

Medical News & Perspectives

As Opioid Prescribing Guidelines Tighten, Mindfulness Meditation Holds Promise for Pain Relief

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Try nonpharmacologic and non-opioid therapies first, the Centers for Disease Control and Prevention (CDC) recommended in a recently published opioid prescribing guideline for primary care clinicians in outpatient settings (Dowell D et al. *JAMA*. 2016;315[15]:1624-1645). The CDC's call for nonpharmacologic approaches may serve to heighten clinician interest in nonpharmacologic strategies for managing chronic pain, such as mindfulness-based stress reduction (MBSR), commented Steven Stanos, DO, medical director for the Swedish Pain Services at Swedish Medical Center in Seattle, and president-elect of the American Academy of Pain Medicine.

"Hopefully, the [CDC guideline] will be a good push to get physicians to start thinking about [behavioral-based pain management therapies] in primary care," Stanos said.

In mindfulness meditation, a person is taught to become aware of his or her breathing, thoughts, and physical sensations in the present moment and view them without judgment (Tang YY and Leve LD. *Transl Behav Med*. 2016;6[1]:63-72). Limited research indicates that mindfulness meditation for pain management therapy has promise (Lee C et al. *Pain Med*. 2014;15:S21-39). However, pain management researchers note that research gaps need to be filled and better ways of referring patients to mindfulness meditation programs established before physicians can add the therapy to clinical practice.

"Learning for who and how [mindfulness] can work is at the very early stage," said Josephine Briggs, MD, director of the National Institutes of Health's National Center for Complementary and Integrative Health (NCCIH).

Efficacy of Mindfulness

Recently, 2 large randomized trials showed that mindfulness meditation can help reduce chronic low back pain. Researchers at the Group Health Research Institute in

Seattle randomized 342 adults with chronic lower back pain into 3 groups: 1 participated in 8 weekly 2-hour MBSR sessions that included meditation and yoga, another took part in 8 weekly 2-hour sessions using cognitive behavioral therapy (CBT) training to teach participants how to change their thoughts about pain, and a third was a usual care group (Cherkin DC et al. *JAMA*. 2016;315[12]:1240-1249). The MBSR and CBT groups also continued with their usual medical care, and participants received materials and instructions to practice between sessions. After 26 weeks, 43.6% of adults in the MBSR group had experienced clinically meaningful reduction in pain compared with 44.9% in the CBT group and 26.6% who received only usual care, which included anti-inflammatory medications, opioids, or physical therapy.

Another study involving 282 older adults at the University of Pittsburgh School of Medicine showed that mindfulness meditation could help reduce chronic low back pain. The intervention group was offered 8 weekly mindfulness meditation sessions, followed by 6 monthly sessions. At the 6-month mark, 44.4% of the intervention group experienced at least a 30% decrease in their current chronic low back

pain compared with 25.2% of the control group (Morone NE et al. *JAMA Intern Med*. 2016;176[3]:329-337).

Such studies highlight how mind-body therapies like mindfulness meditation can be used to shift chronic pain treatment from a "biomedical disease model" to a "patient-centered" model focused on "patient engagement in daily self-management," a recent *JAMA* editorial noted (Goyal M and Haythornthwaite J. *JAMA*. 2016;315[12]:1236-1237).

These studies and others also illustrate that pain is a complex phenomenon involving more than a direct nerve impulse from the affected tissue or limb to the somatic sensory cortex, Briggs explained. A person's thoughts and emotions also play a role in pain perception, she said.

"That's one of the reasons why there is growing recognition that learning strategies to diffuse or reduce the emotions associated with pain and the fear associated with pain may help give people a better sense of control [over their pain]," Briggs said.

Mindfulness meditation helps calm the fear that pain awakens, said Eric Schoemaker, MD, PhD, professor and vice chair for leadership, programs, and centers



CDC Stresses Conservative Approach in Opioid Prescribing Guidelines

In response to growing concerns about opioid medication abuse and increases in related deaths, the Centers for Disease Control and Prevention (CDC) in early 2016 issued an opioid prescribing guideline for primary care physicians in outpatient settings (Dowell D et al. *JAMA*. 2016;315[15]:1624-1645). The key recommendations for primary care physicians treating patients for pain not due to cancer or end-of-life conditions include the following:

- Nonpharmacologic and nonopioid pharmacologic pain management therapies are preferred for chronic pain management.
- Opioids should be used only if expected benefits in pain reduction and improved functioning outweigh the risks. Opioids should be continued only if clinically significant benefits are achieved that outweigh the risks.
- Physicians should establish treatment goals with patients and discuss with them the risks and benefits of opioid medication.
- Clinicians should prescribe the lowest effective dose and assess risks and benefits before prescribing doses of 50 morphine milligram equivalents or more per day.
- The lowest dose possible of immediate-release opioids should be prescribed for acute pain, generally for 3 days or less.
- Physicians should obtain a drug urine test from patients and review their history of prescription opioid use before prescribing opioids.
- Opioids and benzodiazepines should not be prescribed concurrently.

in the department of military and emergency medicine, Uniformed Services University of the Health Sciences in Bethesda, Maryland. Schoemaker also serves on the NCCIH advisory council.

"We catastrophize pain," Schoemaker said. He explained that patients construct their own narratives of why they are in pain, how the pain felt in the past, and how it might feel in the future. Those thoughts can exacerbate sensations of pain, he noted. Mindfulness meditation helps patients, he added, by teaching patients how to observe their thoughts about pain without judgment or emotion.

Mapping the Brain's Response to Mindfulness

Researchers are also trying to understand the neural mechanisms underlying mindfulness meditation's pain-relieving effects. Such information can help determine how mindfulness meditation might be combined with other pain-reducing therapies, as well as provide researchers with information that will help them develop new therapies.

For example, in a study at Wake Forest University's Center for Integrative Medicine, researchers studied functional magnetic resonance images of volunteers engaged in mindfulness meditation or an active control task in the presence of a noxious stimuli. The practice of mindfulness meditation in the presence of noxious stimulation—a thermal probe placed against the leg of each volunteer—reduced

self-reported ratings of how unpleasant the pain felt by 57% and pain intensity ratings by 40% compared with rest (in the absence of behavioral intervention). Attention to breath alone, the active control condition, did not affect intensity or unpleasantness of pain.

The imaging revealed greater activation of the orbitofrontal cortex (OFC) during meditation relative to attentional control and that this activity was associated with meditation-induced reduction in the unpleasantness of pain (Zeidan F et al. *J Neurosci*. 2011;31[14]:5540-5548). The OFC controls how people put into context what they sense in the environment, explained Fadel Zeidan, PhD, associate director of neuroscience at Wake Forest University's Center for Integrative Medicine.

"The subjects said, 'I felt the pain was there, but I was able to let it go. I didn't dwell on it so much,'" Zeidan explained.

What's more, mindfulness meditation deactivated the thalamus, which serves as a gateway between the spinal cord and the brain, and was associated with reduced pain unpleasantness, Zeidan explained.

The investigators determined that meditation-induced reduction of pain intensity was associated with activation of the anterior cingulate cortex (ACC) governing cognitive control and emotional regulation.

Because the OFC and ACC contain numerous opioid receptors, Zeidan's team conducted a second study to determine

whether opioids would block the pain-reducing effect of mindfulness meditation. They discovered, however, that the opioid antagonist naloxone did not counteract the pain-reducing effect of mindfulness meditation, suggesting the pain-relieving effects of meditation are not mediated by opioid receptor-dependent neural processes (Zeidan F et al. *J Neurosci*. 2016;36[11]:3391-3397).

"We thought the naloxone would reverse the meditation effects," