

Interprofessional learning through simulation

Providing a consistent message: *management of chronic pain*



**THIS CLINICAL TRAINING INITIATIVE IS SUPPORTED BY FUNDING FROM
THE AUSTRALIAN GOVERNMENT UNDER THE INCREASED CLINICAL
TRAINING CAPACITY (ICTC) PROGRAM**

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Acknowledgements

This resource was developed by the Interprofessional Ambulatory Care Program (IpAC) at Edith Cowan University (ECU) in collaboration with the ECU Health Simulation Centre with funding provided by the Australian Government under the Increased Clinical Training Capacity (ICTC) Program.

Foreword

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Australia's health workforce is facing unprecedented challenges. Supply won't meet demand, and the safety and quality of care remain key issues. The national health workforce agency, Health Workforce Australia (HWA), an initiative of the Council of Australian Governments (COAG), has been established to address the challenges of providing a workforce that meets the needs of our community – now and in the future.

Accordingly, ECU has set a priority on meeting these challenges, with a focus on the national health workforce reform agenda set out in the 2008 National Partnership Agreement (NPA) on Hospital and Health Workforce Reform.

In June 2010, ECU was awarded \$4.6M from the Australian Government through a nationally competitive process under the ICTC Program, an initiative which aims to develop interprofessional learning and practice capabilities in the Australian health workforce.

The IpAC Program aims to complement traditional clinical placement activities with high quality interprofessional learning competency development and assessment, so that at the earliest point students gain exposure to best work practices within multidisciplinary teams that have the patient's individual needs as the focus.

Additionally, the IpAC Program has developed interprofessional learning resources and interprofessional health simulation challenges in collaboration with the ECU Health

Simulation Centre. The ECU Health Simulation Centre is recognised internationally as a specialist centre in providing human factors based sequential simulation programs using professional actors. Most simulated learning interactions revolve around a single moment, such as a patient's admission to the emergency department. What we provide at the ECU Health Simulation Centre is a sequential simulated learning event that follows the patient and carer's journey through the healthcare system, for example, from the accident site following a motor vehicle accident, to the emergency department, to a hospital ward, to their home and into the community for GP and allied health follow-up.

Human factors in health care are the non-technical factors that impact on patient care, including communication, teamwork and leadership. Awareness of and attention to the negative aspects of clinical human factors improves patient care.

ECU's involvement in national health workforce reform is all about playing a role that enables the health workforce to better respond to the evolving care needs of the Australian community in accordance with the NPA's agenda. The IpAC Program is an example of how we can work across sectors, nationally and internationally, to determine better ways of addressing the pressing issue of how best to prepare students for the workplace and thus assuring that health systems have safe, high quality health services.

Interprofessional Ambulatory Care Program

ECU's IpAC Program was established with support from the Australian Federal Government through funding from the ICTC Program. The IpAC Program aims to deliver a world-class interprofessional learning environment and community clinic that develops collaborative practice among health professionals and optimises chronic disease self-management for clients.

This is achieved through the provision of clinical placements within the multidisciplinary team at the IpAC Unit, a community clinic that develops communication and collaboration among health professionals and optimises chronic disease self-management for clients.

Additionally, a range of clinical placements are offered at existing health facilities, where trained IpAC Program clinical supervisors provide clinical support and ensure the integration of interprofessional learning into each clinical placement.

The IpAC Unit, in collaboration with the ECU Health Simulation Centre, has developed a range of interprofessional learning through simulation resources. These learning resources are packages consisting of an audiovisual resource and a facilitator's manual, and aim to facilitate interprofessional learning and to support the participants in the development of interprofessional skills.

The interprofessional learning through simulation resources developed by the IpAC Program aim to provide health students and health professionals with the opportunity to learn with, from and about one another by engaging them in interactive live simulation events. These simulations encourage students and professionals to challenge themselves and each other in a safe learning environment.

ECU Health Simulation Centre

ECU houses the only fully functioning Health Simulation Centre of its kind in Western Australia, specifically designed and equipped to address the interprofessional learning needs of the health workforce and implementation of both state and national safety and quality frameworks.

The ECU Health Simulation Centre offers health workforce training and development specialising in clinical skills, human factors, and patient safety training for multidisciplinary health teams. Using a variety of educational techniques, including a broad range of simulation mannequins, professional actors and task trainers, ECU specialises in immersive simulation and observational learning. Supporting the ECU Health Simulation Centre are nursing, medical, paramedic and psychology academic and technical staff whose aim is to cultivate the development of competent and confident health professionals centred on enhancing patient safety.

Interprofessional learning

Interprofessional education occurs when two or more professions learn with, from and about each other in order to improve collaboration and quality of care (Centre for the Advancement of Interprofessional Education, 2002).

Interprofessional learning is the learning arising from interaction between students or members of two or more professions. This may be a product of interprofessional education or happen spontaneously in the workplace or in education settings (Freeth, Hammick, Reeves, Barr, & Koppel, 2005). It has been found that interprofessional education can improve collaborative practice, enhance delivery of services and have a positive impact on patient care (Canadian Interprofessional Health Collaborative, 2008).

The World Health Organization (WHO) has recognised the importance of interprofessional education and collaborative practice in developing a health workforce that is able to meet the complex health challenges facing the world and assist in the achievement of the health-related Millennium Development Goals (World Health Organization, 2010). In developing its framework for action, the WHO have recognised that models of interprofessional collaboration are most effective when they consider the regional issues and priority areas (including areas of unmet need) in the local population (World Health Organization, 2010). In doing so, interprofessional education and collaborative practice can best maximise local health resources, reduce service duplication, advance coordinated and integrated patient care, ensure patient safety and increase health professional's job satisfaction (World Health Organization, 2010).

The end goal of interprofessional education is to create a health workforce with improved levels of teamwork, collaboration, knowledge-sharing and problem-solving, eventually leading to better patient and client outcomes in health settings (Braithwaite et al., 2007).

Interprofessional learning through simulation

Simulation in education refers to the re-creation of an event that is as closely linked to reality as possible. Gaba (2004) defined simulation as a technique, rather than a technology, to replace or amplify real life experiences with guided experiences often immersive in nature to evoke or replicate aspects of the real world, in a fully interactive pattern. Simulation provides a safe learning environment for students to practice, where they are free to make mistakes, correct them and improve the processes of care (Kenaszchuk, MacMillan, van Soeren, & Reeves, 2011). Simulation is the bridge between classroom learning and the real life clinical experience, allowing students to put theory into practice.

Interprofessional learning through simulation combines the principles of interprofessional learning and the use of simulation as an educational methodology. Interprofessional learning through simulation provides students with the opportunity to practice working with other health professionals and allows participants to explore collaborative ways of improving communication aspects of clinical care (Kenaszchuk, et al., 2011).

Many of the interdisciplinary team core competencies, such as problem solving, respect, communication, shared knowledge and skills, patient-centred practice, and the ability to work collaboratively (Canadian Interprofessional Health Collaborative, 2010) can all be developed by interprofessional learning through simulation.

Teamwork and interprofessional practice and learning are being recognised as central to improving client care and outcomes and enhancing client safety (Sargent, 2008). Promoting patient safety through team efforts is one of the five core competencies identified by the Institute of Medicine (2003).

In today's healthcare setting, no one health professional can meet all of the client's needs and therefore a healthcare team approach is required. Interprofessional learning through simulation provides learning opportunities to prepare future healthcare professionals for the collaborative models of healthcare being developed internationally (Baker et al., 2008).

