



# PAIN Clinical Updates

INTERNATIONAL ASSOCIATION FOR THE STUDY OF PAIN®

Volume XIV, No. 3

June 2006

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## UPCOMING ISSUES

**Pediatric Pain**

**Cancer Pain**

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## Older People's Pain

Depending upon the culture and the context, one may be called “old” on the basis of physical appearance (gray hair), key life events (retirement from work), changing social roles (becoming a grandparent), or simply how long one has lived. Because there is no universally accepted definition of old age, aging is perhaps better understood as a process of gradual change from birth to death. While some 80-year-olds are extremely frail and suffer from multiple physical impairments and disabilities, other prominent individuals such as Nelson Mandela (88 years old) embody accumulated knowledge, wisdom, depth of experience, and resilience. Recent efforts have started to focus on the predictors of successful aging,<sup>1</sup> but age-based comparisons of the pain experience remain challenging due to the complexity and non-uniformity of the aging process. Nonetheless, there are important reasons to be interested in older persons' pain.

### *A major shift in the age distribution of the world's population is taking place*

A major shift in the age distribution of the world's population is now taking place. In developed countries, the percentage of the population over 65 years old will rise from 17.5% to 36.3% by 2050, and the over-80 age segment will more than triple.<sup>2</sup> Older adults have the highest rates of surgical procedures<sup>3</sup> and the highest incidence of painful diseases. The prevalence of persistent pain climbs steadily with advancing age until at least the seventh decade of life,<sup>4</sup> often exceeding 50% in community-based samples<sup>5</sup> and up to 80% in residential aged care.<sup>6</sup> Thus, the need for appropriate pain care in older persons is urgent. Another compelling reason to focus on pain in persons of advanced age is their vulnerability. Those who suffer from multiple medical problems often face limited treatment options (particularly in the use of analgesic agents) due to the increased risk of adverse effects and problems with complex drug interactions associated with the concurrent use of multiple medications.<sup>7</sup> Reduced economic resources (including loss of employer-funded health coverage) and restricted social support networks can reduce access to specialist pain management services. Cognitive impairment and communication problems present further difficulties for the aged population. Persons with dementia are known to receive fewer analgesics than others of similar age and pathology,<sup>8</sup> and growing international concern focuses on the apparent inadequacy of pain assessment and management for this vulnerable group.<sup>9</sup>

This issue of *Pain: Clinical Updates* discusses some of the observed differences in pain during the later years of life, reviews age-appropriate pain assessment tools, including those for individuals with impaired communication skills, and describes current guidelines for the management of persistent pain in older adults.

## Age Differences in Pain Perception

Current concepts of pain emphasize that biological, psychological, and social factors all play an important role in shaping the pain experience.<sup>10</sup> Aging is associated with widespread and ubiquitous changes in most biological systems, including the nervous, musculoskeletal, immune, and neuroendocrine systems, as well as in psychological dimensions such as attitudes, beliefs, coping resources, and mood and in social functioning as it relates to social roles, employment, and spousal bereavement. Nevertheless, relatively few studies have examined age differences in the various components of pain. Limited evidence from studies using experimental pain stimuli and cohort studies of acute medical conditions reveals a consistent, but not universal, age-related decrease in pain perception and report. With aging, pain becomes a less frequent presenting symptom in a variety of acute medical complaints. Around 40% of patients over 65 years old experience little or no pain during peritonitis, intestinal obstruction, or pneumonia. The “silent” or painless heart attack is so common in older persons (35–42% of cases) that it is recognized as a clinical entity in its own right.<sup>11,12</sup> There have also been limited reports of lower-intensity postoperative pain and less severe cancer pain symptoms in older adults.<sup>11,12</sup>

Experimental pain research over the last 50 years also shows a modest and somewhat inconsistent age-related decline in pain sensitivity to mild noxious stimuli.<sup>13</sup> A recent meta-analysis of studies of pain thresholds revealed that the pain threshold of the average older adult would belong in the top 15% of values seen in younger adults.<sup>14</sup> The increased pain threshold (reduced sensitivity to mild pain) seen in older persons might compromise the warning function of pain by shortening the time between the first perception of a noxious stimulus and consequent tissue damage. Consistent with clinical studies of acute pain, this higher threshold may also be associated with under-reporting of mild pain symptoms, which could increase the risk of undiagnosed disease or injury.

