ANKYLOSING SPONDYLITIS
Causes, Symptoms and Treatments
Ankylosing spondylitis, or AS, is a type of inflammatory arthritis that affects the spine and the sacroiliac joints which attach the pelvis to the base of the spine. *Ankylosing* means fusing and *spondylitis* means inflammation of the spine. As well as being a form of inflammatory arthritis, AS is also an autoimmune disease meaning the body’s own immune system attacks healthy tissue. With AS inflammation, the immune attack targets the ligaments and tendons attached to bone in the joints of the spine. The bone erodes at these sites and the body tries to repair itself by forming new bone. The bones of the spine begin to fuse, or grow together, causing the spine to become stiff, inflexible and painful. Even though new bone forms, the original bone in the spine can become thin, increasing the risk of spinal fractures.

Ankylosing spondylitis is the most common form of spondyloarthritis. Spondyloarthritis describes a group of inflammatory arthritis diseases that are clinically and genetically related, but have distinct features from one another. They are categorized into axial spondyloarthritis which describes conditions affecting the spine, such as ankylosing spondylitis, and
peripheral spondylarthritis, such as psoriatic arthritis, which affects other parts of the body such as the fingers, arm and leg joints, the skin and the gastrointestinal tract, and the eyes.

While spondyloarthritis is a form of inflammatory arthritis, it differs from rheumatoid arthritis, because people with spondyloarthritis do not have rheumatoid factor antibodies in their blood. They are known as seronegative whereas those with rheumatoid arthritis are seropositive.

**Early signs of AS**

Typically, the first symptoms of ankylosing spondylitis start in late adolescence or early adulthood between the ages of 15 and 30. Inflammation usually starts at the base of the spine, often in the sacroiliac joints around the pelvis. It can spread upwards to other parts of the spine and, in the most severe cases can involve the entire spine.

As well as the spine, AS can cause pain and stiffness in peripheral joints, such as the hips and shoulders. The stiffness is due to inflammation of the tendons surrounding the joints, called enthesitis. Some common spots for enthesitis are the back of the heels (Achilles tendonitis); the bottoms of the feet (plantar fasciitis); the outside of the hips (trochanteric bursitis); and along the breast bone (costochondritis).

When the immune system lacks the normal checks and balances, it can attack parts of the body other than the joints and tendons. In AS, this attack may cause inflammation in the eye, a condition called uveitis or iritis.

**How is AS diagnosed?**

Ankylosing spondylitis is difficult to diagnose. It is a highly variable disease with a wide range of symptoms. Some individuals may only experience episodes of mild back pain, while others will have severe chronic pain accompanied by stiffness in the spine affecting their posture and daily activities. Weight loss, fatigue
and feeling feverish or experiencing night sweats are symptoms that can occur particularly in the early stages.

The most universal symptom, however, is chronic low back pain that seems to come (flare) and go for no apparent reason. The pain and stiffness are generally worse in the morning when rising from bed and improve with stretching and exercise as the day progresses. Similarly, sufferers tend to feel better after exercise and worse after rest. AS back pain generally persists for weeks and months as opposed to hours and days.

It is estimated that about two million North Americans have the disease while about 60 million people in North America experience chronic mechanical back pain. Separating the two is important since treatments for these forms of back pain are very different. Early, accurate diagnosis of AS is important because the damage done by AS is difficult if not impossible to reverse; however, early detection and treatment can prevent lasting damage to the spine. Researchers are trying to develop a reliable blood test that will assist doctors in detection.

What are the risk factors for AS?

The majority of people who have AS (90 per cent) have a gene called HLA-B27. However, not everyone with AS has this gene so even if you test negative for the gene, you could still have AS. Also, just because you have this gene does not mean you will develop AS, since most people with the gene will not develop AS. Research is
being conducted into other factors that may cause AS but currently there is nothing conclusive to report.

Why is treatment for AS so important?

Early treatment of ankylosing spondylitis is important because a combination of exercise and medication can reduce severe damage to the spine by assisting in controlling the inflammation, keeping the spine flexible and the joints mobile. Although there is no cure for AS, early diagnosis and treatment allows most people with AS to lead active and productive lives.
Once your diagnosis is confirmed, there are many treatments that can help decrease your pain and increase your movement. Physiotherapy, occupational therapy, regular exercise and relaxation techniques are very important parts of the overall treatment of AS. Although many of these can be undertaken on your own, it is important to build out a health-care team who can help oversee and direct your treatment. Learning as much as you can about AS is also an important part of making sure you do all you can to best manage your condition.