How to use this resource package

This interprofessional learning through simulation resource package has been designed to support the facilitation of interprofessional learning among students and practitioners with an interest in developing their skills and knowledge of interprofessional practice.

The package consists of two components: an audiovisual resource and a supporting manual. In order to optimise the learning opportunities from this package it is recommended that participants are firstly introduced to the concepts of interprofessional learning and human factors in health care.

The audiovisual resource depicts the client having consultations with a range of health care professionals who all reinforce the key messages of self-management, activity pacing and goal setting to minimise the impact of chronic pain on daily living.

The package has been created in a format to enable flexibility in its application depending on the educational setting. We recommend the following format:

1. Facilitator guided discussion around the concepts of interprofessional learning and human factors in health care.
2. View the first segment of the audiovisual resource.
3. Facilitator guided discussion around the scenario specific learning competency areas (samples given within manual).
4. View the other segments of the audiovisual resource.
5. Facilitator guided discussion, identifying and discussing the changes witnessed and how this impacted on the alternative outcome. In particular discussion relating these changes to personal (future) practice is essential in improving interprofessional practice.

Opportunities for further reading and exploration of the scenario are provided in the *Further Information* and *References* sections of this resource manual.

Scenario brief

Luke Hanning is a 34 year old man who sustained a back injury from surfing 8 months ago. An MRI diagnosed a prolapsed disc. Due to his back pain Luke is no longer able to work as a bricklayer and his wife is now working full time with his two children being placed in day care. They are struggling financially and Luke is suffering from depression. His general practitioner (GP) is keen for Luke to attend an interdisciplinary specialist pain clinic but Luke believes increased medication is the only way to deal with his pain.

List of characters

- Client
- Client's wife
- General Practitioner
- Occupational Therapist
- Physiotherapist
- Psychologist

Key learning competencies

The key learning competencies for this scenario are based on the IpAC Program learning objectives as well as the Canadian Interprofessional Health Collaborative (CIHC) Competency Framework (Canadian Interprofessional Health Collaborative, 2010). The specific competency areas for this scenario are:

- Client centred care
- Interprofessional and client centred communication
- Perceptions and attitudes influencing practice

Client centred care

The interaction between team members and the client demonstrates:

- The sharing of information with clients in a respectful manner.
- Communicating with the client in a way that is transparent, understandable, free of jargon and relates to the client's daily life.
- Listening to the needs of all parties to ensure the most appropriate care is provided.
- The interaction is supportive to the client and his or her needs.
- Facilitation of client decision making.

Interprofessional and client centred communication

The health care team consists of health professionals, the client and the family. The interaction within the health care team demonstrates:

- Communication is authentic, consistent and demonstrates trust
- Team members demonstrate active listening skills
- Communication ensures a common understanding of decisions made
- Trusting relationships with clients /families and other team members
- Other disciplines' roles are promoted and supported to client/family

Perceptions and attitudes influencing practice

Reflective practice is crucial in continuous development and re-assessment of skills when working in health care. A reflective practitioner:

- Reflects on feedback and integrates changes into practice.
- Reflects on how own perceptions, attitudes and beliefs impact on practice.
- Identifies knowledge deficits and seeks clarification.

Key discussion points

Following segment 1: GP consult 1

- How would you describe the dynamics between the client and the GP as the scenario develops?
 - What could be contributing to this?
 - What changes become evident?
- How could a better outcome have been achieved following the initial GP consultation? Who could make changes in their communication? Why would the client and the GP each behave the way they did, and say the things they said?
- What are the key messages the GP is trying to convey to the client? Which ones are effective and why?
- Discuss what biopsychosocial factors might be impacting on the client's pain experience? (identify as physical, psychological/emotional, environmental, social)
 - How do you think these could be addressed?
- Why might the client be reluctant to attend the pain clinic? How could these concerns/fears be addressed? Is this done effectively in this scenario?

- How would you describe the client's communication style?
 - Why might this be?
 - What impact would this have on health care professionals he sees?
 - How can health care professionals address his concerns?
- What pre-existing perceptions or stereotypes might the client have about his pain at the beginning of the scenario? (e.g. his concern about other people's opinions: it is all in his head, he's putting it on, no-one believes him; and that medication is the only solution).

Following segments with all health professionals

- How do the health professionals try to address the client's perceptions of pain and his concerns of what people around him think of him?
 - the general practitioner?
 - the occupational therapist?
 - the physiotherapist?
 - the psychologist?
- Do you think the health professionals demonstrated empathy with the client? If so, how was this communicated? Was these anything they could they have done different?
- What messages are communicated to the client consistently during the course of the scenario? Are these effective? Why do you think that?
- How do the various health professionals demonstrate consideration of the client's personal circumstances and goals in assisting him with his pain management?
 - the general practitioner?
 - the occupational therapist?
 - the physiotherapist?
 - the psychologist?
- Identify an example of an attempt at client education by one of the health professionals in the scenario. How was this undertaken? What was effective? Could this have been done differently? If so, how?
- How do the health professionals promote the other health professions to the client? What impact do you think this has on the client? Do you know of examples when this has not happened? What was the impact this had on colleagues, teamwork, the health care system and the client or patient?
- How would you describe the client's pain journey within the scenario? What changes occur in the client from the first segment through to the last? How do these changes

manifest in the client's appearance, behaviour, communication (both non-verbal and spoken)? Why do you think these changes take place?

Encourage participants to reflect on their own practice:

- How can you ensure the interprofessional learning objectives are addressed in your interprofessional and client-centred practice?

Literature review

Chronic pain is an important health problem in Australia (Siddall & Cousins, 2004). In 2007, it was estimated that 3.2 million Australians experienced chronic pain, with this number expected to rise to 5 million by 2050 (Access Economics, 2007). The high prevalence of chronic pain places it only behind visual disorders, musculoskeletal conditions and cardiovascular disease and cardiovascular disease and musculoskeletal conditions in terms of health expenditure (Access Economics, 2007).

Chronic pain impacts significantly on individuals, their support networks, the health care system and the economy (Henry, 2008). The annual cost to Australian society is estimated to exceed A\$34 billion or A\$10,847 for each Australian suffering from chronic pain (Access Economics, 2007). This includes:

- 34% in productivity costs (\$11.7 billion)
- 34% for burden of disease (\$11.5 billion)
- 20% in health system costs (\$7.0 billion)
- 4% for carer costs (opportunity cost of informal care) (\$1.3 billion)
- 1% for other indirect costs including aids and modification (\$300 million)

Source: (Access Economics, 2007).

In 2007, prevalence was generally higher in women than men (20% vs. 17%) (Access Economics, 2007). Prevalence also increases with age, with a peak in the male population at the 65–69 year age group and in females at the 80–84 year age group (Access Economics, 2007). This has important implications for an ageing Australian population where it is projected that the number of people aged over 65 years will exceed 20% of Australia's population in the next 25 years (Australian Bureau of Statistics, 2008). More than 1 in 5 Australians over the age of 65 years report chronic pain with more than half of those believing it has a moderate or severe impact on their quality of life (National Pain Strategy, 2010).

In addition to both sex and age, the Institute of Medicine (2011) has listed the following indicators for increased risk of experiencing pain:

- Having English as a second language;
- Race and ethnicity;
- Income and education;

- Geographic location;
- Military veterans;
- Cognitive impairments;
- Surgical patients;
- Cancer patients; and
- The end of life

Source: (Institute of Medicine, 2011).

