

Assessment of pain in advanced cancer

First steps in successful pain management

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Pain is a dynamic and multidimensional experience that affects each patient differently. The undertreatment of pain in advanced cancer leads to profound suffering and decreased quality of life. Addressing cancer pain systematically by applying the social-psychological-spiritual-biological model helps to ensure that a whole-person approach to pain assessment and management is undertaken.

Pain is a common symptom of advanced cancer and the suffering of uncontrolled pain has a profound impact on quality of life, reducing meaning, hope and function.¹ Pain may prevent engagement in relationships and can increase a person's desire for death.² Despite several studies finding that pain is not a clear predictor of prognosis in advanced cancer, it is most feared by patients and their

families as a herald of progression and mortality.³⁻⁵

The experience of cancer pain is dynamic and multidimensional, affecting a patient's physical self, social functioning, psychological wellbeing and inner spiritual world.⁶ Encouragingly, pain can also be well treated by careful assessment and focused management across these dimensions.^{7,8} This article provides insights into the accurate assessment of cancer pain.

The prevalence of advanced cancer pain

In Australia, cancer is one of the leading causes of death with about 136 people dying daily in 2019.⁹ The prevalence of pain in patients with advanced cancer is 64 to 90%.¹⁰⁻¹² Pain that is difficult to control despite best available therapy has a reported prevalence

of 10 to 20%;¹³ however, undertreatment of pain is more common, described in 30 to 50% of patients.^{11,14}

The social-psychological-spiritual-biological model of pain

Dame Cicely Saunders, the founder of modern palliative care, described how the combination of biological, social, psychological

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Key points

- **Pain is a common symptom in advanced cancer and is often undertreated, leading to profound suffering and decreased quality of life.**
- **Pain is a dynamic and multi-dimensional experience affecting a person's psychological, social, physical and spiritual wellbeing.**
- **Cancer pain can arise from tumour pain syndromes, diagnostic or therapeutic procedures or from cancer treatment modalities.**
- **The foundation of cancer pain assessment and management is the social-psychological-spiritual-biological model.**
- **A mechanistic understanding of the pathophysiology of pain helps determine appropriate pharmacological and non-pharmacological treatment options.**

physical construct but to do so would neglect the overarching principle that cancer pain is always a multidimensional experience.

Biological causes of cancer pain

Diagnosing the cause of cancer pain is important, as it forms part of an accurate pain assessment. Cancer pain can arise from a variety of sources, such as:

- pain syndromes directly due to tumour (e.g. direct tumour infiltration, metastases or paraneoplastic syndromes, accounts for about 75%)¹²
- diagnostic or therapeutic surgical procedures
- treatment-related side effects from chemotherapy, radiotherapy or biological therapies.²¹

Signals from peripheral nociceptors in the bone, skin, tendons, muscles and viscera, stimulated by noxious stimuli induced by tumour cells or cancer therapies, are carried via the spinothalamic tract of the spinal cord to the cerebral cortex for conscious perception of pain.²² Descending pathways from the



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and spiritual factors resulted in total pain, providing an important whole-person social-psychological-spiritual-biological framework by which pain in advanced cancer is assessed and thus treated.¹⁵ This model recognises that our connection to purpose, meaning and self can impact on both suffering and healing. How a patient's social and psychological status, spiritual wellbeing

and physical capacity may change with key clinical moments in the cancer trajectory is shown in Figure 1.¹⁶

The interplay of the four factors described by Saunders is illustrated in Figure 2, highlighting that these four factors can either work together to reduce the pain experience or actively antagonise each other.^{6-8,12,15,17-20} It often seems easier to assess pain within a solely

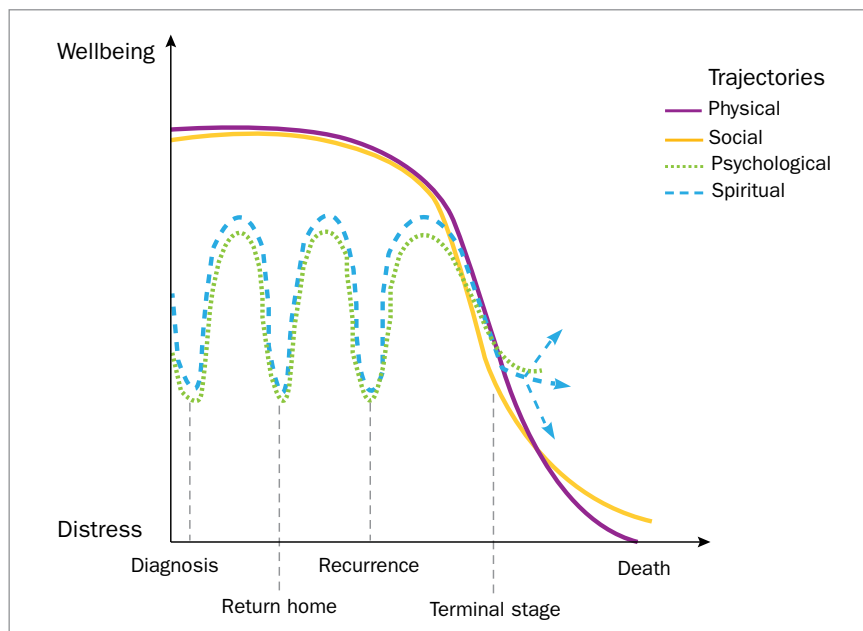


Figure 1. Lung cancer: physical, social, psychological and spiritual wellbeing from diagnosis to death.¹⁶

