

WHAT'S HOT

A Newsletter of



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Reducing the Risk of Mobility Disability in Older Adults With Osteoarthritis

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The Importance of Mobility

Mobility is the ability to independently move safely and effectively around one's environment. Mobility may have many forms, including walking, transferring from sitting to standing, climbing stairs, exercising, performing work or leisure functions, as well as being able to drive and use public transportation.

Mobility is a fundamental component of health and well-being, and it is considered a factor of an individual's intrinsic capacity by the World Health Organization.^{1,2} In fact, because mobility is an integral component of quality of life, it is addressed in several measures in the physical functioning domain of the 36-item Short Form (SF-36) health questionnaire, which is a widely used measure of health-related quality of life.³

Maintaining mobility is crucial for healthy aging and maintaining independence and preventing the loss of function and progression of chronic pain. However, mobility often declines with aging. While only 11% of adults 45 to 64 years of age report difficulty walking 3 city blocks, 32% of adults 65 years of age and older report difficulty with this task.⁴

Poor mobility is a predictor of worsening health-related quality of life over time and is a major risk factor for institutionalization.⁵⁻⁷ (Mobility can be measured using patient self-reported difficulty with mobility tasks or with measures

of physical performance.) Older adults who perform poorly on measures of lower extremity function (e.g., the Short Physical Performance Battery, the Performance Oriented Mobility Assessment, or Usual Gait Speed) have increased risk for all-cause mortality, and those with the poorest physical functioning have the highest risk.^{8,9}

The most common risk factors for mobility limitation are older age, low physical activity, obesity, strength or balance impairments, and chronic conditions such as diabetes, osteoarthritis (OA), or low back pain.¹⁰ Depression, vision impairment, chronic pain, shortness of breath, fatigue, and cognitive impairment have also been linked to mobility limitations.⁷

Mobility problems in older adults have many negative health consequences (Table 1). Mobility limitations are associated with a variety of chronic health conditions including depression, cardiovascular disease, cancer, and injuries (e.g., due to falls).¹¹ The development of such conditions can further compromise mobility, which

Maintaining mobility is crucial for healthy aging and maintaining independence.

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Sedentary behavior contributes to the development of many chronic conditions.

may lead to a vicious cycle of worsening mobility, pain, and comorbid conditions. As patients lose mobility, they become more sedentary and are likely to gain weight, which can worsen pain due to OA, further impeding mobility.¹²

Those who lose mobility as they age may also become deconditioned and have worsening balance, increasing the risk of falls. Older individuals who fall are at risk for fractures, especially if they have osteoporosis.⁵ Although not all falls result in serious injury, falls are an important contributor to injuries and deaths due to injuries in older adults. Falls that do not result in physical injury may trigger a fear of falling that results in a further decline in activity.

Obesity is increasingly being recognized as a contributor to the loss of mobility in old age as well as to increasing rates of OA.¹³ Adults who are overweight in midlife have double the risk for future limitations in mobility compared with normal weight adults.⁶ Furthermore, sedentary behavior due to limited mobility contributes to the development of many chronic conditions including obesity,



cardiovascular disease, diabetes, colorectal cancer, breast cancer, poor cognitive function, and depression.⁴ In older adults with OA, the presence of chronic comorbid conditions is associated with more severe pain, more impairment of joint function, and lower quality of life.¹⁴

Poor mobility may impair people’s ability to work or be involved in community activities, and they may become socially isolated. Mobility problems can interfere with routine activities, including shopping and social events, as well as self-care activities, ultimately reducing independence. The inter-relationships among these factors can lead to further worsening of pain and stiffness, loss of mobility, weight gain, and worsening

psychosocial status. Declining mobility can lead to hospitalizations and the need for long-term care.

