

Managing painful chronic wounds: the Wound Pain Management Model

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ABSTRACT

Chronic wound pain is not well understood and the literature is limited. Six of 10 patients venous leg ulcer experience pain with their ulcer, and similar trends are observed for other chronic wounds. Chronic wound pain can lead to depression and the feeling of constant tiredness. Pain related to the wound should be handled as one of the main priorities in chronic wound management together with addressing the cause. Management of pain in chronic wounds depends on proper assessment, reporting and documenting patient experiences of pain. Assessment should be based on six critical dimensions of the pain experience: location, duration, intensity, quality, onset and impact on activities of daily living. Holistic management must be based on a safe and effective mix of psychosocial approaches together with local and systemic pain management. It is no longer acceptable to ignore or inadequately document persistent wound pain and not to develop a treatment and monitoring strategy to improve the lives of persons with chronic wounds. Unless wound pain is optimally managed, patient suffering and costs to health care systems will increase.

Key words: Holistic management • Local management • Non-pharmacological methods • Pharmacological wound pain management • Wound pain • Wound pain assessment • Wound pain model

Key Points

- healthcare professionals are now starting to recognize the importance of addressing the issue of wound pain
- effective pain management depends on detailed and accurate assessment and documentation of the patient's pain experience
- a Wound Pain Management Model (WPMM) has been created by the authors to be incorporated into the holistic management of patients with chronic wounds
- WPMM starts from the premise that all wounds are painful until proven otherwise

INTRODUCTION

In recent years, there has been growing evidence that the experience of living with a chronic wound has a huge impact on a patient's quality of life (1–3). One of the consistent findings, particularly in the qualitative work that has been completed, is that pain is one of the symptoms that patients find particularly distressing (4–6).

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A recent study in Canada suggests that the prevalence of pain in patients with venous predominant or mixed venous and arterial ulcers is approximately 50%, with over 50% of these using analgesia as part of their treatment (7). Similar figures have been reported in other studies of leg ulceration (8,9) as well as in other chronic wound types (Table 1). Health professionals are now starting to recognise the importance of addressing the issue of wound pain, as evidenced by the European Wound Management Association Position Document on pain (10), the dedication of a supplement of Ostomy Wound Management to this topic (April 2003; 11–13) and the Consensus Document on Minimising Pain at Wound dressing-related procedures launched at the World Union of Wound Healing Societies meeting (July 2004; 12).

Few professionals would disagree that decisions regarding patient care should include a strong focus on the management of pain in

Table 1 Prevalence studies on leg ulcers including observations on pain and its intensity (PubMed, Cinahl and EMBASE, search concluded by May 2006)

Author	Wounds types	Investigations	Methods	Participants	Main outcomes
Ebbeskog <i>et al.</i> , 1996 (38)	Leg and foot	Study of demographics of leg ulcer patients in Sweden	Survey, questionnaire	Physicians and nurses completed questionnaires on 294 patients	Leg and foot ulcer prevalence of 0-12%; 92% patients >65 years; 42% venous ulcers (highest prevalence); pain reported by patients: 47% venous; 80% arterial ulcer; 94% mixed ulcer; 48% diabetic ulcer; 51% other ulcer; combined all day and dressing change pain
Noonan and Burge 1998 (9)	Venous leg ulcer	Measurement of pain	Nurses interviewing patients; ulcer measurements, pain assessment with Visual Analogue Scale and Visual Rating Scale	38 venous; 10 arterial ulcer patients	Temporary pain (dressing change): venous 87%; arterial 100%; mixed 86%. Persistent pain: venous 68%; arterial 100%; mixed 71%. 57% patients felt anger about the pain; standing exacerbated pain for all patients; pain disturbed sleep for most patients
Hofman <i>et al.</i> , 1997 (8)	Venous leg ulcers	Assessment of prevalence, and pain	Prospective study, pain only analysed in venous group as other wound aetiologies were too small in sample size	140 patients	64% of venous patients reported 4/5 out of 5 pain; 38% had continuous pain; 64% reported sleep disturbance; 26% had atrophy blanche; periulcer pain was associated with maceration; 61% had pain in ulcer; 43% had pain around the ulcer; 46% had pain elsewhere; 30 out of 37 patients prescribed morphine still had pain of 4 to 5 out of 5

