

Click the thumbnail above to access the calculator.

Pain Assessment in Advanced Dementia (PAINAD) Scale

The PAINAD scale is used to assess pain in patients with dementia.

Points & Pearls

- The Pain Assessment in Advanced Dementia (PAINAD) scale is a reliable pain assessment tool for patients with advanced dementia. It can be used in both verbal and nonverbal patients.
- While the tool produces a score of 0 to 10 points, there is no definitive evidence that scores correlate with self-reported gradations of pain, as the original study defines only 0 (“no pain”) and 10 (“severe pain”). Caution should be used when titrating analgesic doses based on the PAINAD score.
- The PAINAD scale is valid in patients with levels of cognitive impairment ranging from mild to severe. It may also be useful in elderly patients who are reluctant to report pain, as it is more objective than self-reporting.

Critical Actions

Analgesic medications should be used judiciously in patients with dementia, guided by the goals of care expressed by the patient or the patient’s proxy or surrogate.

Evidence Appraisal

The PAINAD scale was created by Warden et al (2003) in a study that observed 19 patients in an inpatient dementia special care unit at a Veterans Administration Medical Center. Each patient was

Why to Use

It is difficult to assess pain in patients with advanced dementia; the use of a validated pain scale can help with such assessments.

When to Use

- Use the PAINAD scale for patients with advanced dementia who may be in pain.
- The PAINAD scale is particularly useful in aphasic patients or patients who cannot otherwise report the degree of pain.

Next Steps

As with pain management in general, pain in patients with advanced dementia should be assessed serially, and analgesic doses should be titrated accordingly.

assessed and scored by the principal investigator and 2 other raters who were drawn from a pool of 6 raters. Adequate levels of interrater reliability were found between each dyad. The PAINAD scale correlated well with the Discomfort Scale–Dementia of Alzheimer Type, and there was a statistically significant decrease in PAINAD scores after administration of analgesics.

The PAINAD scale was validated in a study of 25 elderly patients who were hospitalized for surgical repair of hip fractures (DeWaters 2008). Twelve of the patients were cognitively impaired and 13 were cognitively intact. The PAINAD scale was positively correlated with a self-reported pain scale, demonstrating concurrent validity, and PAINAD scores were higher when patients were likely to experience pain than when unlikely, demonstrating discriminant validity.

CALCULATOR REVIEW AUTHOR

Randy Goldberg, MD, MPH, FACP

Division of Internal Medicine, New York Medical College; Westchester Medical Center, Valhalla, NY

Mosele et al (2012) prospectively validated the PAINAD scale using evaluations of 600 patients who were admitted consecutively to the acute geriatric section at the University of Padua in Italy. The PAINAD scale was shown to be internally reliable and had better concurrent validity and interrater reliability than a self-reported numerical rating scale.

Use the Calculator Now

[Click here to access the PAINAD scale on MDCalc.](#)

Calculator Creator

Victoria Warden, RN

[Click here to read more about Ms. Warden.](#)

References

Original/Primary Reference

- Warden V, Hurley AC, Volicer L. Development and psychometric evaluation of the Pain Assessment in Advanced Dementia (PAINAD) scale. *J Am Med Dir Assoc.* 2003;4(1):9-15. DOI: <https://doi.org/10.1097/01.JAM.0000043422.31640.F7>

Validation References

- Cohen-Mansfield J, Lipson S. The utility of pain assessment for analgesic use in persons with dementia. *Pain.* 2008;134(1-2):16-23. DOI: <https://doi.org/10.1016/j.pain.2007.03.023>
- Hutchison RW, Tucker WF, Kim S, et al. Evaluation of a behavioral assessment tool for the individual unable to self-report pain. *Am J Hosp Palliat Care.* 2006;23(4):328-331. DOI: <https://doi.org/10.1177/1049909106290244>
- DeWaters T, Faut-Callahan M, McCann JJ, et al. Comparison of self-reported pain and the PAINAD scale in hospitalized cognitively impaired and intact older adults after hip fracture surgery. *Orthop Nurs.* 2008;27(1):21-28. DOI: <https://doi.org/10.1097/01.NOR.0000310607.62624.74>
- Mosele M, Inelmen EM, Toffanello ED, et al. Psychometric properties of the pain assessment in advanced dementia scale compared to self assessment of pain in elderly patients. *Dement Geriatr Cogn Disord.* 2012;34(1):38-43. DOI: <https://doi.org/10.1159/000341582>

Copyright © MDCalc • Reprinted with permission.

