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## CLINICAL REVIEW



## Management of chronic pain in older adults

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Chronic pain is one of the most common conditions encountered by healthcare professionals, particularly among older ( $\geq 65$  years) patients.<sup>1</sup> Pain is associated with substantial disability from reduced mobility, avoidance of activity, falls, depression and anxiety, sleep impairment, and isolation.<sup>1-3</sup> Its negative effects extend beyond the patient, to disrupt both family and social relationships. Chronic pain poses a significant economic burden on society.<sup>1</sup> Prevalence rates for pain are expected to increase as populations continue to age—by 2035 an estimated one quarter of the population in the European Union will be 65 or older—thereby increasing the public health impact of pain. Healthcare providers, irrespective of specialty, should develop competencies to assess and manage chronic pain in their older patients. In this review we summarize recent evidence on the assessment and management of pain in older patients. Evidence is taken from systematic reviews, meta-analyses, individual trials, and clinical guidelines.

### What is chronic pain and how is it caused?

Although no universally accepted definition exists for chronic pain, it is often defined as pain that persists beyond the expected time of healing (typically 12 weeks) and may or may not be associated with an identifiable cause or actual tissue damage.<sup>3,4</sup> Musculoskeletal disorders are common in later life, and increasingly common are painful neuropathies from diabetes, herpes zoster, chemotherapy, and surgery. Other types of pain are also prevalent among older adults, including pain due to cancer as well as cancer treatments.<sup>5,6</sup> Pain is also common in the advanced stages of many chronic diseases, including congestive heart failure, end stage renal disease, and chronic obstructive pulmonary disease.<sup>7</sup> Furthermore, millions of joint repair and replacement surgeries are performed annually, and an important minority of patients undergoing these procedures report chronic pain despite surgery.<sup>8</sup> Finally, vertebral compression fractures are highly prevalent and cause substantial pain and discomfort, particularly among older women.<sup>9</sup> Box 1 lists other common diseases where pain is a major symptom.

### Who gets it?

Chronic pain in later life is a worldwide problem. In one nationwide survey of older adults ( $n=7601$ ) in the United States, 52.8% reported experiencing bothersome pain in the preceding month.<sup>10</sup> Similar findings have been reported in studies conducted in Europe, Asia, and Australia<sup>11-13</sup> and in both developed and less developed countries.<sup>14</sup> Risk factors include advancing age, female sex, lower socioeconomic status, lower educational level, obesity, tobacco use, history of injury, history of a physically strenuous job, childhood trauma, and depression or anxiety.

Factors predicting poor outcomes (that is, higher pain scores, disability, depression) among people with chronic pain include higher levels of pain severity and disability, longer duration of pain, multiple pain sites, history of anxiety or depression, maladaptive coping strategies (for example, worry, avoidance), and low social support at the time of diagnosis. In one study of older adults ( $n=403$ ) with musculoskeletal pain, three brief items assessed at the initial clinical encounter—degree of interference from pain, pain in multiple body sites, and duration of pain—predicted lack of patient improvement at six months and helped general practitioners predict this outcome above clinical judgment alone.<sup>15</sup> Simple risk stratification approaches like this could help to tailor care.

### How are older patients with chronic pain assessed?

A comprehensive pain assessment can increase the likelihood of identifying a specific diagnosis for the pain, guide selection of treatments most likely to benefit the patient, and identify targets for intervention (for example, unrealistic treatment goals) besides pain relief. Office based assessment can be challenging, however, because of constraints on time. Having patients complete parts of the assessment before the visit (or in the office over multiple visits) can be helpful.

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**The bottom line**

Chronic pain in later life is a worldwide problem

All older adults with chronic pain should undergo a comprehensive geriatric pain assessment

A comprehensive assessment can guide selection of treatments most likely to benefit the patient and identify targets for intervention besides pain relief

A multimodal approach that includes both drug and non-drug modalities for pain is recommended

Given the limited reach of cognitive behavioral and exercise approaches to manage pain in later life, patients should be encouraged to engage in and adopt these techniques

Involve and engage family members and paid caregivers and seek out other resources that can help to reinforce adherence to treatment and maintain gains from treatment

**Sources and selection criteria**

We searched Medline, Embase, and the Cochrane Database of Systematic Reviews using the search terms "chronic pain", "older adults", "prevalence", "diagnosis", and "treatment". We specifically focused on identifying and reviewing systematic reviews, meta-analyses, high quality randomized controlled trials, and clinical guidelines published during the past five years whenever possible.

