Quality Standards

Osteoarthritis

Care for Adults With Osteoarthritis of the Knee, Hip, or Hand

Health Quality Ontario

Let's make our health system healthier

Summary

This quality standard addresses care for adults (18 years of age or older) with osteoarthritis of the knee, hip, or hand. The quality standard focuses on the assessment, diagnosis, and management of this condition for people across all health care settings and health care professionals.

Table of Contents

About Quality Standards

Health Quality Ontario, in collaboration with clinical experts, patients, residents, and caregivers across the province, is developing quality standards for Ontario.

Quality standards are concise sets of statements that will:

- Help patients, residents, families, and caregivers know what to ask for in their care
- Help health care professionals know what care they should be offering, based on evidence and expert consensus
- Help health care organizations measure, assess, and improve their performance in caring for patients

The statements in this quality standard do not override the responsibility of health care professionals to make decisions with patients, after considering each patient's unique circumstances.

How to Use Quality Standards

Quality standards inform clinicians and organizations about what high-quality health care looks like for aspects of care that have been deemed a priority for quality improvement in the province. They are based on the best available evidence.

They also include indicators to help clinicians and organizations assess the quality of care they are delivering, and to identify gaps and areas for improvement. These indicators measure processes, structures, and outcomes.

In addition, tools and resources to support clinicians and organizations in their quality improvement efforts accompany each quality standard.

For more information on how to use quality standards, contact **qualitystandards@hqontario.ca**.

About This Quality Standard

Scope of This Quality Standard

This quality standard includes 10 quality statements addressing areas identified by Health Quality Ontario's Osteoarthritis Quality Standard Advisory Committee as having high potential for improving the quality of osteoarthritis care in Ontario.

This quality standard addresses care for adults 18 years of age or older who have been diagnosed with or are suspected to have osteoarthritis of the knee, hip, or hand (i.e., thumb or fingers). The quality standard focuses on the assessment, diagnosis, and management of osteoarthritis for people across all health care settings and health care professionals. It provides guidance on nonpharmacological and pharmacological care. It covers referral for consideration of joint surgery but does not address specific surgical procedures. This quality standard does not apply to care for people with osteoarthritis affecting the spine, other peripheral joints (i.e., shoulder, elbow, wrist, foot, ankle), or neck or low back pain. Similarly, this quality standard also excludes those with inflammatory arthritis or medical conditions and treatments that can lead to osteoarthritis.

Terminology Used in This Quality Standard

When we refer to "people with osteoarthritis" in this quality standard, we mean those with knee, hip, or hand osteoarthritis. Only one quality statement (Quality Statement 5: Therapeutic Exercise) applies to people with hip or knee osteoarthritis, not to those with hand osteoarthritis.

The term "symptoms" in this quality standard means any symptom related to osteoarthritis. Typical symptoms include pain, aching, stiffness, swelling, functional limitations, disability, decreased physical activity, anxiety and mood disorders, fatigue, and/or poor sleep quality.

When we refer to "health care professionals" in this quality standard, this means the many types of people who may be part of the health care team. This includes, but is not limited to, the following regulated professionals: primary care providers (family physician or primary care physician, nurse practitioner); chiropractor, dietitian, nurse, occupational therapist, pharmacist, or physiotherapist; focused-practice physician (e.g., pain management, sport and exercise medicine); specialist physician (e.g., orthopaedic surgeon, physiatrist, plastic surgeon, rheumatologist); advanced/extended practice physiotherapist or occupational therapist; psychologist, counsellor, or other health care professional with additional skills in the management of osteoarthritis-related symptoms (e.g., pain, poor sleep quality, anxiety and mood disorders, weight management).

Why This Quality Standard Is Needed

Osteoarthritis, the most common type of arthritis, is a progressive condition that can affect any moveable joint of the body but most commonly the hips, knees, and hands. Studies in various populations show that about 20% to 30% of adults have osteoarthritis in at least one of these joints.[1] The condition starts as a change to the biological processes within a joint, leading to structural changes such as cartilage breakdown, bone reshaping, bony lumps, joint inflammation, and loss of joint function. This often results in pain, stiffness, and loss of movement.[2] Osteoarthritis is characterized by fluctuating symptoms and increased intensity of joint pain over time. Certain factors make some people more vulnerable to developing osteoarthritis: genetic factors, being overweight or obese, injury from accidents or surgery, and heavy physical activity in some sports or at work.[2]

In Canada, the overall prevalence of diagnosed osteoarthritis in primary care is 14%[3] and is expected to increase to about 25% in the next 30 years.[4] The condition is more common in middle to older age (prevalence is 35% in those aged 80 years and older), affects more women than men, and is associated with other chronic health conditions such as depression and high blood pressure.[3] In Ontario, people with osteoarthritis report a quality of life 10% to 25% lower than those without osteoarthritis, and they incur health care costs two to three times higher.[5] The rising rates of osteoarthritis will have a substantial impact on the lives of people living with the condition and their families, on costs to the health care system, and on the broader economy through lost productivity, people leaving the workforce, and long-term disability.[4,6]

Despite the obvious personal and societal burden of osteoarthritis, it is underdiagnosed and undertreated,[7-9] resulting in missed opportunities for people to benefit from high-quality care. While there is no cure for osteoarthritis, there are several ways to effectively manage symptoms through nonpharmacological and pharmacological treatments that can help reduce pain, improve function, maintain quality of life, and delay disability.[10] Early intervention is best.[10] Poorly managed hip and knee osteoarthritis leads to avoidance of physical activity and exacerbation of pain. This in turn can lead to fatigue, disability, and depressed mood,[11,12,13] and is linked with heart disease, diabetes, and obesity.[14-17]

Substantial gaps in the quality of osteoarthritis care exist all along the care pathway. Many people delay seeking care: in a Canadian study, about 40% of patients with osteoarthritis had symptoms for more than a year before they were diagnosed, and the average time elapsed was more than 7 years.[18] First-line treatment for osteoarthritis should include nonpharmacological approaches: education,

therapeutic exercise, daily physical activity, weight loss (if appropriate), and self-management support.[19] These treatments are underused. A study in British Columbia found that only 25% of patients with hip or knee osteoarthritis received therapeutic exercise or weight management as part of their management plan, and advice to use these approaches differed across the patients' gender, age, disability, and education.[9] Only 29% received an assessment of their ability to walk (ambulatory function) and only 7% were assessed for nonambulatory functions such as dressing, cooking, and the ability to rise from sitting to standing.[9] A survey of Canadians diagnosed with osteoarthritis shows relatively few are seeking advice from health professionals who can provide effective nonpharmacological management. Only 22% had consulted a physiotherapist or occupational therapist in the previous year, and 12% had attended an educational class to help them manage arthritis-related problems.[18]

These shortfalls in access to needed care could be influenced by a misconception among health care professionals and patients that osteoarthritis symptoms are a normal part of aging with limited treatment options. The cost of services and/or a lack of extended health insurance coverage also play a role. Most community-based services for osteoarthritis (such as physiotherapy, occupational therapy, weight-management programs) are not widely available, at least not without substantial costs to patients that must be borne out-of-pocket or with private insurance.[20,21]

In contrast, most people with osteoarthritis are prescribed some form of pharmacological treatment. In a 2015 study of primary care in Canada, 57% of patients with osteoarthritis had a prescription for a nonsteroidal anti-inflammatory drug, and about 33% were prescribed an opioid for pain management.[3] This is an underestimate of medication use, given that many people with osteoarthritis use over-the-counter medications, which are not often captured in data from electronic medical records. In another national study, 66% of people with osteoarthritis (any joint) used nonprescription medications. Among those with hip and/or knee osteoarthritis, the figure was 74%.[18]

For a small percentage of people, their condition will deteriorate to the extent that surgical options such as joint replacement, joint fusion, or joint-conserving surgery may be necessary. Surgical treatment should be offered to people with moderate to severe joint damage that causes unacceptable pain or limitation of function despite the use of interventions described in this quality standard.[6]

Principles Underpinning This Quality Standard

This quality standard is underpinned by the principles of respect, equity, and equality.

People with osteoarthritis should receive services that are respectful of their rights and dignity and that promote shared decision-making and self-management. People with osteoarthritis should be provided services that are respectful of their gender, sexual orientation, socioeconomic status, housing, age, background (including self-identified cultural, ethnic, and religious background), and disability. Equitable access to the health system also includes access to culturally safe care. Language, a basic tool for communication, is an essential part of safe care and needs to be considered throughout a person's health care journey. For example, in predominantly English-speaking settings, services should be actively offered in French and other languages.

People with osteoarthritis should receive care through an integrated approach that facilitates access to interprofessional services from primary care providers, rehabilitation care professionals, referral to surgical and nonsurgical specialists, and programs in the community, according to the patient's needs over time. Interprofessional collaboration, shared decision-making, coordination of care, and continuity of care (including follow-up care) are hallmarks of this patient-centred approach. Collaborative practice in health care "occurs when multiple health workers from different professional backgrounds provide comprehensive services by working with patients, their families, carers, and communities to deliver the highest quality of care across settings."[22]

Health care professionals should be aware of the historical context of the lives of Canada's Indigenous peoples and be sensitive to the impacts of intergenerational trauma and the physical, mental, emotional, and social harms experienced by Indigenous people, families, and communities.

A high-quality health system is one that provides good access, experience, and outcomes for everyone in Ontario, no matter where they live, what they have, or who they are.

How Success Can Be Measured

The Osteoarthritis Quality Standard Advisory Committee identified a small number of overarching goals for this quality standard. These have been mapped to indicators that may be used to assess quality of care locally.

How Success Can Be Measured Provincially

You may want to assess the quality of care you provide to your patients with osteoarthritis. You may also want to monitor your own quality improvement efforts. It may be possible to do this using your own clinical records, or you might need to collect additional data. We recommend the following list of potential indicators, which cannot be measured provincially using currently available data sources:

- Percentage of people with osteoarthritis who report the long-term control of their pain as acceptable
- Percentage of people with osteoarthritis who report a high level of success in coping with and self-managing their condition
- Percentage of people with osteoarthritis who have timely access to appropriate rehabilitation management strategies (such as education, exercise, and weight management)
- Median wait time to first appointment with a health care professional with additional skills in osteoarthritis management (i.e., additional skills in rheumatology, orthopaedic surgery, sport and exercise medicine, or pain management)
- Percentage of people with osteoarthritis referred to a health care professional with additional skills in osteoarthritis management (i.e., additional skills in rheumatology, orthopaedic surgery, sport and exercise medicine, or pain management) who have their first appointment in a timely manner

Note: The target time frame to see a health care professional with additional skills in osteoarthritis management will vary depending on the type of professional and the clinical characteristics of the patient.

