

Tool: Mobilization-Observation-Behavior-Intensity-Dementia Pain Scale (MOBID)
Tool developers: Husebo, B.S., Strand, I., Moe-Nilssen, R., Husebo, S.B., Snow, A.L., Ljunggren, A.E.
Country of origin: Norway
Reviewed: 06/08

Conceptualization Panel rating: 2	
Purpose	MOBID is a nurse-administered instrument to observe pain behaviors and infer pain intensity at rest and with standardized guided activity in patients with severe cognitive impairment (SCI).
Conceptual basis	<p>This scale builds on the evidence that pain behaviors in SCI patients are best observed with activity. Because pain behaviors related to every day activities in the caregiving context may be subtle and difficult to detect, the developers of this tool propose a set of standardized guided movements of different body parts to capture movement-related pain.</p> <p>The scale focuses on three behaviors related to movement: facial expressions, pain noises and defensive gestures. The assumptions are that in the presence of pain, standardized movements of joints in arms, legs and trunk will elicit these observable behaviors. By rating pain intensity for individual behaviors the caregiver can then infer overall pain intensity on a numeric rating scale (NRS 0-10).</p>
Item Generation	<p>Three pain behaviors were agreed upon after literature review and by a panel of experts (1 RN, 1 LPN, 2 MD, 2 PT, 1 clinical psychologist) knowledgeable in pain assessment, tool development and treatment and care of SCI patients. The guided movement protocol initially also included observation at rest and brushing teeth/mouthcare both of which had low internal consistency and were deleted from the final version.</p> <p><u>Tool items</u> The LPN/RN caregiver is instructed to gently guide</p> <ol style="list-style-type: none"> 1. to open both hands, one hand at a time 2. to stretch both arms towards head, one arm at a time 3. to stretch and bend both knees and hips, one leg at a time 4. to turn in bed to both sides 5. to sit at the bedside <p>For each activity, the caregiver is asked to observe for presence and intensity of pain on an 11-point NRS for the following three behaviors:</p> <ol style="list-style-type: none"> 1. Pain noises defined as Ouch!, groaning, gasping or screaming 2. Facial expression defined as grimacing, frowning, tightening mouth or closing eyes. 3. Defense, defined as freezing, guarding, pushing or crouching. <p>Lastly, the caregiver is asked to assign an overall pain intensity rating on an 11-point NRS.</p>
Content validity	Face validity was established in a focus group of 2 registered and 2 licensed practical nurses, 2 physical and 1 occupational therapist and 2 physicians who agreed that behaviors and movements were adequate and sufficient to disclose pain and the protocol was easily carried out with morning cares. Suggestions for layout and wording were incorporated and the final version was pilot-tested on 3 SCI patients.

