

## What is pain?

Pain is defined as an “unpleasant sensory and emotional experience associated with actual or potential tissue damage.” (International Association for the Study of Pain)

Chronic pain is “pain that continues after an injury has healed.”

Pain is the body's alarm system, warning us that our ‘tissues are under threat’, usually by injury or illness (for example, an acute back ‘strain’ or appendicitis).

The human body and especially the brain and spinal cord have evolved over millions of years to amplify pain ‘alarm’ signals (a bit like a ‘hi-fi’ system) so we don’t ignore pain when we are injured. This is usually a good thing which helps us to survive. People born with the rare condition of pain insensitivity die at a young age because they don’t realize they’ve been injured until it’s too late.

Unfortunately, in some people who develop chronic pain, this alarm system ‘keeps on ringing’ even though the injury (such as a back strain) has well and truly healed. We now have an alarm system that hasn’t switched itself off!

This occurs because of changes in the nervous system (called ‘pain sensitization’) and the body’s responses to stress, injury and illness, which ‘amplifies’ and produces a ‘memory’ of the original pain signals in the brain and spinal cord, even though the injury that caused the pain in the first place has healed.

Nerve cells become super-sensitive when a person has chronic pain—this interferes with activity, sleep and how you feel. *In this state, the nerve cells that detect tissue damage keep sending a lot more messages than usual to the brain.* This explains why often there often isn’t a clear link between pain and tissue damage.

This doesn’t mean there’s anything wrong with your brain or spinal cord if you have chronic pain (there’s no problem with the ‘hardware’); it’s more like a ‘glitch’ in the ‘software programme’ that processes pain signals in the body.

**Chronic pain can also develop as part of the body’s response to stress:** Exposure to stress such as injuries (e.g. whiplash, broken bones), illness (e.g. glandular fever virus, cancer, arthritis) or life-event’ (e.g. depression, anxiety, work or relationships problems) causes changes in the body’s nervous, immune and hormone systems, producing a ‘sickness response’ (exactly like a dose of the ‘flu’), which sometimes doesn’t ‘switch-off’ as expected, but continues over the long-term (especially if stress continues).

This **sickness response** to stress not only produces chronic pain in various parts of the body (like the aching muscles you feel when you’re sick in bed with flu), but many of the other symptoms that go hand-in-hand with pain, like chronic fatigue, poor sleep, lack of energy and motivation, difficulty thinking, poor memory, depression, anxiety, sensitivity to various sensations (cold or bright lights), poor appetite and libido. In some people this is called *fibromyalgia syndrome*.

**Pain is a 'whole-person' experience:** Pain affects a person's general health, ability to work, income, travel, relationships, all aspects of life. That's why we need the help of a team of health care professionals such as psychologists or physiotherapists to treat the 'big picture' of someone's pain experience.

Pain is also an unpleasant **emotional** experience: Fifty percent of patients with chronic pain suffer with anxiety or depression.

Pain is associated with increased levels of anxiety and fear. Pain and fear developed together during evolution as a means of ensuring survival when primitive man was threatened by injury (such as an attack by a tiger). Brain scans also show the parts of the brain controlling fear, depression and pain are closely linked together.

Pain, depression and anxiety interact in a 'vicious cycle'. When you experience pain, you may get anxious or depressed, which in turn makes it harder to cope with the pain. This is quite understandable: there are few things as stressful as living with constant pain. That's why we pay a great deal of attention to people's emotions and stress levels when treating chronic pain.

Physiotherapy and exercise are a vital part of pain management. Back pain is a classic example. People who stop exercising their back because of pain become 'de-conditioned', weakening the 'scaffold' of supporting muscles and ligaments, which in turn makes the back pain worse.

Exercise boosts your immune system and your body's natural pain killers called 'endorphins': This not only helps to ease pain but also makes a person feel better, just like the 'high' runners describe after jogging. Exercise is also very effective for treating stress, depression, chronic fatigue (fibromyalgia) and a whole host of pain-related problems.

However people with chronic pain can easily 'overdo' their exercises and become exhausted, disheartened, avoid further exercise and get even more unfit; a 'vicious cycle'. **Pacing** of physical activities, by gradually building-up stamina and endurance a little each day, is a key pain management strategy that physical therapists can teach.

## Procedures and pills

Although procedures and pain medications play a valuable role in pain management, more often than not, a 'magic' injection, operation or drug that 'cures' chronic pain is not available.

**Goals of procedures and pills:** Procedures and pain medications provide a 'window' of improved pain control, during which you can work on the long-term goals of pain management such as improving self-management, physical function, fitness, mood, coping and reducing stress and medication-use.

For most pain-relieving procedures or medications, about **1 in 5 patients** report satisfactory pain relief.

Most spinal injections (e.g. epidurals, facet joint injections, nerve root sleeve injections) and pain medications (e.g. morphine, paracetamol, antidepressants, gabapentin, anti-inflammatory drugs) reduce pain in about *1 in 5 patients*, and they all have potential side effects.

Morphine-like pain killers (called 'opioids') include; morphine (MS Contin™, Ordine™), oxycodone (Oxycontin CR™, Oxynorm™, Endone™), methadone, hydromorphone (Jurnista™, Dilaudid™) codeine (Panadeine forte™, Nurofen-plus™), fentanyl (Durogesic™ patches), buprenorphine (Norspan patches™, Temgesic™) and tapentadol (Palexia™).