Individuals with poor mobility are at risk for psychological comorbidities, such as depression and anxiety, that can further impede their ability to manage chronic pain and perform good self-care and can contribute to social isolation.¹⁵ Social isolation also contributes to a variety of poor health conditions and increases risks of all-cause mortality.⁴ Furthermore, older adults with mobility limitations have fewer opportunities to contribute to their communities through volunteering and similar activities that benefit society and provide social, psychological, and spiritual benefits. ♦

Table 1. Health Impacts of Poor Mobility

Physical Health Impacts	Psychosocial Impacts	Quality of Life Impacts
• Weight gain • Cardiovascular disease • Cancer • Falls and associated injuries • Diabetes • Worsening osteoarthritis • Worsening pain	• Poor cognitive function • Depression • Anxiety • Social isolation	• Declining activities of daily living and instrumental activities of daily living • Loss of employment • Institutionalization • Hospitalization • Mortality

Impact of Osteoarthritis in the United States

OA, sometimes referred to as degenerative joint disease, is the most common form of arthritis and currently affects over 30 million adults in the United States, up from 27 million in 2005.^{16,17} OA is the fifth leading cause of physical disability in the United States and its prevalence is increasing due to the aging of the population and growing obesity epidemic.¹⁸ Researchers have estimated that by 2030, 25% of the adult population, or 67 million people, will be diagnosed with OA, and that 25 million of these individuals will experience mobility limitations as a result of their disease.¹⁸

OA is a progressive disease that results from localized loss of cartilage, remodeling of adjacent bone, and associated inflammation.¹⁹ OA results in pain, stiffness, swelling, and decreased range of motion. The most commonly affected joints are the knees, followed by the hands and hips.^{16,20} Many people have OA in more than one joint area, compounding pain and mobility difficulties.

Individuals with OA typically report joint pain, stiffness, and difficulty with purposeful movement. Approximately 80% of patients with OA have some degree of physical limitation, 25% have difficulty with activities of daily living, and 11% require personal care services.¹⁶ Patients with arthritis are significantly less likely to engage in recommended levels of physical activity than patients without arthritis.²¹

Patients who have OA in weight-bearing joints (e.g., knees, hips) tend to have more impairment in mobility than those with OA in upper extremities. Patients with more advanced disease and greater joint destruction are also more likely to have increased severity of pain and impairments. Data from the Longitudinal Examination of Arthritis Pain study found that

weekly fluctuations in OA pain were associated with changes in levels of daily activities, work absenteeism, sleep interference, and health care resource use.²²

The risk for OA increases with age and is more common in women (particularly after 50 years of age), in African Americans, and in patients with relatives affected by OA. Injury to a joint as well as repetitive motion can also increase the risk of developing OA.^{16,23,24}

Being overweight or obese has been identified as an independent factor associated with the development of OA of the knee as well as knee pain in adults with established OA. Additionally, weight gain is associated with reduced cartilage volume compared with individuals who experience weight loss.²⁵ Every additional 5 kilograms (approximately 11 pounds) of weight gain produces a 36% increase in the risk of developing OA of the knee. Adults who are obese are also more likely to have severe degeneration in the knees compared with adults who are normal weight.¹³

The economic impact of OA is significant and attributed to direct costs of treatment along with indirect costs of lost productivity and physical disability. Mean health care expenditures for arthritis-related conditions increased 192% from 1996 to 2011, and these expenditures were estimated to be \$62.1 billion in 2011.²⁶ In 2010, there were 21.7 million ambulatory care visits and over 3 million inpatient hospitalizations for the treatment of OA.¹⁶ Additionally, there were an estimated 1.3 million to 1.4 million total joint replacements (TJRs, including knee and hip replacements) performed in 2011 in the United States.²⁶ OA is one of the primary reasons why patients undergo TJR; approximately 40% of all total hip replacement surgeries, and more than 90% of all total

knee replacement surgeries are performed on patients with OA.²⁷ Adults with OA also have greater use of medications for treating pain and higher direct medical costs than those without OA.²⁸ Use of prescription medications for patients with OA costs approximately \$3,000 per patient per year.²⁹

The impact of OA and mobility limitations is an important factor for the workforce. Mobility is essential for the performance of many work functions as well as the ability to safely travel to and from work. Although OA is associated with advancing age, it has a growing impact on adults of working age. Managing pain and maintaining mobility are therefore crucial for maintaining health in an aging workforce.

Data from the National Health and Wellness Survey found that individuals with OA pain were less likely to be employed than individuals without OA. Workers who were still able to maintain employment despite pain from OA were less productive. Reductions in productivity appear to be greater in patients with more severe OA. Health status was significantly worse among workers with OA, and total direct and indirect costs for employers were also higher.²² Workplace strategies that have the potential to increase physical activity (e.g., worksite health promotion programs) may reduce pain and improve mobility and productivity among persons with OA.³⁰ ♦

OA is the fifth leading cause of physical disability in the United States.

