Raising the Voice of Patients

A PATIENT'S GUIDE TO LIVING WITH OSTEOARTHRITIS

First Edition

Welcome

to the first edition of CreakyJoints' patient guidelines for osteoarthritis (OA). It is designed to help raise your voice with the decision-makers you'll encounter while living with this condition. This guide is the first of its kind, and it is developed by leading experts including doctors, patients, and other healthcare providers. It's meant to serve as a roadmap to help you navigate your OA, while helping you get what you want, need and deserve from your treatment journey. It offers detailed, accessible explanations of symptoms and what causes them, treatment plans, treatment options, integrated medicines and therapies, diet and exercise, as well as how to talk to your insurance company, and your family and friends about your disease and the ways in which it impacts your life. This first edition has been edited by leading doctors and healthcare experts, and will be updated and improved regularly as new research, information, and treatments on OA become available.

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PART ONE

Patient Charter

RAISE YOUR VOICE: Get Active, Advocate, and Take Charge of Your Healthcare!

Speak up at each doctor's appointment. **Bring a notebook** with you or **use your smartphone's Notes app** to write down information about your treatments, as well as your questions and concerns.

Ask a friend or family member to come to your appointments with you. It's easy to miss some details or instructions that your doctor gives you, so your helper can write everything down while you listen or ask questions.

Write down questions or concerns ahead of time so you don't forget them at your appointments.

Always ask about the possible side effects and the costs of each potential treatment. You can ask either your doctor or nurses these questions, or share any concerns you have with them.

Join other arthritis patients in local or national advocacy groups like CreakyJoints' 50-State Network. **Be an advocate** to make sure your opinions and concerns are always heard by the people who create healthcare laws.

Use the power of technology! **Email or direct-message** other arthritis patients online on CreakyJoints.org's Facebook or Twitter page, or on other social media platforms. As you get to know other patients, start one-on-one conversations on the phone or via text so you stay informed.

Add your name or sign online petitions with a simple click. You will make every advocacy effort stronger by joining with others.

Stay informed on social media and lend your voice to arthritis advocacy or healthcare issues when the time is right for you. Go online, sign up, join phone or email chats, share your thoughts and attend live arthritis advocacy events when you can. Check out Facebook.com/CreakyJoints or @CreakyJoints on Twitter.

Share your opinion or experiences. Fill out patient surveys. Talk to arthritis advocacy groups looking for patient input on important healthcare issues. Offer your thoughts on Facebook or other social media, but remember that nothing is private online so think about what you want others to know. You don't always have to give your name, but when it's appropriate, let others — including elected officials in your state government and at the national level — know that you are a constituent, you vote, and you care about these issues! Choose email, mail, postcards, social media, phone calls, or in-person meetings — whatever works best for you.

Stay informed and up to date. There may be ways for you to get help affording your treatments, new treatments that may be more effective or affordable for you, or clinical trials going on in your area. Follow CreakyJoints at www.creakyjoints.org for news and articles about patients like you to find out how others are dealing with treatments or coverage challenges. Follow @CreakyJoints on **Twitter,** or like the CreakyJoints **Facebook** page to hear news updates and share your thoughts. Also, check out the American College of Rheumatology's website, www.rheumatology.org, for news updates on OA and new treatment approvals.

Speak up about your side effects or concerns about your treatments. Don't tell yourself that you just have to put up with it or downplay these effects. Your doctor may be able to make changes to your treatment plan to help ease your side effects.

Ask your doctor or check online for coupons, rebates or discounts on the cost of your medications.

Patient Charter

Ask your doctor's office staff or pharmacy about any coupons or rebates available too. Even small savings on treatments you take on a regular basis can add up, so why not check it out? A great resource is: https://creakyjoints.org/support/arthritis-copay-cards-assistance/

Ask your doctor about clinical trials for new or existing OA treatments that may be available for you. Ask about current trials, and if you qualify for one, ask about any costs you may have to bear (such as travel to a clinic), or the trial's possible risks and benefits for you.

Treat your emotional and mental health symptoms as seriously as your physical OA symptoms. Tell your physician and nurses if you're anxious, depressed, blue, not sleeping at night, or not able to get through the day because you're worried about OA. Seek care from a mental-health professional or counselor. Find support and comfort from other OA patients in local groups or online. Remember that you are not alone.

Take advantage of any discounts to help you afford the OA treatments you need and deserve. Ask your doctor or nurses about **copay assistance programs** like coupons or rebates from your treatment's manufacturer. Also, **go online** to find your drug's website. Look for **patient assistance programs** there that may help you lower your out-of-pocket costs if you qualify. Also, **call your insurance company** to ask about the details of your drug or physical therapy coverage, **talk to your pharmacist** to ask about your options or possible discounts. **Compare pharmacies' price, including online or mail order pharmacies,** if that's an option for your drug coverage. **Ask your employer's HR department** if your insurer has a patient advocate or employee assistance programs as part of your coverage. These advocates or advocacy programs are designed to work on your behalf to provide information or assistance related to your healthcare.

PART TWO

Introduction

When you have **osteoarthritis (OA)** you want to make sure you're getting the right treatments for your symptoms, feeling better, reducing your pain and improving function of the affected joints.

You can make sure that you're receiving the right treatment by working with your **rheumatologist** or primary care physician to come up with a **plan** designed for your specific needs. Your OA journey will not be the same as others with OA. Your disease is personal and it is important to remember that not everyone fits into the same box.

RAISE YOUR VOICE: Your life with your OA is your journey to take. You can and should be involved in every step of decision making about your OA treatment. Never be afraid to speak out, speak up, or ask questions about your treatment plan. **Speak up** when you're at your first appointment with your rheumatologist, and at every medical appointment you have. **Bring a notebook** with you or **use your smartphone's Notes app** to write down any instructions from your doctor about your treatments, as well as your questions and concerns about your treatments. Write down questions or concerns ahead of time so you can share them or clear up confusion at your appointment. **Don't be shy** about asking about the costs of each potential treatment, as well as any possible side effects — including how each drug could affect you. While your doctor prescribes your drugs, **you're a full partner in any decisions** about your treatment options.

What's the goal of your treatment plan for OA? While there is no proven treatment available yet that can reverse the joint damage from OA, the goal of OA treatment is to reduce your pain and stiffness, improve function of the affected joints and preserve your ability to perform normal activities.

Every person's OA is different. Your OA won't start at the same point as other people with OA. But no matter where your starting point is, you'll take certain OA treatments in order to reduce **your** symptoms and prevent **your** loss of function.

In these patient guidelines, we'll talk about all of your treatment options, including things that you can do in addition to taking drugs, such as:

- Weight loss, since obesity is one of the most important risk factors for knee OA
- Physical therapy
- Exercise, including yoga and aerobic workouts like walking or swimming
- Diet and lifestyle changes you can make, such as quitting smoking and eating healthier
- Integrative medicine and complementary therapies, which includes meditation, guided imagery, or herbs and supplements

The most important part of your treatment plan is *you*. You're the one living with OA every day. You're the one who feels the pain, stiffness, fatigue, and stress that sometimes come with it. You're the one who has to manage your life with OA, including taking your meds and juggling appointments and lifestyle changes. The clinical guidelines (for doctors) outline the most commonly understood treatments, but research is still being conducted to improve life with OA, and there is a bright future for the treatment landscape.

We want you to be an active part of your arthritis treatment and care. That's why we created this patient guide: So you can see which treatments are recommended to treat your OA, why you may want to try some drugs or combos

before you switch to something else, and what other kinds of therapies may work for your symptoms too.

After you read this guide, you can have a discussion with your rheumatologist or other treating physician about your treatment options — not just listen. You may find that you have new questions about your treatment plan. You can feel more in control of your journey with OA, one that will lead you to a better quality of life and peace of mind.

This guide will also help you as you talk to your insurance company, your pharmacist, your benefits manager at work, or even your members of Congress. How many times have you wanted to speak up about your prescriptions, or ask questions about how well they work or their side effects — but didn't feel that you knew where to start? Now you can.

RAISE YOUR VOICE: You are never alone on your OA journey. **Join with other OA patients** in local or national advocacy groups like CreakyJoints' 50-State Network. **Be an advocate** to make sure your opinions and concerns are always heard by the people who create healthcare laws. Being an advocate doesn't mean you have to sit through lengthy meetings or write lots of letters — those are not everyone's favorite things to do, and you may worry that you don't have time to devote to advocacy. **But it's actually easy.** You can **email** other arthritis patients online and start talking about current treatments, insurance coverage issues, or new laws affecting your access to arthritis drugs. You can **add your name or sign online petitions** with a simple click. Or you can just **stay informed** on social media and lend your voice when the time is right for you. Go online, sign up, join phone or email chats, share your thoughts, and attend live events if you can. Check out the CreakyJoints Facebook page or @CreakyJoints on Twitter. There's strength in numbers!

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PART THREE

Treatment Guidelines

So how does your rheumatologist or other health professional come up with your treatment plan? The primary way is to follow the current OA treatment guidelines. The American College of Rheumatology (ACR) treatment guidelines for OA were published in 2012: "Use of Nonpharmacologic and Pharmacologic Therapies in Osteoarthritis of the Hand, Hip, and Knee," which you can read online. The ACR is currently updating these recommendations. The Osteoarthritis Research Society International (OARSI) also published their OA treatment recommendations in 2014.

Guidelines are usually written and funded by doctors' associations — what we call the "professional medical societies." The ACR is the world's largest society of rheumatologists and rheumatology health professionals. Once developed, treatment guidelines for major types of arthritis are updated so new, important research can be considered by the best arthritis experts, and then they can all agree on how to turn that information into up-to-date recommendations for your arthritis treatment.

If you find treatment guidelines a little hard to understand, that's because the OA treatment guidelines are written *for* doctors and other healthcare professionals.

Leading experts on OA create the guidelines as a team. This team or panel includes rheumatologists, rheumatology health professionals, and patients like you. They come up with a final report full of recommendations based on recent scientific information and patient feedback about how best to treat OA. They're meant to help your doctor make decisions about your prescriptions and other approaches to disease management. The 2012 guidelines recommend what treatments (either drug or non-drug treatments) to use first in most people with OA of the knee, hip or hand, and then other options if the first try doesn't work well enough to relieve your symptoms. It's hard to say how well you may or may not respond to a particular drug or non-drug therapy. Remember, treatment guidelines are just recommendations. Each person with OA is different and there is no "one size fits all" when it comes to treating OA.

RAISE YOUR VOICE: If your doctor or nurse or other office staff asks you to be a part of a patient focus group or local advocacy event, or even just to answer a patient survey about OA treatments, take part if you have time. Even a little information from the patient's point of view can help influence healthcare policies that benefit you and others who are taking the same journey. Share your opinions, feelings, and advice with other OA patients and their families. You'll find that you're part of a caring, powerful community.

Your doctor may use the treatment guidelines to decide if and when is the best time for you to switch treatments — such as if your first treatment doesn't work well enough to control your OA symptoms. Guidelines are recommendations — based on the best information on OA treatments available, and updated regularly.

The guidelines' recommendations are often used by people who make decisions about how OA is treated, including:

- Doctors like your rheumatologist or primary-care physician
- Nurses, nurse practitioners, or physician assistants who treat arthritis patients
- Physical and occupational therapists
- Insurance company staff who decide which drugs to cover in their drug formularies or other therapies (such as physical therapy)
- Pharmacists who dispense drugs, including mail-order specialty pharmacies
- Members of Congress or state legislatures, who vote on drug and healthcare laws

Treatment Guidelines

All recommendations for how to treat different types of OA patients are based on evidence. That means the experts who write the treatment guidelines take these important steps:

- Gather research published in medical journals by the world's top hospitals, universities, and labs by the top experts in arthritis, including current studies
- Read, discuss, and debate all of the evidence on OA treatments in these studies
- Go over everything from drug side effects, interactions, and risks of using treatments in patients with other diseases
- Go over the ease of using the drug in real life, including availability and cost, and obtain patient input
- Come up with recommendations based on this evidence on how to best treat people with OA

So that's why we've created these OA patient guidelines for you. It's written by patients just like you, and it's designed for you to read and understand easily. You can use it when you:

- Talk to your rheumatologist or other health professionals about your treatment plan
- Call your insurance company about which drugs or other therapies are covered under your policy
- Meet with to your local legislator or write your member of Congress about healthcare laws

You can use these recommendations to be an active voice in the conversation about your health and your OA treatment options. Too often, people who have OA aren't a part of conversations about their care, or the big debates about which drugs insurance plans will cover. You may feel like your doctor just hands you a prescription to fill, but you don't get to really talk about your treatment options — or what may happen once you are taking them. You may feel like your insurance company just decides which drugs are best for you — instead of getting your input on what really works.

RAISE YOUR VOICE: When you and your healthcare provider decide on a treatment plan, you're likely to encounter challenges along the way in accessing that care. You will inevitably become familiar with terms like "**fail first**," "**step therapy**," and "**prior authorization**," which all refer to processes established by health insurance companies to manage care and control costs — many times to the detriment of the patient. It is important to understand how these processes work so that you are prepared to advocate for yourself when you speak to your insurance company and doctor — especially if you are denied access to a medication you need. Information can be found online at www.FailFirstHurts.org, as well as from your individual insurance company. GHLF's advocacy initiative, the 50-State Network, is a coalition of patients that works to bring the patient perspective to state and federal lawmakers considering policies to prevent step therapy, which can wreak havoc on the lives of patients with chronic disease.

RAISE YOUR VOICE: Stay up to date with the latest changes to OA treatment guidelines and current drug approvals by following CreakyJoints online. Go to www.creakyjoints.org for news and articles about patients like you to find out how others are dealing with treatments or coverage challenges. Follow @CreakyJoints on Twitter, or like the CreakyJoints Facebook page to hear news updates and share your thoughts. Other sources: For updated guidelines and new treatment approvals, check out the American College of Rheumatology's website, www.rheumatology.org. The FDA, www.fda.gov, also posts updates on new OA treatments. Information is power, and it's just a click away on your phone, tablet, or computer.

Treatment Guidelines

These patient guidelines will give you all the information about OA treatments you need to make informed decisions, ask questions, and speak up about your healthcare. New treatments for OA are being studied now, and some will be approved and available for you to take in the next few years. So we'll update these patient guidelines regularly. That way you can get up-to-date information about all the treatments for OA.

We are including some information about OA medicines that are not yet available in the U.S. These are still being studied in what are called clinical trials (which we'll also explain). We want you to know what treatments may be in the works so you can keep an eye on the news and be ready to ask your doctor about them if they're approved soon.

As your doctor and you begin a treatment plan, you can talk more about what options may work best for you. If you have any specific questions or concerns about your treatments — including possible side effects, cost, how they need to be taken or stored, how they may affect your family planning goals — please let your doctor know.

We hope this guide will help you feel more confident about asking questions and speaking up about your treatment plan.