In addition, each quality statement within the standard is accompanied by one or more indicators. These indicators are intended to guide the measurement of quality improvement efforts related to the implementation of the statement. To assess the equitable delivery of care, the quality standard indicators can be stratified by patient or caregiver socioeconomic and demographic characteristics, such as income, education, language, age, sex, and gender.

Quality Statements in Brief

QUALITY STATEMENT 1:
Clinical Assessment for Diagnosis

People who have persistent, atraumatic, movement-related joint pain or aching, and/or morning stiffness lasting less than 30 minutes, are diagnosed with osteoarthritis based on clinical assessment. Radiological imaging is not required to make a diagnosis in people aged 40 years or older if their symptoms are typical of osteoarthritis.

QUALITY STATEMENT 2:
Comprehensive Assessment to Inform the Care Plan

People who have been diagnosed with osteoarthritis receive a comprehensive assessment of their needs to inform the development of their care plan.

QUALITY STATEMENT 3:
Patient Education

People with osteoarthritis are offered education to facilitate a self-management plan. This education is provided in accessible formats.

QUALITY STATEMENT 4:
Patient Self-Management Plan

People with osteoarthritis are supported to develop an individualized, goal-oriented self-management plan that evolves to address ongoing symptom management and access to resources and supports.

QUALITY STATEMENT 5:
Therapeutic Exercise

People with hip or knee osteoarthritis are strongly encouraged to participate in progressive neuromuscular training, muscle strengthening, and aerobic exercise of sufficient frequency, intensity, and duration to maintain or improve joint health and physical fitness.

QUALITY STATEMENT 6:
Physical Activity

People with osteoarthritis are strongly encouraged to optimize their physical activity and minimize sedentary activity, and are offered information and support to help them toward these goals.

QUALITY STATEMENT 7:
Weight Management

People with osteoarthritis who are overweight or obese are offered patient-centred weight-management strategies, and people at a normal weight are encouraged to maintain their weight.

QUALITY STATEMENT 8:
Pharmacological Symptom Management

People with symptomatic osteoarthritis are offered pain-relieving medication options when nonpharmacological treatments are insufficient to control their symptoms.

QUALITY STATEMENT 9:
Referral to a Health Care Professional with Additional Skills in Osteoarthritis Management

People with osteoarthritis, when clinically indicated, are referred by their primary care provider to a health care professional with additional skills in osteoarthritis management.

QUALITY STATEMENT 10:
Referral for Consideration of Joint Surgery

People with osteoarthritis whose symptoms are not sufficiently controlled through nonsurgical management and whose quality of life is negatively impacted by their joint-related symptoms should be referred for consideration of joint surgery.

1

Clinical Assessment for Diagnosis

People who have persistent, atraumatic, movement-related joint pain or aching, and/or morning stiffness lasting less than 30 minutes, are diagnosed with osteoarthritis based on clinical assessment. Radiological imaging is not required to make a diagnosis in people aged 40 years or older if their symptoms are typical of osteoarthritis.

Background

For people aged 40 years or older who present with symptoms typical of osteoarthritis, a diagnosis of osteoarthritis can be made based on clinical assessment (history and physical examination). Diagnosis does not require radiological imaging (e.g., x-ray, magnetic resonance imaging [MRI]) or laboratory investigations (e.g., blood work).[23]

Clinical assessment is the most accurate way to diagnose osteoarthritis because symptoms do not always match visible findings on x-ray or MRI. Some people present with severe pain and show minimal changes on imaging, while others have minimal symptoms despite moderate to severe structural joint changes. In addition, the visible bony changes on x-ray are a relatively late feature in the progression of the condition. Changes seen on x-ray do not require treatment if the person does not have symptoms.

BACKGROUND CONTINUED

Osteoarthritis may be diagnosed in people under the age of 40 when other factors such as prior injury (in the past decade or remote past) or congenital deformities such as hip dysplasia are present along with typical osteoarthritis symptoms.

For adults who present with atypical features of osteoarthritis or where an alternative diagnosis is being considered, it may be necessary to perform other investigations. Referral to a health professional with additional skills in osteoarthritis management may be considered to assist in making a diagnosis (see Quality Statement 9: Referral to a Health Care Professional with Additional Skills in Osteoarthritis Management).[24]

Sources: European League Against Rheumatism, 2017[23] | National Institute for Health and Care Excellence, 2014[19]

What This Quality Statement Means

For Patients

You should see a health care professional if you have persistent pain, aching, and/or stiffness in your knee, hip, or hand when you move it. This does not apply if you have had a recent injury involving that joint or the area around it.

Getting a diagnosis early is important so that you can manage symptoms and maintain your quality of life. The symptoms of osteoarthritis tend to get worse with time, so it's best to start therapies early.

To diagnose your condition, your health care professional will examine you and ask about your symptoms. You will not need an x-ray or a magnetic resonance imaging (MRI) scan to make a diagnosis if you are 40 or older and have symptoms typical of osteoarthritis. This is because osteoarthritis is more common in this age group, and an x-ray or MRI will not explain your symptoms or help in making a diagnosis. Initial decisions about your treatment can usually be based on the examination and how your symptoms are affecting your life.

For Clinicians

Diagnose osteoarthritis in adults based on clinical assessment if the person has symptoms typical of osteoarthritis (see Definitions).[23] Radiological imaging is not needed to make a diagnosis for people aged 40 years or older who present with symptoms typical of osteoarthritis. For those who present with atypical features of osteoarthritis or where an alternative diagnosis is being considered, it is usually necessary

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Symptoms typical of osteoarthritis

Persistent atraumatic movement-related joint pain, aching, stiffness, and/or swelling. Morning stiffness lasting less than 30 minutes may or may not be present. Symptoms may affect one or a few joints.[19,23]

Atypical features

A recent history of injury, joint locking, prolonged morning joint-related stiffness, rapid onset of symptoms, the presence of a hot swollen joint, fever, chills, sweats, or feeling generally unwell. Atypical features usually indicate the need for further investigations to identify possible additional or alternative diagnoses, including loose body, meniscal injury, gout, or other inflammatory arthritides, such as rheumatoid arthritis, septic arthritis, and malignancy (if bone or soft tissue pain are present).[25]

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

to perform other investigations (e.g., imaging and/or blood work) or refer to a health care professional with additional skills in osteoarthritis management to assist in making a diagnosis (see Quality Statement 9: Referral to a Health Care Professional with Additional Skills in Osteoarthritis Management).

For Health Services

Ensure health care professionals have clear policies and processes in place for making a diagnosis based on clinical assessment for people with symptoms typical of osteoarthritis (without radiological imaging). Service providers should also monitor the use of imaging for diagnosing osteoarthritis in adults to ensure that it is not being used inappropriately.

Quality Indicators

Process Indicator

Percentage of people aged 40 and older with symptoms typical of osteoarthritis who undergo an x-ray or MRI to make a diagnosis (A lower percentage is better)

- Denominator: total number of people aged 40 and older with symptoms typical of osteoarthritis
- Numerator: total number of people in the denominator who undergo an x-ray or MRI to make a diagnosis
- Data source: local data collection

2

Comprehensive Assessment to Inform the Care Plan

People who have been diagnosed with osteoarthritis receive a comprehensive assessment of their needs to inform the development of their care plan.

Background

A comprehensive assessment of needs goes beyond the clinical examination and considers the whole person. The assessment should take into account social and psychological factors that impact quality of life, the ability to carry out activities of daily living, and participation in work, family commitments, and leisure activities.[19]

People living with osteoarthritis experience a complex cycle of challenges because of their symptoms. Joint pain can cause interrupted sleep, fatigue, functional limitations, and disability, which often lead to mood changes, worsening pain, avoidance of activity, and—consequently—exacerbated symptoms and even greater disability.[13] Obesity and coexisting chronic conditions, both more likely in people with osteoarthritis, will impact their symptoms and overall management of their condition.[26] The comprehensive assessment should address the individual's medical needs (including body mass index [BMI] and coexisting health conditions), as well as their social and emotional needs. This assessment should inform the development of a care plan that is patient-centred and responsive to the person's needs, preferences, and goals.

Sources: American College of Rheumatology, 2012[27] | Department of Veterans Affairs, Department of Defense, 2014[28] | European League Against Rheumatism, 2013[29] | National Institute for Health and Care Excellence, 2014[19]

What This Quality Statement Means

For Patients

Your health care professionals should do a comprehensive assessment that covers your overall health. They should talk with you about how your osteoarthritis affects your energy, mood, sleep, work, hobbies, family, and social life.

They should use this information to develop a care plan with you that is started within 3 months of your diagnosis. Your care plan should outline how you and your health care professionals will work together to improve your symptoms and your ability to keep doing your usual activities. Together, you should review this plan at every visit and change it as needed.

For Clinicians

Perform and document a comprehensive assessment (see Definitions) for people with osteoarthritis. This assessment is initiated within 3 months of their diagnosis and reviewed whenever the patient visits you or identifies a new symptom or goal for their care plan (see Definitions).

For Health Services

Ensure all health care settings have assessment tools, systems, processes, and resources in place for adults with osteoarthritis to have comprehensive assessments of their needs initiated within 3 months of their diagnosis and on an ongoing basis to inform their care plan (as described in Definitions).

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Comprehensive assessment of needs

In collaboration with the patient, this assessment should take into account their osteoarthritis in its broader context. The assessment should be adapted to meet individual needs and should address the following domains[30]:

- Body functions and structures—such as pain, stiffness, quality of sleep, mood, joint range of motion, sexual function, weight (BMI), other coexisting health conditions
- Activities—such as activities of daily living (e.g., personal care, walking ability); instrumental activities of daily living (e.g., house work, preparing meals, shopping, managing medications)
- Participation—such as family duties, leisure activities, exercise, employment
- Personal factors—such as use of assistive devices (e.g., cane, splints, braces), avoidance of activity, attitudes towards exercise, health beliefs, socioeconomic status, culture
- Environmental factors—such as support network, job setting (e.g., flexibility of work hours), local availability of resources for osteoarthritis care

Quality Indicators

Process Indicators

Percentage of people diagnosed with osteoarthritis who have a comprehensive assessment of their needs and development of a care plan initiated within 3 months of their diagnosis

- Denominator: total number of people diagnosed with osteoarthritis
- Numerator: number of people in the denominator who have a comprehensive assessment of their needs and development of a care plan initiated within 3 months of their diagnosis
- Data source: local data collection

Percentage of people with osteoarthritis who identify a significant change in their monitored symptom(s) or a new symptom or goal, who review their comprehensive assessment of needs and their care plan with their health care professional

- Denominator: total number of people with osteoarthritis who have completed a comprehensive assessment of their needs and who identify a significant change in their monitored symptoms(s) or a new symptom or goal
- Numerator: number of people in the denominator who review their comprehensive assessment of needs and care plan with their health care professional
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Care plan

This documented plan describes the person's assessed health needs, preferences, and goals, and the care that will be provided to meet them. The care plan should be initiated within 3 months of their diagnosis and reviewed on an ongoing basis, whenever the patient visits their health care professional or identifies a new symptom or goal. The care plan should include an ongoing self-management plan for the individual's chronic condition (see Quality Statement 4: Patient Self-Management Plan).