Strategies to Improve Mobility in Adults With Osteoarthritis

Effective multilevel strategies, ranging from population-level efforts to individualized treatment programs, are needed to address mobility problems in adults. Community-based interventions such as those that increase access to walkable areas can help make communities more accommodating and improve mobility. Group exercise programs offered in the community promote both activity and social engagement. At the individual level, interventions to address mobility should consider social, psychological, and environmental factors, as well as physical impairments, in order to promote optimal self-management of mobility in a holistic manner.²

Effective management of OA and associated pain is crucial for mobility, but other conditions such as heart failure, diabetes, or chronic obstructive pulmonary disease must also be considered and managed effectively as these conditions can also negatively impact mobility. Each person's medication history should be reviewed for medications that may affect strength, balance, dizziness, mental status, or other effects that may interfere with mobility. Older adults are particularly vulnerable to changes in cognitive status, which can directly affect mobility.

Treatment of OA may help with the management of other chronic conditions. Improving mobility may result in greater ability to engage in moderate levels of physical activity and thereby improve control of other chronic conditions such as diabetes and hypertension.

There is no known cure for OA. Therefore, goals of treatment for OA are to reduce symptoms and slow disease progression in order to reduce physical disability and to

preserve mobility and quality of life.^{14,29}

Treatments for OA include nonpharmacologic approaches, such as physical activity (unstructured and structured), weight loss, and supportive devices (e.g., canes); pharmacologic approaches (topical, local, and systemic medications); and surgery if other treatments are not effective. Several guidelines inform the treatment of OA. The European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) published a clinical algorithm for treatment of knee OA in 2014; and an update for this guideline was published in 2016. Other guidelines include those from the American College of Rheumatology (ACR), the American Academy of Orthopaedic Surgeons (AAOS), the American Medical Society for Sports Medicine and other organizations.

Patients with OA should be instructed in self-management strategies to manage their pain and improve function. Physical activity is particularly important for arthritis management—it decreases pain, improves function, improves mood, and delays the progression of disability. Physical activity also helps to control weight, reducing stress on joints and the resulting pain and disability. For every pound that a patient loses, there is a reduction of 4 pounds in the load exerted on the knee.²³ However, it is important to note that combined exercise and dietary interventions that promote weight loss produce the greatest benefits for overweight or obese patients.³¹

Nonpharmacologic Approaches

OA treatment guidelines emphasize the importance of nonpharmacologic therapies, including both physical and psychosocial approaches. Physical approaches include exercise,

physical therapy, transcutaneous electrical nerve stimulation, use of assistive devices, manipulation, massage, and heat and ice treatment. Psychosocial approaches include patient education, training in self-management skills and coping skills, and social support. Recommendations from ACR regarding the use of various nonpharmacologic modalities are listed in Table 2.³²

Patient education is a central component of treatment. Patients should be educated about strategies that they can implement to manage their disease, including approaches that can protect joints and slow disease progression. Patient self-management programs educate patients about the value of various interventions, such as physical activity, weight loss, sleep hygiene, and pain management options.

Education about self-management and coping skills has been demonstrated to improve patient knowledge, self-management behaviors, self-efficacy, adherence, health status, and quality of life, as well as reduce pain and increase mobility.¹⁴ Involving patients' significant others in psychosocial interventions also seems to improve benefits.¹⁴ Significant others can provide emotional support, enhance coping skills, and promote healthful self-management behaviors.

Weight Loss

Because being overweight or obese places additional strain on weight-bearing joints, obesity is a risk factor for the development and progression of OA. Conversely, weight loss can provide important benefits for patients with OA and has been shown to result in improved cartilage quality.²⁰ Weight loss can prevent the development of OA; in one study, overweight or obese patients who lost 5.1 kilograms of body weight reduced the incidence of developing

Table 2. Nonpharmacologic Recommendations for the Management of Knee Osteoarthritis

Strongly recommended interventions	• Cardiovascular and/or resistance exercise • Aquatic exercise • Lose weight (if patients are overweight)
Conditionally recommended interventions	• Self-management programs • Manual therapy in combination with supervised exercise • Psychosocial interventions • Medially directed patellar taping • Medially wedged insoles (if patients have lateral compartment osteoarthritis) • Laterally wedged subtalar strapped insoles (if patients have medial compartment osteoarthritis) • Thermal agents • Walking aids (as needed) • Tai chi • Traditional Chinese acupuncture • Transcutaneous electrical stimulation
No recommendations	• Balance exercises • Laterally wedged insoles • Manual therapy alone • Knee braces • Laterally directed patellar taping

Source: Reference 32.

