

Tool: The Pain Assessment Checklist for Seniors with Limited Ability to Communicate(PACSLAC)
Tool developer: Fuchs-Lacelle, S.K. & Hadjistavropoulos, T.
Country of origin: Canada
Reviewed: 04/04
Revised: 06/08

Conceptualization Panel rating: 2 Revised: 2	
Purpose	The PACSLAC is a caregiver-administered pain assessment checklist <i>using direct observation and familiar caregiver information for the assessment of pain in elders with limited ability to communicate.</i>
Conceptual basis	A unified conceptual basis for the tool is not evident; However, the tool does tap pain behaviors from all 6 domains of the AGS Persistent Pain Guidelines. The authors acknowledge the limitations of rating behaviors as to pain intensity in a population with diverse presentations and thus pain indicators are measured on a dichotomous present/absent scale.
Item Generation	<p><u>Tool items</u> There are four subscales with a total of 60 items:</p> <ul style="list-style-type: none"> • Facial expressions (13 items) • Activity/body movements (20 items) • Social/personality/mood (12 items) • Physiological indicators/Eating and sleeping changes/Vocal behaviors (15 items). <p>Each item is scored on a dichotomous scale by checking off those pain behaviors that are observed. The number of checks on each subscale are added together and recorded and then these sums are added together for a total score.</p> <p><u>Phase I: Item generation</u> Items were generated through serial interviews with experienced professional caregivers of seniors with severe dementia (see sample characteristics below). Interviews were recorded, transcribed. Transcribed material was then reviewed by two researchers who each independently developed an initial set of non-overlapping behaviors. The original total of 71 behaviors was collapsed to 65, which was used to develop the PACSLAC. A second coder independently used the list of 71 pain behaviors to review a random sample of 15 transcribed interviews. Agreement between the two coders on total number of instances each coder endorsed each behavior on the list resulted in correlation of 0.94 (p<.01). The behaviors were then grouped conceptually by the authors.</p> <p><u>Phase II: Item analysis and assessment of internal consistency</u> A preliminary tool with 7 subscales with a total of 65 pain behaviors was used by a separate sample of 40 professional caregivers (see sample characteristics below) who reported on pain experiences of remembered patients with severe dementia. The number of subscale was reduced to four in order to improve internal consistency: Facial expressions, Activity/body movements, Social/personality/mood and Physiological indicators/Eating and sleeping changes/Vocal behaviors. Moreover, two items of the 65 items were deleted.</p>

	<p><u>Phase III: Preliminary validation of the PACSLAC</u> An additional three items were deleted following phase III. The final tool has 60 items on 4 subscales (see sample characteristics and results of validation study below).</p>
<p>Content Validity</p>	<p><u>Phase II – Assessment of Usefulness</u> The professional caregivers also rated PACSLAC items for usefulness on a numeric rating scale (Usefulness Scale) anchored by 0 (not useful) and 10 (very useful) to indicate how useful that specific behavior was for deciding whether pain was present. All items except one were rated as being useful in identifying pain as indicated by a score of at least “5”.</p> <p><u>Study 3 (Zwakhalen, Hamers & Berger, 2006)</u> <i>The study evaluated the validity of a Dutch-translated version of the PACSLAC and demonstrated reliability and validity in this language.</i></p> <p><u>Study 4 (Zwakhalen, Hamers, & Berger, 2007)</u> <i>Because 28 of 60 PACSLAC items were not used for over 90% of study participants in Study 3, item reduction was attempted. Using observation of patients for two minutes while receiving an influenza vaccination (T2) and during a patient-specific pain moment (e.g. care activities, washing or mobilization) (T3), item reduction techniques were used to refine the PACSLAC. This study used a translated (Dutch) version of the PACSLAC and the observer had no prior knowledge of the patient. Pain intensity was rated on a VAS. VAS and PACSLAC scoring were performed in random order within a time interval of less than three weeks. Principal components analysis with Oblimin rotation used to determine factor structure with re-examination of matrix following any item deletions to validate final scale and subscales.</i></p> <p><i>35 items were discarded based on low IC and MSA values. Additional items were deleted based on low factor loadings. The final revised tool represented three components explaining 45.7% of variance with 24 items called PACSLAC-D (Dutch Language). Alpha for total scale with 24 items=0.86 at T2 and 0.82 at T3. Cronbach’s alpha for three subscales were high, ranging from 0.72 to 0.82. The reduced version of the scale was correlated with the long 60-item version of the scale with Pearson’s r of 0.945. It is important to note that the PACSLAC-D (Dutch Language) does not contain items that require prior knowledge of the patient and thus is a direct observation tool only.</i></p>
<p>-Panel Commentary</p>	<p>The tool covers all 6 pain behavior categories in the AGS Persistent Pain Guidelines. However, the subscales appear to be conceptually based (derived by the authors), rather than based on factor analysis. A strength of the PACSLAC is the broad nature of indicators that allows for recognition of pain in those with idiosyncratic or less obvious pain behaviors. The subscale “Physiological indicators/Eating and sleeping changes/Vocal behaviors” includes seven indicators that conceptually represent vocalization/verbalization; two represent change in activity pattern and three may represent change in mental status. Because of the large number of diverse indicators on this subscale, refinement may be needed.</p> <p>Because the PACSLAC is a broad list with potential pain indicators for acute and/or persistent pain and is not scored to represent severity of persistent pain, inclusion of physiological indicators appears appropriate.</p> <p>The items are dichotomous and scored as present/absent. The tool does not</p>