3

Patient Education

People with osteoarthritis are offered education to facilitate a self-management plan. This education is provided in accessible formats.

Background

The goal of patient education is to improve self-confidence in one's ability to manage a condition and its health outcomes.[19] Patient education for people with osteoarthritis supports understanding of the condition and encourages positive changes in attitudes, health behaviours, and beliefs about pain, physical activity, and joint damage. This education should include specific information, such as the importance of weight management and the benefits of physical activity, to enable positive health-seeking behaviours.

Patients should receive this information soon after their diagnosis and on an ongoing basis to address changes in their symptoms or functional abilities. Education may be provided in different formats, including tailored one-to-one sessions, group education programs in the clinical setting, or referral to community-based education programs. Not every topic noted in the Definitions section of this statement will be relevant for everyone with osteoarthritis, and there may be other areas that warrant consideration for particular individuals.

The sharing of information is an integral part of osteoarthritis management and should include family and caregivers, if appropriate. The information provided should be based on the individual needs of the person with osteoarthritis, their perception of their condition, their learning abilities, and their readiness to change.

Sources: American College of Rheumatology, 2012[27] | European League Against Rheumatism, 2013[29] | National Institute for Health and Care Excellence, 2014[19]

What This Quality Statement Means

For Patients

Your health care professionals should help you learn about your osteoarthritis and how to manage it. They may provide this information directly or refer you to education programs in your community. They should provide this information when you are first diagnosed and again as your needs change.

Each person will need different types of information, but there are key things everyone with osteoarthritis needs to know:

- Your health care professionals should talk with you about the importance of being physically active, doing specific exercises, and managing your weight. These things can help reduce your pain, improve other symptoms (such as poor sleep and mood changes), and maintain your ability to function
- Your health care professionals should show you how to protect your joints and prevent injury while being physically active (for example, by taking short breaks to allow the joint to rest)

For Clinicians

Provide education (or refer to community-based education programs) in response to the needs of people with osteoarthritis to enhance their understanding of the condition and its management. Information should include all aspects of management and be reinforced and expanded upon at subsequent visits. Share information with family and caregivers, if appropriate.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Education

Patient education should be offered in verbal, written, and/or electronic (e.g., e-learning, website) formats. Education should be individualized and may include the following types of information:

- Overview of the condition (e.g., nature of osteoarthritis), its causes (especially those pertaining to the person), its consequences (e.g., relationship between pain and sleep, pain and function, emotional impact of pain), and prognosis
- Addressing common myths (e.g., using affected joints will damage or harm the joints)
- Living with and managing osteoarthritis (see Quality Statement 4: Patient Self-Management)
- Importance of an active lifestyle (see Quality Statement 5: Therapeutic Exercise and Quality Statement 6: Physical Activity), healthy eating (see Quality Statement 7: Weight Management), management of sleep interruptions
- Difference between therapeutic exercise and physical activity, and the need for both
- How to protect joints and prevent injury

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

For Health Services

Ensure all health care settings have patient education available for adults with osteoarthritis that includes accessible information sessions and materials in written and electronic formats. The format of sessions and materials should be based on the specific needs of the local population.

Quality Indicators

Process Indicator

Percentage of people with osteoarthritis who receive education in an accessible format on osteoarthritis and its management

- Denominator: total number of people with osteoarthritis
- Numerator: number of people in the denominator who receive education in an accessible format on osteoarthritis and its management
- Data source: local data collection

Outcome Indicator

Percentage of people with osteoarthritis who report a high level of success in coping with and self-managing their condition

- Denominator: total number of people with osteoarthritis
- Numerator: number of people in the denominator who report a high level of success in coping with and self-managing their condition
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Education (continued)

- Value of trying nonpharmacological treatments before starting medication (see Definitions in Quality Statement 8: Pharmacological Symptom Management)
- Benefits and risks of medications (see Quality Statement 8: Pharmacological Symptom Management)
- Advice and training on aids and devices (e.g., footwear, orthotics, bracing, joint supports/splints, canes) and ergonomic principles to enhance daily functioning and participation in social and work roles
- Local application of heat or cold as an adjunct to other treatments
- Relationship between weight and osteoarthritis symptoms (see Quality Statement 7: Weight Management)
- How to adapt when sexual function is affected by osteoarthritis symptoms
- When referrals may be needed for additional assessment or treatment (see Quality Statement 9: Referral to a Health Care Professional with Additional Skills in Osteoarthritis Management and Quality Statement 10: Referral for Consideration of Joint Surgery)
- Information about support groups and patient organizations
- Encouragement to seek information about relevant clinical trials

4

Patient Self-Management Plan

People with osteoarthritis are supported to develop an individualized, goal-oriented self-management plan that evolves to address ongoing symptom management and access to resources and supports.

Background

Self-management is a problem-based approach designed to help people gain self-confidence in their ability to develop skills to better manage their osteoarthritis (including their symptoms) and other health conditions.[31,32] Supporting people in self-management empowers them to take an active role in understanding their condition and how best to manage it, enabling them to identify their own priorities and goals for managing their health.[19] Self-management plans can be developed through individual programs or in groups, which include the benefit of peer support and opportunities for interaction. It may also be important to involve a family member or caregiver, especially for people who have multiple chronic conditions.

In developing and working with a self-management plan, people identify challenges associated with their osteoarthritis and other health conditions, set goals, create action plans, problem-solve to understand the strategies they can use to overcome barriers, and monitor their progress in meeting their goals.[33] Health care professionals have an important role in supporting patients to develop an individualized, goal-oriented self-management plan and reviewing it with them on an ongoing basis.

Sources: American Academy of Orthopaedic Surgeons, 2013[34] | American College of Rheumatology, 2012[27] | National Institute for Health and Care Excellence, 2014[19] | Osteoarthritis Research Society International, 2014[35]

What This Quality Statement Means

For Patients

Your health care professionals should work with you to create a self-management plan. This is the part of your care plan that focuses on your role in your care.

Your self-management plan is where you can set goals for living with osteoarthritis, create action plans, solve problems that arise, and chart your progress.

Your plan should include information about how to access local services, such as exercise classes, weight-management programs, and support groups.

Your plan will also need to consider any other medical conditions you have that may impact your goals and abilities.

Depending on your needs, your plan might also include information about aids and devices such as suitable shoes, leg braces, orthotics, and hand grips. These things can help you stay active and function well.

For Clinicians

Work with people with osteoarthritis to support the development of an individualized, goal-oriented self-management plan that gives the person information and advice on the ongoing management of their symptoms and directs them to resources and other supports they may need. This may include referring them to other clinicians (see Quality Statement 9: Referral to a Health Care Professional with Additional Skills in Osteoarthritis Management), services, and community resources.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Self-management plan

The plan should be a written and/or electronic document that addresses both physical and psychosocial health needs. It may include[25]:

- A record of the mutually agreed-upon approach to self-managing osteoarthritis, while taking into account other chronic conditions
- Individualized goals
- Information about the condition and the chosen treatments, how to find support groups and online information, and details of self-management programs available locally
- A plan to access advice and support for:
  - Managing the emotional aspects of osteoarthritis and its impact on mental health and relationships
  - Engaging in therapeutic exercise to increase physical activity, including pacing strategies, and information about local services such as physiotherapy or chiropractic care, exercise classes, groups, and facilities
  - Weight management, for people who are overweight or obese, including referral to a dietitian or other local resources

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

For Health Services

Ensure all health care settings have systems and processes in place for people with osteoarthritis to participate in developing an individualized, goal-oriented self-management plan that addresses the ongoing management of their symptoms and how to access resources and supports when needed.

Quality Indicators

Process Indicators

Percentage of people with osteoarthritis who have a documented self-management plan

- Denominator: total number of people with osteoarthritis
- Numerator: number of people in the denominator who have a documented self-management plan
- Data source: local data collection

Percentage of people with osteoarthritis who identify a significant change in their monitored symptoms(s), or a new symptom or goal, who review their self-management plan with their health care professional

- Denominator: total number of people with osteoarthritis with a documented self-management plan who identify a significant change in their monitored symptom(s) or a new symptom or goal
- Numerator: total number of people in the denominator who review their self-management plan with their health care professional
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Self-management plan (continued)

  - Appropriate types and uses of aids and devices and referral to local services such as a chiropractor, occupational therapist, orthotist, pedorthist, podiatrist, or physiotherapist; these professionals can offer advice on suitable footwear, orthotic devices (such as insoles and braces, support/protection for thumb carpometacarpal joint) and assistive devices (such as walking sticks and tap turners)
  - Nonpharmacological pain management (such as heat or cold therapy, therapeutic exercise, and use of aids and devices)
  - Pharmacological pain management, including who can provide support (e.g., community pharmacies)
- Strategies for the patient to monitor themself, using simple measures to see how they are responding to management
- A plan to review the patient's osteoarthritis symptoms and adjust the self-management plan as their condition and needs change
- Contact information for the professional who will monitor and follow up

5

Therapeutic Exercise

People with hip or knee osteoarthritis are strongly encouraged to participate in progressive neuromuscular training, muscle strengthening, and aerobic exercise of sufficient frequency, intensity, and duration to maintain or improve joint health and physical fitness.