Tramadol is a special kind of pain medication that has mixed opioid and antidepressant pain relieving properties. It is especially effective for nerve pain (1 in 4 patients) and is less constipating, less addictive and less likely to slow down breathing. It may interact with some antidepressants and can be associated with blackouts or seizures in rare cases.

### Effectiveness of opioid pain (morphine-based) medications

Only about *1 in 5 patients* obtain effective pain relief with opioid (morphine-based) pain medications, without major side effects. A 'successful' response includes not only a decrease in pain *severity*, but more importantly, an improvement in physical *function* (walking, exercise, work etc). As you can see, not all patients respond to opioid pain medications, despite them being very potent, and opioids can actually **increase pain** in some cases!

The human body is not designed to have high levels of (opioid) pain medications floating around in the blood stream. When the body detects high levels of opioids in the bloodstream, it produces chemicals which actually *increase the pain signal*, to counteract these medications. This increases pain sensitivity and is called **opioid induced hyperalgesia**.

Your body may also become used-to (tolerant) to pain medications, meaning you continually need a larger dose to get the same pain relief. This leads to a vicious cycle—the higher the dose, the more side effects develop and worse the pain becomes.

The way to deal with these problems is a gentle *reduction* in your pain medication to reset the chemical balance of your brain and reduce your pain.

If an opioid pain medication *is* going to be effective it will do so at low-to-moderate doses—**going ever-higher in dose will *not* reduce pain further**. Some people's pain simply won't respond to opioids, whatever the dose!

In these cases, the opioid medication should either be changed, or tapered and ceased.

Patients should be reviewed every 3 months to see if the dose of pain medication can be reduced or ceased.

Pain relieving medication such as opioids, pregabalin, gabapentin, anti-inflammatories (e.g. ibuprofen, diclofenac, celecoxib) and antidepressants (e.g. amitriptyline, duloxetine) *should be reduced at regular intervals* (under medical supervision only) in an attempt to see if the underlying pain has improved. Very often after a few months of treatment, the pain actually *improves* and patients need less of their pain medication, or it can even be stopped.

Opioid pain medications may cause the following side effects (some of which you may not even notice):

- **Restrictions in breathing:** Accidental or deliberate overdose of opioid pain relievers can slow down or even stop a person's breathing leading to death, especially in people with excessive snoring or who are overweight (obstructive sleep apnoea), or when mixed with other pain medications, sleeping tablets such as diazepam (Valium™), alcohol and drugs.
- **Addiction** (getting 'hooked') in up to 15% of pain patients: these patients need a sympathetic approach including careful management of their medications and other life-style factors.
- **Reduced hormone levels, like testosterone and estrogen:** This can cause low energy, changes in mood (depression) and reduced sex drive.
- **Brittle bones (osteoporosis).**
- **Impaired brain function and changes in the *structure* of your brain:** increasing the risk of psychological problems such as anxiety, depression, poor memory and insomnia.
- **Reduced immune system function:** *possibly* resulting in a higher risk of infections and cancer.

**Antidepressant pain-relievers:** Amitriptyline (Endep™), Nortriptyline, Duloxetine (Cymbalta™) and possibly Venlafaxine (Efexor™) may be effective in treating nerve pain (e.g. shingles, diabetic pain, spinal nerve compression), fibromyalgia and some chronic headaches in around *1 in 3 patients*.

Pregabalin (Lyrica™) or gabapentin are anti-epilepsy drugs which may be effective in treating nerve pain and fibromyalgia in about *1 in 5 patients*.

## Disappointments and frustrations

What many people who live with chronic pain realize is that despite our best attempts with injections, operations or medications, the complex and whole-person experience of chronic pain may not respond to using medical techniques in isolation.

The chronic pain experience can be very frustrating—lots of doctors, therapists, scans and procedures, conflicting information, disappointments and failures, often leading to a loss of faith and hope and even anger. "Why isn't this pain getting better"?

## Managing the whole-person in pain

To manage chronic pain successfully, the 'whole-person' needs to be engaged in a wide range of therapies, provided by a team of experts, including the person-in-pain.

There is good scientific evidence that **pain management programmes** improve physical functioning, energy levels, fitness, coping skills, sleep, mood, quality of life (work, social, family), and reduce medication and healthcare use and to some extent pain levels, in many people with chronic pain.

Effective **pain management programmes** should include;

- Education and information (which promotes self-management and the ability to make informed choices about pain management strategies; promotes an understanding of pain and its mechanisms, thereby taking away some of the 'mystery', fear and threat associated with pain).
- Psychological techniques (stress management, relaxation, mindfulness, hypnosis).
- Physical therapy techniques (activity pacing, fitness, spinal core stability).
- 'Brain power' training techniques (mirror box, virtual reality, placebo).
- Lifestyle management (sleep, medication use, workplace and home, relationships).
- Medical treatments (procedures and medications).
- Strategies to deal with pain 'flare-ups' (the bad days).

Modern pain management focuses on helping **you** take control and using your whole-body's resources to deal with your pain. The treatment approach is to manage your pain so that you can improve your functioning in areas of your life that are important to you.

Although this may not sound easy, with help and support it is possible.

Everyone's pain experience is unique.

That is why **you** are the most important person in successfully managing **your** pain.