The experience of chronic pain, whilst generally defined as pain lasting beyond the usual healing time of 3 months, often endures for significantly longer (Burns, 2010). Approximately half of all people with chronic pain reported it lasting between 1 and 10 years, however almost a third report to have experience chronic pain for more than 10 years and a sixth continue to experience chronic pain for over 20 years (Access Economics, 2007). Therefore the impact of chronic pain on an individual's quality of life can be significant. Access Economics (2007, p. 7) identified the following common features associated with chronic pain:

- i) Interference in normal daily activities (e.g. work, home duties, family and sporting activities).
- ii) High and ongoing consumption of treatments (often a combination of medication, physiotherapy, chiropractic, injection therapies).
- iii) Side-effects of treatment (typically due to medication, especially if on high doses and taking more than recommended or mixed with other substances, like alcohol – including gastric problems, such as nausea and constipation; mental slowing or confusion which can affect functioning and operation of equipment or cars).
- iv) Mood disturbance (mostly depression or adjustment problems).
- v) Sleep disturbance (trouble getting to sleep and/or frequent waking during the night).
- vi) The effects of disuse (e.g. deconditioning of muscles/joints, loss of general fitness).

Source: (Access Economics, 2007, p. 7)

The nature and range of impacts of chronic pain on the sufferer varies from that of acute pain to a complex mix of physical and psychosocial changes that impact on an individual's daily life (Henry, 2008).

Over 50% of sufferers with chronic pain find their work effectiveness is reduced in some way because of their chronic pain (Access Economics, 2007). Work performance can be adversely affected by an inability to work due to pain (absenteeism) or simply a more general negative impact on the ability to undertake duties whilst at work (Access Economics, 2007). Not surprisingly, it has been found that chronic pain sufferers are less likely to work fulltime or part time when compared with the general population (Access Economics, 2007).

In addition to the financial and psychological impact of poor work performance or job loss, there is also the social cost of chronic pain (Institute of Medicine, 2011). Sufferers of chronic pain may require extra assistance from family, friends and other caregivers which was not previously required (Burns, 2010). Social withdrawal, poor coping skills, divorce, alcoholism, drug abuse, family violence, depression, anxiety and suicide can all result from the experience of chronic pain (Burns, 2010; Hinchy, 2010). Approximately 80% of people with chronic pain feel anxious or depressed because of their pain (Hinchy, 2010). Additionally there appears to be an increased risk of suicide among people experiencing chronic pain (Institute of Medicine, 2011).

Types of pain

The International Association for the Study of Pain (International Association for the Study of Pain, 1994) defines pain as '*an unpleasant, sensory and emotional experience associated with actual or potential tissue damage, or described of such damage*' (International Association for the Study of Pain, 1994). The important points to note in the definition are the multidimensional and subjective nature of pain (Roditi & Robinson, 2011). Access Economics (Access Economics, 2007, p. 7) also highlights the following points:

- Pain has no objective measures
- Pain is a sensory and emotional experience
- The relationship between tissue damage and pain is variable with an individual's interpretation of pain being mediated by a range of personal factors (e.g. past experience, beliefs)
- The experience of pain manifests itself in behaviour and actions

Source: (Access Economics, 2007)

In general, pain is classified into three general categories: cancer-related, acute and chronic (Brenneman, 2010). Cancer-related pain includes pain related to tumour growth, metastatic disease as well as pain resulting from treatment interventions (Brenneman, 2010).

Acute pain serves an important role in warning individuals of injury or infection (Institute of Medicine, 2011). Acute pain is a necessity of human evolution indicating tissue damage which usually resolves when the damage is healed (Brenneman, 2010). Acute pain can be defined as: *a normal and time-limited response to trauma or other 'noxious' experience, including pain related to medical procedures and acute medical conditions (e.g. acute shingles)* (National Pain Strategy, 2010, p. 11).

Pain that persists beyond what is expected for adequate healing is considered chronic pain (whilst accounting for individual differences) (Roditi & Robinson, 2011). Therefore, chronic pain can be defined as: *'pain without apparent biological value that has persisted beyond normal tissue healing time of 3 months'* (Burns, 2010, p. 483). Table 1, whilst not exhaustive, provides an overview of the types of non-cancer chronic pain.

Table 1: Types of non-cancer chronic pain

MUSCULOSKELETAL	NEUROPATHIC	HEADACHES	OTHER
Back pain	Herpes zoster/post-herpetic neuralgia	Migraine	Sickle cell anaemia
Arthritis (Rheumatoid or osteoarthritis)	Phantom limb pain	Tension	Haemophilia
Temporomandibular pain	Diabetic neuropathy	Cluster	Irritable bowel syndrome
Fibromyalgia	Carpal tunnel syndrome		
Myofascial pain	Complex regional pain syndrome		

Source: (Dobkin & Boothroyd, 2006, p. 3)

It is often difficult to isolate the cause of chronic pain. An Australian study identified injury as major cause of chronic pain, especially in males where sports injury has been identified as being the cause of chronic pain in over 20% of cases (Access Economics, 2007). Work-related injuries accounted for a further 14% of incidents, whilst arthritis accounted for 9% of cases (Access Economics, 2007). The most common sites of chronic pain were in the back (45%), leg (42%), shoulder (29%), arm (22%) and neck (20%), however a large number of people experienced pain in multiple sites (Access Economics, 2007).

More broadly, pain conditions can be classified as either nociceptive or neuropathic. Nociceptive pain (or tissue damage pain) produces mechanical or chemical pain that results from surgery, trauma or degenerative processes, whilst neuropathic pain (or nerve damage pain) results from neuron dysfunction of the central nervous system and often exhibits localised burning or shooting sensations (Hinchy, 2010; Roditi & Robinson, 2011). Park and Moon (2010) report that effective treatment of neuropathic pain can be particularly challenging with sufferers reporting higher pain scores, lower quality of life measures, greater medication requirements and less effective relief from pain medication when compared to patients with non-neuropathic chronic pain. Hinchy (2010) provides a succinct summary of the key features of nociceptive and neuropathic pain which is reproduced in Table 2.

Table 2: Comparison of nociceptive and neuropathic pain

Types of pain	
<p>Nociceptive pain (tissue damage)</p> <ul style="list-style-type: none"> ▪ Well localised ▪ May be more diffuse if visceral structures are involved ▪ Sharp ▪ Stabbing ▪ Aching ▪ Gripping 	<p>Neuropathic pain (nerve damage)</p> <ul style="list-style-type: none"> ▪ Persistent ▪ Burning ▪ Paroxysmal or spontaneous ▪ Shooting ▪ 'Electrical shocks' ▪ Pain in the absence of ongoing tissue damage ▪ Allodynia (painful response to stimuli that would not normally cause pain) ▪ Hyperalgesia (increased pain in response to pain stimulus) ▪ Dysaesthesia (unpleasant abnormal sensations)
<p>Examples of nociceptive pain</p> <ul style="list-style-type: none"> ▪ Arthritis ▪ Trauma ▪ Acute post-operative pain ▪ Procedural pain, for example, dressings 	<p>Examples of neuropathic pain</p> <ul style="list-style-type: none"> ▪ Trigeminal neuralgia ▪ Diabetic neuropathy ▪ Post-herpetic neuralgia ▪ Complex regional pain syndrome ▪ Peripheral neuropathy

Source: (Hinchy, 2010, p. 27)

Pain aetiology

Unlike acute pain which is caused by tissue damage, chronic pain may have any number of underlying causes (Access Economics, 2007). Whilst chronic pain may often follow from an episode of acute pain this is not always the case and in some cases the specific cause of chronic pain cannot be identified (National Pain Strategy, 2010).

Recent research has suggested chronic pain may be the result of neuroplastic changes in the central nervous system whereby it responds excessively and becomes sensitised to both noxious and also non-noxious stimuli such as touch (Access Economics, 2007; National Pain Strategy, 2010). Neuroglia, the non-neuronal cells in the spinal cord and brain, have been identified as playing a key role in chronic pain (National Pain Strategy, 2010). It is now believed that these cells become 'reactive' following nerve injury, stimulating neurons causing them to become hypersensitive (National Pain Strategy, 2010). The result is that someone suffering from chronic pain becomes "*rewired for pain*" (Institute of Medicine, 2011, p. 32).

It is also recently recognised that this alteration in the person's central nervous system is perpetuated over time by musculature and psychological changes which exacerbate the experience of chronic pain in the individual (Access Economics, 2007). This new understanding requires that health care professionals need to focus on the individual's pain experience rather than focussing on the identification of some underlying condition which is causing the pain (Institute of Medicine, 2011). Unfortunately not all aspects of the health care system have reconfigured their treatment approaches to reflect the latest developments in chronic pain research (National Pain Strategy, 2010).

Traditional approach to treating chronic pain

The biomedical model of health care recognises pain as an acute reaction to an underlying health problem or condition whereby clinicians focus their energies on identifying and treating the underlying cause of the pain (Siddall & Cousins, 2004). This approach is effective when working with acute pain but is limited in effectiveness for those suffering from chronic pain (Siddall & Cousins, 2004). The experience of chronic pain has recently been recognised to be not a symptom of an underlying cause but a disease entity in its own right (Access Economics, 2007; National Pain Strategy, 2010).

The biomedical approach has resulted in fragmentation of treatment options for chronic pain including a vast array of procedures and treatments, most with limited success (Dobkin & Boothroyd, 2006). Sufferers of chronic pain are linked to increased use of health services with pain medication being one of the most frequent treatments arising from medical consultations (Roditi & Robinson, 2011). Patient frustration is not uncommon as a result of medical tests which cannot isolate the 'cause' of their chronic pain and interventions which do not relieve their symptoms (Burns, 2010).

Medications for the treatment of chronic pain

Medication plays a key role in attempting to relieve the experience of chronic pain in sufferers. The range of medications used for the treatment of pain is extensive and the key is identifying the most appropriate drug for the pain experienced (Institute of Medicine, 2011). Inflammatory nociceptive pain is relieved most effectively by nonsteroidal anti-inflammatory drugs (NSAIDs), however the most effective treatments for neuropathic pain are generally antidepressants and anticonvulsants (Verdu, Decosterd, Buclin, Stiefel, & Berney, 2008). The most common medications used to relieve chronic pain include:

- NSAIDs, such as aspirin, used in the treatment of chronic pain due to their anti-inflammatory, analgesic, and antipyretic properties (Park & Moon, 2010).
 - The most common side effect from these medications is gastrointestinal irritation and of recent concern is the suggestion of increased cardiovascular risk (Park & Moon, 2010).
- Tramadol is a multimodal drug effective in the treatment of osteoarthritis, fibromyalgia, and neuropathic pain.
 - An increased risk for seizures reported with this medication (Park & Moon, 2010).
- Opioid analgesics have been found to effectively decrease pain experience for people with chronic pain, however concerns regarding their addictive properties have limited their use (Allen, Macleod, Zwicker, Chiarot, & Critchley, 2011; Park & Moon, 2010).
 - A risk analysis is recommended for all clients being considered for opioid therapy (Brown & Folen, 2005). It is generally recommended that a minimum dose be initiated with this gradually being increased until effective pain relief is obtained (Brenneman, 2010).

- Warning signs for opioid addiction include “requests for early refills, repeated loss or theft of prescriptions, use of illicit street drugs, altered route of administration (e.g. injecting or smoking of opioid to experience euphoria), diversion (selling) of prescription drugs, and prior opioid addiction” (Brown & Folen, 2005, p. 591).
- Additional side effects include nausea, constipation and somnolence with possible side effects from long term use including drowsiness, dizziness, endocrinological abnormalities and impaired neuro-psychological performance (Park & Moon, 2010).
- Antidepressants are also effective in the treatment of chronic pain by inhibiting the reuptake of neural transmitters norepinephrine and serotonin at the spinal level (Park & Moon, 2010).
 - Given that on occasion people with chronic pain have had a long history of intervention it is important to inform clients that antidepressant treatment is effective in the biological processes associated with chronic pain and they are not being treated for simply ‘psychological problems’ (Park & Moon, 2010).
 - Common antidepressants used in the treatment of chronic pain include tricyclic antidepressants (TCAs), selective reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) (Park & Moon, 2010).
 - Potential side effects include hypertension, arrhythmias and falls in older clients (Park & Moon, 2010).
- Anticonvulsants have been utilised for over 50 years in the management of chronic pain and are especially effective for lancinating or burning pain (Park & Moon, 2010).
- Skeletal muscle relaxants has been found to be effective in treating chronic pain associated with fibromyalgia and muscle spasms (Park & Moon, 2010).
- Topical analgesics are used in treating localised neuropathic or osteo-arthritic pain either in conjunction with other medications or as an alternative to oral medications (Park & Moon, 2010).
 - By its very nature treatment is limited to specific sites and skin irritations can occur (Park & Moon, 2010).

Eight in ten people suffering from chronic pain will take prescription medication and half of these will suffer side effects as a result of their medications (Hinchy, 2010). Doctors and pharmacists have a key role in the education and monitoring of the effects of medication.

Effective communication and collaboration between the two professional groups can enhance the care of the person suffering from chronic pain, especially in regards to those taking opioid medications (Allen, et al., 2011). Effective client education before prescribing medications can ensure medication compliance and adherence to any treatment regimen as well as minimise any enduring medication side effects (Hinchy, 2010). Not adhering to a doctor's prescribed treatment regime has been found to result in a "greater numbers of medical emergencies, increased volume and strength of prescriptions, worsened disability and prognosis, increased likelihood of secondary complications, and suboptimal recovery following injury" for clients (Brown & Folen, 2005, p. 590).

Other common medical interventions performed to address chronic pain include regional anaesthetic interventions and surgery. Regional anaesthetic interventions include: sacroiliac joint injections; epidural steroid injections for sciatica-related pain; joint nerve blocks; and implanted devices that deliver analgesic directly to the spinal cavity (Institute of Medicine, 2011). All these interventions are invasive and there is some question as to their effectiveness given the risks and cost involved (Institute of Medicine, 2011).

Surgical therapies range along a spectrum of invasiveness and include the insertion of spinal cord stimulation implant systems and spinal analgesic infusion pumps (mentioned above) as well as spinal decompression procedures, joint or disc replacement, spinal fusion and nerve decompression (Institute of Medicine, 2011; National Pain Strategy, 2010). Surgery is generally only undertaken after other less invasive treatments have been ineffective, as it can be associated with serious complications (Institute of Medicine, 2011; National Pain Strategy, 2010).

In recent years the traditional biomedical model for treating chronic pain has been questioned due to the lack of effective, functional client outcomes from traditional single-dimensional treatment interventions (O'Sullivan, 2012). Whilst pharmacological and surgical interventions can be effective in providing pain relief, their efficacy has been questioned in being able to provide the necessary improvements in a client's daily functioning requirements for long term health improvement (Access Economics, 2007).

