Implementing a Pain Management Program in a Long-Term Care Facility Using a Quality Improvement Approach

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Background: Pain constitutes a constant challenge facing staff and residents of skilled nursing facilities (SNF) and nursing homes (NH). Many SNF and NH have not adopted a uniform plan to assess and treat pain for their residents despite published literature that demonstrates that the implementation of scales improves detection and treatment of pain. The objective of this study was to analyze the baseline pain level in the institutionalized elderly, and then implement a standard pain scale for its assessment and evaluation, while simultaneously identifying challenges in adopting this standardized method.

Methods: As part of a Quality Improvement Project (QI), a total of 40 patients were chosen at random in 2 of the major skilled care and dementia units at a Columbia area nursing home, 20 patients from each. A chart review was conducted to document the presence or absence of pain syndromes, pain medications used, and use of standardized tools for the evaluation of pain. Documentation regarding diagnosis of depression and behavioral problems were also noted as potential markers for the manifestation of pain. Verbal and nonverbal pain scales were introduced and approved by the medical and nursing staff. Training sessions for the administration of such tools were implemented. A baseline evaluation of pain level was obtained applying these newly adopted tools. One cycle using the PDSA (Plan-Do-Study and Act) model for QI was followed.

Results: Our evaluation showed that 84.2% (32/38) of our study population were females, and the mean age was 91.4 years. Fifty percent (19/38) of patients had mild to moderate pain. Because of nonstandardized approaches to analgesia, some regimens rendered clear potential for toxicity: ie, receiving more than 3 grams per day of acetaminophen. Most patients with cognitive deficits had lower levels of moderate pain (9.5% [2/21]) but higher levels of mild pain (33.3% [7/21]) when compared with patients with normal cognition or mild cognitive deficits (35.3% [6/17] and 17.6% [3/17], respectively). Nursing staff adopted successfully the chosen pain tools and gave positive feedback after the trial period, indicating that they were helpful tools to identify pain and treat it promptly. Active participation of nursing staff through the process of decision making, tailoring of the pain assessment scales, and feedback during the period of implementation of pain assessment tools was perceived to facilitate better results. New cycles of pain evaluation and improvement were scheduled.

Conclusions: Pain evaluation and management is of paramount importance because of its high prevalence and demonstrated deleterious effects on both quality of life and long-term survival. Tools for verbal and nonverbal evaluation of pain are necessary in both NH and SCF. Also, regular cognitive and behavioral assessment may help evaluate pain by providing additional information to physicians, nurses, and other caregivers when treatment becomes more challenging and complex. The use of standard standing orders can easily help decrease the potential of toxicity related to the use of analgesics.

Keywords: Pain management; long-term facility; pain assessment; pain scales
though we try to prevent our suffering due to pain, sometimes it becomes an impossible task.

Pain can be of acute or chronic nature. Acute pain is a vital protective mechanism that is present when a specific organic or traumatic injury or stimulus has occurred and its goal, among others, appears to be the prevention of further injury. Usually this pain resolves over time but in some instances it can become persistent or chronic if the disease process or the inflammatory process remains unsolved. There are no strict time boundaries that determine when a pain that was acute in nature becomes chronic, but in general, a pain that remains beyond the usual time expected for healing is a chronic pain, in broad terms 4 to 6 weeks. Pain remains undertreated in the United States and it has been considered a major public health problem.

Both acute and chronic pain are present among residents in the nursing home environment. Their pain can drastically affect their quality of life (QoL) and ability to continue doing activities of daily living (ADLs) and instrumental activities of daily living (IADLs).

The age of a person has been linked to influence his or her perception of pain by decreasing pain perception and pain report. The prevalence of pain ranges between approximately 45% and 80% in the elderly population and it increases even more among residents of long-term care facilities, ranging as high as 83%. Some factors that appear to contribute to this high prevalence of pain include age-related disabilities like osteoarthritis.