In marked contrast to this apparent reduced sensitivity to mild pain, experimental and clinical studies document an increased vulnerability to severe or persistent pain. A meta-analysis of pain tolerance studies shows an age-related decline in the ability to tolerate severe pain.<sup>14</sup> In animals and humans, the effectiveness of descending pain inhibitory mechanisms, particularly their endogenous opioid component, also appears to deteriorate with advancing age.<sup>15,16</sup> Animal studies reveal increased thermal hyperalgesia in older rats injected with formalin in the hindpaw.<sup>17</sup> Further, recovery from hyperalgesia following peripheral nerve injury appears to be delayed in older rats.<sup>16</sup> Clinical studies indicate a prolonged duration of capsaicin-induced hyperalgesia,<sup>18</sup> greater “wind-up” or temporal summation,<sup>19,20</sup> and summation at much longer interstimulus intervals, suggesting a prolonged poststimulus hyperexcitability in the central nervous system of older persons.<sup>21</sup> In aggregate, these findings highlight reduced plasticity of the nociceptive system and prolonged dysfunction following tissue injury, inflammation, or nerve injury in older subjects. The clinical implications of this increased vulnerability are simple. We must be aware of the increased risk of, and susceptibility to, severe or persistent pain in older adults and make strenuous efforts to provide adequate pain relief for this vulnerable group.

## Pain Assessment

The identification and treatment of pain relies on appropriate pain assessment, yet systematic research efforts have only

just started to focus on the reliability and validity of common pain assessment tools when used in older populations. With respect to chronic pain, the need for a multifaceted, comprehensive assessment is well recognized. Attention must be given to pain intensity, quality, and variations over time and situation, the extent of psychological disturbance, the utilization of coping strategies, beliefs and attitudes toward pain, the degree of functional limitations in activities of daily life, and the social impact of chronic pain. In older persons, it is particularly important to take a medical history, conduct a full physical examination, and assess all comorbidities.<sup>22</sup>

### *A patient's failure to complete one type of scale does not preclude success with other types*

Numerous uni- and multidimensional self-report measures of pain have been developed over the past 20–30 years. Instruments with demonstrated merit in younger adult populations are generally useful with older adults. A growing body of evidence supports the reliability and validity of such measures when used with older adults,<sup>22,23</sup> although new, age-specific pain measurement tools such as the Geriatric Pain Measure<sup>24</sup> are available. The consensus among several studies that compare different self-report pain measurement tools is that categorical scales based upon verbal descriptors (e.g., none, weak, mild, moderate, or strong) are preferred by older persons and have the greatest utility, reliability, and validity.<sup>25–27</sup> There is less uniform support for visual analogue scales, and several authors raise concerns about the use of this measure to capture pain intensity in older adults.<sup>25,28</sup> Other acceptable measures include numeric rating scales, box rating scales, pictorial pain scales such as the pain thermometer and faces scales, and for comprehensive assessment, the multidimensional McGill Pain Questionnaire and Brief Pain Inventory.<sup>25,28,29</sup> Because there is no single best measure, a patient's failure to complete one type of scale does not preclude success with other types.<sup>30</sup> In clinical practice it is best to select tools that are consistent with the personal preference of the individual once that is known, or to try several different types of scales before giving up on self-report tools to assess that person's pain.

Pain assessment often is more difficult in certain older populations, such as those in residential aged care, those with sensory loss (impaired vision or hearing), or those with cognitive impairment. Self-report pain assessment tools are still a viable option for many older persons with mild to moderate dementia, and clinical evidence supports the reliability and validity of many standardized unidimensional pain assessment tools in those with dementia.<sup>22,29,31,32</sup> While self-report has become the de facto gold standard for pain assessment, other nonverbal methods (behavioral measures and observational tools) also provide important and clinically relevant information and may be the preferred assessment choice in cases of moderate to severe cognitive impairment.<sup>33</sup> More than 10 new observer-rated behavioral pain assessment tools have been developed recently for specific use in those with dementia. Most instruments grade the presence of various behaviors that are thought to indicate pain. For instance, combinations of behaviors such as facial grimacing or wincing, negative vocalizations, specific body language (rubbing, guarding, or restlessness), altered breathing or physiological signs—increased heart rate or blood pressure—can be scored to provide an index of likely pain intensity. Each new observer-rated scale has typically undergone some limited validation in a small sample of older

adults and has demonstrated inter-rater reliability. These scales represent a welcome addition to the battery of pain assessment tools and offer an important first step toward improving the quality of pain management in this highly dependent and vulnerable group. Nonetheless, much remains to be done, beginning with direct comparisons of different observer-rated scales within the same sample in order to evaluate their relative strengths and weaknesses. Refinement of the circumstances under which such behaviors accurately indicate the presence of pain, and of the degree of individual variability in behavioral markers of pain, must also occur. There has been little attempt to consider the differences between behavioral indicators of acute versus chronic pain. Most of the selected behavioral indicators of pain are more likely to be associated with expressions of acute pain (e.g., facial grimace or wincing), which while important, is less prevalent than persistent pain in older adults. Despite the clinical significance of movement-related (“incident”) pain,<sup>34</sup> few attempts have been made to investigate the utility of observer-rated pain assessment scales for older adults within this context. At this stage we need to refine existing observer-rated tools to assess acute and persistent pain and validate these measures across multiple samples and settings before developing new instruments.