Reproduced with permission from Professor Scott Murray, Primary Palliative Care Research Group, The University of Edinburgh, UK.

cortex then modulate the pain experience and can inhibit/facilitate pain information flow back through the spinal cord.²¹

With unrelieved pain, sensitisation of nociceptors leads to increased stimulation

within the spinal cord resulting in the windup phenomenon (central sensitisation). Once windup develops, subsequent noxious stimuli lead to an exaggerated pain response such as allodynia and hyperalgesia.^{23,24}

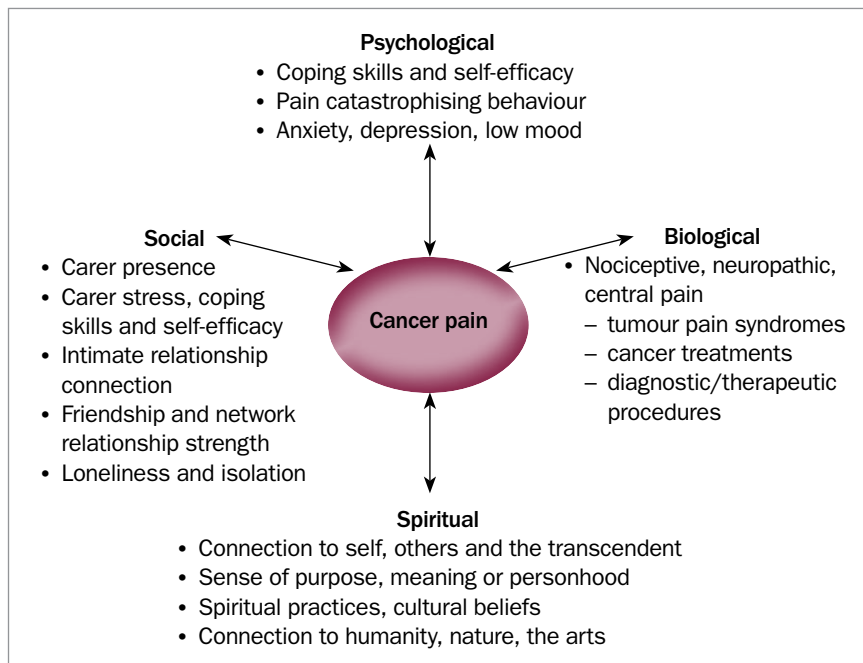


Figure 2. Spiritual-social-psychological-biological cancer pain relationship and assessment^{6-8,12,15,17-20}

Mechanistic pathophysiology of pain

A mechanistic view of the pathophysiology of cancer pain assists in determining appropriate multimodal pharmacological and non-pharmacological treatments of pain. The two broad groups are nociceptive and neuropathic pain. Nociceptive pain is sustained from somatic or visceral tissue damage. Somatic pain can be generated from superficial (skin and mucosa) or deep (bones, muscle and tendons) damage. Visceral pain results from smooth muscle or organ damage. Neuropathic pain originates from damage of neural tissue, producing the hallmark symptoms of allodynia, hyperalgesia and dysaesthesia.²⁵

Approximately one in three patients with cancer pain will have a neuropathic component, often related to cancer treatment (17 to 47%).^{26,27} The prevalence of chemotherapy-induced peripheral neuropathy can be up to 68% at one month and 63% at three months after chemotherapy. The prevalence of persistent postsurgical pain from certain procedures can be between 10 and 30%.²⁸

Neuropathic pain can be difficult to identify, is refractory to many treatments and is often undertreated.²⁹ The International Association for the Study of Pain has a grading system for neuropathic pain that can assist as outlined below.^{27,29,30}

- **Criteria 1:** pain distribution is neuroanatomically feasible.
- **Criteria 2:** history and examination suggests lesion or damage to somatosensory system.
- **Criteria 3:** positive (paraesthesia, hyperalgesia and allodynia) or negative (numbness and sensory loss) sensory signs and symptoms within pain territory.
- **Criteria 4:** confirmation of the lesion by diagnostic testing.

