Physical pain is a significant problem for many elderly adults. Effective pain management is a complex clinical process that requires thorough assessment, appropriate intervention, and systematic reassessment. Dementia complicates this process because the ability to recall, recognize, and verbally report pain is compromised in persons with dementia. Evidence suggests that persons with dementia are less likely to report and be treated for pain than cognitively intact elders. This article provides an overview of pain, discusses specific issues pertaining to pain assessment and management in persons with dementia, summarizes barriers to effective pain management, and highlights key methodological issues in research on pain in persons with dementia.

**Key words:** aging, dementia, pain

Physical pain is a significant problem for many elderly adults. It has been estimated that approximately 50% of community-dwelling elders suffer from pain and that the incidence of pain is twice as high in people aged 65 and older as in younger adults. The prevalence of pain in nursing homes is reported to be as much as 70% to 80%. The high prevalence of pain is primarily related to the increased rates of chronic health disorders in advanced age, particularly painful musculoskeletal conditions such as arthritis, gout, and peripheral vascular disease. In addition, in this age group there is a greater prevalence of acute conditions such as cancer, surgical procedures, cardiovascular disease, and other painful medical diseases and conditions.
A PRIMER ON PAIN IN ELDERLY ADULTS

Importance of effective pain management

There are several key reasons why knowledge about pain in elderly adults is so important. First, pain has major implications for elders’ health, functioning, and quality of life. For instance, pain is associated with depression, withdrawal, sleep disturbances, impaired mobility, decreased activity engagement, and increased health care use. Other geriatric conditions that can be worsened by pain include falls, deconditioning, malnutrition, gait disturbances, and delayed rehabilitation. Thus, chronic pain has deleterious effects on the physical, functional, and mental health of elderly adults.

Second, the promotion of comfort and relief of pain is fundamental to health care. Given that the prevalence of pain in older adults is substantially higher than among younger adults, the role of health care providers in managing pain is increasingly important in the elderly population. Interdisciplinary teams, consisting of nurses, physicians, psychologists, occupational and physical therapists, pharmacists, and others, must work together in diverse health care environments to manage pain. In addition, patients and families must be taught about pain and how to manage it at home using both pharmacological and nonpharmacological treatments. As such, all health care providers must be knowledgeable about pain management among elderly adults in general, and about managing pain in elders with dementia in particular.

Third, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) now officially recognizes pain as a major health problem and that all patients have the right to appropriate assessment and management of pain. These requirements, implemented in 2001, consider pain the “fifth vital sign” and require systematic and regular assessment of pain in all hospitalized patients. Health care providers must now be compliant with regulatory guidelines about pain management. It is important to note that these regulations address only hospitalized persons and do not pertain to persons residing in the community, living in long-term care settings, or being treated in outpatient clinics. Nonetheless, the JCAHO standards highlight the fact that pain management is important for all patients, including those with dementia.

Definitions of pain

Pain is a multidimensional, subjective experience with sensory, cognitive, and emotional dimensions. For clinical practice, Margo McCaffery’s definition of pain is among the most relevant. She states, “Pain is whatever the experiencing person says it is, existing whenever he says it does.” Both of these definitions highlight the fact that pain is highly subjective and that patients’ self-report and description of pain are very important to understanding the pain experience. These definitions are problematic, however, for working with persons with Alzheimer’s disease or other dementias because pain is defined solely on the basis of self-report. Dementia is characterized by memory loss, loss of judgment, language deficits, confusion, withdrawal, and, in the later stages, the inability to communicate. As such, the ability to recall and/or verbally self-report pain is often reduced in elders with dementia. Does this mean that we simply cannot evaluate pain in persons with dementia, or that we can assume that if they cannot say it that they don’t have it? This would be a very unfortunate interpretation since persons with dementia experience many of the same painful conditions as elders.
without dementia. Instead, we are challenged, as practitioners and researchers, to broaden our definitions of pain and to expand our skills in evaluating pain in persons with dementia.

**Types of pain**

There are several different types and classifications of pain. The most basic distinction is whether the pain is acute or chronic. Acute pain results from an injury, surgery, or disease-related tissue damage. It is usually associated with autonomic activity, such as tachycardia and diaphoresis. Acute pain is usually relatively brief and subsides with healing. In contrast, chronic pain endures past the normal duration of tissue damage (usually more than 3-6 months) and autonomic activity is usually absent. Chronic pain can lead to functional loss, reduced quality of life, and mood and behavior changes, especially when it is not adequately treated.

Pain is further classified as either nociceptive or neuropathic, depending on the cause of the pain. Nociceptive pain results from disease processes (e.g., osteoarthritis), soft-tissue injuries (e.g., falls), and medical treatment (e.g., surgery, venipuncture, and other procedures) and is associated with stimulation of specific peripheral or visceral receptors. Nociceptive pain is usually localized and responsive to treatment. Neuropathic pain is caused by pathology in the peripheral or central nervous system. This type of pain is often associated with diabetic neuropathies, phantom-limb pain, postherpetic and trigeminal neuralgias, and cerebrovascular accidents. Neuropathic pain is more diffuse and less responsive to analgesics. It is important to note, however, that these pain types often overlap, and are not always clearly differentiated.