Studies report that approximately 40% of nursing home residents with cancer and 25% without cancer are not treated with analgesics, even though they may be experiencing pain on a daily basis.

Another important phenomenon to consider is that pain is often underrecognized and frequently undertreated, particularly in older adults with cognitive impairment. Assessing pain in this population can be challenging because its presence is due to an often complex combination of physical pain, depression, loss, loneliness, sadness, and anger.

Several misconceptions have been reported: older people tolerate pain better; the elderly have a higher threshold for pain; and pain is just part of aging and there is very little to do about it. Pain assessment tools and scales have been created specifically for such complicated situations that account for possible cognitive deficits and behavioral problems such as agitation, depression, dementia, and lack of cooperation which might act as confounders in the correct assessment of pain.

According to the American Geriatrics Society (1998, 2002) and American Medical Directors Association (1999) Clinical Practice Guidelines, pain management can be improved through a process of formalized pain assessment and appropriate use of pharmacologic agents and nonpharmacologic interventions.

**OUR SETTING**

This quality improvement project was designed to help improve at least one of several areas of deficiency in a local long-term care facility. A local Continuum of Care Retirement Community (CCRC) was selected for this project. Two skilled care wings of the CCRC were chosen for the pilot quality improvement (QI) project. The first one was a closed unit where patients with severe dementia or severe cognitive deficits live, and the other one was a typical long-term care unit. After interviewing the nursing staff and the director of nursing, it was determined that pain was not regularly or systematically assessed.

Standard protocol included a subjective pain assessment performed by the nursing staff based on their personal knowledge of patients' behaviors with a written communication on the nurses' notes. When a resident was noted to be in discomfort, medication was given and a new assessment was written (improved, not improved) (Figure 1). Initial and regular pain assessments were not routinely performed. A more complete pain assessment form was compiled in the event of a fall, accident, or injury.

**CHOOSING AN APPROPRIATE PAIN SCALE**

A thorough review of the literature was performed to determine what models of pain assessment tools were available and which were more appropriate. A chart review was used to determine the most common causes of pain among the residents of the 2 units.

From a review of available pain tools, 2 categories of pain assessment instruments were chosen: verbal or nonverbal. A number of verbal tools were reviewed, including the visual analog pain scale, the faces pain scale, the Wong-Baker pain scale, and others. These pain scales have been used extensively and proven in different age groups with very good results. These scales require verbal communication with a patient and some of them require abstract thinking, making them suitable for patients with intact cognition (Figures 2 to 4).

A variety of nonverbal tools were also chosen based on their ability to reflect the presence of pain in patients with cognitive deficits and in some instances considering patients with no introspection or ability to communicate their pain status. Some of the tools considered were the Abbess Pain Scale, the Assessment of Discomfort in Dementia (ADD) protocol, Checklist of Nonverbal Pain Indicators (CNPI), the Doloplus 2, the FLACC behavioral pain scale, the Non-Communicative Patient’s Pain Assessment Instrument.
(NOPPAIN),30 the Pain Assessment Scale for Seniors with Severe Dementia (PACSLAC),31 the Pain Assessment for the Dementing Elderly (PADE),32 the Pain Assessment In Advanced Dementia (PAINAD) Scale,33 and the Pain Assessment in Non-communicative Elderly Persons (PAINE).34 Our goal was to try to choose 1 or 2 scales or instruments from this list that would be sensitive, specific, appropriate, time sensitive, widely accepted, and consequently used in the nursing home setting.

With the intent of introducing a new standardized format for pain assessment and management, the P-D-S-A (PLAN, DO, STUDY, ACT) cycle paradigm was used as a template.13,14

Objective (PLAN-cycle)

Develop a quality improvement project for pain assessment to ensure that pain is adequately identified, so that it can be managed effectively with medications and other measures outlined in standing orders (Figure 5).