Background

Currently, the most effective nonsurgical treatment for hip and knee osteoarthritis is therapeutic exercise and other physical activity. Therapeutic exercise, a subset of physical activity, is planned, structured, and repetitive and has the objective of improving or maintaining physical fitness.[36] People with osteoarthritis of the hip and knee commonly experience physical deconditioning, lower extremity muscle weakness, functional instability, and poor neuromuscular function that can improve with exercise.[37-41] Therapeutic exercise has been shown to reduce pain, disability, and medication use, and to improve physical function, sleep, and mood in people with hip and knee osteoarthritis.[19] Therapeutic exercise programs that include progressive neuromuscular training, muscle strengthening, and aerobic exercise can restore strength, balance, and healthy movement patterns and will not cause additional joint damage.[10,42]

BACKGROUND CONTINUED

Therapeutic exercise programs should be developed by a health care professional with expertise in the prescription of exercise. The therapeutic exercise program should be progressive, with a plan to gradually increase frequency, intensity, and duration sufficient to create physiological changes, and designed to optimize function.[42] Therapeutic exercises for osteoarthritis of the hip and knee should target the quadriceps, hamstring, and gluteal and calf muscles as well as the trunk (abdomen and back) muscles. The exercises need to be tailored to the specific muscular and functional deficits of each individual based on findings from clinical assessment. However, the therapeutic exercise program can be done in a group setting, which provides additional motivation for patients to learn about their condition and progressively increase their exercises.

Sources: American Academy of Orthopaedic Surgeons, 2013[34] | American Academy of Orthopaedic Surgeons, 2017[43] | American College of Rheumatology, 2012[27] | Department of Veterans Affairs, Department of Defense, 2014[28] | European League Against Rheumatism, 2013[29] | National Institute for Health and Care Excellence, 2014[19] | Osteoarthritis Research Society International, 2014[35] | Ottawa Panel, 2016[44] | Ottawa Panel, 2017[45,46]

What This Quality Statement Means

For Patients

If you have osteoarthritis in your hip or knee, doing specific types of exercises can reduce your pain and improve your ability to move. Your health care professionals should provide you with a therapeutic exercise program designed for your needs.

Therapeutic exercise is a planned program of exercises to strengthen your muscles and train them to move in ways that reduce the load on your joints. If you have hip or knee osteoarthritis, your exercise program should target the muscles in your legs, abdomen, and back. It should also include exercises to improve your heart and lung fitness. This will give you more energy to do your activities.

To make sure you benefit from these exercises, your health care professionals should show you how to do them properly and safely. They should show you how to gradually do more challenging exercises and to increase the amount you can do.

For Clinicians

For your patients with osteoarthritis of the hip and knee, provide them with progressive neuromuscular training, muscle strengthening, and aerobic exercise of sufficient frequency, intensity, and duration to maintain or improve joint health and physical fitness. This may include referral to a supervised individual or group education and therapeutic exercise program. The program should address the person's individual needs, circumstances, and self-motivation as identified in the clinical assessment. The program needs to be individually progressed; however, it can be provided in a group setting, depending on availability of local programs or facilities.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Neuromuscular training

The aim of this training is to improve controlled movement through coordinated muscle activity (sensorimotor control) and the ability of the joint to remain stable during physical activity (functional stability).[39,47] Components include strength, balance, agility, and neuromuscular control to optimize movement patterns and reduce abnormal joint loads.[10,48,49]

Muscle strengthening

This involves exercise to strengthen the muscles around the affected joint to maintain functional independence, enhance balance, and reduce risk of falls.[25] This can include non–weight-bearing exercises to train isolated muscles selectively, and also weight-bearing exercises involving multiple joints.[39] The quality of strengthening exercises is emphasized by ensuring the level of training matches the person's abilities and that progression is encouraged.

Aerobic exercise

Also known as cardio, aerobic exercise can be low, moderate, or high intensity and involves using large muscles for sustained periods. Cycling, swimming laps, and walking in a pool or in a walking program are examples of aerobic exercise.[50] It is linked with improved physical and mental health as well as increased endurance or energy to participate in everyday activities.

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

For Health Services

Ensure all health care settings have systems, processes, and resources in place for adults with osteoarthritis of the hip and knee to receive progressive neuromuscular training, muscle strengthening, and aerobic exercise of sufficient frequency and intensity to maintain or improve joint health and physical fitness.

Quality Indicators

Process Indicator

Percentage of people with hip or knee osteoarthritis who participate in progressive neuromuscular training, muscle strengthening, and aerobic exercise programs

- Denominator: total number of people with hip or knee osteoarthritis
- Numerator: number of people in the denominator who participate in progressive neuromuscular training, muscle strengthening, and aerobic exercise programs
- Data source: local data collection

Structural Indicator

Local availability of therapeutic exercise programs delivered by health care professionals with expertise in the prescription of exercise

6

Physical Activity

People with osteoarthritis are strongly encouraged to optimize their physical activity and minimize sedentary activity, and are offered information and support to help them toward these goals.

Background

Physical activity is any activity that involves bodily movement, done as part of leisure, recreation, work, active transportation, or household tasks.[36,51] It is different from therapeutic exercise, which is a type of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness[52] (see Quality Statement 5: Therapeutic Exercise). Regular physical activity will not damage joints and can reduce the symptoms of osteoarthritis and improve overall health.[19,29,35]

A sedentary lifestyle is a known risk factor for osteoarthritis and for worsening of symptoms, and can be modified by increasing physical activity and exercise.[53,54] People with osteoarthritis who are sedentary are also vulnerable to further losses in quality of life if they become increasingly sedentary.[54,55] They may need education from a health care professional that includes information and support in developing a plan to get started, including how to incorporate physical activity into their daily lives and guidance on managing symptoms, such as doing physical activity within acceptable pain levels rather than avoiding pain.[56-58]

BACKGROUND CONTINUED

Regular physical activity is recommended, as much as the person is able to do and can tolerate, with a target to accumulate at least 150 minutes of moderate to vigorous aerobic activity per week, in bouts of 10 minutes or more.[56-58] Moderate activity will cause adults to sweat a little and breathe harder; examples are brisk walking, biking, household chores, dancing, and yardwork. Vigorous activity will cause adults to sweat and be out of breath; examples are faster-paced walking, biking uphill, and swimming laps.

For those who cannot meet the recommended target, a small amount of physical activity is better than none. Quality of life gains can be achieved by replacing sedentary time (sitting, lying down) with either daily intervals of 10 minutes of moderate to vigorous physical activity or 1 hour of light physical activity, such as walking slowly, making a bed, and preparing food.[54] If physical activity does not aggravate joint pain or swelling, it is safe to engage in it beyond these amounts.[56-58]

Sources: American Academy of Orthopaedic Surgeons, 2013[34] | American College of Rheumatology, 2012[27] | Department of Veterans Affairs, Department of Defense, 2014[28] | European League Against Rheumatism, 2013[29] | National Institute for Health and Care Excellence, 2014[19] | Osteoarthritis Research Society International, 2014[35] | Ottawa Panel, 2011[59] | Ottawa Panel, 2016[44] | Ottawa Panel, 2017[60]

What This Quality Statement Means

For Patients

In addition to your therapeutic exercise program, your health care professionals should encourage you to be physically active every day. Even a small amount of activity is good. Regular physical activity can greatly reduce the pain, aching, and stiffness related to your osteoarthritis and improve your overall health.

Walking, biking, swimming, rowing, aqua-fit, and walking in a pool are activities that are gentler on the joints. Yoga and Tai Chi are also good but may need to be modified for you.

Brisk walking, biking, household chores, dancing, and yardwork are examples of moderate activity.

Examples of vigorous activity are faster-paced walking, biking uphill, and swimming laps.

If you feel pain when you are active, it does not mean you are damaging your joints. If an activity does make your symptoms worse, your health care professionals should show you how to modify it, or recommend other activities.

You should aim to do as much physical activity as you can tolerate. A good target is at least 150 minutes of moderate to vigorous activity each week. Being active in bouts of 10 minutes or more will give you health benefits.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Information and support

Components may include:

- Understanding that joint pain from physical activity does not equal harm, and that there is greater health risk and increased risk of joint pain by not being active
- Understanding that physical activity will likely increase pain a little to moderately and that thermal modalities (heat or cold) or medication after activity can be used to manage this pain
- Pacing activity so it is interspersed with short periods of rest
- Developing an individualized physical activity plan, based on the person's needs and preferences, with realistic and gradually increasing targets (e.g., bouts of 10 minutes of walking to reach 5,000 steps per day, gradually increased to 30-minute bouts for 10,000 steps per day)
- Iterative problem-solving that emphasizes skills to improve adherence and reinforce maintenance (e.g., activity trackers or other mobile e-tools to measure steps taken, motivational programs, log books, written information or electronic resources, booster sessions)

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

If you find the target of 150 minutes each week is too hard, you can start small and gradually increase the amount of physical activity you do each day.

Your health care professionals should work with you on a plan to reach your goals, or refer you to community programs that can help.

For Clinicians

Encourage your patients with osteoarthritis to optimize their physical activity and minimize sedentary activity. Explain the importance of being physically active every day, both for their osteoarthritis and their overall health. Provide information about strategies and resources to help them develop an individualized physical activity plan that is responsive to their needs and preferences. If needed, refer patients to other health care professionals (e.g., chiropractors, physiotherapists, sport and exercise medicine physicians), or community programs that provide education and peer support and facilitate ongoing participation in daily physical activity for people with osteoarthritis.

For Health Services

Ensure all health care settings have systems, processes, and resources in place for adults with osteoarthritis to receive information and support about how to optimize their physical activity and minimize sedentary activity. Ensure all health care settings have systems and processes in place for people with osteoarthritis to participate in developing an individualized physical activity plan. Ensure that appropriate local programs are available to support a physically active lifestyle, including referral to community-based fitness programs and facilities that offer walking, aquatic, yoga, or Tai Chi activities.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Information and support (continued)

- Choosing activities the person likes, such as[24]:
  - Cardiovascular and/or resistance exercise on land (e.g., walking, biking)
  - Activities requiring neuromuscular control, modified as needed (e.g., yoga, Tai Chi)
  - Aquatic exercise (e.g., swimming, aqua-fit, walking in a pool)
- Helping those who are sedentary make a plan to get started; if pain is a barrier to physical activity, this may include providing pain-relieving medication (see Quality Statement 8: Pharmacological Symptom Management)

Quality Indicators

Process Indicator

Percentage of people with osteoarthritis who receive information and support to participate in daily physical activity from a health care professional

- Denominator: total number of people with osteoarthritis
- Numerator: number of people in the denominator who receive information and support to participate in daily physical activity from a health care professional
- Data source: local data collection

Outcome Indicator

Percentage of people with osteoarthritis who complete a weekly minimum of 150 minutes of moderate to vigorous physical activity

- Denominator: total number of people with osteoarthritis
- Numerator: number of people in the denominator who complete a weekly minimum of 150 minutes of moderate to vigorous physical activity
- Data source: local data collection

Structural Indicator

Local availability of programs to support a physically active lifestyle, including community-based fitness programs and facilities

7

Weight Management

People with osteoarthritis who are overweight or obese are offered patient-centred weight-management strategies, and people at a normal weight are encouraged to maintain their weight.