**Pain management in elderly adults**

Pain management is a complex clinical process. It requires thorough assessment of pain, appropriate intervention, and systematic reassessment. Several excellent pain management protocols have been developed for use with elderly adults. For instance, the American Geriatrics Society has published clinical practice guidelines for managing chronic pain in older adults. These guidelines provide comprehensive information that is specific to the needs of geriatric patients. In addition, the American Pain Society has published guidelines for the management of pain in osteoarthritis, rheumatoid arthritis, and juvenile chronic arthritis. These guidelines are disease-specific, rather than age group-specific, but provide comprehensive information for managing these chronic pain conditions. The Agency for Health Care Policy and Research has also developed clinical guidelines for the management of acute pain, but this protocol is less specific to older adults.

More recently, Weiner and Hanlon have published an excellent overview for managing pain in nursing home residents, many of whom have cognitive losses.

**PAIN IN PERSONS WITH DEMENTIA**

Despite the proliferation of pain studies over the past decade or so, the relationship between dementia and the neuropathophysiology of pain has not been extensively examined. Dementia is associated with central nervous system changes such as the destruction of cortical neuronal cells and depletion of cortical chemical neurotransmitters. Nociceptor response and transmission of pain sensation, however, are not thought to be affected by these physiological changes. In particular, the somatosensory cortex, crucial to the central modulation of pain, is largely unaffected by dementia. The results of experimental pain studies indicate that pain thresholds (e.g., the minimum level at which a painful stimulus is recognized as pain) did not differ between cognitively impaired and intact elders. Pain tolerance (e.g., the maximum level at which a pain stimulus is voluntarily tolerated), however, was significantly increased in persons with mild dementia compared to elders without dementia. Thus, the sensory/discriminative dimensions of pain appear to be largely preserved in persons with dementia (as indicated by pain threshold) but the motivational/affective and cognitive-evaluative pain systems (as indicated by pain tolerance) are affected. As such, the empirical evidence indicates that cognitively impaired elders are not less sensitive to pain, but that they may fail to interpret the sensations as painful.

Despite these findings, evidence suggests that cognitively impaired older adults underreport pain relative to nonimpaired elders. Parmeele and colleagues found an inverse relationship between cognitive impairment and self-reported pain intensity in a study of 758 institutionalized elders; that is, cognitively impaired residents reported lower pain intensity than did intact residents. Cohen-Mansfield and Marx found a similar relationship in a sample of 408 nursing home residents. In a representative sample of 516 Berlin elders that included both institutionalized and community-dwelling adults, Horgas and colleagues reported that the prevalence of self-reported pain declined significantly as the severity of diagnosed dementia increased.
dementia increased.55 Werner and colleagues reported that adult day care participants without cognitive deficits had higher prevalence rates of self-reported pain than those with mild to moderate impairment (48%–71% vs 50%–57%).5 Thus, there is some evidence that cognitive impairment inhibits elders' ability or inclination to verbally report pain. This may be due, in large part, to the over-reliance on self-report methods of measuring pain. In the following sections, strategies for assessing and treating pain in persons with dementia will be discussed.

PAIN ASSESSMENT IN ELDERS WITH DEMENTIA

Effective management of pain among elderly adults relies on adequate pain assessment. Within a caregiving context, pain assessment depends on communication between the care recipients (eg, patients and nursing home residents) and health care providers. It is also important to gain information from family members about the patient's pain, especially in the case of cognitively impaired elders. Ideally, pain assessment attends to both verbal, self-reports of pain and nonverbal behaviors that are indicators of pain. In addition, pain assessment should be comprehensive and should consider the presence, location(s), duration, intensity, and emotional aspects of pain, as well as aggravating and alleviating factors. The impact of pain on functional ability, mood, sleep, activity level, and social relationships should also be assessed. There are several widely used tools that are available to comprehensively assess pain, such as the Brief Pain Inventory or the McGill Pain Questionnaire.34,35 These measures are ideal, but may be too complex for use in persons with dementia, due to their inability to verbally respond.14 It is also important to explore different words when working with cognitively impaired elders. Evidence suggests that even patients with mild to moderate cognitive impairment can report their pain when asked simple questions and given sufficient time to respond.15 It is also important to explore different words that the patient may use synonymously with pain, such as discomfort or aching.