Methods (DO-cycle)

The above-mentioned objectives were addressed through the following:

1. Staff education/training
2. Introduction of a formalized pain assessment (instrument and scales)
3. Introduction of standing orders for pain
4. Introduction of policy recommendations

Staff Education and Training

One 30-minute session was presented by a physician and the director of skilled nursing to the nursing staff. This was followed by two 10-minute sessions with the nurses individually. Topics covered included most common causes of pain in nursing homes, current methods to assess pain and rationale for choosing the instruments and scales that would likely be implemented in the facility.

Formalized Pain Assessment

Based on the patients’ characteristics, the Visual Analog Scale (1 to 10) was chosen for verbal patients. The director of skilled nursing, after consulting with the nursing staff, requested for the scale to be changed from 1 to 5 instead of 1 to 10 for purposes of managing information more easily. Although no studies have been done with these numbers we decided to adapt the tool to gain compliance. A second request was made to add some faces similar to those present in the Wong-Baker and Faces pain scales.

A set of instructions was added at the beginning of the page to remind the nurse about the proper administration of the tool. The finalized tool had elements that have been present in more than one scale (Figure 6).

For the cognitively impaired patients it was imperative that the scale be easily reproducible, user friendly, and time efficient. The NOPPAIN, PAINAD, and the Non Verbal Indicators For Pain scales fulfilled these requirements and were given to the nursing staff to test for ease of use and effectiveness.

After a period of evaluation, nursing staff and the skilled nursing director decided to adopt PAINAD, half scaled (Figure 7).

Pain Management Standing Orders

New standing orders were adopted based on the positive results reported in the 2006 pilot study: Quality Improvement
Initiative for Chronic Pain Assessment and Management in the Nursing Home: A pilot study from 2006. They included the following:

- May offer a warm tub bath or shower.
- Offer chaplain or social work consults for supportive counseling.
- May offer patient educational materials.
- Encourage physical exercise. May ask physical therapy for a screening visit if patient mobility is an issue and improvement is a reasonable expectation.
- Ketoprofen gel, 3 times a day as needed, pea-sized amount rubbed into painful area for 3 to 10 minutes. Wear gloves and discontinue if skin irritation occurs.
- Acetaminophen 650 mg orally every 4 hours as needed for general pain if resident does not take acetaminophen as a scheduled medication. If resident takes scheduled acetaminophen or has allergy to it call NP/MD for orders.
- Call NP/MD if pain is not relieved, if it is unusually severe, if weakness is present, if there is a change in mental status, or if the pain is associated with a fall or injury.

The bowel regimen is as follows, modified from Buhr and White:

- Daily monitoring of bowel movements.
- May combine prune juice, apple sauce, and raw fiber or bran in a pudding to taste and titrate as needed if the patient is adequately hydrated.
- Encourage fluids and physical exercise.
- If an opioid is prescribed then the patient should be on a laxative with possible adjustment up as opioid is titrated up. Possible laxative Senna or Sorbitol. Call NP/MD if no laxative is prescribed.
- If no bowel movement in 24 hours, Sorbitol 30 mL every day, twice a day.
- If not effective in 72 hours, perform rectal exam and check for impaction. May use phosphate enema or warm water enema. May manually disimpact. Notify NP/MD.

Procedure Policy Recommendations (to be converted into nursing policy)

New patient: If unsure of cognitive status, always start with the verbal scale. If patient fails to answer appropriately or does not appear to understand, switch to the nonverbal scale.

- Verbal – use modified visual analog scale
- Non verbal – Half-scaled PAINAD for cognitive impaired patients.
- Refer to standing orders
- Reassess. If patient still in pain consider trying next item in standing orders or call physician.

Patients readmitted from the hospital/emergency department visits:

- Reassess according to their cognitive status (presence or not of cognitive deficits)
- Refer to standing orders

Acute event: resident in pain:

- Assess according to their cognitive status (cognitive, noncognitive)
- Reassess after 1 to 2 hours (maximum)
- Refer to standing orders for medications

Regular pain assessment will be repeated every 2 to 4 weeks if patient stable.

