

Practice Guidelines for Assessing Pain in Older Persons with Dementia Residing in Long-Term Care Facilities

Thomas Hadjistavropoulos, Theresa Dever Fitzgerald, Gregory P. Marchildon

ABSTRACT

Purpose: Frail patients with dementia most frequently present with musculoskeletal pain and mobility concerns; therefore, physiotherapy interventions for this population are likely to be of great benefit. However, physiotherapists who work with older adults with dementia confront a considerable challenge: the communication impairments that characterize dementia make it difficult to assess pain and determine its source. For an effective physiotherapy programme to be implemented, valid pain assessment is necessary. This paper is intended to provide practice guidelines for pain assessment among older persons with dementia.

Summary of Key Points: Over the last several years, there has been tremendous research progress in this area. While more research is needed, several promising assessment methodologies are available. These methodologies most often involve the use of observational checklists to record specific pain behaviours.

Recommendations: We encourage the ongoing and regular evidence-based pain assessment of older persons with dementia, using standardized procedures. Without regular and systematic assessment, pain problems will often go undetected in this population. Given the need for systematic pain assessment and intervention for long-term care populations with mobility concerns and musculoskeletal pain problems, we call for increased involvement of physical therapists in long-term care facilities.

Key Words: Alzheimer's disease, assessment, dementia, long-term care, older adults, pain

Hadjistavropoulos T, Dever Fitzgerald T, Marchildon GP. Practice guidelines for assessing pain in older persons with dementia residing in long-term care facilities. *Physiother Can.* 2010;62:104–113.

RÉSUMÉ

Objectif : Les patients de santé fragile atteints de démence sont les plus sujets aux douleurs musculosquelettiques et aux problèmes de mobilité. Par conséquent, les interventions en physiothérapie apporteront sans doute de grands bienfaits à cette clientèle. Toutefois, les physiothérapeutes travaillant auprès des personnes âgées atteintes de démence doivent faire face à un défi de taille : la dégradation des capacités de communication caractérisant la démence fait en sorte qu'il est difficile d'évaluer la douleur et d'en déterminer la source. Pour qu'un programme efficace de physiothérapie puisse être mis en œuvre, une évaluation valide de la douleur doit être réalisée. Cette documentation tente de proposer des directives de pratique pour l'évaluation de la douleur chez les personnes âgées atteintes de démence.

Résumé des points clés : Au cours des dernières années, des progrès considérables ont été réalisés au chapitre de la recherche dans ce secteur. Même si plus de recherche est nécessaire, plusieurs méthodes d'évaluation prometteuses sont disponibles. Ces méthodologies font souvent appel à l'utilisation de listes de vérification des observations comprenant la consignation de comportements douloureux particuliers.

Recommandations : Nous encourageons l'évaluation continue et régulière de la douleur reposant sur des données probantes chez les personnes âgées atteintes de démence, et ce, à l'aide de procédures standardisées. Sans évaluation régulière et systématique, les problèmes liés à la douleur demeurent souvent non détectés chez cette clientèle. Pour ce qui a trait à la nécessité d'une évaluation systématique de la douleur et d'une intervention auprès des clientèles en soins prolongés avec problèmes de mobilité et de douleurs musculosquelettiques, nous demandons une participation plus importante des physiothérapeutes dans les établissements de soins de longue durée.

Mots clés : aînés, démence, douleur, évaluation, maladie d'Alzheimer, personnes âgées, soins de longue durée

Thomas Hadjistavropoulos is one of the copyright owners of the Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC); his research is currently supported by the Saskatchewan Health Research Foundation, RBC Foundation, the Canadian Institutes of Health Research, and the Social Sciences and Humanities Research Council of Canada.

Theresa Dever Fitzgerald is supported by the Canadian Institutes of Health Research.

Gregory P. Marchildon's research is supported by the Canada Research Chairs programme and by the Social Sciences and Humanities Research Council of Canada.

This work was supported in part through funding from the Canadian Institutes of Health Research.

We thank Dr. Judith Hunter for inviting this article.

Thomas Hadjistavropoulos, PhD: Department of Psychology and Centre on Aging and Health, University of Regina, Regina, Saskatchewan.

Theresa Dever Fitzgerald, MA: Department of Psychology and Centre on Aging and Health, University of Regina, Regina, Saskatchewan.

Gregory P. Marchildon, PhD: Johnson-Shoyama Graduate School of Public Policy, University of Regina, Regina, Saskatchewan.

Address correspondence to *Thomas Hadjistavropoulos*, Department of Psychology, University of Regina, Regina, SK S4S 0A2 Canada;
E-mail: hadjistt@uregina.ca.

DOI:10.3138/physio.62.2.104

BACKGROUND

Frail patients with dementia most frequently present with musculoskeletal pain problems and mobility concerns.¹ Physiotherapy interventions for this population are therefore aimed at preventing further functional decline and maintaining mobility. Nonetheless, physiotherapists who work with older adults with dementia confront a considerable challenge: the communication impairments that characterize dementia complicate the assessment of pain in these patients. For an effective physiotherapy programme to be implemented, valid pain assessment is necessary. This paper is intended to provide practice guidelines for pain assessment among older persons with dementia.

THE UNDER-TREATMENT AND UNDER-ASSESSMENT OF PAIN

Epidemiological information suggests that chronic pain affects at least 50% of community-dwelling seniors and as many as 80%² of those residing in long-term care facilities (often referred to as “nursing homes”). Despite its high prevalence, pain is severely under-treated in this population.^{3–7}

Although pain is often under-treated among older adults in general, the problem is particularly salient among persons who have serious limitations in ability to communicate their pain as a result of cognitive impairments that accompany dementias such as Alzheimer’s disease. It has been well established that people with dementia are less likely than their cognitively intact counterparts to report pain, despite a similar prevalence of pain-related conditions.⁸ In light of the under-reporting of pain in dementia, Morrison and Sui³ found that the majority of cognitively intact older adults, who are able to self-report their pain, tended to receive approximately three times more analgesic pain medications than seniors with dementia. Given that 40% of participants in Morrison and Sui’s study who were able to communicate their pain verbally reported severe to very severe pain (defined as a score of 3 or 4 on a 0–4 scale), it is reasonable to assume that seniors with serious limitations in ability to communicate were also experiencing severe pain.³ Despite this, seniors with dementia were administered fewer pain medications.³

A Canadian study by Kaasalainen et al.⁹ showed that although almost half of cognitively intact long-term care residents had scheduled pain medication orders, only 25% of seniors with cognitive impairments had such orders. It is therefore not surprising that seniors with dementia were administered significantly fewer pain medi-

cations than cognitively intact older adults received.⁹ Similar findings have been obtained in several recent investigations.^{4,5,10–13} Given findings such as those of Kaasalainen et al.⁹ and Morrison and Sui,³ the under-treatment of pain among seniors represents one of the most pressing ethical concerns for pain clinicians.¹⁴

The under-treatment of pain among older adults has been attributed to a variety of factors, including erroneous beliefs and myths about the ageing process. For example, it has been suggested that, in addition to difficulties of assessing pain among those who cannot self-report, under-treatment of pain in this population may also result from (1) the myth that pain is a natural and expected part of the ageing process;^a (2) the myth that seniors with dementia may be insensitive to pain; and (3) exaggerated fears about the risk of addiction to opioid medications.

