

# The assessment of pain in acute wounds



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Patients report pain as being the most difficult part of having acute and chronic wounds. Pain in acute wounds, as a result of injury or surgery, is known to interfere with wound healing. Poorly managed acute pain can result in chronic post-surgical pain. Pain assessment is an essential part of acute wound management and requires the healthcare professional to establish the location and type of pain the patient is experiencing. It also needs to include a 'pain conversation' to help guide healthcare professionals to the appropriate, holistic approach when managing acute pain. The article describes some of the validated pain assessment/ measurement tools available and why an appropriate selection of pain assessment tools is the responsibility of the multidisciplinary team when managing patients with acute wounds.

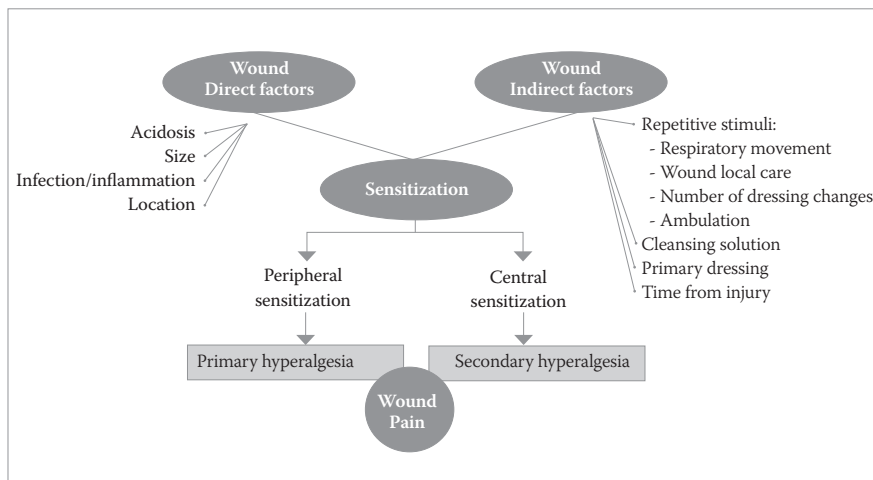
Patients report pain as being the most difficult part of chronic wounds (Bietz and Golberg, 2005). Pain in acute wounds, as a result of disease, injury or surgery and pain, interferes with wound healing (McGuire et al, 2006). Gregory and McGowan (2015) reported the prevalence of acute pain in hospitalized patients and that there was a 9% (7/10 or above on the Numerical Rating Scale [NRS]) to 36% (65 mm or above on Visual Analogue Scale [VAS]) prevalence of severe pain — with a higher prevalence of pain in surgical patients. There is a lack of other recent evidence on the incidence or prevalence of pain in acute wounds. Poorly managed and unrelieved pain can result in the development of chronic postsurgical pain (Correll, 2017), impacting on patients' recovery and an increased financial burden on the healthcare organisations (McGhie and Grady, 2016). Pain in wounds is defined as 'a noxious symptom or unpleasant experience directly related to an open skin ulcer' (World Union of Wound Healing Societies [WUWHS], 2004). Pain is an emotion experienced in the brain, it is not like touch, taste, sight, smell or hearing. Acute pain is defined as being less than twelve weeks' duration during the tissue repair period

(International Association for the Study of Pain [IASP], 2019). This article will focus on pain in acute wounds.

The International human rights law states that 'countries have to provide pain treatment medications as part of their core obligations under the right to health; failure to take reasonable steps to ensure that people who suffer pain have access to adequate pain treatment may result in the violation of the obligation to protect against cruel, inhuman and degrading treatment' (Loman et al, 2010). Whilst acute pain has not been the focus of many cases of litigation, it is essential that healthcare professionals maintain patient records that are accurate and evidence of the care given. Pain assessment with valid and reliable pain assessment tools is an essential part of identifying appropriate pain management and documenting it.