**Box 1 Diseases associated with chronic pain in later life, by system or specialty**

- *Dermatology*—pressure or ischemic ulcers, burns, scleroderma
- *Gastrointestinal*—constipation, irritable bowel disease, diverticulitis, inflammatory bowel disease
- *Cardiovascular*—advanced heart disease, peripheral vascular disease
- *Pulmonary*—advanced chronic obstructive pulmonary disease, pleurisy
- *Rheumatology*—osteoarthritis, rheumatoid arthritis, gout, pseudogout, polymyalgia rheumatica, spinal stenosis and other low back syndromes, myofascial syndromes, osteoporotic related fractures
- *Endocrine*—diabetic neuropathy, Paget's disease
- *Nephrology*—chronic cystitis, end stage renal disease
- *Immune*—herpes zoster, post-herpetic neuralgia, HIV/AIDS neuropathy
- *Neurology*—headache, peripheral neuropathies, compressive neuropathies, radiculopathies, Parkinson's disease, post-stroke pain
- *Oncology*—cancer
- *Miscellaneous*—depression, tendonitis, bursitis

Clinicians often struggle with the question of how comprehensive the assessment needs to be to establish a specific cause of pain. Unfortunately the literature provides little guidance on this but does indicate that a specific cause is not found in a large number of patients, despite comprehensive evaluation. Potential benefits to identifying a cause of pain include earlier initiation of an appropriate treatment and providing reassurance as patients often worry about the cause of their pain. These putative benefits must be weighed against the risks of extensive investigations, which often uncover incidental findings, are expensive, and can increase patient worry.

**History**

Chronic pain is more than just a sensory event; it has affective (emotional responses to pain), cognitive (attitudes and beliefs about pain), behavioral (for example, behaviors manifested in response to pain by patients and their family members or caregivers), as well as sensory components (for example, quality, location, temporal pattern). Assessing for the presence and severity of pain captures only a small part of the pain experience. All older patients with chronic pain should undergo a comprehensive pain assessment (box 2 outlines the key elements).

Box 3 lists these and other core elements of the assessment along with sample questions that can be employed during the interview. Additional guidance about assessment approaches can be found in UK and US guidelines<sup>17 18</sup> and in an international consensus report on this topic.<sup>19</sup>

**Examination**

A physical examination should be conducted, focusing on the musculoskeletal (is there evidence of inflammation?) and neurologic (is there evidence of weakness or neuropathy?) systems. Because many older adults with chronic pain report the presence of weakness, it is important to distinguish pain induced weakness from true motor weakness. This can be done by documenting abnormal results from nerve conduction studies or by treating pain successfully and seeing if the muscle weakness improves. Tackling physical functioning and risk of falls is critically important, given that pain is associated with these outcomes. This part of the assessment should include self report and performance based measures such as gait speed, timed up and go test, balance. The results provide a baseline against which the functional impact of treatment can be evaluated.

**Imaging**

Diagnostic imaging is often overused and does not indicate better care.<sup>20</sup> In one study of Portuguese adults (n=5094) more than half of all respondents with chronic pain reported undergoing a diagnostic imaging procedure in the previous six months.<sup>21</sup> Such imaging often uncovers incidental findings, leading to more testing, costs, and worry for patients. An additional concern is the low correlation between pathologic findings identified by imaging and the extent to which patients report experiencing pain.<sup>22</sup> Many patients with major disease identified by imaging report no pain, whereas others without major disease often report severe pain.<sup>22</sup> Diagnostic imaging is appropriate when the history or physical examination identifies