attempt to measure pain severity, which is appropriate for older adults with dementia who are not able to communicate their pain verbally.

The PACSLAC was assessed for content validity by an independent review process involving professional caregivers as experts and was assessed as being clinically useful for assessing pain in elders with severe dementia.

A shortened version has been developed in Dutch called PACSLAC-D (Dutch Language) with 24 items derived through factor analytic procedures based on a small sample and based on an acute pain episode (with small sample experiencing situation-based pain). This shortened tool has preliminary reliability and validity, although additional testing with other types of more chronic pain and larger samples is needed. Both the PACSLAC and PACSLAC-D (Dutch Language) have been validated in Dutch. Further study of the PACSLAC is warranted to determine if frequency of item use and a similar factor structure and reduction holds up in English and other languages and populations.

It should be noted that the PACSLAC is an informant-based tool requiring knowledge of the patient's baseline behaviors as opposed to the PACSLAC-D (Dutch Language) which is strictly an observation-based tool. Given the fact that there are 60 items in the PACSLAC it has been suggested that the very few items requiring prior knowledge of the patient could be left blank. More testing is needed to see how this would affect reliability of the PACSLAC.

Subjects
Panel rating: 1
Revised: 2

Subjects

Study 1 (Fuchs-Lacelle & Hadjistavropoulos, 2004)

Stage I
28 primary caregivers of elders 65 years of age or older living in long term care due to serious limitations in their ability to communicate.
The primary caregivers were registered nurses, licensed practical nurses and special care aides

Stage II
40 RN/Resident Dyads
40 Registered nurses and registered psychiatric nurses who worked in long term care facilities with older adults with cognitive impairments that limited their ability to communicate. None of these caregivers had participated in phase I. Nurse characteristics:
Average age: 49 years (±10.2)
Experience as a nurse: 21.4 years (±13.0)
Experience with patients reported on: 3.6 years (±2.8)
40 patients
Average age: 83.2 years (±7.8)
Gender: 11 males, 29 females
Dementia severity: Present Functioning Questionnaire (PFQ): Average score: 44.6, (±5.3), indicating severe dementia.
The subjects were “remembered patients” under the care of the nurse.

Stage III
40 RN/Resident Dyads
40 nurses:
Average age: 44 years
Average years experience as a nurse: 19 years
40 patients:

