



Identification and assessment of pain in intensive care patients

NRF Clinical Practice Guidelines™

COMPOSITION OF THE WORKING GROUP

Chair

SANNA-MARI PUDAS-TÄHKÄ, RN, PhD, Head of Education, Satakunta Educational Federation – Sataedu

Members

ANNIKA BJÖRN, RN, MHSc, Clinical Nursing Specialist, Surgical and Intensive Care Centre, Helsinki University Hospital (HUS)

MINNA PELTOMAA, RN, MHSc, Information Management Designer, Wellbeing Services County of Pirkanmaa

LAURA PUIKKO, RN, MHSc, Doctoral Researcher, Clinical Nursing Specialist, Wellbeing Services County of Central Finland

RIITTA ROSIO, PT, PhD, Lecturer, Satakunta University of Applied Sciences, SAMK Master School

JOHANNA SOINI, RN, MHSc, Doctoral Researcher, Lecturer, Seinäjoki University of Applied Sciences – SEAMK

Experts

MIKAEL JUOPERI, RN, MHSc Student, Clinical Nursing Specialist, Acute Care Division, Tampere University Hospital, Wellbeing Services County of Pirkanmaa

HELI PIHLAJA, RN, MHSc, Intensive Care Unit, Seinäjoki Central Hospital, Wellbeing Services County of South Ostrobothnia

TYTTI ERVASTI, RN, MHSc, PhD, Service Manager, Wellbeing Services County of Central Finland (member of the guideline development group until the end of 2022)

DECLARATION OF INTERESTS: The members of the guideline development group have no affiliations related to the subject of the guideline that would benefit or compromise the reliability of the guideline.

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Introduction

Approximately 20,000 patients are treated annually in intensive care units around Finland¹. In intensive care, the aim is to prevent life-threatening conditions in critically ill patients through advanced technology and staff specialised in intensive care nursing^{2,3}. Pain is one of the most significant problems among intensive care patients¹. The intensity of pain varies during the treatment period⁴, but approximately half of intensive care patients experience significant pain^{5,6}. Patients in intensive care experience pain both at rest⁵ and during procedures⁷. Pain in intensive care is caused by various interventions, such as repositioning or physical examinations. In addition, pain is induced by different catheters and cannulas, as well as treatments provided in intensive care, such as mechanical ventilation and airway clearance. Pain is also influenced by individual patient-related factors and injuries resulting from underlying conditions^{4,7}.

An intensive care patient may be able to communicate verbally, and thus assess their own pain, or they may be unable to communicate or express pain. Inability to communicate may result from fluctuations in the level of consciousness, mechanical ventilation, or medication⁸.

Untreated pain has physiological and psychological effects on the patient. Unmanaged pain causes insomnia, fatigue, discomfort⁹, delirium¹⁰ and stress^{10,11} in intensive care patients. This increases the need for sedation and prolongs mechanical ventilation, which in turn extends the duration of intensive care and delays recovery¹¹. Untreated pain also leads to prolonged stress, slows healing, and it may impair quality of life even after discharge from hospital¹⁰.

Effective pain management requires identification and regular assessment of pain^{8,12}. Studies indicate that pain in intensive care patients is assessed irregularly^{12,13} and often underestimated¹⁴. Underestimation of pain is one of the most important reasons for inadequate pain management¹⁵.

The purpose, target groups, and key concepts of the guideline

The purpose of the guideline

The purpose of this clinical guideline is to provide evidence, based on critically appraised research, international guidelines, and expert statements, on how to identify and assess pain in adult intensive care patients. The aim of the guideline is to standardise practices for the identification and assessment of pain in intensive care patients.

Target groups

This clinical guideline is intended for use by all social and healthcare professionals who care for and interact with intensive care patients in their work, or who are interested in the identification and assessment of pain in intensive care patients. The guideline can also be utilised as learning material and in the development of curricula for both basic and continuing professional education.

Key concepts

Intensive care patient

An intensive care patient refers to a critically ill individual treated in an intensive care unit, who may present with multiple organ dysfunctions³. Intensive care patients have life-threatening health conditions or are at risk of developing them. They are highly vulnerable, and their condition is unstable. Intensive care patients require continuous monitoring, and any changes in their status must be addressed promptly¹⁶. These patients may be able or unable to communicate. The level of consciousness may fluctuate due to illness or medication. Furthermore, communication can be restricted by mechanical ventilation or other forms of treatment. For an intensive care patient who is unable to communicate, the ability to express pain is partially or completely limited¹⁷.

Pain

The International Association for the Study of Pain (IASP) defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Pain is always a subjective experience influenced by psychological, biological, and social factors. Pain and nociception (the sensory process of detecting harmful stimuli) are distinct phenomena. Pain cannot be inferred solely from the activity of sensory neurons. Individuals learn the concept of pain through life experiences, and therefore, a person's own account of their pain experience should be respected. Verbal description is only one of many ways to express pain. Inability to communicate does not preclude the experience of pain, and therefore, adequate pain relief is required^{18,19}.