## Managing Pain in Older Persons

Despite the fact that persistent pain is more common in the older segments of the population, the overwhelming majority of pain treatment studies and intervention trials have been conducted in young adult populations. The degree to which standard treatments require modification to meet the special needs of the older person has not been systematically examined, and age differences in treatment efficacy have rarely been considered. For instance, until very recently, older adults were intentionally excluded from randomized controlled trials of pharmacotherapy. Recent directives from the U.S. Food and Drug Administration and other regulatory authorities to ensure that patient samples are more representative of the group in which they will be used constitute a logical and welcome development. Nonetheless, clinical trial subjects still include few very old subjects, and selection criteria typically exclude those with comorbid disease or those taking other medications. Given that the typical 70-year-old living in the community has more than three comorbid medical problems and takes an average of seven different medications, one may question the representativeness of older subjects included in current trials. While there are obvious difficulties in enrolling ill or frail older persons in intervention trials, the legacy of this selection bias is a manifest lack of scientific evidence to support most of the currently accepted treatment approaches for the management of pain as applied to older adults.

### *Pharmacological therapy for persistent pain is most effective when combined with nonpharmacological approaches*

Many older people are able to manage pain by themselves or with limited help from their local health professionals. Short-term symptomatic relief may be all that is required until the injury or disease resolves. However, in some situations pain persists and becomes problematic or bothersome. Comprehensive clinical practice guidelines on the assessment and management of persistent pain in older adults are now available,<sup>35-37</sup> including specific recommendations for those in residential

aged care.<sup>38,39</sup> While all of these guidelines acknowledge the relative lack of age-specific evidence, all are tailored to the special needs of older adults and provide a useful and detailed framework to help guide clinical practice. Of course, guidelines must be adopted and implemented in order to effect practice change, but they are an important resource for improving pain management services for older persons. A brief overview of relevant guidelines includes the following points. The choice of analgesic drugs for the older person requires an understanding of age-related pharmacokinetic and pharmacodynamic changes and must consider the impact of comorbid disease and concurrent medication use. For this reason, simple analgesics such as acetaminophen are the treatment of choice for the management of mild to moderate persistent pain, particularly that associated with musculoskeletal conditions. Nonsteroidal anti-inflammatory drugs and cyclooxygenase-2 inhibitors should be used with caution, and all medications including opioids and adjuvant analgesics (anticonvulsants and antidepressants) carry a balance of benefits and risks that must be weighed in each older individual. Most guidelines emphasize that pharmacological therapy for persistent pain is most effective when combined with nonpharmacological approaches. Nondrug treatments with at least some evidence of efficacy in older populations include physical therapies such as graded exercise programs, application of heat or cold, and TENS; psychological methods such as relaxation or cognitive-behavioral therapy; educational programs; social support interventions; and certain complementary therapies including glucosamine dietary supplementation and acupuncture. There is also evidence to support the use of interventional therapies such as joint injection techniques or orthopedic surgery for the treatment of persistent pain in older adults, but age-specific, high-quality outcome data are still lacking for many procedures including intrathecal pumps and spinal cord stimulators. Multidisciplinary pain programs that combine several modes of pharmacological and nonpharmacological treatment have demonstrated efficacy for the management of persistent pain in older adults,<sup>40,41</sup> including those in residential aged care.<sup>42</sup> However, this approach appears to be underutilized at present because older patients are underrepresented in pain management clinics, are less likely to be offered this treatment, and receive fewer treatment options when attending such clinics.<sup>43</sup> There have been some attempts to adapt the essential features of a multidisciplinary pain management program so that it can be delivered as a home-based service.<sup>44</sup> Initiatives such as this should help to improve access to state-of-the-art multidisciplinary treatment and ultimately improve pain management options for frail, incapacitated, or institutionalized older persons who suffer from persistent and bothersome pain.

## Conclusions

The world's population is aging, and there is a clear need for accurate, comprehensive information on pain and its management in adults of advanced age. Recent interest in pain during older age has generated a steadily growing body of evidence on age differences in the phenomenology of the pain experience, age-appropriate pain assessment tools, and controlled outcome studies of various pain management options in older adults. However, our current knowledge remains incomplete, and there is an urgent need for better professional education programs, further dedicated research to help guide clinical practice, and better pain management strategies that specifically target the special needs of the older persons in our community.

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## Pain in Older Persons

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IASP Press, 2005

US\$81.00 (IASP members US\$66.00)

[www.iasp-pain.org](http://www.iasp-pain.org)

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