Physical activity

Physical activity protects joints by strengthening the muscles around them. Strong muscles and tissue support joints that have been weakened by arthritis. Therefore, participating in a properly designed exercise program is a great way to alleviate the discomfort caused by AS. Being physically active can reduce pain and fatigue, improve mobility and overall fitness, and alleviate depression by allowing you to actively participate in your own treatment.

Exercise

There are different types of exercises you can do to decrease pain and stiffness:

- **Flexibility** exercises, including stretches and range of motion exercises, improve flexibility and can reduce pain and stiffness and help keep your joints moving. Range of motion refers to the amount your joints can move in certain directions. Stretches elongate muscles and are best done when muscles are already warmed up. Ideally, you should complete range of motion exercises every day even on days when your joints are sore. For some ideas about stretches, visit arthritis.ca/videos and view the “Simple Stretches” video.

- **Strengthening** exercises maintain or increase muscle tone and protect your joints. These exercises include weight training done with “free” weights, your own body weight or weight machines.
• **Endurance exercises** strengthen your heart, give you energy, control your weight and help improve your overall health. These include walking, swimming and cycling including stationary bikes. It is best to avoid high-impact exercises like contact sports.

**Posture**

For those with AS, it is important to maintain good posture, i.e., keep the spine as straight as possible. For example, when using the computer or watching television. Exercises to improve posture and respiratory capacity may be appropriate for some patients.

**NOTE:** For further information, refer to The Arthritis Society’s *Physical Activity and Arthritis* guide, available at arthritis.ca/publications.

**Protecting your joints**

You should always use your joints in ways that avoid excess stress. This allows you to experience less pain, perform tasks more easily and protect your joints from damage. Techniques to protect your joints include:

• **Pacing yourself** by alternating heavy or repeated tasks with lighter tasks. Taking a break reduces stress on painful joints and conserves energy by allowing weakened muscles to rest.

• **Positioning joints wisely** promotes proper alignment and decreases excess stress. For example, squatting and kneeling may put extra stress on your hips or knees. When lifting or carrying heavy items, keep items at waist height and avoid carrying them up and down stairs.

• **Talking to your doctor** about seeing a physiotherapist who can customize your exercise program.

• **Using assistive devices** conserves energy and makes daily tasks easier. Raise seat levels to decrease stress on hip and knee joints. Use a reacher to pick up items from the ground. Use a cane to decrease stress on hip and knee joints.
Heat

Taking a warm shower and using warm packs are great ways to help reduce pain and stiffness. Always use a protective barrier, such as a towel, between the warm pack and the skin. Heat is ideal for:

- Relieving pain
- Relieving muscle spasms and tightness
- Enhancing range of motion

**NOTE:** To avoid making symptoms worse, heat should not be applied to an already inflamed joint.

Relaxation and coping skills

Developing good relaxation and coping skills can help you maintain balance in your life, giving you a greater feeling of control over your arthritis and a more positive outlook. Relaxing the muscles around a sore joint reduces pain. There are many ways to relax. Try deep breathing exercises. Listen to music or relaxation tapes. Imagine or visualize a pleasant and peaceful activity, such as lying on a beach.

Eating well to control weight

The most important link between your diet and arthritis is your weight. Being overweight puts an extra burden on your weight-bearing joints (back, hips, knees, ankles and feet). Maintaining an appropriate weight will help you more than any food supplements.

Proper nutrition is vital to controlling body weight. Here are three ways to cut back on excess calories:

- **Reduce fat intake:** A healthy diet should include a small amount of unsaturated fats and limited amounts of saturated and trans fat. Choosing the
right amount and types of fats help you achieve and maintain a healthy body weight.

- **Reduce sugar intake:** Sugar contains “empty” calories and has no nutritional value. This includes syrup as well as white, brown, cane and raw sugar. Limit or avoid adding sugar to drinks and cereals. Although artificial sweeteners contain fewer calories, it is best to get used to food being less sweet. Use dried, unsweetened fruit like raisins, cherries or dates to sweeten cereals since they provide vitamins, minerals and fibre.

