waitlist as they no longer required surgery.⁷⁷

In Australia, access to different clinicians can be limited, particularly in regional, rural or remote areas. Cost may also be a factor for access. Using alternative models of service delivery, such as digital and telecommunication technologies, may help overcome these challenges to support patients' self-management strategies.^{63, 82} For example, a recent trial confirmed the feasibility and benefits of delivering education, exercise and pain coping skills training over the internet in community-dwelling Australians aged 50 years and over with chronic knee pain.⁸³ Open access Australian online pain management programs that model traditional face-to-face programs, such as [Pain Course](https://ecentreclinic.org/?q=PainCourse)^v, have been shown to be effective in clinical trials for people with osteoarthritis.^{84, 85}

“ For some patients, understanding that their experience of knee pain is not consistently related to structural changes in their knee, is difficult. Taking the time to explain persistent pain and the factors associated with it may better equip people to better manage their pain. ”

Physiotherapist, Melbourne

v <https://ecentreclinic.org/?q=PainCourse>

Quality statement 4: Weight loss and exercise

A patient with knee osteoarthritis is offered support to lose weight, if they are overweight or obese, and advice on exercise, tailored to their needs and preferences. The patient is encouraged to set weight and exercise goals, and is referred to services to help them achieve these, as required.

Why is this important?

Data from the Australian National Health Survey demonstrate that a significantly greater proportion of Australians with arthritis (the majority of whom are diagnosed with osteoarthritis) are overweight or obese, and are less physically active than people without arthritis, even after adjusting for age (see **Table 1**).

Increasing body mass index (BMI) is directly related to the risk of developing knee osteoarthritis and its progression over time.^{86, 87} Research suggests that the odds of having osteoarthritis are up to seven times higher in Australians who are obese.⁸⁸ Furthermore, there is evidence that obesity is associated with increased pain, stiffness and reduced function in people with knee osteoarthritis, compared to those with lower body weight.⁸⁸ Therefore, weight loss and exercise are critically important interventions for people with knee osteoarthritis and are recommended in all clinical practice guidelines for osteoarthritis care.²²

While challenging to sustainably implement, these two low-cost and safe interventions have been shown to reduce the burden of disease and health expenditure associated with knee osteoarthritis.¹⁸ Effectively managing knee osteoarthritis with these interventions may delay or remove the need for other interventions, such as surgery, which carries risks and can be costly to the patient and the health system.

Weight loss at any stage of osteoarthritis is likely to improve symptoms and may slow structural joint changes.^{89, 90} Given that adipose (fat) tissue is an important contributor to systemic inflammation, reducing adipose tissue through weight loss and exercise is likely to have a positive benefit on inflammation and related symptoms.^{91, 92} Weight loss appears to have a dose-response relationship.^{91, 93} Evidence from a meta-analysis

of four trials suggests that weight loss of at least 5% of body weight (at least 0.24% per week) in overweight individuals is associated with a reduction in self-reported disability of a minimal clinical effect.⁹⁰ A moderate clinical effect can be achieved with a greater weight loss of at least 7.5% of body weight at a rate of 0.6% loss per week.⁹⁰ Importantly, combining weight loss with exercise is associated with an even greater effect on pain reduction and improvement in function than either intervention alone in overweight or obese adults with knee osteoarthritis.^{32, 91} This evidence highlights the importance of coupling these interventions for most people in order to achieve the best outcomes. Weight loss is also important for patients who undergo knee joint replacement surgery, with research showing that obese patients have significantly higher rates of adverse events following surgery.⁹⁴

Land-based and water-based exercise has been demonstrated to improve symptoms and quality of life in patients with knee osteoarthritis and is recommended at all stages of the condition.^{62, 95-97} Generally, a combination of flexibility, aerobic and lower limb strengthening exercises (particularly for the thigh muscles) is recommended.⁹⁸ To optimise adherence, development of a program that is acceptable to a patient is critical.⁹⁹ Comorbid health conditions are not a contraindication to exercise. A recent trial confirmed the feasibility and effectiveness of tailored exercise therapy for people with knee osteoarthritis who had at least one other chronic health condition (cardiovascular disease, heart failure, diabetes, chronic lung disease or obesity).¹⁰⁰ These data highlight that comorbid health conditions are usually not a barrier to participating in appropriately delivered exercise therapy by a qualified practitioner.

“ I did water-based exercises at first because the pain was too great to do land-based exercises and I wasn’t very fit. Once my fitness improved and I lost some weight, I found I could transfer the water-based exercises to the land, as well as start regular walking. ”

Anne

What is current practice?

