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A guide to cancer pain management

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Abstract

Most, if not all, cancer patients require care from community teams at some stage during their disease trajectory. For many of these patients, community nurses and General Practitioners are the main point of contact. Pain is reported by between 55–95% of patients with advanced or terminal disease. Optimal pain control positively impacts on the physical, emotional and functional well-being of the patient. Despite the existence of guidelines (WHO, 1996) (SIGN, 2000) and a wealth of literature on cancer pain management, half of all patients in Western countries still do not receive adequate pain relief. This article looks at the reasons behind this and provides community nurses with an overview of up-to-date information on pain pathophysiology and management, so that the control of cancer pain can be optimized in the community.

Key words

Cancer pain • Pain pathways • Assessment • Management

Pain management remains a problematic area in the treatment of cancer patients (Jacobson et al, 2007) (Azevedo São Leão Ferreira et al, 2006) and an important responsibility of nurses serving these patients in the community. Many cancer patients experience pain at some point during the course of their disease, even if they receive analgesic treatment. Although it is estimated that up to 90% of cancer pain can be managed (WHO, 2008) (WHO, 1996), half of all patients in Western countries still do not receive adequate pain relief (Hanks, 1995). Cancer patients now have improved survival rates and many will spend a large proportion of their final years at home, increasing pressure on community nurses as the main care coordinators and providers of holistic cancer-related pain management (Kennedy, 2005).

Community nurse role in the management of cancer pain

It is essential that nurses working in the community have the knowledge and support to provide optimal pain relief to their cancer patients. This involves understanding the current barriers to optimal management, the importance of regular pain assessment and the multiple therapies available to provide effective management. Underpinning this, communication between General Practitioners, nurses and other teams (hospice and hospital) involved with the patient’s care is essential, as is communication between nurses and their patients, carers or other family members during consultation and assessment.

Barriers to effective pain management

Pain is subjective and a number of barriers exist to its effective management (Pargeon and Hailey, 1999) (Glajchen, 2001) (Gunnarsdottir et al, 2003). Between 55–95% of patients with advanced or terminal disease report pain (Brescia, 1993) yet many still receive inadequate treatment.

Healthcare professional barriers

Healthcare professionals can harbour attitudes and misconceptions that affect their assessment and use of pain relief measures (Box 1).

These issues are present across healthcare disciplines (Thomason, 1998). When assessing the intensity of the patient’s pain, healthcare professionals can be influenced by their own personal perceptions and prejudices. These affect how they respond to patients’ self-reporting, or non-reporting, of their pain and can lead to inadequate use of non-pharmacological measures or prescriptions of medication. Some professionals still worry that patients will become tolerant or addicted to opioids. They may also be reluctant to prescribe opioids for fear that the patient may need increasingly higher doses of these analgesics to control pain, or that they could experience serious side effects.

Patient barriers

Patients also fear opioid tolerance or addiction and can associate these drugs with hopelessness or death. They may also be concerned about side effects and worry that the safeguards for the close monitoring of these in hospital are not available in the community. This can cause some patients to hide, or fail to report, their pain while others may not comply with prescribed medication. By listening to patient concerns and using good communication skills, community nurses are in an ideal position to help reassure patients about the drugs they are taking and to encourage compliance. Sometimes older patients may simply forget to take analgesics or have problems accessing prescriptions for analgesic drugs. Even getting tablets or liquid analgesics out of bottles can be difficult for older patients. Such problems
and visceral pain, which is produced in internal organs. In structures of the body, such as the skin or muscles, pain can be further subdivided into somatic pain, which is produced by nociceptive or neuropathic mechanisms. Nociceptive pain can be sufficiently relieved by analgesics, whereas fast conducting A\(\beta\) fibres can close the gates. A\(\beta\) fibres are found concentrated in the skin and are stimulated by touch or pressure. When activity of the A\(\beta\) fibres is greater than that of A\(\delta\) and C fibres, the gate closes and the pain intensity perceived by the brain is reduced. This may be why some patients feel benefits from massage to the affected area, although other factors, such as relaxation and distraction, may also contribute to pain relief experienced through this therapy.

**Organizational barriers**

There are also a number of organizational barriers to effective pain management. These include issues surrounding who takes responsibility and for what. For example, while GPs normally take responsibility for the ongoing prescribing and titration of analgesics, community nurses have a vital role in evaluating their effectiveness, monitoring side effects and reporting back to the GP. Good interdisciplinary cooperation is therefore necessary to provide optimal pain control for the patient (Dows, 1998).