**Box 2 Key elements of a comprehensive pain assessment**

- *Administering standardized pain assessment tools*—this can provide additional information above and beyond what is generated by the interview and physical examination. Table 1 includes measures that are for the most part simple, brief, and appropriate for being self administered. The brief pain inventory-short form and the geriatric pain measure are recommended for routine use in practice because they are easy to complete, have been successfully used in studies of older adults, and assess multiple salient dimensions of the pain experience. It is important to employ assessments that older patients can do without difficulty and to use the same tools at each visit to assess for change in a given outcome over time
- *Ascertaining the impact of chronic pain on functioning*—for example, activities of daily living, social functioning, sleep
- *Identifying attitudes and beliefs about pain, as well as treatment goals and expectations*—many older patients endorse beliefs that operate as important barriers to engagement with and adherence to treatment. Older patients' goals may or may not be the same as the healthcare provider's goals. In addition, patients may have unrealistic (for example, expect complete pain relief) or negative (for example, treatments will not help) expectations that can serve as targets for intervention<sup>16</sup>
- *Gathering data from family members and paid caregivers*—gathering information from third parties about an older patient's response to pain and the impact it has at home may be essential, particularly when patients cannot provide this information because of difficulties with communication as a consequence of stroke or advanced dementia
- *Identifying resources to include family members, other caregivers, and faith communities, when appropriate*—these can provide emotional or instrumental support and help to reinforce engagement with and adherence to treatment
- *Reviewing comorbidities and drugs*—some chronic conditions might be made worse by starting a particular analgesic agent and some drugs may constitute a contraindication to initiating a specific analgesic trial

**Box 3 Elements of a comprehensive geriatric pain assessment***Sensory*

Please tell me all of the places you experience pain or discomfort. What does it feel like? What words come to mind?

Is your pain or discomfort with you all of the time or does it come and go? How long has it been present? What makes it better, what makes it worse?

*Emotional impact*

Has pain affected your mood, sense of wellbeing, energy level?

Are you worried about your pain or what may be causing it?

*Functional impact*

Has pain affected your ability to do every day activities? To do things you enjoy?

How about relating with others? If so, how?

*Sleep*

Has pain affected your sleep?

Do you have trouble falling asleep or need to take drugs to help you sleep on account of your pain?

*Attitudes and beliefs*

Do you have any thoughts or opinions about experiencing pain at this point in your life that you believe would be important for me to know?

Do you have any thoughts or opinions about specific pain treatments that you believe would be important for me to know?

*Coping styles*

What things do you do to help you cope with your pain? This could be listening to your favorite music, praying, sitting still, or isolating yourself from others

*Treatment expectations and goals*

What do you think is likely to happen with the treatment I have recommended?

What are the most important things you hope will happen as a result of the treatment?

*Resources*

Is there anyone at home or in the community that you can turn to for help and support when your pain is really bad?

abnormalities that suggest a specific diagnosis for the pain. Imaging procedures should also be strongly considered in the presence of “red flags,” to include worsening pain in patients with a history of cancer, risk factors for infection (injecting drug use, immunosuppressive therapy), and worrisome constitutional signs or symptoms such as unexplained weight loss, fever, or loss of appetite.

**Assessing pain in older patients with major cognitive impairment**

Patients with limited verbal or cognitive abilities require modified approaches to assessment. A hierarchy of techniques is recommended, the first including an attempt to obtain self report data followed by a search for potential causes of the pain,

observing patient behavior (for example, facial expressions, vocalizations, guarding), obtaining proxy data from family members or caregivers who know the patient well and can report on whether changes in behavior or activity are very different from baseline, and conducting an analgesic trial to see whether the behavior resolves with treatment.<sup>23</sup> Several tools for behavioral pain assessment have been developed to assess for pain in non-verbal patients and are reviewed elsewhere.<sup>19 23</sup>

**What is the approach to management?**

Management of pain in later life can be complex; problems with both nociceptive and neuropathic pain are common and often coexist. Nociceptive pain arises from actual or threatened damage to non-neural tissue through activation of nociceptors,

whereas neuropathic pain occurs as a consequence of abnormalities in the central or peripheral somatosensory nervous system.<sup>4</sup> Management is further complicated by age related physiologic changes, which lead to altered drug absorption and decreased renal excretion, sensory and cognitive impairments, polypharmacy, and multimorbidity, particularly chronic conditions such as disorders of gait and balance, and kidney, lung, and cardiovascular disease.<sup>16</sup> Other barriers to management include a limited evidence base to guide decisions, physician concerns about the potential for treatment related harm, as well as older adults' beliefs about pain and treatments for the pain. However, it is important to note that these barriers are not universally present in older adults; an important tenet of geriatric medicine is that chronologic age does not equal biologic age.