Table 1 Continued

Author	Wounds types	Investigations	Methods	Participants	Main outcomes
Lindholm <i>et al.</i> , 1999 (39)	Chronic wounds and demographics	Study of demographics of leg ulcer patients in Sweden	Survey; structured questionnaire	Physicians and nurses completed questionnaires regarding 694 patients	<ul style="list-style-type: none"> Prevalence: leg ulcers (0.14%); pressure ulcers (0.06%) and other wounds (0.04%); pain :48% leg ulcer patients; 46% foot ulcer patients; 37% pressure ulcer patients; 82% arterial patients; 39% venous disease; 24% of type I persons with diabetes; 30% of type II persons with diabetes; 87% of the older adult pressure ulcer patients (80–89 years)
Hollinworth and Collier, 2000 (40)	Chronic leg ulcers	Survey	Questionnaire survey among nurses	373 nurses returned questionnaires	<ul style="list-style-type: none"> Practitioners main consideration: 47% prevention of trauma to the wound; 37% avoiding patient pain; other concerns 16%
Charles <i>et al.</i> , 2002 (41)	Venous ulcers	Compression bandaging; hydrocolloid dressing evaluation	Clinical trial; 12-week treatment	65 patients	<ul style="list-style-type: none"> 71% of patients had ulcer-associated pain; 2 weeks with compression bandaging reduced pain to half its entry level; no difference in pain with different dressings
Margolis <i>et al.</i> , 2002 (42)	Venous leg ulcers	Database analysis	Analysis of general practice databases, UK	6% of the general practitioners in UK; >65 years; 50 000 eligible for analysis	<ul style="list-style-type: none"> 1.69% >65 had venous leg ulcers at least one time per year. 1.2 new incidence rate per 100 person years; incidence increased with increasing age

Nemeth <i>et al.</i> , 2003 (7)	Venous and mixed aetiology	Prevalence measurement	Nurse interviews, cross-sectional design, three times 1 week, numeric rating scale	255 participants	48–55% pain prevalence in venous leg ulcers; pain in all wounds not related to hard-to-heal wounds; individuals with pain statistically significant: ↑ osteoarthritis, ↑ foot ulcers, ↓ time of attendance at a leg ulcer service, ↓ SF-12 mental health component score
Nemeth <i>et al.</i> , 2004 (43)	Venous leg ulcers	Tracking pain related to compression bandaging	Nurses interviewing patients, pain measurement with numeric rating scale, and short form McGill	20 patients with venous disease	85% reported pain at admission; 81% still felt pain after 5 weeks of compression bandaging, but of less severity
Goncalves <i>et al.</i> , 2004 (44)	Chronic leg ulcers	Describe pain characteristics	Nurse interviews, McGill pain descriptors	90 patients; mainly of venous origin (87%)	100% of venous leg ulcer patients had pain; pain descriptors: 83% throbbing; 78% drilling; 72% burning; 70% stabbing; evaluative descriptors: 66% nagging; 60% tiring; 50% troublesome

Key Points

- there are 2 types of pain
- acute pain warns of injury and prevents tissue damage such as mechanical, thermal and chemical injuries
- chronic pain involves both physical and emotional components and is rarely an indication of ongoing damage
- to distinguish between the chronic aspects of the wound and the chronic aspects of the pain WPMM uses the terms temporary and persistent

order to relieve patient suffering. However, effective pain management depends on detailed and accurate assessment and documentation of the patient's pain experience. The authors have developed a Wound Pain Management Model (WPMM) to assist health care professionals to incorporate wound pain assessment and management into the holistic management of patients with chronic wounds. The first sections of the model place the assessment and management of pain into the context of important aspects of chronic wound management, such as accurate diagnosis and appropriate local wound management. This article concentrates on wound pain assessment and treatment strategies, focusing on persistent chronic pain and on the pain associated with local wound treatment including dressing change.

WOUND PAIN MANAGEMENT MODEL

The WPMM (Figure 1) starts from the basic premise that all wounds are painful until proven otherwise (12) but begins by emphasizing the importance of good wound assessment leading to accurate wound diagnosis to assist in ensuring that fundamental aspects of underlying pathology are addressed. In addition, many aspects of local wound management, if dealt with swiftly and appropriately, can lead to a reduction in the patient's pain experience, for example, resolution of infection or reduction in inflammation. Many of these issues are covered comprehensively in the literature (14,15) and are outside the scope of this study. The focus for the remaining text will be on differentiation of the types of wound pain, wound pain assessment and holistic approaches to wound pain management.