Contemporary management of chronic pain has shifted from the strictly surgical, physical, or pharmacological approach and moved towards a biopsychosocial approach in which pain is

viewed as a “*complex, multifaceted experience emerging from the dynamic interplay of a patient’s physiological state, thoughts, emotions, behaviours, and sociocultural influences*” (Roditi & Robinson, 2011, p. 42). Evidence suggests that biopsychosocial approaches result in better outcomes for clients in a variety of measures including pain reports; mood; restoration of daily functioning; work status; and medication or health care use (Roditi & Robinson, 2011).

The biopsychosocial model of chronic pain

The biopsychosocial model of chronic pain proposes that pain is multifaceted and comprises three broad components: the physical or biological component (which may involve nociceptive and/or neuropathic factors); psychological (or even psychiatric) factors; and environmental factors (National Pain Strategy, 2010). These components are not independent and the experience and impact of chronic pain is the result of an interaction between these three factors. For example, a physical injury can result in pain (psychologically) which further influences physical functioning by an avoidance of physical activity which leads to deconditioning, depression, social isolation and anxiety (Access Economics, 2007; Institute of Medicine, 2011).

These psychological and environmental factors can have a major impact on the ongoing ability to function with chronic pain irrespective of the original biological (nociceptive or neuropathic) component (Siddall & Cousins, 2004). Thus for meaningful functional improvements to be made, a multi-modal treatment which addresses biological, psychological and environmental factors is necessary (National Pain Strategy, 2010). Interventions may include analgesics, physical therapy, behavioural therapy, and psychological therapy provided in an integrated, coordinated way by an interdisciplinary care team (National Pain Strategy, 2010; Roditi & Robinson, 2011). Common treatment interventions can include:

- Medication
- Interventional pain blocks
- Physical therapy
- Occupational therapy
- Counselling
- Cognitive-behavioural therapy

- Acupuncture
- Homeopathy
- Massage
- Dietary changes
- Heat and cold compresses
- Relaxation techniques
- Distraction techniques
- Imagery

Source: (Brenneman, 2010; Hinchy, 2010)

The focus of treatment based on the biopsychosocial model is on improving quality of life by reducing perceptions of pain and minimising its effect on a day-to-day functioning rather than 'curing' the chronic pain (Institute of Medicine, 2011). Functional improvements may include returning to work or studies, performing tasks of daily living and maintaining important social relationships (Institute of Medicine, 2011).

Psychosocial aspects of chronic pain

Psychological and environmental factors play a key role in how individuals interpret and react to their chronic pain (Burns, 2010). Mood disorders such as anxiety and depression have been found to share neurotransmitters with chronic pain and emotions have been found to either amplify (in the case of negative emotions) or lessen (in the case of a positive outlook) the experience of chronic pain in individuals (National Pain Strategy, 2010). Beliefs and expectations are also strong predictors of chronic pain outcomes (Institute of Medicine, 2011). 'Pain catastrophising' is a maladaptive thought process common in individuals with chronic pain (Institute of Medicine, 2011). It is characterised by a tendency in individuals to "*ruminate about their pain, magnify pain sensations, and feel helpless about their ability to manage it*" (Institute of Medicine, 2011, p. 43). The result can be an increased perception of pain and dysfunction in those with chronic pain that also results in slower recovery and poorer adjustment (Institute of Medicine, 2011).

Pain catastrophising is associated with fear-avoidance behaviours which often lead to a "*downward spiral of reduced activity, deconditioning, postural changes, and loss of muscle support of various joints and also the spine*" (National Pain Strategy, 2010, p. 13). Fear-avoidance behaviours are commonly seen in clients with lower back pain and is

characterised by the interpretation of pain as a danger signal of injury leading to the individual undertaking behaviours which avoid triggering a pain response (Roditi & Robinson, 2011). These behaviours coupled with maladaptive cognitions can lead to reduced activity, physical deconditioning, postural changes and hyper vigilance of physical sensations (National Pain Strategy, 2010; Roditi & Robinson, 2011). Interventions aim to stop the cycle of maladaptive physical behaviour and cognitions through a range of psychological interventions including psychoeducation, relaxation, goal setting, cognitive restructuring and graded exposure.

During graded exposure individuals suffering from chronic pain are instructed how to regulate their physical activity in a controlled manner to gradually increase the intensity and length of time they undertake physical activity with the aim of improving overall functioning and quality of life (Scascighini, Toma, Dober-Spielmann, & Sprott, 2008). Also referred to as 'pacing', this technique is important in helping individuals overcome fear of injury, especially in clients experiencing lower back pain (Institute of Medicine, 2011). Research has found that approximately two-thirds of individuals with chronic back pain actively avoid certain actions that they should be able to safely undertake out of fear of injuring their back (Institute of Medicine, 2011).

Psychosocial interventions assist clients to identify maladaptive coping strategies, such as fear avoidance, and introduce positive coping strategies including: cognitive restructuring; positive self-talk; social skills training; relaxation; and stress management (Roditi & Robinson, 2011). Problem solving techniques enable clients to exert some control over their chronic pain and become an active participant in their treatment (Burns, 2010). Having a sense of control over their chronic pain has been found to result in lower incidence of depression and increased resilience (Burns, 2010; Institute of Medicine, 2011). Understanding the basis of health beliefs, identifying triggers for pain and learning new coping mechanisms are all important aspects of treatment (Burns, 2010).

Relaxation training is also seen as an important and effective tool in coping with chronic pain (Roditi & Robinson, 2011). Relaxation training aims to "*reduce tension levels (physical and mental) through activation of the parasympathetic nervous system and attainment of greater awareness of physiological and psychological states, thereby achieving reductions in pain and increasing control over pain*" (Roditi & Robinson, 2011, p. 43). Specific techniques

include diaphragmatic breathing, progressive muscle relaxation, autogenic training and visualisation and guided imagery (Roditi & Robinson, 2011).

Psychosocial interventions for chronic pain do not claim to eliminate chronic pain but instead provide the client with the knowledge, skills and techniques that enable the individual to improve their chronic pain condition (Roditi & Robinson, 2011). They enable clients to realise that their own expectations, beliefs, mood, environment, sociocultural context and family dynamics interact to create a uniquely personal and individualised chronic pain experience (Burns, 2010).

Tailoring chronic pain interventions

A client's suite of care should be individualised to reflect personal circumstances including the type of pain experienced, background and personal characteristics, family and social situation (Institute of Medicine, 2011). The type of care can include some or all of the following: self management, primary care, specialty care or pain centres (Institute of Medicine, 2011). It is generally agreed that the majority of care and management the patient receives should be undertaken through self-management and primary care (Institute of Medicine, 2011).

This presents some challenges as primary care is generally not structured to allow doctors the time and remuneration to undertake comprehensive client assessments and education (Institute of Medicine, 2011). When referred to more specialist care, the waiting times are often lengthy due to the high level of demand for the limited number of services available (Institute of Medicine, 2011). Frustration, anger and depression may often result when clients are not adequately informed of the long and complex journey that can be associated with the search for the best combination of treatments to relieve their chronic pain symptoms (National Pain Strategy, 2010). It is therefore important that the management approach be tailored to an individual's chronic pain as early in the process as possible to ensure intervention is as effective as possible. Individualised management will assist with targeting the intervention early in the patient's journey to manage as many of the contributors to disability and dysfunction, and ensure a return to optimal functioning as soon as possible (Access Economics, 2007). The health care professional's role is to guide, educate and assist clients to effectively self-manage their chronic pain on a daily basis (Institute of

Medicine, 2011). A client centred, comprehensive and interdisciplinary approach has been found to be most effective (Institute of Medicine, 2011).