Pain assessment and measurement are fundamental in trying to establish the cause of pain, how to manage it effectively and how to evaluate the impact of pain management strategies (Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine [ANZCA], 2015). There is currently no up-to-date clinical guidance or recommendations for the

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**Figure 1.** Factors that contribute to acute wound pain (adapted from Arroroyo-Novoa et al, 2009)

assessment of pain in ‘acute wounds’. In the US, the Veteran Health Administration (2000) identified pain as the 5th vital sign to make its assessment as important as the other four vital signs (body temperature, blood pressure, pulse (heart rate), and breathing rate (respiratory rate). In 2015, the guidelines by the Core Standards for Pain Management Pain (CSPMP) in the UK recommended:

- Regular pain assessments for acute pain that are documented
- Standardized assessment tools
- Availability in different languages and for those with cognitive impairment/learning difficulties (CSPMP, 2015).

Pain also needs to be assessed from a biopsychosocial perspective, e.g. via a Brief Pain Inventory, due to the biopsychosocial influences on the experience of pain and its impact. To ensure that assessments are standardized, the CSPMP (2015) recommends that healthcare professionals, where possible, discuss and review their choice of pain assessment tools with their local Acute Pain Service. Acute Pain Services develop evidence-based guidelines for pain management that are relevant to all clinical areas. They also audit acute pain management to ensure that appropriate acute pain management strategies are being used effectively.

Barriers have been identified to pain management and include time management, deficiencies in knowledge regarding the complexity of pain, analgesic regimen, pain assessment, negative attitudes toward opioids, fear of addiction and a lack of communication (Barratta et al, 2014). Therefore, an understanding of pain in acute wounds is required to inform the appropriate selection and use of pain assessment tools. The aim of this article is to consider pain assessment tools for adults with acute wounds.

## Pain in acute wounds

The WUWHS categorize pain in wounds as background, incident, procedural and operative (WUWHS, 2004), highlighting that assessment of pain in acute wounds needs to be undertaken during dressing procedures and outside of that period (at rest and movement). Most patients with acute wounds experience pain, unless they have a neurological disorder, e.g. sensory neuropathy or congenital analgesia (Shukla et al, 2005).

Pain is a multidimensional phenomenon. It includes biological, psychological and social factors that influence how it is experienced and how it should be managed. This article will not define types of pain and what influences it. However, in brief, more than one mechanism is involved in acute wound pain. They include nociceptive, inflammatory and neuropathic mechanisms (Arroroyo-Novoa et al, 2009), as well as ischaemic pain mechanisms which may be involved in incisional pain (Pogatzki-Zhan et al, 2007). Arroroyo-Novoa et al (2009) summarized factors that contribute to acute wound pain in a flow diagram [Figure 1].

Wound-related factors need to be assessed and reviewed before any wound management procedures and indirect wound factors [Figure 1] need to be considered within the planning of wound care. This suggests that for effective pain management, the pain assessment process should enable healthcare professionals to assess and document these factors. The assessment of pain in acute wounds needs to be undertaken before, during and after dressing/wound care-related procedures. To ensure that pain relief is effective outside these periods, pain needs also to be assessed at rest and at movement.

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## Pain assessment/measurement in wounds

Pain is a subjective, multifaceted experience that varies considerably between individuals. One patient may not describe their pain as severe unless it is extremely debilitating, whilst another may report their pain as severe, but appear comfortable and relaxed. As patients with wound healing problems may have pain that can be acute, chronic or both, one pain assessment tool alone will not be enough to assess their pain.

Pain assessment and measurement are different. Pain assessment includes clinical judgment based on observation of the type, significance and context of the individual’s pain experience. The healthcare professional needs to listen empathically, believing the patient’s pain.

