

# Is Pain Assessment Feasible as a Performance Indicator for Dutch Nursing Homes? A Cross-Sectional Approach

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## ■ ABSTRACT:

Quality of care gains transparency with the help of performance indicators. For Dutch nursing homes, the current set of performance indicators does not include pain. To determine the feasibility of pain assessment as performance indicator, information about pain prevalence and analgesic prescription in one nursing home was collected. Within the time span of 3 days, pain intensity was measured in 91% of the residents (201 out of 221), either with a numeric rating scale, a verbal rating scale, or the Rotterdam Elderly Pain Observation Scale (REPOS). Numerical rating was used for 72%, verbal rating for 3%, and REPOS observation for 25% of the residents. Pain was substantial in 65 residents (32%), who received the following analgesic prescription: World Health Organization (WHO) step 1, 45%; WHO step 3, 12%; and neuroactive agents, 5%. Thirty-eight percent of these residents were in pain and received no analgesics. Residents with substantial pain significantly more often received analgesics ( $p = .007$ ). Results suggest that pain assessment is feasible in a nursing home and would stimulate staff attention to pain. Further investigation is necessary to find out if a pain algorithm is feasible and will lead to improved pain treatment.  
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In recent years, quality of care in nursing homes in The Netherlands has received greater attention. This culminated in a joint venture of the Dutch government, nursing home physicians and nurses, patient organizations, and insurance companies in 2007 to achieve transparency and improvement in quality of care (Nispen, van Beek & Wagner, 2005).

Among the measures aimed at reaching this goal is the development of a set of performance indicators, including prevalences of pressure ulcers,

malnutrition, and medication errors (Dutch Health Care Inspectorate, 2009). These outcomes are published on the Internet and are therefore available for clients, other nursing homes, health care insurers, and the Health Care Inspectorate (Dutch Health Care Inspectorate, 2009). This benchmarking enables clients to make an informed choice about selecting a home and nursing homes to improve their standards of care.

The system is similar to the Nursing Home Quality Measures (Abts Associates Inc, 2004) in the USA. There is one exception, however. One of the quality measures in the USA is the “percentage of residents who have moderate to severe pain” looking back 7 days, which is missing in the Dutch system. This is regrettable, because pain is documented to be common in nursing home residents in The Netherlands (Achterberg, Pot, Scherder, & Ribbe, 2007; Boerlage, Stronks, van Dijk, van der Rijt, Baar, & de Wit, 2007) with prevalence ratings of 17%-72% (Achterberg et al., 2007; Boerlage et al., 2007; Sawyer, Lillis, Bodner, & Allman, 2007; Smalbrugge, Jongenelis, Pot, Beekman, & Eefsting, 2007; Thomas, Peat, Harris, Wilkie, & Croft, 2004). Furthermore, pain treatment is often insufficient (Boerlage et al., 2007; Hutt, Pepper, Vojir, Fink, & Jones, 2006; Won, Lapane, Vallow, Schein, Morris, & Lipsitz, 2004). Up to 20%-30% of the nursing home residents with moderate to severe pain receive no pain medication (Torvik, Kaasa, Kirkevold, & Rustoen, 2010; Zyczkowska, Szczerbinska, Jantzi, & Hirdes, 2007). In 2002, the American Geriatric Society (AGS) already stated that the health care system has an obligation to provide comfort and pain management for older patients. One of their recommendations was that nursing homes should routinely conduct quality assurance and quality improvement activities in pain management (AGS Panel, 2002).

To determine the feasibility of pain assessment as performance indicator, we performed a check in one nursing home in Rotterdam, The Netherlands. Here, caregivers have measured residents' pain on a weekly basis since the implementation of such assessment in 2002. Caregivers ask the residents to rate their present pain intensity with an 11-point numerical rating scale (NRS; 0 = no pain; 10 = worst pain ever). The ratings are visualized on a chart which shows if pain intensity changes and the effect of interventions. Regarding characteristics such as pain prevalence, this nursing home is similar to other nursing homes in the Netherlands (Achterberg, Gambassi, Finne-Soveri, Liperoti, Noro, Frijters, Cherubini, Dell'aquila, & Ribbe, 2010; van Herk, Boerlage, van Dijk, Baar, Tibboel, & de Wit, 2009a; Zwakhalen, Koopmans, Geels, Berger, & Hamers, 2009).

Within the time span of 3 days in March 2008, we asked all of the residents of the nursing home who were present during that period to rate their pain by self-report. Those who were unable to do this, owing to a cognitive impairment, aphasia, or language barrier, were observed using the Rotterdam Elderly Pain Observation Scale (REPOS) (van Herk, van Dijk, Baar, Tibboel, & de Wit, 2007) during a potentially painful moment, usually during daily care or transfer (Sloane, Miller, Mitchell, Rader, Swafford, & Hiatt, 2007). Diagnosis and analgesic treatment were retrieved from the medical or nursing charts.

