Improving pain management for patients in a hospital burns unit

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The pain caused by burns can be unpredictable and its management is complex. In order to minimise the discomfort experienced by burns patients, it is important that health care professionals understand the principles of analgesia and the importance of delivering the right drugs at the right time. An audit in a burns unit revealed that nursing and medical staff lacked confidence in prescribing and administering analgesia, and as a result patients were experiencing uncontrolled pain. A new system of pain assessment and management was developed with an accompanying education programme, which resulted in improved pain management.

The inadequate treatment of acute pain can delay healing, resulting in complications such as chest infection and pulmonary embolism. This can increase recovery time, as well as causing further pain, distress and inconvenience to the patients and their families.

One of the major barriers to the effective management of pain is a lack of recognition of the problem. Bruster et al (1994) found that 87 per cent of patients discharged from hospital had suffered moderate or severe pain. About one-third of patients experienced pain all or most of the time while in hospital. This was despite recommendations made by the Royal College of Surgeons of England and the College of Anaesthetists (1990) that pain should be systematically assessed and recorded in all patients.

The management of burns pain

Burns are considered to be among the most painful types of trauma (Kohler et al, 2001). A search of the literature produces a plethora of papers concluding that strong opioids are the mainstay of any pain management regimen in burns patients. It follows therefore, that as well as simple analgesia, these patients should be prescribed strong opioids, of which morphine is accepted as the ‘gold standard’ (British Medical Association and the Royal Pharmaceutical Society of Great Britain, 2004).

Pain relief in patients who have sustained burns has traditionally been a complex phenomenon, and providing them with adequate analgesia has often proved difficult (Judkins, 1998; Latarjet and Choinere, 1995).

This is due, in part, to the multidimensional nature of burn pain (Judkins, 1998). The experience of pain depends not only on the stimulus, but also on how the brain deals with the messages it receives. These mechanisms change considerably from one person to another and also depend on the situation (Carr and Mann, 2000). Factors such as mood and previous painful experiences exert an effect, as does the cause of the pain and what that might signify to the patient.

It has long been recognised that strong opioids are the preferred choice for treating severe pain, but there are unjustified fears among many health care professionals that they lead to respiratory depression. This may occur if the dose of opioid is not titrated to the pain and the patient is given too high a dose for her or his needs. Staff sometimes administer far too small a dose ‘just to be on the safe side’, and the fear of causing addiction may also limit the use of opioids as analgesics (Carr, 1997; McQuay et al, 1997).

Using audit and the analgesic ladder

In order to assess whether practice could be improved, a regional burns unit based within a hospital in the south of England undertook an audit of pain management.

Although health care professionals are now familiar with the principles of clinical effectiveness, there remain significant variations in practice (Squire, 2001). The collection of reliable data is essential for identifying areas for improvement and ensuring that any changes in practice have the desired outcomes (Lawler, 2001). One way of obtaining such data is through clinical audit.

Regular audit activity is part of the acute pain team’s (APT’s) clinical role. The Department of Health (1996) suggests the main purpose of audit is to improve quality of patient care and defines it as the systematic and critical analysis of the quality of clinical care. This analysis should include diagnosis, treatment and care, the use of resources, and the resulting outcome and quality of life for patients.

In undertaking the audit, the APT wanted to establish whether patients were being prescribed a variety of

BOX 1. RECOMMENDED STANDARDS ON ANALGESICS FOR BURNS PATIENTS

All patients should be prescribed the following:

- Regular paracetamol (1g every six hours);
- Regular non-steroidal anti-inflammatory drugs (unless contraindicated);
- Opioid analgesia in a dose – the route and frequency appropriate to the individual;
- Anti-emetic medication to be given as needed;
- Laxative to be given if opioids are administered.

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balanced analgesia in appropriate doses, at the correct time intervals, through a variety of routes. These standards were based on the World Health Organization's (WHO, 1996) 'analgesic ladder' – a stepped approach that aims to ensure that patients receive effective pain relief (Fig 1).