Too few Australian patients with knee osteoarthritis are routinely offered effective, non-pharmacologic interventions in primary care^{54, 80}, with 38% and 56%-79% of patients never having trialled weight loss or exercise interventions, respectively, to manage their knee osteoarthritis.³³ Many patients appear to encounter a range of barriers to adopting and maintaining exercise programs. Recent reviews have identified a range of such barriers, including:

- A lack of knowledge or adequate instructions about exercise
- Poor self-image
- Negative beliefs about symptoms of osteoarthritis limiting capacity to exercise
- Feelings of fatalism about osteoarthritis and negative attitudes towards exercise
- An expected failure of non-pharmacologic interventions
- Lack of reinforcement or motivation to maintain exercise habits
- Lack of goal setting
- Tiredness, forgetfulness and habitual inactivity
- Limited access to exercise facilities
- Lack of social support
- Anxiety and boredom related to exercise.^{35, 101}

Many of these barriers are common to those experienced by patients in initiating and sustaining weight loss programs.^{102, 103}

Table 1: Age-adjusted proportions of Australians with and without arthritis according to body size and physical activity levels in 2011–12 (data presented as age-standardised rate (%) and 95% confidence interval).

Population	Body size category [^]			Activity category [*]		
	Normal	Overweight	Obese	Sufficiently active	Insufficiently active	Inactive
Population with arthritis (n=3,258,600)	19.0 (15.9-22.0)	26.3 (23.3-29.2)	32.1 (25.7-38.8)	41.5 (36.8-46.2)	37.4 (33.0-41.9)	21.0 (18.0-23.9)
Population without arthritis (n=13,782,100)	27.6 (26.5-28.6)	30.0 (28.9-31.1)	21.6 (20.0-23.2)	45.4 (44.2-46.6)	37.0 (35.9-38.1)	17.5 (16.6-18.4)

[^] Body size categories defined by Body Mass Index (BMI) thresholds

^{*} Sufficiently active: Participation in at least 150 minutes of physical activity (including walking for transport and fitness, and moderate and vigorous activity) over five separate sessions in a given week. Insufficiently active: Not completely inactive but failing to meet the requirement of at least 150 minutes of physical activity (including walking for transport and fitness, and moderate and vigorous activity) over five separate sessions in a given week. For the purpose of this measure, vigorous activity time is multiplied by a factor of two. Inactive: Not doing physical activity (including walking for transport and fitness, and moderate and vigorous activity) in the week before interview.

Source: Based on AIHW analysis of National Health Survey Data (<http://www.aihw.gov.au/arthritis-and-its-comorbidities/risk-factors/>).

Collectively, these barriers highlight the importance of shared decision making and education about exercise and weight loss programs, tailoring programs to the patient's individual situation, and supporting patients to sustain engagement with their goals through patient review (**refer to Quality Statement 6**).

Clinicians may also experience barriers to delivering best-practice conservative management for osteoarthritis; these include a perception that the condition is not serious; feeling underprepared to deliver appropriate care; doubts about patients' ability to adhere to programs, and doubts about treatment effectiveness.⁷⁰

What could be achieved?

Supporting sustained weight loss in people who are overweight or obese and promoting regular exercise are likely to have a profound positive impact not only on knee osteoarthritis symptoms, but also on comorbid health conditions, fitness for surgery (if required) and general wellbeing.

Given the rapidly increasing rates of obesity, the incidence of knee osteoarthritis is expected to increase beyond the effect attributable to ageing alone.^{104, 105} Targeting population-based reductions in body weight may, therefore, provide significant reductions in osteoarthritis incidence and thus significant savings for the health system. Recent Canadian simulation modelling data highlight hypothetical population prevalence and incidence reductions achievable for osteoarthritis by 2030 through implementing a population-based, obesity-reducing intervention between 2011-2030 for overweight or obese individuals. The model predicts an absolute reduction in osteoarthritis prevalence of 0.25%–1.66% for males and 0.27%–3.61% for females by 2030 with an annual reduction in BMI of 0.1 to 2.0 units per year.¹⁰⁴

Community-based implementation of an exercise and weight loss program for people with knee osteoarthritis in Australia, based on the ADAPT trial³², is predicted to achieve significant hospital

resource savings from the number of people able to avoid or delay knee joint replacement surgery.¹¹ Additional societal benefits could also be achieved from increased workforce participation.¹⁸

A number of public and private programs focusing on non-surgical management strategies including weight loss and exercise have been developed, which have shown success with patients.^{77, 93} Both NSW Health and Department of Health and Human Services Victoria have implemented management programs for patients who have been wait-listed for joint replacement surgery. For example, formative evaluation of the NSW Osteoarthritis Chronic Care Program, which incorporates multidisciplinary management to deliver medicines, nutritional management and exercise, provides preliminary evidence that weight loss and exercise interventions can be feasibly delivered in hospital settings for people listed for joint replacement surgery, resulting in improved patient health and system outcomes.⁷⁷ A recent cohort study demonstrated that a web-based, 18-week weight loss program for patients with knee osteoarthritis, delivered on behalf of private health funds, could be feasibly implemented in community settings in Australia, and was associated with an improvement in pain and function for weight loss of at least 7.7% of body weight.⁹³ The program consisted of a phased eating plan, exercise and education. Capitalising on digital and communication technologies for Australians with knee osteoarthritis is also likely to improve access to care and adherence to exercise and weight loss interventions.^{93, 106}