Chronic pain in older patients most often occurs in the setting of multiple comorbidities, limiting treatment options. A comprehensive management approach should deal with common sequelae such as depression, isolation, and physical disability, and include both drug and non-drug treatments. UK and US guidelines on the management of pain in later life strongly endorse this approach.<sup>2,3</sup> Recent data provide support for multimodal treatment approaches. In one randomized clinical trial (n=454) of overweight or obese older adults with osteoarthritis of the knee, intensive weight reduction combined with exercise training produced significant improvements in pain, functional status, and physical performance over an 18 month period when compared with exercise only (and diet only) control groups.<sup>24</sup>

In terms of care delivery, collaborative approaches have proved efficacy in the primary care setting.<sup>25-27</sup> One recent randomized clinical trial involving older primary care patients (n=250) with chronic musculoskeletal pain found that a telephone based collaborative care management intervention delivered by a nurse care manager, physician pain specialist, and the patient's primary care provider led to improved patient outcomes at 12 months, largely through optimizing non-opioid analgesics by using a stepped care approach.<sup>25</sup> Given the complexities of managing most older patients with chronic pain, a multidisciplinary approach that includes physician, nursing, and social work perspectives is strongly recommended.

### Social aspects of management

Clinicians are advised to take family responses and dynamics into account when formulating treatment plans. Older patients' chronic pain often affects their close relatives and caregivers.

Spouses typically play an important role in caring for older patients, often times delivering emotional and instrumental support. However, when an older spouse experiences chronic pain, problems of communication and commitment to the marriage can occur.

Therapeutic interventions directed at patients with chronic pain increasingly involve the family, most often by including relatives in cognitive behavior therapy (CBT) or self management training. Although evidence is mixed, several well conducted, randomized trials suggest that spousal participation in the treatment process can yield measurable benefits for patients, including enhanced emotional wellbeing and reduced pain levels.<sup>28,29</sup>

### Home visits

We are not aware of any literature that has examined the value of home visits for older adults with chronic pain. Despite a lack of evidence supporting the use of home visits, clinicians should consider them on a case by case basis because of several

potential benefits, which include clarifying reasons for non-adherence to drug and behavioral interventions, gathering proxy data that may not be available during an office visit, and preventing the use of old prescription drugs often stored by patients. Perhaps the most important benefit is a strengthening of the doctor-patient relationship. From the physician's perspective, observing the patient's environment often offers intangible but valuable insights into the patient's condition. From the patient's perspective, most feel enormously supported by a physician who cares enough to make a home visit.

### What drug interventions are available?

Table 2 summarizes current UK and US guideline recommendations,<sup>2,3</sup> highlights key safety concerns about analgesics, and provides guidance on specific drug treatments for both nociceptive and neuropathic pain disorders. The use of drug combinations often results in enhanced analgesic effectiveness, with lower toxicity than is seen with the use of a single agent at higher doses, and is encouraged.<sup>30</sup>

#### Paracetamol

Because of its favourable safety profile, paracetamol (acetaminophen) is the preferred treatment for older patients with mild or moderate pain. In one meta-analysis of seven randomized controlled trials comparing paracetamol with placebo, paracetamol (up to 4 g daily) was found to be modestly effective in reducing pain, which decreased on average by 4 points on a scale of 0-100. The number needed to treat ranged from 4 to 16. Paracetamol did not improve physical function or stiffness when compared with placebo.<sup>31</sup> While it is not associated with significant cardiovascular, renal, or gastrointestinal effects,<sup>3</sup> unintentional overdose of paracetamol is an important cause of hepatotoxicity. Patients should be counseled to not exceed the maximum recommended daily dose.

#### Non-steroidal anti-inflammatory drugs

Oral non-steroidal anti-inflammatory drugs (NSAIDs) have established gastrointestinal, cardiovascular, and renal risks, which increase with age. Oral NSAIDs can be effective in some patients but are safest when used for pain flares (transient increases in pain that typically persist for hours to days). The current evidence base provides little guidance about the NSAID for safest use in this patient population. A network meta-analysis examined the cardiovascular safety of various NSAIDs and found that naproxen was the least harmful compared with other non-selective (for example, ibuprofen) and selective (for example, celecoxib) NSAIDs.<sup>32</sup> These data indicate that naproxen is most appropriate (compared with other NSAIDs) for patients with cardiovascular risk factors. Risk of renal and gastrointestinal injury must also be weighed, however, before initiating any trial involving NSAIDs. If a trial of an NSAID is undertaken, have the patient return to the office within two weeks to ask about treatment benefit and gastrointestinal side effects, check blood pressure, and carry out renal function tests.