Although the under-treatment of pain among long-term care residents is due to a variety of factors, including resource considerations,⁴ difficulties in detecting and assessing pain are one of the most widely cited reasons for this under-treatment.¹⁵ These difficulties become more significant in the assessment of seniors who have dementia and are severely limited in their ability to communicate their pain experience.^{16,17}

From a physiotherapy standpoint, assessment of pain is critical. In the population of older adults, it is important to maintain physical capacity to meet ordinary and expected demands of activities of daily living.¹⁸ Before a physiotherapy programme for pain management can be developed for an older individual, a comprehensive assessment, including evaluation of pain, is necessary.¹⁹ It is important to understand whether pain is itself contributing to the individual’s activity limitation; moreover, it is essential to evaluate pain during and after each physiotherapy intervention. Lack of familiarity with methodologies to assess pain among dementia patients limits the physiotherapist’s ability to work with this population. The primary goal of this article is to review specific methodologies that are suitable for assessing pain in individuals with dementia who reside in long-term care facilities and to outline recommended protocols for such assessments.

THE ASSESSMENT OF 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.”^{20(p.211)} A note attached to the definition indicates that inability to communicate should in no way be taken to imply that the individual experiences no pain.²¹ In fact, we do not know of convincing evidence to suggest that the brain deterioration that occurs with dementia leads to clinically significant reductions in pain intensity; in other

^a While pain is highly prevalent in older adults, it is not natural; it is always the result of disease or pathology. If we think of pain as “natural” for this age group, we may be less inclined to treat it than when we consider pain to be the result of pathology.

words, people with dementia are as likely to suffer from pain problems as similarly aged cohorts.^{22–27}

Central to pain assessment are the self-report of pain and/or the direct observation of pain-related behaviours. Seniors who present with mild to moderate dementia tend to be able to provide valid self-reports of pain.¹⁵ Although nonverbal pain behaviours (e.g., rubbing the affected area, facial reactions, paralinguistic vocalizations) are useful in assessing all pain patients, as cognitive functions deteriorate the assessment emphasis shifts increasingly toward nonverbal responses. Table 1 outlines guidelines pertinent to the use of self-report and behaviour-observation tools among seniors with cognitive impairments.

THE SELF-REPORT OF PAIN

Most health professionals, including physiotherapists, are accustomed to pain assessment that relies almost exclusively on self-report. Although a shift from that way of thinking needs to occur, especially when assessing persons with dementia whose verbal communication abilities are limited, self-report should always be attempted with all patients. When attempting to obtain a self-report of pain from older adults who reside in long-term care facilities, one should take care to use simple and concrete questions (e.g., “Does this hurt?” and “Where does it hurt?”). Nonetheless, use of formal self-report scales is recommended (especially in long-term care facilities where several different staff members share information about each patient). Standardized self-report scales, even if they are as simple as a 0–10 scale, are useful for monitoring pain scores across time and for evaluating the efficacy of pain-management interventions. They also facilitate communication among different health professionals. A large number of self-report scales are available, although not all self-report scales have been shown to be effective for use with older adults.²⁸

An important issue when using self-report scales in this population is the need to be sensitive to the cognitive and sensory changes that often occur with increasing age (e.g., difficulties with vision or hearing). Some minor modifications of self-report scales may be required when working with older adults in order to obtain a valid assessment—for example, using larger font sizes and ensuring that patients have easy access to their eyeglasses and that they can clearly hear the assessor.²⁹

Research suggests that simple self-report procedures are appropriate for use with a large percentage of people with mild to moderate dementia. Specifically, Ferrell et al.³⁰ investigated the percentage of residents in long-term care facilities who were capable of completing

various unidimensional self-report scales (e.g., a numeric rating scale ranging from 0 to 10^{30,31} or a 100 mm horizontal visual analogue scale^{32–35}). They found that 62% of participants with moderate to severe dementia reported having pain and that 83% of participants interviewed were able to complete at least one of the self-report tools. However, 17% of participants were unable to respond to any of the self-report measures, although many were able to respond appropriately to yes-or-no questions about the presence of pain. Cognitive status was assessed using the Modified Mini-Mental Status Examination (MMSE),³⁶ a widely used measure of cognitive function; the average MMSE score of the participants was 12.1/30 (see Tombaugh and McIntyre³⁷ for detailed information on MMSE cutoff scores).

Weiner et al.³⁸ evaluated a numeric 0–10 pain scale^{30,31} and a pain thermometer; they found that older adults with dementia who could comprehend a 0–10 pain assessment scales had MMSE scores ranging from 18 to 22 (of a possible 30), whereas those who had major difficulties comprehending the scale tended to have MMSE scores closer to 13/30.^b Similarly, Chibnall and Tait³¹ demonstrated that seniors with an average MMSE score of 18 tended to provide valid responses on the 21-point box scale (reviewed below).³¹ These authors showed that the psychometric properties of the 21-point box scale are superior to those of a verbal rating scale (reviewed below)^{32–35} and of the Faces Pain Scale (which involves showing the patient drawings of faces that express varying levels of distress).³⁹

Based on the studies by Weiner et al.,³⁸ Chibnall and Tait,³¹ and other related research, a rule of thumb for assessing the likelihood that older adults with cognitive impairments can self-report pain is that those who score 18 or higher on the MMSE are typically capable of providing valid self-report, whereas persons with scores of 13 or lower are least likely to provide valid reports.¹⁶ Nonetheless, self-report should be attempted with all patients, as there are individuals with low MMSE scores who can self-report pain. We now review several pain-intensity scales that have been used with older persons with cognitive impairments.