“ I have found support from both family and health professionals to be essential. Family support has been especially helpful to me in maintaining an appropriate diet. ”

Consumer, Sydney

Quality statement 5: Medicines to manage symptoms

A patient with knee osteoarthritis is offered medicines to manage their symptoms according to the current version of *Therapeutic Guidelines: Rheumatology* (or concordant local guidelines). This includes consideration of the patient's clinical condition and their preferences.

Why is this important?

For patients with osteoarthritis, management of joint pain is typically their most important priority when seeking care.^{42, 52, 107} Accordingly, providing medicines to manage pain and other physical and psychological symptoms associated with knee osteoarthritis is recommended across clinical guidelines.²² Topical, oral or intra-articular pain-modifying medicines may be useful to enable patients to engage more easily in active management strategies and assist with improving quality of life. However, not all patients will require medicines to manage symptoms of knee osteoarthritis.

Evidence for the use of existing medicines and new therapies for osteoarthritis continues to evolve. For example, the effectiveness of paracetamol as first-line therapy for osteoarthritis has recently been brought into question¹⁰⁸ and the use of opioids is generally not recommended, particularly for durations greater than three months, due to limited benefit and significant risks of harm.⁶ For this reason, prescribing medicines in alignment with current clinical guidelines and systematic reviews of high quality clinical trials is important to ensure prescribing practices are up to date regarding potential short- and long-term benefits and side effects of medicines. An important reference for health professionals is the *Therapeutic Guidelines: Rheumatology*⁶, which considers best available evidence and expert recommendations to provide

practical advice for clinicians in prescribing medicines to manage osteoarthritis. This resource is updated regularly as evidence and consensus opinion evolve.⁶

While clinical trials and guidelines provide information about the average effects of medicines in selected groups, individual patients may respond differently, particularly as symptoms of knee osteoarthritis typically fluctuate. In this context, a trial approach of appropriate medicines for individual patients is reasonable when delivered with defined management goals and planned review.¹⁰⁹ Periodic review of a patient's medicine requirements is also important for optimal safety and to evaluate the therapy's effectiveness, patient satisfaction and any changing preferences.

What is current practice?

Knee osteoarthritis is commonly managed with medicines in primary care, often as first-line treatment without the use of lifestyle interventions, such as weight loss, exercise and joint protection strategies, that may provide sustained support.^{54, 80}

Alarming, evolving data suggest that the use of opioid medications is high for musculoskeletal conditions, including osteoarthritis, and continues to increase in developed nations such as Australia¹¹⁰⁻¹¹³, although it should be noted that prescription rates are highly variable according to geography and socioeconomic status.¹¹⁴

Representative data from general practitioner consultations in 2008 and 2009 identified that 32% of patients with osteoarthritis were prescribed an opioid medication to manage their pain.⁸⁰ Increasing opioid prescriptions are associated with an increasing prevalence of serious adverse

outcomes.¹¹² Recent qualitative data also highlight that Australians taking opioid medications for musculoskeletal pain conditions have concerns about their use.¹¹⁵ For these reasons, there is increasing focus across the health sector to reduce opioid medication use, in particular for chronic, non-cancer conditions associated with pain, such as knee osteoarthritis.^{114, 116, 117}

What could be achieved?

While the use of medicines for knee osteoarthritis represents an important component of care, this strategy should not be undertaken in isolation. Combining appropriate use of medicines with education and active management strategies such as exercise, weight loss (where indicated), weight maintenance, time-contingent activity pacing (based on a duration of time rather than pain symptoms) and joint protection strategies is most likely to lead to improved symptom control and quality of life. Ready access for clinicians and patients to medicines information, including information about emerging therapies for which limited evidence currently exists (for example, stem cell therapies and blood products), is critical for informed, shared decision making and aligning expectations about the likely benefits, harms and costs of therapeutic options.