The therapeutic relationship

The therapeutic relationship between health care professionals and their clients can play an important role in the management of chronic pain (O'Sullivan, 2012). Treatment interventions will be ineffective if clients (and their families) are not active participants in the treatment approach (Institute of Medicine, 2011). Communication skills, empathy, level of confidence and beliefs are all factors that influence a patient's treatment compliance and subsequent treatment outcomes (O'Sullivan, 2012).

Understanding the impact of chronic pain on an individual's physical, emotional and social functioning is an important first step (Institute of Medicine, 2011). Whilst the structure of the health care system does not always encourage it, taking the time to listen to the client's pain journey (sometimes referred to as their 'pain story') can be important in building the therapeutic relationship (Hinchy, 2010). Communication skills that employ empathy, open questioning, reflective listening and motivational interviewing techniques all allow the health care professional to fully explore the biopsychosocial impact of chronic pain on the client, enabling the health care professional to isolate the antecedents of the pain as well as what is sustaining and exacerbating the condition (O'Sullivan, 2012).

Helpful questions may include:

- Where is the pain?
- When did it start?
- What makes it worse?
- What helps to ease it?
- How does the pain feel (is it sharp, dull, aching, throbbing, shooting, burning)?
- How does the pain affect your:
 - Sleep patterns?
 - Eating?
 - Activity patterns?
 - Mood and emotions?
 - Physical appearance?

- Sexual function?
- Energy levels?
- What impact is this having on your family and other relationships?

Source: (Hinchy, 2010, p. 28)

Mutual understanding between health care professionals and clients is also imperative for effective chronic pain management (Institute of Medicine, 2011). It is important that clients understand that in a large number of cases, chronic pain is not 'cured' but rather the focus of treatment is on better management of a chronic health condition by minimising symptoms and maintaining (or regaining) as much normal functioning as possible (Access Economics, 2007). It also includes recognition that finding the right combination of treatments is not always straight forward, can take time and different treatment options need to be trialled until the right one is found for their personal circumstances (Institute of Medicine, 2011). Shared decision making is essential and empowers clients to be actively involved in their own care and treatment decisions (Dobkin & Boothroyd, 2006). When there is not a level of mutual understanding 'doctor shopping' and experimenting with unproven therapies can result (Institute of Medicine, 2011).

Self management

Clients with chronic pain, like those with other chronic health conditions, need to be actively involved in their own treatment as they are responsible for the implementation of significant aspects of treatment, such as medication compliance and lifestyle changes, including exercise and dieting (Dobkin & Boothroyd, 2006). A passive approach by clients to their own treatment has been linked to poor health outcomes (Smith, Lumley, & Longo, 2002).

Self management is defined as 'the ability to manage the symptoms, treatment, physical and psychosocial consequences and life-style changes inherent in living with a chronic condition' (Bair et al., 2009, p. 2). Psycho-education is a key aspect of developing effective client self-management as it provides the client with necessary knowledge and skills to effectively problem solve and make informed choices about treatment options (Davies et al., 2011). Research on chronic pain has found that educating clients about pain management can improve outcomes 'in terms of pain, pain knowledge and attitudes, use of pain medicines and interference by pain in activities of daily living' (National Pain Strategy, 2010, p. 28).

The National Pain Strategy (National Pain Strategy, 2010) concluded that:

- Positive health outcomes and changes in clients' beliefs about their chronic pain can be achieved from adult education programs.
- There is real value in pain support groups for clients and their support networks in providing unique assistance and support that may not be readily available within the health care system.
- Active self management, whereby clients take responsibility for their own treatment, results in less disability than in clients who take a passive approach to their chronic pain management.

Source: (National Pain Strategy, 2010)

Education in self management of chronic pain extends beyond the traditional, passive provision of written materials, such as pamphlets and booklets (Bair, et al., 2009). It encourages clients to be informed about their own pain experience and to take an active role in the decision of treatment goals with the health care providers involved in their care (Bair et al. 2009). The Institute of Medicine recommends clients be provided with resources that provide 'information about the nature of pain; ways to use self-help strategies to prevent, cope with, and reduce pain; and the benefits, risks, and costs of various pain management options' (Institute of Medicine, 2011, p. 8). The Institute also reiterates that care must be taken to ensure materials are culturally and linguistically appropriate and in those clients whose first language is English that proficient levels of health literacy cannot be assumed (Institute of Medicine, 2011).

Each client's pain experience is unique and as such the level of active participation in self management will also vary. In a qualitative study, Bair and colleagues (2009) identified a number of facilitators and barriers to active self management in clients with chronic musculoskeletal pain. These are outlined in Table 3.

Table 3: Common facilitators and barriers to effective chronic pain self-management

Facilitators of chronic pain self-management

- the treatment and relief of depression symptoms
- having support from family, friends, care managers, and co-workers (e.g. social support)
- social comparison, that is, comparing one's pain with that of others
- being proactive
- having a positive attitude and using positive thinking and affirmations
- setting and achieving goals
- having a menu of self-management strategies from which to choose

Barriers to self-management

- the disabling effect of pain
- that some primary care physician's use medications as the sole modality to relieve pain and do not discuss other self-management practices
- the negative effects of depression and stress
- fear that exercise and activity will exacerbate pain
- the lack of efficacy of some self-management practices to an individual's personal pain experience
- a lack of social support

Source: (Bair, et al., 2009, p. 8)

Some other perceived barriers raised included strategies not being tailored for a particular individual, time constraints, lack of patient motivation or discipline, and limited financial or transportation resources (Bair, et al., 2009).

When educating clients about chronic pain management, it is important to give them the knowledge and skills to develop confidence in making their own decisions, developing their problem solving skills and being able to apply their newfound knowledge to their own personal pain experience to improve their functioning and quality of life (Institute of Medicine, 2011). Clients need to be taught how to self-monitor their behaviour, thoughts and emotions and identify likely motivators and barriers to achieving treatment goals (Roditi & Robinson, 2011). Wherever possible, it is valuable to also include the client's family and carers as they also play a significant role in facilitating the client's active role in their own care and ensure

everybody is working towards the same goals (National Pain Strategy, 2010). When done effectively, education regarding self management has been shown to decrease the occurrence of chronic pain outbursts, minimise general pain discomfort, maximise daily functioning and reduce ongoing health care requests (Davies, et al., 2011; Institute of Medicine, 2011).

Interdisciplinary treatment

An interdisciplinary approach whereby health professionals from different disciplines work actively together to provide the optimal care for each client's chronic pain experience has become the international benchmark for chronic pain management (Burns, 2010; Dobkin & Boothroyd, 2006). Research from a range of countries and study populations has consistently supported an interdisciplinary approach for chronic pain management (Institute of Medicine, 2011).

By recognising chronic pain as a disease in its own right with a range of biopsychosocial factors impacting on an individual's pain experience, it is now recognised that one health discipline is not adequate to comprehensively assess and treat chronic pain (National Pain Strategy, 2010). Chronic pain is complex and requires consideration and decision making across a range of variables and domains including different perceptions of client needs based on individual health discipline priorities (Brown & Folen, 2005). A range of professions are likely to be involved in the care of a client with chronic pain including doctors, nurses, psychologists or other mental health professionals, rehabilitation specialists, physiotherapists, occupational therapists, pharmacists and/or complementary and alternative medicine therapists (Brenneman, 2010; Institute of Medicine, 2011; Stenner & Courtenay, 2008). Research has highlighted the benefit of providing general practitioners with direct links to allied health professionals such as physiotherapists, psychologists, occupational therapists and nurses, when treating clients at high risk of disabling chronic pain (Dobkin & Boothroyd, 2006).

