

Critical Care Pain Observation Tool (CPOT)

Gélinas, C., Fillion, L., Puntillo, K.A., Viens, C., Fortier, M. (2006) Validation of the critical-care pain observation tool in adult patients. *Am J Crit Care*. 15(4):420-7.

Instrument de mesure	Critical Care Pain Observation Tool
Abréviation	CPOT
Auteur	Gélinas et al
Thème	douleur
Objectif	Évaluer la douleur des adultes inconscients
Population	Adultes inconscients
Utilisateurs	Infirmiers
Nombre d'items	4
Participation du patient	Non
Localisation de l'instrument de mesure	https://www.oiiq.org/sites/default/files/uploads/periodiques/Perspective/vol12no2/15-recherche-v2.pdf

OBJECTIF

Il s'agit d'une grille d'évaluation comportementale de la douleur dans une population d'adulte inconscients.

PUBLIC CIBLE

L'outil est conçu pour l'évaluation de la douleur chez le patient incapable de communiquer en raison d'une altération de la conscience, de l'administration de sédatifs ou de ventilation mécanique.

DESCRIPTION

Le Critical-Care Pain Observation Tool (CPOT) a été développée au Québec, d'abord en version française puis en anglais. (Gélinas et al., 2006).

Il s'agit, pour compléter l'outil d'observer le patient lors d'une période de repos (non douloureuses) et ensuite d'effectuer l'évaluation des items repris dans l'outil lors d'un acte douloureux.

La cotation est de 0 à 2 pour les items de 4 sections : l'expression faciale ; les mouvements corporels ; la tension musculaire ; les vocalises OU l'interaction avec le ventilateur (patient intubé ou trachéotomisé). Le score global final est donc compris entre 0 et 8.

Les auteurs ont fixé un score seuil à 3 mais Echegaray-Benites et al, proposent l'utilisation d'un score seuil supérieur à 1,5.

Il s'agit d'un outil fiable utilisable par les infirmières après une courte formation, permettant d'obtenir des indicateurs valides d'évaluation de la douleur.

FIABILITE

La fidélité inter juges a été étudiée dans plusieurs publications comme indicateur de fiabilité du test. L'outil montre une fiabilité inter-juges moyenne à bonne exprimée par un coefficient de Kappa entre 0.52 et 0.88. (Gélinas et al., 2006).

La consistance interne (*Internal Consistency*) du test a été mesurée par Kanji et al, 2016 et montre une bonne consistance interne exprimée par un coefficient alpha de Cronbach à 0.778. Chaque Item contribue à la bonne consistance du test.

VALIDITE

La validité du contenu (*Content Validity*) de l'instrument de mesure a été établie sur base de la littérature et par un panel d'experts (4 médecins et 13 infirmières). Les professionnels ont évalué la pertinence de chaque indicateur proposés ;

La validité des critères (*Criterion Validity*) de l'instrument de mesure a été mesurée dans différents contexte de soins. Il y a une corrélation modérée entre la douleur exprimée par le patient et les scores obtenus au CPOT.

La validation discriminante (*concurrent Validity*) de l'utilisation de l'échelle a été démontrée par des scores CPOT plus élevés pendant les épisodes douloureux par rapport aux épisodes non douloureux. La valeur diagnostique de l'outil est exprimée par une sensibilité de 66.7% et une spécificité de

83.3% en utilisant un score seuil de 3. Cependant, l'étude de Echegaray-Benites et al, indique une sensibilité de 76.9, une spécificité de 73.3 en utilisant un score de seuil de >1.5 ; et un espace sous la courbe ROC de 0.86, ce qui montre la bonne validité de l'outil.

CONVIVIALITE

La convivialité de l'outil a été recherchée auprès des infirmières ayant complété le CPOT. De façon globale, les infirmières ont données un avis favorable à l'utilisation de l'échelle CPOT à l'USI.

Pour une bonne utilisation de l'outil, une formation minimale est nécessaire pour la bonne compréhension des items.

RÉFÉRENCES

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LOCALISATION DE L'INSTRUMENT DE MESURE

En français :

<https://www.oiq.org/sites/default/files/uploads/periodiques/Perspective/vol12no2/15-recherche-v2.pdf>

En Anglais :

Gélinas, C., Fillion, L., Puntillo, K.A., Viens, C., Fortier, M. (2006) Validation of the critical-care pain observation tool in adult patients. *Am J Crit Care.* 15(4):420-7.

CRITICAL CARE PAIN OBSERVATIONAL TOOL (CPOT)

GÉLINAS ET AL.

Author (year)	Setting	Sample (n)	Design	Reliability	Validity
Gélinas et al, 2006	cardiology health center in Quebec, Canada	105 cardiac surgery patients in the intensive care unit,	Validation study	E	CV; CtV; CrV
Gélinas et al, 2007	University hospital in the montreal area	A total of 30 conscious and 25 unconscious patients in the intensive care unit	Validation study Cross-over observational design	E	CV; CrV

Betrouwbaarheid/ fiabiliteit: Stability (S), Internal Consistency (IC), Equivalence (E)

Validiteit/ validité: Face Validity (FV), Content Validity (CtV), Criterion Validity (CrV), Construct Validity (CsV)

Sensitivity (Sen), Specificity (Sp), Positive Predictive Value (PPV), Negative Predictive Value (NPV), Receiver Operating Curve (ROC), Likelihood Ratio (LR), Odds Ratio (OR), Area Under the Curve (AUC)

Results reliability	Results validity	Commentary
<p>E: Equivalence : Interrater reliability was supported by moderate to high weighted kappa coefficients (0.52-0.88)</p>	<p>Results validity</p> <p>Ct V: Content Validity: Established with 4 physicians and 13 critical care nurses. They completed a questionnaire on the relevance of the inclusion of these indicators by using a likert scale. Content validity indices, which are the proportion of participants who answered 3 or 4 on the likert scale were calculated. All indicators had indices greater than 0.88 to 1.00;</p> <p>CV: Criterion Validity: significant associations were found between the patients' self-reports of pain and the scores on the Critical-Care Pain Observation Tool.</p> <p>Spearman correlation of 0.49, 0.59, 0.40 ($p \leq 0.001$).</p> <p>CrV: Concurrent Validity: Discriminant validity was supported by higher scores during positioning (a noiceptive procedure) versus at rest.</p>	<p>French version</p>
<p>E: Equivalence : Interrater reliability of the CPOT was supported with high intraclass correlation coefficients (0.80 to 0.93).</p>	<p>CV: Criterion Validity: scores were correlated to the patients' self-reports of pain, whereas physiologic measures were not; Pearson correlation of 0.71 ($p \leq 0.05$)</p> <p>CrV: Concurrent Validity: Discriminant validity was supported with increases of the CPOT and physiologic indicators, and a decrease in SpO₂.</p> <p>Using a CPOT cutoff score of >3 : sensitivity of 66.7% and a specificity of 83.3%; Positive predictive value : 85.7%</p>	<p>English version</p>

Betrouwbaarheid/ fiabilité: Stability (S), Internal Consistency (IC), Equivalence (E);

Validiteit/ validité: Face Validity (FV), Content Validity (CtV), Criterion Validity (CrV), Construct Validity (CsV)

Sensitivity (Sen), Specificity (Sp), Positive Predictive Value (PPV), Negative Predictive Value (NPV), Receiver Operating Curve (ROC), Likelihood Ratio (LR), Odds Ratio (OR), Area Under the Curve (AUC)

CRITICAL CARE PAIN OBSERVATIONAL TOOL (CPOT)

GÉLINAS ET AL.

Author (year)	Setting	Sample (n)	Design	Reliability	Validity
Gélinas et al, 2009 (b)	university cardiology health center in Canada	Patients were evaluated while conscious and intubated (n=99/105), and extubated (n=105).	Evaluation Study	E	CrV
Keane, 2013	Teaching hospital, northeastern United States.	21 postoperative open heart surgery patients cared for in a tertiary-care teaching hospital	Validation Study	E	CrV; CrV

Betrouwbaarheid/ fiabilité: Stability (S), Internal Consistency (IC), Equivalence (E)

Validiteit/ validité: Face Validity (FV), Content Validity (CtV), Criterion Validity (CrV), Construct Validity (CsV)

Sensitivity (Sen), Specificity (Sp), Positive Predictive Value (PPV), Negative Predictive Value (NPV), Receiver Operating Curve (ROC), Likelihood Ratio (LR), Odds Ratio (OR), Area Under the Curve (AUC)