Note: If at any moment the nurse believes that the patient appears to be sick, has a change in condition, or feels uneasy about the current situation of the patient, she or he will call the doctor immediately.

STUDY-cycle

A tracking system for quality improvement purposes was implemented over a period of 2 months, but multiple interventions will be necessary for continuous improvement and reevaluation of the effectiveness of the program. Reevaluation is currently programmed on regular basis (quarterly to bi-annually). It will include, but not be limited to, evaluation of pain level among residents, number of narcotics and other analgesics used for pain management, and updating of standing orders as necessary according to Food and Drug Administration warnings or presence of more appropriate medications or treatments in the market.

ACT

Once data were gathered and outcomes outlined, new PDSA-cycles were scheduled. Each cycle will be conducted
every 6 to 12 months. A single geriatric fellow or group of fellows in training will conduct each cycle under the direct supervision and support of the medical director.

Modified data collection plans

A first P-D-S-A cycle concluded in the first month and the results of the first attempt of implementation were reviewed. A meeting took place with the medical director of the facility, the director of the skilled care nursing unit, physicians, and a representative of the governing board.

It was noted that despite the time that had been spent educating the nursing staff and choosing the most appropriate tools for assessment of pain in the population, only 2 evaluations of pain status had taken place. These 2 evaluations had been obtained of patients who did not have pain at the moment of evaluation and were obtained during times when nurses were not engaged in other activities and not as part of a daily or weekly evaluation. During a feedback session, nurses stated that they felt that the pain scales were helpful to evaluate pain levels, but sometimes they forgot to use them because they were not yet part of the official medical record. It became evident that trying the tool without the enforcement and support of the directors of the nursing home would not be widely accepted, especially if our pain scale forms were not be widely accepted, especially if our pain scale forms were not an intrinsic part of the patient’s record. For this reason, a greater push was given to an official use of this documentation, by incorporating it immediately into the medical file.

Based on training and education provided, feedback from nursing staff, and chart reviews, a modified program was undertaken, revised goals included the following:

➢ To obtain new baseline data about the characteristics of the population.
➢ To review patients’ charts to obtain information about the presence or absence of cognitive deficits (CDs) and dementia.
➢ If CDs were present, look for specific qualifiers: type of dementia, severity, and so forth (including last Mini Mental Status Examinations [MMSE]).
➢ To identify the presence or absence of behavioral problems that could be related to the inability to convey the presence of pain. Behavioral problems could be frequent identifiers of uncontrolled pain.17,18
➢ To review documentation present in the chart about the patient’s level of pain and pain characteristics (location, acute versus chronic). Review the MAR, looking for medications administered per schedule, and standing orders for pain. Document different standing orders.
➢ To obtain the first set of data about the baseline level of pain in this setting from all the patients in both nursing wings.

The first set of data was obtained by the investigators.

RESULTS

There were a total of 19 patients present and residing in the dementia unit at the time of the evaluation. One hundred percent of the patients had CDs or dementia. Twenty (50%) charts of a total of 40 patients from the other wing were reviewed. Forty-five percent of those charts randomly picked also had the diagnosis of CDs or dementia. Concerning age, most patients were in their 90s: 56.4% (22/t = 39), followed by patients in their 80s: 41% (16/t = 39) and only 1 in his 70s. One patient was excluded from further study because of being hospitalized at the time of the first evaluation. This evaluation showed that 54.2% (32/38) were females, mean age was 91.4 years old. Of all the patients interviewed, 73.7% (28/t = 38) had the diagnosis of CDs with 85.7% (24/t = 28) of them with Alzheimer’s dementia, followed by Mixed (Vascular-Alzheimer’s dementia) in only 7.1% (2/t = 28) of the patients, vascular dementia and not-otherwise-specified dementias with 3.5% each (1/t = 28).

It was noted that 24 (85.7%) of 28 patients with dementia also had either a behavioral problem or the diagnosis of depression, which can sometimes be associated with inadequately treated pain.