The intensity of pain can be measured in many ways. Some commonly used tools include the visual analog scale (VAS), the verbal descriptor scale, and the faces scale. VAS is widely used, especially in hospital settings. Patients are asked to rate the intensity of their pain on a 0 to 10 scale. The VAS requires the ability to discriminate subtle differences in pain intensity and may be difficult for some elders to complete. A tool that has been specifically recommended for use with elderly adults is the verbal descriptor scale.1 VAS is more appropriate for use with elderly adults than other facial depiction scales because the cartoon faces are not age-, gender-, or race-specific.36 Other authors, however, have indicated that persons with mild to moderate dementia have limited understanding of this measure.57

Observed pain indicators

The assessment of pain behaviors is often necessary in persons with dementia, due to their inability to verbally communicate their pain. Observed pain behaviors include facial grimacing and structured assessments of physical movements (eg, rubbing, bracing, guarding).40–41 These measurement strategies have not been widely tested in elderly adults, although some studies are under way to investigate their use in cognitively impaired elders. Recently, Feldt documented the pain behaviors of facial grimacing, rubbing, vocalizations, sighing, complaining, screaming, and body rigidity in cognitively impaired elders after hip fracture surgery.54 Using observational measures of pain, Raway found few significant differences between cognitively impaired elders and those without cognitive impairment in pain intensity. These self-report measures are not significantly different from each other, and were divided into two groups: those with memory impairment and those without. The results showed that the self-report measures were significantly different from the observed measures, with the self-report measures being higher in the group with memory impairment.

The self-report measures were also compared with the observed measures over time, with the observed measures being significantly higher in the group with memory impairment. This suggests that the observed measures may be more reliable than the self-report measures, especially in persons with memory impairment. It is important to note that these findings were based on small sample sizes, and further research is needed to confirm these results.

In conclusion, pain assessment and management in elderly adults with dementia is a complex process that requires careful consideration of the individual's cognitive and physical limitations. Effective pain assessment depends on a comprehensive approach that considers both verbal and nonverbal indicators of pain, as well as the use of reliable and valid measurement tools. Further research is needed to develop and validate pain assessment tools that are specifically designed for use with elderly adults, especially those with dementia.
impaired and cognitively intact elders in observed pain behaviors (eg, bracing, guarding, rubbing) or facial expressions (eg, grimacing). This study, however, focused on acute, postoperative hip surgery pain in hospitalized elders and was limited by a small sample size. In a similar study, Feldt examined nonverbal pain indicators in 88 patients with hip fractures and found that cognitively impaired elders exhibited significantly more nonverbal pain indicators than those who were cognitively intact. Further, Hadjistavropoulos and colleagues examined pain behaviors and facial expressions in postsurgical patients in a rehabilitation hospital. These authors found that only facial movements were sensitive to cognitive status effects; impaired patients demonstrated more facial expressions of pain than did non-impaired patients. Thus, while cognitive impairment may limit the verbal expression of pain, there is some evidence to suggest that nonverbal pain behaviors remain at least partially intact. It has been suggested that as the dementia progresses, untreated pain is a contributing factor in agitated and disruptive behavior.

Several measures have been developed specifically to assess pain in persons with dementia. For instance, Parke published a method of rating pain by using changes in facial expressions, body movements, and activity patterns. This measure, however, was not validated. Harvey and colleagues developed the Discomfort Scale-DAT to assess discomfort in persons with advanced Alzheimer’s disease. They identified 9 reliable indicators of discomfort associated with fever: noisy breathing, absence of a look of contentment, looking sad, looking frightened, frowning, absence of a relaxed body posture, looking tense, and fidgeting. This measure, however, is aimed at assessing discomfort, defined as a negative and/or emotional state subject to variation in magnitude in response to environmental conditions, which has been shown to be empirically distinct from pain. This measure, however, has been reported to require significant training and to be too complex for routine nursing care. Feldt and colleagues developed the Checklist for Nonverbal Pain Behaviors to assess the presence of 6 pain behaviors during rest and movement. This tool is based, however, on naturalistic observations. Thus, if the person with dementia is observed sitting quietly, the pain that may be present during movement, such as getting in and out of bed, may be missed. More recently, Snow and colleagues developed the NOPPAIN scale for assessing pain in noncommunicative nursing home residents. The NOPPAIN is used by certified nursing assistants to rate the presence and intensity of pain among residents following usual care activities. The results of preliminary studies testing the NOPPAIN indicate that it has high reliability and validity and is sensitive to treatment effects. Thus, this measure shows promise for advancing the research in this area and for enhancing clinical practice.

These studies all highlight the importance of using observational measures to assess pain in cognitively impaired elders. They also highlight some of the difficulties of measuring pain in this population. Nonetheless, more research in this area is needed, and some work is currently in progress by the present authors and other research teams. It is expected that this work will help to refine and advance the measurement of pain in persons with dementia.

Timing of pain assessments

More recent evidence suggests that the timing of pain assessments may be an important variable in minimizing cognitive status effects on self-reported pain. Most studies documenting the inverse relationship of cognitive status and self-reported pain prevalence have relied largely on assessments of current pain. While not explicitly stated, it is likely that these assessments were conducted while participants were in a resting or static position. Recent evidence, however, suggests that simple movements (like transferring in and out of bed or changing position) may exacerbate pain and lead to more accurate reports of pain prevalence. Elders with dementia may forget their pain until movement reminds them of it. This raises the interesting possibility that self-reports of pain may be enhanced, and cognitive status differences minimized, when assessment is immediate rather than retrospective and conducted at rest and after movement. Thus, there is some support for the use of observational methods of assessing pain in elderly adults, particularly in persons with dementia. Ideally, a comprehensive pain assessment approach should be undertaken that includes assessment of self-report and observational methods.