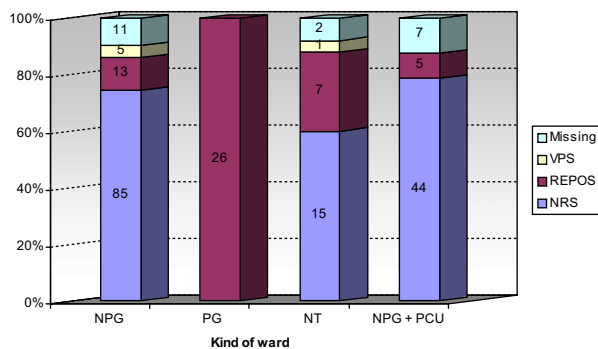
A medical doctor (A.M.) and a nurse specialist in pain (A.B.), both trained REPOS observers, conducted the pain assessments and data collection. Interrater reliability between both REPOS observers was good (Cohen linear weighted kappa 0.76 [Cohen, 1988]).

Because the efficacy of pain assessment has already been reported, and therefore pain assessment is considered to be a standard of care, ethical clearance for the implementation project was waived. Nevertheless, the local directors' board approved the project.

## INSTRUMENTS

The Numeric Rating Scale (NRS) is a validated pain instrument which asks residents to rate pain intensity by number (0 = no pain; and 10 = worst pain ever) (Closs, Barr, Briggs, Cash, & Seers, 2004; Jensen, Karoly, & Braver, 1986; Jensen & McFarland, 1993; Taylor, Harris, Epps, & Herr, 2005). The Verbal Pain Scale (VPS), a 6-point verbal pain rating scale that has been validated for use in a nursing home (Closs et al., 2004; Taylor et al., 2005), was applied when the NRS was too difficult for the resident. The REPOS is a pain observation scale consisting of 10 behavioral items. The REPOS has been validated for residents (Van Herk, Dijk van, Tibboel, Baar, Wit de, & Duivenvoorde, 2009b) who are unable to report pain themselves including residents with cognitive impairment and aphasia.

The REPOS assessment starts with a 2-minute observation period during a potentially painful moment (e.g., washing and clothing); the observer scores the ten items as present or absent as they were observed. A cutoff score of  $\geq 3$  suggests a high likelihood of pain. A high REPOS score might be the result of other emotions than pain, e.g., shame or sadness. In that case, the caregivers can give an NRS of  $< 4$ . This is why the REPOS is used in combination with the NRS. The NRS represents the caregiver's opinion of the client's pain, taking circumstances into account (Van Herk et al., 2009b). In 2007 and 2008, the REPOS was implemented



**Figure 1.** Pain scales used and residents per kind of ward. NPG = nonpsychogeriatric; PG = psychogeriatric; NT = neurotrauma; PCU = palliative care unit; NRS = numerical rating scale; VPS = verbal pain scale; REPOS = Rotterdam Elderly Pain Observational Scale.

in several nursing homes in Rotterdam (Van Herk, Boerlage, Baar, Tibboel, de Wit, & van Dijk, 2008).

## ANALYSIS

Nonnormally distributed data are presented as median and interquartile range (IQR). Chi-squared tests were used to determine the association between nominal data. Pain was considered to be substantial when residents rated NRS or VPS (converted to a 10-point scale) as  $\geq 4$ . For the REPOS, pain was considered to be substantial for any combination of REPOS  $\geq 3$  and nurse-assessed NRS  $\geq 4$ .

## RESULTS

Pain was assessed in 201 of the 221 residents. Nineteen residents were absent, and one resident refused participation because he considered pain assessment to be nonsense. The remaining study group included 122 women (60.7%) and 79 men (39.3%) with a median age of 77 (IQR 68-84) years. One hundred forty-four residents (71.6%) provided an NRS rating, six (3.0%) a VPS rating, and the REPOS was applied in 51 (25.4%). Figure 1 shows the distribution of the pain scales used for the four different types of wards. It appears that REPOS observation was needed for all residents in the psychogeriatric ward. NRS or VPS rating was feasible for most residents of the nonpsychogeriatric wards and palliative care unit and for two-thirds of the residents on the neurotrauma ward.