Please mark a cross on the line below to indicate the amount of pain you are experiencing at present:

No pain ----- Pain as bad as it could be

Figure 2. Visual analogue scale (VAS)

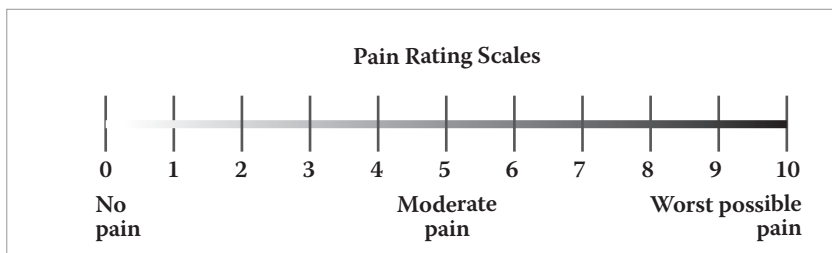


Figure 3. Verbal rating scale (VRS) (McCaffery and Paesero, 1999)

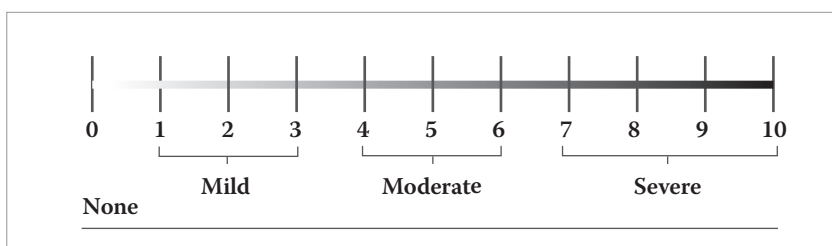


Figure 4. NRS (adopted from McCaffery et al, 1989)

It also requires their understanding of what the patient may be experiencing (to the best of their capability). This can have an influence on achieving effective pain management (Fink, 2000).

Pain measurement enables the patient to quantify pain intensity and enables the healthcare professional to determine the effectiveness of interventions aimed at reducing pain, an essential part of wound pain management. Tools recommended for use in acute pain assessment, are those that require a quick and easy quantification of pain intensity.

Assessment of acute pain needs to be undertaken using valid and reliable pain assessment tools. The documenting of pain assessment needs to be highly visible and enable regular assessment by all members of the multidisciplinary team, who are managing patients with acute wounds. In acute pain, unidimensional self-reporting pain assessment scales, e.g. VAS and NRS (discussed later), are used as they enable quick, self-reporting assessments. However, pain assessment requires a holistic assessment of the patients and the point in time at which pain is assessed also

needs consideration. Postoperative wound pain is relatively easy to manage at rest, as the patient is not moving, but it is pain on movement and wound management that is more difficult to manage. Regular assessment, outside of wound management is important, as multiple measurements within a 24-hour period may yield a more accurate picture than a single retrospective 24-hour 'average' observation. It provides an evaluation and documented evidence of how effective a treatment or analgesia has been. This is an important factor as it allows pain management to be titrated and tailored to the patient's requirements, especially during wound management procedures.

Assessment of the pain experience is frequently built upon patient's self-reports and the patient and the healthcare professional need to communicate in ways that allow the pain to be qualified in terms of what is understood by both. For instance, a visual analogue scale allows the patient to describe his or her pain in terms of numbers that the clinician can understand and act upon. Assessment of pain also requires a psychosocial, behavioural as well as the measurement of pain using tools such as VAS and NRS, which encompasses not only the severity of pain and related pathology but also the individual (Tait and Chibnall, 2014). Pain is an individual experience influenced by many factors including previous experience, culture, prognosis, coping strategies, fear and anxiety (Carr, 1997). The overall aim is to relieve total pain (Greenstreet, 2001) and it is important to know how much pain is experienced. Therefore, the healthcare professional needs to measure whether this varies as a result of changes in the procedure or treatment.

Pain cannot always be assessed as just one number or one word. Therefore, pain assessment may not be the appropriate term to use when trying to establish the patient's report of pain. Nevertheless, it is essential to make some form of quantification of the patient's discomfort to assess for factors that will influence the pain experience in wound management and the effect of any therapeutic interventions.