Background

Being overweight or obese is a known risk factor for the development and progression of osteoarthritis. The contributing stresses on the body are complex and include both biomechanical factors (e.g., increased or abnormal joint loading, loss of muscle mass and strength over time, mechanical stress leading to release of inflammatory mediators from joint tissues) and nonmechanical factors (e.g., inflammatory mediators produced in fat tissue).[61]

A combination of weight loss and exercise is the most beneficial approach to managing osteoarthritis.[59,61] People who are overweight or obese should be offered weight-management strategies or referred to community programs to help them lose a minimum of 5% of body weight for some symptom relief[28,35] and ideally 10% or more for significant improvements in symptoms, physical function, and health-related quality of life.[61] Medications and surgery may also be options for people with severe obesity.[25]

Sources: American Academy of Orthopaedic Surgeons, 2013[34] | American College of Rheumatology, 2012[27] | Department of Veterans, Affairs Department of Defense, 2014[28] | European League Against Rheumatism, 2013[29] | National Institute for Health and Care Excellence, 2014[19] | Osteoarthritis Research Society International, 2014[35] | Ottawa Panel, 2011[59]

What This Quality Statement Means

For Patients

Being overweight can make joint pain and mobility worse. Losing weight can improve your symptoms. If you have osteoarthritis and are overweight, your health care professionals should offer you help to lose at least 5% to 10% of your body weight. If you are at a healthy weight, they should encourage you to maintain it.

If you need help, your primary care provider should refer you to a weight-management program or dietitian. They can support you with information and advice on things like how eating and exercise work together to affect your weight and how to stay motivated and reach your weight-loss goals.

For Clinicians

Offer weight-management strategies to adults with osteoarthritis who are overweight or obese, to help them lose a minimum of 5% to 10% of body weight. Patients should receive information and support to develop individual weight loss goals, learn problem-solving techniques to reach their goals, and receive follow-up visits to re-evaluate and discuss their goals for losing weight and increasing physical activity (see Quality Statement 6: Physical Activity). If needed, refer patients to a dietitian or weight-management program. Encourage adults with osteoarthritis who are at a normal weight to maintain their weight.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Overweight or obese

The excessive accumulation of body fat is measured by the body mass index (BMI) and calculated as weight in kilograms divided by height in metres squared. BMI is not a direct measure of body fat but is the most widely investigated and most useful indicator of weight-related health risk. Internationally accepted BMI values for overweight adults are 25.0 to 29.9 kg/m^2; for obesity, 30.0 to 39.9 kg/m2; and for severe obesity, 40.0 kg/m^2 or higher.[62]

Normal weight

BMI values for adults of normal weight are 18.5 to 24.9 kg/m^2.[62]

Weight-management strategies

Strategies to help people with osteoarthritis lose weight should include a focus on lifestyle interventions and behaviour-change strategies to encourage healthy eating and increased physical activity. The amount of support should be determined by the person's needs and be responsive to changes over time.

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

For Health Services

Ensure all health care settings have systems, processes, and resources in place so that people with osteoarthritis who are overweight or obese are offered weight-management strategies to lose weight, and those who are at a normal weight are supported to maintain their weight. This may include information for clinicians on accessing community resources (e.g., referral to a dietitian or weight-management program delivered by a trained professional) when needed.

Quality Indicators

Process Indicators

Percentage of people with osteoarthritis whose BMI is documented in their medical chart

- Denominator: total number of people with osteoarthritis
- Numerator: number of people in the denominator whose BMI is documented in their medical chart
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Weight-management strategies (continued)

Weight-management programs should be delivered by trained professionals (e.g., dietitians) and ideally use a multidisciplinary approach. Practical, patient-centred weight-management strategies may include the following[29]:

- Regular self-monitoring, such as food diaries, calorie-counting apps, and recording weight monthly
- Regular support meetings to review/discuss progress
- Understanding how food intake and exercise work together to affect weight
- Education on healthy eating
- Understanding eating behaviours, triggers such as stress, and alternative coping strategies
- Timing of eating and exercise
- Appropriate sleep hygiene
- Maintaining good mental health
- Nutrition education
- Predicting and managing relapse

QUALITY INDICATORS CONTINUED

Percentage of people with osteoarthritis who receive a documented weight-management strategy

- Denominator: total number of people with osteoarthritis
- Numerator: number of people in the denominator who receive a documented weight-management strategy
- Data source: local data collection

Structural Indicator

Local availability of community resources (e.g., dietitian or weight management program delivered by a trained professional)

8

Pharmacological Symptom Management

People with symptomatic osteoarthritis are offered pain-relieving medication options when nonpharmacological treatments are insufficient to control their symptoms.

Background

Overall, the goal of treatment for osteoarthritis should be to improve quality of life. All people with osteoarthritis require nonpharmacological treatments.[19] Despite using them, however, some people experience persistent, significant, activity-limiting symptoms and may need to concurrently use pain-relieving medication. It is important to assess osteoarthritis-related symptoms using valid and reliable measures[24] to understand a patient's pain experience. Medications can target different aspects of a person's pain, including pain experienced with joint use. In addition, sleep problems and psychological factors such as depression and anxiety also contribute to the pain cycle,[10] and treating these downstream effects of osteoarthritis pain with central-acting drugs (e.g., serotonin and norepinephrine reuptake inhibitors [SNRIs]) may be beneficial.[24]

Many clinical trials have found medications (i.e., hyaluronic acid, acetaminophen, glucosamine, chondroitin) are not better than placebo (30% to 40% placebo response), although this does not mean there was no effect for some patients.[63-66] Few trials have been conducted in people with osteoarthritis who also have other conditions such as diabetes and heart disease; this is despite the fact that most people with knee, hip, or hand osteoarthritis have at least one other chronic condition.[67] Therefore, comorbidities should be considered with any prescribed management plan.

BACKGROUND CONTINUED

In selecting pain-relieving medication, a stepped approach should be used that takes into consideration risks, side effects, efficacy, costs to the patient, and the person's needs and preferences. Pain-relieving medication options should be offered then a collaborative approach used to make a plan for symptom management, including reassessments as needed of the response to treatment. Opioids should not be used routinely to treat osteoarthritis pain. The use of opioids is associated with significant harms and side effects, including addiction and fatal and nonfatal overdose. For detailed guidance, see Health Quality Ontario's *Opioid Prescribing for Chronic Pain* quality standard.

Sources: American Academy of Orthopaedic Surgeons 2013[34] | American Academy of Orthopaedic Surgeons 2017[43] | American College of Rheumatology 2012[27] | Department of Veterans Affairs, Department of Defense 2014[28] | National Institute for Health and Care Excellence 2014[19] | Osteoarthritis Research Society International 2014[35]

What This Quality Statement Means

For Patients

If things like exercise and weight management are not working well enough to control your symptoms, your primary care provider should offer you options for pain-relieving medication. If you decide to use pain medication, it is important to continue using other nondrug treatments as well. One does not replace the other.

Your primary care provider should work with you to make a plan to review your medication use after a certain time. However, if you experience any side effects from the medication, tell your primary care provider right away.

Your primary care provider should first offer you a cream to rub over the joint. If this doesn't work for you, they may recommend over-the-counter pills (such as low-dose analgesics and/or nonsteroidal anti-inflammatory drugs), prescription pills, or an injection into the joint.

Your primary care provider should not offer you an opioid medication as the first or routine treatment for your osteoarthritis pain. These drugs have serious risks including addiction, overdose, and death. For more information, please see our patient reference guide *Opioid Prescribing for Chronic Pain*.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Symptomatic osteoarthritis

Symptoms vary by osteoarthritis stage (early, moderate, and advanced)[24] and include pain, aching, swelling, stiffness, functional limitations, anxiety and mood disorders, fatigue, and/or poor sleep quality.[11,12,13] These symptoms are all connected and pain is the instigator.

Nonpharmacological treatments[19]

- Education, advice, information (see Quality Statement 3: Patient Education)
- Patient self-management (see Quality Statement 4: Patient Self-Management Plan)
- Exercise and physical activity (see Quality Statement 5: Therapeutic Exercise and Quality Statement 6: Physical Activity)
- Weight loss, for patients who are overweight or obese (see Quality Statement 7: Weight Management)

Pain-relieving medication options

- Stepped approach:
  1. Topical therapy for knee or hand; *and/or* low-dose analgesics *and/or* nonsteroidal anti-inflammatory drugs (NSAIDs) for hip, knee, or hand, used as required to relieve symptoms

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

For Clinicians

For people with symptomatic osteoarthritis in whom nonpharmacological treatments are insufficient to control symptoms, offer pain-relieving medication options in collaboration with the patient (see Quality Statement 4: Patient Self-Management Plan). Pain-relieving medications include treatments for associated mood or sleep disorders. With respect to medication, the discussion should include information about its benefits, when to take it, how much to take, how long to take it for, any possible side effects, and an agreement to reassess the response to treatment on a regular basis.

If the patient has multiple comorbidities that present challenges to using pain medications, consider referring them for consultation with a rheumatologist or other internal medicine specialist or with a pharmacist regarding drug interactions (see Quality Statement 9: Referral to a Health Care Professional with Additional Skills in Osteoarthritis Management).