RAISE YOUR VOICE: Don't wait until side effects become too much to bear. Speak up about your treatment side effects or any problems you have. **Call, email, or speak** to your doctor's office right away to see if you can change your dose, take your drugs with food to ease nausea, switch drugs, or take another medication along with your drug to ease these effects. Also, if you struggle to afford your treatment copays, coinsurance costs, or payments against your insurance deductible, please **contact your doctor's office, pharmacist, insurance company, or even the drug's manufacturer** to find out if you can get help with these costs. **Don't skip a dose of your medicine or stop taking it before you let your doctor or nurses know.**

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PART FOUR

Osteoarthritis Overview

Osteoarthritis (OA) is the most common form of arthritis worldwide, affecting an estimated 250 million people. OA is characterized by abnormalities in all of the tissues in the joint, leading to symptoms and loss of normal joint function. The tissues affected in the joint include the breakdown of cartilage – the smooth, rubbery connective tissue on the end of bones that cushions the joints, helping them move smoothly and easily. The bones in the joint also undergo changes, including enlargement with bony spurs (bony projections that develop along the edges of bones in the joints, also known as osteophytes) that can sometimes be noticed in the fingers as enlarged knuckles. In severe cases, there may be very little or no cartilage left, with the bones rubbing against one another. Tendons, ligaments, and muscles are also affected, and there can also be inflammation in the joint.

OA typically occurs later in life, usually after age 50, though it may start earlier, and can occur due to joint injury or be common within families. Women are more commonly affected than men. Just about everybody has some degree of osteoarthritis in one or more joints by age 70 by X-ray, most often in the hands, neck, spine, hips and knees, and generally, the older one gets, the more susceptible they are to developing OA. OA can get worse over time and there is no cure, but a number of treatments can slow the progression of the disease, improve joint function and ease pain.

There is an evolving consensus among rheumatologists, orthopedists and sports medicine physicians that osteoarthritis is not one single entity but a condition which includes inflammatory subsets, post-traumatic osteoarthritis and congenital disease. Examples may include digital osteoarthritis (often cystic and inflammatory with tender PIP and DIP joints), post-traumatic disease (frequently following cartilage tear, ACL and meniscal injury from athletic activity leading to joint space narrowing) and hereditary forms of OA (with age, gender, race, lifestyle, obesity and occupation all playing a role in disease activity). The genetic influence on disease expression (obesity, heredity, joint overuse, deformity) and having other rheumatic diseases including gout and rheumatoid arthritis (RA) can increase the risk of developing early OA.

Symptoms of OA can range from mild to very severe and include joint aching and soreness, tenderness when

pressure is applied, stiffness, loss of flexibility, grating sensation from bone rubbing on bone, and bone spurs (bony projections that develop along the edges of bones in the joints). Most people first begin to notice pain and stiffness in the affected joints after prolonged sitting or with prolonged activity. The pain tends to worsen as the day goes on with increased activity, and lessens with rest, but over time it may become constant. Many people age 45 and over may first notice OA pain in their knees, especially when they go up and down stairs, or after standing and walking for a while.

There is no cure for OA but early diagnosis and treatment can ease pain and other symptoms. That's what your treatment plan — including weight management, exercise, physical therapy, and your OA medications — is designed to do. The goal of treatment is to reduce the pain and other symptoms, reduce any limitations in your daily functioning and try to slow the progression of the disease.

Medications used to treat OA mainly reduce your pain. You can learn more about these in the treatments section. Surgery is usually only used for people with OA who have severe joint damage and persistent pain that has not responded to other therapies.

Your doctor can use different methods to check your progress at your appointments. You'll start by talking about your medical history and having a physical exam. Typically your doctor will examine your affected joint(s) to check for tenderness, swelling or redness, and to determine the range of motion. That's the range of how far you can move your joint. Your doctor may ask you questions about the severity of your pain, when you usually have pain, how often/how long pain occurs, and how pain affects your daily function.

While cartilage doesn't show up on X-ray images, cartilage loss can be seen on X-ray as a narrowing of the space between the bones in a joint. X-rays can also show bone spurs around a joint. Some people may show evidence of OA on X-ray before they have any symptoms. X-rays and MRIs are not needed to diagnose OA, but sometimes may be obtained by your doctor to rule out other problems that may mimic OA. There are no blood tests that can diagnose or monitor OA, although your doctor may have ordered certain blood tests when you were diagnosed with OA to rule out other conditions such as RA.

Your doctor will determine which drug or drugs to prescribe, and/or non-drug therapies like exercise or weight loss, based on the results of your exam and tests, along with other factors including:

- Joint damage and pain severity
- Lifestyle factors that may be contributing to your OA
- Other diseases you have, such as kidney or liver disease
- Possible reasons that the drug could do you harm and mean you should avoid it
- Your personal preferences, such as drugs that are taken as pills or injections
- Potential medication side effects

Side effects are changes that can occur in our bodies as the result of using a particular medication or device. Side effects can be mild or severe and can vary greatly from person to person.

Contraindications are situations when you should avoid taking a certain medication for health reasons. For example, you should not take acetaminophen if you have severe liver disease, because this drug can affect the liver. If you have kidney disease or have had a bleeding ulcer, you may not be able to use nonsteroidal anti-inflammatory drugs such as ibuprofen or naprosyn. You and your doctor can talk about how safe it is to use any medication based on your individual medical issues.

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PART FIVE

Monitoring

How often should I see my doctor? Monitoring with blood tests (commonly referred to as "lab work") is typically not helpful in assessing the progression of your OA. However, it may be necessary to make sure the treatment that you and your doctor select is both safe and effective in certain circumstances, such as if you have liver or kidney problems. Your doctor may recommend lab work while taking medications for OA, especially when you first start a new medication, though this is not typical if you have OA.

What do my labs mean? Your lab tests are used to monitor your health during your treatment plan. The most common tests will monitor your liver, your kidney function, and your blood counts.

Liver toxicity is measured with liver enzymes. Your liver can make and release certain enzymes when it's injured or weakened in some way. Higher liver enzyme levels may indicate liver damage from certain drugs.

Creatinine and **BUN** (blood urea nitrogen) levels are used to assess your kidney function. Even if the OA medication you are taking does not impact the kidney, it is important to keep track of its function because a change in kidney function can affect the level of your OA medicine in your blood. Creatinine is a waste product that your kidneys filter and remove through your urine. Your kidneys also remove and flush out urea, a waste product of protein breakdown. If your creatinine or BUN levels are high, it means your kidneys are not able to filter these waste products effectively. They could build up and cause problems.

Imaging: Imaging is not needed to monitor OA, since your symptoms and functioning help your physician make your treatment decisions. Sometimes, if your symptoms are not typical for OA, an X-ray or MRI may be needed to rule out other problems. If you're unable to manage your OA symptoms with either drug and non-drug treatments, your doctor may order an X-ray or MRI before sending you to an orthopedic surgeon for an opinion about whether surgery may be helpful for you.

Physical examination: Your doctor will closely examine your affected joint(s) to check for any increase in tenderness, swelling or redness, and for range of motion in the joint(s). As the disease progresses decreased range of motion can occur. Your doctor may test the strength in your legs because these muscles may also be affected.

Your Own Assessment: Perhaps the most important factor that indicates how severe your OA is and how much affects your daily life comes directly from you. So be honest and complete when you tell your doctor how OA affects you, or when you fill out any written questionnaires your doctor provides. See below for more information on patient-reported outcomes.

ARTHRITISPOWER: PATIENT-REPORTED DATA AND OUTCOMES MEASURES

As an arthritis patient, you may think that you have to be passive about your treatment. But you can do more than just follow your doctor's instructions, take your medications, and speak up only when your doctor asks you if you have any questions.

In fact, *you* are the most important player on the team when it comes to managing your OA. Your experiences—how your therapies work, how your symptoms impact you, what side effects you may have, what challenges you face day-to-day – are vital pieces of information that can help your primary care physician or rheumatologist track and improve your therapy. Your input, when combined with information given by other patients like you, can also drive OA research in the right direction and help uncover clues about the disease and how to manage it better.

Today you have an even easier way to provide meaningful information to guide your treatment and fuel new arthritis research: **ArthritisPower.** This simple smartphone app and program is a collaborative research initiative between CreakyJoints and the University of Alabama at Birmingham, one of the leading arthritis research centers worldwide. It's a patient-centered, patient-managed research initiative of the non-profit Global Healthy Living Foundation (the parent organization for CreakyJoints).

Monitoring

How does ArthritisPower work? You simply download the app onto your iPhone or Android phone or tablet, or load it onto your home computer. Then, as you go about your daily life, keep track of your treatments, medications, symptoms, pain flares, physical function and more via the app while automatically sharing the information with rheumatology researchers. You can also track your progress and see where you may need to make changes to your treatment plan.

ArthritisPower lets you share summary progress reports about your personal health with your rheumatologist through a secure email system. In addition, you can share your data securely and anonymously with the arthritis research community. The information you provide about your experiences are extremely valuable as researchers work to improve arthritis therapy.

How you fare day to day with your arthritis, or how you react to the drugs you take for your disease, are called **patient-reported outcomes** (PROs). That information is very important to arthritis researchers as well as your rheumatologist. Patient-reported outcomes let your rheumatologist measure how you're doing once you start (or taper from) a new therapy, or what impact certain therapies like exercise have on your function or well-being.

Your doctor may ask you to fill out simple questionnaires that measure your outcomes. It's important for you to take a few minutes to respond to these questions. Your honest answers will help both you and your doctor track your health, how well your medications are working, and what may need to be changed so your symptoms or well-being improve.

Patient-reported outcomes are also used by arthritis researchers as they study the disease. So the information you give about yourself plays an important role in shaping the future of arthritis treatment – hopefully, making treatments more effective and safer for everyone with this disease.

While your doctor's examination of you during your clinic visit are one way to track your disease activity or progress, your doctor needs to know how well you are doing day-to-day. How can you track how well you can use your joints for ordinary tasks, how you feel or how much energy you have in between appointments? Through simple questionnaires and by tracking your daily experiences with ArthritisPower.

Outcomes are the results of your treatment. Patient-reported outcomes tell doctors how therapies may or may not improve your physical ability, symptoms or long-term progress. Only by sharing and tracking your outcomes can you really tell how well your treatment plan is working.

Here are some patient-reported outcomes measures used in OA:

VAS (Visual Analogue Scale): Easy tool to track and measure your pain based on you rating your pain, usually from 0, meaning no pain, to 10, meaning the worst pain imaginable.

Western Ontario and McMaster Universities Arthritis Index (WOMAC): A symptom questionnaire to assess pain, stiffness, and physical function in patients with hip and/or knee OA. This is one of the most commonly used questionnaires in studies of knee and hip OA. It contains 24 items divided into three subscales:

- Pain (5 items): during walking, using stairs, in bed, sitting or lying, and standing
- Stiffness (2 items): after first waking and later in the day
- Physical Function (17 items): stair use, rising from sitting, standing, bending, walking, getting in / out of a car, shopping, putting on / taking off socks, rising from bed, lying in bed, getting in / out of bath, sitting, getting on / off toilet, heavy household duties, light household duties

Knee Injury and Osteoarthritis Outcome Score (KOOS): Questionnaire that focuses specifically on the knee in terms of pain, stiffness and daily function.

Monitoring

Hip Disability and Osteoarthritis Outcomes Score (HOOS): Questionnaire that focuses specifically on the hips in terms of pain, stiffness and daily function.

Patient Reported Outcomes Measurement Information System (PROMIS): The National Institutes of Health's (NIH) PROMIS is a set of questionnaires that measure aspects of physical, mental, and social health among patients with various chronic conditions. It is intended for use by researchers in various disciplines. Several short form tests target categories that are relevant to patients with symptomatic OA, including PROMIS Pain Interference 6b, Physical Function 10a, Emotional Distress-Anxiety 7a, and Emotional Distress-Depression 8b.

Learn more about ArthritisPower today. Download the free app and get started. And be honest! Stick with it so you provide meaningful information about your health over time. This data will really help you see how well you're doing, how well your treatments are working, where you need to make changes to your routine, and what arthritis researchers need to know as they find new treatments and, one day, a cure. It is a very simple, fast and reliable way to make sure your voice is heard!

PART SIX

Treatments

The *most* important step you can take to manage your OA is to educate yourself about your disease. Start by learning what you can do on your own to ease your pain and improve your function, such as weight loss, activity pacing, and exercise. Physical therapy is also often used in early stages to help manage OA symptoms. These non-drug therapies can help you manage your OA to reduce your risk of the disease getting worse. They can help reduce your symptoms and improve your function so you can do your daily tasks at home or at work, as well as recreational activities you enjoy.

There is no cure for OA at this time. Medications can help you manage your pain, but these drugs do not reduce the risk of your arthritis progressing. They do not improve your physical function in any way other than by addressing your pain.

I. Non-Pharmacological Treatments

PHYSICAL THERAPY AND EXERCISE

The mainstays of OA treatment are weight loss (for knee OA), exercise, and physical therapy, with a number of studies demonstrating good effects in managing OA pain and improving function with these approaches.

Exercise is the most recommended therapy for osteoarthritis. You should work with your physician and oftentimes with a physical therapist to find the best and safest regimen for your particular situation, taking into account other health conditions you may have.

Exercise is not only a great way to manage your OA symptoms, it's also good for your overall health. Regular exercises like walking or swimming can help you keep your heart healthy. Weight-bearing exercises can keep your bones strong. Your physical therapist can show you how to do easy exercises to strengthen the muscles around your joints, and flexibility stretches to help you improve your range of motion.

Best of all, exercise is something you can do on your own schedule and in your own way. If you like to work out with other people, you can join an arthritis exercise class, water aerobics session or a walking group. If you prefer to exercise on your own, head to the gym for your regular workout when it's convenient for you. Pop on some earphones to listen to your favorite music or an audiobook.

Exercise Tips for OA

While some people are concerned that exercise can hurt their joints or increase pain levels, the truth is that exercise is good for OA; in fact, it is considered the most effective non-drug treatment for reducing pain and improving movement.

Listen to your body. Don't do anything that adds more pain and discomfort, or could cause an injury. If you can do some kind of movement even during your pain flares, you may find that it can help. Break up your exercise routine into shorter segments. Or do something light that just gets you moving. Water exercise may be a good option when you're in pain, because you can move your joints without putting pressure on them. Just remember that with most gentle exercises, you are not harming your joints, so you can continue to work through the exercise even when you have some mild discomfort; over time, the discomfort and pain will diminish as you become stronger and more limber.

How do you get started? What kinds of exercise work best? It really depends on your symptoms, your overall fitness and health, and what kind of exercise you might like to do the most — because if you like doing an exercise, you're more likely to keep doing it. Range of motion exercises can help improve flexibility in your joints, while aerobic/endurance exercises can help control your weight, boost fatigue and improve your mood. Strengthening exercises are also important, as these build strong muscles, which in turn protect and support your joints.