Avoiding opioid medications unless a short-term prescription is absolutely necessary and tapering use in people who have been prescribed opioids, is important for minimising the potential for significant harms associated with their use.^{118, 119} Several resources for opioid use and de-prescribing for those who use opioids regularly, are now available, such as:

- The Victorian Government [Safer use of opioids](#).^{vi} This site provides guidance for clinicians when considering the prescribing of an opioid medicine. The hub contains a library of fact sheets, which cover a range of topics (e.g. risks of prescribing high doses, how to safely taper opioids and managing patients with a history of opioid dependence).
- Therapeutic Guidelines: [Rheumatology](#) or [Analgesic](#).^{vii} Practical guidance for general practitioners on de-prescribing and weaning opiate medications developed by the [NSW Pain Management Network](#).^{viii}
- Guidance for consumers about the use of opioids for management of persistent pain, accessible from [painHEALTH](#)^{ix} and [NPS MedicineWise](#)^x
- An [App](#) developed by the Faculty of Pain Medicine (Australian and New Zealand College of Anaesthetists).

“ When trialling medicines in patients with osteoarthritis, it is important to remember that average response to them is comprised of a wide range of responses in individuals. So it is often worth trialling a few different medications for adequate periods to find the one that they respond to best. ”

General Practitioner, Queensland

vi <https://www2.health.vic.gov.au/public-health/drugs-and-poisons/medical-practitioners/specific-schedule-8-poisons-requirements/safer-use-of-opioids>

vii <https://tgldcdp.tg.org.au/etgAccess>

viii <http://www.aci.health.nsw.gov.au/chronic-pain/health-professionals/quick-steps-to-manage-chronic-pain-in-primary-care/how-to-de-prescribe-and-wean-opioids-in-general-practice>

ix <https://painhealth.csse.uwa.edu.au/pain-module/medicines-and-procedures/>

x <https://www.nps.org.au/medical-info/consumer-info/chronic-pain-explained>

Quality statement 6: Patient review

A patient with knee osteoarthritis receives planned clinical reviews at agreed intervals, and management of the condition is adjusted for any changing needs. If the patient has worsening symptoms with severe functional impairment that persists despite the best conservative management, they are referred for specialist assessment.

Why is this important?

Symptoms associated with knee osteoarthritis tend to fluctuate over time, and interventions associated with positive outcomes on symptoms and function often take some months to be effective. Therefore, it is important that a patient with knee osteoarthritis is reviewed periodically to assess their physical and mental health, the status of any comorbid health conditions, and their progression towards their self-management goals.¹²⁰

Periodic reviews are recognised as a central component of care by both patients and general practitioners.^{107, 120} Reviews at agreed intervals are recommended, as some patients require reviews more regularly, particularly in the earlier phases of care. Planned reviews, rather than episodic reviews (for example, during a flare-up) are important for observing how a patient's knee osteoarthritis changes over time and for tailoring management approaches and self-management strategies. Periodic reviews provide the opportunity for clinicians to reinforce education about osteoarthritis (including beliefs and knowledge of the condition and coping strategies), to support and progress self-management efforts, and to refer patients in a timely manner to other health providers, if required. If functional impairment persists, referral for weight-bearing X-rays and specialist assessment is important.

For many patients who have not previously engaged in self-management approaches, periodic review

with their clinicians is an important way to assist positive health behaviour change, such as adhering to exercise and weight loss goals.³⁵ Planned reviews also enable communication of clinical information about a patient amongst clinicians.

The International Consortium for Health Outcomes (ICHOM) suggests that a full assessment of the outcome measures recommended for knee osteoarthritis, such as patient reported health status measures (function, pain, quality of life, work, satisfaction), surgical outcomes (if relevant), treatment progression and care utilisation, should be undertaken annually or when there is a change in clinical management, such as planned surgery.⁵⁸

What is current practice?

Historical Australian practice data suggest that periodic review for osteoarthritis could be improved. Patients are typically referred early to an orthopaedic surgeon or other specialist for review without necessarily undertaking suitable non-surgical management approaches for a reasonable time frame.^{30, 33, 78} Up to a quarter of patients who present to orthopaedic surgery hospital departments for assessment have limited understanding of their condition.¹²¹ Further, in a review of general practice activity data from 2005 to 2010, Medicare-supported Chronic Disease Management Plans were considered for only 1.2% of hip and knee osteoarthritis encounters.⁵⁴ Although collected some time ago, these data suggest an opportunity for service improvement by involving other health professionals (where appropriate) in knee osteoarthritis care, particularly given the recognised time pressures experienced by general practitioners and the importance of a shared-care model of service delivery.^{42, 47}

What could be achieved?