The interdisciplinary approach to chronic pain requires a comprehensive assessment of the client's pain experience and the development of treatment goals that address the physical, psychological, social and occupational functioning of the client (Dobkin & Boothroyd, 2006). To do this effectively usually requires that more than one type of health professional is involved in the client's care (National Pain Strategy, 2010). When more than one treatment

provider is involved, clear and effective communication becomes critical. Successful self management requires consistent advice across health professionals in their interactions with the client (Brown & Folen, 2005). This in turn requires health professionals from different disciplines to be clear on care goals and priorities (Brown & Folen, 2005). This can only be achieved when health professionals communicate with each other and agree, in partnership with the client, on the most appropriate treatment(s) or management plan (Access Economics, 2007; National Pain Strategy, 2010). This agreed plan of action should incorporate the 'values, perspectives, and expertise of all who must execute the decisions working with the client and family' (Brown & Folen, 2005, p. 589).

Brown and Folen (2005) have identified five conditions as important to ensuring interprofessional team effectiveness: real teams with clear boundaries, compelling direction, enabling structure, supportive context, and competent coaching. This is enabled by regular meetings to discuss management issues of the treatment of the client's chronic pain, a singular or consistent record system, and a uniform approach to client management (Dobkin & Boothroyd, 2006).

By adopting a health care approach which is interdisciplinary and recognises the biopsychosocial factors that impact on the client's unique pain experience, optimised client outcomes include return to work, reduced pain levels, improved mood, lowered risk of substance abuse, and decreased health care utilisation (Burns, 2010, p. 485).

Conclusion

The burden of pain in health, social and financial terms is significant (National Pain Strategy, 2010). This is demonstrated by the fact that pain is the third most costly health problem in Australia (National Pain Strategy, 2010). There is no one pain experience or treatment approach. The Institute of Medicine (IOM) identifies a range of factors that impact upon the pain experience:

- The severity, frequency, and extent of the pain itself
- The underlying disease process or pathology, if there is one
- Genetic factors
- People's attitudes, emotional makeup, and beliefs and the meaning of the experience for them (e.g., an accident victim might associate pain with a companion's loss of life)

- Knowledge and beliefs about the effectiveness and availability of treatments
- Environmental circumstances, such as the advice of family and colleagues, the burdens of work, other life stressors, and physical aspects of the home (e.g. stairs)
- Responses of physicians and other health professionals (encouragement to engage in exercise or other self-management efforts versus suspicion or denigration of the patient's coping efforts)

Source: (Institute of Medicine, 2011, p. 116)

Chronic pain is complex and difficult to manage with research revealing that the majority of individuals with chronic pain do not receive access to effective treatment options (Hinchy, 2010; National Pain Strategy, 2010). The challenge is to have a health care workforce that is well educated on the biopsychosocial approach to chronic pain and has the skills and resources to identify the most helpful treatment options based on a client's individual circumstances (Hinchy, 2010). The Australian National Pain Strategy (2010) in reviewing the most appropriate, timely and evidence-based treatments for chronic pain both locally and internationally identified the following characteristics:

- acknowledgement of chronic pain as a disease in its own right
- stratified care according to complexity
- interdisciplinary care at all levels, with strong coordination between care providers and seamless transition from primary to tertiary care
- an active role for the person with pain
- community level group programs, including educational programs for most patients and intensive cognitive-behavioural programs for appropriate candidates, with carers, partners or family members also able to attend
- Pain Medicine specialists working beside GPs and other health professionals, to initiate and support integrated primary care pain services (with the specialist service also providing its own clinical service)
- a triage system and service delivery model that enables timely access to levels of care to prevent chronicity or, when chronicity occurs, minimising morbidity through effective care (specially trained nurses, physiotherapists and occupational therapists carry out the triage role in several centres in Canada and the UK)
- 'assist nurses' – a coordination/advice role to field patient calls and track patient treatment pathways

- the use of templates for recording patient histories, examinations and decision making electronic medical records
- data collection and management to follow outcomes
- GP education and training

Source: (National Pain Strategy, 2010, p. 31)

Good communication and a level of understanding between the health professionals involved in a client's care is important (Brown & Folen, 2005; Dobkin & Boothroyd, 2006). Interprofessional communication may include the timely delivery of test results, communicating the success or otherwise of different interventions, communicating the status of health consultations and simply ensuring that all health care professionals involved in a client's care are 'on the same page' (Dobkin & Boothroyd, 2006). This is important for timely decision making and reviewing of treatment goals (Dobkin & Boothroyd, 2006). Formal, coordinated and consistent communication pathways are important, especially for the general practitioner who is generally responsible for the coordination and oversight of a client's treatment plan (Access Economics, 2007; Hinchy, 2010). Consistency between health professionals in the health messages they communicate to clients also ensures that clients do not receive conflicting messages which can lead to confusion, frustration and non-compliance (Brown & Folen, 2005).

Medical glossary and acronyms

Acute pain	Pain that comes on quickly, can be severe, but lasts a relatively short time (Institute of Medicine, 2011)
Addiction	A primary, chronic, neurobiologic disease whose development and manifestations are influenced by genetic, psychosocial, and environmental factors (Institute of Medicine, 2011). It is characterised by behaviour that includes one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving (Institute of Medicine, 2011).
Allodynia	Pain due to a stimulus that does not normally provoke pain (Institute of Medicine, 2011). For example, stroking the skin lightly with clothes will produce pain.
Analgesia	Absence of pain in response to stimulation which would normally be painful (International Association for the Study of Pain, 1994).
Antipyretic	Medication that reduces fever.
Biopsychosocial model	A framework that accounts for the biological, psychological, and social dimensions of illness and disease (Institute of Medicine, 2011). The biopsychosocial model provides a basis for the understanding and treatment of disease, taking into account the patient, his/her social context, and the impact of illness on that individual from a societal perspective (Institute of Medicine, 2011). The model states that ill health and disease are the result of interaction among biological, psychological, and social factors (Institute of Medicine, 2011).
Chronic pain	Ongoing or recurrent pain lasting beyond the usual course of acute illness or injury (which is generally more than 3 to 6

months) and is adversely affecting the individual's well-being (Institute of Medicine, 2011). A simpler definition for chronic or persistent pain is pain that continues when it should not (Institute of Medicine, 2011).

CBT

Cognitive-behavioural therapy

An evidence-based treatment focusing on patterns of thinking that are maladaptive and the beliefs that underlie such thinking (Institute of Medicine, 2011). Cognitive-behavioural therapy is based on the idea that thoughts, not external factors (such as people, situations, and events) cause a person's feelings and behaviour (Institute of Medicine, 2011). As a result, someone can change the way they think to improve the way they feel, even if the situation does not change (Institute of Medicine, 2011).

CRPS

Complex regional pain syndrome

A chronic pain condition believed to be the result of dysfunction in the central or peripheral nervous systems. Generally affecting the arm, hand, leg or foot, typical features include dramatic changes in the colour and temperature of the skin with intense burning pain, skin sensitivity, sweating, and swelling. Symptoms can range from mild to severe and may last months or years.

CT Scan

Computerised Tomography Scan

Also known as a 'catscan'.

This is a sophisticated x-ray technique for showing bone detail. It is a painless procedure taking on average twenty minutes and is generally performed on an outpatient basis. Cross-sectional images are produced from information received through beams of x-rays going through the body.