In the past, doctors told people with arthritis not to exercise. They thought exercise would damage fragile joints.

But now, we know that exercise is safe and healthy for people with OA. It's not likely to cause more joint pain, especially if you do it in moderation. So start slowly with any new exercise you try, and then work up to longer or more challenging routines.

One reason why exercise is so important for OA is weight management. **Being overweight increases the likelihood of both the development of OA and worsening of OA symptoms**. Losing weight can reduce stress on your joints that can further break down the cushioning cartilage between the joints. Studies show that being even 10 pounds overweight will increase the stress across the knee joint by 30 to 60 pounds.

Excessive exercise, just like too little exercise, may worsen your OA pain. So it's important to talk to your doctor before starting any new exercise routine so you know that it's safe and healthy for you. You might start with something as simple as walking, or try working out in a heated pool at your local community center or gym. You can take local exercise classes that are designed for people with arthritis so you don't damage or injure your joints. If you should accidentally overdo, hot and cold compresses may also help to temporarily reduce pain and relax muscles after exercising. It's really important to engage in a supervised exercise program if you are unsure about what types of exercise to do so that you avoid injuring your joint.

Here are a few suggested exercise options for people with OA:

Stretching
Daily stretching can help you manage your arthritis pain and improve your **range of motion**. After a three to five minute warm up (marching in place or arm circles), perform a variety of stretches and hold each for about 15 seconds. Reaching for the sky and touching your toes are good places to start. Don't be afraid to stretch any joints that tend to be problem areas. Listen to your body — don't push any stretch so far that it causes pain.

Walking
This simple exercise can fit easily into your daily routine no matter how old you are or where you live. It's free — just find a safe place to walk in your area and get moving. Find some friends, neighbors, or family members to join you for a walk to make it even more fun. Walking can be good for your heart health, joint health, and mood.

If the weather is bad, you can walk inside your local mall. If it's a pretty day, explore your neighborhood or local park. Walk on flat, paved surfaces to be safe. Make sure you have well-fitting, comfortable walking shoes and socks. Wear comfortable clothing that you can work up a sweat in. Drink some water beforehand or bring a small bottle so you don't get dehydrated.

Start slowly and walk at an easy pace. As you feel more confident, challenge yourself to walk a little faster or farther, or both. Some people like to use personal fitness tracking devices (i.e. a FitBit or a pedometer) to track their daily activity and encourage consistent exercise.

Tai Chi and Yoga
Tai chi and yoga are two ancient forms of movement. Tai chi is a series of flowing movements designed to help you improve function and balance. Yoga, which comes in many different styles, usually involves poses and stretches that are meant to improve arthritis symptoms and mood.

Research suggests that tai chi and yoga may reduce OA pain and improve movement. Both tai chi and yoga are used by many people with OA to feel better and improve some of their OA-related symptoms. Done properly, both tai chi and yoga can be safe for people with arthritis to do on a regular basis. There are a number of arthritis tai chi and yoga programs in local communities, as well as videos and online instruction tools.

You can also take a class from an instructor who can show you how to adapt your moves to be safe for your joints. Talk to your doctor or physical therapist to find out if tai chi or yoga are right for you, and if they

recommend any classes in your area.

Aquatic Exercise
Exercising in water is great if you have OA, because water's buoyancy supports your weight so you can move around without putting lots of pressure on your joints. But water also offers some resistance as you move, so it can help you work your joints and muscles, and get stronger. Check out water exercise classes in your area, especially ones designed for people with OA. Your doctor or physical therapist can refer you to the right water exercise classes in your community.

Biking
Riding a bike, either stationary or regular, can help you ease stiffness, improve range of motion or flexibility, and build endurance and muscle tone, particularly if you have OA of the knee. Placing the seat at a comfortable height can decrease the strain on the knee and make the exercise less painful.

Strength Training
You can relieve the stress on joints affected by OA if you build up the muscles around them. Strength training is the best way to do that. You can do specific exercises that target those muscles on your own, on a weight machine, or with small free weights. It's important to do any strength exercises the right way, so talk to a physical therapist (PT). Your PT can recommend strengthening moves for you and show you how to do them properly.

Weight Management
Staying at a healthy weight, or losing weight if you're overweight, can be helpful in managing your OA and general health. If you have knee OA, weight loss is considered a mainstay of treatment. In other words, shedding those extra pounds could actually treat your arthritis and help you feel better.

Losing weight is not always easy, and it doesn't happen overnight. If you're concerned about your weight, bring this up at your next doctor's appointment. If your doctor tells you that you need to lose weight, ask for some specific guidance or tips to help you with:

- Setting a healthy goal for your weight loss, such as a goal weight and timeline to try to lose that weight healthfully
- Any diet or weight management programs that your doctor recommends
- Any foods or trendy diets, such as fad diets, that you should avoid
- A referral to a dietician if your doctor thinks you need special guidance

The most important thing to remember as you try to lose weight is to stick with your plan and your goals. Don't set unreasonable expectations for your weight loss. It's better to lose weight slowly and gradually with a healthy eating plan that you can follow for life than a fad diet that you'll give up on after just a few weeks.

A balanced diet full of fresh, healthy foods is the best way to stay at a healthy weight. If you struggle to lose weight or control your eating habits, your doctor, nurses, dietician or therapists may be able to help you find resources that will get you on the right track. There are also support groups in most communities or online where you can link up with other people who are trying to lose or manage their weight. You may find that it's easier for you to stick to a weight loss plan or healthy diet if you're doing it with others. Don't give up!

Later in these guidelines, we've shared some information and research on different foods and how they may be incorporated into a healthy diet for people with OA. Whether you need to lose weight or just want to maintain your current weight, a healthy, balanced diet of fresh, whole and natural foods is the best way to achieve your goals.

II. Pharmacological Treatments

NSAIDS

Introduction
Nonsteroidal anti-inflammatory drugs, or NSAIDs, are the most commonly used drug treatments for OA pain and stiffness. NSAIDs include (but are not limited to) aspirin, ibuprofen, meloxicam, naproxen and celecoxib. They are available over-the-counter or by prescription and may be taken orally or applied topically to the skin in a cream, lotion or gel form. Topical NSAIDs cause less side effects because they do not entire the bloodstream as much as NSAIDs taken as pills do.

NSAIDs are generally safe to use for minor flares of pain in people without kidney disease, cardiovascular disease, or a history of stomach/intestinal ulcers. But even in people without such health conditions, NSAIDs do have many possible side effects if you take them for a long time or in high doses. Side effects include damage to the kidneys, gastritis/bleeding ulcers, fluid retention, high blood pressure, and heart attacks.

What We Already Know
NSAIDs block molecules made by your body called prostaglandins that contribute to pain and inflammation. Some prostaglandins are made by enzymes called COX-1 and COX-2, and blocking these enzymes can therefore decrease pain and inflammation. Some NSAIDs block both COX-1 and COX-2, although COX-1 also helps keep your stomach acid under control so NSAIDs affecting COX-1 contribute to risk for bleeding ulcers. Celecoxib only blocks COX-2. It may be gentler on your stomach than other NSAIDs.

Here are the ACR's recommendations regarding drug therapy for OA:

- Patients with hand OA should be treated with either topical or oral NSAIDs, topical capsaicin, tramadol, or celecoxib (a COX-2 selective inhibitor).
- Patients with knee OA should be treated with intermittent dosing of OTC acetaminophen, OTC NSAIDs, and/ or OTC nutritional supplements. For those who fail to get symptom relief from any of these treatments, either topical or oral prescription NSAIDs, topical capsaicin, or tramadol should be used.
- NSAID recommendations for patients with hip OA are similar to those for patients with knee OA except that no recommendations were made for topical NSAIDs due to a lack of clinical data on their benefit or safety at the time the guidelines were published.

The ACR believes that most OA patients benefit from treatment with NSAIDs and that the positive consequences far outweigh potential side effects for most people. Your doctor may change your NSAID dose depending on how severe your symptoms are. Whether or not your doctor recommends that you use NSAIDs continuously will depend on the severity of your symptoms and how often you have them, other diseases you may have and your personal preferences.

Common NSAIDs you might take for your OA pain:

- Aspirin
- Ibuprofen (Advil®, Motrin®)
- Naproxen sodium (Aleve®)
- Celecoxib (Celebrex®)
- Diclofenac sodium (Voltaren®)
- Indomethacin (Indocin®)
- Ketoprofen (Actron®, Orudis®)
- Piroxicam (Feldene®)
- Meloxicam (Mobic®)

Some NSAIDs are available over the counter, generally at lower doses for mild pain. These include aspirin, ibuprofen and naproxen sodium. You can also buy generic or "store brand" versions of these medicines.

For stronger pain, there are higher doses of NSAIDs available by prescription. Some NSAIDs are only available by prescription. Don't take an over-the-counter NSAID if you're already taking a prescription NSAID. You could easily take too much medicine and put yourself at high risk for side effects like stomach pain, bleeding, fluid retention, kidney problems, high blood pressure, or heart attack.

No one NSAID is more effective than others. It's up to you and your doctor to decide which one may be right for you to take for your OA pain. Your doctor will decide which NSAID to prescribe based on your personal history of NSAID use, the potential for side effects and other diseases or conditions you may have.

Why Am I Taking an NSAID?
You may need to take an NSAID for joint pain or stiffness from time to time. Or, your doctor may prescribe a stronger NSAID for your pain if needed. You may not have to take NSAIDs long term. You may just need to take an NSAID on days when your pain feels worse than usual. If you overdo physical activity on certain days and ache afterward, an NSAID may be helpful for relieving your short-term pain.

Some people with OA control their joint pain or stiffness with acetaminophen, corticosteroid injections or non-drug therapies, so you may not need NSAIDs at all or only once in a while. Other people may find that these options don't work well enough and need to take an NSAID also. For others, an NSAID is the only treatment they need. It depends on your body, your day-to-day pain, and how well your other drugs are working to keep your OA under control. Since taking NSAIDs regularly for pain can cause serious side effects, talk to your doctor about the best way to ease your pain. He or she may suggest that you keep NSAIDs on hand just in case you need them.

Many NSAIDs are available over the counter (OTC) in your local drugstore or supermarket, including ibuprofen (Advil®), naproxen sodium (Aleve®) and aspirin. Remember: even OTC pills can have serious side effects, especially if you take them often. Talk to your doctor about your options for managing your pain. Also, make sure your doctor knows everything you are taking for your pain, even OTC drugs or supplements.

What are the possible side effects of NSAIDs?
NSAIDs can be unsafe depending on your age and other illnesses that might affect whether you can take NSAIDs. If you have hypertension, diabetes, cardiovascular disease, history of ulcers or any type of kidney problems you may not be able to take even OTC NSAIDs or must be followed very closely by your doctor.

The most common side effect of taking NSAIDs is stomach pain or heartburn. Others include:

- Bleeding
- Kidney problems

- Raised blood pressure
- Fluid retention
- Increased risk of heart attack or stroke
- Ringing in your ears
- Lightheadedness or dizziness
- Headaches
- Allergic reactions, or liver problems (rarely)

If you notice any of these symptoms, get medical care right away:

- Vomiting
- Swollen ankles, hands or feet from fluid retention
- Black or bloody stool
- Unusual weight gain
- Chest pain

Your risk of side effects goes up if you take higher doses of NSAIDs or take these drugs over long periods of time. Also, people who are older or have a history of ulcers may be at higher risk for problems with NSAID use. Talk to your doctor about your options for managing chronic pain.

Celecoxib treats arthritis pain as effectively as other NSAIDs, but because it only blocks COX-2 and not COX-1, it may be easier on your stomach. COX-1 is a prostaglandin that protects the lining of your stomach. So celecoxib may ease your pain with lower risk of stomach pain or ulcers. Meloxicam has a stronger blocking effect on COX-2 than on COX-1, so it may also have lower risk of stomach ulcers.

If the person with OA is taking low-dose aspirin (325 mg or less per day) for heart protection and the practitioner chooses to use an oral NSAID, the ACR strongly recommends using a nonselective NSAID other than ibuprofen in combination with a proton-pump inhibitor. This recommendation is based, in part, on the FDA warning that the combined use of ibuprofen and low-dose aspirin may render aspirin less effective when used for heart protection and stroke prevention because of a recognized drug-drug interaction.

How to monitor for side effects

Let your doctor know if you have unpleasant side effects like heartburn, stomach pain or fluid retention. Don't "grin and bear it." **It is important to know that many times bleeding ulcers from NSAIDs have no symptoms at all. So you need to be monitored by your physician for any drop in your blood count or darkening of the color of your stools.** Your doctor may be able to lower your dose or suggest another medicine for your pain. Don't try to treat severe stomach pain or heartburn on your own.

Keep up with all of your regular check-ups so you can track your blood pressure and other vital signs while you take NSAIDs. Taken over a long time, these drugs can raise your risk of serious heart problems. If you already have high blood pressure, it's important to **check your blood pressure often, and if it is increased, you may need to stop or adjust the dose of the NSAID. Increased blood pressure can damage your kidneys and increase your risk for a heart attack or stroke. NSAIDs can also directly damage your kidneys, which can occur without any symptoms, so regular blood tests to monitor your kidney function are important.**

What can I do to help prevent or ease side effects?

If you have side effects from your NSAIDs, such as stomach pain or heartburn, you may be able to add another medicine to lower your stomach acid. **There are drugs called proton pump inhibitors that may reduce your risk of ulcers.**

They include:

- omeprazole (Prilosec®, Prilosec® OTC)
- lansoprazole (Prevacid®, Prevacid® IV, Prevacid® 24-Hour)
- dexlansoprazole (Dexilent®, Dexilent Solutab®)
- rabeprazole (Aciphex®, Aciphex® Sprinkle®)
- pantoprazole (Protonix®)
- esomeprazole (Nexium®, Nexium® IV, Nexium® 24 HR)
- omeprazole/sodium bicarbonate (Zegerid®, Zegerid® OTC)

Some of these can be purchased over the counter and others you may need a prescription.

Some simple ways you may ease NSAIDs' side effects include:

- Take the lowest possible dose you need to manage your pain.
- Take your medicine with food, such as your normal meals or a snack. **It should be noted that taking NSAIDs with food will not lower your risk of an ulcer. It may increase the tolerability of the NSAID but it won't reduce the toxicity.**
- Try coated aspirin instead of uncoated. **Please note, this may only increase the tolerability of aspirin and not decrease the risk of an ulcer.**
- Avoid the long-lasting, "once-a-day" NSAIDs, because they stay in your system for a longer time than quick-acting ones.
- Consider using acetaminophen (Tylenol®) for occasional joint pain instead of NSAIDs. It has some side effect risks too, so talk to your doctor before you take any OTC drug for arthritis pain.
- Discuss with your doctor the synergistic effect of acetaminophen (Tylenol®) with NSAIDs to allow the minimum NSAID dose possible.