The ladder was initially developed to manage cancer pain, but has a far wider application. It exploits the fact that analgesics work at specific receptors, with each type working at different sites. For example, opioids work at opiate receptors most commonly found in the brain and spinal cord, while non-steroidal anti-inflammatory drugs (NSAIDs) work peripherally.

The resulting synergistic activity of different analgesics has led WHO to recommend the use of a combination of analgesics where one type is ineffective alone (Twycross et al, 1998). The ladder has three steps, which are to be followed in sequence until the patient is free of pain. It involves prompt oral administration of drugs as follows:

- **Step 1** – Non-opioids (paracetamol and NSAIDs);
- **Step 2** – Mild opioids such as codeine;
- **Step 3** – Strong opioids such as morphine.

Drugs from the previous step of the ladder can be continued or not as appropriate. Additional adjuvant drugs can be used to calm fear and anxiety. WHO recommends that drugs are given 'by the clock', every three to six hours to prevent breakthrough pain, rather than on demand when the patient is already experiencing pain. This approach of administering the right drug in the right dose at the right time is inexpensive, according to WHO, and is 80–90 per cent effective.

Collecting the data

Audit data was collected from 20 adult patients with burn injuries ranging from less than 1 per cent to 20 per cent. The team was then able to assess current practice and compare it with the hospital's recommended standards (Box 1), which were based on the standards of the Joint Commission on Accreditation of Healthcare Organizations (2001). Patients admitted to the unit between August and September 2000 were approached by the APT and invited to take part in the audit, provided that they were eating and drinking, and were able to take their analgesia orally.

Results of the audit (Box 2) highlighted a lack of understanding of the WHO analgesic ladder among both the doctors who prescribed and the nurses who administered analgesia. This resulted in patients receiving inadequate pain relief. Specific problems highlighted by the audit can be summarised as follows:

- No formal pain assessment was taking place. Nurses therefore found it difficult to identify and express pain severity, which meant they relied on intuition and their own interpretation of patients' requests for pain relief;
- Health care professionals’ lack of knowledge of the WHO analgesic ladder meant that patients did not always receive the right analgesia to control their pain;
- Inappropriate prescribing was commonplace – most patients were not prescribed regular non-opioid analgesia;
- Patients were often given weak opioids, despite complaining of severe pain;
- Inadequate doses of morphine were being prescribed for the control of severe pain;
- Immediate-release oral morphine solution was reserved for use at dressing change only.

**Improving pain management in the unit**

The assessment and documentation of pain are essential if pain is to be managed effectively (Carr and Mann, 2000). The lack of formal assessment within the burns unit made it virtually impossible for staff to make rational decisions on patients' analgesic requirements.

The audit highlighted that the unit was not using formal standards for prescribing analgesia, so medical staff made isolated decisions about what analgesia was necessary. Weak opioids were being prescribed to patients experiencing severe pain, while others were being prescribed inadequate doses of morphine – often as little as 5–10mg oral morphine four-hourly as required was being prescribed for patients weighing over 80kg. A good starting point for such patients would be 20–40mg, two-hourly as required.

While it is not appropriate to make general comments on the basis of this audit data, other authors have found similar difficulties. For example, MacLellan (1997) found that inappropriate prescribing was commonplace for postoperative patients, with a lack of simple analgesia prescriptions and inadequate strengths and/or numbers of opioid doses.

**Changes to practice**

Following the audit, a senior nurse from the APT, the ward manager and the burns unit pharmacist discussed how the situation could be improved. Three changes were agreed for the management of pain in the unit:

- A pain assessment chart was introduced;
- The principles of WHO’s analgesic ladder were adopted;
- Immediate-release oral morphine solution was no longer stored as a controlled drug – it was kept on the drug trolley for single nurse administration on routine drug rounds.

Each of these changes was underpinned with education provided by the senior nurse from the APT. The ward manager introduced a weekly programme of multiprofessional education, with the APT taking an active role. The APT also

**REFERENCES**


**KEYWORDS** ■ Medicine ■ Burns ■ Pain management

**BOX 2. RESULTS OF THE AUDIT**

Data was collected on 20 adult patients in a regional burns unit:

- Six patients were prescribed regular paracetamol to be taken every six hours;
- 17 patients were able to take NSAIDs – six were prescribed regular NSAIDs;
- 14 patients were prescribed an anti-emetic;
- Only three patients had been prescribed anything to prevent or treat constipation;
- The prescribing of opioids was erratic, with a mixture of weak and strong opioids being available in various doses, often disproportionate to the amount of pain the patient was experiencing.