Also, it was noted that of those patients with the official diagnosis of dementia or cognitive deficits, 76% did not have a Mini Mental Status examination documented in the chart. Patients were classified in 1 of 2 groups based on their Mini Mental Status examination: the first group of patients with mild cognitive impairment or no cognitive impairment with MMSE values of 22 to 30, and the second group with moderate to severe cognitive deficits with MMSE of less than 21.

The overall prevalence of pain was calculated in the 2 wings of the facility and was divided into 2 groups according to the presence of moderate to severe cognitive deficits versus normal to mild CDs. No patients complained of severe pain (>4/5) at the time of the evaluations, but mild (0.5 to 1/5) and moderate pain (2 to 3/5) was present in 47.4% of the patients (18/n = 38), with 52.9% (9/17) of pain in the group of patients with no cognitive or mild cognitive deficit and 42.8% (9/21) from the group with moderate to severe CDs (Table 1).

Most patients with moderate to severe cognitive deficits had lower levels of moderate pain (9.5% [2/21]) but higher levels of mild pain (33% [7/21]) when compared with patients with normal cognition or mild cognitive deficits (36% [6/17] and 17% [3/17], respectively).

Also, the ability to answer to the verbal or nonverbal scale was noted (Table 2).

Patients with an MMSE of less than 21 (group of moderate to severe cognitive deficits) had more difficulties responding to the verbal pain scale, requiring the use of a nonverbal scale.

<table>
<thead>
<tr>
<th>Pain score in patients (scale 0 to 5)</th>
<th>Moderate to severe CD, % (cases/N)</th>
<th>Mild to no CD, % (cases/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/5</td>
<td>57.1% (12/21)</td>
<td>47.0% (8/17)</td>
</tr>
<tr>
<td>0.5 to 1/5</td>
<td>33.3% (7/21)</td>
<td>17.6% (3/17)</td>
</tr>
<tr>
<td>2 to 3/5</td>
<td>9.5% (2/21)</td>
<td>35.3% (6/17)</td>
</tr>
<tr>
<td>4 to 5/5</td>
<td>0% (0/21)</td>
<td>0% (0/17)</td>
</tr>
</tbody>
</table>

CD, cognitive deficit.
in over 66% of the cases (21/28). Only a minority of patients with no cognitive deficit (20%) required the use of nonverbal scales and this was attributed to other sensory deficits (blindness, deafness, and others).

The most common cause of pain was musculoskeletal in 60.0% of the cases, followed by abdominal pain in approx 13.3% of the cases. Several other less frequent causes of pain were identified.

At least 10 different providers, among medical doctors and nurse practitioners, were identified as attendings after chart review. Each one had a different regimen for the management of pain and for standing orders. Furthermore, the same doctor could have more than one set of standing orders. A list of the different regimens used to address pain is included. Medicines used to address other pathologies but with the potential of affecting the perception of pain were included. According to

Table 3  Grouped Standing Orders at Local Facility

| As needed medicines: | |
|----------------------| |
| Acetaminophen 1300 mg q8h or tid (Tylenol) | |
| Acetaminophen ranging from 325 mg to 1000 mg q6h or tid | |
| Acetaminophen/hydrocodone 5/500 mg q4h (Lortab, Vicodin) | |
| Acetaminophen/protophynephine napsylate 100 q6h/q8h (Darvocet) | |
| Oxycodeone 5 mg q6h (Oxycontin) | |
| Tramadol 50 mg q4h/q6h | |
| Panagel sic liniment as needed (bedside) | |
| Theragesic cream as needed. (bedside) | |
| Oragel (PRN) | |
| Scheduled: (Same as above, plus) | |
| Acetaminophen/hydrocodone higher doses | |
| Morphine | |
| Acetaminophen/oxycodeone (Percocet) | |
| Aspirin/Dipyridamole (Aggrenox) | |
| Acetaminophen/codeine (Tylenol#3) | |
| Prednisone | |
| Calcitonin-Salmon (Miacalcin) | |
| Ibuprofen (Motrin) | |

Note: Some regimens did not clearly document a maximum dose per day of acetaminophen, which theoretically could surpass 3 to 4 g per day, combining several products containing acetaminophen.