Results reliability	Results validity	Commentary
<p>E: Equivalence : interrater reliability were variable with weighted Kappa coefficients ranging from 0.4 to 1.0.</p>	<p>CrV: Concurrent Validity</p> <p>During the nociceptive exposure, the CPOT had a sensitivity of 86%, a specificity of 78%, a positive likelihood ratio (LR(+)) of 3.87 (1.63-9.23), and a negative LR (LR(-)) of 0.18 (0.09-0.33).</p> <p>It also showed good specificity (83% and 97%) but lower sensitivity (47% and 63%) during nonexposure conditions. The CPOT cutoff score was >2 during the nociceptive exposure.</p>	
<p>E: Equivalence : interrater reliability were variable with weighted Kappa coefficients ranging from 0.4 to 1.0.</p>	<p>CV: Criterion Validity</p> <p>Testing for CV showed a weak nonsignificant Spearman correlation of 0.26 ($P < .312$) between CPOT scores and patient self-report during repositioning after extubation.</p> <p>CrV: Concurrent Validity</p> <p>Statistically differences were noted when comparing mean CPOT scores during nonnociceptive periods and nociception.</p>	

Betrouwbaarheid/ fiabiliteit: Stability (S), Internal Consistency (IC), Equivalence (E)

Validiteit/ validiteit: Face Validity (FV), Content Validity (CtV), Criterion Validity (CrV), Construct Validity (CsV)

Sensitivity (Sen), Specificity (Sp), Positive Predictive Value (PPV), Negative Predictive Value (NPV), Receiver Operating Curve (ROC), Likelihood Ratio (LR), Odds Ratio (OR), Area Under the Curve (AUC)

CRITICAL CARE PAIN OBSERVATIONAL TOOL (CPOT)

GÉLINAS ET AL.

Author (year)	Setting	Sample (n)	Design	Reliability	Validity
Topolovec-Vranic et al., 2013	urban teaching hospital (St Michael's Hospital) in Toronto, Ontario	nurses and the patients in the ICU. Twenty-three nurses consented to participate in the research. Seventy patients were recruited for the study.	Prospective repeated-measures descriptive study	E	CrV
Echegaray-Benites et al, 2014	A Canadian university hospital	Forty-three elective brain surgery patients		E	CrV; CV
Kanji et al, 2016	Canadian tertiary healthcare center	40 ICU patients	Prospective cohort study	IC	CrV

Betrouwbaarheid/ fiabilité: Stability (S), Internal Consistency (IC), Equivalence (E)

Validiteit/ validité: Face Validity (FV), Content Validity (CtV), Criterion Validity (CrV), Construct Validity (CsV)

Sensitivity (Sen), Specificity (Sp), Positive Predictive Value (PPV), Negative Predictive Value (NPV), Receiver Operating Curve (ROC), Likelihood Ratio (LR), Odds Ratio (OR), Area Under the Curve (AUC)

Results reliability	Results validity	Commentary
<p>E: Equivalence : ICCs were calculated to compare the paired assessments completed by the study coordinator and nurse assessor. ICCs (0.60 to 0.97)</p> <p>E: Equivalence : Interrater and intrarater reliability of CROT scores through the viewing of participants' videos by two trained raters was supported with high Intraclass Correlation Coefficients (ICC>0.75).</p>	<p>CrV: Concurrent Validity : Significant interaction effects (time x procedure) were found for the CPOT and the Non Verbal Pain Scale-R scores</p> <p>CrV: Concurrent Validity : Discriminant validation was supported with higher mean CROT scores during the nociceptive procedure compared with the non-nociceptive one</p> <p>The area under the curve (AUC) was 0.864, $p < 0.001$ (CI95% = 0.757 – 0.971)</p> <p>Cut-off point >1.5: sensitivity: 76.9% ; specificity 73.3%</p> <p>CV: Criterion Validity was supported with a moderate positive correlation between self-reports of pain intensity and CROT scores during turning ($r = 0.571$, $p < 0.001$)</p>	
<p>IC: Internal Consistency:</p> <p>Cronbach alpha : 0.778</p>	<p>CrV: Concurrent Validity : The percent agreement between CROT and the nurses' subjective opinion was 80.5%</p>	

Betrouwbaarheid/ fiabilité: Stability (S), Internal Consistency (IC), Equivalence (E)

Validiteit/ validité: Face Validity (FV), Content Validity (CtV), Criterion Validity (CrV), Construct Validity (CsV)

Sensitivity (Sen), Specificity (Sp), Positive Predictive Value (PPV), Negative Predictive Value (NPV), Receiver Operating Curve (ROC), Likelihood Ratio (LR), Odds Ratio (OR), Area Under the Curve (AUC)

Comment citer ce rapport ?

Tricas-Sauras S. ; Filion N ; Piron, C ; Verhaeghe S ; Van Durme Th ; Karam, M ; Darras, E. (2016) Inventaire et mise à disposition de recommandations pour la pratique infirmière. Les projets BeST et Guidelines III. Bruxelles : Politique Scientifique Fédérale & Service Public Fédéral Santé Publique, Sécurité de la Chaîne alimentaire et Environnement.

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