Coloured Analogue Scale (CAS)⁴⁰

The CAS is a self-report scale used to measure pain severity. It is usually made of hard plastic and resembles a thermometer. The colour of this specific type of visual analogue scale changes gradually from the bottom to the top; the bottom is thin and white in colour (representing no pain), and the top is thicker in size and red in colour (representing extreme pain). Participants are asked to use a horizontal sliding bar to indicate their level of pain. The location of the bar corresponds to a numeric rating (ranging from 0 to 10) on the back of the scale. In a study examining self-report measures for use in older

^b Scores lower than 24 are considered to indicate cognitive impairment; scores lower than 18 indicate moderate to severe impairment.

Table 1 Guidelines for Assessing Pain in Seniors with Cognitive Impairments*General Guidelines*

1. Determine if Mini Mental Status Examination scores are available or can be obtained. This would facilitate determination of patient ability to provide valid self-report.
2. Always attempt self-report regardless of level of cognitive functioning.
3. Baseline scores should be collected for each individual (ideally on a regular basis which would allow for the examination of unusual changes from the persons typical pattern of scores).
4. Patient history and physical examination results should be taken into consideration.
5. If assessments are to be repeated over time, assessment conditions should be kept constant (e.g., use the same assessment tool, use the same assessor where possible and conduct pain assessment during similar situations).
6. Pain-assessment results should be used to evaluate the efficacy of pain management interventions.
7. Knowledgeable informants (e.g., caregivers) should be asked about typical pain behaviours of the individual.
8. Other aspects of the pain experience should also be evaluated including environmental factors, psychological functioning and social environment.

Recommendations Specific to Self-Report Measures

1. Use of synonyms when asking about the pain experience (e.g., *hurt, aching*) will facilitate the self-report of some patients who have limitations in ability to communicate verbally.
2. Self-report scales should be modified to account for any sensory deficits that occur with aging (e.g., poor vision, hearing difficulties).
3. Use self-report tools that have been found to be most valid among seniors (e.g., the Coloured Analogue Scale,⁴⁰ Numeric Rating Scales,^{30,31,33,35,38,44} Behavioural Rating Scales, the 21 Point Box Scale³¹).
4. Use of horizontal visual analogue scales should be avoided, as some investigators have found unusually high numbers of unscorable responses among seniors.⁴⁹

Recommendations Specific to Observational Measures

1. Observational tools that have been shown to be reliable and valid for use in this population include the PACSLAC and DOLOPLUS-2. The PACSLAC is the only tool that covers all six behavioural pain-assessment domains that have been recommended by the American Geriatrics Society.⁵¹ Nonetheless, clinicians should always exercise caution when using these measures because they are relatively new and research is continuing.
2. When assessing pain in acute-care settings tools that primarily focus on evaluation of change over time should be avoided.
3. Observational assessments during movement-based tasks would be more likely to lead to the identification of underlying pain problems than assessments during rest.
4. Some pain-assessment tools, such as the PACSLAC, do not have specific cut off scores because of recognition of tremendous individual differences among people with severe dementia. Instead, it is recommended that pain be assessed on a regular basis (establishing baseline scores for each patient) with the clinician observing score changes over time.
5. Examination of pain-assessment scores before and after the administration of analgesics is likely to facilitate pain assessment.
6. Some of the symptoms of delirium (which are seen frequently in long-term care) overlap with certain behavioural manifestations of uncontrolled pain (e.g., behavioural disturbance). Clinicians assessing patients with delirium should be aware of this. On the positive side, delirium tends to be a transient state, and pain assessment, which can be repeated or conducted when the patient is not delirious, is more likely to lead to valid results. It is important to note also that pain can cause delirium, and clinicians should be astute in order to avoid missing pain problems among patients with delirium.
7. Observational pain-assessment tools are screening instruments only and cannot be taken to represent definitive indicators of pain. Sometimes they may suggest the presence of pain when pain is not present, and at other times they may fail to identify pain.

Outcomes of Interest

In addition to improved scores on various assessment tools, evidence of more effective pain management can be observed in areas such as greater participation in activities, improved sleep, reduced behavioural disturbance, improved ability to ambulate, and improved social interactions.

Note: Many of these recommendations have been adapted from Hadjistavropoulos et al.¹⁵ Many of these recommendations also overlap with those of Herr et al.⁷² This table © Thomas Hadjistavropoulos; reprinted here with permission.

adults, the CAS was found to be interpreted correctly by all cognitively intact seniors as well as by seniors with mild dementia.⁴¹ Moreover, the CAS was correctly interpreted by 80% of seniors with moderate dementia, suggesting that it is appropriate for use with many older adults with cognitive impairments.⁴¹ However, there is also evidence to suggest that responses to the CAS tend

to become invalid as the severity of dementia increases.²³

Verbal Rating Scales (VRS)^{32,33,35,38,42,43}

Verbal rating scales, or verbal descriptor scales, are self-report scales that require the individual to choose

the descriptor that best matches his or her level of pain—for example, *no pain*, *slight pain*, *mild pain*, *moderate pain*, *severe pain*, *extreme pain*, and *pain as bad as it could be*. Each of these descriptors corresponds to a number, often found on the back of the scale, with higher numbers corresponding to more intense descriptors of pain. Research comparing five different self-report measures, including a simple VRS, suggests that simple VRS are appropriate measures of pain intensity in cognitively intact older adults as well as in older adults with mild dementia.¹⁵ Moreover, research has demonstrated that the VRS ranked higher than various numeric and/or visual analogue scales (see below) for both younger and older adults in terms of scale success, internal consistency, reliability, sensitivity, and preference.³⁵

Numeric Rating Scales (NRS)^{30,31,33,35,38,44}

Numeric rating scales are measures of pain intensity that are available in a number of ranges (e.g., 0–5, 0–10, 0–100), with 0 representing no pain and the highest number on the scale indicating pain as bad as it could be. Participants completing an NRS are asked to choose the number that best represents the intensity of their pain. Research studies employing NRS suggest that they are appropriate for use among cognitively intact seniors as well as seniors with mild to moderate dementia.^{15,38} NRS have also been shown to be more reliable than VRS, particularly in patient populations with a lower educational level.⁴⁵

21-Point Box Scale⁴⁶

The 21-point box scale is a horizontal scale consisting of 21 boxes containing numbers ranging from 0 (indicating no pain) to 100 (indicating pain as bad as it could be). The numeric ratings on the 21-point box scale increase in increments of five. To complete the scale, individuals are asked to place an × on the number that best represents the intensity of their pain. The 21-point box scale is easy to administer, as it does not rely on verbal descriptors of pain.⁴⁷ In an empirical investigation of four self-report scales in seniors with and without dementia, the 21-point box scale was found to be the best all-around measure.³¹