Table 4  Potentially Inappropriate Medication Use in the Elderly*

| 2002 Criteria for Potentially Inappropriate Medication Use in Older Adults: Beers Criteria, revised | |
| Propoxyphene (Darvon) and combinations | |
| Pentazocine (Talwin) | |
| Indomethacin (Indocin and Indocin SR) | |
| Ketorolac (Toralid) | |
| Meperidine (Demerol) | |
| NSAIDs and Aspirin > 325 mg chronic use or if gastric and duodenal ulcers/bleeding disorders | |

* Note: only analgesics were included in this version.

CONCLUSIONS

Pain management tools and policy were adopted in the nursing home facility after the first successful PDSA-cycle. During feedback sessions with the director of skilled nursing and nursing staff, it was determined that the scales were adopted because they were helpful and standardized, because they were tailored to the specific needs of the setting (half-scaled), and because active participation and feedback from the staff were requested. The first successful PDSA-cycle evaluation showed that pain was poorly assessed and treated without adopting a specific standardized tool and appropriate policy. These findings corroborate most of the literature about pain management in many long-term care settings.

New PDSA cycles for quality improvement will be scheduled, and all the residents from the CCRC will participate in the program. Preliminary data from new PDSA cycles suggests that pain prevalence has substantially decreased after the intervention.

Many nursing homes and assisted living facilities that do not employ general standard methods for the evaluation and treatment of pain appear to be at a disadvantage at best, because doctors use different regimens to treat pain. Some regimens that used medicines proven problematic or potentially dangerous in the elderly population were found. Other medicines were used at levels with known potentials for toxicity when used in conjunction with other agents.

Patients with known moderate to severe dementia and cognitive impairment had lower levels of moderate pain but higher levels of mild pain than those patients with normal cognition or just a mild cognitive impairment. This interesting occurrence raises the question: Are cognitively impaired patients experiencing less severe pain? Or, are our tools still inaccurate to quantify their real level of pain? We do not have an answer to this question but we expect this question will challenge us and other investigators to continue to study the problem.

A great majority of patients with cognitive deficits require some form of nonverbal pain evaluation that offers some
consistency to the evaluation of pain by certified nurse assistants, registered nurses, licensed practical nurses, and medical doctors. A minority of patients without documented cognitive deficits required the use of a nonverbal pain evaluation scale that highlights the importance of individual patient assessment for the best means of monitoring pain.

As a result, some form of standardized verbal and nonverbal scale should be available in this and similar facilities for the reasons mentioned earlier.

Also, a frequent form of evaluation to define the current cognitive status of a patient (MMSE, Mini Cog, clock drawing, and so forth) should also be implemented on a regular basis to document progression of the disease and to best manage pain. The decision to stop monitoring cognitive status should be otherwise documented and visible for chart reviewers.

The introduction of a standardized pain evaluation program may prove a labor-intensive task. Failed attempts to produce a sustainable and widely adopted tool in the CCRC setting may occur, as it was experienced in this facility when implementing the program. However, repeated and unwavering attempts by nurses and physicians to have a finished product that is also dynamic and subsequently improved should be in place. This will ultimately lead to wide acceptance of the tools as helpful adjuncts to other objective and subjective signs and symptoms.

The quality improvement process used in a local long-term care facility resulted in a more standardized approach to pain evaluation and treatment and is expected to improve pain control and detection as demonstrated in other similar studies in different settings. Some of the biggest challenges for the adoption of such programs in long-term care facilities consist of educating supervisors and staff, and the implementation of supporting policy. It is fundamental to show all members of the institution that despite efforts to identify and treat pain, without proper tools and strategies, results are poor.

REFERENCES