Related Tool on MDCalc

- [Children's Hospital of Eastern Ontario Pain Scale \(CHEOPS\)](#)

Click the thumbnail above to access the calculator.

Critical-Care Pain Observation Tool (CPOT)

The CPOT rates pain in critically ill patients by using clinical observations.

Points & Pearls

- The gold standard of pain assessment is the patient's self-report of pain. The Critical-Care Pain Observation Tool (CPOT) was designed to assess the pain of critically ill patients who are incapable of reporting their pain.
- The CPOT was created using retrospective reviews of common pain characteristics and was validated by intensive care unit (ICU) nurses and physicians.
- The original CPOT study included cardiac patients who were relatively healthy. The study used only 2 data collectors to perform the analysis. A subsequent evaluation included only 33 of 105 patients.
- CPOT scores were higher when patients were conscious and intubated than when unconscious or extubated, which may be due to endotracheal tube discomfort or positive pressure causing incision site pain.
- CPOT scores were similar for both unconscious and conscious extubated patients, which may be due to lingering anesthesia or pain resolution resulting from extubation.
- Further analyses have validated the CPOT score in multiple postsurgical and medical ICU settings.

Critical Actions

Regular re-evaluation of a patient's pain is crucial to appropriate pain management.

Evidence Appraisal

Elements of the CPOT were developed using a chart review of 52 critically ill patients, along with focus groups of nurses and physicians (Gélinas 2004). The relevance of inclusion criteria was validated with 4 physicians and 13 critical care nurses using a Likert scale, with content validity indices of 0.88 to 1.0 (Gélinas 2006). The validation study included a cohort of 105 patients, who were each

CALCULATOR REVIEW AUTHOR

Benjamin Slovis, MD

Department of Emergency Medicine, Thomas Jefferson University Hospital, Philadelphia, PA

Why to Use

It is estimated that up to 71% of patients in the ICU experience untreated pain (Gélinas 2007). The Society of Intensive Care Medicine recommends routine monitoring of pain in ICU patients. Treatment of pain is associated with fewer days on mechanical ventilation, fewer infections, and increased patient satisfaction.

The CPOT uses objective findings to rate the pain of patients who are unable to report pain levels themselves. The CPOT has good interrater reliability in multiple studies and high sensitivity when patients are in pain.

When to Use

The CPOT can be used to rate pain in intubated or sedated patients by observing facial expressions, muscle tension, and movement, along with compliance with ventilated breaths for intubated patients or vocalized pain for nonintubated patients.

Next Steps

- For patients with a CPOT score ≤ 2 , it is likely that there is minimal to no pain present. Re-evaluation should be considered, as appropriate.
- For patients with a CPOT score > 2 , there is an unacceptable level of pain. Further or alternative analgesia and sedation should be considered.

Abbreviations: ICU, intensive care unit.

tested 3 times during 3 periods, for a total of 9 tests. The tests were performed 1 minute before, during, and 1 minute after a positioning procedure. Exclusion criteria included heart transplant, thoracic aortic aneurysm repair, medical management of chronic pain, ejection fraction $< 25\%$, psychiatric illness or neurologic problems, alcohol or drug dependence, use of postsurgical neuromuscular blockers, and surgical complications (eg,

hemorrhage, delirium). Interrater reliability was high ($\kappa = 0.62-0.88$) for all testing periods except for the fourth test ($\kappa = 0.52$).

In all 3 testing phases, there was a statistically significant increase in CPOT score during positioning when compared with CPOT score before positioning. During the second testing period, intubated patients who reported pain had higher CPOT scores than those who reported no pain. During the final testing period, CPOT scores correlated with reported pain intensity scores.

A post hoc analysis showed a sensitivity and specificity of 86% and 78%, respectively, during positioning (Gélinas 2009). Sensitivity was 83% before positioning and 63% after positioning, and specificity was 83% and 97%, respectively. A cutoff CPOT score of > 2 was established for nociceptive exposure. Additional validations include the following:

- A study of nurses' evaluations of CPOT found that 72.7% of the respondents would recommend the tool for routine use and 78% found it easy to use (Gélinas 2010).
- A Spanish study found average CPOT scores prior to, during, and after positioning to be 0.27, 1.93, and 0.10 respectively, with $\kappa = 0.79$ (Vázquez 2011).
- A neurosurgical ICU study demonstrated significantly higher scores for patients who reported pain during positioning. Area under the curve analysis showed good discrimination ($0.864, P < .001$ [95% confidence interval, 0.76-0.97]) (Echegaray-Benites 2014).
- A Dutch study comparing the CPOT to the Behavioral Pain Scale found an intraclass correlation coefficient of 0.6 to 0.81. The Behavioral Pain Scale had a significant score increase during nonpainful events, while the CPOT did not (Rijkenberg 2015).