Topical NSAIDs represent an alternative to oral NSAIDs, are generally well tolerated, and should be considered, especially for patients with localized pain.

#### Opioids

Opioids may be considered when an older patient's pain has not responded to other treatments or when major functional impairment persists despite treatment. The short term efficacy of opioid use ( $\leq 12$  weeks) among older adults has been

established.<sup>33</sup> In a retrospective cohort study of (n=133) older patients (mean age 82) newly started on an opioid because of pain due to chronic musculoskeletal conditions, reductions in pain were recorded in 66% of participants.<sup>34</sup> However, opioids were discontinued in 48% of the participants, mostly as a result of poorly tolerated side effects, including constipation, changes to mental status, and nausea. Given the established risks associated with opioid use,<sup>35</sup> the potential negative effects must be weighed against the consequences of untreated or partially treated pain. A recent systematic review found limited evidence in support of long term opioid treatment, and the risk for serious harm increased in line with opioid dose.<sup>35</sup> If an opioid trial is undertaken, it is important to closely monitor (that is, biweekly during the initiation and dose titration phase of treatment) whether treatment goals are being met. If not, the drug should be tapered and discontinued.

There is no evidence to support the use of one weak opioid (for example, hydrocodone, codeine) over another when the response to paracetamol or a NSAID is lacking. Selection of a specific opioid depends on the clinician's clinical experience and knowledge, the patient's previous experiences, and availability of the drug in local pharmacies. Strong opioids (for example, morphine, hydrocodone) should not be given to patients who have never used opioids. Efforts to reduce opioid related risks are particularly appropriate given dramatic increases in and complications associated with opioid use. These include the use of screening tools (for example, the screener and opioid assessment for people with pain, opioid risk tool) that can be used to assess risk for the likelihood of opioid misuse, as well as guide decisions about the extent of monitoring needed if an opioid trial is undertaken. Such monitoring might extend to the use of urine toxicology screens on a periodic basis. Before older patients are prescribed opioid analgesics, physicians should be satisfied with arrangements for safe storage of the drug, given the risk for drug diversion (that is, use of the drug for a purpose other than pain reduction). In terms of initiating a given opioid trial, no special dosing guidelines exist for older patients. Beginning at the lowest possible dose and titrating upwards based on tolerability and efficacy is recommended, given that age is associated with a greater incidence of treatment related adverse effects. This risk is increased by the presence of multiple comorbidities, polypharmacy, and physiologic vulnerability. Careful surveillance is necessary after beginning an analgesic trial. Frequent telephone or email contact is recommended to assess for and deal with any adverse effects.

## What psychological interventions are available?

There is optimism about the role of psychological interventions as treatment for older patients with chronic pain.<sup>36</sup>

### Cognitive behavioral therapy

The use of CBT is promising.<sup>37</sup> CBT is used to enhance patients' control over pain, based on the premise that an individual's beliefs, attitudes, and behaviors play a central role in the experience of pain. Standard CBT protocols instruct patients in the use of specific cognitive and behavioral techniques, teach them how certain thoughts, beliefs, attitudes, and emotions influence pain, and highlight the patient's own role in controlling and adapting to chronic pain. CBT techniques are underutilized, particularly among older adults with chronic pain. Few providers have been trained to deliver the protocols for pain, particularly in less developed countries.<sup>38</sup> Early innovation in remote therapy that makes use of communication technology may help to

overcome this barrier. Although the quality of the early trials in this area is poor, the use of ehealth and mhealth technologies can improve access to treatments and could improve the treatments.<sup>39</sup> Particularly promising are efforts to train non-psychologists in CBT delivery and related therapies, which could increase the reach of these treatments.<sup>40</sup> In addition, two recent high quality trials broaden the scope of treatment to include sustainable self management practices in primary care.<sup>41 42</sup> In one trial, investigators evaluated a CBT based self management program for use by older patients with chronic pain in primary care.<sup>41</sup> Significant improvements in distress from the pain, disability, and self efficacy were found in patients who received CBT training compared with an exercise only and wait list control group. Communicating with older patients—particularly those who are reluctant to try behavioral treatments—that using non-drug as well as drug treatments is the standard of care can be helpful. Routinely inquiring about and dealing with patient barriers to engagement with treatment (for example, belief that non-drug treatments are ineffective) is also recommended.