- **Eat more vegetables and fruit:** Vegetables and fruit should make up the largest component of your diet. Keep in mind that the sweetest fruits have high sugar content so best not to overdo it. Try to have at least one vegetable or fruit at every meal and while snacking. Besides being an excellent source of energy, vegetables and fruit boost your fibre intake, which helps with weight management. They are also loaded with antioxidants, which help boost the immune system and may help maintain healthy cartilage.

*NOTE: For further information, refer to The Arthritis Society’s *Nutrition and Arthritis* guide, available at arthritis.ca/publications.*
Watch your eyes

About 30 per cent of people with AS will develop iritis (eye inflammation). This is a rapid onset of inflammation in the front of the eyeball. The eye may feel irritated and there may be pain in the eye or surrounding area. You could experience headaches, blurred vision or sensitivity to light. Iritis usually happens in one eye only. If you think you may have iritis, you need to see an ophthalmologist (eye specialist). Prescription eye drops (steroids) can stop the attack and prevent potential loss of vision.

Take care of your bones

People with AS may develop a fused spine. Often the fused spine can become brittle and become prone to easy breaks (fractures). Generally, people with AS should take calcium and vitamin D supplements. Activities involving forward bending or heavy lifting should be avoided. Fractures are more common in AS when the spine is fused. Fusion of the spinal joints in AS usually occurs in the late stages of the disease and may limit movement; however, sometimes, pain and stiffness get better with fusion.
Treatments for Ankylosing Spondylitis

Medications used to treat AS

The general approach to treating AS is to reduce joint inflammation to improve your function and mobility, with the hope of preventing long-term damage to the spine and joints. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) are the most commonly used medication to treat the pain and inflammation of AS. Disease-Modifying Anti-Rheumatic Drugs (DMARDs) can be used in combination with NSAIDs, although they generally don’t work as well for inflammation in the spine. DMARDs can sometimes be used when inflammation occurs in joints away from the spine. Corticosteroids (steroids) are sometimes used to try and control symptoms during flares of AS.

A newer class of medications called biologics has revolutionized the treatment of AS. These medications suppress inflammation and may help prevent damage to the joints of the spine. Biologics block a molecule called TNF (tumour necrosis factor) that appears to be important in causing inflammation in AS. It is critical to discuss the use of any arthritis medications with your doctor.


Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) are a class of medications used to treat the pain and inflammation of arthritis. They do not contain steroids, so are referred to as “non-steroidal.” These medications work to improve symptoms but have no proven long-term benefits. As such, these medications can be taken on an as-needed basis. However, some patients find it helpful to take their NSAID on a regular basis to control
Treatments for Ankylosing Spondylitis

their symptoms. There is some recent evidence that these medications may help to prevent spinal damage in AS. Your doctor will advise you about what is suitable.

Some patients will notice the effects of an NSAID within the first few hours of taking a dose. In other patients, the effects may not be evident for a few days and even up to a week or two after the medicine has been started. If it hasn’t helped within two to three weeks, it is unlikely to be of much benefit. Your doctor might ask you to try a few different NSAIDs, as some may work better for you than others; what works varies from person to person.

Indigestion, heartburn, stomach cramps and nausea are the most common side effects of NSAIDs. NSAIDs can affect the protective lining of the stomach, making you more susceptible to ulcers and bleeding. COXIBs are a newer class of NSAIDs that have been developed to reduce the risk of gastrointestinal ulcers and bleeding. Although COXIBs are safer on the stomach, they have all of the other side effects of NSAIDs and may still cause indigestion, nausea, stomach cramps and heartburn. Stomach protective medications such as misoprostol and proton pump inhibitors can minimize the impact NSAIDs have on the stomach. It is also important to maintain good blood pressure control while taking these medications.

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Corticosteroids

Cortisone is a hormone produced naturally by the body’s adrenal glands that regulates routine inflammation from minor injuries. Major traumas, such as broken bones or surgery, depend upon the adrenal gland to produce even more cortisone. But the adrenal gland cannot produce enough cortisone to meet the challenge of inflammatory arthritis. In the 1950s, physicians found that giving extra cortisone to patients with rheumatoid arthritis dramatically improved their symptoms.