Pain measurement obtains a measurement (number) to document the level of pain experienced (a pain score). It needs to be reliable (with consistent results when performed under similar conditions or circumstances) and valid (the measurement scales 'pain' and not some other quantity such as anxiety). In acute pain assessment, precision and speediness are vital. Patients in pain will not want to spend time, possibly in an uncomfortable position,

completing lengthy pain assessment tools.

Pain rating scales provide a quick report of pain intensity (measurement) to which a numerical value can be assigned (Melzack and Katz, 1999). They are easy to use, are efficient and minimally intrusive for the patient. They include the visual analogue scale (VAS), verbal rating scale (VRS) and the numerical rating scale (NRS). However, they treat pain as a single dimension that varies only in intensity. On the visual analogue scale, pain can be measured by using single-item rating [Figure 2].

The VRS is a list of adjectives describing different levels of pain intensity. An adequate VRS of pain intensity should include adjectives that reflect the extremes of this dimension; from 'no pain' to 'worst pain imaginable' and additional adjectives to capture the range of pain intensity that may be experienced between these two extremes. Figure 3 gives one example.

Patients should be asked to read over the list of adjectives and select the word or phrase that best describes their level of pain on the scale. Many different VRS lists have been created (Seymour, 1982; Frank et al, 1982). They are easy to administer, score and understand. Therefore, compliance with the VRS is as good, if not better, than other scoring systems (Jensen et al 1986; 1989). They are valid and relate positively and significantly to other measures of pain intensity (Ohnhaus and Adler, 1975; Kremer et al 1981; Jensen et al 1986; Paice and Cohen, 1997). They demonstrate sensitivity to treatments that are known to have an impact on pain intensity.

The NRS [Figure 4], similar to the VRS, is valid and demonstrates positive and significant correlations with other measures of pain intensity (Jensen et al, 1986, Hjermstad et al, 2011). It has also demonstrated sensitivity to treatments that are expected to have an impact on pain intensity (Paice and Cohen, 1997).

NRSs are easy to administer and score, can be used during acute wound management and with a greater variety of patients (e.g. older adults and patients with motor problems) than with a VAS.

The Brief Pain Inventory (BPI) uses NRSs [Figure 5], presenting the numbers in ascending order with the endpoint descriptors near the 0 and the highest number of the scale (Cleeland and Ryan, 1994).

Patients circle the number that best represents their pain intensity. It is a useful tool as it enables the patient to report the incidence and severity of their pain, the effect of any analgesics they are taking, and, more importantly, it allows them to report the impact that pain has on activities of daily living. It also

has a body map for patients to report where their pains are. This suggests that for acute wound management it can assess the pain experience, its location (they may have more than one wound or a different pain), its impact and the effectiveness of pain management strategies used. The BPI is a valid and reliable tool and whilst it was initially designed for patients with cancer pain it has since been validated in other patient groups, acute and chronic pain (Beauregard et al, 1998; Zalon, 1999; Keller et al, 2004; Mendoza et al, 2004).

The large number of tools available for pain assessment testifies to the fact that no single perfect system exists and there is no simple thermometer that can objectively record how much pain an individual experiences (Turk and Melzack, 2001).

The complex nature of the experience of pain suggests that measurements from these domains may not always show high agreement (Beauregard et al, 1998; Zalon, 1999; Keller et al, 2004; Mendoza et al, 2004, Hjermstad et al, 2011). As pain is subjective, the patient's self-report provides the most valid measure of the experience. Most of these assessment systems provide numerical values, either on a continuous or interval scale, since statistically these are more powerful and are validated for pain research.

However, the quality and utility of any assessment tool is only as good as the clinician's ability to thoroughly focus on the patient. There is no new evidence on the validity and reliability of these tools, and no evidence of their role in acute wound management. Quantification of pain also poses other challenges. Consider the numerical rating scale and how it is presented as 0 to 10 or 100, when assessing pain, would you consider this as a 10 or 100-point scale? What is the difference between each section of the scale? If the patient's pain is 'the worst pain imaginable', what happens if it increases further. These are all challenges for the healthcare professional and may be more confusing for the patient. Whilst the VAS has also been well validated, particularly for research, instructions for its use need to be very clear and consideration of whether it is easy for patients in pain to use in acute wound management?