Visual Analogue Scales (VAS)^{32–35,48}

These scales are vertical or horizontal lines, typically 10 cm in length, anchored by two verbal descriptors of pain (e.g., *no pain* and *pain as bad as it can be*). Participants are asked to mark an × on the line at the point corresponding to their level of pain. VAS are scored by measuring the distance between the beginning of the scale and the point indicated by the participant; this distance is then translated into a pain-intensity score (e.g.,

a participant who places a mark 4.5 cm from the beginning of the scale would have a pain-intensity score of 4.5). Although some researchers have obtained encouraging validity results for vertical VAS,^{29,49} others have recommended against the use of VAS in general because they observed unusually high numbers of unscorable responses with older adults.⁵⁰

OBSERVATIONAL MEASURES OF PAIN

Ideally, best clinical practice in pain assessment would involve valid self-report information supplemented by clinical observations of pain behaviour. However, in cases where valid self-report is unavailable, reliance on observation of nonverbal pain behaviours is essential. The American Geriatrics Society (AGS) Panel on Persistent Pain in Older Persons⁵¹ has recommended that each of the following behavioural domains be considered in the comprehensive nonverbal pain assessment of the older adult:

1. Facial expressions (e.g., frowning, rapid blinking)
2. Verbalizations and vocalizations (e.g., moaning, grunting)
3. Body movements (e.g., protecting sore areas, pacing)
4. Changes in interpersonal interactions (e.g., disruptive behaviour, withdrawal)
5. Changes in activity patterns or routines (e.g., changes in sleep or appetite)
6. Mental status changes (e.g., increased confusion, crying)

Among people with limited ability to communicate, it is especially important to systematize and standardize the observational assessment of pain in a way that maximizes consistency across assessors and circumstances. To that end, a variety of observational procedures have been developed for assessing the patient with dementia. Several reviews of these tools have been published,^{15,16,52,53} and, based on these, among the most promising observational pain assessment tools to date are the Abbey Pain Scale,⁵⁴ the Pain Assessment in Advanced Dementia Scale (PAINAD),⁵⁵ the DOLOPLUS-2,⁵⁶ and the Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC).⁵⁷

Abbey Pain Scale (APS)⁵⁴

The Abbey Pain Scale is a brief, six-item scale that takes a knowledgeable caregiver only a few minutes to complete. Items of the APS measure aspects of the pain experience including physiological changes (e.g., change in temperature), vocalization (e.g., whimpering), and facial expressions (e.g., grimacing). Items are scored on a scale ranging from 0 (absent) to 3 (severe). An important caveat regarding the APS is that it is designed to

measure change in these behaviours over time; as such, it must be completed by someone familiar with the patient. This may limit the utility of this tool, particularly in acute-care settings. Despite this limitation, however, the scale has been shown to be internally consistent, and scores on the APS have been found to decrease significantly following pain intervention by nurses. (It should be noted that the nurses completing the scale were not blind with respect to whether or not an intervention had been administered.⁵⁴) Items on this scale cover five of the six AGS-recommended domains (facial expressions, verbalizations and vocalizations, changes in activity patterns and routines, and body movements); the “behavioural change” item covers, to some extent, the sixth AGS-recommended domain (mental status changes).

The Pain Assessment in Advanced Dementia Scale (PAINAD)⁵⁵

The PAINAD is a five-item measure with item scores ranging from 0 to 2. These numeric ratings have different descriptors for each item of the PAINAD; for the item “consolability,” for example, ratings are “0 = no need to console; 1 = distracted or reassured by voice or touch; 2 = unable to console, distract or reassure.” The PAINAD takes, on average, less than 5 minutes to complete.⁵⁸ Examples of items measured by the PAINAD are negative vocalization and body language. The PAINAD has demonstrated moderate correlations with other measures of pain behaviour.⁵⁵ In addition, research involving the PAINAD supported its ability to discriminate between pain-related and non-pain-related situations;⁵⁹ however, in the original study it had low internal consistency.⁵⁵ The PAINAD clearly covers three of the six AGS-recommended pain assessment domains (body movements, verbalizations and vocalizations, and facial expressions). Additional items of this tool focus on breathing patterns and consolability (which is related to the AGS-recommended domain of interpersonal interactions).

DOLOPLUS-2⁵⁶

The DOLOPLUS-2 is a 10-item measure that includes somatic, psychomotor, and psychosocial domains. The DOLOPLUS-2 requires only a few minutes for a knowledgeable caregiver to complete. Each item of this scale is scored on a four-point scale ranging from 0 (behaviour not present or abnormal for the individual) to 3 (significant behavioural disturbance). Examples of DOLOPLUS-2 items are “protecting sore areas,” “mobility,” and “behaviour problems.” Total scores on the DOLOPLUS-2 range from 0 to 30, and scores of 5 or higher are suggested to indicate pain. However, an important caveat is that DOLOPLUS-2 scores do not represent the level of pain at a particular moment but, rather, reflect the experience of pain over time.⁶⁰

One important limitation of the DOLOPLUS-2 is that it must be completed by individuals who are familiar with the patient because some items measure change over time. It may therefore be of limited use for patients in acute-care settings. Items of the DOLOPLUS-2 have been found to be adequately correlated with one another, and it has been suggested that an abbreviated version of the DOLOPLUS-2 performs similarly.⁶¹ The measure correlates moderately with self-reports on VAS and has adequate overall psychometric properties.⁶¹ It covers five of the six AGS-recommended behavioural pain assessment domains (verbalizations and vocalizations, changes in activity patterns and routines, changes in interpersonal interactions, facial expressions, and body movements).

Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC)⁵⁷

The PACSLAC is a 60-item checklist of pain behaviours wherein each behaviour present is scored as one point. Examples of behaviours included in the PACSLAC are grimacing, fidgeting, agitation, and shaking/trembling. Although the PACSLAC is divided into separate subcategories (e.g., facial expressions, activity/body movements), the developers recommend⁵⁷ that only the total score be interpreted, because it tends to be more reliable than sub-scale scores. Despite being the longest and most comprehensive of the behavioural observation tools, the PACSLAC can be completed in approximately 5 minutes after minimal training.

The PACSLAC has demonstrated very good psychometric properties and clinical utility, both in its initial validation and in prospective validation research.^{57,62} A prospective validation study found that patients whose pain was being monitored using the PACSLAC experienced better management of their pain (through increased *pro re nata* [prn] pain medication use). Nonetheless, we note as a precaution that medication regimens for older adults should be evaluated on a regular basis, using the Beers criteria,⁶³ and that increased medication usage is not necessarily the optimal clinical practice for every patient.