Identification of pain and pain risk factors

The foundation of pain management is the identification and assessment of pain¹⁷. When identifying pain in intensive care patients, factors that may cause pain both at rest and during procedures (e.g., airway clearance, cannula insertion, repositioning) should be considered. Psychological factors such as anxiety and depression, as well as demographic factors including age, comorbidities, or surgical history, influence the experience of pain. Procedural pain is affected by the intensity of pain caused by the intervention, underlying surgical or trauma-related diagnoses, and demographic factors (age, sex and ethnic background)²⁰. Differentiating pain from other symptoms is challenging, as intensive care patients may also experience anxiety, delirium, and sleep disturbances^{17,20}.

Pain assessment

Pain in intensive care patients should be assessed regularly and reassessed as needed. The patient's self-assessment is considered the gold standard and should always be prioritised¹⁷. If the patient is unable to assess their own pain, validated tools based on pain-related behavioural indicators should be used, alongside observation of changes in the patient's behaviour. Close persons can be involved in pain assessment by considering their views on the intensive care patient's pain and any changes in pain-related behaviour^{17,21}. Physiological changes, such as increased heart rate, blood pressure and respiratory rate, may provide clues to the patient's pain experience, but they are not reliable indicators on their own¹⁷.

Pain assessment tools in intensive care

Several tools have been developed for assessing pain in intensive care patients. Pain assessment tools designed for patients who are able to communicate are based on self-reporting. Tools developed for assessing pain in patients who are unable to communicate rely on observing changes in pain-related behaviour.

Numeric Rating Scale (NRS) is a pain scale that enables the patient to self-assess their pain. Pain is rated on a horizontal scale from 0 to 10, where 0 represents no pain and 10 represents the worst possible pain²².

Verbal Descriptor Scale (VDS)/ Verbal Rating Scale (VRS) is a descriptive pain assessment scale (no pain, mild pain, moderate pain, severe pain, extreme pain) and can be used for self-assessment by patients who are unable to use a numerical scale, such as the 0–10 NRS²⁰.

Behavioural Pain Scale (BPS) is a reliable pain assessment tool based on behavioural indicators, designed for evaluating pain in patients who are unable to communicate verbally. Pain is assessed across the following domains: facial expression, upper limb movements, and compliance with mechanical ventilation. The patient's pain is scored on a scale from 3 to 12, with each domain rated from 1 to 4 points (3 = no signs of pain, 12 = worst possible pain)²³. A score above five indicates significant pain¹⁷. The BPS tool has been translated into Finnish and culturally validated for use in Finnish intensive care settings²⁴.

Behavioural Pain Scale – Non-intubated (BPS-NI) is a reliable pain assessment tool based on behavioural indicators, intended for non-intubated intensive care patients who are unable to verbally assess their pain. Pain is assessed across the following domains: facial expression, upper limb movements, and vocalisation. The scoring system is identical to that of the BPS tool²². This tool has not been translated into Finnish nor validated for use in Finnish intensive care settings.

Critical-Care Pain Observation Tool (CPOT) is a reliable pain assessment tool based on behavioural indicators and designed for evaluating pain in patients who are unable to communicate verbally. Pain is assessed across the following domains: facial expression, body movements, compliance with mechanical ventilation for intubated patients or vocalisation for non-intubated patients, and muscle tension. Pain is scored on a scale from 0 to 8, with each domain rated from 0 to 2 points (0 = no signs of pain, 8 = worst possible pain)²⁵. A score of three or higher indicates significant pain¹³. The CPOT tool has been translated into Finnish, as well as validated²⁴ and implemented²⁶ in Finnish intensive care settings.

Recommendations

The recommendations on pain assessment in intensive care patients are based on 16 studies. From these studies, six thematic areas were identified, and evidence reviews were conducted to support the recommendations. The evidence reviews underpinning the recommendations are available on the website of the Nursing Research Foundation. The thematic areas include patient-related factors in pain identification, pain assessment through self-report tools, pain assessment through behavioural pain assessment tools, involvement and consideration of close persons, vital signs in pain assessment, and specific considerations in the use of behavioural pain assessment tools.

Identification, assessment, and documentation of pain are prerequisites for effective pain management and must be carried out regularly and systematically for every patient^{20,27}.

Pain in intensive care patients should be assessed at least four times during each shift and repeated as necessary¹³.

At the start of each shift, a baseline pain assessment should always be performed. In addition, pain assessment must be repeated during any forms of care, treatment, or procedures that may cause pain, as well as before and after pain management interventions. All pain assessments must be documented, and the results should be reported during handovers²⁷.

1. Patient-related factors in pain identification

Consider patient-related factors when identifying and assessing pain, as

➤ **patient-related factors appear to influence the experience of pain both at rest and during procedures²⁰. (B)**

- Rest pain in intensive care patients may be exacerbated by psychological factors (e.g., anxiety and depression) as well as demographic factors (e.g., younger age, comorbidities and surgical history)²⁰.
- Procedural pain is influenced by the intensity of pain prior to the procedure, the type of procedure, underlying surgical or trauma-related diagnoses, and demographic factors (younger age, female sex and non-white ethnicity)²⁰.
- Healthcare professionals should seek information about the patient's background from close persons to ensure that provided care addresses individual factors²⁰.