Day (2019) considers how pain assessment is changing and that 'pain conversation' may be more appropriate, instead of quantifiable measuring tools presented within this article. Pain conversation is about asking the patient about the impact pain has on daily living (Levy et al, 2016). The US are questioning the role of the 5th vital sign as it is believed that NRSs

are responsible for the opioid epidemic. Pain management has not improved with the use of NRSs (Mularsky et al, 2006; Zazlansky et al, 2015) and has resulted in over-sedation and adverse reactions following opioid administration (Vila et al, 2005). The Joint Commission (the regulatory body for many US healthcare institutions) has issued 19 elements of performance (EP) to reduce the risk of opioid addiction. This includes “using NPSs alone to monitor patients’ pain is inadequate” and “stresses the importance of assessing how pain affects function and the ability to make progress towards treatment goals.” They also suggest that “immediately after surgery the goal of pain control may be the patient’s ability to take a breath without excessive pain. Over the next few days, the goal of pain control may be the ability to sit up in bed or walk to the bathroom without limitation due to pain”. This all supports the role of the ‘pain conversation’ with the patient and enables a more individual assessment, but the healthcare professionals need to ensure that it is documented (Joint Commission, 2017). The use of an NPS can quantify effectiveness but needs to be used alongside the pain conversation to assess for factors that impact on wound pain experience.

## Discussion

Numerical pain scales, validated in acute pain management and used for assessing the 5th vital sign, are recommended in the pain management of patients with acute wounds. However, the recommendations by the Joint Commission in the US suggest that practice needs to change and include the ‘pain conversation’. It is the US’ oldest and largest standards-setting and accrediting body in health care and includes public hospitals, suggesting that it can be considered by healthcare professionals working in health care in other countries. Other countries also faces the problem of opioid addiction as a result of long-term opioid use and whilst there is currently no evidence on the impact of the 5th vital sign on long-term opioid use within the UK, for example, it highlights the need for further research and consideration. It stresses the importance of discussions and collaboration between multidisciplinary teams, assessing patients with acute wounds to establish appropriate strategies to manage their pain effectively. This discussion should include an appropriate choice of pain assessment tools, e.g. how pain rating scales are viewed/documented and whether a guideline can be developed to include the specific pain-

management approaches recommended based on the score. Validated tools are an important part of acute wound pain assessment and may also identify and indicator of a problem with a wound; however, healthcare professionals need to ensure that they are assessing the whole pain, the factors that may influence an individual’s experience of pain and document it accurately. The patient (where possible, or their family/carer) needs to be at the centre of this assessment, to ensure an accurate report. Another important aspect of pain assessment is what is done with the report. To manage pain effectively, the assessment of pain needs to clearly inform its treatment, therefore healthcare professionals need to ensure that they have identified and documented the factors that contribute to acute wound pain experienced in this process. This should also include establishing what strategies patients used to manage pain at home (non-pharmacological approaches, e.g. positioning, relaxation, mindfulness, cold/heat). This would help to visibly share information to all members of the multidisciplinary team and achieve a holistic approach to pain management for patients with acute wounds.

## Conclusion

Pain rating scales are currently recommended for assessing/measuring pain in patients with acute wounds and include VAS, NRS and VRS. In the US, however, classing pain as the 5th vital sign and its subsequent need for assessment are being reconsidered due to emerging evidence that suggests it could be responsible for the opioid epidemic. Assessments need to include a ‘pain conversation’ to establish a rapport with the patient to help guide healthcare professionals on the appropriate, holistic approach to manage pain in patients with acute wounds. A multidisciplinary approach is needed, with regular assessments undertaken (at rest, movement, before and after wound management) and documented and kept where all of the multidisciplinary team can access the information. WAS

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