<p><i>-Panel Commentary</i></p>	<p>Conceptually the tool includes 3 categories of pain indicators noted in the AGS Persistent Pain Guidelines. Facial expression, vocalization and defense are clearly operationalized. Used as indicators of induced pain they are assumed to be easiest to detect. It is not explicitly stated whether focus group experts were independent from those staff members involved in the development of the initial set of pain items. The authors acknowledge the fact that the scale does not capture visceral, neuropathic or headache related pain. The MOBID incorporates patient self-report/expression, observation and proxy assessment in one brief tool. This may widen its sensitivity despite the fact that only three behaviors are actually recorded on the instrument itself.</p> <p>There remains a conceptual leap in inferring not only the presence but also the intensity of persistent pain from movement induced pain behaviors. However, there is emerging evidence that observation or informant-based pain assessment tools can track change in degrees of pain for individual patients and differentiate between mild, moderate and severe pain. More testing is needed to support any population-based normed correlation between intensity of pain behaviors and intensity of pain.</p> <p>The authors assert that it is a strength of the MOBID to combine both the overall NRS and ratings of individual behaviors because it allows caregivers to assess pain in those non-verbal adults who have also lost the ability to express pain behaviors as with Parkinson's Disease or stroke-related communication deficits.</p>
<p>Subjects Panel rating: 1</p>	
<p>Subjects</p>	<p>Nursing home in Bergen, Norway (174 beds). N=26 patients met inclusion criteria for age, cognitive impairment and presence of chronic musculoskeletal pain >3 on NRS. Patients with acute pain, psychiatric conditions or sensory impairments were excluded.</p> <p>Average age: 87 (SD 6.1) Gender: 89% female Cognitive impairment: MMSE <11 (mean 4.3, SD 4.3) Clinical Dementia Rating Scale mean 16.7 (SD 2.0) Severe Impairment Rating Scale mean 7 (SD 7) Mean ADL score 5.9 (SD 5.9).</p> <p>NH staff was divided into 2 separate groups of MOBID raters. Group 1 (5 RNs and 6 LPNs) was familiar with the patients. Group 2 (3 external LPN raters) did not know the patients. Both groups received 1-hour briefings on pain assessment and use of the MOBID, and practiced administering the MOBID. Average work experience of raters at this NH was 7.7 years (SD 6.8).</p>
<p><i>-Panel Commentary</i></p>	<p>The MOBID clearly identifies its focus on long term care setting and chronic musculoskeletal pain with concurrent chronic illness. The study population has severe dementia as assessed with standardized instruments. There is notable exclusion of depression and neuropsychiatric disorders. Age and gender distribution are characteristic of NH settings. The authors acknowledge that, at this time, there is less than 1% ethnic diversity in Norwegian NHs (private communication, Dr. Husebo, August 2008)</p> <p>Using 5 subjects per item as a minimum standard for this review, a sample size of 75 subjects (3x5 variables x 5 subjects per item) would be needed to correlate pain behaviors and body parts, with correction for multiple testing when adding the correlation of pain intensity. With only 26 subjects this study presents a preliminary but important step towards establishing validity of the</p>

	<p>tool.</p> <p>The nature of the convenience sample from one institution has the usual limitations for generalization. Little information is available on caregivers who participated and how they were chosen. Their experience was highly variable given the large standard deviations.</p>
<p>Administration, Scoring, Feasibility</p> <p>Panel rating: 1</p>	
<p>Administration, Scoring, Feasibility</p>	<p>Caregivers are asked to check off boxes for the presence of 3 pain behaviors, rate pain intensity after performing each of the 5 individual guided activities, and assign an overall score for pain intensity after completion of the assessment. The NRS is the familiar 11-point scale with fluid ordinal intervals between 0 (no pain) and 10 (as bad as it possibly could be).</p> <p>Brief instructions for guiding movements are printed on the assessment sheet and descriptors for each of the 3 pain behaviors are included (see item generation).</p> <p>Study results showed that the movement eliciting the highest pain intensity correlated best with the overall assigned pain intensity score. This intuitively fits with the assumption that severe pain in one body part will not be averaged out by less pain elsewhere. Scoring may therefore be misleading, because intensity of pain is not based on number of pain behaviors among familiar raters.</p>
<p><i>-Panel Commentary</i></p>	<p>The MOBID was developed to be a routine component of morning cares. The form itself is brief and concise.</p> <p>Raters in this study are RNs and LPNs who received a one-hour briefing on pain assessment and use of the MOBID and had practiced administration of the MOBID. More evidence is needed to ascertain training times for unskilled nursing assistants who may require more specific guidance for observing and rating activity-induced pain.</p> <p>Cut-off points for interventions are not stated. The authors state that the overall persistent pain NRS should be determined independently from individual, movement-related pain behaviors, to supplement information about pain in those individuals who cannot express pain behaviors, or whose behaviors are more likely dementia rather than pain –related (personal communication, Dr. Husebo, August 2008)</p> <p>More studies are needed to evaluate utility in English-speaking settings and US nursing homes.</p>
<p>Reliability</p> <p>Panel rating: 1</p>	
<p>Internal consistency</p>	<p>Patient behaviors during MOBID administration were videotaped. Three blinded external raters viewed the videotapes and performed MOBID scoring.</p> <p>Cronbach's α for the 3 external raters were .90, .90 and .91 after "observation at rest" and "tooth brushing" were omitted for low correlations.</p>
<p>Interrater reliability</p>	<p>2 MDs performed chart review, neuropsychiatric testing and physical and medical examinations to establish cognitive status and level of chronic pain. They then assigned an overall pain score on NRS shortly before the administration of the MOBID. Caregivers observed and rated pain intensity during morning cares using the MOBID protocol and assigned another overall pain intensity score.</p>