TYPES OF WOUND PAIN

In 1979, the subcommittee for taxonomy of the International Association for the Study of Pain

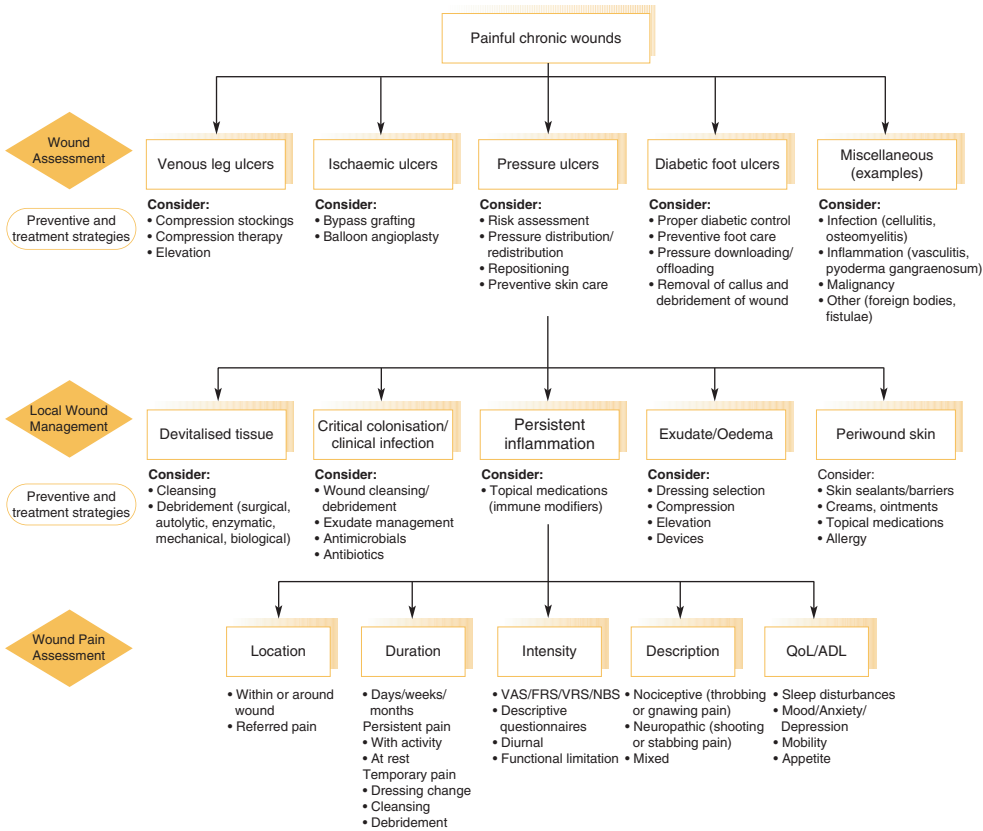
drafted a definition of pain as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage' (11). This definition clearly covers both physical and emotional components of the pain experience and reflects the currently held belief that personal perception mediates the experience of pain, reflected in the definition that 'pain is what the patient says it is' (16). The need for a universally agreed definition of pain was not just an academic exercise; this definition of pain led to calls for changes in treatment and created pressure to treat pain as a symptom or disorder in its own right. It also highlighted the need to be clear about the different types of pain that patients experience, and the language that we use to describe such pain. Many authors concentrate on distinguishing between 'acute' and 'chronic' pain (17,18).

The primary function of acute pain is to warn of injury and prevent tissue damage such as mechanical, thermal and chemical injuries. This is referred to as nociceptive pain. When harmful inputs decrease, pain is usually relieved. Chronic pain differs as it involves both physical and emotional components and is rarely an indication of ongoing damage (18,19). A wound represents a loss of skin integrity and cut nerve fibres, therefore the resulting pain is due to a combination of nociceptive pain and pain caused by nerve damage (neuropathic pain).

Nociceptive pain has been defined as an appropriate physiological response to a painful stimulus, while neuropathic pain has been defined as an inappropriate response caused by a primary lesion or dysfunction in the nervous system (11). The clinician must be aware that there is a physical and an emotional component of pain. For treatment of the physical component, pain can be divided into nociceptive and/or neuropathic pain as indicated in Table 2. The emotional component of nociceptive and neuropathic pain is comparable and therefore the treatment is similar (20).