The PACSLAC has been translated into French (PACSLAC-F) and Dutch (PACSLAC-D).^{60,64} In a study by Zwakhalen et al.,⁶⁰ nurses were asked to rate pain behaviours using the PACSLAC and two other observational measures of pain (the DOLOPLUS-2 and the PAINAD). Results indicated that all three observational measures of pain had adequate to good psychometric properties; however, the PACSLAC was rated by nurses as the most clinically useful tool for assessing pain in seniors.⁶⁰ Moreover, Fuchs-Lacelle et al.⁶² found that nurses who regularly used the PACSLAC to assess patients' pain demonstrated reduced stress and burnout levels relative to nurses completing an irrelevant checklist, presumably because when pain was better managed,

residents were less agitated. The PACSLAC covers all six of the AGS-recommended pain-assessment domains.

THE COMORBIDITY OF PAIN AND DELIRIUM

One important caveat when using observational measures of pain relates to the potential overlap between pain behaviours and symptoms of delirium. For example, patients with delirium may exhibit symptoms such as moaning, calling out, and acting aggressively,⁶⁵ and these behaviours are also often included as indicators of pain in observational measures. This is problematic given the high prevalence of delirium, particularly among older adults residing in long-term care facilities; it is estimated that as many as 50–60% of such patients may present with delirium.^{66–68} Assessing pain among older adults with comorbid dementia and delirium may be particularly challenging.

Hadjistavropoulos et al.⁶⁹ concluded that scores on items of the DOLOPLUS-2 correlated with indices of delirium, depression, and the severity of the dementia. Moreover, a recent review suggests that this overlap is not unique to the DOLOPLUS-2. A cursory review of observational measures of pain indicated that as many as 20% to 33% of items overlap with delirium.⁷⁰ Hadjistavropoulos et al.⁶⁹ concluded that when assessing pain in patients with delirium and limited ability to communicate as a result of dementia, clinicians should place greater emphasis on items related uniquely to pain (e.g., protecting sore areas). Considering that pain can cause delirium,⁷¹ however, it is also important for clinicians to be thorough in their assessments, in an effort to ensure that pain problems are not missed in delirious patients. Moreover, since delirium is typically transient, pain assessment can be repeated after symptoms of delirium subside.

A CLINICAL APPROACH TO ASSESSMENT

Recommendations have been made to assist in the assessment of pain in seniors residing in long-term care facilities, many of whom have a limited ability to communicate as a result of dementia. Although MMSE scores can be used to determine the likelihood that self-reports of pain will be valid, it has been recommended that self-report measures always be attempted, regardless of level of cognitive functioning,^{15,51} because there are patients with low MMSE scores who can self-report pain. As outlined above, tools such as the CAS⁴⁰ and the 21-point box scale³¹ have been shown to be appropriate for use in seniors with mild to moderate dementia. In addition, observational measures of pain (such as the PACSLAC) should be used, particularly with older adults with cognitive impairments who may be unable to reliably self-report the presence of pain. To date, the PACSLAC⁵⁷ is the only observational measure of pain that encom-

passes all six of the AGS-recommended domains for pain assessment.

An international interdisciplinary expert consensus group made several recommendations regarding the assessment of pain among older adults.¹⁵ Table 1 summarizes some of these recommendations. Specifically, this consensus group suggested that self-report and observational measures of pain be used in combination when assessing pain among older adults and provided specific recommendations and examples of measures that could be used in this population, including the CAS, NRS, DOLOPLUS-2, and the PACSLAC (while pointing out that clinicians should exercise great caution, as these measures require further research). Moreover, the group recommended that these measures not be considered definitive indicators of pain and noted that ongoing assessment is warranted. Hadjistavropoulos et al.¹⁵ also recommended obtaining baseline pain measurements for the individual in order to measure fluctuations in pain scores over time. Whenever possible the same assessor should be used across assessment times.

Hadjistavropoulos et al.,¹⁵ as well as Herr et al.,⁷² highlighted the importance of assessing pain during movement-based tasks and not simply when the older adult is at rest. A movement-based protocol for pain assessment suggested by Husebo et al.⁷³ includes guiding the older adult to (1) open both hands one at a time, (2) stretch both arms toward the head one arm at a time, (3) stretch both hips and knees one leg at a time, (4) turn in bed to both sides, and (5) sit at the bedside. It is important to note, however, that this protocol should be conducted by a qualified health professional such as a physiotherapist, or under a physiotherapist's supervision, given the frailty that is frequent in this population.

Because of the high prevalence of pain among persons with dementia, it is recommended that older adults in long-term care be assessed for pain within 24 hours of admission and no less than once a week for the duration of their stay.⁷⁴ In addition, it has been recommended that pain assessment tools be used regularly to monitor the efficacy of pain-management interventions.⁷⁴ Clinicians should always remember that the assessment of the pain patient will ideally be broad (i.e., not limited to the evaluation of pain intensity) and needs to incorporate results of physical examination, diagnostic information, consideration of psychological and environmental factors, and other related information.

A CALL FOR INCREASED PHYSIOTHERAPY INVOLVEMENT IN LONG-TERM CARE PAIN MANAGEMENT

A factor contributing to the under-treatment and under-assessment of pain in older patients in long-term care is the small percentage of Canadian physiotherapists working in such settings. Physiotherapists could play a critical role in implementing the new approach to

Table 2 Number and Distribution of Physiotherapists Working in Long-Term Care in Canada, 2007

Province*	Physiotherapists Working in Long-Term Care	
	n	%
Newfoundland and Labrador	6	3.1
Quebec	169	4.6
Ontario	297	4.9
Manitoba	21	3.2
Saskatchewan	20	3.8
Alberta	107	5.7
British Columbia	42	1.8
Canada	665**	4.2

Source: Canadian Institute for Health Information (2008),⁷⁵ provincial and territorial profiles.

* Nova Scotia did not provide 2007 data; data from New Brunswick and Prince Edward Island were excluded because very small values (≤ 4) were suppressed in accordance with CIHI's privacy policy.

** The numbers listed for separate provinces do not add up to 665 because, as noted above, figures from New Brunswick and Prince Edward Island are not reported separately.

pain assessment for seniors residing in long-term care facilities. As discussed, they would be essential to implementing and managing a movement-based assessment protocol such as the one recommended by Husebo et al.⁷³ More broadly, however, given their portfolio of education, training, and experience, physiotherapists are ideally suited to the new pain-assessment tasks associated with the guidelines summarized in Table 1.

In 2007, of the approximately 16,000 physiotherapists working in Canada, only 665 (approximately 4.2%) reported working in mainly residential care facilities that receive the majority of their funding from public sources.⁷⁵ The vast majority of Canadian physiotherapists work in hospitals (40%) or in professional practice clinics and businesses (39%).⁷⁵ Table 2 summarizes the percentage of physiotherapists working in long-term care settings for most provinces.