	<p>Average age: 85 years Gender: 10 males, 30 females 33 patients with a diagnosis of dementia. 34 patients had a diagnosis associated with pain. Present Functioning Questionnaire (PFQ): Average score: 41, (± 3.3). The subjects were “remembered patients” under the care of the nurse for at least six months and who experienced pain.</p> <p><u>Study 2 (Fuchs-Lacelle & Hadjistavropoulos, 2005)</u> 50 nurses Age: No information Gender: 70% female, 30% male Patients (no information on number of patients assessed) Cognitive status: Present Functioning Questionnaire (PFQ) average score 37 (± 5.7) indicating serious cognitive impairment.</p> <p><u>Study 3 (Zwakhaleen, Hamers & Berger, 2006)</u> 144 nursing home residents, with 128 dementia, 12 psychogeriatric patients. Age: mean 82.4 (SD=6.8), range 60-98 years Gender: 78.1% female, 21.9% male Cognitive Status for dementia patients: MDS-CPS 47.7% severely impaired (n=61), 28.1% moderately impaired (n=36), 21.9% mildly impaired (n=28) Diagnosis: 32% Alzheimer’s Disease; 18.8% vascular dementia, 9.4% other and 39.8% unknown. Pain: based on MDS, 25% of psycho-geriatric patients experienced pain on daily basis; 42.2% of residents reported frequent pain (14.1% mild, 22.7% moderate, 5.5% unbearable).</p> <p>16 somatically ill (control group for pain intensity scores) Age: 78.1 (SD 10.6) years Gender: 11 female, 5 male</p> <p>Nurses (n=12) Age: mean 34.3 (SD=9.6) years Gender: 10 female, 2 male</p> <p><u>Study 4 (Zwakhaleen, Hamers, & Berger, 2007)</u> 128 nursing home residents with dementia Age: mean 82.4 (SD=6.8), range 60-98 years Gender: 78.1% female; 21.9% male Cognitive status: same sample of dementia patients as in study 3.</p> <p><u>Study 5 (Zwakhaleen, Koopmans, Geels, Berger & Hamers, 2008)</u> 117 residents from 3 Dutch nursing homes Age: mean 82.8 (SD=6.1), range 60-97 Gender: 80% female, 20% male Cognitive status: MMSE mean score 5.7 (SD=6.8) suggesting severe impairment</p> <p><u>Study 6 (Fuchs-Lacelle, Hadjistavropoulos, & Lix, in press)</u> 21 units within 12 long-term care facilities 181 patients randomly assigned to experimental (E) or control group (C) Age: mean 84.89 (SD=6.54) experimental and 8/39 (SD=7.00) control group Gender: E: 70.8% female; 29.2% male C: 88.1% female; 11.9% male</p>
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	<p><i>Cognitive Status: PFQ E=38.99 (SD=7.8) C=38.86 (SD=7.2)</i></p> <p><i>Caregivers/Nurses 61 RNs, LPNs and NAs Age: E= mean 44.1 (SD=11.4) C= mean 46.0 (SD=9.88) Gender: E: 100% female; 0 male C: 96.5% female; 3.5% male</i></p>
<p>-Panel Commentary</p>	<p>The use of remembered patients may be appropriate for preliminary instrument testing. However, recall bias on the part of the nurses represents a threat to the validity of this study.</p> <p><i>The PACSLAC has been evaluated prospectively in NH settings with sample of patients with dementia. Methods for evaluating cognitive status are appropriate and indicate severe impairment in most studies. Age and gender representation is appropriate. There is no information in any of the studies regarding racial/ethnic diversity, except testing in Canadians and Dutch. Using a minimum requirement of 5 subjects per item for the purposes of this review, the sample sizes for testing the PACSLAC and the PACSLAC-D (Dutch Language) are small. Additionally, few subjects in the existing studies had moderate or severe pain impacting evaluation of the tool usefulness across the full range of scoring. Additional evaluation in larger English-speaking samples with increased diversity are needed.</i></p>
<p>Administration, Scoring, Feasibility Panel rating: 2 Revised: 2</p>	
<p>Administration, Scoring, Feasibility</p>	<p>There are four subscales with a total of 60 items. Each item is scored on a dichotomous scale with one check for each item identified. Subscale scores are summed to arrive at a total score. It took most nurses less than five minutes to complete the PACSLAC.</p> <p><u>Study 2 (Fuchs-Lacelle & Hadjistavropoulos, 2005)</u> <i>Nurses completed the PACSLAC prospectively while working with the patient over an 8-hour shift, observing intermittently. No information on time to complete, perceptions of use, or feasibility reported.</i></p> <p><u>Study 3 (Zwakhalen, Hamers & Berger, 2006)</u> <i>Nurses' rated clinical usefulness (on a 10-point scale) showing 75% preferring the PACSLAC to measure pain in elderly patients with dementia. Mean usefulness score for PACSLAC (7.0; SD 0.5) compared to the PAINAD 5.89 (SD 1.7). PACSLAC was reported to be user-friendly and not time-consuming by the participating nurses. Once used to the scale, they could assess patients within a few minutes.</i></p> <p><u>Study 5 (Zwakhalen., Koopmans, Geels, Berger & Hamers, 2008)</u> <i>10 raters from 3 NHs received a short instruction session on use of the PACSLAC-D (Dutch Language) (30 minutes) and observed residents once for five randomly selected minutes during personal morning care (e.g. washing, showering). No raters had prior in-depth knowledge of the NH residents. Validity and reliability established suggest the tool is readily used with minimal training. Cut-offs for pain were established for the PACSLAC-D (Dutch Language) with 4 out of 24 considered to indicate presence of pain. With this cut-off, the scale sensitivity was 0.96 and specificity was 0.90. Procedure to establish cut-off included linear transformation using other observational scales with</i></p>