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facilitated teaching sessions specifically for nurses.

A standard pain assessment tool was introduced, accompanied by education from the APT. The visual analogue scale was selected, as it is a well-known tool, is simple to use, and has been well validated (Hawksley, 2000).

This tool enables patients to indicate the level of pain (or the effectiveness of pain control) they are experiencing, most commonly on a line marked from 1–10, in which 0 is no pain and 10 represents the worst possible pain. By using the tool nurses could see they had previously underestimated the severity of patients’ pain and overestimated the effectiveness of their interventions. Introducing formal pain assessment and the principles of the WHO analgesic ladder overcame many of the problems highlighted in the audit. Staff then documented pain scores so the effectiveness of analgesics could be assessed.

It was anticipated that by adopting WHO’s analgesic ladder, medical staff would be encouraged to prescribe a variety of ‘balanced’ analgesia. If they did this for each patient, staff would be able to tailor the appropriate analgesics to individual needs. Simple non-opioid analgesics would be available for all patients, with strong opioids being prescribed to manage moderate or severe pain.

The audit showed that patients often received weak opioids such as dihydrocodeine when reporting pain. Stronger opioids, such as morphine, were rarely used for anything other than dressing changes. As a result, patients were experiencing poor standards of pain relief.

This problem was exacerbated by the fact that it can take a significant amount of time to prescribe and administer strong analgesia even when its need is identified, due to the constraints surrounding controlled drugs. Also, Walsh and Ford (1989) identified that inadequate knowledge compromises nurses’ abilities to make optimal clinical decisions, and can foster ritualistic practices.

Traditionally, immediate-release oral morphine solution had been treated and stored as a controlled drug on the unit. However, from a legal perspective it only becomes a controlled drug when there is more than 13mg morphine in 5ml (British Medical Association and the Royal Pharmaceutical Society of Great Britain, 2004).

The strength most often used on the unit is 2mg/ml, which is not legally classified as a controlled drug and can be stored in a locked medicine cupboard or trolley. It therefore seemed logical to dispense with the checking procedure involved with administering immediate-release oral morphine solution from the controlled drug cupboard.

Mann and Redwood (2000) documented a similar change resulting in increased use of the drug and reduced waiting times for patients before they received it.

**Effects of the changes**

Three months after the changes in practice had been implemented, an evaluation questionnaire was distributed to the nurses. The results showed an improvement in the prescribing and administration of simple analgesia, and that the nurses were enthusiastic about formally assessing and recording the severity of patients’ pain.

The management of pain in the burns unit has improved significantly since the changes were introduced, with most patients regularly receiving simple analgesia. Fewer patients experience severe pain – although this cannot be verified as no formal assessment and recording of pain had occurred before the changes were implemented.

Several months after the audit, a further questionnaire was given to staff. This revealed that the nurses were more confident in administering stronger analgesics, such as large doses of morphine, to control severe pain. The use of slow-release morphine tablets had become commonplace and as a result, the peaks and troughs in pain control usually associated with immediate-release formulations were less frequent, leading to increased patient comfort. Staff concerns about reducing and stopping slow-release morphine had proved to be unfounded.

The amount of immediate-release oral morphine solution consumed in the burns unit increased dramatically once the changes were introduced. The total amount consumed rose by 50 per cent in the first three months, and this figure continued to rise. These findings endorse the positive impact of the changes.

**The current situation**

Medical staff joining the burns unit team are often surprised at the doses of morphine required to control pain of differing burn sizes. However, education and affirmation of their knowledge of WHO’s analgesic ladder gives them confidence to prescribe adequate doses and they soon become familiar with the new accepted practice.

The change in storage of immediate-release oral morphine solution has led to more timely administration, allowing nurses to spend more time on direct patient care. It has proved so successful that one year on it has been adopted in all clinical areas throughout the trust.