Periodic reviews with clinicians to monitor a patient's knee osteoarthritis are likely to support sustainability of positive self-management behaviours, which may delay or remove the requirement for specialist referral. This approach to care is likely to improve outcomes for patients, as well as reduce their time and financial burdens. There is moderate quality evidence suggesting that the addition of 'booster' sessions with a clinician is more likely to lead to sustained engagement in exercise for patients with knee osteoarthritis.¹²² For patients in rural and remote areas, the use of telehealth or other digital strategies to provide more frequent contact with multidisciplinary clinicians for osteoarthritis care may allow for more effective patient monitoring and enhance positive outcomes.¹²³

The Victorian Model of Care for Osteoarthritis of the Hip and Knee recommends periodic review with clinicians at least annually to ensure that patients are optimally supported to manage their osteoarthritis and referred for surgical review at an appropriate time if needed.⁴⁷ For patients with complex health needs, contemporary Australian policy and strategy recommend the establishment of community-based musculoskeletal clinical centres or 'hubs' to facilitate expert, multidisciplinary care planning and review.^{124, 125} One way to support a multidisciplinary, shared-care model of service delivery is through the use of Medicare-supported Team Care Arrangements, where multidisciplinary allied health clinicians are engaged in the management and review of patients with knee osteoarthritis over a 12-month period. The commencement of the Australian Government's Health Care Homes initiative in late 2017 may provide a useful model to enhance coordination of chronic health problems, including knee osteoarthritis, and better facilitate planned clinical reviews to ensure the right management strategies are being delivered at the right time.

“ Patient review is important to determine whether you are doing the program correctly and it is a motivator as well. When I went for review it motivated me to upgrade my exercises and lose some more weight. ”

Consumer, Sydney

Quality statement 7: Surgery

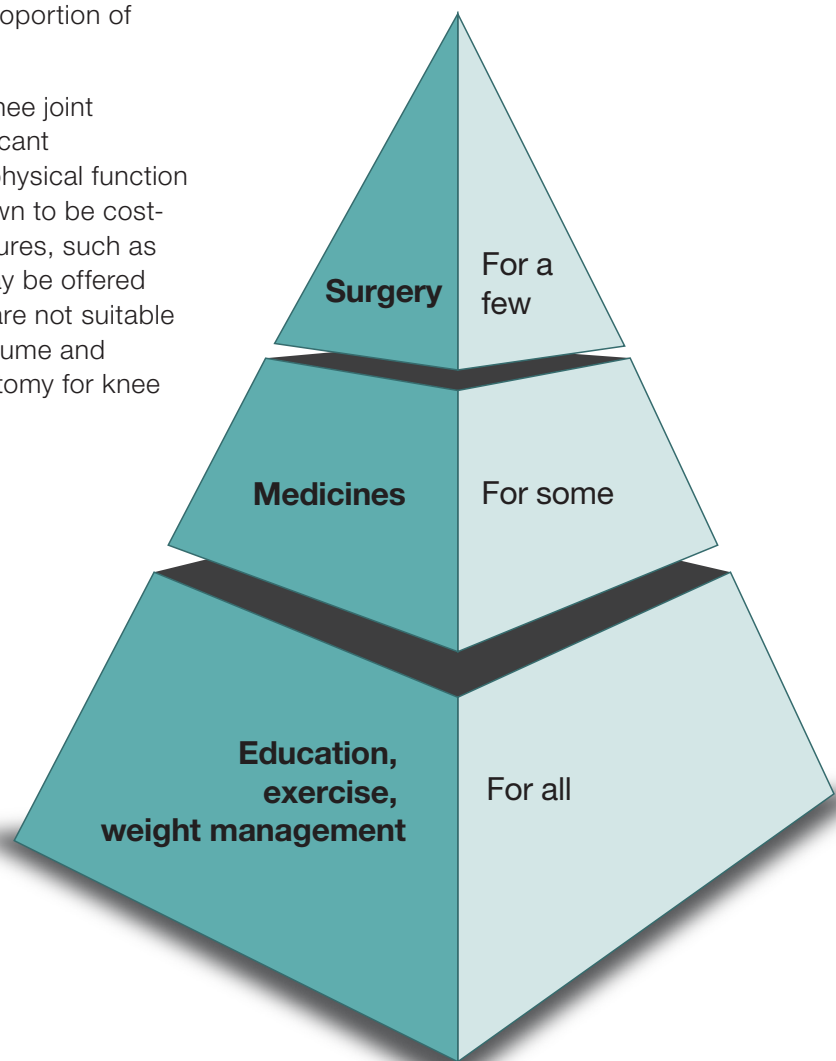
A patient with knee osteoarthritis who is not responding to conservative management is offered timely joint-conserving or joint replacement surgery, depending on their fitness for surgery and preferences. The patient receives information about the procedure to inform their treatment decision. Arthroscopic procedures are not effective treatments for knee osteoarthritis, and therefore should only be offered if the patient has true mechanical locking or another appropriate indication for these procedures.

Why is this important?

While non-surgical and non-pharmacologic management strategies are appropriate for all patients with knee osteoarthritis at all stages of the disease, surgery is indicated for a proportion of patients (See Figure 2).

