

# Managing chronic pain in the primary care setting

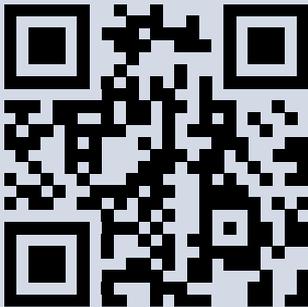
## Module 1: Understanding the causes and pathophysiology of chronic pain



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*"It is important to realise that pain is not only a symptom, but can be a condition in its own right"*

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This report is based on a consensus statement developed by a group of South African experts representing multiple disciplines including pain, anaesthesiology, neurology, psychiatry and primary care practice.

### Introduction

**Pain is the most common symptom with which patients present to doctors, particularly in the primary care setting. In managing pain, it is essential to distinguish between acute and chronic pain as the pathophysiology and treatment are different. "It is important to realise that pain is not only a symptom, but can be a condition in its own right."**

Depending on the definition of chronic pain used, it is estimated that 25-30% of the world's adult population will suffer from chronic pain during their lifetime. For most patients with chronic pain, the general practitioner remains the most appropriate healthcare professional to manage the condition.

### KEY MESSAGES

- Clinical management of chronic pain is based on the understanding of its development
- Chronic pain may develop from known causes such as inflammation (osteoarthritis) or nervous system damage (neuropathic pain), or can be functional with no known cause
- Frequently, chronic pain is a mixture of known and unknown causes
- Chronic pain's pathophysiology is key to effective management
- Hypersensitisation and reduction of normal endorphin function due to medication are the most important pathophysiological pathways
- Chronic pain is isolating and emotionally exhausting; it requires interdisciplinary approaches to support the patient and reduce the impact of pain on daily life.

Traditionally chronic pain was viewed as pain that was present for three months or longer. Today, a more comprehensive definition of chronic pain is 'pain that persists beyond what is expected for that

particular source of pain'. So chronic pain can develop if there is an injury, operation or illness and the resultant pain doesn't resolve in the expected time.

## Presentation of chronic pain in primary care

The most common presentation is that of a patient consulting a general practitioner and complaining of pain, often repeatedly. These patients make frequent visits with the same complaint; they feel that none of the medication they've used is working and that they require more, and stronger, medication. Those who present

with pain have probably seen many doctors and tried many types of treatment, but no matter what the practitioner prescribes, the pain doesn't seem to settle.

Chronic pain is isolating, emotionally exhausting and adversely impacts social relationships, daily functioning, sleep and feelings of self-worth (Table 1).<sup>1</sup>

**Table 1. Associated and contributory behavioural and psychological factors in chronic pain<sup>2-4</sup>**

• Depression, anger, frustration
• Anxiety, fear
• Catastrophisation
• Sleep disturbance
• Dependence on medication and increased use of healthcare services
• Over-dependence on family and other carers
• Disability, absenteeism from work and poor performance at work
• Adverse impact on social relationships, social isolation
• Poor self-image, low self-esteem, role confusion
• Financial difficulties
• Suicide risk
• Spiritual emptiness, lack of meaning, religious needs.

## The pathophysiology of pain

### Pathophysiology of acute pain

Acute pain is really a very simple circuit (Figure 1). When a person has been injured, has had hot water fall on them or has had some kind of an infection, receptors pick up this particular stimulus and transmit a signal along a nerve to the spinal cord. The signal is then transmitted

to the thalamus, or the 'sorting station', which diverts the signal to the frontal lobe; the person then becomes aware that they have pain. The signal diverts to the hippocampus, where pain is stored as a memory, and also to the somatosensory cortex that perceives the pain.

### Pathophysiology of chronic pain

The pathophysiology of chronic pain is complex and distinct depending on its initial origin – nociceptive, neuropathic, visceral and frequently mixed pain. In

a considerable proportion of cases of chronic pain, the aetiology of the pain is uncertain (Table 2).

**Table 2. Common types of chronic pain with uncertain aetiology<sup>5</sup>**

• Low back pain
• Chronic headache
• Musculoskeletal/joint pain
• Chronic pelvic pain
• Temporomandibular disorder
• Abdominal pain/irritable bowel syndrome
• Fibromyalgia.