Even in those provinces where relatively more physiotherapists work in long-term care (Quebec, Ontario, and Alberta), the percentage employed in such settings is still small. Despite relatively large percentages of seniors in provinces such as Saskatchewan and Newfoundland and Labrador, the proportion of physiotherapists working in long-term care in those provinces is below the national average. Similarly, the number of physiotherapists working in long-term care settings in British Columbia is proportionally very low.

Since there is a demonstrated need for physiotherapy services in long-term care settings, it is not entirely clear whether there is ineffective demand because of the current configuration of public funding and administration or whether there is inadequate supply of physiotherapists (likely because of a strong preference on the part

of physiotherapists for work in other publicly funded settings, such as hospitals, or in private practice). The establishment of regional health authorities (RHAs) in most provinces should have removed remuneration as a factor, since a large number of physiotherapists working in the public sector should be employed at similar rates by RHAs regardless of whether they are working in hospitals or in long-term care facilities. Of course, this does not apply to Ontario, where public-sector physiotherapists work for individual hospitals or long-term care organizations rather than for Local Health Integration Networks (analogous to RHAs).

There is virtually no information on the number or percentage of long-term care facilities that use exercise programmes (including passive stretching) on a regular basis for all their residents. Such exercise can be beneficial in preventing and managing pain. Recreation therapy programmes are generally conducted by clinical recreation therapists rather than by physiotherapists; however, recreation therapy is a young profession that has not yet established self-governing status in many provincial jurisdictions. Nonetheless, if the recommended practice guidelines for pain assessment were adopted, provincial governments and RHAs within provinces should consider a strategy that involves establishing new physiotherapy positions in long-term care to facilitate implementation of related pain-assessment and pain-management programmes.

The pain-assessment guidelines summarized in Table 1 are aimed at facilitating physiotherapy evaluations of long-term care patients. We do note, however, that the documented under-treatment of pain among frail long-term care residents and the evidence in support of the benefits of physiotherapy with respect to the physical functioning of this population⁷⁶ suggest that physiotherapy as a profession can play a key role in influencing public policy to increase access to services for residents in long-term care. We believe that the need for physiotherapy services in long-term care settings is probably much greater than we currently understand based on incomplete or anecdotal information. While clinical evidence makes a strong case for the greater use of physiotherapists for pain management in long-term care settings, more needs to be understood about the supply of and the demand for physiotherapy services, including the work preferences and patterns of physiotherapists and the structures within which they work, as well as about the governance, financing, and administration of long-term care in Canada.⁷⁷

KEY MESSAGES

What Is Already Known on This Subject

Over the last several years there has been significant progress in the area of pain assessment in seniors with

dementia. More specifically, several easy-to-use observational procedures have been developed, validated, and used with success.

What This Study Adds

In this paper we summarize recent developments in the area of pain assessments in seniors with dementia. We also present, based on the literature, a series of practical pain-assessment guidelines for clinicians.

