Pain Control

By Dr. Delia Roberts

Pain is a protective signal that can become overwhelming, especially if it becomes chronic. Pain can arise for different reasons and may not always indicate what is really going on in the body. We've all experienced pain and have all reached for pain medication hoping for relief, but some medications work better in certain situations than others. So, here's some information about how different medications act to block pain, their side effects and some alternative choices - because not all pain responds to all treatments, and not all people respond the same in each situation.

Discussing pain medication should begin with a distinction between opioid (also known as narcotics) and non-opioid based medications. For many years, opioids were the main treatment for moderate to severe pain because of their powerful effect of blocking pain signals. However, we now understand the dangers associated with developing dependence on opioid drugs and the recommendation is to now seek alternatives whenever possible.

Opioid Medications:

Whether natural or synthetically derived, all opioids work by activating receptor proteins located on nerve cells in the brain and spinal column as well as on other cells in the body. Helpful effects include the blocking of pain signals and lowering of respiration to control coughing, but at higher doses this second effect can become life threatening. In addition, side effects include drowsiness, especially when combined with alcohol or other drugs. Some people also experience feelings of euphoria which may contribute to the development of a dependency. Other effects include constipation, which can be severe. Thus, increased dietary fibre, osmotic laxatives or stool softeners are recommended when taking opioid medication for more than a few days. Some people also experience nausea and vomiting.

When opioid drugs enter the bloodstream they travel to the liver where they are converted to the active form. Between 23% and 28% of people either convert more or less than average to the active form, which helps to explain why some people experience different effects than others. Examples of opioid drugs include codeine, hydromorphone, tramadol, morphine, and oxycodone, fentanyl and heroin. Although codeine is one of the most prescribed opioid medications in British Columbia it is also one of the ones that has the widest range of genetic variance among individuals, which can make it difficult to adjust the effective dose.

Opioid medications are still most often the first prescribed for moderate to severe acute pain following surgery or an injury where the pain is expected to diminish within days. They are also widely used for chronic pain but because of the risk of developing an opioid use disorder, there has been a trend to move away from long term use other than in palliative and life-limiting diseases or injuries. Despite this, long term opioid use is not always effective for managing pain. There is a high risk of requiring increased doses due to developing a tolerance for the drug and subsequent physical dependence leading to opioid use disorder, with the risk of overdose and death.

When nearing the end of an opioid prescription it is wise to reduce the dose gradually to avoid any physical dependency withdrawal symptoms. These can range from mild to severe and include anxiety, muscle and bone pain, diarrhea, vomiting, poor appetite, restless sleep, chills (goose bumps), shakiness and twitching muscles.

Non-opioid Medications:

Non-opioid medications, such as acetaminophen or NSAIDs like Ibuprofen, are generally available without a prescription as they are safer than opioid medications and do not produce physical dependency. There are, however, some health risks associated with extended use (more than one week). Furthermore, research indicates that between 30-50% of people do not achieve sufficient pain relief with acetaminophen or NSAIDs. These medications display a "ceiling effect" where increasing the dose above a maximum level does not increase their ability to block pain. Thus, if the recommended dose does not provide sufficient pain relief alternatives should be considered. Pain relief is important for healing and long-term use of these medications is associated with increased risk of complications so staying in touch with your health care team until your pain is resolved is highly recommended.

Acetaminophen

After opium, acetaminophen is one of the oldest pain medications. It was first synthesized in 1878 and has been widely used to treat mild to moderate pain and fever since the 1950's. Acetaminophen is thought to act by inhibiting cyclooxygenase (COX) enzymes that are involved in signalling pain. Nonsteroidal anti-inflammatory drugs (NSAIDs) also work by blocking these enzymes but while they act at the site of the pain production, acetaminophen is thought to block the enzyme in the brain. This is important because COX enzymes are involved in many other pathways including those that improve muscle strength and endurance after physical training. Thus, acetaminophen may be a better choice than NSAIDs for preventing pain during and immediately following physical exercise if the goal is to increase fitness.

At high doses and with chronic use there is a risk of liver damage. Extended use of more than one week is not recommended

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for seniors and those with kidney problems and/or who consume alcohol as these conditions increase the risk of acetaminophen causing liver problems.

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs):

Non-steroidal anti-Inflammatory drugs including aspirin, ibuprofen and naproxen are used to treat mild to moderate musculoskeletal pain, inflammation and fever. As over-the-counter medications they are widely used, but because they act to inhibit COX enzymes throughout the body they not only suppress inflammation at the site of the injury they also have other effects. There are two types of COX enzymes (COX-1 and COX-2), most NSAIDs are non-selective and inhibit both forms of the enzymes. When they are used for more than one week, they can cause complications in the gastrointestinal (GI) tract and kidneys and increase the risk of cardiovascular events in those with other risk factors. Celecoxib is an NSAID that is selective for the COX-2 enzyme and seems to have less effect on the GI tract but may cause more cardiovascular problems.

As with acetaminophen, it is best to start with the lowest recommended dose and gradually increase the amount taken until pain relief is achieved. Exceeding the upper limit does not make the drug more effective but does raise the risk of complications.

Combining Acetaminophen and NSAIDs:

When the use of acetaminophen or NSAIDs alone does not provide sufficient pain relief it is possible to use both at once because their mechanisms of action are different. This allows for more effective pain relief without increasing the risk of side effects. In addition, both can also be used to supplement opioid medications and hence lower the risk of complications including dependency, neurological and GI side effects. However, some opioid based medications already include acetaminophen so as with all medications it is wise to check with a pharmacist before combining drugs.