PAIN MANAGEMENT STRATEGIES IN ELDERS WITH DEMENTIA

Managing pain in older adults can be a challenging process. Pain treatment approaches that use a multidimensional approach and that are individualized to the patient, however, are often effective. The main goal of pain management in older adults is to maximize function and quality of life. Thus, a combination of pharmacological and nonpharmacological strategies should be used to relieve pain.
Pharmacological pain treatment

Pain treatment with medications is a complex decision-making process based on multiple considerations. Ideally, it is a mutual process between health care provider, the patient, and significant others. It includes a careful discussion of risks versus benefits and the establishment of clear goals of therapy. Often it is a process of trial and error that aims to balance medication effectiveness with management of side effects. Other considerations included in the process are frequency of use, type of pain, duration of treatment, and cost.

The World Health Organization provides an analgesic ladder that has been successfully used as a guide for treating cancer pain. Choices are made from 3 drug categories based on pain severity: the non-opioids, opioids, and adjuvant agents. Combinations of drugs are used because 2 or more drugs can treat different underlying pain mechanisms, different types of pain, and allow for smaller doses of each analgesic to be used, thus minimizing side effects. Adjuvant drugs have primary purposes other than pain relief, but can be used for their analgesic effects in certain painful conditions.

Age-related physiologic changes

Specific age-related changes influence the pharmacodynamics (the pharmacological effect of the drug on the body) and pharmacokinetics (the concentration of active drug in the body) of medications. Some changes with advanced age include diminished absorption due to increased gastric pH and decreased intestinal blood flow. Drug distribution is affected by less lean body mass, increased body fat and decreased body water content, increased plasma protein, and changes in nutritional state. Drug metabolism is affected by decreased hepatic function. Drug excretion and elimination is reduced by 10% per each decade after age 40 because of declines in renal function.

Special considerations for administering analgesics

Older adults are at higher risk for side effects with drug therapy due to age-related decline in drug metabolism and elimination. Recommendations for beginning medication treatment include starting at low doses and gradually titrating upward while monitoring and managing side effects. The adage “start low and go slow” is often used. Titrate doses upward to achieve desired effect using short-acting medications first, and consider using longer duration medications for long-lasting pain. Choose a drug with a short half-life and the fewest side effects if possible.

Multiple drug routes are available for administration of pain medications. Often the first choice is the oral route because it is the least invasive and very effective. The onset of action is within 30 minutes to 2 hours. For more immediate pain relief, intravenous administration is recommended. In general, intramuscular injections should be avoided in the elderly because of tissue injury and because they are pain producing. Topical and rectal routes may also be used in pain medication administration. Whenever possible, adopting a preventive approach to pain management is recommended. By treating pain before it occurs, less medication is required than to relieve it. Around the clock dosing, dosing prior to a painful treatment or event, and giving the next dose before the previous dose wears off are examples of pain prevention.

Types of analgesic medications

Medications that are commonly used to treat pain in elderly adults are summarized in Table 1. This table also includes recommended dosages and special considerations. Specific information about these types of medications is discussed below.

Non-opioid medications

Non-opioids are often the first line in pharmacological pain treatment. This group includes acetaminophen, non-steroidal anti-inflammatory (NSAIDs), cyclooxygenase-2 (COX-2) inhibitors, and tramadol. They are generally used for a wide variety of painful conditions, both acute and chronic, of mild to moderate severity. Acetaminophen (eg, Tylenol) is considered the drug of choice for relief of musculoskeletal pain because it has few side effects and is probably the safest non-opioid for most people. However, it should be used with caution in people with underlying hepatic or renal disease. The NSAIDs (eg, ibuprofen and naproxen sodium) are also effective for mild to moderate pain. NSAIDs or acetaminophen are often used in combination with opioids for moderate to severe pain.

The most common side effect of the NSAIDs is gastric damage that occurs locally as a gastric irritant and systemically through inhibition of prostaglandin synthesis, resulting in increased gastrointestinal tract susceptibility to injury. The elderly are more likely to develop ulcer disease and have a greater incidence of death from the
Table 1.