ACETAMINOPHEN

Introduction

Acetaminophen may be used for mild to moderate OA pain. It is sold under the brand name Tylenol® and is typically used to treat pain and reduce fever. It is sold over the counter, but your doctor may also write you a prescription for acetaminophen. It is taken orally. It is generally safe to use for minor flares of pain and typically does not have side effects, though large amounts taken over a long period of time can potentially cause liver damage. The most common side effects, though rare, are rash, nausea, and headache.

What we already know

Acetaminophen belongs to a class of drugs called analgesics (pain relievers) and antipyretics (fever reducers). The exact mechanism of action of acetaminophen is not known. It may reduce the brains' production of prostaglandins, which are chemicals that cause inflammation and swelling. Acetaminophen relieves pain by elevating the pain threshold, meaning it requires a greater amount of pain to develop before a person feels it. It reduces fever by acting on the heat-regulating center of the brain, causing the center to lower your body's temperature.

The dose for adults is 325 mg every 4 hours or 500 mg every 8 hours when using immediate release formulations. The dose for extended release caplets is 1300 mg every 8 hours.

In 2014 the Food and Drug Administration (FDA) began asking doctors to stop prescribing combination medications that contain more than 325 milligrams of acetaminophen per pill because of concerns about

liver damage. The move was one of a series of actions the FDA took to limit high-dose use of the drug. The FDA also asked drug makers to stop producing combination prescription medications with more than 325 milligrams of acetaminophen (which typically contain acetaminophen plus an opioid painkiller such as codeine).

The greatest risk for severe liver injury happens when people take more than the prescribed dose of acetaminophen, take more than one acetaminophen-containing product at the same time, or drink alcohol while taking acetaminophen. Severe liver injury can lead to liver failure, liver transplant, and death.

The ACR's recommendations regarding acetaminophen for OA are as follows:

- For patients with OA of the hand, ACR does not recommend for or against acetaminophen.
- For patients with OA of the knee, ACR recommends that patients who do not get adequate pain relief with intermittent dosing of OTC acetaminophen, OTC NSAIDs, and/or OTC nutritional supplements should be treated with consistent, higher dosing of acetaminophen, prescription strength oral or topical
- For patients with OA of the hip, ACR recommendations are similar to those for patients with knee OA regarding acetaminophen.

Why am I taking acetaminophen?
You may need to take acetaminophen for joint pain or stiffness from time to time. Or, your rheumatologist may prescribe a stronger dose of acetaminophen for your pain if needed. You may not have to take acetaminophen long term. You may just need to take it on days when your pain feels worse than normal. If you overdo physical activity on certain days and ache afterward, acetaminophen may be helpful for relieving your short-term pain.

Some people with OA control their joint pain or stiffness with an NSAID, corticosteroid injections or non-drug therapies, so you may not need acetaminophen at all or only once in a while. Other people may find that these options don't work well enough and need to take acetaminophen also. For others, acetaminophen is the only treatment they need. It depends on your body, your day-to-day pain, and how well your other drugs are working to keep your OA under control.

Since taking acetaminophen regularly for pain can rarely cause side effects, particularly at higher doses, talk to your doctor about the best way to ease your pain.

Even OTC pills can have serious side effects, especially if you take them often. Talk to your doctor about your options for managing your pain. Also, make sure your doctor knows everything you are taking for your pain, even OTC drugs or supplements.

What are the possible side effects of acetaminophen?
Acetaminophen is generally very safe depending on your age and other illnesses that might affect whether you can take acetaminophen. If you have any type of liver problems, take other medications that can damage the liver, or drink three or more alcoholic drinks per day, you may not be able to take even OTC acetaminophen or must be followed very closely by your doctor.

The most common side effects of acetaminophen are rash, nausea and headache. If you notice any of these symptoms, get medical care right away:

- Swelling of the face, mouth, and throat
- Difficulty breathing
- Itching or rash
- Nausea, vomiting, loss of appetite, or severe stomach pain
- Trouble passing urine or change in the amount of urine

- Light-headedness, sweating, fainting, or weakness
- Unusual bruising or bleeding
- Yellowing of the skin or whites of your eyes

Symptoms of liver damage include:

- Yellowing of your skin or the whites of your eyes (jaundice)
- Pain in the upper right area of your abdomen
- Nausea or vomiting
- Loss of appetite
- Fatigue
- Sweating more than usual
- Pale skin
- Unusual bruising or bleeding
- Dark or tea-colored urine
- Dark, tarry stools

How to monitor for side effects

Let your doctor know if you have unpleasant side effects like nausea or headache. Don't "grin and bear it." Your rheumatologist may be able to lower your dose or suggest another medicine for your pain. Don't try to treat severe side effects on your own. Though rare, some people are allergic to acetaminophen. Call your doctor immediately if you notice any signs of an allergic reaction including difficulty breathing or swallowing, hives, severe itching or swelling of the throat, face, lips or tongue.

Liver damage is not likely if you take acetaminophen at the recommended dose. However, liver damage can occur if you

take too much. If your doctor suspects liver damage, he or she can order blood tests that check the health of your liver.

What can I do to help prevent or ease side effects?
Adults should not take more than 3 grams (3,000 mg) of acetaminophen in a 24-hour period to help prevent liver damage. Acetaminophen overuse is more common than people think, because acetaminophen is a common ingredient in many different OTC drugs such as cough and cold medications or certain sleep aids that also control pain. Keep track of how much acetaminophen you take in one day to lower your risk of overuse.

Some simple ways you may ease side effects of acetaminophen include:

- Take the lowest possible dose you need to manage your pain.
- Take note of other sources of acetaminophen you may be taking, such as OTC cough and cold medicines.
- Take your medicine with food, such as your normal meals or a snack. **It should be noted that taking acetaminophen with food will not lower your risk of liver damage.**
- If you are also taking an NSAID, discuss with your doctor the synergistic effect of acetaminophen with NSAIDs to allow the minimum NSAID dose possible.

DULOXETINE

Introduction
In 2010, the FDA approved the use of the oral medication duloxetine (Cymbalta®), a type of drug known as a selective SNRI (serotonin and norepinephrine reuptake inhibitor), for chronic musculoskeletal pain, including OA. It was first approved by the FDA in 2004 as a treatment for depression, and is also used for other health concerns, including other mood disorders, nerve pain and fibromyalgia.

It was approved for use in OA based on two clinical trials that showed it was associated with significant pain reduction and improved function in patients with pain due to knee OA. The approved dose for chronic musculoskeletal pain is a 60mg capsule taken once a day, swallowed whole; it does not have to be timed with meals but doing so may help alleviate nausea, which can be a side effect with this medicine.

What We Already Know
Duloxetine works by acting on pain inhibitory pathways in the brain. Specifically, it increases natural substances in the brain, serotonin and norepinephrine, which are believed to upregulate the pain inhibitory pathway that stops pain signals reaching the brain. Sometimes doctors will prescribe duloxetine for OA in addition to another drug such as an NSAID. The two clinical studies that led to its approval for OA showed that duloxetine is about as effective as NSAIDs for OA pain relief, without the side effect of potential gastrointestinal bleeding sometimes seen with NSAIDs. However, more than 16 percent of the subjects in these studies stopped taking duloxetine due to an adverse reaction. The three most common seen in the studies were nausea, fatigue and constipation.

The ACR's recommendation regarding duloxetine for OA is as follows:

- For patients with OA of the hand, knee or hip, ACR has no recommendations regarding the use of duloxetine due to the lack of data from randomized clinical trials at the time of publication in 2012. The ACR is reviewing new data that have been published since 2012 for their upcoming updated treatment guidelines.

Why am I taking duloxetine?
Your doctor may prescribe duloxetine if you are not getting adequate symptom relief from OTC acetaminophen or a prescription NSAID, or if you cannot tolerate the side effects of NSAIDs or are at high risk for gastrointestinal

bleeding, which NSAIDs may cause in some people.

What are the possible side effects of duloxetine?
The safety of duloxetine has been well established in clinical trials in more than 32,000 patients across all indications. Since its first approval in 2004, over 53 million patients have been treated with duloxetine worldwide. Duloxetine has been shown to be generally safe and well tolerated with no new safety concerns identified in people with OA. The most common side effects are nausea, constipation, dry mouth, diarrhea, fatigue, dizziness, somnolence and insomnia.

More serious side effects have occurred in less than one percent of people taking the drug. If you experience any of these more severe side effects, seek immediate medical attention:

- Liver damage
- Vomiting
- Hives
- Rashes
- Swelling in the face
- Pneumonia
- Suicidal thoughts and behavior
- Depressed mood or other psychological changes (anxiety, panic attacks, agitation, aggressive behavior or irritability)
- Diarrhea
- Changes to urinary or sexual habits
- Dizziness
- Tiredness
- Muscle pain or cramps

In 2014, the FDA added a black box warning to the label of duloxetine. This is the strictest warning put in the labeling of prescription drugs by the FDA when there is reasonable evidence of a serious hazard with the drug. The warning for duloxetine reads as follows:

> **"WARNING: SUICIDAL THOUGHTS AND BEHAVIORS: Increased risk of suicidal thinking and behavior in children, adolescents, and young adults taking Antidepressants. Monitor for worsening and emergence of suicidal thoughts and behaviors."**

Keep in mind that this warning is based on studies of people taking duloxetine for major depressive disorder and other psychiatric disorders, not OA. However, **your mental health may change in unexpected ways when you take duloxetine or other antidepressants even if you are an adult over 24 years of age, and even if you do not have a mental illness and are not taking it for depression.** A warning was also added in 2014 for orthostatic hypotension, falls and fainting. (This is when your blood pressure drops when you stand up from lying or sitting.) The risk of falls is greater if you are taking a drug for high blood pressure in addition to duloxetine. If you are already at risk of falls from age or other conditions, this may be worse with duloxetine, especially when you first start taking it.

How to monitor for side effects
Let your doctor know if you have unpleasant or worrisome side effects like nausea, vomiting, fainting, dizziness or changes in your mood (see complete list above). Your doctor may be able to lower your dose or suggest another medicine for your pain. Don't try to treat severe side effects on your own. Though rare, some people are allergic to duloxetine. Call your doctor immediately if you notice any signs of an allergic reaction including difficulty breathing or swallowing, hives, severe itching or swelling of the throat, face, lips or tongue.

Your doctor will want to monitor you and see you often, especially at the beginning of your treatment with duloxetine, to make sure you are not experiencing serious side effects, particularly changes in your mood. Liver damage is not likely if you take duloxetine at the recommended dose. However, liver damage can occur. If your doctor suspects liver damage, she can order blood tests that check the health of your liver.

What can I do to help prevent or ease side effects?

- Stay alert for any signs of agitation, irritability, unusual changes in behavior, and thoughts of suicide or harming yourself.
- To help avoid or reduce nausea, start at the lowest dose (30mg) or take it with food.
- Tell your doctor if you are allergic to duloxetine, or if you take thioridazine or a MAO inhibitor, as these drugs may negatively interact with duloxetine. Other drugs taken with duloxetine may increase or decrease its effectiveness. These include (this is not an exhaustive list):
  - quinolones
  - antidepressants
  - antipsychotic medications
  - opioid pain medications
  - sleep medications
  - tranquilizers
- Give your doctor a list of all medications and vitamins you take, especially products containing St. John's wort or tryptophan, as these may interact with duloxetine. Discuss any other medical conditions you have as well as habits such as alcohol use.
- Take your prescription exactly as instructed by the directions on the label.
- Do not suddenly stop taking duloxetine without talking to your doctor first. Sudden discontinuation can cause adverse side effects, such as nausea; vomiting; diarrhea; anxiety; dizziness; tiredness; headache; pain, burning, numbness, or tingling in the hands or feet; irritability; difficulty falling asleep or staying asleep; sweating; and nightmares. Your doctor will probably want to decrease your dose gradually over time.
- Don't drive or operate machinery until you know how this medicine affects you.
- If you are pregnant, especially if you are in the last few months of your pregnancy, if you plan to become pregnant or are breast-feeding, or become pregnant while taking duloxetine, tell your doctor. Duloxetine may cause problems in newborns following delivery if it is taken during the last months of pregnancy.

GLUCOCORTICOIDS (STEROID INJECTIONS)

Introduction

Glucocorticoids are medicines used to reduce inflammation. They may also be called corticosteroids or even "steroids" for short. If you have OA, you're more likely to get a steroid injection directly into your painful joint, not steroids that are taken orally. OA affects particular, individual joints, not your whole body. A glucocorticoid shot can help to ease pain in a specific joint that's affected by OA.

What do we already know?

The purpose of the corticosteroid injection is to reduce the irritation caused by local joint inflammation. The injection's effect, though temporary, can be significant. Many patients feel relief from these injections. However, they do not work well for everyone. That may be because the disease is too far advanced or because it is difficult to locate the joint space (though ultrasound can help guide your doctor to the right place for the injection).

Any candidate for a steroid injection may receive physical therapy, supportive bracing and oral or topical

medication to maximize their response to the injection. It's important to note that the effect lasts for an average of two to three months. How far your OA has progressed and your overall health can affect how long you'll feel some relief from your joint injection.

It's also important not to receive too many of these injections. You shouldn't have corticosteroid injections into any given joint more than once every three to four months. Too many injections increases the risk of side effects, such as avascular necrosis, which is a lack of blood flow to a part of the bone that causes it to collapse. Other side effects include nerve damage and thinning of nearby bone. Because the injections are formulated as slow-release crystals, patients can, in the short term, develop irritation in the joint similar to gout, and, rarely, develop infection.

Current formulations of injectable glucocorticoids include short-acting agents (methylprednisolone or Medrol) and longer-acting agents (triamcinolone) which are combined in a single injection along with an anesthetic agent (lidocaine). A new formulation of triamcinolone has recently been approved by the FDA for articular injection.

Zilretta® is an extended-release formulation of triamcinolone acetonide (a glucocorticoid) incorporated into microspheres for injection into the knee joint. This formulation releases the drug slowly into the knee joint fluid for up to 12 weeks. There is no evidence of effects on plasma glucose concentrations, a known complication of articular steroid injections. Patients receiving this drug report sustained pain relief following single injection (up to and beyond the 12 week study period), a treatment response not typically seen from other steroid injections.

Why am I getting corticosteroid injections?
More than likely, you are getting an injection in one or more joints due to OA pain and stiffness that has not responded to oral medications, there is joint swelling with fluid in the joint present, or because you cannot take certain oral medications due to side effects. The ACR recommends oral or topical NSAIDs or the use of steroid injections for patients with hip or knee OA who do not have a satisfactory response to full-dose acetaminophen. The ACR does not recommend corticosteroid injections for people with hand OA (the recommendations do not cover OA in other joints). In large measure this is a technical challenge due to the bony characteristics of digital osteoarthritis involving the DIP joints specifically.