REFERENCES

- Proctor WR, Hirdes JP. Pain and cognitive status among nursing home residents in Canada. *Pain Res Manag.* 2001;6:119–25.
- Helme R, Gibson S. Measurement and management of pain in older people. *Australas J Ageing.* 1998;17:5–9.
- Morrison RS, Sui AL. A comparison of pain and its treatment in advanced dementia and cognitively impaired patients with hip fracture. *J Pain Symptom Manage.* 2000;19:240–8.
- Martin R, Williams J, Hadjistavropoulos T, Hadjistavropoulos HD, MacLean M. A qualitative investigation of seniors' and caregivers' views on pain assessment and management. *Can J Nurs Res.* 2005;37:142–64.
- Horgas AL, Nichols AL, Schapson CA, Vietes K. Assessing pain in persons with dementia: relationships among the non-communicative patient's pain assessment instrument, self-report, and behavioral observations. *Pain Manag Nurs.* 2007;8:77–85. doi:10.1016/j.pmn.2007.03.003
- Marzinski LR. The tragedy of dementia: clinically assessing pain in the confused nonverbal elderly. *J Gerontol Nurs.* 1991;17:25–8.
- Kaasalainen S, Coker E, Dolovich L, Papaioannou A, Hadjistavropoulos T, Emili A, et al. Pain management decision-making among long-term care physicians and nurses. *West J Nurs Res.* 2007;29:561–80. doi:10.1177/0193945906295522
- Parmelee PA, Smith B, Katz IR. Pain complaints and cognitive status among elderly institution residents. *J Am Geriatr Soc.* 1993;41:517–22.
- Kaasalainen S, Middleton J, Knezacek S, Hartley T, Stewart N, Ife C, et al. Pain and cognitive status in the institutionalized elderly: perceptions and interventions. *J Gerontol Nurs.* 1998;24:24–31; quiz 50–1.
- Robinson CL. Relieving pain in the elderly. *Health Prog.* 2007;88:48–53,70.
- Won AB, Lapane KL, Vallow S, Schein J, Morris JN, Lipsitz LA. Persistent nonmalignant pain and analgesic prescribing patterns in elderly nursing home residents. *J Am Geriatr Soc.* 2004;52:867–74. doi:10.1111/j.1532-5415.2004.52251.x
- Reynolds KS, Hanson LC, DeVellis RF, Henderson M, Steinhauer KE. Disparities in pain management between cognitively intact and cognitively impaired nursing home residents. *J Pain Symptom Manage.* 2008;35:388–96. doi:10.1016/j.jpainsymman.2008.01.001
- Jakobsson U, Rahm Hallberg I, Westergren A. Pain management in elderly persons who require assistance with activities of daily living: a comparison of those living at home with those in special accommodations. *Eur J Pain.* 2004;8:335–44. doi:10.1016/j.ejpain.2003.10.007
- Ferrell BR, Novy D, Sullivan MD, Banja J, Dubois MY, Gitlin MC, et al. Ethical dilemmas in pain management. *J Pain.* 2001;2:171–80. doi:10.1054/jpai.2001.21596
- Hadjistavropoulos T, Herr K, Turk DC, Fine PG, Dworkin RH, Helme R, et al. An interdisciplinary expert consensus statement on assessment of pain in older persons. *Clin J Pain.* 2007;23:S1–43.
- Hadjistavropoulos T. Assessing pain in older persons with severe limitations in ability to communicate. In: Gibson SJ, Weiner D, editors. *Pain in the elderly.* Seattle: IASP Press; 2005. p. 135–51. doi:10.1097/AJP.0b013e31802be869
- Hadjistavropoulos T, von Baeyer C, Craig KD. Pain assessment in persons with limited ability to communicate. In: Turk DC, Melzack R, editors. *Handbook of pain assessment.* New York: Guilford; 2001. p. 134–49.
- Peri K, Kerse N, Robinson E, Parsons M, Parsons J, Latham N. Does functionally based activity make a difference to health status and mobility? a randomised controlled trial in residential care facilities (The Promoting Independent Living Study; PILS). *Age Ageing.* 2008;37:57–63. doi:10.1093/ageing/afm135
- Scudds RJ, Scudds RA. Physical therapy approaches to the management of pain in older adults. In: Gibson S, Weiner D, editors. *Pain in older persons.* Seattle: IASP Press; 2005. p. 223–37.
- Merskey H, Bogduk N. *Classification of chronic pain.* Seattle: IASP Press; 1994.
- International Association for the Study of Pain. Pain terms [Internet]. Seattle: The Association; 2005 [cited 2006]. Available from: <http://www.iasp-pain.org/terms-p.html#Pain>.
- Cole LJ, Farrell MJ, Duff EP, Barber JB, Egan GF, Gibson SJ. Pain sensitivity and fMRI pain-related brain activity in Alzheimer's disease. *Brain.* 2006;129:2957–65. doi:10.1093/brain/awl228
- Hadjistavropoulos T, Craig KD, Martin N, Hadjistavropoulos HD, McMurty B. Toward a research outcome measure of pain in frail elderly in chronic care. *Pain Clinic.* 1997;10:71–9.
- Hadjistavropoulos T, LaChapelle D, MacLeod F, Hale C, O'Rourke N, Craig KD. Cognitive functioning and pain reactions in hospitalized elders. *Pain Res Manag.* 1998;3:145–51.
- Hadjistavropoulos T, LaChapelle DL, Hadjistavropoulos HD, Green S, Asmundson GJ. Using facial expressions to assess musculoskeletal pain in older persons. *Eur J Pain.* 2002;6:179–87. doi:10.1053/eujp.2001.0327
- Lints-Martindale AC, Hadjistavropoulos T, Barber B, Gibson SJ. A psychophysical investigation of the facial action coding system as an index of pain variability among older adults with and without Alzheimer's disease. *Pain Med.* 2007;8:678–89. doi:10.1111/j.1526-4637.2007.00358.x
- Hadjistavropoulos T, LaChapelle DL, MacLeod FK, Snider B, Craig KD. Measuring movement-exacerbated pain in cognitively impaired frail elders. *Clin J Pain.* 2000;16:54–63.
- Herr K. Pain assessment in older adults with verbal communication skills. In: Gibson SJ, Weiner DK, editors. *Pain in older adults.* Seattle: IASP Press; 2005. p. 111–33.
- Herr KA, Mobily PR. Complexities of pain assessment in the elderly: clinical considerations. *J Gerontol Nurs.* 1991;17:12–9.
- Ferrell BA, Ferrell BR, Rivera L. Pain in cognitively impaired nursing home patients. *J Pain Symptom Manage.* 1995;10:591–8. doi:10.1016/0885-3924(95)00121-2
- Chibnall JT, Tait RC. Pain assessment in cognitively impaired and unimpaired older adults: a comparison of four scales. *Pain.* 2001;92:173–86. doi:10.1016/S0304-3959(00)00485-1
- Gagliese L, Katz J. Age differences in postoperative pain are scale dependent: a comparison of measures of pain intensity and quality in younger and older surgical patients. *Pain.* 2003;103:11–20.
- Gagliese L, Weizblit N, Ellis W, Chan VW. The measurement of post-operative pain: a comparison of intensity scales in younger and older surgical patients. *Pain.* 2005;117:412–20. doi:10.1016/S0304-3959(02)00327-5
- Herr KA, Mobily PR. Comparison of selected pain assessment tools for use with the elderly. *Appl Nurs Res.* 1993;6:39–46. doi:10.1016/S0897-1897(05)80041-2
- Herr KA, Spratt K, Mobily PR, Richardson G. Pain intensity assessment in older adults: use of experimental pain to compare psychometric properties and usability of selected pain scales with younger adults. *Clin J Pain.* 2004;20:207–19.
- Folstein MF, Folstein SE, McHugh PR. Mini-mental state: A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res.* 1975;12:189–98. doi:10.1016/0022-3956(75)90026-6
- Tombaugh TN, McIntyre NJ. The mini-mental state examination: a comprehensive review. *J Am Geriatr Soc.* 1992;40:922–35.