Common Pain Medications for Use With Elderly Patients<sup>17,19,60,61</sup>

<table>
<thead>
<tr>
<th>Indication and effects</th>
<th>Type</th>
<th>Medication</th>
<th>Initial dose</th>
<th>Half-life (h)</th>
<th>Maximum daily dose (mg)</th>
<th>Special considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild pain</td>
<td>Non-opioids</td>
<td>Acetaminophen (Tylenol)</td>
<td>325-650 mg p.o. q4-6h</td>
<td>1-3</td>
<td>4000</td>
<td>Caution with hepatic disease, possibly associated with renal dysfunction with prolonged use. Gastrointestinal bleeding, caution with hepatic and renal disease may cause central nervous system symptoms.</td>
</tr>
<tr>
<td></td>
<td>Non-opioids</td>
<td>Ibuprofen (Advil, Motrin)</td>
<td>200-400 mg p.o. q6-8h</td>
<td>1.8-2.5</td>
<td>3200</td>
<td>Gastrointestinal bleeding, caution with hepatic and renal disease, may cause central nervous system symptoms.</td>
</tr>
<tr>
<td></td>
<td>CCK 2 Inhibitors</td>
<td>Rofecoxib (Vioxx)</td>
<td>12.5-25 mg/d p.o. q24h</td>
<td>17</td>
<td>50</td>
<td>Less gastrointestinal side effects than NSAIDS. Rofecoxib contraindicated with sulfa sensitivity.</td>
</tr>
<tr>
<td></td>
<td>CCK 2 Inhibitors</td>
<td>Celecoxib (Celebrex)</td>
<td>100-200 mg p.o. q2-24</td>
<td>11</td>
<td>400</td>
<td>Lees gastrointestinal side effects than NSAIDS. Celecoxib contraindicated with sulfa sensitivity.</td>
</tr>
<tr>
<td>Moderate to severe pain</td>
<td>Opioids</td>
<td>Codeine</td>
<td>30-60 mg p.o. q4-6h</td>
<td>2-4</td>
<td>No maximum</td>
<td>Nausea, constipation, sedation, respiratory depression, hypotension, dizziness.</td>
</tr>
<tr>
<td></td>
<td>Opioids</td>
<td>Hydrocodone (Vicodin, lortab)</td>
<td>5-10 mg</td>
<td>3-4</td>
<td>No maximum</td>
<td>Nausea, constipation, sedation, respiratory depression, hypotension, dizziness.</td>
</tr>
<tr>
<td></td>
<td>Opioids</td>
<td>Oxycodone (Percocet, Tylox)</td>
<td>5-10 mg p.o. q4-6h</td>
<td>2-3</td>
<td>No maximum</td>
<td>Nausea, constipation, sedation, respiratory depression, hypotension, dizziness.</td>
</tr>
<tr>
<td></td>
<td>Opioids</td>
<td>Oxycodone (Oxycontin)</td>
<td>10-20 mg p.o. q12</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-opioids</td>
<td>Morphine sulfate</td>
<td>15-30 mg p.o. q3-4h</td>
<td>2-4</td>
<td>No maximum</td>
<td>Nausea, constipation, sedation, respiratory depression, hypotension, dizziness.</td>
</tr>
<tr>
<td></td>
<td>Non-opioids</td>
<td>MS Contin</td>
<td>15-30 mg p.o. q12h</td>
<td>2-4</td>
<td>No maximum</td>
<td>Nausea, constipation, sedation, respiratory depression, hypotension, dizziness.</td>
</tr>
<tr>
<td></td>
<td>Opioids</td>
<td>Fentanyl (Duragesic)</td>
<td>25-50 µg/hr q48-72h</td>
<td>13-24</td>
<td>No maximum</td>
<td>Nausea, constipation, sedation, respiratory depression, hypotension, dizziness.</td>
</tr>
<tr>
<td></td>
<td>Opioids</td>
<td>Hydromorphone (Dilaudid)</td>
<td>2-4 mg p.o. q3-4h</td>
<td>2-3</td>
<td>No maximum</td>
<td>Nausea, constipation, sedation, respiratory depression, hypotension, dizziness.</td>
</tr>
</tbody>
</table>
gastrointestinal effects of NSAIDs. Renal insufficiency is more likely to occur in the elderly with NSAID use. Other side effects include increased bleeding time, central nervous system effects, hepatic disease, and worsening asthma. When NSAIDs are used as single doses, in low doses, and for short periods of time, side effects are usually less common than with long-term use. Coadministration of misoprostol (Cytotec) has been shown to reduce the gastrointestinal complications associated with NSAID use.

The COX-2 inhibitors, celecoxib and rofecoxib, are as effective as NSAIDs for pain relief, are indicated for mild to moderate pain, are associated with a lower risk of gastrointestinal bleeding, but have a similar risk for other side effects. Celecoxib should not be used with sulfa sensitivities.

Tramadol (Ultram) has characteristics of both non-opioids and opioids in analgesic properties. It is effective for moderate to severe pain and its mechanism of action is not completely understood. Nausea and vomiting are common side effects associated with the use of tramadol, along with dizziness, sedation, restlessness, diarrhea or constipation, dyspepsia, weakness, diaphoresis, seizures, and respiratory depression. It should not be used in people with a history of codeine allergy and should be used cautiously in hepatic or renal impairment.

Opioid medications

Opioid drugs (eg, codeine and morphine) are effective at treating moderate to severe pain from multiple causes. They are effective in the elderly although many older adults and health care providers are reluctant to use them because of fears of overdose, side effects, and intolerance. Potential side effects include nausea, constipation, drowsiness, cognitive effects, and respiratory depression. The Agency for Health Care Policy and Research (now known as AHRQ) recommends achieving safe administration of opioids to the elderly by reducing the dose to 25% to 50% of the adult dose.

Tolerance to the side effects develops with use over time; therefore coadministration of stool softeners for relief of constipation is recommended. Adjuvant drugs, or other non-opioid drugs administered in conjunction with other analgesics, are often administered with non-opioids and opioids to achieve optimal pain control through additive analgesic effects or to enhance response to analgesics. Tricyclic antidepresants (eg, nortriptyline) are used for neuropathic pain. Antidipressants are often used in addition to analgesics to treat underlying depression and anxiety associated with chronic pain. Anticonvulsants (eg, carbamazepine) are often used for trigeminal neuralgia. Local anesthetics such as lidocaine, as a patch, gel, or cream, can be used as an additional treatment for the pain of postherpetic neuralgia.