OA over 10 years by 50%.¹³ Among people diagnosed with OA, weight loss can reduce symptoms associated with OA, especially pain, and improve both physical function and quality of life.

Weight loss of at least 5% over 6 months results in symptomatic benefits, including reduced pain and improved physical function; 10% weight loss results in further improvements.²⁰ The more weight patients lose, the more benefits they obtain.

Moreover, weight loss can help patients control a wide range of other chronic conditions, including diabetes, hypertension,

and cardiovascular disease, and therefore can contribute to important improvements in overall health and wellness. However, weight loss interventions should ensure adequate dietary protein intake. The loss of muscle with weight loss is a concern in aging as is the potential loss of bone density in the back and hip.

Individuals are classified as overweight if they have a body mass index (BMI) of 25 to 29.9, and individuals are classified as obese if their BMI is greater than 30. The AAOS guidelines recommend weight loss for patients with symptomatic OA who have a BMI of 25 or greater.

Goals of treatment for OA are to reduce symptoms and slow disease progression in order to reduce physical disability, preserve mobility and quality of life, and avoid or delay the need for joint replacement surgery.

Multifaceted approaches to weight loss are most effective and combine a moderately reduced calorie diet with increased physical activity and behavioral strategies to support adherence to dietary and activity recommendations.³³

Physical Activity

Physical activity is essential for preventing mobility decline and subsequent disability and loss of independence with advancing age. Physical activity programs can improve mobility and can enhance physical functioning among older people with OA. Additionally, physical activity is a cornerstone of weight loss and management programs; thus, increasing physical activity can have numerous benefits for patients with OA. In addition to supporting a healthy weight, exercise can improve OA symptoms by strengthening the muscles that support the joints. Both aerobic exercises and exercises that strengthen the quadriceps muscles have been shown to provide significant benefits for patients with knee OA.¹³

Treatment recommendations for knee OA from AAOS call for the use of self-management programs, strengthening, low-impact aerobic exercises, and neuromuscular education. They also call for patients to perform physical activity that is aligned with national

recommendations from the U.S. Department of Health and Human Services (HHS).³⁴

The HHS national physical activity guidelines call for adults to perform at least 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous-intensity aerobic activity each week, and note that more extensive health benefits can be derived from additional physical activity. Additionally, adults should engage in muscle strengthening activities at least 2 days each week.³⁵ Of note, a systematic review and meta-analysis found that the largest effect sizes shown with physical activity have been in supervised, structured physical activities that are performed at least 3 times per week.³⁶

The guidelines recognize that not all adults with OA are capable of performing this level of physical activity and recommend that patients are as physically active as their abilities and conditions allow.³⁵ Starting with 45 minutes of physical activity per week can be used as a stepping stone to more rigorous physical activity regimens.³⁷ Furthermore, even patients with severe OA who are awaiting TJR experience reduced pain from physical activity.³⁸ Therefore, it is critical to carefully evaluate the patient's capacity for physical activity when determining the amount and intensity to recommend. For example, patients who are at increased risk for falls should receive activity recommendations that account for this particular risk and should have their risks for osteoporosis and fractures evaluated and managed.