	<p>Mobilizing arms and legs elicited the highest number of pain behaviors: facial expressions > pain noises> defense. Accordingly, the highest pain intensity was attributed by the raters to arm and leg movements.</p> <p>Raters had moderate to very good agreement on pain noises ($\kappa = 0.42-0.84$); low to good agreement on facial expressions ($\kappa = 0.06-0.77$) and defense ($\kappa = 0.05-0.87$)</p> <p>There was good to excellent agreement for pain intensity inferred for each MOBID item (ICC = 0.70-0.96), and for the comprehensive pain score (ICC = 0.76-0.82). ICC was 0.86 between the 3 external raters. The authors conclude that reliability in detecting individual behaviors may not be a prerequisite for inferring overall intensity. Because the process of inference is highly individualistic to each rater, it may be said that the magnitude of the behavior more than its mere presence leads to ratings of pain intensity.</p>
Intrarater reliability	<p>Patient behaviors during MOBID administration were videotaped. Four to six days after the actual examination, the same primary caregivers reviewed the videotapes and repeated MOBID scoring.</p> <p>Primary care givers consistently rated pain intensity higher after viewing the video and the reported high correlation between bedside and video MOBID scores does not in itself support intra-rater reliability.</p>
-Panel commentary	<p>The MOBID has good internal consistency for detecting pain based on three specific behaviors. Observation at rest was removed from the test items. However, raters are instructed to observe baseline resting behaviors prior to the assessment to detect changes due to pain with movement.</p> <p>There is a wide range in interrater reliability for observed behaviors which may be due to raters' familiarity vs. non-familiarity with the patient. The high agreement in pain intensity ratings between familiar caregivers and external raters, on the other hand, may support the assumption of a common process in deriving pain intensity ratings from observation of pain behaviors in proxy reporting in general. The authors state that this consensus appears to be based on presence of pain behaviors in general rather than the specific number of pain behaviors. The lack of correlation between number of pain behaviors and ratings of intensity among familiar raters may be due to familiar raters' ability to attribute these behaviors to pain vs. dementia more accurately than non-familiar, external raters. No information is available for test-retest reliability yet. More testing with larger samples is recommended.</p>
Validity: Criterion or construct	
Panel rating: 1	
Construct validity/ Criterion related validity	<p><u>Construct validity</u></p> <p>The MOBID bedside assessment score was compared to pain intensity ratings after regular morning cares. MOBID scores were higher ($p < 0.005$). There was no significant association between overall intensity scores. Overall pain scores assigned were highest after viewing the video and lowest after performing normal morning cares. One explanation was that caregivers and patients cooperated to minimize pain with manipulation.</p> <p>Primary caregivers consistently rated pain intensity higher after viewing the video but there was a high correlation between bedside and video MOBID scores ($r = 0.67, p < 0.01$).</p> <p>Both external raters and primary carers assigned similar pain intensity scores to individual movements upon viewing the videotape (mean 5.5 for both groups). Overall pain scores correlated moderately ($r = 0.56, p < 0.01$).</p> <p>There was a linear trend for more pain behaviors to be associated with higher</p>