Use the Calculator Now

[Click here to access the CPOT on MDCalc.](#)

Calculator Creator

Céline Gélinas, RN, PhD

[Click here to read more about Dr. Gélinas.](#)

References

Original/Primary Reference

- Gélinas C, Fortier M, Viens C, et al. Pain assessment and management in critically ill intubated patients: a retrospective study. *Am J Crit Care*. 2004;13(2):126-135.
<https://www.ncbi.nlm.nih.gov/pubmed/15043240>

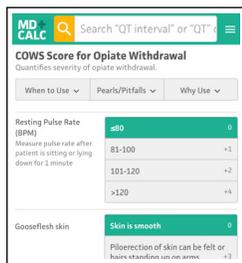
Validation References

- Gélinas C, Harel F, Fillion L, et al. Sensitivity and specificity of the critical-care pain observation tool for the detection of pain in intubated adults after cardiac surgery. *J Pain Symptom Manage*. 2009;37(1):58-67.
DOI: <https://doi.org/10.1016/j.jpainsymman.2007.12.022>
- Gélinas C. Nurses' evaluations of the feasibility and the clinical utility of the Critical-Care Pain Observation Tool. *Pain Manag Nurs*. 2010;11(2):115-125.
DOI: <https://doi.org/10.1016/j.pmn.2009.05.002>
- Vázquez M, Pardavila MI, Lucia M, et al. Pain assessment in turning procedures for patients with invasive mechanical ventilation. *Nurs Crit Care*. 2011;16(4):178-185.
DOI: <https://doi.org/10.1111/j.1478-5153.2011.00436.x>
- Echegaray-Benites C, Kapoustina O, Gélinas C. Validation of the use of the Critical-Care Pain Observation Tool (CPOT) with brain surgery patients in the neurosurgical intensive care unit. *Intensive Crit Care Nurs*. 2014;30(5):257-265.
DOI: <https://doi.org/10.1016/j.iccn.2014.04.002>
- Rijkenberg S, Stilma W, Endeman H, et al. Pain measurement in mechanically ventilated critically ill patients: Behavioral Pain Scale versus Critical-Care Pain Observation Tool. *J Crit Care*. 2015;30(1):167-172.
DOI: <https://doi.org/10.1016/j.jcrc.2014.09.007>

Copyright © MDCalc • Reprinted with permission.

Related Tool on MDCalc

- [Behavioral Pain Scale \(BPS\) for Pain Assessment in Intubated Patients](#)



Click the thumbnail above to access the calculator.

Clinical Opiate Withdrawal Scale (COWS)

The COWS is used to quantify the severity of opiate withdrawal.

Points & Pearls

- While commonly used prior to buprenorphine or buprenorphine/naloxone induction, the Clinical Opiate Withdrawal Scale (COWS) can also be useful in a variety of medical office, clinic, and hospital settings. For example, it may be used in the assessment of acute opioid withdrawal during an opioid detoxification program, for methadone maintenance treatment, or for the treatment of chronic pain.
- The scale is designed to be completed by a clinician in < 2 minutes.
- Additional credentialing by the [Center for Substance Abuse Treatment \(CSAT\) of the Substance Abuse and Mental Health Services Administration](#) is required to prescribe buprenorphine and buprenorphine/naloxone in the context of opioid addiction treatment.

Critical Actions

Clinicians should always consider the possibility of comorbid withdrawal conditions from alcohol, benzodiazepines, or sedative-hypnotics, which may be life-threatening alone or in combination.

Advice

Prior to buprenorphine induction, patients should already be in moderate to severe opioid withdrawal (equivalent to a COWS score ≥ 8), as buprenorphine is a partial opioid agonist that can precipitate florid opioid withdrawal if administered to a physically dependent patient. Clinicians should be aware of this important criterion in order to prevent patients from experiencing precipitated withdrawal, which is a rapid and intense onset of withdrawal symptoms initiated by the medication. Self-reported "time since last opioid use" is not reliable because patients are

CALCULATOR REVIEW AUTHORS

Jonathan Avery, MD

Department of Psychiatry, Weill Cornell Medicine, New York, NY

Katherine E. Taylor, MD

Department of Psychiatry, New York University-Langone Medical Center, New York, NY

Why to Use

The COWS combines subjective and objective components, limiting the possibility of feigned responses. It can be serially administered to track changes in the severity of opioid withdrawal symptoms over time or in response to treatment.