In appropriately selected patients, knee joint replacement surgery provides significant improvements in symptom control, physical function and quality of life and has been shown to be cost-effective.¹²⁷ Joint-conserving procedures, such as osteotomy, are less common but may be offered to younger patients and those who are not suitable for a total joint replacement.¹ The volume and quality of evidence to support osteotomy for knee osteoarthritis is limited.¹²⁸

Figure 2: Components of care for knee osteoarthritis. Adapted from Roos and Juhl¹²⁶ and the Victorian Model of Care for Osteoarthritis of the Hip and Knee.⁴⁷



Knee joint replacement surgery is a major surgical procedure and carries a risk of adverse outcomes. Between 15% and 30% of patients who undergo knee joint replacement surgery remain dissatisfied with the outcome, mainly due to persistent pain and functional limitations, despite a surgically successful procedure.³⁹ This suggests that patients may not have fully understood the implications of the procedure prior to surgery, had different expectations to those of their treating surgeon, were inappropriately selected for surgery or did not have surgery at the most appropriate time. Therefore, it is essential that patients are referred for surgery, if required, at an optimal time, and that before the operation, they are provided with tailored information and given the opportunity to discuss their expectations and understanding of the implications of the procedure. Considering the best time frame to have surgery is important, as early surgery may result in unrealistic expectations of what it can achieve for a patient, while late surgery may cause unnecessary pain, lack of mobility and the patient being de-conditioned for surgery.

It is important that, where possible, surgery is offered to those patients who are likely to respond well to the procedure. In this context, comprehensive multidimensional assessment, patient education and shared decision making regarding surgery are critical. Patients should only be offered knee joint replacement or joint-conserving surgery after exhausting non-surgical management approaches for knee osteoarthritis, such as weight loss (if indicated), exercise and medicines, for a reasonable time frame **(see Figure 2)**. Such non-surgical management strategies are also important for optimising fitness for surgery and surgical outcomes. In particular, managing obesity and psychological health pre-operatively have been identified as particularly important.⁴¹


There is now substantial evidence that knee arthroscopy is not effective for improving symptoms of knee osteoarthritis^{26,27} and has a greater risk profile than non-operative interventions.²⁸ Accordingly this procedure is not recommended

in current clinical practice guidelines¹²⁹, Australian models of care⁴⁷ or by the Australian Knee Society.³ However there are some clinical indications for arthroscopic procedures for patients with knee osteoarthritis, such as septic arthritis and cases of true mechanical locking that do not respond to non-operative care.

What is current practice?

Surgery for knee osteoarthritis is common in Australia. The Australian Orthopaedic Association National Joint Replacement Registry recorded over 60,000 knee procedures in 2016. The most common indication for knee joint replacement surgery is osteoarthritis, comprising 97.5% of all primary total joint replacement procedures.¹³⁰ In 2015, the first year that BMI data were collected by the registry, 31.4% and 57.4% of primary total knee joint replacement surgeries were performed on patients classified as overweight and obese, respectively (based on 83.5% data coverage).¹³⁰ The rates of total knee joint replacement surgery continue to rise by approximately 6% per year.¹³⁰ However, analysis of hospitalisations for total knee joint replacement surgery in Australia in 2014-2015 identified significant variation in age-standardised surgery rates according to place of residence. For example, the rate was 4.0 times as high in the area with the highest rate compared to the area with the lowest rate, suggesting national inconsistency in the approach to this intervention.¹³¹

Since 2003, primary total knee joint replacement surgeries have increased by 130.4%, and revision knee replacement surgeries by 82.9%.¹³⁰ The cumulative percentage of revision surgery is currently 3.6% at five years, 5.3% at 10 years and 7.3% at 15 years, with the most common indicators being prosthesis loosening and infection.¹³⁰ The increase in the annual volume of these procedures is reflected in the likelihood of people having this operation in their lifetime in Australia. A recent multi-national study highlighted that the likelihood of Australian adults ever needing a total knee joint replacement increased from 9.8% to 15.4% in males and from 13.6% to 21.1% in females between 2003 and 2013.¹⁷



Knee arthroscopy procedures are not recommended for people with knee osteoarthritis. Data show that the overall number of knee arthroscopy procedures for any indication is declining, possibly through clinician education. In 2012-2013, there were 33,682 hospital admissions for knee arthroscopy in patients aged 55 years and over, with significant variation in procedure rates across the country, which may be related to differences in clinical decision making.¹³² In 2014-2015, there were 32,317 hospital admissions for knee arthroscopy in patients aged 55 years and over, representing a 4% reduction in procedures of this type.¹³³

What could be achieved?

Ceasing inappropriate knee arthroscopic procedures will reduce risks of possible harms to patients and provide significant financial savings for patients and the health system. Through continued clinician education, this is likely to occur.