Drugs to avoid in elders

Medications to avoid in the elderly include meperidine (Demerol), propoxyphene (Darvon or Darvocet), and pentazocine (Talwin) because of the risk of delirium, seizures, and renal impairment. Additionally, sedatives, antihistamines, and anxiolytics should be avoided or used with caution because of long duration of action, risk of falls, anticholinergic effects, and sedating effects.

Nonpharmacological pain treatment

Whenever possible, pain should be treated with a combination of drug and nondrug therapies. A combination approach may help to provide more effective pain management with less potential for negative side-effects due to medications. In addition, the use of nondrug approaches can often be taught to patients, families, and caregivers.

Nonpharmacological pain treatment strategies generally fall into 2 categories: physical pain relief approaches and cognitive-behavioral approaches. Physical strategies are interventions such as repositioning to promote comfort and prevent skin breakdown, transcutaneous electrical nerve stimulation, use of heat and cold, massage, and mild exercise. Cognitive-behavioral interventions change the person’s perception of the pain and improve coping strategies. These include strategies such as relaxation, distraction, guided imagery, hypnosis, and biofeedback.

Older adults are generally responsive to the use of non-drug methods of treating pain. In fact, one study showed that 96% of older adults reported using at least 1 complementary/alternative therapy modality, and that prayer was the most commonly reported coping strategy. It is important to recognize, however, that individuals differ in their preferences for and ability to use non-pharmacological interventions to manage pain. Spiritual and/or religious coping strategies, for instance, must be consistent with individual values and beliefs. Other strategies, such as imagery or relaxation techniques, may not be feasible for cognitively impaired elders. Thus, it is important for health care providers to consider a broad array of non-pharmacological pain management strategies, and to tailor the selection to the individual. It is also important to gain individual and family input about the use of home and folk remedies, and to support their use as appropriate.
Special considerations in treating pain in persons with dementia

Evidence suggests that even when pain is recognized in those with dementia, it is often significantly undertreated. Several studies have documented that diminished cognitive function is significantly associated with less pharmacological pain treatment. For instance, Horgas and Tsai investigated pain treatment in a sample of 539 nursing home residents. They reported that cognitively impaired residents were prescribed and administered significantly less analgesic medication, measured in acetaminophen equivalents, than were more intact residents. These differences persisted even after controlling for the presence of painful conditions. In a hospitalized sample, persons with advanced dementia treated for hip fractures received 3 times less opioid analgesic than was given to cognitively intact patients. Similarly, other studies have documented that less than one fourth of nursing home residents with dementia who were recognized as having pain were receiving pain treatment.

In situations where clinicians suspect that a person with dementia may be experiencing pain, a clinical trial of pain medication, as well as non-pharmacologic strategies, should be implemented. In particular, Weiner and Hanlon have advocated an empirical approach to managing pain in this population. This involves a thorough investigation of behavior changes in persons with dementia and, once other causes for change have been ruled out, a trial of analgesics is initiated. Continued symptoms, such as vocalizations or agitation, after administration of pain medication should be considered as evidence that the patient’s symptoms are due to unrelieved pain and that further treatment should be initiated. Kovach and colleagues developed the Assessment of Discomfort in Dementia (ADD) protocol to assess and treat physical pain and affective discomfort in persons with late-stage dementia. The protocol consists of a systematic evaluation of physical causes of discomfort and patient history, followed by a stepwise implementation of non-pharmacological and pharmacological interventions. Use of the protocol has shown a significant increase in regularly prescribed analgesic medications and non-pharmacological treatments, as well as significant decreases in several behavioral symptoms of pain.

Regardless of the specific approach used, managing pain at the end of life in persons with dementia involves multiple challenges. First, pain must be carefully and systematically assessed. Second, pain should be treated pharmacologically, exercising caution to avoid and/or manage polypharmacy and side effects. Finally, pain management protocols should include appropriate and effective non-pharmacological interventions. This combined approach is discussed more fully by Allen and colleagues (this issue).

Barriers to effective pain treatment

There are a number of factors that can interfere with effective pain management, including both individual and caregiver-based factors. Individual factors that may impair pain assessment include the following: a belief that pain in a normal part of aging, b) concern of being labeled a hypochondriac or complainer, c) fear of the meaning of the pain in relation to disease progression or prognosis, d) fear of analgesics and narcotic addiction, e) worry about health care costs, and f) a belief that their pain is not important to health care providers. Other factors, such as hearing and speech difficulties, may prevent elderly adults from communicating pain to health care providers. As the severity of dementia increases, some of these factors may have less salience as individuals lose their ability to comprehend and express fears and beliefs. Nonetheless, these factors are important to keep in mind because they may be very salient in the minds of caregivers and family members. Thus, even in persons with dementia, family members may resist pain treatment for a variety of reasons.