**Understanding pain**

Understanding the different types of pain and the mechanisms behind them can help professionals prescribe the right treatments. Pain can be broadly classified as either nociceptive or neuropathic. Nociceptive pain can be further subdivided into somatic pain, which is produced in structures of the body, such as the skin or muscles, and visceral pain, which is produced in internal organs.

**Box 1. Common health care professional misconceptions surrounding pain**

- Patients should expect pain
- Patients in pain always have observable signs
- Patients will always tell you when they are in pain
- One type of intervention, for example analgesia, is sufficient to relieve pain
- Addiction and respiratory depression are problems with opioid use

(Carr and Mann, 1998)

**Box 2. Definitions of common terms**

- Drug tolerance: a condition whereby higher doses of a drug are required to maintain the same effect as produced during initial use of that drug. Tolerance often leads to physical dependence.
- Drug dependency: when a patient becomes physiologically or psychologically dependent on a drug, but without the damaging effect to the patient’s well-being, or compulsive use associated with addiction.
- Drug addiction: the compulsive use of a drug, which damages the users’ physical and psychological health, and adversely affects their social behaviour.
- Breakthrough pain: a temporary flare of moderate to severe pain intensity that occurs on a background of otherwise stable pain control.
- Adjuvants: non-analgesic drugs that are used with or without analgesics to improve pain control.

**Box 3. Pain gating system**

In 1965, Melzack and Wall first proposed a gating mechanism theory to explain the regulation of pain perception. It is now generally accepted that there are ‘gates’ present at each level of the spinal cord as well as at a number of sites in the brain. The theory proposes that a pain message can only pass through the ‘gate’ if it is open (Godfrey, 2005). Input from primary afferent neurones, which bring pain messages from the tissues to the spinal cord, affect gate opening and closing. This is due to the balance of stimulation of the different types of primary afferent nerve fibres involved in pain pathways. A\(\delta\) fibres transmit ‘sharp’ nerve injury type pain whereas C fibres transmit ‘dull’ or ‘throbbing’ pain. A\(\delta\) and C fibres open the gate to allow transmission of pain, whereas fast conducting A\(\beta\) fibres can close the gates. A\(\beta\) fibres are found concentrated in the skin and are stimulated by touch or pressure. When activity of the A\(\beta\) fibres is greater than that of A\(\delta\) and C fibres, the gate closes and the pain intensity perceived by the brain is reduced. This may be why some patients feel benefits from massage to the affected area, although other factors, such as relaxation and distraction, may also contribute to pain relief experienced through this therapy.

Nociceptive pain occurs when tissue damage, caused by tumour growth, results in the release of locally produced pain-producing substances. Neuropathic pain occurs when tumour growth damages the peripheral and/or the central nervous system. The words patients use to describe their pain can indicate what type of pain they have. For example nociceptive, somatic pain is typically described as ‘dull’ or ‘throbbing’, whereas visceral pain may be poorly localized and described as ‘cramping’. Neuropathic pain is often described as ‘severe burning’, ‘shooting’, ‘tingling’ or ‘numbing’. Often both nociceptive and neuropathic mechanisms are involved, so the pain is described as mixed.

Nociceptive and neuropathic pain involve similar pain pathways. There are four processes involved in these pathways; transduction, transmission, modulation and perception (Figure 1).

**Understanding pain pathways and perception**

Understanding the phase of modulation in pain pathways can help understand why some therapies work and help community teams prescribe the right treatments. It is known that when pain messages pass through the central nervous system and onto the brain to be perceived, these messages can be inhibited or enhanced by pathways descending from the brain. The descending pathways from the brain and the pathways of the incoming pain messages interlink with a complex gating system (Box 3) in the spinal cord. Cognitive activities, such as anxiety, excitement and anticipation, can cause pain signals to be modified via descending pathways in such a way as to enhance the pain stimulus, which can increase the intensity of pain per-
Figure 1. The four phases of the pain pathway. 1) Transduction: A noxious stimulus, such as a pin prick, acts on a specialised pain receptor, commonly called a nociceptor. Above a certain threshold level, the stimulus causes a change in electrical potential across the nerve’s cell membrane, known as an action potential. 2) Transmission: The action potential propagates along the nerve. This relays the message from the nociceptor to the spine and brain, which form the central part of the nervous system (CNS). 3) Modulation: The message is modified (inhibited or enhanced) by other activity in the CNS, coming from other sensory fibres, such as those stimulated by touch, or from the descending pathways from the brain. 4) Perception: The brain perceives the sensation as painful. The main areas involved in pain perception are the thalamus, sensory cortex and limbic system.

received (Carr and Mann, 2000) (Gebhart, 2004). Conversely, the administration of opioids or cognitive activities, such as distraction, suggestion and relaxation, can inhibit the pain stimulus via descending pain pathways, which can reduce the intensity of pain perceived. The gating system is also influenced by incoming messages from sensory fibres. Specific sensory fibres that respond to touch or pressure are activated by the application of warmth, coolness, massage or transcutaneous electrical nerve stimulation (TENS) to the skin. This can result in the closure of the pain gates in the spinal cord, therefore reducing perceived pain intensity.