Providing timely total joint replacement surgery for appropriately selected patients is likely to significantly improve their pain and function. Australian data highlight that patients' quality of life can deteriorate significantly while on a surgical waitlist.¹³⁴ As such, it is important that processes and health system pathways are able to reliably identify patients who are likely to respond well to surgery⁴¹, as well as support escalation to surgery if required.^{45, 47}

Educating patients about the benefits and risks of surgical procedures is likely to lead to more informed and shared decision-making, as well as appropriately reducing the uptake of joint replacement surgery.¹³⁵ International data suggest there is scope for improvement in educating patients about total joint replacement surgery and aligning patient expectations around their appropriateness for surgery and likely surgical outcomes.^{40, 136, 137} The use of decision support tools may be particularly helpful.¹³⁸

“Some patients I see have fluctuating symptoms that could easily be managed in primary care; others have tried some conservative management options and they have worked, so they don't need surgery. Some people haven't tried any conservative management but have been told that they need surgery immediately. Others come armed with multiple MRIs that don't provide appropriate information. It's really important that GPs and specialists work together so that both GPs and patients understand what should be offered in primary care, and at what point it's appropriate for a patient to be referred to a surgeon.”

Orthopaedic surgeon, Brisbane

Glossary

Assessment: A clinician's evaluation of a disease or condition based on the patient's report of the symptoms and course of the illness or condition, on information reported by family members and other healthcare team members, and on the clinician's objective findings (obtained through tests, physical examination and medical history).¹³

Arthroscopic procedures: Procedures that involve the use of a device known as an arthroscope, which is inserted through a small cut in the skin to examine a joint, wash it out (lavage) or remove damaged tissue (debridement).²

Adverse event: An incident causing harm to a person receiving healthcare.¹³⁹

Carers: People who provide care and support to family members or friends who have a disease, disability, mental illness, chronic condition, terminal illness or general frailty. Carers include parents and guardians caring for children.¹⁴⁰

Clinician: A trained health professional who provides direct clinical care to patients. Clinicians include registered and non-registered practitioners working individually or in teams. They include doctors, nurses, allied health professionals, nurses' assistants, Aboriginal health workers and other people who provide health care.^{27, 63, 140, 141}

Community-dwelling: Refers to people who live in the community, as opposed to those who are hospitalised or in residential care.

Comorbidities: Coexisting diseases or conditions (other than that being treated or studied) in an individual.¹⁴²

Complementary medicines: These include products containing herbs, vitamins, minerals, nutritional supplements, homoeopathic medicines, aromatherapy oils, and traditional Chinese medicines. Also called herbal, natural and alternative medicines.¹⁴³

Conservative management: Non-surgical management of a condition; for knee osteoarthritis this includes activities such as patient education and self-management, weight loss and exercise (non-pharmacological interventions), and use of medicines such as analgesics and nonsteroidal anti-inflammatory drugs (pharmacological interventions).¹²⁴

Daily activities: Tasks performed by a person in a typical day to allow independent living. Basic activities include eating, dressing, hygiene and mobility. Also known as activities of daily living.¹⁴⁴

Decision support tool: a tool that can help clinicians and consumers to draw on available evidence when making clinical decisions. The tools take a number of formats. Some are explicitly designed to facilitate shared decision making (e.g. decision aids). Others provide some of the information needed for some components of the shared decision making process (e.g. risk calculators, evidence summaries), or provide ways of initiating and structuring conversations about health decisions (e.g. communication frameworks, question prompt lists). See also shared decision making.¹⁴⁵

Functional assessment: The evaluation of an individual's mobility and ability to carry out specific physical activities using a standardised patient-reported questionnaire or a test performed in a clinical setting (for example, timed walking test).

Health service: A service responsible for the clinical governance, administration and financial management of unit(s) providing health care. A service unit involves a grouping of clinicians and others working in a systematic way to deliver health care to patients and can be in any location or setting, including pharmacies, clinics, outpatient facilities, hospitals, patients' homes, community settings, practices and clinicians' rooms.¹⁴⁰

Insufficiency fracture: A fracture that can occur when normal stress is placed on an abnormal bone, for example if affected by osteoporosis. Untreated it can result in premature or accelerated osteoarthritis.

Joint protection: Strategies or devices used to limit strain on a joint such as restrictions on high-impact activities or the use of walking aids, braces, and appropriate footwear.

Locked or locking knee: When the leg becomes stuck in a position and cannot be straightened or bent. Mechanical or true locking is when something physically stops the knee from moving (for example, loose fragment of bone, meniscal tear).¹⁴⁶ Pseudo-locking is more common and is when the knee cannot be fully extended because of swelling or pain.

Malignancy: Cancer found in an organ or tissue such as the bone, which can spread through the tissue and to other parts of the body.

Medicine: A chemical substance given to help prevent, cure, control or alleviate disease, or improve the physical or mental welfare of people. Prescription, non-prescription and complementary medicines, regardless of administration route (for example, oral, intravenous, intra-articular), are included.¹⁴⁰ Also called pharmacological intervention.