Low-impact exercise, including walking programs, is often recommended for patients with OA. Walking is one of the most common forms of physical activity for older adults for exercise and as a component of everyday activities.⁴ Aquatic programs (e.g., water aerobics) may be beneficial for

Low-impact exercise, including walking programs, is often recommended for patients with OA.

patients who experience pain with land-based programs, because the water provides buoyancy to reduce stress on the lower extremity joints and provides resistance as the patient exercises. Programs in heated pools have the added benefit of helping muscles relax. Nonambulatory patients can engage in physical activities such as moving their legs in a marching motion while seated. The amount of physical activity should be gradually increased over time for patients who cannot initially perform the full recommended amount of physical activity.²⁰

Some older adults with OA may benefit from physical therapy. Physical therapy can play an important role in improving mobility through the design and implementation of specific exercises that improve balance, strength, and range of motion as well as those that improve cardiovascular capacity and stamina. Physical therapists promote health and fitness and can implement rehabilitative and maintenance protocols to improve patient function. They can also assist patients with implementing adaptations to help them navigate their environment (e.g., recommendation and education to use a cane or other assistive device).⁷

The ESCEO algorithm recommends manual therapy delivered by a physical therapist. Manual therapy is intended to improve mobility by modifying the quality and range of motion of the target joint and associated soft tissue structures.^{39,40}

Pharmacologic Interventions

Medications are commonly used in the management of OA but should be used with caution in older adults due to their increased risk of adverse drug reactions. Older adults are more likely to have physiologic changes that result in differences in the pharmacokinetics and pharmacodynamics of medications, making them more susceptible to adverse drug reactions compared with younger adults. Because older adults are also more likely to have multiple chronic conditions that are managed by pharmacotherapy, they are at increased risk for drug-drug and drug-disease interactions.¹⁴ ESCEO released an algorithm in 2016 for the pharmacologic management of knee OA (Figure 1).^{20,29} Pain can often be managed with localized treatment of joints using topical agents so that systemic side effects are avoided.

Acetaminophen

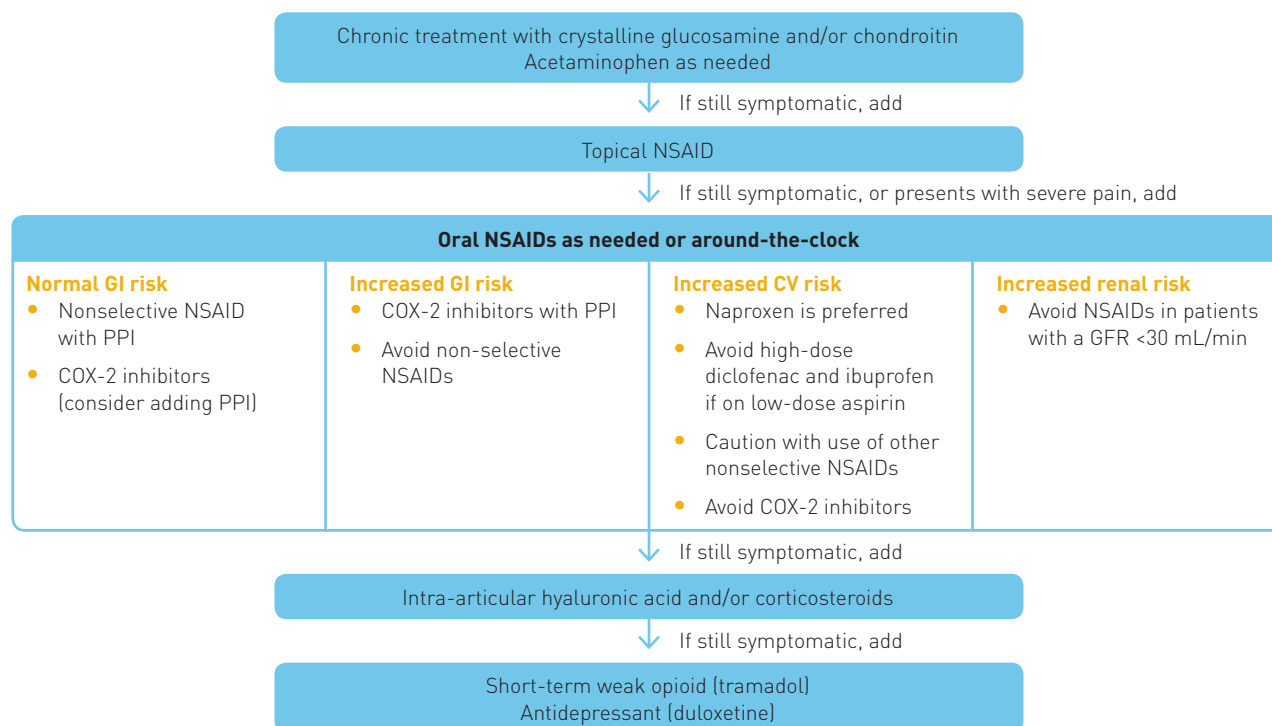
Acetaminophen is recommended as a first-line pharmacologic treatment for analgesia in patients with OA. However, it does not appear to have a significant effect on stiffness or physical functioning.³² Some clinicians recommend the use of acetaminophen prior to physical activity to manage pain and enhance the patient's capacity to engage in the activity.