Table 2 Characteristics of nociceptive and neuropathic pain

Type of pain characteristics	Nociceptive pain	Neuropathic pain
Pain caused by (18,45)	Tissue damage, acute and chronic inflammation	Disrupted/damaged nervous system
Pain is described as (46)	Aching, throbbing, gnawing, tender	Burning, stinging, shooting, stabbing, cramp, numbness



Key Points

- WPMM outlines areas that are important for wound pain assessment including the location, intensity and duration of the pain as well as listening to ways in which patients describe their pain and the impact the pain has on their lives
- the use of validated scales (VAS, Numeric Box Scale, Faces Scale and Visual Rating Scale) can assist in measuring the impact of pain

Explanations: VAS: Visual Analogue Scale • FRS: Faces Pain Rating Scale • VRS: Verbal Rating Scale • NBS: Numeric Box Scale • QoL: Quality of Life • ADL: Activities of Daily Living

Figure 1. The Wound Pain Management Model is a guide on wound pain assessment and management. The guide consists of four levels that need to be considered simultaneously in order to prevent and treat painful chronic wounds properly. It is therefore recommended to assess and treat both the wound and the pain at the same time.

Both types of pain are most usually seen in combination in patients experiencing chronic wound pain.

The World Union of Wound Healing Society’s consensus document describes different elements of the pain experience in terms of ‘operative’, ‘incident’, ‘procedural’ and ‘background’ pain to distinguish the differing parts of the experience of wound pain (12). The debate about the terms used can lead to confusion for the non expert practitioner in the wound care arena. In order to distinguish between the chronic aspects of the wound and the chronic aspects of the pain experience, the WPMM uses the terms ‘temporary’ and ‘persistent’ to clearly differentiate the temporal aspects of the pain experience (in the pain literature, the term ‘chronic pain’ may be used for ‘persistent pain’). These terms may be useful for health professionals at all levels to comprehend and discuss the pain experience with a person with chronic wound, and are outlined in the WPMM in Figure 1.

This conceptualisation incorporates both the ground-breaking work already completed on patients’ and practitioners’ concerns about experiences of pain at dressing change (21) and research that has shown that wound pain can be persistent (22), with fluctuating bursts of temporary pain at any time (23).

ASSESSMENT OF WOUND PAIN

If wound pain is not assessed and documented, it may be ignored and/or not addressed properly (24). It is important to remember that increased wound pain may be an indicator of wound complications that need treatment and therefore practitioners must constantly reassess the wound as well as the associated pain. The WPMM outlines areas that are important for wound pain assessment including the location, intensity and duration of the pain, as well as listening to the ways in which patients describe their pain and the impact the pain experience has on their

Key Points

- at present there are a few local options for the treatment of persistent pain
- a new foam dressing is available that releases ibuprofen in the presence of exudate