### Self management programs

Self management programs merge physical, psychological, and social dimensions and adopt a largely educational approach, teaching patients specific strategies to reduce pain by changing their behavioral, cognitive, and emotional responses to pain and building self efficacy for managing pain and its sequelae. These programs combine education about pain and its consequences and training in relaxation and communication skills. Among the best known of these programs is the Arthritis Foundation self help program (<http://patienteducation.stanford.edu/programs/asmp.html>). Evidence about the value of self management programs for pain is mixed. Several reviews have reported positive treatment outcomes,<sup>43 44</sup> whereas others have not.<sup>45 46</sup> Despite the conflicting data, we believe it is reasonable to encourage patient participation in self management, and a clearer matching of tailored treatment content to specific outcomes.<sup>47</sup>

## What rehabilitative and exercise approaches are available?

Exercise interventions for older adults with chronic pain are evidenced based, underutilized, and should be a core component of any long term treatment plan. Primary components include training in balance, flexibility, endurance, and strengthening, the mix of which should be tailored to best meet the needs of each patient. Clinicians can refer patients to physiotherapists to develop an exercise program. Physiotherapists can also reinforce related concepts to include coaching on risk of falls, balance training, body mechanics, and pacing. Simple physician advice to remain physically active despite pain, in the absence of a specific exercise routine, is ineffective.

Community based programs include the evidence based Arthritis Foundation exercise program ([www.cdc.gov/arthritis/interventions/physical\\_activity.htm](http://www.cdc.gov/arthritis/interventions/physical_activity.htm)), which is delivered in a group format. Classes are held 1-3 times a week for eight weeks. Health or fitness trainers (such as exercise therapists) lead the groups, which focus on specific exercises appropriate for patients with arthritis or arthritis related diseases. In a recent uncontrolled study (n=110) of a group based exercise training program for older adults with arthritis, participation led to significant improvements in physical functioning.<sup>48</sup> Tai Chi and yoga programs should also be considered, with the caveat that the instructor should be properly qualified.<sup>18</sup> Exercise based

programs are low cost and accessible in many communities.<sup>49</sup> Healthcare providers should familiarize themselves with these resources.

Practitioners should consider the preferences of individual patients when prescribing exercise, including the preferred location (for example, gym, home) as well as type of exercise. Older patients with chronic pain may not have access to facilities for exercise or may lack the motivation to engage. It is important to address these barriers or adherence will be low. In support of this approach is a randomized controlled trial of community dwelling older adults (n=56) with chronic pain.<sup>50</sup> In this study, participants randomized to an eight week group based exercise program that included motivational interviewing techniques delivered by a physiotherapist showed significant improvements in pain intensity, self efficacy, anxiety level, and mobility compared with a group based activity control group.<sup>50</sup>

## When should patients be referred to a pain specialist?

Practitioners should refer patients when pain is unresponsive (or poorly responsive) to standard treatments, a psychiatric condition (for example, active substance use disorder, excluding nicotine) or medical condition (for example, hepatic or renal dysfunction) would complicate management, there are concerns about misuse of opioids, and procedures (for example, nerve block) may help to clarify a diagnosis or are indicated for the treatment of a given pain disorder.

## What is the role of mobile health technology?

Recent advances in mobile health technologies suggest these devices may play a role in the near future by facilitating the collection and transmission of information for the assessment of pain.<sup>51 52</sup> These devices could potentially improve patient care through more effective monitoring of treatment outcomes, enhanced patient-provider communication, and by providing new ways to deliver treatment.<sup>51</sup> For example, a recent SMS text message based social support intervention delivered by mobile phone was found to reduce pain and pain interference levels among patients with chronic pain.<sup>52</sup>