What are the possible side effects of corticosteroid injections?

- Nerve damage
- Thinning of nearby bone and/or fat tissue
- Irritation in the joint similar to gout (because the injections are formulated as slow-release crystals)
- Infection (though this is rare)
- Increased glucose levels in diabetics (relatively commonplace though short-lived)

Your chances of having these side effects depend on how often you get the injections and whether you have other medical conditions.

How to monitor for side effects
You and your doctor should be on the lookout for any of the above side effects. If you experience any pain or other symptoms around the joint that was injected, see your doctor.

INTRA-ARTICULAR HYALURONATE (HYALURONIC ACID INJECTIONS)

Introduction
Hyaluronic acid (HA) is a natural, gel-like, lubricating substance that occurs in your joint fluid and cartilage, acting as a shock absorber and lubricant. However, the acid appears to break down in people with osteoarthritis.

Injections of hyaluronic acid directly into the knee joint are selectively used in the treatment of OA. Most people who try these injections do so after treatments like physical therapy, exercise, and injections with steroids don't give them enough symptom relief.

HA injections are FDA approved for use in the knee only; however, some physicians will also use them in other joints with OA, such as the hip or ankle. For some patients, these injections provide pain relief by providing some cushioning in the knee. However, the relief does not last long-term and some, but not all, studies suggest that any relief a patient experiences with these injections is the result of the placebo effect, in which the patient feels relief only because he or she expects the treatment to work.

What We Already Know

There are several types of HA injections, also called viscosupplementation, that are used for knee OA. They are made from either rooster or chicken combs, or are derived from bacteria, and are injected directly into the joint. It may take more than one injection for the pain to go away. Typically you'll receive a series of three to five shots one week apart over three to five weeks. On average, it takes about five weeks to experience the full benefits of HA injection. In contrast, relief from corticosteroid injections occurs within days, though this relief diminishes significantly after about a month or two.

The theory behind these injections is that because people with OA have a lower than normal amount of HA in their joints, adding HA to the joint will improve symptoms by helping to cushion the joint. The injection seems to work by temporarily restoring the thickness of the joint fluid, allowing better joint lubrication and perhaps directly affecting pain receptors. Research shows that HA may also interfere with prostaglandins and cytokines, naturally occurring compounds that promote inflammation in your body. Still other research has shown that HA may actually help encourage the joint to make new cartilage since hyaluronic acid is a major building block of cartilage. However, the evidence regarding HA is mixed, with many studies showing no benefit over placebo. Nonetheless, physicians may opt to try this therapy in case it may work in a particular patient, for example as a temporizing measure before considering surgery.

Some studies have shown that HA injections can reduce pain for up to six months, but others have shown more limited results, with 30 to 40 percent of those receiving the injections showing no improvement. A recent study, presented last year at the EULAR conference, found that there were certain characteristics that make a person less likely to show improvement with HA injections, including obesity, severe arthritis, being older than 65, and/or having HA or corticosteroid shots in the past.

Common brand names/types of HA injections include:

- Synvisc®
- Hyalgan®
- Orthovisc®
- Monovisc®
- Supartz®
- Euflexxa®
- Gel-One®
- Supartz®
- Supartz® FX

The ACR's recommendation for HA injections is as follows:

- For patients with OA of the knee, ACR has no recommendation regarding HA injections because of the lack of data from randomized clinical trials on either benefit or safety at the time of publication.

- For patients with OA of the hip, no recommendations were made for the use of hyaluronic acid injections because of the lack of data from randomized clinical trials on either benefit or safety at the time of publication.
- For patients with OA of the hand, ACR recommends not using either intraarticular corticosteroids or HA injections and, furthermore, provided no recommendation on the choice between corticosteroids and hyaluronates, if a provider decides to give an injection.

Notably, the American Academy of Orthopedic Surgeons (AAOS) no longer recommends HA injections for knee OA because it says that there isn't enough evidence the therapy provides "clinically important improvement."

Why am I getting an HA injection(s)?
Your doctor may prescribe HA injections if: you are not getting adequate pain relief from OTC acetaminophen or prescription NSAIDs; you are unable to take NSAIDs due to the side effects; physical therapy, exercise, and injections with steroids have not worked to alleviate your pain; or you have a personal preference for injections versus taking an oral, systemic drug (one that will go into your blood stream and throughout your system).

What are the possible side effects of HA injections?
Side effects from HA injections are generally mild. The most common side effects with HA injections are difficulty with moving**,** muscle pain, warmth at the injection site, stiffness and/or joint pain. You may have temporary pain or swelling in the knee joint after injection. Call your doctor if the pain or swelling persists or becomes worse. Less common but more serious side effects include:

- Bleeding
- Blistering
- Burning
- Coldness
- Discoloration of the skin
- Feeling of pressure
- Hives
- Infection
- Redness or inflammation
- Itching or rash
- Lumps
- Numbness
- Tingling
- Ulceration

It should be noted that intra-articular hyaluronic acid derivatives are associated with a complication called injection flare in about 1 percent of cases. This is a post-injection reaction with fluid accumulating in the joint, which is associated with swelling and significant pain, and is well recognized amongst treating clinicians. Treatment of a post-injection flare involves draining the fluid with a needle and syringe. Injection flare should not be confused with a temporary flare of arthritis in the injected joint that begins a few hours after the injection and lasts a couple of days.

How to monitor for side effects
Let your doctor know if you have unpleasant side effects like swelling or increased pain in the injected joint(s), or any listed above. Don't try to treat severe side effects on your own. Though rare, some people are allergic to HA. Call your doctor immediately if you notice any signs of an allergic reaction including difficulty breathing or swallowing, hives, severe itching or redness/inflammation around the injection site.

What can I do to help prevent or ease side effects?
Be careful not to strain your knee joint for two days after receiving HA injections and avoid activities that will strain the knee joint, such as jogging, soccer, tennis, heavy lifting, or standing on your feet for a long periods. Applying ice may alleviate mild swelling in the joint but call your doctor if the pain or swelling persists or gets worse after you get an injection.

TRAMADOL

Introduction
Sold under the brand name Ultram®, Ultracet and Ultram® ER (extended release), among others, tramadol is an opioid pain medicine used to treat moderate to moderately severe pain. It is in a class of medications called opiate (narcotic) analgesics. It works by changing the way the brain and nervous system respond to pain. It is sometimes prescribed to treat OA pain, particularly for patients with severe pain for whom NSAIDs and acetaminophen do not provide symptom relief. However, more recent data suggest that tramadol does not offer any more pain relief than NSAIDs.

Tramadol can help to decrease OA pain intensity, relieve symptoms, and improve function. The regular tablet is taken with or without food every four to six hours as needed. The extended-release tablet and extended-release capsule should be taken once a day. Your doctor may start you on a low dose of tramadol and gradually increase the amount of medication you take.

BE AWARE: Tramadol and other opioids are not routinely recommended to manage OA pain. There are many options to manage OA pain that are more effective and far less risky for your health. These drugs carry serious risks of dependence or even abuse. Opioid addiction and abuse are a significant problem in the United States. As a result, people taking opioids must be carefully monitored. Talk with your physician about the risks of taking tramadol or any other opioid for pain, even if you only think you will take these drugs on an occasional basis. Many people become dependent on or addicted to opioids even with short-term use. The potential pain-relieving benefits of taking an opioid to manage chronic pain really do not outweigh the risks for most people.

What We Already Know
A recent guideline from the American Geriatrics Society recommends that all older patients with moderate to severe OA pain or diminished quality of life be considered for opioid therapy such as tramadol because the risks of NSAIDs in these patients, including cardiovascular risk and gastrointestinal toxicity, may be serious enough to outweigh the potential for addiction. Tramadol is also not associated with kidney problems, unlike some other OA medications.

However, some studies have shown that for other patients not in this category, the benefits of tramadol are small and do not outweigh the potential for side effects. One review of several randomized clinical trials that evaluated the effect of tramadol on pain levels and/or physical function in people with OA found that "adverse events, although reversible and not life threatening, often cause participants to stop taking the medication and could limit tramadol usefulness."

A more recent meta-analysis (a study that reviews many previous clinical studies) comparing oral NSAIDs and oral opioids for relief of knee OA pain in over 5,500 patients found that on average, oral NSAIDs, less potent oral opioids (such as tramadol) and more potent oral opioids (such as oxycodone) all reduced pain to a similar extent, by about 30 percent.

The ACR's recommendations for tramadol are as follows:

- For patients with hand OA who fail to obtain adequate pain relief with intermittent dosing of OTC acetaminophen, OTC NSAIDs, and/or OTC nutritional supplements (e.g., chondroitin sulfate, glucosamine), ACR recommends either topical or oral NSAIDs, topical capsaicin, or tramadol.
- For patients with knee OA who fail to obtain adequate pain relief with intermittent dosing of OTC acetaminophen, OTC NSAIDs, and/or OTC nutritional supplements, ACR recommends acetaminophen, oral or topical NSAIDs, tramadol, or intraarticular corticosteroid injections.
- For patients with hip OA who fail to adequate pain relief with intermittent dosing of OTC acetaminophen, OTC NSAIDs, and/or OTC nutritional supplements, ACR recommends acetaminophen, oral NSAIDs or tramadol.

Why am I taking tramadol?
Your doctor may prescribe tramadol if you are not getting adequate symptom relief from OTC or prescription acetaminophen or an NSAID, or if are at high risk for gastrointestinal bleeding, which NSAIDs may cause in some people. You may also be taking tramadol because your OA pain and other symptoms are severe, or you are an older patient for whom the risks of an NSAID (such as gastrointestinal bleeding or kidney or heart problems) outweigh the risk of addiction and other side effects associated with tramadol.

What are the possible side effects of tramadol?
Common side effects of tramadol include dizziness, headache, drowsiness, nausea and vomiting, constipation, lack of energy, sweating and dry mouth. These effects can be mild, and go away on their own within a few days or a couple of weeks. If they're more severe or don't go away, talk to your doctor or pharmacist. Tramadol can also cause more serious side effects, including:

- Serious breathing problems
- Fast heart rate
- High blood pressure
- Fever
- Reflexes that are stronger than normal
- Lack of coordination
- Diarrhea
- Agitation
- Hallucinations (seeing or hearing things that aren't real)
- Coma
- Fainting, dizziness or confusion
- Long-lasting tiredness or muscle weakness

Tramadol has a risk of decreasing fertility in men and women, and increases the risk of and can worsen seizures, especially in patients who drink alcohol or are taking certain other medications such as other opioids or drugs for depression, psychosis or mood disorders. Tramadol can also lead to addiction and misuse, which can result in overdose and death. A physical dependence can lead to withdrawal symptoms if you stop taking the drug. These may include:

- Feeling irritable, anxious, or restless
- Trouble sleeping
- Increased blood pressure
- Fast breathing rate
- Fast heart rate

- Dilated (large) pupils
- Teary eyes
- Runny nose
- Yawning
- Nausea, vomiting, and a loss of appetite
- Diarrhea and stomach cramps
- Sweating
- Chills
- Muscle aches, back pain, or joint pain

Tramadol has the potential to interact with other drugs you may be taking, which could increase your risk for breathing problems, sedation, or coma. These drugs include those taken for anxiety, mental illness, nausea, pain, muscle relaxants, sedatives, sleeping pills or tranquilizers.

How to monitor for side effects
You and your doctor should be on the lookout for any of the above side effects, particularly any signs that you may be developing a dependency on the drug. If you have any of these, your doctor may need to adjust your dose or discontinue use. Even mild side effects that do not go away within a few weeks should be taken seriously and reported to your doctor. Do not attempt to adjust your dose or stop taking the drug on your own – talk to your doctor first.

What can I do to prevent or ease side effects?

- Take this drug exactly as prescribed by your doctor to help avoid developing a dependence. Do not take a larger dose, take it more often, or take it for a longer period of time than prescribed by your doctor.
- Do not drive or operate machinery until you know how tramadol will affect you.
- Do not stop taking tramadol without talking to your doctor. Your doctor will probably decrease your dose gradually. If you suddenly stop taking tramadol, you may experience withdrawal symptoms such as nervousness; panic; sweating; difficulty falling asleep or staying asleep; runny nose, sneezing, or cough; pain; hair standing on end; chills; nausea; uncontrollable shaking of a part of your body; diarrhea; or rarely, hallucinations.
- Tell your doctor what herbal products you are taking, especially St. John's wort and tryptophan.
- Tell your doctor if you have or have ever had slowed breathing, lung disease, or asthma. Your doctor may tell you not to take tramadol.
- Tell your doctor if you have or have ever had seizures; an infection in your brain or spine; a head injury, a brain tumor, a stroke, or any other condition that caused high pressure inside your skull.
- Discuss any psychological problems you have now or have had in the past including depression or thoughts about harming or killing yourself.
- Make sure your doctor is aware of how much alcohol you drink.
- Tell your doctor if you are pregnant, plan to become pregnant, or are breastfeeding. If you become pregnant while taking tramadol, call your doctor.
- Drinking grapefruit juice can interact with tramadol, so talk to your doctor before doing so.

MEDICAL FOODS

Limbrel

Limbrel (flavocoxid) is a medicinal food approved for the treatment of osteoarthritis. Limbrel is not a drug or dietary supplement. According to the FDA "a medical food is a food which is formulated to be consumed or administered enterally under the supervision of a physician and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on scientific principles are established by medical evaluation."

Limbrel is a blend of concentrated flavonoids, baicalin and catechin. These flavonoids inhibit 5-Lox (5-lipoxygenase, Cox-1 and Cox-2). Limbrel can be used in individuals who are aspirin sensitive.

In 2010, Limbrel (500 mg twice daily) was compared with naproxen (500 mg twice daily) in 220 patients with moderate to severe knee osteoarthritis over a 12-week period. Each agent had equivalent efficacy, Limbrel had fewer reports of toxicity.

A potential toxicity of Limbrel is acute liver damage. Flavocoxid is capable of causing acute liver damage. Patients need to be monitored for the appearance of liver function test abnormalities.

As of publication, Primus Pharmaceuticals (the makers of Limbrel) and the FDA have been communicating based on the FDA's safety alert issued on Dec 18th 2017. To learn more visit: www.limbrel.com/index.php

TREATMENT CHANGES

What if just one drug, or monotherapy, doesn't work for your OA? What next? If your OA symptoms don't seem to be relieved by one medication, another drug may be added or substituted.

COMBINATION THERAPY

Everyone is different. In some cases, one drug, such as an NSAID or acetaminophen, might not work by itself or at all. In those cases, your doctor will discuss the possibility of adding an additional treatment to the one you are currently taking, such as corticosteroid injection into your most painful joint(s) or duloxetine. Many people with OA manage their pain with a combination of non-drug therapies and medications. You may do physical therapy, work with a dietician to manage your weight, follow a regular exercise program, and also take an NSAID or get an occasional joint injection. Talk to your doctor about the best treatment plan for you.