2. Pain assessment through self-report tools

Use a self-report pain assessment tool when the intensive care patient is able to communicate reliably, as

- **the patient's own assessment of their pain and its intensity is the primary method of pain evaluation^{20,27}. (B)**
 - For intensive care patients who are able to self-assess pain, the Numeric Rating Scale (NRS) is a reliable and practical tool, particularly in its visual format. The Verbal Descriptor Scale / Verbal Rating Scale (VDS/VRS) is suitable for patients for whom a numerical scale is not appropriate²⁰.

3. Pain assessment through behavioural pain assessment tools

Use a reliable behavioural pain assessment tool for intensive care patients who are unable to assess their pain reliably, as

- **behavioural pain assessment tools such as CPOT^{20,27-32}, BPS^{20,27,30-32} and BPS-NI^{20,27,32} have been found to be the most reliable and practical pain assessment tools for intensive care patients. (A)**
 - When performing the assessment, it is important to note that facial burns, dressings, or similar conditions may hinder the evaluation of facial expressions³⁰.
 - Using CPOT and BPS tools yields consistent pain assessment results^{29,30}.
 - Nursing staff have evaluated CPOT and BPS behavioural pain assessment tools as suitable and practical for assessing pain in intensive care patients²⁸⁻³⁰.
- **CPOT and BPS tools also appear to be reliable options for assessing pain in sedated patients^{20,33}. (B)**

Assess the intensive care patient's pain both at rest and during procedures using a reliable behavioural pain assessment tool, as

- **many procedures typically performed in intensive care are painful for patients^{20,29,34,35}. (A)**
 - Research evidence has established the painfulness of at least the following procedures: arterial catheter insertion, removal of pleural or wound drains, turning the patient³⁶, other repositioning^{20,34}, airway clearance^{20,34,35} and wound care³⁴.
 - Tracheostomised and intubated patients may experience pain during oral care, suctioning, toothbrushing and swabbing with cotton applicators²⁹.
- **CPOT and BPS tools have been found to be reliable options for assessing pain both at rest and during procedures^{20,24,29,30,33}. (B)**

4. Considering and involving close persons

Whenever possible, consider involving close persons in the pain assessment of critically ill patients when the patient is unable to assess their own pain, as

- **Close persons may recognise pain-related behaviours in critically ill patients even better than professionals^{20,27}. (C)**
 - The close person's assessment of the patient's pain and the discomfort it causes may correspond more accurately to the patient's own assessment of pain than professional evaluations²⁰.
 - Note that there are close persons who do not wish to participate in pain assessment and situations where involving close persons is not possible. The pain assessment by close persons cannot replace the assessment by critical care professionals; the responsibility for pain assessment always lies with critical care professionals²⁰.

5. Vital signs in pain assessment

Use a reliable pain assessment tool as the primary method for assessing pain in critically ill patients instead of evaluating vital signs, as

- **Vital signs can only be used as indicators of pain in critically ill patients^{20,24,27,36,37}. (B)**
 - Behavioural pain assessment tools remain the most reliable method for assessing pain in critically ill patients who are unable to communicate³⁶.

6. Special considerations in the use of behavioural pain assessment tools

Take into account the level of consciousness of the critically ill patient when using a behavioural pain assessment tool, as

- **The patient's level of consciousness may influence CPOT scores²⁹. (C)**
 - A validated behavioural pain assessment tool can be used for critically ill patients with a traumatic brain injury, as pain-related behaviours are observable in these patients as well^{27,38-42}.
 - CPOT-Neuro has been specifically developed for critically ill patients with a traumatic brain injury. It is adapted for this patient group, and it considers their specific characteristics, such as spasticity and autonomic reactions (tears, facial flushing)²⁵. However, it should be noted that CPOT-Neuro has not been translated into Finnish nor tested in Finnish intensive care settings.
 - CPOT has also been found to perform adequately in patients with a traumatic brain injury. Therefore, it can be used in intensive care units treating patients from multiple specialties⁴³.

Acknowledge the effect of medications on the patient’s pain-related behaviour and thus on the assessment results when using a pain assessment tool, as

- **Intravenous opioids administered to critically ill patients may influence pain assessment results²⁹. (C)**
- **Muscle relaxants administered to critically ill patients may affect assessment results⁴⁴. (C)**

Identify the patient’s delirium and consider it when selecting a pain assessment tool, as

- **In patients with delirium, a behavioural pain assessment tool may provide a more reliable assessment than a self-report tool⁴⁵. (C)**
 - Regarding delirium, refer to the national NRF Clinical Practice Guideline™ “Non-pharmacological methods for prevention and treatment of delirium in critically ill adult patients”⁴⁶.

Consider facial injuries when assessing pain in critically ill patients, as

- **Facial burns may complicate the evaluation of pain-related facial expressions³⁰. (C)**

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