*Chronic pain is isolating, emotionally exhausting and adversely impacts social relationships, daily functioning, sleep and self-worth*

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*Longer-term use of opiates leads to a negative feedback loop where endorphin production is reduced, with a resulting lower pain threshold*

Chronic pain has a far more complex circuitry. It involves areas of the limbic system, the prefrontal cortex, the dorsolateral prefrontal cortex and the hippocampus. These are areas of emotion, memory and awareness, and are shaped by the patient's personality, genetic make-up and past experiences.

The two basic pathophysiological pathways in the development of chronic pain are:

1. Hypersensitisation of the nervous system
2. Reaction to painkiller medication.

**Hypersensitisation of the nervous system**

The entire nervous system is overactive following a prolonged period of pain. There is a 'kindling effect' where excitable nerve tissue excites adjacent nerve tissue. Typically, a patient with back pain says, "I now have pain all over my body!" This is referred to as secondary generalisation or sensitisation, caused by an oversensitised hyperactive nervous system extending through the brain, spinal cord and peripheral nerves (Figure 2).

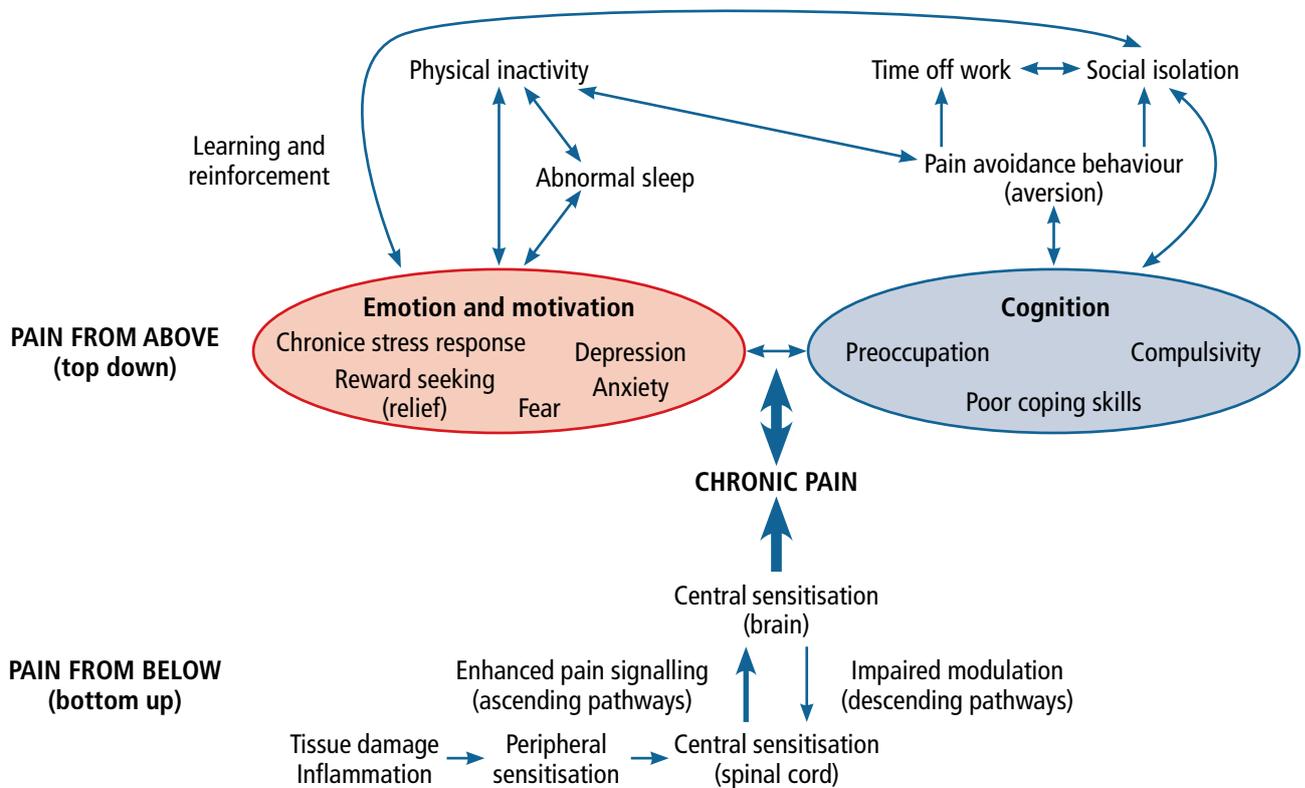


Figure 2. Multiple mechanisms of chronic pain

**Physiological reaction to painkiller medication**

This pathophysiological pathway arises from the long-term use of opioids or opiate-containing painkillers. These painkillers suppress endogenous endorphins and downregulate the body's normal reactions to pain.

Opiates are very effective for short-term pain management, usually prescribed for no longer than a week. If medication is needed beyond a week, care needs to be taken. "We often see patients who have