38. Weiner DK, Peterson BL, Logue P, Keefe FJ. Predictors of pain self-report in nursing home residents. *Aging*. 1998;10:411–20.
39. Hicks CL, von Baeyer CL, Spafford PA, van Korlaar I, Goodenough B. The Faces Pain Scale—Revised: toward a common metric in pediatric pain measurement. *Pain*. 2001;93:173–83. doi:10.1016/S0304-3959(01)00314-1
40. McGrath PA, Seifert CE, Speechley KN, Booth JC, Stitt L, Gibson MC. A new analogue scale for assessing children's pain: an initial validation study. *Pain*. 1996;64:435–43. doi:10.1016/0304-3959(95)00171-9
41. Scherder EJ, Bouma A. Visual analogue scales for pain assessment in Alzheimer's disease. *Gerontology*. 2000;46:47–53. doi:10.1159/000022133
42. Wynne CF, Ling SM, Reimsburg R. Comparison of pain assessment instruments in cognitively intact and cognitively impaired nursing home residents. *Geriatr Nurs*. 2000;21:20–3.
43. Melzack R. The McGill Pain Questionnaire: major properties and scoring methods. *Pain*. 1975;1:277–99. doi:10.1016/0304-3959(75)90044-5
44. Weiner D, Peterson B, Ladd K, McConnell E, Keefe F. Pain in nursing home residents: an exploration of prevalence, staff perspectives, and practical aspects of measurement. *Clin J Pain*. 1999;15:92–101.
45. Ferraz MB, Quaresma MR, Aquino LR, Atra E, Tugwell P, Goldsmith CH. Reliability of pain scales in the assessment of literate and illiterate patients with rheumatoid arthritis. *J Rheumatol*. 1990;17:1022–4.
46. Jensen MP, Miller L, Fisher LD. Assessment of pain during medical procedures: a comparison of three scales. *Clin J Pain*. 1998;14:343–9.
47. Jensen MP, Karoly P. Self-report scales and procedures for assessing pain in adults. In: Turk DC, Melzack R, editors. *Handbook of pain assessment*. New York: Guilford; 2001. p. 15–34.
48. Gagliese L, Melzack R. Chronic pain in elderly people. *Pain*. 1997;70:3–14. doi:10.1016/S0304-3959(96)03266-6
49. Fries BE, Simon SE, Morris JN, Flodstrom C, Bookstein FL. Pain in U.S. nursing homes: validating a pain scale for the minimum data set. *Gerontologist*. 2001;41:173–9.
50. Gagliese L. Assessment of pain in elderly people. In: Turk DC, Melzack R, editors. *Handbook of pain assessment*. New York: Guilford; 2001. p. 119–33.
51. AGS Panel on Persistent Pain in Older Persons. Clinical practice guidelines: the management of persistent pain in older persons. *J Am Geriatr Soc*. 2002;50:S205–24.
52. Aubin M, Giguere A, Hadjistavropoulos T, Verreault R. Évaluation systématique des instruments pour mesurer la douleur chez les personnes âgées ayant des capacités réduites à communiquer. *Pain Res Manag*. 2007;12:195–203.
53. Zwakhalen SM, Hamers JP, Abu-Saad HH, Berger MP. Pain in elderly people with severe dementia: a systematic review of behavioural pain assessment tools. *BMC Geriatr* [Internet]. 2006 Jan 27 [cited 2010 Feb 4];6(3). doi:10.1186/1471-2318-6-3
54. Abbey J, Piller N, De Bellis A, Esterman A, Parker D, Giles L, et al. The Abbey pain scale: a 1-minute numerical indicator for people with end-stage dementia. *Int J Palliat Nurs*. 2004;10:6–13.
55. 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;4:9–15. doi:10.1016/S1525-8610(04)70258-3
56. Wary B, Collectif Doloplus. DOLOPLUS 2, une échelle pour évaluer la douleur. *Soins Gerontol*. 1999;19:25–7.
57. Fuchs-Lacelle S, Hadjistavropoulos T. Development and preliminary validation of the Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC). *Pain Manag Nurs*. 2004;5:37–49. doi:10.1016/j.pmn.2003.10.001
58. Horgas A, Miller L. Pain assessment in people with dementia. *Am J Nurs*. 2008;108:62–70; quiz 1.
59. DeWaters T, Faut-Callahan M, McCann JJ, Paice JA, Fogg L, Hollinger-Smith L, 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;27:21–8. doi:10.1097/01.NOR.0000310607.62624.74
60. Zwakhalen SM, Hamers JP, Berger MP. The psychometric quality and clinical usefulness of three pain assessment tools for elderly people with dementia. *Pain*. 2006;126:210–20. doi:10.1016/j.pain.2006.06.029
61. Pautex S, Herrmann FR, Michon A, Giannakopoulos P, Gold G. Psychometric properties of the DOLOPLUS-2 observational pain assessment scale and comparison to self-assessment in hospitalized elderly. *Clin J Pain*. 2007;23:774–9. doi:10.1097/AJP.0b013e318154b6e3
62. Fuchs-Lacelle S, Hadjistavropoulos T, Lix L. Pain assessment as intervention: a study of older adults with severe dementia. *Clin J Pain*. 2008;24:697–707.
63. Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH. Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. *Arch Intern Med*. 2003;163:2716–24. doi:10.1001/archinte.163.22.2716
64. Aubin M, Verreault R, Savoie M, Lemay S, Hadjistavropoulos T, Fillion L, et al. Validité et utilité clinique d'une grille d'observation (PACSLAC-F) pour évaluer la douleur chez des aînés atteints de démence vivant en milieu de soins de longue durée. *Can J Aging*. 2008;27:45–55. doi:10.3138/cja.27.1.45
65. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. Washington, DC: The Association; 2005.
66. Inouye SK. Delirium in older persons. *New Engl J Med*. 2006;354:1157–65. doi:10.1056/NEJMra052321
67. Kiely DK, Bergmann MA, Jones RN, Murphy KM, Orav EJ, Marcantonio ER. Characteristics associated with delirium persistence among newly admitted post-acute facility patients. *J Gerontol A-Biol*. 2004;59:344–9.
68. Roche V. Etiology and management of delirium. *Am J Med Sci*. 2000;325:20–30. doi:10.1097/00000441-200301000-00005
69. Hadjistavropoulos T, Voyer P, Sharpe D, Verreault R, Aubin M. Assessing pain in dementia patients with comorbid delirium and depression. *Pain Manag Nurs*. 2008;9:48–54. doi:10.1016/j.pmn.2007.12.004
70. Hadjistavropoulos T, Hunter P, Dever Fitzgerald TG. Pain assessment in older adults: Conceptual issues and clinical challenges. *Can Psychol*. 2009;50:241–54. doi:10.1037/a0015341
71. Morrison RS, Magaziner J, Gilbert M, Koval KJ, McLaughlin MA, Orosz G, et al. Relationship between pain and opioid analgesics on the development of delirium following hip fracture. *J Gerontol-A*. 2003;58:76–81.
72. Herr K, Coyne PJ, Key T, Manworren R, McCaffery M, Merkel S, et al. Pain assessment in the nonverbal patient: position statement with clinical practice recommendations. *Pain Manag Nurs*. 2006;7:44–52. doi:10.1016/j.pmn.2006.02.003
73. Husebo BS, Strand LI, Moe-Nilssen R, Husebo SB, Snow AL, Ljunggren AE. Mobilization–Observation–Behavior–Intensity–Dementia Pain Scale (MOBID): development and validation of a nurse-administered pain assessment tool for use in dementia. *J Pain Symptom Manage*. 2007;34:67–80. doi:10.1016/j.jpainsymman.2006.10.016
74. Hadjistavropoulos T, Marchildon GP, Fine PG, Herr K, Palley HA, Kaasalainen S, et al. Transforming long-term care pain management in North America: The policy-clinical interface. *Pain Med*. 2009;10:506–20. doi:10.1111/j.1526-4637.2009.00566.x
75. Canadian Institute for Health Information 2008. *Workforce trends of physiotherapists in Canada, 2007*. Ottawa: The Institute; 2008.
76. Mulrow CD, Grety MB, Kanten D, DeNino LA, Cornell JE. Effects of physical therapy on functional status of nursing home residents. *J Am Geriatr Soc*. 1993;41:326–8.
77. Landry MD, Williams AP, Deber RB, Vermier MC. On evidence-based decision-making: implications for physical therapy in the post-Kirby, post-Romanow era. *Physiother Can*. 2004;56:7–14. doi:10.2310/6640.2004.15328