	<p>known cut-offs, verification of cut-off with empirical data and determining sensitivity and specificity with sample of the study.</p> <p><u>Study 6 (Fuchs-Lacelle, Hadjistavropoulos & Lix, in press)</u> The study provides data regarding the impact of PACSLAC use on patient outcomes. Regular use of the PACSLAC improved pain management practices over time as reflected in increased usage of PRN analgesic medications and a decrease in observable behaviors as pain interventions increased. Nurses who used the PACSLAC reported decreased distress and burnout over time. Also preliminary normative data suggest that scores greater than 12 (out of 60) represent high levels of pain for patients in LTCF. Scores between 0-5 are indicative of usual pain.</p>
<p>-Panel Commentary</p>	<p>Simple instructions on how to administer and score the tool are provided on the tool form. Scoring procedures are clear, and preliminary cut-offs for determining pain presence are determined for the PACSLAC. Although the original PACSLAC includes 60 items, the tool requires a limited amount of time to administer, indicating that the tool is potentially useful in everyday clinical practice. Testing of the PACSLAC-D (Dutch Language), the shorter 24 item scale, suggests the tool is user friendly requiring a short time for training (30 minutes), has an established cut-off to facilitate score interpretation, and can be completed in a few minutes. Preliminary evidence of clinical utility and normative data for scoring is provided, although further validation with larger and more diverse is needed.</p>
<p>Reliability Panel rating: 1 Revised: 2</p>	
<p>Internal consistency</p>	<p><u>Study 1 (Fuchs-Lacelle & Hadjistavropoulos, 2004)</u> <u>Stage II</u> In phase II of tool development the PACSLAC observations were made by professional caregivers (see sample characteristics above). Following deletion of two items phase II and subscale revisions the following subscale internal consistency reliabilities were reported: Total tool (63 items): $\alpha=.92$ Subscales: <ul style="list-style-type: none"> • Facial Reactions: $\alpha=.80$ • Social/Personality/Mood: $\alpha=.82$ • Activity/Body Movement: $\alpha=.84$ • Physiological indicators/ Eating and sleeping changes/ Vocal behaviors $\alpha=.74$ <u>Stage III</u> Internal consistency was conducted in a sample of 40 RN/Resident dyads (see sample specifications above). The 40 RNs rated 40 residents on the PACSLAC retrospectively based on four remembered events: two painful events, one distressing (but not pain-related) and one calm event. Internal consistency based on average for the two pain events was $\alpha=.85$. Internal consistency for subscales: <ul style="list-style-type: none"> • Facial Reactions: $\alpha=.56$ • Social/Personality/Mood: $\alpha=.85$ • Activity/Body Movement: $\alpha=.55$ • Physiological indicators/ Eating and sleeping changes/ Vocal behaviors $\alpha=.59$ </p>