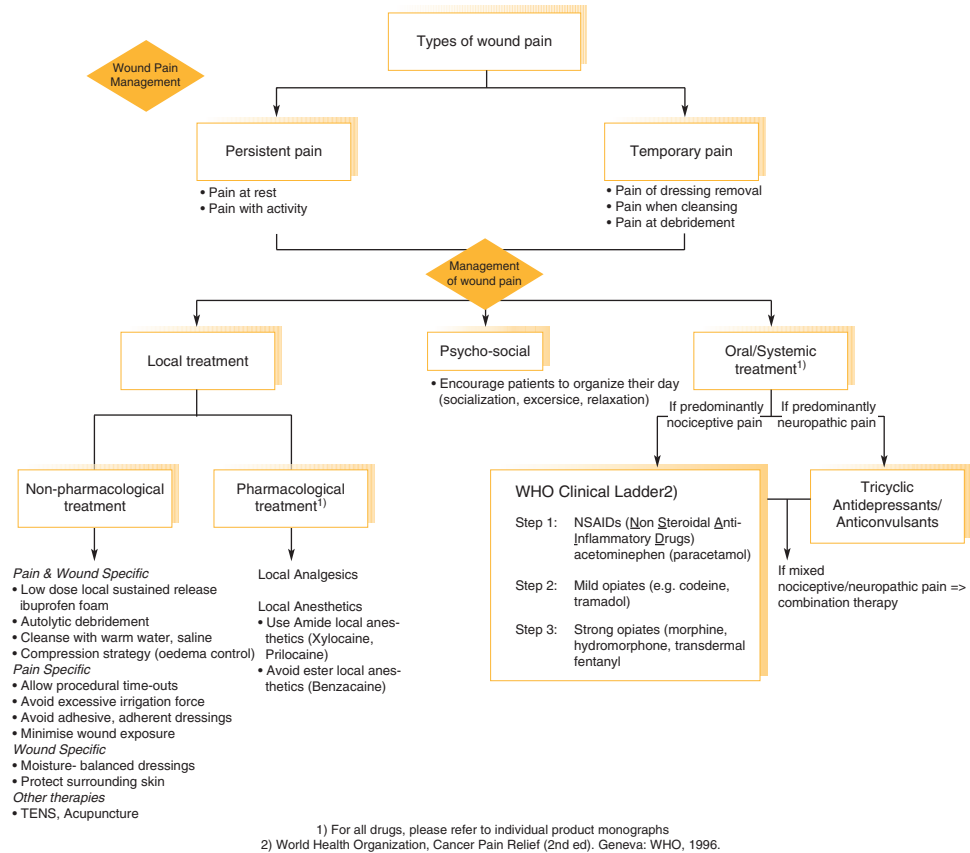


Figure 1. Continued.

activities of daily living. Table 3 outlines a series of questions, together with an explanation of why these questions should be asked. The questions reflect the key components of the model and represent the collective experiences of the groups as useful ways of getting patients to talk about their pain.

There are also a number of recognised, validated pain measurement scales [Visual Analogue Scale (VAS), Numeric Box Scale, The Faces Scale, Visual Rating Scale] (25) that can be used to assess pain (25). The use of these validated scales on a regular basis can assist in measuring the impact of pain on sleep, mood state, anxiety levels and activities of daily living (26). The VAS is considered the gold standard for research purposes (25), but there are often situations in which this tool can be particularly difficult to use, such as those with literacy problems or cognitive or communication difficulties. Such circumstances may require the use of a simpler scale, such as the Faces Scale. In some cases, a pragmatic way to assess pain is simply to ask: "Is the pain better,

worse or the same?" at each visit; this at least allows for a record of change in pain to be recorded. There will be circumstances in which patients are unable, due to their illness, to self-assess their pain levels, and in such cases, health care professionals will need to evaluate non verbal communication signs and/or signals to estimate their pain levels (27).

Optimal management of wounds requires holistic assessment. Documentation of the patient's pain experience is critical and may range from the use of a patient diary (which should be patient driven) to recording pain entirely by the health care professional or caregiver (26). Effective communication between the patient and the health care team is fundamental to this holistic approach. The more frequently the health care professionals measure pain, the greater the likelihood of introducing or changing pain management practices. Ongoing reassessment of pain can be a long process, and the frequency will vary depending on the type of wound and the practice setting.

Table 3 Useful questions to ask patients to help assess their wound pain experiences

Pain assessment	Questions	Explanation
Location	Where is the pain located: In the wound bed? In the area surrounding the wound? Another location in the region of the wound? Is the pain unrelated to the wound?	The localisation of the pain is the first step in determining the cause of the pain and directing appropriate investigations and treatments
Duration	How long has the pain been experienced? Is the pain persistent? (At rest or with activities?) Is the pain temporary? (Procedurally, at dressing change, during cleansing and debridement)	A change in the pain suggests the need for a reassessment
Intensity	How strong is chronic wound pain on a scale from 0 to 10? 0 = no pain, 10 = worst pain	Pain is subjective and should be treated based on the patient's symptoms. Pain measurement scales should be used to monitor the development of pain and the patient's response to treatment
Quality	Ask the patients to describe their wound pain. Is it: Aching, throbbing, gnawing, tender (nociceptive) Burning, stinging, shooting, stabbing (neuropathic)	It is important to match the treatment of pain to its characteristics; many patients may have both nociceptive and neuropathic pain
Increased or new onset of pain	Reassess: Has the wound changed? Increased size or other signs and symptoms (increased inflammation, infection, cellulitis, etc.)	If the wound is painful and has signs of critical colonisation/infection, it is important to treat the cause
Activities of daily living	Is there anything you do that makes your pain better or worse? How does the patients' chronic wound pain interfere with their: Usual activities Sleep Ability to move around Appetite Mood	Effective wound pain management involves activities of daily living