ESCEO recommends initial treatment of patients with mild-to-moderate symptoms with acetaminophen up to 4 grams daily on a regular basis.²⁹ Acetaminophen is widely used due to its favorable safety profile. However, it does have the potential for adverse effects. High doses of acetaminophen increase the risk for hepatotoxicity. Long-term use of doses greater than 3 grams daily is also associated with declining renal function and an increase in the risk of hypertension.²⁹

Glucosamine and Chondroitin

Numerous trials have investigated the role of the dietary supplements glucosamine and chondroitin in the

Figure 1. Algorithm for the Pharmacologic Management of Symptomatic Knee Osteoarthritis



COX-2 = cyclooxygenase 2; CV = cardiovascular; GFR = glomerular filtration rate; GI = gastrointestinal; NSAID = nonsteroidal anti-inflammatory drug; PPI = proton pump inhibitor.

Source: Adapted from Reference 29.

treatment of OA and have produced conflicting results. A Cochrane review found that only individuals using a patented crystalline glucosamine sulfate formulation experienced benefit.⁴¹

The ESCEO authors note that there is substantial heterogeneity in results of clinical trials with available glucosamine products but that evidence does support the use of crystalline glucosamine sulfate.²⁹ Crystalline glucosamine sulfate has been shown to produce pain relief and improvement in function similar to that provided by oral nonsteroidal anti-inflammatory drugs (NSAIDs).²⁰ Chondroitin sulfate may offer similar benefits to those seen with glucosamine and may improve cartilage structure with long-term use. However, heterogeneity of available chondroitin products may affect outcomes.²⁰

The ESCEO authors also note that both glucosamine and chondroitin have adverse event profiles similar to placebo, which supports their role in treatment. The use of glucosamine and chondroitin in combination has also been found to provide improvement in joint space narrowing as well as reduced loss of cartilage volume. Based on the data, the authors conclude there is “limited evidence” to support the use of these agents in combination.²⁹ Glucosamine and chondroitin may decrease the need to use oral NSAIDs.²⁰

It is important to recognize that glucosamine and chondroitin are marketed as dietary supplements in the United States and therefore are not subject to the same regulatory oversight as prescription and nonprescription medications. Although glucosamine and chondroitin do appear to provide some benefit, many of the clinical

trials investigating the use of these products are low quality. More high-quality studies could help better define the appropriate role of these products.⁴²

Topical and Oral NSAIDs

If acetaminophen or glucosamine and chondroitin do not adequately control symptoms, or if patients initially present with moderate-to-severe pain, topical or oral NSAIDs may be appropriate for patients who can tolerate them. There appears to be no significant difference between topical and oral NSAIDs for efficacy, however topical NSAIDs have better gastrointestinal and renal safety profiles. The selection of the oral NSAID should be driven by the medication’s safety profile and the patient’s risk factors and comorbid conditions, including the risk of gastrointestinal bleeding, cardiovascular risk, and renal

Patients who do not experience adequate symptom improvements after an adequate trial of nonsurgical approaches may be candidates for total joint replacement.

risks. Specific recommendations are shown in the treatment algorithm.