Topical NSAIDs:

NSAIDs can be provided in cream form as well as orally. Topical application allows the drug to be directed to a specific location and in some people may be an effective alternative for pain relief from sprains, strains and overuse injuries. It can also be helpful for some chronic conditions such as osteoarthritis in shallower joints such as the hand where the medication can penetrate.

Skeletal Muscle Relaxants:

Skeletal muscle relaxants include medications called antispasmodics that are used to treat muscle spasms. They are only available in Canada by prescription, some common examples are cyclobenzaprine and methocarbamol. These medications have several dangerous side effects including being very sedating and a dependency on these drugs can develop. As a result, they are only recommended for moderate to severe muscle pain lasting one to two weeks and are most often used for acute episodes of back or neck pain. Because they cause drowsiness and dizziness, they can increase the risk of falls and operation of a motor vehicle or heavy machinery is not recommended when using these medications. Alcohol and certain other medications can worsen these effects, so it is important to follow the recommended precautions when using them.

Nerve Pain Inhibitors:

Nerve pain medications are more effective than some other drugs when the pain specifically arises due to nerve irritation or damage. This might occur as part of a musculoskeletal injury or due to illnesses like herpes, shingles or diabetic neuropathy. Some of these medications were developed for other purposes, for example as anti-epileptic medications (gabapentin) or as anti-depressants (amitriptyline, nortriptyline, or duloxetine), but they were found to be more effective at reducing nerve pain and are now prescribed for that purpose.

These medications can interact with other drugs to produce life threatening side effects, and their use should be closely monitored. At higher doses gabapentin can severely lower breathing and can be very sedating.

Other Medications:

Suzetrigine is a new oral medication that was approved by the FDA for use in the United States for acute moderate to severe pain in adults in January 2025. Although not currently licensed in Canada the release of this drug is exciting because the mechanism of action is based on an entirely new approach. Rather than acting on the central nervous system as opiates do, Suzetrigine works by specifically blocking signal transmission by peripheral pain nerves in a manner not unlike novocaine, the medication used to numb your teeth or skin before a procedure.

Clinical trials have shown a moderate level of effectiveness and there is no risk of developing a dependency. However, the long-term effects are unknown, and some people experience itching, muscle spasms, rash and an increased blood level of an enzyme which is released from muscle (including the heart) with muscle damage. The drug can also decrease the effectiveness of oral contraceptives and may cause temporary infertility. Suzetrigine is metabolized in the liver by the enzyme CYP3A and thus should not be taken together with drugs that inhibit this enzyme including some anti-fungal, antibiotics and anti-viral medications as well as certain drugs used to decrease heart arrhythmias, as well as grapefruit juice.

Injected medications:

Another approach to pain management is to inject a medication directly into a painful site or joint. In many cases injections can provide relief lasting several months in duration. There are risks associated with these procedures such as infection, or damage to adjacent tissues that can be serious. However, if

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performed appropriately the risks are low. For difficult locations, the physician may use an ultrasound imaging machine to guide the injection into the tissue.

There are many different types of injections. The material injected can range from a sugar solution (prolotherapy) to anti-inflammatory corticosteroids, to healing promoting platelet rich plasma (PRP) to pain blocking medications. Sites such as trigger points in muscle, bursae, and many joint injections can be performed in a physician or allied health professional's office, while other sites in and around the spine and more major nerve blocks are more complicated and should be done in an outpatient clinic set up for minor surgical procedures. If you suffer from chronic pain, it may be worth discussing these options with your healthcare provider.

Other Modalities:

Although the focus of this article is on medications for pain management it is worth mentioning that there are other means of managing pain that are not chemically based. Some treatments may be more helpful for certain pain causing conditions than others, and different people respond differently, so it may take a bit of exploration to find a method and practitioner that works for you. Some of these alternative treatments are well known such as massage, topical stimulants including heat and cold, physiotherapy with prescribed exercises, intramuscular stimulation (IMS) and ultrasound. Chiropractic adjustments and acupuncture, one of the oldest known methods of treating pain, are very effective for some people. Newer methods include light therapy, dry needling and shock wave therapy. In addition, professionals such as cognitive based therapy counselors, occupational therapists, podiatrists and osteopaths may provide different approaches to pain management that can be very helpful.

Unfortunately, many of these modalities are not publicly funded in BC and may not be available outside of large urban centres. However, there may be resources available to you through different organizations such as ICBC, WorkSafeBC and work disability services or private insurance. Your local healthcare team can help with navigating through the various ways to access appropriate care, so staying in touch with your primary healthcare provider is a good strategy to develop and execute a pain management plan that works for you.

Managing pain is an important part of healing, but some pain is inevitable, and it isn't always harmful. This makes acceptance an important part of every pain control plan. Successful pain management also includes focusing on improving function and quality of life rather than the absence of pain. Making use of several different resources and modalities for restoration of movement and lifestyle following an injury or illness is often more effective than a more restricted approach. Whether its medication or other forms of pain relief, there is no one size fits all, and ongoing evaluation of the effectiveness of pain control is important.

Resources:

- Government of BC Opioid Guidelines: Information Sheet
- Health Canada: Opioid Pain Medications FAQs
- Self-Management BC: Provides free chronic pain guidance and self-management program options to BC residents. It is part of the University of Victoria's Institute on Aging & Lifelong Health.
- Pain BC: Provides information, resources and support (including a helpline) for patients and caregivers for those living with chronic pain.
- HealthLink BC - Pain Control Information Page
- First Nations Health Authority – Health through Wellness: Supports First Nations individuals, families and communities with health and wellness strategies including pain management resources and support.