Key Points

- the WPMM outlines the pharmacological options that can be considered depending on whether the patient presents with neuropathic or nociceptive pain
- patients often reject and caregivers are sometimes reluctant to encourage pharmacological interventions for pain management due to worries about addiction and side effects

LOCAL WOUND PAIN TREATMENT

Local pain management should be based on simple principles, starting with the assessment of wound pain together with the underlying cause. This information should be communicated and a mutual decision reached between the health care provider and the patient to design the best combination of wound management and pain control. Local pain management is a natural first step in persistent pain treatment and can be subdivided into non pharmacological and pharmacological treatments. The WPMM outlines these two approaches: pharmacological treatments focus on the use of local and systemic treatments to reduce pain intensity for either persistent or temporary pain, while non pharmacological treatments include a range of strategies that health care profes-

sionals can use to minimise the impact of the procedures that they need to carry out to treat the chronic wound.

At present, there are few local options for the treatment of persistent pain, while managing the exudate levels present in many chronic wounds. However, a new foam dressing is available that releases ibuprofen in the presence of exudate (Biatain-Ibu) (28). A recent review of the effect of non steroidal anti-inflammatory drugs (NSAIDs) on wound healing has concluded that these drugs are unlikely to interfere with wound healing, with very few side effects when topical application is compared with oral NSAID treatment.

SYSTEMIC WOUND PAIN TREATMENT

If local treatment does not provide adequate pain reduction, it may be necessary for patients

Key Points

- psychological factors play an important role in coping, quality of life and disability resulting from chronic pain
- a community intervention programme documented pain-level improvements and improved ulcer healing for those with extra focus on information sharing and preventive care for the patient. This approach could be a model to help with the emotional aspects of wound pain
- education of carers and patients is an important element in successfully managing chronic wound pain
- WPMM has been developed to try to integrate important factors related to wound pain assessment and management together with relevant factors for the assessment and management of chronic wounds

with chronic painful wounds to be prescribed additional systemic treatment for the physical component of their pain. Clinicians should consult with their prescribing colleagues, referring to the World Health Organization (WHO) pain relief ladder (29) of systemic treatment options for guidance. The WPMM outlines the pharmacological options that can be considered depending on whether the patient presents with neuropathic or nociceptive pain, the steps in the WHO ladder reflecting a move towards more powerful drugs that may be necessary. For every pharmacological intervention, there are possible benefits and adverse events that the prescribing clinician will need to consider in conjunction with the wound care treatment team.

PSYCHOSOCIAL WOUND PAIN MANAGEMENT

Patients often reject, and caregivers are sometimes reluctant to encourage, pharmacological interventions for pain management due to worries about addiction and side effects (24). For some patients, pain signifies that their disease is progressing, or a belief that they should not complain about pain. Alternatively, some patients prefer to deal with the psychosocial aspects of care on a personal basis and reject the interventions of health care professionals, despite an empathic response to their situation (24). Yet, research has demonstrated that psychological factors play an important role in coping, quality of life and disability resulting from chronic pain (30). Although there has been little research on psychological interventions for pain in wound care, a recent randomised controlled trial (RCT) of a community intervention programme documented pain-level improvements and improved ulcer healing for those with extra focus on information sharing and preventive care for the patient (31). This approach could be a model to help with the considerable emotional aspects of wound pain.

Health care professionals should encourage patients to become involved in appropriate strategies to improve their pain. Options to be considered include coping skills training, behavioural contracts, biofeedback, relaxation and distraction techniques, or social support/self-help groups. Health care professionals should suggest patients organise their day to

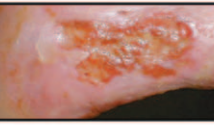
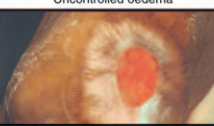


include exercise, socialisation, TV, listen actively to music and focussed relaxation. Patients should be encouraged to take more control and improve their ability to cope. Some of these examples are included in the WPMM as part of a holistic approach to managing persistent, chronic wound pain; however, more information is available in the literature (32).