Pain assessment

Inadequate pain assessment is an important contributory factor to the under-treatment of cancer pain (Davis and Walsh, 2004). As pain is not static and changes during the course of the disease, it should be reassessed frequently. The initial assessment provides a baseline measure of a patient’s pain against which changes can be measured, such as the success of treatment (White, 2004). Subsequent assessment enables any side effects of treatment or breakthrough pain (Box 2) to be documented (Carr and Mann, 2000). Regular assessments also convey interest in the patient and builds trust between the patient and assessor (Oldham and Bacon, 2001).

At the initial assessment a full medical history should be taken, including drug allergies and drug history. This should be followed by a history of the pain, including location, intensity, description, onset and duration. The assessment should then identify factors that may aggravate or relieve the pain, as these can lead to changes in function or behaviour. For example, the patient may be prevented from carrying out normal activities, such as gardening or playing with children, because movement may aggravate the pain. Being prevented from carrying out these activities can make some people feel helpless, hopeless or depressed. It is therefore important to take into account psychosocial factors such as these, which can affect mood and interpersonal relationships, in the assessment. A complete understanding of the features of pain can also help the assessor empathize with the patient (Ward, 2000).

There are a number of pain assessment tools that can be used to facilitate the assessment process. Most include body diagrams to reference the pain location and numbered scales to mark pain intensity. Useful pain assessment tools include: The Brief Pain Inventory (Cleeland, 1991) (Cleeland and Ryan, 1994) and the McGill Pain Questionnaire (Melzack,
Like other assessment tools, each has their own associated advantages and disadvantages. Therefore, it is important to use the tool which is most appropriate for the patient. With patients who are mildly or moderately cognitively impaired, the patient’s own reporting of their pain should still be the primary source for a pain assessment (Rao and Cohen, 2004). In those with severe cognitive impairment, community nurses will find that the observations of family members or caregivers, alongside visual (e.g. facial grimacing) and physical signs of pain (e.g. tense muscles), can provide useful information.

Pharmacological methods of pain management

Since pain is multifaceted it is best managed with a multidisciplinary approach that uses a combination of pharmacological and non-pharmacological treatments (Twycross, 1994). Pharmacological therapies are the cornerstone of pain management, and work by various mechanisms to alter the transmission of pain pathways. The World Health Organization (WHO) guidelines on the relief of cancer pain are widely accepted as the international standard by which treatment should be governed (WHO, 1996). These guidelines can be built upon to account for more recent advances in pain management.

WHO recommendations

1. Analgesics should be given orally unless administration by mouth is not feasible. When the oral route is not possible, alternative routes, such as intramuscular or subcutaneous, should be considered (Box 4). An exception to this is the transdermal route. This is now being used more frequently as an alternative to the oral route, particularly if patient compliance is a problem or the patient feels they have too many tablets to take.

<table>
<thead>
<tr>
<th>Adjuvant</th>
<th>Common use</th>
<th>Example drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticonvulsants</td>
<td>Neuropathic pain</td>
<td>Gabapentin and pregabalin are licensed for neuropathic pain in the UK (Hall and Sykes, 2004). Sodium valproate and Carbamazepine are also used, though are not licensed</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>Neuropathic pain</td>
<td>Amitriptyline</td>
</tr>
<tr>
<td>Muscle relaxants</td>
<td>Bone disease</td>
<td>Diazepam</td>
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<td></td>
<td></td>
<td>Baclofen</td>
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<tr>
<td></td>
<td></td>
<td>Clonazepam (also a useful drug for neuropathic pain)</td>
</tr>
<tr>
<td>Biphosphonates</td>
<td>Bone pain, especially that caused by multiple myeloma, breast or prostate cancer (Fulfaro et al, 1998) (Wong and Wiffen, 2002)</td>
<td>Pamidronate</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>Bone pain, spinal cord compression, headache from raised intra-cranial pressure and visceral pain</td>
<td>Prednisolone Dexamethasone</td>
</tr>
</tbody>
</table>

Box 4. Syringe driver set-up support

Subcutaneous opioids may be useful for treating patients in the terminal stages of illness who have become too unwell to take drugs orally. A syringe driver is commonly used to deliver analgesics, such as morphine, at set flow rates as it provides a reliable and constant route of administration that is safe to use in unsupervised settings (Barnett, 2000). However, setting up a driver can be complicated and driver-specific as well as patient-specific. Local skin irritation at the infusion site, mechanical problems and difficulties in mixing drugs are all widely recognized (Mitten, 2001).