Pain detection and management are also influenced by provider-based factors. Health care providers have been found to share the mistaken belief that pain is a part of the normal aging process and to avoid using opioids because of fear about potential addiction and adverse side effects. Thus, pain assessment and management can be a complicated clinical issue. Health care providers should face the challenge of pain management by first systematically examining their own biases, knowledge, and beliefs about pain, and eliciting and understanding the challenges and beliefs that their patients and patients’ families bring to the situation as well.

METHODOLOGICAL ISSUES IN PAIN RESEARCH IN PERSONS WITH DEMENTIA

This article describes some of the challenges of pain assessment and treatment in persons with dementia. Clearly, the problem of pain among elderly adults is great and practitioners are urgently seeking solutions to promote comfort for their clients. In clinical settings, efforts have been made to create pain checklists and pain management protocols that serve clinical and quality assurance purposes. The need exists, however, for more research on pain in
persons with dementia. Despite the enormous progress that has been made in understanding and treating pain in the general population over the past several decades, research on pain in elderly adults, and specifically in persons with dementia, is in its relative infancy. Because the cornerstone of effective pain management is pain assessment, the focus must be on developing reliable and valid measures of pain for use in this vulnerable population, and on conducting rigorous investigations. There is some promising work in this area, but more research is, as always, needed.

Measuring pain in persons with dementia relies on behavioral assessments. In persons who cannot communicate their pain verbally, the use of nonverbal means of evaluating the presence and intensity of pain is imperative. Behavioral studies, however, are challenging to conduct, especially in persons with dementia or in long-term care settings where many frail and/or elders with dementia reside. Behavioral analysis has a long scientific tradition, and successful studies have been conducted in elderly populations in a variety of settings. The extension of this approach to the study of pain in elderly adults has also had some success. Thus, there is a strong foundation upon which scientists and practitioners can build.

Research on pain in persons with dementia must be concerned with several methodological issues. These include the treatment implementation and the assessment of treatment effects, validity issues, clinical significance, and translational research. Each of these issues will be addressed in the following sections.

The first important methodological issue is the assessment of treatment effects. The goal of pain management is to reduce or alleviate pain. Thus, a critical step in evaluating the pain management process is to ensure the treatment implementation. This must be followed by systematic evaluation of the treatment outcome. In order to reliably measure treatment effectiveness in persons with dementia, psychometrically sound measures of behavioral indicators of pain must be available. The validity of pain behavior measures is difficult to establish, however, since pain is a subjective experience. Given that self-report is considered the gold standard of pain assessment, behavioral measures must be validated with self-report measures. In persons with dementia, the ability to reliably self-report is often limited. Researchers should consider looking at other pain models, including postsurgical acute pain, to validate their behavioral measures of pain. This might provide a somewhat more standardized ‘pain induction’ that is likely to result in measurable pain behaviors. The reliability of behavioral measures must also be addressed. Interrater reliability is critical so that raters are able to identify the same pain behaviors with a high level of agreement. As such, behavioral measures of pain must be clearly defined and easy to use. They must also be sensitive enough to detect subtle behavioral change reflective of a change in pain status. In addition, they should be multidimensional enough to assess other aspects of pain, such as functioning and depression. Ideally, a specific pain behavior measure used to assess proximal treatment effects (eg, reduction in pain intensity 1 hour after administering analgesics) should be embedded in a broader, multidimensional pain assessment protocol that measures more distal outcomes, such as an increase in activities or reduction in depression.

A second major methodological issue that must be addressed in the study of pain in persons with dementia is the balance between internal and external validity (see article by Zarit and colleagues, previous issue, for further discussion). To date, much of the work on pain has relied on experimental designs in laboratory settings. Very few of these studies have included elderly participants, and even fewer have included cognitively impaired elders. In fact, the presence of dementia is often considered an exclusion criterion for participation in research. Laboratory studies use experimental designs and usually induce pain via a standardized procedure (eg, ischemic pain, cold pressor test). Laboratory-based pain differs, however, from clinical pain in a number of dimensions, including attributions about the cause of pain, the duration of the pain stimulus, and the controllability of the pain. This is especially true in the case of chronic pain, a type of pain that is persistent and often less easily relieved. Thus, the standardization of laboratory studies of pain increases the extent to which one can identify and measure painful stimuli, but limits the extent to which the study results may generalize to understanding the condition of chronic pain that is so common among elderly adults.

On the other hand, most studies that have focused specifically on pain in elderly adults have been conducted in clinical settings. Studies have been carried out in nursing homes, outpatient clinics, and hospitals. As such, the research settings are more ecologically valid and represent the real world of pain in elderly adults. Some of these studies have used the presence of dementia as an exclusion criterion for study participation; others have focused exclusively on persons with dementia. The inclusion of elders with dementia in study samples increases the extent to which the study findings can be generalized to this impaired population. The cost, however, may be measured in terms of lowered internal validity. That is, the extent to which behaviors may be directly attributed to pain is
lower in elders with dementia who exhibit a variety of behavioral symptoms. Some clinically based studies have examined pain using a 2-group design. That is, pain behaviors are compared in a group of cognitively intact elders relative to a group of cognitively impaired elders. This is a common research design that is relatively feasible to conduct. It is limited, however, by the lack of random assignment to the “treatment” (eg, dementia) versus “control” (eg, intact) groups. Thus, differences that emerge between the groups, if any, may reflect the fact that elders with dementia and elders without dementia are different at the outset in some fundamental ways. To be fair, there are fewer alternatives to this design because researchers cannot manipulate cognitive status. Nonetheless, investigators in this area should be aware of this threat to internal validity and might consider the use of alternative research designs, such as within-subject designs, to avoid the randomization issue. This alternative approach might also yield important new information about the variability of pain reports. The balance between internal and external validity is always delicate in research designs, but even more so when studying pain in persons with dementia.