For Health Services

Ensure all health care settings have systems, processes, and resources in place for people with osteoarthritis to receive pain-relieving medication options when nonpharmacological treatments are insufficient to control their symptoms.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Pain-relieving medication options (continued)

2. Systemic therapy as a consistent course of treatment, with analgesics *and/or* NSAIDs for hip, knee, or hand; *and/or* intra-articular corticosteroid injections for hip or knee
3. For those who have had an inadequate response to steps 1 and 2, selective or higher-dose nonselective NSAIDs in combination with a proton pump inhibitor and/or heterocyclic antidepressants (SNRIs)

- Opioids should not be used routinely to treat osteoarthritis pain because the potential harms of opioids often outweigh the benefits. For detailed guidance, see Health Quality Ontario's *Opioid Prescribing for Chronic Pain* quality standard.
- The potential harms of NSAIDs may also outweigh the benefits in some patients, especially in older adults who use NSAIDs on an ongoing basis. Prescribers should assess patients carefully before recommending NSAIDs, and monitor appropriately when patients have risk factors that place them at higher risk for side effects.[68]
- Evidence is inconclusive on the use of these medications: intra-articular hyaluronates, platelet-rich plasma and stem cell therapy for hip or knee; glucosamine (for symptom relief); herbal remedies and supplements[24]

Quality Indicators

Process Indicators

Percentage of people with osteoarthritis who are prescribed pain-relieving medication who also receive nonpharmacological treatments

- Denominator: total number of people with osteoarthritis who are prescribed pain-relieving medication
- Numerator: number of people in the denominator who also receive nonpharmacological treatments for pain management
- Data source: local data collection

Percentage of people with osteoarthritis who are prescribed pain-relieving medication, who have a documented discussion of risks and benefits of their medication with their primary care provider

- Denominator: total number of people with osteoarthritis who are prescribed pain-relieving medication
- Numerator: number of people in the denominator who have a documented discussion of risks and benefits of their medication with their primary care provider
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Pain-relieving medication options (continued)

- The following are not recommended: chondroitin and glucosamine (for disease modification), owing to limited and uncertain evidence[19,24,27,35]; medical cannabinoids for pain, owing to lack of evidence and known harms[69]

9

Referral to a Health Care Professional With Additional Skills in Osteoarthritis Management

People with osteoarthritis, when clinically indicated, are referred by their primary care provider to a health care professional with additional skills in osteoarthritis management.

Background

Primary care providers have the skills to manage osteoarthritis care for most people. However, some people with osteoarthritis may benefit from a referral to a health care professional with additional skills in osteoarthritis management for further assessment and/or treatment; this person can assist the primary care provider in implementing the patient's management plans. Before such a referral, primary care providers should support patients with nonpharmacological (see Quality Statements 3 to 7) and pharmacological interventions (see Quality Statement 8: Pharmacological Symptom Management).

The referral should include the results from the clinical assessment (see Quality Statement 1: Clinical Assessment for Diagnosis) and the comprehensive assessment (see Quality Statement 2: Comprehensive Assessment to Inform the Care Plan), the clinical indication for referral, and information about the person's care plan, including a copy of their written self-management plan (see Quality Statement 4: Patient Self-Management Plan). This information will help ensure people with osteoarthritis are seen according to the urgency of their referral, undergo only those investigations that have not already been completed, and are offered evidence-based comprehensive treatment options.

BACKGROUND CONTINUED

The referral process should involve an integrated approach where there is collaboration, communication, and shared decision-making to promote patient-centred care. In some cases, a consultation between the two health care professionals may be required. After seeing the patient, the health care professional acting in a consulting role should communicate the recommended plan for treatment and follow-up (if needed) to the primary care provider. The primary care provider should continue managing the person's care, including coordinating care with other professionals and integrating treatment plans from any subsequent referrals. Once their symptoms and functional abilities are stable, the patient will usually not need to continue seeing the health care professional with additional skills in osteoarthritis management once their symptoms and functional abilities are stable.

Source: Advisory committee consensus

What This Quality Statement Means

For Patients

Your primary care provider may suggest you see another health care professional with additional skills in helping people manage their osteoarthritis symptoms, to see if you could benefit from further assessment or treatment. Ask your primary care provider who will contact you about any upcoming assessment or treatment.

Health care professionals you're referred to should send notes about your progress to your primary care provider. Your primary care provider should share this information with you at your next appointment.

Your overall care will remain the responsibility of your primary care provider so that you can avoid unnecessary assessments, investigations, or treatments.

For Clinicians

When clinically indicated (see Definitions), refer people with osteoarthritis for assessment and/or treatment by a health care professional with additional skills in osteoarthritis management.

Primary care providers: Provide a detailed referral that includes the clinical assessment, comprehensive assessment results, the patient's individualized care plan and self-management plan, and the clinical indication for referral. Tell your patient how they will be contacted about the referral appointment.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Primary care provider

The professional who is responsible for the person's care (e.g., screening, diagnosis, and management). This is usually the primary care physician, family physician, nurse practitioner, or other health care professional with the ability to make referrals, request imaging, and/or prescribe medications.

Health care professional with additional skills in osteoarthritis management

Depending on the clinical indication, the referral may be to a health care professional with additional skills in osteoarthritis management or the management of osteoarthritis-related symptoms (e.g., pain, poor sleep quality, anxiety and mood disorders, weight management). This includes, but is not limited to, the following professionals: specialist physician (e.g., orthopaedic surgeon, physiatrist, plastic surgeon, rheumatologist); focused-practice physician (e.g., pain management, sport and exercise medicine); nurse practitioner or advanced/extended practice occupational therapist or physiotherapist; chiropractor, dietitian, occupational therapist, pharmacist, physiotherapist; psychologist, counsellor, or other health care professional with additional skills in the management of osteoarthritis.

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

Health care professionals with additional skills in osteoarthritis management: Communicate with the patient's primary care provider to inform them of the timing of the referral response. After consultation, communicate the recommended plan for treatment and follow-up (if needed) to the patient and their primary care provider.

For Health Services

Ensure systems, processes, and resources are in place so that people with osteoarthritis have timely access to a health care professional with additional skills in osteoarthritis management, on referral from their primary care provider. Decisions on referral thresholds should be based on discussions between the patient and family representatives, the referring health care professionals, and the health care professionals with additional skills in osteoarthritis management.

Quality Indicators

Process Indicators

Percentage of people with osteoarthritis who are referred to a health care professional with additional skills in osteoarthritis management when clinically indicated

- Denominator: total number of people with osteoarthritis with a clinically indicated reason for referral to a health care professional with additional skills in osteoarthritis management
- Numerator: number of people in the denominator who are referred to a health care professional with additional skills in osteoarthritis management
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Clinically indicated

Primary care providers have the skills to manage osteoarthritis. However, there are clinical indications that prompt a primary care provider to consider referral to a health care professional with additional skills in osteoarthritis management. These include, but are not limited to, the following:

- Uncertain diagnosis, confirmation of diagnosis, atypical features of osteoarthritis, or consideration for alternative diagnosis (see Quality Statement 1: Clinical Assessment for Diagnosis)
- Unexpected or unusual disease progression or complications
- Surgical or complex weight management (see Quality Statement 7: Weight Management)
- People with osteoarthritis who are considering joint surgery, whose symptoms are not sufficiently controlled through nonpharmacological and pharmacological management, and whose quality of life is negatively impacted

QUALITY INDICATORS CONTINUED

Percentage of people with osteoarthritis whose primary care provider received and shared with them a recommended plan for treatment from the health care professional with additional skills in the management of osteoarthritis after their visit

- Denominator: total number of people with osteoarthritis who were referred to a health care professional with additional skills in the management of osteoarthritis by their primary care provider and who were seen by a health care professional with additional skills in the management of osteoarthritis
- Numerator: number of people in the denominator whose primary care provider received and shared with them a plan for treatment from the health care professional with additional skills in the management of osteoarthritis after their visit
- Data source: local data collection

Outcome Indicator

Median wait time to first appointment with a health care professional with additional skills in osteoarthritis management (i.e., additional skills in rheumatology, sport and exercise medicine, or pain management)

- Potential stratification: referral provider type
- Data source: local data collection

Structural Indicator

Local availability of health care professionals with additional skills in osteoarthritis management

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Clinically indicated (continued)

There are additional circumstances in which some primary care providers may wish to refer a patient to a health care professional with additional skills in osteoarthritis management. This decision should be made with the patient. Examples of these circumstances include:

- Suboptimal control of symptoms (including inability to reach best potential, unstable pain levels that interfere with daily activities, sleep, and/or function)
- Psychological symptoms that affect the person's ability to participate in self-management of their osteoarthritis
- Escalating or high doses of pain medications (e.g., opioids) or inability to take traditional analgesics and anti-inflammatories owing to allergies or intolerances
- Severity or complexity of the condition, multiple comorbidities (e.g., concern about use of medications, drug interactions, and safety) (see Quality Statement 2: Comprehensive Assessment to Inform the Care Plan)
- Complex osteoarthritis that requires procedures such as arthrocentesis (joint aspiration) or challenging joint injection and where additional skill is required for the best outcome

10

Referral for Consideration of Joint Surgery

People with osteoarthritis whose symptoms are not sufficiently controlled through nonsurgical management and whose quality of life is negatively impacted by their joint-related symptoms should be referred for consideration of joint surgery.

Background

People with osteoarthritis should be supported with nonsurgical management before any referral for consideration of joint replacement surgery (hip, knee), joint-conserving surgery (such as osteotomy), or joint fusion or excision in the hand.[19,28] An adequate trial of nonsurgical management, before exploring a surgical solution, will give people with osteoarthritis the best chance of optimizing their quality of life. People who do go on to have a hip or knee replacement are likely to have greater functional recovery after surgery if they have better pre-operative physical function.[70]

People with osteoarthritis whose symptoms are not sufficiently controlled after an adequate trial of nonsurgical management—and whose quality of life is negatively impacted such that they have difficulty managing on a day-to-day basis—should be offered referral for consideration of joint surgery. The decision to refer should be based on the severity of their pain, functional limitations, or other patient-reported osteoarthritis outcomes negatively impacting quality of life; their general health; their expectations for lifestyle and activity; and their willingness to consider surgery as an option. [19,28,71]

BACKGROUND CONTINUED

Patient-specific factors, such as age, sex, smoking, obesity, and comorbidities, should not be barriers to referral for consideration of joint surgery.[19]

There is no role for arthroscopic surgery in the management of knee osteoarthritis.[72]

When considering surgical consultation for people with osteoarthritis of the hip or knee, the referring clinician should obtain plain radiographs within the 6-month period prior to their first appointment with a surgeon (weight-bearing for knee and non–weight-bearing for hip).[28] Advanced imaging, such as magnetic resonance imaging or computed tomography, is not required. People being considered for hip or knee joint replacement surgery should not receive joint injections in the involved joint if surgery is anticipated within 3 to 6 months.[28]

Sources: Department of Veterans Affairs, Department of Defense, 2014[28] | National Institute for Health and Care Excellence, 2014[19]

What This Quality Statement Means

For Patients

If you have tried to manage your symptoms using the treatments described in this guide, and your osteoarthritis symptoms are making it difficult for you to manage day to day, your health care professionals may suggest that you be referred for an assessment to see if you could benefit from surgery to realign or replace your painful joint. Joint replacement can greatly reduce pain and improve function for people severely affected by osteoarthritis.