	<p><u>Study 3 (Zwakhale, Hamers & Berger, 2006)</u> Internal consistencies reported for Dutch PACSLAC across rating by nurses and rater at T and, T3. Ranges for Cronbach's alpha's were as follows: Total scale: 0.80-0.84 Facial Expressions subscale: 0.57-0.73 Activity/Body Movement subscale: 0.40-0.57 Social/Personality subscale: 0.65-0.76 Physiological/Eating/Sleeping changes/Vocal behaviors: 0.20-0.43</p> <p><u>Study 4 (Zwakhale, Hamers, & Berger, 2007)</u> Internal consistency evaluated for the revised 24-item PACSLAC-D (Dutch Language). Alpha for total scale with 24 items=0.86 at T2 and 0.82 at T3. Cronbach's alpha for three subscales were high, ranging from 0.72 to 0.82.</p>
Interrater reliability	<p><u>Study 3 (Zwakhale, Hamers & Berger, 2006)</u> ICCs between rater 1 and the nurses for the PACSLAC Total scale r's 0.93-0.96; subscales 0.77 to 0.95. The correlations could be lower depending on the pair of raters compared.</p> <p><u>Study 4 (Zwakhale, Hamers, & Berger, 2007)</u> No interrater reliability reported for the PACSLAC-D (Dutch Language) (24 item scale)</p> <p><u>Study 5 (Zwakhale., Koopmans, Geels, Berger & Hamers, 2008)</u> Fifteen residents were assessed by two raters simultaneously during morning care. ICC for total scale= 0.89; Facial expressions= .89, Resistance/Defense=0.76, Social-Emotional aspects/mood= 0.56</p> <p><u>Study 6 (Fuchs-Lacelle, Hadjistavropoulos & Lix, in press)</u> Interrater reliability established between two independent, trained RA observers. Kappa coefficient=0.61, degree of agreement=0.97</p>
Test-retest reliability	<p><u>Study 3 (Zwakhale, Hamers & Berger, 2006)</u> Intrarater reliability assessed by comparing scores on PACSLAC allocated by rater 1 at bedside with those rescored for the same time based on video recordings (n=29, no time interval given between testing points). Cronbach's alpha=0.86 overall with subscale r's from 0.72 to 0.92</p>
-Panel commentary	<p>The PACSLAC has good internal consistency, interrater reliability and intrarater reliability. The PACSLAC-D (Dutch Language) also has good reliability estimates established in preliminary testing. Additional testing in diverse samples, including those with greater range of pain severity, is recommended.</p>
<p>Validity: Criterion or construct Panel rating: 2 Revised: 2</p>	
Construct validity/ Criterion related validity	<p><u>Study 1 (Fuchs-Lacelle & Hadjistavropoulos, 2004)</u> <u>Discriminant validity</u> Discriminant validity was based on retrospective recall of painful events by the nurse, two pain events with very clear cause, one distressing (but not pain-related) event, one calm event (no signs of distress). Results: Pain Event I > Distress Event (p< .001) Pain Event I > Calm Event (p<.001) Pain Event II > Distress Event (p<.001)</p>

Pain Event II > Calm Event (p<.001)
Distress Event > Calm Event (p<.001).

Conclusion: The total PACSLAC score is able to discriminate among painful, calm, and non-pain related distress events $F(3,117) = 108.1$ (p<.001).

Subscales: Facial Expressions, Activity/Rocking Movement and Physiological indicators/Eating and sleeping changes/Vocal behaviors discriminated as follows: Pain > Distress > Calm (p<.001).
Subscale Social/Personality/Mood discriminated between pain and calm events but not between pain and the distress events.

Three additional items were deleted during this phase because they occurred with greater frequency during calm events.

Criterion related validity

In Study 1, Global Pain Intensity Ratings of the nurses' perception of the patients pain and PACSLAC total scores were moderately correlated:

PE1: $r=.39$ (p<.05)

PE2: $r=.54$ (p<.001).

Study 2 (Fuchs-Lacelle & Hadjistavropoulos, 2005)

This report compared nursing observations of patients without known pain to earlier retrospective ratings of pain events and distress event.

MANOVA used to compare four subscale scores from observations after a nursing shift with the two Pain Events and the Distress Event.

- *Total scores for both the Pain Events were significantly higher than for the total scores based on observation (of patients with no known pain problems) during a nursing work shift ($t(80) > 4.0$, $p < 0.001$).*
- *All subscales were significantly higher for Pain Event I than for the subscale scores obtained after a nursing shift ($F(80) > 9.46$, $p < 0.05$).*
- *Subscale scores for Activity/Body Movements, Social/Personality/Mood and Other were higher for Pain Event II than for nursing shift ($F(80) > 9.43$, $p > .05$).*
- *Total scores and the Activity/Body Movements and other subscale scores did not differ between the pain assessment completed after a nursing shift and the assessment based on the Distress Event.*

Study 3 (Zwakhalen, Hamers & Berger, 2006)

Pain and non-pain groups (based on self-report on VRS) were identified and PACSLAC ability to detect increasing pain with increased behaviors was evaluated.