## What limitations exist in the evidence base about treatment?

Although the number of well designed studies evaluating drug or non-drug treatments for older adults with chronic pain is growing, there are important limitations in the existing evidence base. Factors limiting the generalizability of findings include the use of various outcome measures, which make it difficult to compare across studies, short duration of most trials ( $\leq 12$  weeks), lack of diversity in study populations (inclusion of mostly white, non-Hispanic patients), and greater enrolment of young-old participants (with few participants aged  $\geq 80$ ) without major comorbidity. Questions about treatment adherence, as well as the long term safety and efficacy of these modalities in older populations remain inadequately defined. In terms of behavioral treatments, patient factors that positively (or negatively) impact treatment outcomes remain inadequately defined. Identifying optimal strategies for the delivery of behavioral treatment (for example, individual versus group based and online versus mobile health approaches) warrant further attention.<sup>36</sup>

Despite these knowledge gaps, we recommend that healthcare providers educate older patients about diverse treatment approaches and encourage their use, to include both drug and non-drug modalities, as a way of broadening their “pain management portfolio.” Lack of evidence does not mean evidence of no effect; clinicians must make treatment decisions based on the interaction of individual needs and existing evidence. Given low rates of use of many non-drug management approaches in older patients, encouraging engagement in and adoption of these modalities, to include cognitive behavioral therapy and exercise is particularly recommended.

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### Questions for future research

- What are the implications of ethnic and cultural diversity on the experience of pain among older people, and the effectiveness of interventions?
- What are the best ways to measure outcomes in geriatric pain research, including both observable and subjective dimensions?
- Can access to psychological therapies be improved by training non-psychologists in delivering them and by using mhealth and ehealth solutions?
- What effect does pain have on cognitive ability and motivation in older people, and how can this be best managed with cognitive behavioral therapy?
- How can the evidence base in trials of pharmacologic, physical, and psychological treatments be improved for older people?
- Should the inclusion of older people in the design of novel interventions be mandatory?
- What evidence based approaches work best to maximize treatment adherence?

### Tips for non-specialists

- Pain is more than just a sensory event; assessing for the presence and severity of pain captures only a small part of the pain experience
- Diagnostic imaging is often overused and does not equal better care
- Consider specialist referral for older patients who have complicated psychiatric histories, debilitating pain, or pain that does not respond to customary treatments
- Use combinations of analgesic drugs to enhance analgesic effectiveness
- Non-drug approaches to include exercise and cognitive behavioral approaches are underutilized. Educate older patients about these approaches and identify local practitioners or agencies that provide them
- Implement surveillance plan to assess treatment efficacy, tolerability, and adherence with each new treatment

### Additional educational resources

#### Resources for healthcare professionals

- International Association for the Study of Pain ([www.iasp-pain.org/](http://www.iasp-pain.org/))—Offers extensive resources for healthcare professionals, including listings of educational opportunities, resources on management and treatment, and clinical updates (many countries have affiliates of IASP)
- American Geriatrics Society ([www.americangeriatrics.org/health\\_care\\_professionals/clinical\\_practice/clinical\\_guidelines\\_recommendations/2009/](http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/2009/))—Provides resources and guidelines for clinicians in providing care to older adults with pain
- European Pain Federation ([www.efic.org/](http://www.efic.org/))—Promotes research, education, clinical management, and professional practice on pain, with training and educational opportunities

#### Resources for patients

- British Pain Society ([www.britishpainsociety.org/](http://www.britishpainsociety.org/))—Provides extensive information for people with pain, including suggested readings, frequently asked questions, and free downloadable publications on various aspects of pain management
- American Chronic Pain Association ([www.theacpa.org/](http://www.theacpa.org/))—Offers education and support for people in pain, including educational online resources and a network of support groups in the United States, United Kingdom, and other countries
- Arthritis Foundation ([www.arthritis.org/](http://www.arthritis.org/))—Offers programs, practical tips, and education to help people to better manage arthritis related pain

### A patient's perspective

I have lived with chronic back pain for over 30 years. Early on I had surgery on my back that helped for maybe six months, but then the pain returned and has been with me ever since. It has affected my life in many ways: I don't have as much energy as I would like, I can only do housework for short periods before my back starts to hurt, and my kids only know me as a person with chronic back pain. I use different techniques to help me manage it. First off, having a supportive spouse and family is very important. I also find massage, which I get several times a week, to be incredibly helpful. I also go to the gym where I do stretches, walk on the treadmill, and do the exercise bike and elliptical for short periods (five minutes each) before my back starts to bother me. I do take pain medications; I will take ibuprofen for short periods. I also take hydrocodone when the pain is really bad but don't like taking it regularly because my mother had an addiction problem, which is a concern. I would say I have learned to live with the pain and won't let it defeat me.