If you have knee osteoarthritis, your surgeon should not offer you a treatment called arthroscopy. (In this procedure, a tube-like device is inserted into a joint to examine and treat it.) Arthroscopy does not reduce pain or improve function in people with knee osteoarthritis, so it should not be used. The benefits do not outweigh the risks.

For Clinicians

Refer people with osteoarthritis for assessment and consideration of joint surgery if the patient has complied with an adequate trial of nonpharmacological (see Quality Statements 3 to 7) and pharmacological (see Quality Statement 8) management but is experiencing a significant reduction of joint mobility that negatively impacts activities of daily living and quality of life, along with an escalation in the use of pain medication and/or reduced effectiveness of pain management.

For people with knee osteoarthritis, do not refer for surgical consultation for arthroscopic procedures.[72]

If you order x-ray for knee osteoarthritis, specify weight-bearing images.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Symptoms are not sufficiently controlled

This occurs when a patient experiences escalated use of pain medication and/or reduced effectiveness of nonpharmacological and pharmacological pain management strategies.

Quality of life is negatively impacted

This occurs when the person considers the level of their osteoarthritis symptoms—pain, aching, stiffness, sleep interruption, reduced function, etc.—to be unacceptable such that they have difficulty managing on a day-to-day basis.

Nonsurgical management

This includes nonpharmacological (see Quality Statements 3 to 7) and pharmacological interventions (see Quality Statement 8: Pharmacological Symptom Management), both of which should be supported before any referral for consideration of joint surgery.

WHAT THIS QUALITY STATEMENT MEANS CONTINUED

For Health Services

Ensure all primary care providers and hospitals have clear policies and processes in place so that people with osteoarthritis are not referred for consideration of joint surgery until they have been supported with an adequate trial of nonsurgical management. Decisions on referral thresholds should be based on discussions between the patient and family representatives, the referring health care professionals, and surgeons.

Quality Indicators

Process Indicators

Percentage of people with osteoarthritis who report that their symptoms are not sufficiently controlled and are negatively impacting their quality of life, who are referred to an orthopaedic surgeon for consideration for joint surgery

- Denominator: total number of people with osteoarthritis who report that their symptoms are not sufficiently controlled and are negatively impacting their quality of life
- Numerator: number of people the in the denominator who are referred to an orthopaedic surgeon for consideration for joint surgery
- Data source: local data collection

QUALITY INDICATORS CONTINUED

Percentage of people with osteoarthritis referred for consideration of joint surgery who have documentation of having received nonsurgical management prior to their referral

- Denominator: total number of people with osteoarthritis referred for consideration of joint surgery
- Numerator: number of people in the denominator who have documentation of having received nonsurgical management
- Data source: local data collection

Percentage of people with knee osteoarthritis who are referred for surgical consultation for arthroscopic procedure (A lower percentage is better)

- Denominator: total number of people with knee osteoarthritis
- Numerator: number of people in the denominator who are referred for surgical consultation for arthroscopic procedure
- Data source: local data collection

Outcome Indicator

Percentage of people with knee osteoarthritis who undergo a knee arthroscopic procedure (A lower percentage is better)

- Denominator: total number of people with knee osteoarthritis
- Numerator: number of people in the denominator who had knee arthroscopy
- Data sources: Ontario Health Insurance Plan (OHIP), Discharge Abstract Database

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References

1. Neogi T, Zhang Y. Epidemiology of osteoarthritis. Rheum Dis Clin North Am. 2013;39(1):1-19.

2. Osteoarthritis Research Society International. What is osteoarthritis? [Internet]. Mount Laurel (NJ): The Society; 2013 [cited 2016 Dec 28]. Available from: https://www.oarsi.org/what-osteoarthritis

3. Birtwhistle R, Morkem R, Peat G, Williamson T, Green ME, Khan S, et al. Prevalence and management of osteoarthritis in primary care: an epidemiologic cohort study from the Canadian Primary Care Sentinel Surveillance Network. CMAJ Open. 2015;3(3):E270-5.

4. Arthritis Alliance of Canada. The impact of arthritis in Canada: today and over the next 30 years [Internet]. Toronto: The Alliance; 2011 [cited 2016 Dec 29]. Available from: http://www.arthritisalliance.ca/images/PDF/eng/Initiatives/20111022_2200_impact_of_arthritis.pdf

5. Tarride JE, Haq M, O'Reilly DJ, Bowen JM, Xie F, Dolovich L, et al. The excess burden of osteoarthritis in the province of Ontario, Canada. Arthritis Rheum. 2012;64(4):1153-61.

6. Public Health Agency of Canada, Centre for Chronic Disease Prevention and Control, Chronic Disease Surveillance Division resource team. Life with arthritis in Canada: a personal and public health challenge [Internet]. Ottawa: The Agency; 2010 [cited 2016 Dec 28]. Available from: http://www.phac-aspc.gc.ca/cd-mc/arthritis-arthrite/lwaic-vaaac-10/pdf/arthritis-2010-eng.pdf

7. Ganz DA, Chang JT, Roth CP, Guan M, Kamberg CJ, Niu F, et al. Quality of osteoarthritis care for community-dwelling older adults. Arthritis Rheum. 2006;55(2):241-7.

8. Grindrod KA, Marra CA, Colley L, Cibere J, Tsuyuki RT, Esdaile JM, et al. After patients are diagnosed with knee osteoarthritis, what do they do? Arthritis Care Res (Hoboken). 2010;62(4):510-5.

9. Li LC, Sayre EC, Kopec JA, Esdaile JM, Bar S, Cibere J. Quality of nonpharmacological care in the community for people with knee and hip osteoarthritis. J Rheumatol. 2011;38(10):2230-7.

10. Allen KD, Choong PF, Davis AM, Dowsey MM, Dziedzic KS, Emery C, et al. Osteoarthritis: Models for appropriate care across the disease continuum. Best Pract Res Clin Rheumatol. 2016;30(3):503-35.

11. Hawker GA. The challenge of pain for patients with OA. HSS J. 2012;8(1):42-4.

12. Sadosky AB, Bushmakin AG, Cappelleri JC, Lionberger DR. Relationship between patient-reported disease severity in osteoarthritis and self-reported pain, function and work productivity. Arthritis Res Ther. 2010;12(4):R162.

13. Hawker GA, Gignac MA, Badley E, Davis AM, French MR, Li Y, et al. A longitudinal study to explain the pain-depression link in older adults with osteoarthritis. Arthritis Care Res (Hoboken). 2011;63(10):1382-90.

14. Nuesch E, Dieppe P, Reichenbach S, Williams S, Iff S, Juni P. All cause and disease specific mortality in patients with knee or hip osteoarthritis: population based cohort study. BMJ. 2011;342:d1165.

15. Hawker GA, Croxford R, Bierman AS, Harvey PJ, Ravi B, Stanaitis I, et al. All-cause mortality and serious cardiovascular events in people with hip and knee osteoarthritis: a population-based cohort study. PLoS One. 2014;9(3):e91286.

16. Hawker GA, Croxford R, Bierman AS, Harvey P, Ravi B, Kendzerska T, et al. Osteoarthritis-related difficulty walking and risk for diabetes complications. Osteoarthritis Cartilage. 2017;25(1):67-75.

17. Schieir O, Hogg-Johnson S, Glazier RH, Badley EM. Sex variations in the effects of arthritis and activity limitation on first heart disease event occurrence in the Canadian general population: results from the Longitudinal National Population Health Survey. Arthritis Care Res (Hoboken). 2016;68(6):811-8.

18. MacDonald KV, Sanmartin C, Langlois K, Marshall DA. Symptom onset, diagnosis and management of osteoarthritis. Health Rep. 2014;25(9):10-7.

19. National Institute for Health Care Excellence. Osteoarthritis: care and management [Internet]. London, UK: The Institute; 2014 [cited 2016 Dec 28]. Available from: https://www.nice.org.uk/guidance/cg177/resources/osteoarthritis-care-and-management-35109757272517

20. Cott CA, Davis AM, Badley EM, Wong R, Canizares M, Li LC, et al. Commonalities and differences in the implementation of models of care for arthritis: key informant interviews from Canada. BMC Health Serv Res. 2016;16(1):415.

21. Davis AM, Palaganas M, Li LC. Public opinion on community-based education and exercise programs for managing hip and knee osteoarthritis-like symptoms: results of a survey. Patient preference and adherence. 2016;10:283-90.

22. World Health Organization. Framework for action on interprofessional education and collaborative practice [Internet]. Geneva: WHO Press; 2010 [cited 2017 Mar 31]. Available from: http://who.int/hrh/resources/framework_action/en/index.html

23. Sakellariou G, Conaghan PG, Zhang W, Bijlsma JW, Boyesen P, D'Agostino MA, et al. EULAR recommendations for the use of imaging in the clinical management of peripheral joint osteoarthritis. Ann Rheum Dis. 2017.

24. Arthritis Alliance of Canada, Centre for Effective Practice, College of Family Physicians of Canada. Osteoarthritis tool [Internet]. Toronto: The Alliance; 2017 [cited 2017 Jul 6]. Available from: http://arthritisalliance.ca/en/osteoarthritis-toolbox

25. National Institute for Health and Care Excellence. Osteoarthritis: quality standard [Internet]. London, UK: The Institute; 2015 [cited 2016 Dec 28]. Available from: https://www.nice.org.uk/guidance/qs87

26. Arthritis Community Research & Evaluation Unit. Arthritis in Ontario. Toronto: The Arthritis Society; 2013.

27. Hochberg MC, Altman RD, April KT, Benkhalti M, Guyatt G, McGowan J, et al. American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. Arthritis Care Res (Hoboken). 2012;64(4):465-74.

28. Department of Veterans Affairs, Department of Defense. VA/DoD clinical practice guidelines for the non-surgical management of hip & knee osteoarthritis [Internet]. Washington (DC): The Departments; 2014 [cited 2016 Dec 28]. Available from: https://www.healthquality.va.gov/guidelines/CD/OA/VADoDOACPGFINAL090214.pdf

29. Fernandes L, Hagen KB, Bijlsma JW, Andreassen O, Christensen P, Conaghan PG, et al. EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis. Ann Rheum Dis. 2013;72(7):1125-35.

30. World Health Organization. International classification of functioning, disability and health [Internet]. 2017 [cited 2017 Jun 25]. Available from: http://www.who.int/classifications/icf/en/

31. Lorig KR, Mazonson PD, Holman HR. Evidence suggesting that health education for self-management in patients with chronic arthritis has sustained health benefits while reducing health care costs. Arthritis Rheum. 1993;36(4):439-46.