Over 5,000 articles describing syringe drivers have been published globally in the last decade (Costello, 2008), yet many community nurses still lack confidence in how to set up a syringe driver. Local hospices, primary care teams or hospital pain and palliative care teams are a good place to turn to for advice and/or training. A good reference book, such as Dickman, Schneider and Varga’s The Syringe Driver, continuous subcutaneous infusions in palliative care, can be a valuable resource for all healthcare professionals who are involved in the set-up and management of syringe drivers.
3. A three-step analgesic ladder based on whether the pain is mild, moderate or severe is recommended (Figure 2). Analgesic treatment should begin at an appropriate step of the WHO analgesic ladder and move up a step when needed. It is important to remember that the analgesic ladder is not a rigid clinical path that must be adhered to in the care of every patient. The clinical judgement of an experienced and knowledgeable clinician in determining appropriate pain medication is important (von Gunten and Ferris, 1999).

**Step one of the WHO analgesic ladder**

Step one of the ladder represents non-opioids, such as paracetamol and/or non-steroidal anti-inflammatory drugs (NSAIDs). Used by themselves, non-opioids are generally used to treat mild to moderate pain. However, they can also be used in combination with opioids to treat moderate to severe pain. Paracetamol can be given in conjunction with stronger analgesics; for example morphine and regular paracetamol for the treatment of severe cancer pain. NSAIDs, including ibuprofen and diclofenac, are useful for managing pain related to cancer and may be useful to treat musculoskeletal pain, especially pain due to bone metastases. It is particularly important that community nurses are aware of the specific side effects of NSAIDs, especially gastric irritation, and monitor patients for these. Step one non-opioids can also be supplemented by adjuvants (Box 2, Table 1).

Both adjuvants and non-opioids can also be used at any step of the ladder, either by themselves (step one, non-opioids alone or with adjuvants) or in combination with weak or strong opioids (steps two and three). For example, adjuvant drugs, such as antidepressants and anticonvulsants, have an important role in the management of neuropathic pain. These drugs dampen down the abnormal nerve activity caused by tumour damage to nerves. For nurses working in the community this means that patients who describe their pain as ‘burning’, ‘shooting’ or ‘pins and needles’ in nature are likely to get pain relief from antidepressants or anticonvulsant drugs.

**Steps two and three of the WHO analgesic ladder**

Steps two and three of the WHO analgesic ladder represent weak and strong opioids, respectively. Opioids are effective for treating a variety of pains including nociceptive and neuropathic pain (Quigley, 2005) (Eisenberg et al, 2006). Originally it was thought that neuropathic pain was unresponsive to opioids, but it is now believed that there is a gradation of response. Opioids do have a role in its treatment, in conjunction with adjuvants including anticonvulsants and antidepressants. Step two represents weak opioids, such as codeine, dihydrocodeine and tramadol. Weak opioids are normally used to treat mild to moderate pain and are often administered in combination with non-opioids, especially paracetamol. Codeine and dihydrocodeine are nearly always used in this way, as they are not as effective by themselves (Moore et al, 1997) (SIGN, 2000). The choice of which weak opioid to use depends upon a number of factors, including mechanism of action, potency, potential side effects, contraindications and even the availability of the drug. Again, community nurses have an important role in evaluating the effectiveness of these drugs while monitoring and preventing side effects. The most significant side effect with codeine based drugs is constipation and therefore patients should be co-prescribed laxatives. tramadol, however, is less constipating, but can cause sickness and drowsiness.

Step three of the ladder represents strong opioids, such as morphine, oxycodone or fentanyl. Morphine is often the first choice of strong opioid. As with other opioids, it should be titrated for each individual patient — the dose being gradually increased in a stepwise manner until pain control is achieved or dose-limiting side effects occur (Walsh, 2000). Often, the process of titration may take several days and requires team work. While GPs have responsibility for prescribing and titrating opioid analogues, the community nurse is often in the best position to regularly review the dose and provide ongoing monitoring of the patient.