When to Use

- The COWS may be used in both inpatient and outpatient settings, including:
 - » During detoxification, for the general monitoring of opioid withdrawal during opioid detox.
 - » During pain treatment, for patients who are receiving opioids for the treatment of acute or chronic pain and who may show subtle signs of opioid withdrawal.
 - » In the emergency department and other settings for patients who request methadone for opioid withdrawal symptoms, when enrollment in methadone maintenance treatment has not been verified.
- The COWS is most commonly used in buprenorphine induction and is recommended specifically for this use.

not always accurate in reporting their last use, and metabolism varies from patient to patient.

Evidence Appraisal

The COWS was first published in a training manual for buprenorphine treatment (Wesson 2003). The scale consists of an 11-item rating system, designed to be completed within 2 minutes by a trained observer, to track opioid withdrawal (as differentiated from opioid toxicity) using serial assessments. It was designed to be administered quickly and to improve on existing assessment tools.

Tompkins et al (2009) validated the COWS in comparison to the validated Clinical Institute Narcotic Assessment scale. The study used a double-blind randomized design to compare opioid

withdrawal symptoms for intramuscularly administered naloxone versus placebo in 46 patients with opioid dependency. The COWS and Clinical Institute Narcotic Assessment scores were well correlated during the naloxone challenge session, with a Pearson correlation coefficient of 0.85 ($P < .001$), while the placebo was not associated with any significant elevation in either score. Additional evidence of concurrent validity was provided by comparing COWS with the self-reported visual analogue scale; COWS scores correlated well with peak visual analogue scale scores of bad drug effect ($r = 0.57$, $P < .001$) and feeling sick ($r = 0.57$, $P < .001$). Cronbach's alpha for the COWS was 0.78, indicating good internal consistency.

Use the Calculator Now

[Click here to access the COWS on MDCalc.](#)

Calculator Creator

Donald R. Wesson, MD

[Click here to read more about Dr. Wesson.](#)

References

Original/Primary Reference

- Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). *J Psychoactive Drugs*. 2003;35(2):253-259.
DOI: <https://doi.org/10.1080/02791072.2003.10400007>

Validation References

- Tompkins DA, Bigelow GE, Harrison JA, et al. Concurrent validation of the Clinical Opiate Withdrawal Scale (COWS) and single-item indices against the Clinical Institute Narcotic Assessment (CINA) opioid withdrawal instrument. *Drug Alcohol Depend*. 2009;105(1-2):154-159.
DOI: <https://doi.org/10.1016/j.drugalcdep.2009.07.001>

Copyright © MDCalc • Reprinted with permission.

Related Tool on MDCalc

- [Withdrawal Assessment Tool \(WAT-1\) for Pediatric Withdrawal](#)

This edition of *Calculated Decisions*, powered by MDCalc, is published as a supplement to *Emergency Medicine Practice* as an exclusive benefit to subscribers. *Calculated Decisions* is the result of a collaboration between EB Medicine, publisher of *Emergency Medicine Practice*, and MD Aware, developer of MDCalc. Both companies are dedicated to providing evidence-based clinical decision-making support for emergency medicine clinicians.



Contact EB Medicine:

Phone: 1-800-249-5770
or 678-366-7933
Fax: 770-500-1316
PO Box 1671
Williamsport, PA 17703



Contact MD Aware:

MDCalc
Phone: 646-543-8380
12 East 20th Street
5th Floor
New York, NY 10003

Emergency Medicine Practice (ISSN Print: 1524-1971, ISSN Online: 1559-3908, ACID-FREE) is published monthly (12 times per year) by EB Medicine (PO Box 1671, Williamsport, PA 17703-1671). Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. This publication is intended as a general guide and is intended to supplement, rather than substitute, professional judgment. It covers a highly technical and complex subject and should not be used for making specific medical decisions. The materials contained herein are not intended to establish policy, procedure, or standard of care. Copyright © 2019 EB Medicine. All rights reserved. No part of this publication may be reproduced in any format without written consent of EB Medicine. This publication is intended for the use of the individual subscriber only and may not be copied in whole or part or redistributed in any way without the publisher's prior written permission.