32. Lorig K, Lubeck D, Kraines RG, Seleznick M, Holman HR. Outcomes of self-help education for patients with arthritis. Arthritis Rheum. 1985;28(6):680-5.

33. Health Council of Canada. Self-management support for Canadians with chronic health conditions: a focus for primary health care [Internet]. Toronto: The Council; 2012 [cited 2016 Dec 28]. Available from: http://www.selfmanagementbc.ca/uploads/HCC_SelfManagementReport_FA.pdf

34. American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee: evidence-based guideline. 2nd ed [Internet]. Rosemont (IL): The Academy; 2013 [cited 2016 Jan 15]. Available from: http://www.aaos.org/research/guidelines/TreatmentofOsteoarthritisoftheKneeGuideline.pdf

35. McAlindon TE, Bannuru RR, Sullivan MC, Arden NK, Berenbaum F, Bierma-Zeinstra SM, et al. OARSI guidelines for the non-surgical management of knee osteoarthritis. Osteoarthritis Cartilage. 2014;22(3):363-88.

36. Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. Public Health Rep. 1985;100(2):126-31.

37. Bennell KL, Hunt MA, Wrigley TV, Lim BW, Hinman RS. Role of muscle in the genesis and management of knee osteoarthritis. Rheum Dis Clin North Am. 2008;34(3):731-54.

38. Fitzgerald GK, Piva SR, Irrgang JJ. Reports of joint instability in knee osteoarthritis: its prevalence and relationship to physical function. Arthritis Rheum. 2004;51(6):941-6.

39. Ageberg E, Link A, Roos EM. Feasibility of neuromuscular training in patients with severe hip or knee OA: the individualized goal-based NEMEX-TJR training program. BMC Musculoskelet Disord. 2010;11:126.

40. Shih M, Hootman JM, Kruger J, Helmick CG. Physical activity in men and women with arthritis, National Health Interview Survey, 2002. Am J Prev Med. 2006;30(5):385-93.

41. Fontaine KR, Heo M, Bathon J. Are US adults with arthritis meeting public health recommendations for physical activity? Arthritis Rheum. 2004;50(2):624-8.

42. McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition energy and and human performance. Philadelphia: Lippincott Williams & Wilkins 2014.

43. American Academy of Orthopaedic Surgeons. Management of osteoarthritis of the hip evidence-based clinical practice guideline [Internet]. Rosemont (IL): The Academy; 2017. Available from: https://www.aaos.org/uploadedFiles/PreProduction/Quality/Guidelines_and_Reviews/OA%20Hip%20CPG_11.1.17.pdf

44. Brosseau L, Wells GA, Pugh AG, Smith CA, Rahman P, Alvarez Gallardo IC, et al. Ottawa Panel evidence-based clinical practice guidelines for therapeutic exercise in the management of hip osteoarthritis. Clin Rehabil. 2016;30(10):935-46.

45. Brosseau L, Taki J, Desjardins B, Thevenot O, Fransen M, Wells GA, et al. The Ottawa panel clinical practice guidelines for the management of knee osteoarthritis. Part three: aerobic exercise programs. Clin Rehabil. 2017:269215517691085.

46. Brosseau L, Taki J, Desjardins B, Thevenot O, Fransen M, Wells GA, et al. The Ottawa panel clinical practice guidelines for the management of knee osteoarthritis. Part two: strengthening exercise programs. Clin Rehabil. 2017:269215517691084.

47. Roos EM, Arden NK. Strategies for the prevention of knee osteoarthritis. Nat Rev Rheumatol. 2016;12(2):92-101.

48. Emery CA, Roy TO, Whittaker JL, Nettel-Aguirre A, van Mechelen W. Neuromuscular training injury prevention strategies in youth sport: a systematic review and meta-analysis. Br J Sports Med. 2015;49(13):865-70.

49. Lauersen JB, Bertelsen DM, Andersen LB. The effectiveness of exercise interventions to prevent sports injuries: a systematic review and meta-analysis of randomised controlled trials. Br J Sports Med. 2014;48(11):871-7.

50. Plowman SA, Smith DL. Exercise physiology for health, fitness, and performance. Philadelphia: Lippincott Williams & Wilkins; 2007.

51. World Health Organization. Global strategy on diet, physical activity and health [Internet]. Geneva: The Organization; 2017 [cited 2017 Jul 6]. Available from: http://www.who.int/dietphysicalactivity/pa/en/

52. World Health Organization. Physical activity fact sheet [Internet]. Geneva: The Organization; 2018 [Available from: http://www.who.int/mediacentre/factsheets/fs385/en/

53. Booth FW, Roberts CK, Laye MJ. Lack of exercise is a major cause of chronic diseases. Comprehensive Physiology. 2012;2(2):1143-211.

54. (54)Pinto D, Song J, Lee J, Chang RW, Semanik PA, Ehrlich-Jones LS, et al. The association between sedentary time and quality of life from the Osteoarthritis Initiative: who might benefit most from treatment? Arch Phys Med Rehabil. 2017.

55. White D. Protective effects of replacing sedentary time with light and moderate to vigorous physical activity on functional limitation in knee OA [abstract]. Arthritis Rheumatol [Internet]. 2016; 68 (Suppl 10). Available from: http://acrabstracts.org/abstract/protective-effects-of-replacing-sedentary-time-with-light-and-moderate-to-vigorous-physical-activity-on-functional-limitation-in-knee-oa/

56. Canadian Society for Exercise Physiology. Canadian physical activity guidelines for older adults 65 years and older [Internet]. Ottawa: The Society; 2011 [cited 2017 Jan 6]. Available from: http://www.csep.ca/CMFiles/Guidelines/CSEP_PAGuidelines_older-adults_en.pdf

57. Canadian Society for Exercise Physiology. Canadian physical activity guidelines for adults 18 to 64 years [Internet]. Ottawa: The Society; 2011 [cited 2017 Jan 6]. Available from: http://www.csep.ca/CMFiles/Guidelines/CSEP_PAGuidelines_adults_en.pdf

58. Dunlop DD, Song J, Lee J, Gilbert AL, Semanik PA, Ehrlich-Jones L, et al. Physical activity minimum threshold predicting improved function in adults with lower-extremity symptoms. Arthritis Care Res (Hoboken). 2017;69(4):475-83.

59. Brosseau L, Wells GA, Tugwell P, Egan M, Dubouloz CJ, Casimiro L, et al. Ottawa Panel evidence-based clinical practice guidelines for the management of osteoarthritis in adults who are obese or overweight. Phys Ther. 2011;91(6):843-61.

60. Brosseau L, Taki J, Desjardins B, Thevenot O, Fransen M, Wells GA, et al. The Ottawa panel clinical practice guidelines for the management of knee osteoarthritis. Part one: introduction, and mind-body exercise programs. Clin Rehabil. 2017:269215517691083.

61. Bliddal H, Leeds AR, Christensen R. Osteoarthritis, obesity and weight loss: evidence, hypotheses and horizons—a scoping review. Obes Rev. 2014;15(7):578-86.

62. Health Canada. Canadian guidelines for body weight classification in adults [Internet]. Ottawa: Health Canada; 2003 [cited 2017 Mar 15]. Available from: https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/healthy-weights/canadian-guidelines-body-weight-classification-adults/quick-reference-tool-professionals.html

63. Zhang W, Robertson J, Jones AC, Dieppe PA, Doherty M. The placebo effect and its determinants in osteoarthritis: meta-analysis of randomised controlled trials. Ann Rheum Dis. 2008;67(12):1716-23.

64. da Costa BR, Reichenbach S, Keller N, Nartey L, Wandel S, Juni P, et al. Effectiveness of non-steroidal anti-inflammatory drugs for the treatment of pain in knee and hip osteoarthritis: a network meta-analysis. Lancet. 2017;390(10090):e21-e33.

65. Wandel S, Juni P, Tendal B, Nuesch E, Villiger PM, Welton NJ, et al. Effects of glucosamine, chondroitin, or placebo in patients with osteoarthritis of hip or knee: network meta-analysis. BMJ. 2010;341:c4675.

66. Rutjes AW, Juni P, da Costa BR, Trelle S, Nuesch E, Reichenbach S. Viscosupplementation for osteoarthritis of the knee: a systematic review and meta-analysis. Ann Intern Med. 2012;157(3):180-91.

67. Centers for Medicare and Medicaid Services. Chronic conditions among Medicare beneficiaries chartbook 2012 edition. Baltimore (MD): U.S. Department of Health and Human Services; 2012.

68. American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatr Soc. 2012;60(4):616-31.

69. Allan GM, Ramji J, Perry D, Ton J, Beahm NP, Crisp N, et al. Simplified guideline for prescribing medical cannabinoids in primary care. Can Fam Physician. 2018;64(2):111-20.

70. Kennedy DM, Hanna SE, Stratford PW, Wessel J, Gollish JD. Preoperative function and gender predict pattern of functional recovery after hip and knee arthroplasty. J Arthroplasty. 2006;21(4):559-66.

71. Hawker G, Bohm ER, Conner-Spady B, De Coster C, Dunbar M, Hennigar A, et al. Perspectives of Canadian stakeholders on criteria for appropriateness for total joint arthroplasty in patients with hip and knee osteoarthritis. Arthritis Rheumatol. 2015;67(7):1806-15.

72. Siemieniuk RAC, Harris IA, Agoritsas T, Poolman RW, Brignardello-Petersen R, Van de Velde S, et al. Arthroscopic surgery for degenerative knee arthritis and meniscal tears: a clinical practice guideline. BMJ. 2017;357:j1982.

About Health Quality Ontario

Health Quality Ontario is the provincial leader on the quality of health care. We help nurses, doctors and others working hard on the frontlines be more effective in what they do—by providing objective advice and by supporting them and government in improving health care for the people of Ontario.

Our focus is making health care more effective, efficient and affordable which we do through a legislative mandate of:

- Reporting to the public, organizations and health care providers on how the health system is performing,
- Finding the best evidence of what works, and
- Translating this evidence into concrete standards, recommendations and tools that health care providers can easily put into practice to make improvements.

For more information about Health Quality Ontario, visit hqontario.ca.

Quality Standards

Looking for more information?

Visit our website at **hqontario.ca** and contact us at **qualitystandards@hqontario.ca** if you have any questions or feedback about this guide.

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