From this discovery, corticosteroids, also known as steroids, were developed and are some of the oldest, most effective and fastest working medications for inflammatory arthritis. Steroids can be given by mouth, injected into the joint, injected into a muscle or administered through an intravenous drip.

In AS, steroids are usually used for short durations to quickly relieve a flare of symptoms or get a newly diagnosed disease under control. Steroids work quickly (usually within a few days) and some patients start to feel better within hours of taking the first dose. To maximize benefits and minimize side effects, doctors prescribe corticosteroids in doses as low as possible and for as short a time as possible. Dosages vary widely and are based on your disease and the goals of treatment.

Disease-modifying anti-rheumatic drugs (DMARDs)

DMARDs are a class of medications used for treating rheumatoid arthritis; there is no good evidence that they are useful for most people with AS when it involves only the spine.

Biologics

Biologics are a class of medications specially designed to treat inflammatory types of arthritis. There are a number of biologics available that work by different mechanisms. Those biologics that block a molecule called TNF (tumour necrosis factor) have been shown to be useful in controlling the AS symptoms of inflammation in the spine. This may be because TNF
has been found in the inflamed joints of the spine in this disease. The use of these anti-TNF medications has been considered a major breakthrough in the treatment of AS.

Biologics are administered in two ways: infusion and injection. Your doctor can provide you with information on the way in which different medications are administered and help make the right choice for you. An infusion means that the medication will be given to you through a needle placed in a vein in your arm. An injection means that the medication will be given by a needle under the skin of your abdomen or thigh.

Biologics are generally successful with most people but not with everyone; they can take a while to work so finding the right biologic can take some time. Some people may notice the effects of the medication quite quickly (within days to weeks), while others may take three to six months to feel the effects.

Biologics often work by suppressing your immune system, which can make it harder for you to fight off infections. Please inform your doctor if you are prone to frequent infections. It is advisable to stop your medication and call your doctor if you develop a fever, if you have or think you have an infection or if you have been prescribed antibiotics. Any woman who is pregnant or may become pregnant should not take a biologic.

Your doctor will recommend a therapy that is best suited to your type of arthritis, other medical problems and other medications.
Surgery

Those with severe, advanced AS may require surgery for badly damaged joints. Surgery usually involves replacing a joint with an artificial joint. This is most commonly used for the end stage of damage to the hip joints, called a total hip joint replacement. Benefits include less pain, better movement and restored function. Spinal surgery is complex and is only used in those with severe deformity.
The Arthritis Society has been setting lives in motion for over 65 years. Dedicated to a vision of living well while creating a future without arthritis, The Society is Canada’s principal health charity providing education, programs and support to the over 4.6 million Canadians living with arthritis. Since its founding in 1948, The Society has been the largest non-government funder of arthritis research in Canada, investing over $190 million in projects that have led to breakthroughs in the diagnosis, treatment and care of people with arthritis.

Become a Volunteer

Help others through meaningful work. By volunteering with The Arthritis Society, you can give back to your community, learn new skills, gain work experience and meet new friends. Visit arthritis.ca or call 1.800.321.1433.

Donate Online

Donations to The Arthritis Society support vital research and services that help improve the lives of people with arthritis. There are many ways to give, visit arthritis.ca/donate to make a contribution and learn more.
How We Can Help

The Arthritis Society offers free education, programs and support to Canadians living with arthritis.

• **Programs and services**: Join us for adult and child educational sessions, such as the Chronic Pain Management Workshop ([arthritisc.ca/cpmw](http://arthritisc.ca/cpmw)) and various public forums.

• **Online self-management courses**: Try e-learning programs like *You and Your Health-Care Provider: A Guide for Effective Conversations* and *Overcome Fatigue* ([arthritisc.ca/education](http://arthritisc.ca/education)).

• **Publications**: We publish several information booklets to help people living with arthritis understand more about their condition and treatment options as well as tips on how to self-manage. For a list of arthritis conditions and related resource materials, including a digital copy of this information, visit [arthritisc.ca/publications](http://arthritisc.ca/publications).

Learn more and connect with our online community at [arthritisc.ca](http://arthritisc.ca).

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