Probable neuropathic pain can be diagnosed if criteria 1, 2 and 3 or 1, 2 and 4 are found, and definite neuropathic pain if all four criteria are present.³⁰

Background, breakthrough and incident pain

Most patients with cancer pain will experience a continuous level of pain, termed

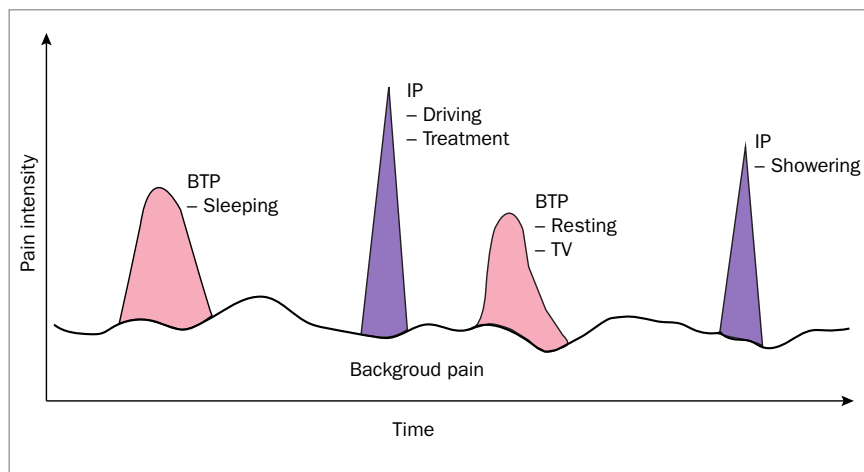


Figure 3. Background pain, breakthrough pain (BTP) and incident pain (IP).^{33,34} Example. A typical day of varying pain intensity of a 62-year-old man with metastatic prostate cancer with liver and painful bone metastases.

background pain. The initial stages of management aim to quantify and treat background pain to allow patients to continue normal function. However, patients with background pain may also experience intermittent or episodic flares of increased pain (with no known trigger) that is beyond the control of regular analgesia, and this is termed breakthrough pain. Patients who experience pain on movement or activity (from a known trigger) have incident pain. The distinction between breakthrough and incident pain is important as they both may require different treatment strategies (Figure 3).^{27,30-34}

Social, psychological and spiritual pain factors

The profound impact of cancer pain on a patient's inner world and the meaning they are able to attribute to their suffering can be difficult to fully comprehend. The authors recommend the work of two particular medical authors in gaining a deeper perspective of responses to suffering and healing. Dr Viktor Frankl survived the concentration camps of World War II and writes of his observations that 'those who have a "why" to live, can bear with almost any "how"'.³⁵ Dr Eric Cassell explores the nature of suffering and meaning and the role medicine plays suggesting 'transcendence is probably the most powerful way in which one is

restored to wholeness after an injury to personhood'.³⁶ A person's spiritual life is how they find meaning and purpose and how they experience connection to self, the sacred and the significant. Spirituality is intensely personal and subjective, and the meaning a patient ascribes to their illness can support them to transcend their suffering and feel healed.¹⁷

Psychological and emotional distress have a close relationship to pain in patients with advanced cancer. It is estimated that one-sixth of patients with cancer will have depression and one-quarter will have a mood disorder.³⁷ Patients who experience higher levels of pain are more likely to report mood disturbances and emotional distress. Conversely, the intensity of pain experienced by patients with advanced cancer can be directly related to a premonitory psychological condition and emotional distress.^{6-8,37} Patients who display pain-catastrophising behaviour have the tendency to focus on and exaggerate the threat value of painful stimuli and devalue their own ability to deal with pain. They tend to report higher pain scores than those who report higher self-efficacy to manage their pain.^{37,38}

Although pain is experienced personally and privately, it affects a person's social environment, their relationship networks and those who are providing care to them.⁷ Factors such as having a connected family

and friend network, socioeconomic status, having an available carer, education about their disease, ability to understand treatment decisions and relationships with healthcare workers are important determinants of pain perception.^{6-8,39}

When a patient with advanced cancer is suffering from pain, it can also place an enormous burden on carers as they are often called to monitor pain symptoms, dispense medication, manage side effects and communicate with healthcare providers.⁷ Factors in the carer such as distress, poor coping ability and lower self-efficacy can negatively impact a patient's quality of life and pain experience.⁸ More than that, a patient's progressive pain symptoms can cause psychological distress in carers and lead to caregiver strain.