Both non-selective NSAIDs and cyclooxygenase 2 (COX-2) selective NSAIDs provide analgesia that is superior to acetaminophen. The choice of NSAID should be determined by the agent's relative risk profile and the patient's characteristics, including risk factors for gastrointestinal bleeding as well as cardiovascular risk.²⁰

The ACR guidelines caution that NSAIDs should not be used in patients with contraindications and that topical NSAIDs should be used in patients who are at increased risk of gastrointestinal bleeding or have renal impairment. Patients with a history of gastrointestinal bleeding should be treated with COX-2 selective inhibitors. Furthermore, patients receiving NSAIDs should also be treated with a proton pump inhibitor to provide gastroprotection. COX-2 inhibitors reduce but do not eliminate bleeding risks.⁴³ NSAIDs should not be used in patients with renal impairment. NSAIDs may also be associated with increased risk for myocardial infarction.⁴⁴

If NSAIDs are ineffective, ESCEO recommends against combining NSAIDs or attempting multiple successive rounds of NSAIDs before progressing to other treatments.²⁹

Intra-articular Injections

For patients who have contraindications to NSAIDs or remain symptomatic despite

NSAID use, intra-articular treatments may be explored.²⁹

Viscosupplementation with intra-articular hyaluronic acid has been found to produce benefits in terms of pain, function, and patient global assessment, with efficacy for up to 6 months following injection.²⁹ Most meta-analyses of hyaluronic acid injections have shown a significant benefit in knee OA. In one study, hyaluronic acid was found to be the most effective treatment of pain among all pharmacologic treatments for OA.⁴⁵ Other research has shown the analgesic effect of a hyaluronic acid injection to be similar to NSAIDs, with an improved safety profile.

Efficacy has been demonstrated at 4 weeks, peaks at 8 weeks, and is maintained for up to 6 months. Repeated treatment cycles have been shown to improve efficacy. Use of hyaluronic acid has been demonstrated to delay the need for total knee replacement for approximately 2 years.²⁹

According to the ESCEO guidelines, intra-articular hyaluronic acid injections are considered relatively safe and provide longer pain control than intra-articular corticosteroids. Furthermore, they may delay the need for TJR. The ESCEO authors state that hyaluronic acid may be a good alternative to NSAIDs for patients who are at greater risk for NSAID-induced adverse events.²⁰

Another option is use of intra-articular corticosteroids, which are theoretically of greatest benefit for patients with effusion.⁴⁶ In this situation, corticosteroids may be administered following joint aspiration of synovial fluid. Intra-articular corticosteroids have better efficacy than hyaluronic acid during the first few weeks following administration, but the effect does not last as long. The transient benefit of corticosteroid injections is an issue because most physicians will inject

corticosteroids only every 3 to 4 months due to safety concerns.²⁵

Based on these findings, ESCEO recommends hyaluronic acid for patients who have mild-to-moderate disease as well as those who have contraindications to TJR or wish to delay TJR. However, hyaluronic acid injections appear later in the algorithm than NSAIDs (unless NSAIDs are contraindicated) because injections require administration by a specialized practitioner.²⁹

Other Pharmacologic Approaches

Patients who fail to have an adequate response to these approaches may be candidates for treatment with an opioid, starting with tramadol as an option. Tramadol should be used with caution due to risks associated with opioid use, including respiratory depression and physical dependence, as well as potential interactions with other medications, particularly some antidepressants.

Sustained-release formulations of tramadol may provide longer duration of analgesia with fewer adverse effects. Adjuvant therapy with medications such as antidepressants may also be used. Duloxetine in particular has been shown to provide benefits in patients who have an inadequate response to NSAIDs.²⁹

If patients with severe OA pain have contraindications to surgery, or are unwilling to undergo surgery, other oral or transdermal opioids may be used with caution. Whenever opioids are used, guidelines for their safe use in the management of chronic nonmalignant pain should be followed, and risks for potential misuse, abuse, and diversion should be carefully managed.²⁰ When possible, pain specialists should be consulted when prescribing chronic opioid therapy for patients with OA.

A variety of potential new medications for the treatment of OA are currently undergoing clinical trials. One promising line of research includes nerve growth factor inhibitors (e.g., tanezumab). Nerve growth factor plays a role in nociceptive pathways and has recently emerged as a potential target for analgesic therapies. In clinical trials, patients treated with tanezumab were found to have greater improvement in pain and physical function than patients treated with NSAIDs. However, patients who received NSAIDs and tanezumab had an increased risk of requiring TJR. Ongoing safety trials are underway.²⁵ Additional research suggests that bisphosphonates are effective for providing analgesia in patients with knee OA and bone marrow lesions.²⁵

Total Joint Replacement Surgery

Patients who do not experience satisfactory symptom improvements after an adequate trial of nonsurgical approaches may be candidates for TJR. During TJR, the damaged, arthritic parts of the joint are removed and replaced with prosthetics made of metal, plastic, or ceramic.