been on opiates for years – 20 or 25 years - taking the same medication or stronger versions of it." Longer-term use of opiates leads to a negative feedback loop where endorphin production is reduced, with a resulting lower pain threshold. "So, in a strange kind of way, the more opiate painkillers you take, the more pain you are eventually going to have; because your threshold has become lower, even the smallest stimulus can cause pain," Dr Salduker noted. These conditions are referred to as allodynia or hyperalgesia.

This summary report was compiled with Dr Salduker for *deNovo Medica* by Julia Aalbers BSc (Hons) Pharmacology

## Consequences of chronic pain

Chronic pain is associated with behavioural and psychological comorbidities; particularly anxiety, depression and insomnia. The association of these

pathologies is beyond cause and effect; they interact adversely, accumulating and affecting one another (Figure 3).<sup>7</sup>

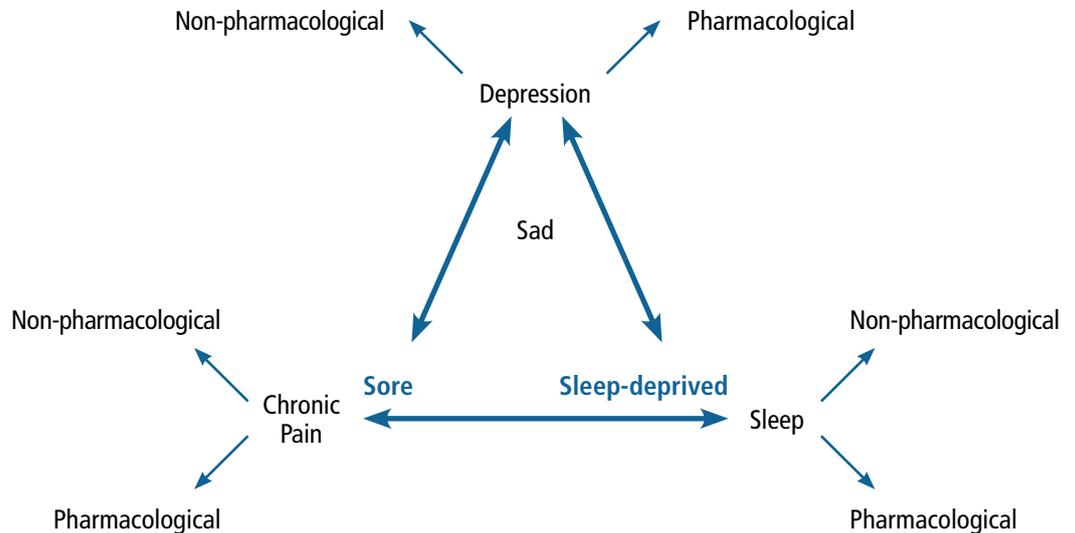


Figure 3. Bidirectional relationships between pain, mood and sleep<sup>7</sup>

## Overview

Key to a better clinical outcome in pain management is the understanding of different types of pain, and that chronic pain differs fundamentally from acute pain. The pathophysiology of chronic pain is complex and therefore traditional painkillers will not solve the problem – the approach must be multimodal and

interdisciplinary. Chronic pain management needs to incorporate the expertise of physical therapists, psychotherapists, dietitians and other parallel health workers to help patients adjust to living with their pain.

The second module addresses the principles of the treatment of chronic pain.

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### Click on reference to access the scientific article

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