Decompression	Surgical procedure for relieving pressure on a nerve or the spinal cord.
Deconditioning	The loss of muscle tone and fitness due to chronic disease, immobility, or loss of function.
Discectomy	The surgical removal of part of the disc that has prolapsed, bulged or ruptured causing pressure on spinal nerves. This operation can be done by an open method, by microsurgery or by minimally invasive techniques.
Dysesthesia	Unpleasant abnormal sensations, which may be spontaneous or evoked.
Hyperalgesia	The perception of a painful stimulus as more painful than normal.
Interdisciplinary teams	A team that is collaboration-oriented. The team meets regularly to discuss and collaboratively set treatment goals and carry out treatment plans. There is a high level of communication and cooperation among team members (Korner, 2008, p. 2)
Lancinating	Sensation of piercing or stabbing.
MRI	Magnetic Resonance Imaging Involves a highly technical scanner that uses magnetic fields and computer technology to generate images of the internal anatomy of the body, including discs and nerve roots.
Multidisciplinary teams	A team that is discipline-oriented. Each professional works in parallel, with clear role definitions, specified asks and hierarchical lines of authority (Korner, 2008, p. 2).

Neuralgia	Pain in the distribution of a nerve or nerves (International Association for the Study of Pain, 1994).
Neuropathic pain	Pain caused by a lesion or disease of the somatosensory nervous system (Institute of Medicine, 2011). For example pain following shingles, an amputation or spinal cord trauma.
Nociception	The neural processes of encoding and processing noxious stimuli (Institute of Medicine, 2011).
Nociceptor	A high-threshold sensory receptor of the peripheral somatosensory nervous system that is capable of transducing and encoding noxious stimuli (International Association for the Study of Pain, 1994).
Nucleus Pulposus	The core of the intervertebral disc. It has a high fluid content in our early years and then dries out with age.
Opioid	Any compound that binds to an opioid receptor (Institute of Medicine, 2011). They are a group of medicines that come from the opium poppy or are closely chemically related to it. Includes the opioid drugs (agonist analgesics and antagonists) and the endogenous opioid peptides (Institute of Medicine, 2011). Opioids have been used for many years for managing pain.
Pain	An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (International Association for the Study of Pain, 1994).
Pain catastrophising	An individual's tendency to focus on and exaggerate the threat value of painful stimuli and negatively evaluate his/her ability to deal with pain (Institute of Medicine, 2011).

Parasympathetic nervous system	The parasympathetic nervous system and sympathetic nervous system form the autonomic nervous system, which is integral in managing chronic pain. Where the sympathetic nervous system develops a response to pain, the parasympathetic nervous system works to recuperate the body after experiencing pain.
Radicular pain	Pain radiating along a nerve as a result of irritation of the spinal nerve root, e.g. sciatica (Institute of Medicine, 2011).
Sciatica	Pain along the length of the sciatic nerve that is down the back of the thigh, through the calf and into the foot. Sometimes it is used more loosely to describe any leg symptoms.
Sensitisation	Increased responsiveness of nociceptive neurons to their normal input, and/or recruitment of a response to normally subthreshold inputs.
SNRI	Serotonin-noradrenergic reuptake inhibitors An antidepressant that blocks the reuptake of serotonin and norepinephrine. They do not produce the side effects associated with tricyclics.
Spinal canal	The hole that runs the length of the spine containing the spinal cord, its covering and the nerves that leave it in pairs at each level of vertebrae.
TENS	Transcutaneous Electrical Nerve Stimulation A battery powered machine that delivers small electric shocks via adhesively attached electrodes, placed either side of the spine with the aim of blocking the pain messages to the brain and producing the body's natural pain killers, endorphins.
TCA	Tricyclic antidepressant Heterocyclic chemical compounds used primarily as

antidepressants. The TCAs are used primarily in the clinical treatment of mood disorders such as major depressive disorder, dysthymia, and bipolar disorder, especially of the treatment-resistant variants. They are also used in the treatment of a number of other medical disorders, including anxiety disorders, obsessive-compulsive disorder, post-traumatic stress disorder, body dysmorphic disorder, eating disorders, certain personality disorders such as borderline personality disorder, attention-deficit hyperactivity disorder, as well as chronic pain, neuralgia or neuropathic pain, and fibromyalgia, headache or migraine

Further information

Australia

Australian Pain Management Association (APMA)

<http://www.painmanagement.org.au/>

or 1300 340 357

APMA advocates for recognition of persistent (chronic) pain as a disease in its own right and for better health and community services for people with ongoing pain. Their website aims to offer pain management options and information for people with pain, their families and friends. APMA's *Pain Link* telephone helpline is a support service staffed by volunteers who live with persistent (chronic) pain.

Chronic Pain Australia

<http://chronicpinaustralia.org.au/>

or 1800 218 921

A support group for people experiencing chronic pain. The key aims of *Chronic Pain Australia* are to: Improve knowledge and understanding about chronic pain across Australia; promote better understanding amongst health professionals about what it is like to live with chronic pain; and work towards supported self-management of pain.

Painaustralia

<http://www.pinaustralia.org.au>

or (02) 9130 6086

Painaustralia is a national not-for-profit body established to improve the treatment and management of pain in Australia. Formed in February 2011 to facilitate implementation of the National Pain Strategy (NPS), its role is to work with governments, healthcare professionals and consumers to ensure Australians have better access to pain management services through delivery of best practice models of care across the healthcare system.

Canada

Canadian Pain Coalition

<http://www.canadianpaincoalition.ca/>

or 905-404-9545

The Canadian Pain Coalition is a partnership of pain consumer groups, health professionals, and scientists. Its goals are:

- Increasing recognition by public and professionals that chronic pain is a disease,
- Promoting Best Practice guidelines for the treatment of pain,
- Reducing new cases of chronic pain through better treatment of acute pain,
- Increasing number of specialised facilities to treat chronic pain adequately,
- Increasing research activities into novel treatments of intractable pain.

Canadian Pain Society

<http://www.canadianpainsociety.ca/en/index.html>

The Canadian Pain Society is a chapter of the International Association for the Study of Pain with a varied membership including health professionals involved in the management of pain (e.g. physicians, dentists, nurses, physiotherapists, psychologists); scientists; professionals involved in education and training in the field of pain; and lay persons with an interest in the field of pain.

Chronic Pain Canada

<http://www.chronicpaincanada.com/index.html>

The Chronic Pain Association of Canada is Canada's largest independent, not-for-profit charitable organisation serving people affected by pain, through education, information, support and advocacy.

Europe

British Pain Society

<http://www.britishpainsociety.org/>

The British Chapter of the IASP, it is the representative body for all professionals involved in the management and understanding of pain in the United Kingdom

European Federation of IASP chapters (EFIC)

<http://www.efic.org/>

The EFIC is a multidisciplinary professional organisation in the field of pain research and medicine and represents Pain Societies from 35 European countries encompassing physicians, researchers, nurses, physiotherapists, psychologists and other healthcare professionals across Europe who are involved in pain management and pain research.

United States of America

American Chronic Pain Association

<http://www.theacpa.org/default.aspx>

or 1-800-533-3231

The American Chronic Pain Association aims to facilitate peer support and education for individuals with chronic pain, their families and friends as well as health care professionals.

International

International Association for the Study of Pain (IASP)

<http://www.iasp-pain.org/>

The IASP brings together scientists, clinicians, health care providers, and policy makers to stimulate and support the study of pain and to translate that knowledge into improved pain relief worldwide.

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