Currently, the ACR guidelines do not cover various treatment combinations. It's up to your doctor to decide whether a combination of medicines is best for you and if so, in what combination. Do not attempt to add medications to your regimen without discussing it with your doctor first, as certain medicines can interact with each other and cause harmful side effects – some serious enough to cause a medical emergency.

ON THE HORIZON: NEW DRUGS COMING DOWN THE PIPELINE

OA has historically lagged behind RA in terms of research and drug development. Given the number of people who have or will develop OA (due in part to our increasing elderly population), there is a significant unmet need for new drug treatments. Clinical research for OA has traditionally focused on improving pain medications to make them safer, non-addictive, more effective or longer acting. However, disease-modifying osteoarthritis drugs (DMOADs) are urgently needed to not only alleviate pain and improve function but also delay the structural

progression of the disease. There are drugs that are being tested now for OA and some will be reviewed for FDA approval in the future. Many are still in **clinical trials**. That means researchers are still testing them to see if they work well to control OA symptoms and affect OA progression; to make sure they are safe enough for you to take; and don't have side effects that would outweigh the possible health benefits of the drug.

Phase 1 Clinical Trial: A new drug is tested on a very small group of people (usually healthy volunteers) to evaluate its safety profile, determine the distribution of the drug within the body, and the side effects the drug may cause.

Phase 2 Clinical Trial: The new drug is then tested on a group of patients with the disease the drug is intended for, to further evaluate its safety profile, get an early indication of whether it is potentially effective and help design new Phase 3 trials.

Phase 3 Clinical Trial: The drug is given to much larger groups of patients to more definitively test that the drug works at the intended dose, to evaluate safety and look for side effects, and to gather any information that will be needed so the drug can be safely given.

Phase 4 Clinical Trial: After the drug is **approved by a governmental agency, such as the FDA**, and available for prescription, or **on the market**, more trials are done to test its long-term effectiveness, possible side effects, or how it works in different patient groups.

Phase 2 Clinical Trials for OA treatments (as of November 2017):

- GSK3196165, an antibody directed against GM-CSF (granulocyte-macrophage colony-stimulating factor)
- SM04690, a Wnt pathway inhibitor, intra-articular injection
- JTA-004, an intra-articular injection
- Botox®, Botulinum toxin A, intra-articular injection
- ZYN002, CBD gel (synthetic transdermal cannabidiol)
- MIV-711, an oral cathepsin K inhibitor

Phase 3 Clinical Trials for OA treatments (as of November 2017)

- Tanezumab, an antibody directed against NGF (nerve growth factor)
- XS-02, oral Disodium Zoledronate Tetrahydrate
- Fasinumab, an antibody directed against NGF (nerve growth factor)
- InvossaTM, a cell and gene therapy, intra-articular injection
- Sprifermin, FGF-18 (fibroblast growth factor 18), intra-articular injection
- AmpionTM, a low molecular weight fraction of human serum albumin (HSA), intra-articular injection

Additional clinical trials may be available. For a complete list of clinical trials, including eligibility information from the individual sponsors of the clinical trials, go to: www.ClinicalTrials.gov.

RAISE YOUR VOICE: Patients just like you take part in clinical trials of arthritis treatments, including drugs not yet available to the public. These trials can help rheumatologists and drug manufacturers learn more about these treatments, including their effectiveness and possible side effects. If you're curious about clinical trials and whether they may be right for you, **ask your doctor**. He or she may be conducting clinical trials or know of current trials looking for patients like you. You may also learn more about current OA clinical trials at www.clinicaltrials.gov, or see advertisements online, and in major magazines and newspapers. Ask about all the possible risks of any clinical trial before you proceed, and also ask about any costs you may have to take on to be in a trial, including travel or time away from work.

EVOLVING THERAPY: DMOADS: DISEASE MODIFYING OSTEOARTHRITIS DRUG

In recent years, emerging regenerative therapies for OA have gained much attention as they have shown potential to go beyond temporary symptom relief alone and promote cartilage repair and regeneration within a joint. These potential DMOADs that are being investigated in clinical trials target unique disease mechanisms to try and achieve the same therapeutic goal: the preservation or restoration of articular cartilage. The drugs and biologics below are currently in different stages of clinical trials and have not yet been approved by the FDA.

INVOSSA™-Tissue Gene/Kolon (Biologic)
INVOSSA™ is a cell and gene therapy option being investigated for the treatment of osteoarthritis that contains a mixture of non-transformed chondrocytes with chondrocytes which were transduced with a retroviral vector to overexpress TGF-1. INVOSSA™ has been recently approved in South Korea and is currently being tested in phase 3 clinical trials in the US.

MIV-711-Medivir
MIV-711 is a highly selective inhibitor of cathepsin K, a protein that breaks down collagen and plays an important role in the structural integrity of both bone and cartilage. Medivir's research has shown that inhibition of cathepsin K can reduce the rate of joint destruction in preclinical models of osteoarthritis. MIV-711 is in phase 2 clinical trials.

SM04690-Samumed
SM04690 is being developed as an intra-articular (IA) knee injection to target cellular mechanisms that may promote the regeneration of cartilage cells in the joint. SM04690 inhibits the function of a key pathway (Wnt) that plays a pivotal role in the maturation of a type of progenitor cells that reside in the joint and have the potential to become chondrocytes, a key component in the formation of cartilage. SM04690 is currently being tested in phase 2 clinical trials.

Sprifermin-Merck KgA (Biologic)
Sprifermin is in clinical development to investigate its potential as a treatment for osteoarthritis (OA) in the knee. It is a truncated recombinant human FGF-18 protein thought to induce chondrocyte proliferation and increased extra-cellular matrix (ECM) production, with the potential of promoting cartilage growth and repair. Sprifermin is currently in Phase 3 studies.

III. Integrative Medicine and Complementary Therapies

Although there isn't a great deal of solid, scientific evidence to support many **complementary and alternative medicine** (CAM) therapies for arthritis, many people feel that using them in addition to your prescriptions could have some benefits. Before actively engaging in integrative medicine or complementary therapies, consult with your doctor. Here are some common CAM therapies used by people with OA:

- Acupuncture, possibly cupping
- Massage therapy
- Magnetic therapy, copper bracelets
- Relaxation therapy or meditation
- Hydrotherapy, sauna treatment
- Nutrition, dietary herbs and supplements
- Osteopathic manipulation
- Chiropractic adjustments

Be sure to ask your doctor about the safety of any CAM before starting it to make sure it is safe and right for you.

ACUPUNCTURE

This ancient healing practice uses thin needles that are inserted into specific points on the body. Acupuncture is meant to help balance your body's natural energy flow (also known as 'qi'). Its effects can ease your pain, increase a sense of calm, and improve digestion, to name a few possible benefits. Risks are typically mild, including transient lightheadedness, pain at needling site, initial exacerbation of symptoms, and bleeding. Acupuncture should ideally be performed by a licensed acupuncturist (LAc) who has completed a master's degree or higher level of training. Acupuncture sessions are typically performed once or twice a week. At least six to 10 sessions should occur before you decide on its effectiveness and whether to continue therapies. Insurance coverage varies for this therapy, so check with your carrier to learn if you have coverage for acupuncture.

Recent research shows that acupuncture may have some benefits for people with chronic pain, however other studies have indicated that pain improvement from acupuncture is no different than sham ("pretend") acupuncture.

MASSAGE THERAPY

Performed by massage therapists as well as other health professionals, massage involves pressing or kneading muscles and tissues in a relaxed, quiet environment. The most common type is Swedish massage. Recent studies have shown pain-relief benefits for Swedish massage. Massage therapy can relieve anxiety, which helps ramp down the pain response as well.

MAGNET THERAPY AND COPPER BRACELETS

Magnets produce a field of energy that attracts metal, just like the ones you use to stick notes on your refrigerator. Magnets are used as an alternative therapy for pain relief in arthritis, and may be sold as products like socks, bracelets, mattress pads, or bands that you strap around your painful joints. However, there's no evidence that magnet therapy works better than placebo to ease arthritis pain or other symptoms. These products are a waste of money, unless they're purchased strictly for how they look (as jewelry or decoration).

RELAXATION THERAPIES OR MEDITATION

Techniques to help you relax or ease stress can help you manage chronic pain or anxiety that's common with having a disease like OA. Relaxation therapies include biofeedback, self-hypnosis, deep breathing techniques, meditation, or guided imagery. There are therapists trained to help you learn to do any of these relaxation techniques properly, but you can also teach yourself to do them by using online videos or tapes. Tai chi and Yoga may also be done in combination with techniques like meditation to help you relax.

Usually, relaxation is considered safe and healthy, but if you've had anxiety or depression, check with your doctor or psychologist to make sure it's OK for you. For more information, go here:
nccih.nih.gov/health/stress/relaxation.htm

HYDROTHERAPY

Water therapies use warm water in baths, showers, hot tubs, heated pools, or spas to help you relax tight, sore muscles or ease joint pain. "Hydro" means water. Hydrotherapy can also mean exercising in warm water. Studies show that warm-water exercise is a good way to build strength and fitness, and some research shows it can help with the stiffness and pain common with OA. You can use a warm shower to loosen stiff joints in the morning, or you may find a soak in a

spa tub soothes sore, aching muscles.

Talk to your doctor or physical therapist about the best ways for you to use hydrotherapy safely and effectively. Paraffin wax treatments for hand OA can also improve symptoms, and are administered by occupational therapists.

IV. Mental Outlook

Being diagnosed with a chronic disease like OA can make you feel confused, distressed, or hopeless. You have to deal with physical pain that leads to emotional pain, because you're unable to go about your daily life or normal activities. While these temporary feelings of sadness are expected, if they last for more than a few weeks they may progress into depression that needs medical treatment. Some symptoms of depression are:

- Anxiety
- Feelings of sadness or irritation
- Emptiness, hopelessness, or worthlessness
- Fatigue or decreased energy
- Trouble concentrating, remembering, and making decisions
- Having irregular sleep patterns, either from not being able to sleep or sleeping too much
- Changes in your diet, such as either eating too much or not wanting to eat at all
- Thoughts of death or suicide (or suicide attempts)
- Aches, pains, cramps, headaches, or digestive problems without a clear physical cause that don't get better with treatment

People with chronic medical conditions have higher rates of depression for many reasons: the stress of treatment, the physical pain of the disease, and the interruption of a normal life. Although depression is common, it is *not* normal. In fact, studies have shown that having depression can actually make your OA pain worse. A study published in the *Journal of Bone and Joint Surgery* showed that for people OA, depression can have just as strong an effect on knee pain as physical damage, although the reasons why are not clear.

What's important to remember is that you are not alone. Your depression can be treated. Talk to your doctor about seeing a psychologist or psychiatrist, starting different types of therapy, or taking medication to help ease your depression. You can also take steps to develop better resilience, or the ability to learn from your challenges and stressors and rebound from them. This can help you keep up your mental and physical strength in the face of

pain and anger due to your disease. Another important aspect of mental outlook is related to coping skills, which can be improved through cognitive behavioral therapy and has been shown to help with improving pain symptoms.

RAISE YOUR VOICE: Care for your OA includes not just the physical symptoms of the disease, but also your emotional health and personal happiness. **Seek help** right away if you ever feel like you're alone, that you're in need of emotional support, or that OAis becoming too much to bear on a day-to-day basis. Yes, doctors and nurses can seem like they're in a rush sometimes. **Ask them to slow down** and listen to your needs. Include emotional or mental struggles you have in your list of symptoms when you go for a doctor's appointment — they're just as important as pain or stiffness. **Seek a mental-health professional for therapy or counseling** if you sense that OA is making you depressed, anxious, ruining your sleep, or making it impossible to get through the day. Also, **online and local support groups** of fellow patients with OA and chronic illnesses can be places of comfort and companionship. You are not alone! Your emotional health and wellness are essential as you make your OA journey.

All people have natural resilience, but here are some ways to boost yours:

Focus on the positives: Studies have shown that the more hopeful you are, the more resilient you will be. Look at your experiences in a new way. Be aware of the negatives that OA brings to your life, but focus on the positives too. Stay optimistic about your treatment plan working well so you can get back to a normal, active life that you enjoy.

Learn from experience: Keep track of how different treatments impact you and what works best for your body. This will help you understand how to manage your disease, making you stronger and more confident about your future.

Expand your knowledge: Read up on OA and how to manage it. The more you know about your condition, the more power you will have to control its effect on your life and well-being.

Stay active in life: Make time to find and do things that you enjoy. Find new activities that are easy to do, like reading, watching movies, taking gentle walks, or visiting with friends.

Exercise: Movement is not just great for your joints and muscles, it's also known to improve your mood and decrease anxiety.

Get support: Turn to family or friends when you are struggling with your emotions or feel like you're in despair. Support groups of others living with OA, including in person and online, may help you share your feelings, find solutions to your challenges, or just feel that you're not alone. Support networks like CreakyJoints allow you to connect with other people who are living with rheumatic diseases like OA. Learn more and talk to others who share your experiences to help you build resilience.

Count your blessings: Gratitude can make you feel more connected with life. Be grateful for the things in your life that make you feel good. Focus on the people and activities that make you happy.

To learn more about CAM in general, visit the National Center for Complementary and Integrative Health's website: nccih.nih.gov/health/integrative-health

V. Diet and Nutrition

While there is no special "diet" an arthritis patient should follow, and no diet that can treat or cure OA — despite what you may have heard or read online — research shows that eating a well-balanced healthy diet is essential to help build strong cartilage, keep weight down and reduce inflammation. Further, eating certain foods, particularly those you'll find in a Mediterranean diet, can help keep inflammation in check. As noted in the exercise section, excess weight takes a toll on your joints and can worsen your OA symptoms, so it's important to eat with an eye toward either losing weight or maintaining your current healthy weight. You can seek council from dietitians and nutritionists, and always make sure to consult your doctor.

TRY INCORPORATING MORE OF THESE FOODS INTO YOUR DIET

Keep track of your symptoms to see if your symptoms improve. It may be beneficial for people with OA to keep a food diary and note any changes in how they feel when they eat or restrict specific foods.

Fish: Some fish are rich in omega-3 fatty acids, which reduce inflammatory proteins in your body. These are salmon, tuna, sardines, anchovies, and other cold-water fish. Get at least 3-4 ounces of fish twice a week. In fact, some studies have demonstrated an improvement in arthritis pain with omega-3 fatty acids.

Fruits and vegetables: Eating more antioxidant-rich fruits and vegetables is also essential to reduce joint inflammation and pain, and protect cells from damage. Fruits and vegetables have antioxidants, which support your immune system. Eat a colorful variety of fruits and veggies like blueberries, blackberries, cherries, strawberries, spinach, kale, or broccoli. Get at least 1.5-2 cups of fruit and 2-3 cups of vegetables per meal. There are more reasons to enjoy these foods: a diet rich in fruits and vegetables provides needed healthy fiber that reduces inflammation, and filling up on these healthy foods helps reduce the amount of unhealthy food you eat each day. This may help you manage your weight or maintain a healthy weight.