Pain assessment

A comprehensive history is the cornerstone of pain assessment as it informs physical examination, resultant radiological and laboratory studies and the pain management plan (Box 1).^{7,8,12,31,40,41} A multidimensional assessment explores the character and nature of the pain and its impact on a patient's social, psychological and spiritual world. Pain potentiators, such as long-standing opiate use, pre-existing chronic pain and the presence of post-traumatic stress disorder, should also be considered.^{7,8,12}

Attention should be given to the current pain management regimen with respect to its effectiveness, side effects and the patient's understanding of the plan. It is important to be aware of all anticancer treatments to provide perspective on the cancer trajectory and potential pain generators.^{12,40}

Pain intensity can be quantified using the numerical rating scale (NRS), which has been validated for use in cancer pain, or the visual analogue scale (VAS).^{30,42} The Abbey Pain Scale is useful in patients with cognitive impairment as it quantifies observed pain-related behaviours such as facial expression, body movements and vocalisation.^{30,43}

The psychosocial impact of cancer pain can be assessed with the Brief Pain Inventory (BPI), which explores the interference of pain on activity (walking, general activity,

1. Cancer pain assessment^{7,8,12,31,40,41}

History

Characterise pain (what is the pain like?)

- Intensity
- Location and radiation
- Features (breakthrough pain, incident pain, daily fluctuation)
- Neuropathic features (allodynia, hyperalgesia, dysaesthesia)
- Quality (patient's own words)
- Relieving and provoking factors

Nature of pain (why is it painful?)

- Cause (verifiable tumour on investigations, history of relevant treatments)
- Pathophysiology (type of pain – nociceptive, neuropathic)
- Cancer pain syndromes
 - tumour-related pain (e.g. cancer bone pain, cancer-related soft tissue pain, spinal cord compression, hypercalcaemia, paraneoplastic syndromes)
 - treatment-related pain (e.g. chemotherapy-induced peripheral neuropathy, postsurgical pain, radiation-induced osteonecrosis)

Past and current cancer management therapies

- Surgery
- Chemotherapy
- Radiotherapy
- Biological therapies
- Alternative therapies

Current pain management plan (what are you doing now and what is working?)

- Pharmacological therapy
- Opioids and nonopioid therapies
- Response to therapy and clinical effectiveness
- Side effects (e.g. constipation, nausea, sedation, gastric upset)
- Adherence to regimen and barriers (cost, lack of education, poor self-efficacy)
- Nonpharmacological measures

Multidimensional assessment (what else is contributing?)

- Socio-psycho-spiritual factors

Functional impairment (how is it affecting?)

- Effect on physical function
- Effect on mood, psychological wellbeing, coping strategies
- Effect on social function
- Effect on family, marriage and relationships
- Effect on sleep, energy, sexual function

Pain potentiators (red and yellow flags)

- Post-traumatic stress disorder
- Substance abuse

Psychiatric conditions

Chronic pain and high opiate use

Social stressors

- Socioeconomic status, loneliness, carer distress, relationship structure

Psychological

- Catastrophising, anxiety, depression, low mood

Physical examination and diagnostic studies

- Comprehensive physical examination
- Order relevant investigations

working and sleep) and affect (relationship with others, enjoyment of life and mood).⁴⁴⁻⁴⁶ Higher scores correlate with increased psychosocial distress.^{6,45}

Resources that may support enquiry into a patient's spiritual world include:

- a two-question tool developed by Fitchett and Risk, which asks if religion or spirituality is important to them and, if so, if the existing resources are working for them. The combination of 'yes/no' would result in a referral to an appropriate resource such as a Chaplain or another spiritual professional²⁰
- the Faith, Importance and Influence, Community and Address (FICA) tool, which uses open-ended questions to assess faith (belief and meaning in life), the importance of spirituality to life, the influence of their belief system, the spiritual community to whom they belong and how healthcare providers can support a patient's spirituality.⁴⁷

Physical examination encompasses the evaluation of painful areas, looking

for signs of inflammation, infection, deformity or swelling. Careful attention should be paid to the nervous system, looking for wasting, sensory loss, altered reflexes, hyperalgesia or allodynia. Palpation and movement of the musculoskeletal system can reveal increased pain on movement, point tenderness and decreased mobility, all of which will inform a tailored management plan.^{30,40,48}

Radiological and laboratory studies are helpful in evaluating disease progression and identifying potential pain aetiology.⁴⁸

Helpful online resources for assessing cancer pain are listed in Box 2.

Conclusion

The first step in successful cancer pain management is recognising that pain is a dynamic and multidimensional experience that affects each patient differently. The undertreatment of pain in advanced cancer produces significant suffering and has a profound impact on a patient's quality of life, social functioning and wellbeing.

2. Helpful online resources for assessment of cancer pain

Guidelines: cancer pain management in adults

https://wiki.cancer.org.au/australia/Guidelines:Cancer_pain_management

Opioid calculator

<http://www.opioidcalculator.com.au/>

Addressing cancer pain systematically by applying the social-psychological-spiritual-biological model helps to ensure that a whole-person approach to pain assessment and management is taken. This allows the subtleties of each patient's cancer pain experience to be recognised, considered and cared for. **PMT**

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A list of references is included in the online version of this article (www.painmanagementtoday.com.au).

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