	pain intensity ($p < 0.05$) among external raters. The highest pain intensity of all MOBID assessment parts correlated with the overall pain intensity score better than the mean of summed MOBID scores.
-Panel commentary	The higher pain scores with MOBID-activity confirm the tool's ability to detect movement induced pain compared to resting pain. A trend of more behaviors leading to higher pain intensity scores may signify discriminant validity and sensitivity of the tool in detecting different pain levels. However, it may also reflect raters' arbitrary conclusions about perceived pain; this relationship is not yet empirically verified. After comparing bedside and video scores the authors conclude that MOBID bedside scores may under-report pain intensity. More evidence is needed to support validity of this tool for both presence of pain behaviors and inferred pain intensity.
Summary of panel evaluation of pain assessment tool	
MOBID is a nurse-administered instrument to observe pain behaviors and infer pain intensity at rest and with standardized guided activity in patients with severe cognitive impairment (SCI). It includes three of six behaviors defined by AGS to detect movement-induced pain. With only one study to date, psychometric information is limited. Preliminary reliability testing is limited to interrater reliability and is stronger for pain intensity ratings than for detecting pain behaviors alone. Construct validity testing confirms the tool's ability to measure movement-induced pain but does not contribute to understanding how presence of pain behaviors translate into ratings of pain intensity. The differences found between familiar and unfamiliar raters in this study are interesting and pose questions re. the utility of combining informant and observer ratings in one tool. More testing with larger and more diverse samples is recommended to further establish validity and support a link between proxy ratings and patient behaviors.	

Source of evidence

Husebo, B. S., Strand, L. I., Moe-Nilssen, R., Husebo, S. B., Snow, A. L., & Ljunggren, A. E. (2007). Mobilization-observation-behavior-intensity-dementia pain scale (MOBID): Development and validation of a nurse-administered pain assessment tool for use in dementia. *Journal of Pain and Symptom Management*, 34(1), 67-80.

In personal communication with Dr. Husebo in August 2008 she shared further work in progress to refine the MOBID.

Husebo BS, Strand LI, Moe-Nilssen R, Husebo SB, Ljunggren AE. Pain behaviour and pain intensity in older persons with severe dementia: Reliability of the MOBID Pain Scale by video uptake. *J Scand Caring Sci* 2008; in press.

According to Dr. Husebo, this paper “documented the extended testing of the intra-rater and inter-rater reliability of the pain behaviour indicators and pain intensity scores of the MOBID Pain Scale by three external raters, using video recordings, concurrently and independently on days 1, 4 and 8.”

Husebo BS, Strand LI, Moe-Nilssen R, Husebo SB, Ljunggren AE. Pain in older persons with severe dementia. Psychometric properties of the Mobilization–Observation–Behavior–Intensity–Dementia (MOBID-2) Pain Scale in a clinical setting. Under review.

Here, “in order to also assess pain from internal organs, the head and skin, an extended instrument, the MOBID-2 Pain Scale” was created.. “It comprised the original MOBID, renamed MOBID-2 Part 1, and MOBID-2 Part 2, which registered pain behaviour related to internal organs, the head and skin. Including 77 patients, the internal consistency, inter-rater and test-retest reliability of pain behaviour indicators, pain drawings and pain intensity scores are tested. Furthermore, arguments for face-, construct- and concurrent validity are added.”

Husebo, B. S., Strand, L. I., Moe-Nilssen, R., Borgehusebo, S., Aarsland, D., & Ljunggren, A. E. (2008). Who suffers most? Dementia and pain in nursing home patients: A cross-sectional study. *Journal of the American Medical Directors Association*, 9(6), 427-433.

This “is a cross-sectional study exploring the relationship between severity and diagnoses of dementia and the use of pain medication and other variables of pain measured using pain intensity scores from MOBID-2 in 181 nursing home (NH) patients.”

Key to panel rating

3= Available evidence is strong

2= Available evidence supports need for further testing

1= Available evidence is insufficient and/or tool revisions are needed

0= Evidence is absent

Tool developer contact information

Bettina Husebo, MD

Department of Public Health and Primary Health Care

Section for Physiotherapy Science

University of Bergen, Kalfarveien 31

5018 Bergen, Norway

Email: Bettina.Husebo@isf.uib.no

Evaluation completed by:

K. Herr, H. Bursch, B. Black, University of Iowa.

Contact information: keela-herr@uiowa.edu