Nuts: These tasty treats are rich in monounsaturated fat, protein, and fiber, which help make you feel full and fight inflammation. Snack on or add these nuts to your meals: walnuts, pine nuts, pistachios, and

almonds. Get 1.5 ounces (about a handful) of nuts per day. More nuts could add too many calories to your diet, so be careful not to overdo it with the nuts.

Beans: Rich in fiber and protein, beans are full of antioxidant and anti-inflammatory compounds.

Green Tea: Research has shown that EGCG (a substance in green tea) may block a type of pro-inflammatory cell from damaging cartilage.

Olive oil: This heart-healthy fat contains monounsaturated fat, antioxidants, and oleocanthal, an anti-inflammatory compound. Get 2-3 tablespoons per day of extra virgin olive oil in your cooking or salad dressings.

Onions: These simple, flavor-rich veggies contain lots of antioxidants and may help reduce inflammation, improve heart health, or help control cholesterol.

Fiber: In foods like beans, whole-grain breads and cereals, or fresh veggies and fruits, fiber makes you feel fuller longer and helps you stay regular. It also lowers C-reactive protein, which is found in the blood and is a strong marker of inflammation. Get plenty of fiber in your diet or try fiber supplements. Whole grains can trigger symptoms in some people with arthritis. If you're not sure, try keeping a food diary to determine if whole grains trigger a flare-up.

FOODS TO CONSIDER AVOIDING OR REDUCING

Processed food: Reduce the amount of processed food (like packaged snack chips, pastries, cookies, and other sweets). Avoid too much refined sugar, salt, and alcohol in your diet to help reduce your levels of inflammation and maintain a healthy weight.

Gluten/wheat: Gluten, a protein found in wheat, rye, spelt, kamut, triticale, and some other grains has gotten a lot of attention recently. There is a medical condition called Celiac disease, which is exacerbated by gluten. There is currently no evidence that a gluten-free diet is beneficial for OA, unless you have a sensitivity to gluten unrelated to your OA. Consult your physician or nutritionist before embarking on a gluten free trial; often gluten-free diets lead to inclusion of more unhealthy processed foods in the diet.

Nightshades: Some people believe that nightshade vegetables, such as eggplant, peppers, tomatoes, and potatoes, trigger arthritis flares. There is no evidence to support this, but you can still try an elimination for two weeks or more to see if you feel better. Reintroduce nightshades after the elimination period to see if your pain flares up, and if it does flare up, limit nightshades. If you feel fine after the reintroduction, then do not worry about eating nightshades.

Fad diets: Don't try any diets that list lots of claims about how they'll get rid of your OA symptoms, cure your OA or allow you to stop using all of your OA drugs. Talk to your doctor before you try any diet, start eating a certain food in large quantities, or start cutting out whole groups of foods. Also be wary of any diet that

requires you to buy anything up front, such as the actual diet plan, foods, supplements, or products. You can eat a healthy, natural diet made of foods that you can find at your local store.

Fried foods: Researchers at the Mount Sinai School of Medicine found that "cutting back on the consumption of fried and processed foods, such as fried meats and prepared frozen meals, can reduce inflammation and actually help restore the body's natural defenses."

Sugar: High amounts of sugar can increase inflammation in the body, and contribute to weight gain which can worsen stress on your joints.

Corn oil: Corn and other oils like cottonseed, common in many packaged foods and snacks, contain high levels of omega-6 fatty acids. Unlike omega-3s, omega-6 fatty acids can increase inflammation in the body.

Red meat: Red meat, like corn oil, contains large amounts of omega-6 fatty acids. Try lean proteins like poultry or fish instead.

Salt: Look for salt substitutes or try another option like pepper and other natural flavored herbs, vinegars, or citrus to add to recipes and foods.

Meats cooked at high temperatures: Some experts believe that meats (any type of meat, from fish to pork to beef) cooked at high temperatures (as in grilling, frying and microwaving) should be avoided because this type of cooking produces compounds called AGEs that can worsen inflammation in the body.

For more information on an anti-inflammatory diet, go here: creakyjoints.org/education/anti-inflammatory-diet.

HERBS AND SUPPLEMENTS

Some people with OA also feel better or have symptom relief with herbal and dietary supplements. There are many to choose from, but there's not much solid, scientific evidence to show they really work. Some herbs and supplements have been studied in smaller scale tests compared to pharmaceuticals, due to several factors. Most notably, high quality research on natural products and dietary supplements are difficult to obtain due to the high cost of doing research, the difficulty for manufacturers to patent natural products, and the lack of standards in the industry that oversee these products to make sure they contain what they say they contain. In almost every case, herbs and supplements need to be researched more to say if they will work for OA or not.

However, it's up to you if you want to give them a try. They may work for some people with OA, but not for others. Or they may make you feel a little bit better, but they won't replace your OA drugs and/or non-drug therapies such as physical therapy.

Before you take any herbal treatments or dietary supplements, including vitamins or minerals, let your doctor know. Some herbs and supplements can interact with medicines, or even do the same thing — so they can add to the effects of your drugs. Some herbs and supplements can damage your liver, kidneys, and other organs, particularly when combined with certain drugs you may already be taking. So let your doctor know everything you are taking for your OA.

In addition, there's not much testing of herbs or supplements you find in health food stores, online, at alternative healing shops or fairs, or other sources. Some products may not even contain what the bottle or package says it does. Or the actual concentration of the dosage may be very different from what the label states. So use caution and good sense before you buy or try anything. Consult a physician who is knowledgeable about dietary supplements and can guide you on selecting high quality supplement brands to enhance the safety and effectiveness of your

treatment regimen. Physicians trained in the specialty of integrative medicine have the highest level of training and comfort level with dietary supplements, nutrition plans, and lifestyle modification to combine with conventional medicine treatments. Collaboration between your rheumatologist and integrative physician may help ensure the safest, most effective treatment plan if you choose to use supplements with your medications to control OA and promote wellness.

Here's an online source of information for choosing reputable, independently tested supplements: www.consumerlab.com.

The following is a descriptive list of some dietary supplements OA patients have used to support their health. Take note that research on these products and other therapies for OA occur over time to either support or discourage their use. Check with a physician who is knowledgeable about natural products to get the full assessment of risks, benefits, and potential interactions with your medications.

While research is mixed on the effectiveness of most CAM therapies for arthritis symptoms, some show promise. While some people may find these therapies helpful as part of an overall OA treatment plan, they won't be a magic cure for your OA symptoms or allow you to stop taking your medications. Often the biggest side effect is a major impact on your wallet without any benefits for your symptoms.

The most widely and rigorously studied of the supplements listed below are glucosamine and chondroitin. In several well-conducted studies that were free from industry bias, these two supplements did not improve symptoms of OA. None of the other supplements below have been as well-studied as these two.

Topical capsaicin is another useful OTC product for relieving pain that you can buy either over-the-counter or in prescription forms. Recent research is promising on capsaicin's benefits for relieving localized joint pain. It's made from the oil in hot chili peppers. You apply capsaicin as a topical cream, gel, or patch. It depletes the amount of a neurotransmitter called substance P that sends pain messages through the nerves to your brain. It can distract you from sensing pain in your affected joint or muscles where you rub it in. Remember, capsaicin is hot stuff! Take care not to touch your eyes or mouth after you apply capsaicin to your skin. Use gloves if you can.

Avocado Soybean Unsaponifiables (ASU)	A natural vegetable extract made from avocado oil and soybean oil.	May improve pain or function.
Black Currant Oil	A natural supplement made from 15-20% gamma-linolenic acid (GLA). Rich in omega-3 and omega-6 fats.	May ease inflammation.
Borage Oil	Made from 20-26% GLA. Also called borage seed oil. Rich with essential fatty acids.	May ease inflammation or act to block inflammatory cells.
Boswellia	Also called Indian Frankincense. Made from the *boswellia serrata* plant.	May ease pain and improve joint function. It may also help prevent cartilage loss. In a 2008 study, the extract, called Loxin 5, significantly improved OA-related pain and function.
Bromelain	Supplement made from pineapple enzymes.	May reduce joint pain.
Cat's Claw	Supplement made from a wild vine found in Central and South America.	May have healthy effects on the immune system.
Chondroitin Sulfate	Supplement made from the cartilage of cows, pigs, or fish.	Designed to help replace worn-down cartilage in your joints, to reduce pain and inflammation, and improve joint function. Studies have been mixed in terms of whether chondroitin helps OA.
Curcumin	Curcumin is derived from the root turmeric. This herbal treatment has potent anti-inflammatory effects.	Could help ease joint pain and swelling.
Devil's Claw	Supplement made from a plant native to southern regions of Africa.	Used to relieve joint pain and inflammation, as well as back pain.
DHEA	Supplements made from a natural hormone made in your adrenal glands on top of your kidneys.	There's good evidence that DHEA can help improve bone density, though more study is needed. *This hormone can convert to estrogen or testosterone, so patients with breast, ovarian, testicular, or prostate cancer should avoid DHEA.*

Treatments

DMSO	Also called dimethyl sulfoxide. By-product of paper manufacturing, DMSO can be found in gel or cream form and rubbed into the skin.	Meant to ease pain and inflammation, and improve joint mobility. Research on DMSO for OA has yielded conflicting results.
Evening Primrose	Herbal oil rich in omega-6 fatty acids. It's used to lower pain and inflammation.	Some evidence shows it could ease morning stiffness.
Fish Oil	Supplements of natural liver oil from fatty fish in capsule form, or in fish you consume in your diet. Rich in omega-3 fatty acids.	Could reduce joint pain, inflammation, and morning stiffness.
Flaxseed Oil	Herbal supplement taken in capsule form. It's rich in alpha-linoleic acid (ALA), an essential omega-3 fatty acid that builds healthy cells.	Could reduce joint pain, inflammation and morning stiffness.
Ginger	Natural root ground into powder, taken in capsule or oil form, added to foods or eaten in tea, pickled, or candied form.	Could reduce chemicals in your body that play a role in inflammation. Could also ease pain in a similar way as aspirin. Effective at easing nausea.
GLA	Gamma linoleic acid, found in other herbs like borage oil or evening primrose.	Rich in omega-6 fatty acids. Used in supplement or food form to ease joint pain, stiffness, and swelling.
Glucosamine Sulfate	Supplement made from the shells of fish like shrimp or crabs (avoid if with shellfish allergy).	Used to slow deterioration of joint cartilage, relieve joint pain related to osteoarthritis, and improve joint mobility. Studies have been mixed in terms of whether glucosamine helps OA.
Green-lipped Mussel	Shellfish found in the waters off New Zealand. Its hard shells are ground into powder and put in capsules. It's rich in omega-3 fatty acids.	May have anti-inflammatory effects and ease joint pain.
Melatonin	Supplement containing a natural hormone that's found in your brain. The hormone helps control your circadian rhythms, which tell your brain when to sleep and when to wake.	Melatonin capsules may help you sleep better if your OA symptoms keep you awake. *Nightmares or vivid dreams may occur with this supplement.*

MSM	Methylsulfonylmethane, an organic sulfur compound found in animals and plants. It's often taken in capsules or in a cream that you rub into your skin.	Meant to reduce pain and inflammation.
Pine Bark	Herbal extract from the bark of trees. Also called by a common brand name, Pycnogenol®. It contains procyandin, an antioxidant.	May block pro-inflammatory enzymes. Not much evidence supports its efficacy in OA.
Rose Hips	Herbal supplement made from the tiny fruits of wild rose bushes. Found in capsule form as well as teas. Rich in polyphenols and anthocyaninins, natural chemicals.	May ease joint inflammation. Also rich in vitamin C, an antioxidant.
Sam-E	Short for S-adenosyl methionine. Found naturally in the body, it is a precursor to making serotonin, which helps regulate mood. Taken in capsule or pill form.	Used as a supplement to treat pain, stiffness, and swelling, rebuild cartilage, and improve mobility. Sam-E may also help improve depressed mood.
St. John's Wort	Herbal supplement made from a flowering plant found mostly in Europe.	Used to ease mild to moderate depression symptoms, but some say it can reduce inflammation and pain in arthritis. *Do not take with birth control or HIV medications.*
Stinging Nettle	Herbal supplement made from a common plant that stings your skin if you brush by it. It can be eaten or cooked into food, or taken as a supplement.	Used to ease inflammation and pain, and may work best for hay fever. It may be helpful in reducing joint pain due to its ability to lower the levels of specific anti-inflammatory compounds in the body.
Turmeric	A relative of ginger and a main ingredient of Indian curries. Can be eaten or cooked into food or taken as a supplement.	Prized for its anti-inflammatory and antioxidant properties, it may reduce joint pain and swelling.

Valerian	Herbal supplement made from a plant root. Can be taken in capsule form or as a tea.	Used mainly to treat insomnia, but may also ease pain, and have antispasmodic and sedative effects that could relax tense muscles or joints.
Vitamin C	A water-soluble vitamin, also known as L-ascorbic acid that is naturally present in some foods, such as citrus fruits.	Has been shown to build collagen and connective tissue in the body.

▲ The information in these guidelines should never replace the information and advice from your treating physician. It is meant to inform the discussion that you have with healthcare professionals, as well as others who play a role in your care and well being.

PART SEVEN

Remission

Remission means that the level of your disease activity has been measurably reduced to the point where the disease is no longer active. While remission is possible in RA and, in fact, is the goal of RA treatment, OA is generally not discussed in terms of "remission," primarily because there are no treatments to date that can halt the disease progression. How fast the disease progresses differs from person to person.

Thus, while OA can be managed and the symptoms relieved or reduced, we do not have available therapies to effectively stop its progression. There are medicines as well as non-drug therapies described in these guidelines that can help you manage your OA and its symptoms, and can help to reduce its impact on your daily life. Your doctor can work with you to develop an OA treatment plan that is right for you.

PART EIGHT

Co-Pay Support Programs

In today's healthcare environment, co-payments for drugs are one of the most important and hotly debated topics. Your drug co-pay is the amount you will pay out of pocket for your prescription drugs — what's not covered by your insurance.

While OA drugs are typically not as complex or expensive as those for RA (such as biologics), drug co-pay support programs offered by the drugs' manufacturers or others can help many people afford their OA treatments. Co-pay card programs are generally not accepted for use if you have any type of government insurance covering your medication such as Medicare, Medicaid, or Tricare.

There are three main types of support: co-pay assistance programs that are like coupons for your drugs; pharmaceutical companies' assistance programs; and patient assistance foundation programs. CreakyJoints.org has a great deal of information on these programs for arthritis patients: creakyjoints.org/support/arthritis-copay-cards-assistance. Or, you can email us at info@creakyjoints.org to ask any questions about assistance in obtaining your OA medication.