Pharmacological treatment of the neuropathic component of pain revolves around the use of antidepressants, anticonvulsants and opioids; all these drugs have the potential to help with the emotional component of pain (33). The tricyclic antidepressants and the newer serotonin and noradrenaline reuptake inhibitors have also been shown in RCTs to be beneficial for the physical component of both neuropathic and nociceptive pain (19). All provide relief of anxiety and unhappiness, improve sleep and relieve the physical component of pain (34). Anticonvulsant drugs are second-line mood elevators for anxiety and unhappiness and may also help sleep and relieve the physical component of neuropathic pain (11,19,34).

INFORMATION ON WOUND PAIN FOR HEALTH CARE PROFESSIONALS AND PATIENTS

Education of patients and carers is an important element in successfully managing chronic wound pain, as patient education and involvement lead to improved outcomes (35). Health care providers need to use simple messages about pain management, given that persistent pain, anxiety, unhappiness and potential depression lead to a negative impact on other types of thinking, including poor concentration, poor memory and failure to complete cognitive tasks (36).

The management of wound pain should focus on discussing the care plan with the patient, and educational initiatives should encourage professionals to find ways to make this possible. A discussion of all the important aspects of education is outside the scope of this study, but in order to maximise the impact of models (such as WPMM) on professional practice, it is important that educational sessions for health care providers are interactive and focus on both pain assessment and management. The authors have developed several tools for practice to support the use of

A ssess the pain	B e aware of the cause	C onsider local	D o we need systemic?
<p>Ask the patient about the pain:</p> <ul style="list-style-type: none"> Does the wound pain interfere with sleep, mobility, appetite etc? Where is the pain located? For how long have you had the pain? How strong is the wound pain on a scale from 0 to 10? Can you describe the pain? 	<p>Treat the underlying possible causes of pain</p> <p>Possible causes:</p> <ul style="list-style-type: none"> VAPF (Venous, Arterial, Pressure, Diabetic Foot) Infection Uncontrolled oedema  <p>Infection</p>  <p>Uncontrolled oedema</p>	<p>Manage the persistent wound pain locally</p> <ul style="list-style-type: none"> Consider a low-dose-local sustained-release ibuprofen foam 	<p>If the pain is not reduced, treat the persistent pain systemically</p> <ul style="list-style-type: none"> Consider the guidance in the pocket guide 'Assessing and Managing Painful Chronic Wounds' and refer to your pain team or specialist nurse. <p>The Persistent Wound Pain Management Guide is based on 'Assessing and Managing Painful Chronic Wounds: A Pocket Guide' developed by:</p> <p>Dr Karsten Fogh, Denmark Dr Chris Glynn, UK Prof. Dr Michael Jünger, Germany Dr Diane Krasner, USA Prof. Patricia Price, UK Prof. Gary Sibbald, Canada.</p> 

Key Points

- unless wound pain is optimally managed, patient suffering and the associated costs to the health care system will increase

Figure 2. The ABCD guide summarizes, in a mnemonic form, four steps to ensure better pain treatment.

the WPMM [e.g. a pocket guide on wound pain management (37) and a guide to persistent pain management; Figure 2] to provide a useful basis for educational sessions. Professionals should refer to the evidence on strategies to minimise wound pain as part of developing their care packages (12).

CONCLUSION

Chronic, persistent wound pain occurs frequently in patients with leg ulcers and other types of wounds. Persistent pain dominates patients’ lives but, until recently, has not been a major concern for health care professionals. Many patients, particularly the elderly patients, are reticent to report their pain for fear of being seen as ‘difficult’; therefore, the obligation is for health professionals to ask about their patient’s pain and accurately document their responses. Holistic wound pain management must integrate local wound pain management, systemic pain management and psychosocial approaches. The WPMM has been developed to try to integrate important factors related to wound pain assessment and management, together with relevant factors for the assessment and management of chronic wounds. Each of these areas needs to be

reviewed regularly as they overlap considerably in terms of the daily experiences of patients.

Increasingly, health care professionals can select from a range of options to help patient’s effectively manage wound pain. Increased awareness of these options must be raised through coordinated, relevant educational initiatives. It is no longer acceptable to inadequately document persistent wound pain as the aim for wound care practitioners should be to develop a treatment and monitoring strategy to improve the lives of persons with chronic wounds. Unless wound pain is optimally managed, patient suffering and the associated costs to health care system will increase.

CONFLICTS OF INTEREST

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