Some patients may not respond to morphine or experience unacceptable side effects, such as sickness, hallucinations or drowsiness. It is important that these are monitored by community nurses so that, if necessary, another strong opioid on the same step of the ladder can be substituted (if the pain is opioid sensitive). This is known as ‘opioid switching’ or ‘opioid rotation’. Alternatively, the route of administration may be changed. In general, opioid switching/rotation or changes in the route of administration should be managed in conjunction with hospital or hospice teams who have knowledge of equivalent drug doses. For example, transdermal fentanyl can be difficult to switch to without experience, as each patch is equivalent to a range of morphine dosages. Community nurses often have close working relationships with hospice teams and are well placed to make use of the specialist skills and experience of these teams when managing pain in the community. In addition, if the route of administration is changed to subcutaneous delivery using a syringe driver, specialist input is often needed to determine correct drug dosages for subcutaneous use. Syringe drivers are used when a patient is unable to absorb, tolerate or take oral analgesics. This can be due to persistent vomiting or malabsorption, difficulty swallowing due to tumour obstruction, severe weakness or if the patient is in a semi/or unconscious state (Box 4).

**Non-pharmacological methods of management**

A large proportion of patients, possibly up to 30%, will not have their pain adequately controlled with conventional...
pharmacological therapy alone (WHO, 1996). Analgesic drugs should be used in conjunction with other treatments, such as physical and psychological techniques. Non-pharmacological therapies complement pain medication, targeting some of the different components that contribute to an individual’s sensation of pain.

Physical interventions should ideally be introduced early in the care of the patient, enabling these therapies to become an established part of the overall management strategy. There are a wide variety of physical approaches that can be employed, and individual patients may derive benefit from different combinations of these. Referral to a physiotherapist may be necessary. The physiotherapist can assess the patient’s physical needs and decide upon a strategy of exercise and rest best suited to the patient, following their own assessment. They can also advise on counter stimulation using Transcutaneous Electrical Nerve Stimulation (TENS). TENS devices send a weak electrical current through the skin to stimulate sensory nerve endings. Patients can be shown how to operate TENS machines and told to expect a comfortable prickly or buzzing sensation upon use. Machines may be hired or purchased from health shops and may also be available on short-term loan from the National Health Service. Other physical therapies that can be explored alongside pharmacological therapy include acupuncture, massage or the application of superficial heat or cold to the affected area. Some of these approaches have been slow to gain clinical approval because of limited evidence-base. However, many have now been shown to be beneficial (Carr and Mann, 2000) (Vickers and Cassileth, 2001). Patients can often access these services via their local oncology centre or hospice, if they have been referred to one.

Psychological interventions can also be valuable in controlling pain and offer the patient a sense of self-control. Such interventions can be explored through visiting a psychologist and can encompass both cognitive and behavioural techniques. Cognitive techniques focus on perception and thought and are designed to influence how patients interpret events or bodily sensations. Behavioural techniques are directed at helping patients develop skills to cope with pain and modify their reactions to it. Such interventions include hypnotherapy, relaxation and distraction techniques or music and art therapy. Emotional, religious or spiritual support also play a part in psychological well-being, as does having good communication and a trusting relationship between the healthcare professional and patient. Psychological interventions do not eliminate a patient’s pain, but can help them adapt and cope with it.

**Patient education**

Patients should know how their pain is being managed, what to expect and should be involved in decisions about treatment. Community nurses therefore find themselves educating patients and their families about pain management. Education is important for many reasons, particularly because it can help patients and their families take control of their pain and improve its overall management.

### Free educational CD ROM

The information in this article has been adapted from extracts taken from the *Breaking Barriers: management of cancer-related pain* CD ROM. This educational resource has been developed by the Interactive Education Unit at The Institute of Cancer Research, in collaboration with The Royal Marsden NHS Foundation Trust.

The CD ROM is freely available for the education of healthcare professionals working in the field of cancer pain. To order a copy call: 0560 1422921

See [www.ieu.icr.ac.uk](http://www.ieu.icr.ac.uk) for more details

### Conclusion

Nurses are well placed to have a direct impact on the quality of pain control provided to cancer patients in the community. Keeping up-to-date with advances in the field can lead to increased confidence in how to approach the complex and multifaceted experience of pain. Armed with a good awareness of the barriers to its management and a good knowledge of pain pathways and dimensions, the community nurse will be well equipped to take a thorough pain assessment and advise on an optimal and multidisciplinary management strategy.

BJCN


Carr E, Mann E (2000) *Opioids for neuropathic pain.* Lippincott Williams & Wilkins


Cleeland C (1991) *The Brief Pain Inventory Pain Research Group, Department of Neurology, University of Wisconsin, Madison*


TOPIC HEADER

KEY POINTS

- Only half of cancer patients experience adequate pain relief.
- Most cancer pain can be relieved with good management.
- A number of ‘barriers’ exist to effective pain management.
- Pain is subjective and multidimensional.
- A combination of pharmacological and non-pharmacological treatments should be used for optimal pain management.