You can look at the websites for your drugs to find out if the manufacturer offers a co-pay assistance program, such as a coupon, rebate, drug card, or other options. Unfortunately, these programs are not available if you are on Medicare. You can find your drug's website by entering the brand name into any internet search engine (such as Google), but usually, they're the brand name of the drug followed by .com.

You can also ask your doctor/rheumatologist, rheumatology health professionals like nurses or physician assistants, rheumatology office support staff, or your pharmacist about copay assistance programs, how to get coupons, rebates, or other help paying for high drug costs.

RAISE YOUR VOICE: You always deserve access to the very best care for your arthritis. That's one of your fundamental rights as a patient. If you worry about being able to afford any treatments, you can and should take action now. First, **talk to your doctor's office**. They will have information about **copay assistance programs** like coupons or rebates from your treatment's manufacturer. Also, **go online** to find your drug's website. It will be listed under the brand name, so just do a browser search and it will come up quickly. There, you will find links to **patient assistance programs** that can help you lower your out-of-pocket costs in many cases. Also, **call your insurance company** to ask about the details of your drug coverage. **Talk to your pharmacist** or call your specialty pharmacy as well — they often have information about other treatments that may be more affordable, or know about programs that can help make your treatments more affordable. Let them know what type of drug coverage you have, so they can help you understand your options. If you're insured at work, **talk to your benefits manager** or HR department. They should have information about your insurance policy that may help you get your drugs covered or find out more options so you can afford your treatments.

PART NINE

Ways to Make Your Voice Heard

Living with a chronic disease can impact many areas of your life. On top of communicating with your healthcare team, you will also need to be able to speak with your insurance provider, employer, support network, and elected officials.

First, we begin with the doctor's office, which usually includes multiple staff members who have multiple roles in your treatment and care.

WHO'S WHO IN THE OFFICE

Receptionist: They will usually be the first person you interact with when you enter the office. Be nice to them, they can help ensure that others on the healthcare team are made aware of your situation. They handle the majority of the paperwork and process your insurance information.

Office Manager: The office manager is there to ensure that the facilities are safe, up to date, and able to provide the best quality care to you. They are there to coordinate the goals of the medical staff, ensuring that each has you at its center.

Technician: Performs your medical tests, such as X-rays or blood tests, and relays the results to your physician. While they certainly can offer advice, know that technicians can't offer a definitive diagnosis.

Medical Assistant: Will not provide any medical advice, but may show you to an examination room and measure your height, weight, and blood pressure. They record information relevant to your visit and relay the information to your physician.

Nurse (RN): Depending on the size or specialty of your doctor's office, your nurse will perform different actions. They are usually the ones who coordinate your care with other doctors and medical professionals. They can administer vaccinations and, in some cases, can perform biopsies and other interventions.

Nurse Practitioner (NP): Your doctor's office may have a nurse practitioner or NP. This is a nurse with additional graduate training, such as a master's degree or doctorate, beyond their registered nurse degree. They may have specialized training or knowledge in certain types of clinical care. NPs can order and interpret your tests, diagnose conditions like high blood pressure or an infection, or prescribe your medications in certain situations.

Physician's Assistant (PA): They have a license to practice medicine, but only under a physician's guidance. They can interpret your lab results, treat injuries, and also perform exams. Some are able to prescribe medicine in certain situations.

Physician: This is the one you're probably most familiar with. With OA, you are likely going to see either a rheumatologist or general practitioner. They will perform tests and diagnoses, and prescribe you appropriate drugs. They have had the most schooling of those on this list.

It is important to disclose all information regarding medications, diet, and lifestyle choices to your physician. In order to make the best treatment recommendation, they have to consider a lot of information specific to you. Leaving out an important detail, like a medication, could lead to adverse side effects on a certain treatment.

Never hesitate to ask your physician any questions you may have about your treatment or OA in general. They are there to help!

To see CreakyJoints' resource page on the healthcare team, go here:
https://creakyjoints.org/education/what-is-the-healthcare-team

Before your talk with your provider, take a look at your plan and develop an understanding of what is covered. To do this, look at your list of benefits, or medical services that are covered. You may also find a list of closed benefits, which means your provider will not pay for the cost of any treatment not on the benefit list. On top of a benefits list you may find a "formulary," which is a list of prescription drugs the health plan covers. It can include medications that are both brand name and generic. An "open formulary" or "preferred drug list" often has a greater choice of covered drugs. A "formulary exclusion list" is a list of prescription drugs not covered by a health plan. If you need a treatment or drug that is not on your benefits list or formulary, you and/or your doctor must ask the plan to cover it as an exception. Even if your prescribed medication is on your plan's formulary, it will only cover that drug if it is deemed medically necessary through standards or research that states what care is most effective. You will also want to get a clear understanding of whether and how many sessions of physical therapy are covered, whether a knee brace is covered, etc.

"Medically necessary" can also be referred to as "medically necessary services" or "medical necessity." To keep track of what services your provider has covered and what money you may owe them, you can review your explanation of benefits (EOB) — a statement usually sent by mail or email from your health plan. You may find you owe money through a copay or coinsurance fee. Coinsurance is the percentage of health care expenses you pay after your deductible. Copay is the dollar amount you pay for health care expenses, most often after you meet your deductible limit.

When you speak with your insurance provider on the phone, be sure to have a good understanding of what your plan covers. If certain medications or treatments are deemed necessary by your doctor but not covered, there are appeals processes you can make to prove medical necessity.

For more information on how to talk to your insurance provider, go here: www.ghlf.org/switching-survey-glossary.

HOW TO TALK TO YOUR EMPLOYER

In many cases, treatment and management of your disease mean you can experience few interruptions of your daily life. However, living with a chronic disease can sometimes impact your ability to be as productive as you'd like in your workplace. Employers may not understand the fatigue, pain, and difficulty arthritis can cause because these things are often not seen on the surface. You may wish to have a conversation with your employer explaining your diagnosis and how it might impact your performance to better their understanding. Here are some tips:

First, understand whom you should speak with. In many cases, a supervisor and your human resource department are good starting points.

- Explain your diagnosis, what that means for you, and why you feel they should know.
- Become familiar with your company's disability plan and insurance policy.
- Know your rights:
  - Understand that the Family and Medical Leave Act (FMLA) allows you to take up to 12 weeks off each year for medical emergencies. This is unpaid, but will at least allow for job security.
  - The Americans with Disabilities Act (ADA) requires employers to make reasonable adjustments for disabled workers.
- If need be, it may be a good idea to request time off while you adjust to treatment.
- It is also helpful to go over your benefit plan with HR if you receive health insurance from your employer.
- If interviewing, it is suggested to not disclose your disease history — it could compromise your standing.

Here is a list of helpful websites you can use to research options should your condition impact your work:

State Legislature: www.dol.gov/odep/contact/state.htm

Job Accommodation Network: askjan.org
FMLA: www.dol.gov/whd/regs/compliance/whdfs28.htm#.UNHq_2_hrFk
ADA: www.eeoc.gov/facts/fs-ada.html

RAISE YOUR VOICE: If you're insured through your job, ask your HR department if your company or its insurer has a patient advocate or employee assistance programs as part of your coverage. These advocates or advocacy programs are designed to work on your behalf to provide information or assistance related to your healthcare.

HOW TO TALK TO YOUR ELECTED OFFICIALS

Your elected officials at the federal, state, and most importantly the local level are interested in helping you. After all, YOU are their constituent, and their job is to represent their constituents. Getting in contact with your elected officials' offices can help speed up the insurance claim process, help improve existing guidelines of care, and will send a message to your government that your issue is real, and needs to be taken seriously.

There are a number of reasons to contact your elected officials, and it's important to understand that many will work to help you, but mostly on an individual level as a "constituent service." As much as you and they may want sweeping change to the laws, change takes time and sustained interest from constituents.

So now that we've tempered your expectations about government, how should you go about contacting your local officials, and what can they help you with?

First you need to find them. To do so, follow this link: openstates.org

Your state senator, house representative, or assembly person can work to be a powerful advocate in clearing up insurance coverage issues. Furthermore, sharing your story will provide your representatives a picture of their constituents that will help inform their decisions on future legislation.

How should you share your story? While a personal hand-written letter is the most impactful way of sharing your story, a phone call or personal email is a more practical way of contacting your elected official.

You can also get involved with the 50-State Network, a national organization of patients just like you who want to make their voices heard by their elected officials. Learn more and sign up at www.50statenetwork.org — this is a program developed and run by GHLF, the parent non-profit of CreakyJoints.

The ACR also brings together patients like you, rheumatologists and health professionals, and families of kids with rheumatic diseases to Washington each fall to lobby members of Congress about important legislative issues.

RAISE YOUR VOICE: Everyone involved in healthcare — including elected officials, insurance providers, drug manufacturers, hospitals, pharmacies, and physician groups — should focus on you, the patient, when setting any policies or making any decisions. Healthcare is about you — your health, your treatment options, your quality of care, and your needs. Speak up if you feel that a new law, regulation, or policy will make it harder for you to access the best care. Or speak up on behalf of legislation that you believe will make getting the best care easier! Use social media, email, phone, letters, or postcards to let your voice be heard at all times.

HOW TO TALK TO YOUR FAMILY AND FRIENDS

When you have OA, you may not always look like you're sick or in pain on the outside. People around you may not realize you hurt, or that your joints are stiff or hard to move. They may not realize you struggle to get out of bed in the mornings, that you have to take shots or pills, or that some activities are harder for you to do. They may not know that you sometimes feel blue because you have a chronic disease.

Talk to your friends and family about your OA so they understand what's going on with you. Let them know some ways that they can help you cope better with the challenges of your disease, particularly if they want to be there for you. Find out which people in your life will be good sources of support. Some family members or friends could be great exercise buddies too.

Here are a few tips for talking with your family and friends about your OA, and getting help when you need it:

- Explain a little bit about your disease, like how OA affects your joints. Don't try to unload an encyclopedia of information on others — just give them a few ways that OA affects you.
- Don't hide your pain or other symptoms from those you love. It's OK to admit that you are having pain or struggling to get tasks done. Ask for help if and when you need it. Let people know ahead of time if you need help with regular tasks like getting dressed or lifting a cooking pot.
- Keep your friends and family up to date about your OA treatments. Make a list of the drugs and dosages you take, and give it to a couple of people in your inner circle that you trust. They may need to have this information handy in a medical emergency. Also, people that care about you want to know what you are doing to treat your disease, and how you're doing. They can be the best cheerleaders for your treatment success!

You may want to talk to coworkers or other people you deal with from time to time about your OA. They may wonder about your condition when you're not feeling well or if you need help with certain tasks.

About the Editors

DR. DAVID BORENSTEIN

Doctor Borenstein began his career as a board-certified physician in internal medicine and rheumatology after graduating from The Johns Hopkins School of Medicine. He taught medicine at George Washington University, where Dr. Borenstein was appointed Associate Director for education and research for the Division of Rheumatology. He then joined the Arthritis and Rheumatism Associates practice in 1997 before starting The Center for Rheumatology and Bone Research in Washington, DC. Among his many memberships in professional medical organizations, Dr. Borenstein is a Fellow of the American College of Rheumatology, the American College of Physicians, and was President of the Rheumatism Society of the District of Columbia. His active involvement in the arthritis community has resulted in several awards, include The President's Award for Lifetime Service from the Arthritis Foundation. Dr. Borenstein's dedication to the study of Arthritis and other Rheumatological conditions is apparent and widely celebrated by the communities he has impacted.

LOUIS THARP

Louis Tharp is the Co-Founder and Executive Director of the Global Healthy Living Foundation, the 501(c)(3) non for profit organization that is the parent company to CreakyJoints. He co-founded CreakyJoints after 20 years running a successful international public relations, advertising, and marketing company. His goal was to create an organization and social media site for people living with arthritis. Louis is an osteoarthritis patient.

DR. JONATHAN KRANT

Dr. Jonathan Krant graduated from Johns Hopkins, where he initially developed an interest in musculoskeletal disorders. He went on to study the epidemiology of arthritis in the Najavo and Yakima tribes while at Dartmouth Medical school and while doing research at the University of Washington. Dr. Krant now directs the teaching service in Rheumatology at Berkshire Medical Center in Pittsfield, MA. At Berkshire, Dr. Krant supervises the care of over 6,000 patients in four states. He also runs the clinical investigation unit.

DR. TUHINA NEOGI

Doctor Neogi received her medical degree from the University of Toronto before getting a PhD from the Boston University School of Public Health. She has dedicated her career in rheumatology and epidemiology to research on knee osteoarthritis, gout, and other issues related to rheumatic disease. Dr. Neogi has served as the chair of FDA's Arthritis Advisory Committee and serves on two international boards for Rheumatic diseases, as well as committees for ACR and IASP. Her dedication to the field resulted in awards from the America College of Rheumatology. Beyond performing her own research, Dr. Neogi mentors the next generation of researchers in musculoskeletal disease, supporting their efforts to develop better treatments for all patients.

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Glossary

Black Box Warning
The strictest warning put in the labeling of prescription drugs by the U.S. Food and Drug Administration (FDA) when there is reasonable evidence of a serious hazard with the drug.

Bone spurs
Bony projections that develop along the edges of bones and in the joints.

Cartilage
The smooth, rubbery connective tissue on the end of bones that cushions the joints, helping them move smoothly and easily. In OA, cartilage breaks down over time.

Comorbidity
Refers to another disease one might have aside from the primary condition. Because OA is most likely to affect the elderly, there is a high degree of probability that someone with OA may be suffering from another disease, such as diabetes or heart disease.

Combination Therapy
Treatment that involves being on more than one medication in order to control the disease.

Osteoarthritis
A progressive joint disease typically seen in middle-aged to elderly people in which all of the tissues in the joints are affected, including the cartilage, bones, tendons, ligaments, menisci, and muscles.

Patient Reported Outcomes
Any report of the status of a patient's health that comes directly from the patient, without interpretation of the patient's response by a clinician or anyone else.

Pharmacologic
Relating to pharmacology, which is the study of medicines and drugs.

Placebo effect
A beneficial effect that cannot be attributed to the properties of the treatment itself, and must therefore be due to the patient's belief in that treatment's effectiveness.

Radiologic progression
Objective rating used by doctors to assess changes in the joint structure using X-ray exams.

Remission
State in which signs and symptoms are controlled, and based on objective examination by the doctor, the disease activity is low. Remission is the goal of treatment in RA but is not a term typically used regarding OA.

Self-Administration
Term used to characterize a medication that, although not necessarily as simple as a pill, can be administered by the patient without a healthcare provider being involved.

▲ The information in these guidelines should never replace the information and advice from your treating physician. It is meant to inform the discussion that you have with healthcare professionals, as well as others who play a role in your care and well being.

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