A third methodological issue that must be considered in research on pain in persons with dementia is that of clinical significance. That is, does the pain treatment result in a meaningful difference to the client? This is a difficult question to answer with regard to the assessment of pain, but is particularly difficult in persons with dementia. People with dementia, as discussed previously, lack the cognitive and verbal abilities required to convey that a particular treatment resulted in a meaningful difference to them. And since pain is, by definition, a subjective experience, 2 individuals with the same tissue damage or injury may experience the resulting pain in completely different ways. Therefore it is difficult to set a standard acceptable level of pain from which to base judgments on whether or not a particular treatment reduced pain effectively for all people. In order to establish clinical significance, one may argue that the only meaningful result to the individual would be eliminating the pain. However, the elimination of pain may not be realistic or possible for all individuals, especially those with chronic musculoskeletal conditions.

Currently there is no clear-cut method for establishing the clinical significance of a particular treatment for pain reduction. Czaja and Schulz provide a comprehensive discussion on several ways to measure the clinical significance of interventions. They recommend that achieving clinically significant outcomes should be just as important as achieving statistical significance. It is imperative that clinical research interventions be practical to the population for which they are targeted. In order to evaluate the effectiveness of interventions in people with dementia, a control group without dementia is often studied as well. One recent approach, as described by Czaja and Schulz, that may be an option for determining the clinical significance of interventions for people with dementia is the use of equivalence testing. This would consist of developing norms for pain reduction in a nonpatient sample consisting of older adults with similar characteristics as those of the patients. Typically, cognitively intact older adults are used as norms for older adults with dementia. These norms would then be applied to the patient sample with dementia to determine if the intervention reduced pain in a clinically significant manner.

However, since clinical significance is a measure of how important the intervention is to the individual, it may not be appropriate to base clinical significance of pain treatments on group norms. Alternatively, researchers should consider using different research methodologies to evaluate treatment effectiveness for specific individuals. For instance, single-subject design methodology allows researchers to collect multiple points of data over time, reverse treatment effects, and evaluate whether or not the intervention caused change in a subject’s clinical picture. In this instance, the clinical change would represent reduction in pain as evidenced by behavioral indicators. This may be a more efficient and appropriate way to evaluate the clinical significance of a pain intervention because it allows the assessment of intraindividual effects, rather than focusing on group differences or group norms.

Finally, in the world of clinical pain, the most psychometrically sound measures and the most rigorous research design are considered to be of relatively little value if they are not clinically relevant. That is, the research must translate into clinical practice; the measurement tools must be concise and easy to use; the treatment protocols easy to follow, and the outcomes easy to document (see Herr and colleagues, this issue, for an example). In clinical settings such as nursing homes, clinics, and hospitals, documentation of treatment and outcomes is critical. In hospitals, the new JCAHO regulations require it. Still, changing health care systems, and practitioners’ behavior within those systems, is more complicated. Education and training in pain management is one important component. Equally important, however, are the requisite administrative and policy changes that enable change to take place.

In nursing homes, certified nursing assistants provide the majority of direct care to elderly residents. These individuals have minimal training in general, and even less training in pain assessment. Still, they are the critical link in the care sys-
tem because they work most directly with persons with dementia and must identify and report pain presence to the nurses and other providers who can treat it.82 Research-based training for nursing home staff on many clinical issues has been initiated and instituted,75,76 and could be reasonably extended to include pain management.

SUMMARY

Pain is a significant problem for older adults, which has the potential to negatively impact independence, functioning, and quality of life. In order for pain to be effectively managed, it must first be carefully and systematically assessed. Pain assessment in persons with dementia should start with self-report of pain, but must incorporate assessment of nonverbal pain behaviors. Pain treatment in older adults should be tailored to the type and severity of pain. Pain medications can be safely used in elders, and may be more effective when combined with non-pharmacological treatment. Despite the preponderance of research on pain, relatively few investigations have focused on pain in elderly adults in general, and on persons with dementia specifically. Researchers must carefully consider a number of methodological issues when conducting research in this area. Better strategies for assessing pain, using observational methods, are the cornerstone of effective pain management in persons with dementia. Practitioners must be knowledgeable about pain treatment, and use both pharmacological and non-pharmacological strategies to relieve pain. Moreover, clinicians must be aware of the barriers to effective pain management and work to overcome them. In so doing, they may make significant contributions to managing pain in persons with dementia, and improving the quality of life of this vulnerable population of elders.

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