Multidisciplinary care: Care involving a range of clinicians (for example, doctors, nurses, physiotherapists and other allied health professionals) from one or more organisations, working together to deliver comprehensive care that addresses as many of a patient's health and other needs as possible.¹⁴⁷

Osteoarthritis: A clinical syndrome of joint pain accompanied by varying degrees of functional limitation and reduced quality of life. Pain, reduced function and effects on a person's ability to carry out their daily activities can be important consequences. It is characterised pathologically by localised loss of cartilage from the end of the bones (articular cartilage), inflammation and changes to bone and other joint structures.¹⁴⁸

Osteotomy: A joint-conserving procedure that corrects or improves limb malalignment.

Pacing: Incorporating intermittent exercise sessions and periods of rest into the day's activities.¹⁴⁸

Pain-contingent approach: Doing or limiting activities based on whether one is experiencing pain or not. This often leads to the highs and lows of 'overdo and underdo' cycles or 'boom and bust' cycles, and doesn't necessarily allow people to comfortably increase their activities.¹⁴⁹

Pain management: Putting in place strategies to address a patient's individual pain using medicinal, physical and cognitive therapies. For people with osteoarthritis, this may include pain relief medication such as analgesics and nonsteroidal anti-inflammatory drugs (NSAIDs), specific exercises, cognitive behavioural therapy or other forms of psychological management.

Patient centred care: Patient-centred care is health care that is respectful of, and responsive to, the preferences, needs and values of patients and consumers.¹⁵⁰

Primary care: The first level of care or entry point into the healthcare system, such as general practice clinics, community health practices (for example, clinics, outreach or home visiting services), ambulance services, pharmacists, or services for specific populations (for example, Aboriginal or refugee health services).

Psychosocial assessment: An evaluation of a person's mental health, social wellbeing, and perception of their ability to function in the community.¹³

Quality of life: The general wellbeing of a person in terms of health, comfort, functional status and happiness.

Risk factor: A characteristic, condition or behaviour that increases the possibility of disease, injury, or loss of wellbeing.¹⁵¹

Side effects: An unintended effect from a medicine or treatment.¹⁵²

Self-management: A person's management of their healthcare needs on a day-to-day basis, which involves making informed decisions about their care.

Self-management plan: A written agreement between a patient and their clinicians to manage day-to-day health. This information is identified in a health record.

System: The resources, policies, processes and procedures that are organised, integrated, regulated and administered to provide health care. Systems enable the objectives of healthcare standards to be accomplished by addressing risk management, governance, operational processes and procedures, implementation and training, and by influencing behavior change to encourage compliance.¹⁴⁰

Time-contingent approach: Pacing uses a 'time-contingent' approach to activity rather than a 'pain-contingent' approach. This means activity that is based on a measurement (such as an amount of time, a distance, number of repetitions) rather than pain. This measure gives you a target and a limit for the activity – for example 15 minutes of walking or 20 minutes of light housework. It gives you a basis from which to build 'activity tolerance', which is important to allow you to do everyday tasks.¹⁴⁹

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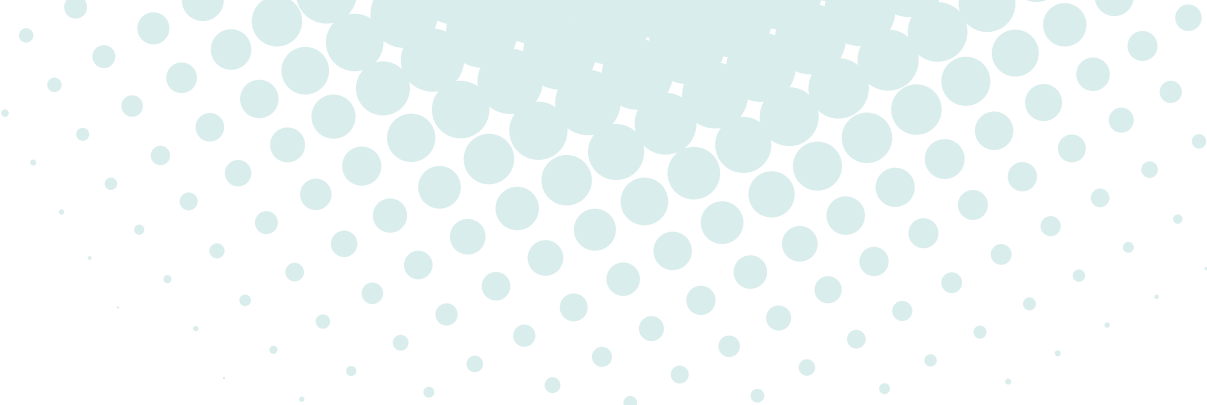
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