Construct validity confirmed with upward trend in scores comparing mean PACSLAC scores at rest (2.6), at injection, T1 (5.5) and at pain inducing moment T2 (9.6).

Congruent validity also established between the PACSLAC and PAINAD ($r=0.85$). Low correlations noted between the PACSLAC and DOLOPLUS-2 ($r=0.29$) suggesting these two tools are not measuring the same construct.

Study 5 (Zwakhalen., Koopmans, Geels, Berger & Hamers, 2008)

Using data from Study 4, cut-offs for determining pain presence were identified and used in a prospective evaluation of pain prevalence in nursing

	<i>homes. The findings are consistent with other studies but use an observational tool for determining pain presence. The cut-off was verified using data from Study 3 to establish sensitivity and specificity of the tool. PACSLAC-D (Dutch Language) sensitivity is 0.96 and specificity is 0.90 based on a ≥ 4 score.</i>
-Panel commentary	Retrospective recall of patients and their pain-related conditions in initial testing carries potential for bias <i>but further testing supports tool validity. Further evaluation provides support for congruent and discriminant validity of the PACSLAC, as well as preliminary support for sensitivity and specificity of the shorter PACSLAC-D (Dutch Language). Additional study in larger samples, with samples experiencing greater pain severity, and to evaluate tool sensitivity are needed.</i>
Summary of panel evaluation of pain assessment tool	
The PACSLAC is a potentially clinically useful behavior checklist that appears simple to use for assessing and monitoring changes in persons with dementia and diverse presentations of pain-related behavior. The tool is comprehensive and addresses pertinent indicators noted in the literature and AGS Guideline. <i>Prospective evaluation has added to the tool's reliability and validity, as well as factor analysis to determine the most efficient and useful indicator set for clinical use (PACSLAC-D (Dutch Language)). However, the revised PACSLAC-D (Dutch Language) no longer contains items that are based on knowledge of the patient and this may under-recognize pain in patients who demonstrate less obvious indicators such as changes in activity or behavior. Because of this major revision in the tool, the PACSLAC and PACSLAC-D (Dutch Language) psychometric evaluations should be considered independently. Preliminary normative data and cut-offs are provided but require further validation in larger, more diverse samples. Additional factor analysis in English-speaking samples, other diverse samples, and in patients with increased levels of pain severity is needed, as is determination of tool sensitivity in detecting treatment effects.</i>	

Source of evidence

- Fuchs-Lacelle, S. & Hadjistavropoulos, T. (2004). Development and preliminary validation of the Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC). *Pain Management Nursing*, 5(2).
- Fuchs-Lacelle, S. & Hadjistavropoulos, T. (2005). A checklist for pain assessment in LTC. PACSLAC: Pain Assessment Checklist for Seniors with Limited Ability to Communicate. *Canadian Nursing Home*, 16(4), 4-7.
- Zwakhalen, S., Hamers, J. & Berger, M. (2006). The psychometric quality and clinical usefulness of three pain assessment tools for elderly people dementia. *Pain*, 126(1-3), 210-220.
- Zwakhalen, S., Hamers, J. & Berger, M. (2007). Improving the clinical usefulness of a behavioral pain scale for older people with dementia. *Journal of Advanced Nursing*, 58(5), 493-502.
- Zwakhalen, S., Koopmans, R., Geels, P., Berger, M. & Hamers, J. (2008) The prevalence of pain in nursing home residents with dementia measured using an observational pain scale. *European Journal of Pain*, xx, xxxx. (in press).
- Fuchs-Lacelle, S., Hadjistavropoulos, T. & Lix, L. (in press). Pain assessment as intervention: A study of older adults with severe dementia. *Clinical Journal of Pain*, xx, xxx. (in press)

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

Contact address for PACSLAC:

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Thomas Hadjistavropoulos, PhD

Thomas.Hadjistavropoulos@uregina.ca

Contact address for PACSLAC-D (Dutch Language):

Sandra Zwakhalen, PhD

Email: S.Zwakhalen@zw.unimaas.nl

Evaluation completed by:

K. Herr, S. Decker, K. Bjoro, The University of Iowa.

Revision 06/08 by:

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

Contact information: keela-herr@uiowa.edu