TJR is very effective for the treatment of severe OA knee pain in appropriately selected patients and should be combined with rehabilitative therapy. Post-operatively, TJR prosthetics may last for decades. For example, approximately 90% of knee replacement prosthetics remain fully functional 15 years after surgery.⁴⁷ However, because the prosthetics will not necessarily last

for a patient's entire lifespan, using interventions that delay the need for TJR may prevent the need for repeat surgical procedures. Other procedures (e.g., hemiarthroplasty, which is less extensive) may be appropriate for carefully selected patients.

In patients who are obese, some researchers have recommended performing bariatric surgery prior to attempting TJR. This approach may avoid the need for joint replacement if patient symptoms improve following weight loss. However, bariatric surgery may not be appropriate for all patients, particularly frail elderly patients. Additionally, if patients proceed with TJR following bariatric surgery and weight loss, they may have reduced surgical risks and improved recovery.¹³ ♦

Team-Based Approaches to Improving Mobility in Patients With Osteoarthritis

Because of the multifaceted nature of OA management and treatment, it is crucial that the patient is managed by a health care team for holistic evaluation and patient care.

Holistic patient assessment should include evaluations of pain and mobility with tools such as pain severity and pain interference ratings, assessment of pain locations, and the Western Ontario McMaster Universities Osteoarthritis Index, which rates symptoms related to OA of the knee and hip, including pain, stiffness, and physical functioning of the joints. Additionally, it is important to assess for psychosocial effects of chronic pain, such as the presence of anxiety, depression, sleep disturbance, effect on ability to work, and impact on socialization.

A variety of team members—including physicians, nurses,

pharmacists, physical and occupational therapists, psychologists, psychiatrists, social workers, dietitians (particularly if patients need to lose weight), and others—should collaborate to address the patient's various needs and work to optimize pain management and quality of life. Referrals to specialists in geriatrics, rheumatology, sports medicine, and physiatry may be needed. Team members should work collaboratively to support patient adherence to effective self-care behaviors and refer patients to programs designed to provide ongoing patient support, as appropriate. Such interventions may be particularly important for supporting weight management and physical activity interventions. Collaboration with the patient's family members and caregivers may also be helpful both for the assessment and

the implementation of various interventions. A variety of resources are available to support patients in improving mobility. For example, a number of smartphone apps are available to support mobility in patients with OA.⁴⁸ Additionally, the National Council on Aging provides resources on fall prevention at www.ncoa.org/healthy-aging/falls-prevention/falls-prevention-awareness-day/general-resources/infographics-handouts/.

Additionally, because OA and resulting mobility limitations

It is crucial that the patient is managed by a health care team for holistic evaluation and patient care.

have cascading and interwoven impacts on a variety of other chronic conditions, collaboration with all the patient's specialists is important to ensure that all health care needs are being addressed in a logical and systematic fashion.

For example, patients who use multiple medications to manage chronic conditions may require careful medication management to avoid or minimize drug-drug and drug-disease interactions.

If the patient is a candidate for TJR, an orthopedic surgeon will be a key member of the health care team and should collaborate with other team members to support the patient's return to optimal function following surgery. ♦

Summary

Maintaining mobility is a crucial component of healthy aging. However, a number of chronic health conditions associated with aging can impair mobility. Communities can develop organized strategies that promote mobility for aging populations, ranging from offering community exercise programs to enhancing neighborhood environments, to improve accessibility and promote opportunities for physical activity.

OA affects many older adults and is a leading cause of declining mobility. The disease contributes to significant physical disability as well as the development and worsening of comorbid conditions. Maintaining mobility is fundamental to the management of OA, because it improves OA, contributes to the management of a variety of other health conditions that are common in older adults, and prevents the development of a downward spiral of worsening pain and declining function. Both nonpharmacologic

and pharmacologic approaches to the management of OA are important for providing holistic patient treatment and improving quality of life. Use of such therapies should be optimized prior to considering surgical interventions. TJR may be appropriate for patients who do not achieve an adequate response to other therapies. A holistic approach to patients that addresses the range of patient needs and barriers can help minimize pain and disability, and improve quality of life. ♦



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