The most frequent underlying condition was diseases of the circulatory system, i.e., in 30% of the 201 residents. Other diseases related to pain were those of the nervous system (14%), musculoskeletal

**TABLE 1.**  
Administered Pain Medication to Residents Without and With Substantial Pain, n (%)

	Numeric Rating Scale Pain		<i>p</i> Value
	0-3	4-10	
WHO step 1, analgesic:	38 (28)	29 (45)	.007
Acetaminophen	36	27	
NSAIDs	2	2	
WHO step 2, weak opioid	2 (1)	1 (1)	
Tramadol	2	1	
WHO step 3, opioid	4 (3)	7 (11)	
Transdermal fentanyl	1	3	
Oral opioids	3	4	
Antineuropathic pain	8 (6)	3 (5)	
Gabapentin (Neurontin)	1	2	
Amitriptyline (Tryptizol)	4	—	
Carbamazepine (Tegretol)	2	1	
Pregabalin (Lyrica)	1	—	
No pain medication	84 (62)	25 (38)	
Total	136 (100)	65 (100)	

system and connective tissue (13%), endocrine, nutritional and metabolic disease (6%), and neoplasm (3%).

Pain was substantial in 65 residents (32%), as rated by NRS for 52 residents, by VPS for 2, and by REPOS/nurse-assessed NRS for 11.

Median pain intensity was 6 (IQR 4-7) as rated by NRS, 5 (IQR 5-7) as rated by VPS, and 6 (IQR 5-7) as rated by REPOS with nurse-assessed NRS [4 (IQR 4-5)].

Twenty-nine residents (45%) with substantial pain received pain medication of step 1 of the World Health Organization (WHO) analgesic ladder, 8 residents (12%) received (weak) opioids (step 3 of the WHO analgesic ladder, and 3 residents (5%) received a neuroactive agent. Twenty-five residents (38%) experienced substantial pain but received no pain medication.

Six residents (4%) received opioids with NRS  $\leq 3$ . Residents with NRS  $\geq 4$  were administered significantly more analgesics (chi-squared test 12.1;  $p = .007$ ) than those with lower NRS. Table 1 presents the medication prescriptions in the 201 residents.

## DISCUSSION

Self-report was feasible in two-thirds of the residents of this nursing home the others required a REPOS observation. Two observers approached 201 residents within 3 days. If two observers are able to collect the information within 3 days it would be feasible for the caregivers to do so within 1 week.

Pain was substantial in one-third of the residents. Although residents with substantial pain received analgesics more often, 38% of them did not at all, which suggests that pain treatment is not yet sufficient. The latter percentage is similar to those reported in the literature, ranging from 20% to 54% (Achterberg et al., 2007; Boerlage et al., 2007; Hadjistavropoulos, Herr, Turk, Fine, Dworkin, Helme, Jackson, Parmelee, Rudy, Lynn Beattie, Chibnall, Craig, Ferrell, Fillingim, Gagliese, Gallagher, Gibson, Harrison, Katz, Keefe, Lieber, Lussier, Schmader, Tait, Weiner, & Williams, 2007; Herr & Titler, 2009; Hutt et al., 2006; Reynolds, Hanson, DeVellis, Henderson, & Steinhauser, 2008; Won et al., 2004).

The consequences of persistent pain or its inadequate treatment in the elderly are important. The increased risk of functional impairment, falls, slow rehabilitation, cognitive impairment, mood changes, decreased socialization, and sleep and appetite disturbances lead not only to a decreased quality of life but also to an increase in health care cost (AGS Panel, 2002, 2009). The results of the present report suggest that pain remains a relevant problem in nursing homes in The Netherlands. Regrettably, pain is not yet included in the set of performance indicators for nursing homes implemented in The Netherlands in 2008.

There is every reason to believe that adding pain assessment would stimulate the attention to pain. The question is whether it would improve pain treatment as well. It seems that improvement cannot be achieved by

assessment only. It is necessary to combine assessment with either a treatment decision-tree or an individualized standing order so that nursing staff can effectively intervene when pain requires treatment (Leone, Standoli, & Hirth, 2009; Van Herk, et al., 2009b). It is important that pain is a regular theme during medical rounds. Physicians must look at the results of pain assessment and ask the caregivers if an intervention was effective. Complicated pain problems should be discussed within a multidisciplinary team. Such a team should preferably include at least a physician, a psychologist, a physiotherapist, and a nurse (AGS Panel, 2009; Swafford, Miller, Tsai, Herr, & Ersek, 2009).

To guarantee sufficient knowledge, caregivers as well as physicians should follow training on pain assessment and pain treatment on a regular basis. A regular basis of training assures that new personnel receive the same training as sitting personnel, knowledge level about pain stays up to date, and attention to pain is stimulated (Swafford et al., 2009).

The present study shows that pain assessment is a feasible performance indicator. Quality of pain treatment would be available on the Internet for future clients, management of nursing homes, health care insurers, and the Health care inspectorate, which might stimulate the development of a best-practice treatment model. Pain assessment combined with a pain treatment algorithm makes a good combination for the improvement of pain treatment in a nursing home.

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