Sally Smith, New York City

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## Tables

**Table 1 | Standardized tools for pain assessment**

Measure (No of items)	Domains assessed
Multidimensional measures:	
Brief pain inventory-short form (n=9) <sup>w1</sup>	Sensory (intensity, location); pain related interference or disability; treatments, degree of relief provided by treatments; affect
Geriatric pain measure (n=24) <sup>w2</sup>	Sensory (intensity, temporal pattern); pain related interference or disability; affect
Pain disability index (n=7) <sup>w3</sup>	Pain related interference or disability
Short-form McGill pain questionnaire (n=15) <sup>w4</sup>	Sensory; exacerbating or ameliorating factors; affect
PROMIS* pain interference, behavior, intensity items <sup>w5</sup>	Pain related interference or disability; pain behaviors; pain intensity
WOMAC (n=24) <sup>w6</sup>	Sensory (intensity); pain related interference or disability; joint stiffness
Roland Morris disability questionnaire† (n=24) <sup>w7</sup>	Pain related interference or disability; affect
Unidimensional measures:	
Numeric rating scale (n=1) <sup>w8</sup>	Sensory (intensity)
Verbal rating scale (n=1) <sup>w9</sup>	Sensory (severity)
Visual analog scale (n=1) <sup>w9</sup>	Sensory (intensity)
Faces pain scale (n=1) <sup>w10</sup>	Sensory (intensity)
LANSS pain scale (n=7) <sup>w11</sup>	Sensory (assessment of possible neuropathic pain)
DN4 (n=4) <sup>w12</sup>	Sensory (assessment of possible neuropathic pain)

WOMAC=Western Ontario and McMaster Universities osteoarthritis index; LANSS=Leeds assessment of neuropathic symptoms and signs; DN4=Douleur Neuropathique 4 questions.

\*Available in long and short form versions: long version for pain interference has 40 items; there are five short form versions for pain interference where the number of questions varies from 4 to 8; long form version for pain behavior has 39 items, short form version has 7. PROMIS pain intensity measure has three items.

†Originally developed as tool to measure perceived disability in patients with back pain. Increasingly used to measure perceived disability due to pain from any cause.

Table 2| Guideline recommendations for drug management of chronic pain

Analgesic class	Recommendation*	Safety concerns	Quality of evidence†
Paracetamol (acetaminophen)	Use for mild to moderate pain	Liver toxicity a concern at higher doses, particularly from unintentional overdose	High
Oral NSAIDs	Use for shortest time possible; may be appropriate when other treatments have failed	Selective and non-selective NSAIDs associated with adverse gastrointestinal, renal, and cardiovascular side effects	High
Topical NSAIDs	Use as alternative to oral NSAIDs, particularly when pain is localized	Safety of topical NSAIDs in patients receiving anticoagulation or with renal impairment remains unknown	Moderate
Tramadol	Consider for use in patients who do not respond to paracetamol/NSAIDs	Increased risk of seizures or serotonin syndrome when used with antidepressants; side effect profile similar to that of opioids	Not reported
Opioids	Use for moderate to severe pain or with substantial impairments in functioning or quality of life and when other treatments have been unsuccessful	Side effects limit use (constipation, sedation, nausea)	Low
Tricyclic antidepressants	Avoid tertiary tricyclics (for example, amitriptyline) because of concerns over adverse side effects; consider trial of secondary amine (nortriptyline) for neuropathic pain	Side effects limit use, electrocardiographic monitoring required owing to risk of QTC prolongation; serum level monitoring also recommended	Moderate
Anticonvulsants (for example, pregabalin, gabapentin)	Use for neuropathic pain	Side effects limit use (for example, sedation, peripheral edema); dose adjustment necessary in those with renal impairment	Moderate

NSAIDs=non-steroidal anti-inflammatory drugs.

\*Recommendations present in both UK and US guidelines.<sup>2,3</sup>

†Quality of evidence ratings are from the 2009 American Geriatrics Society guideline.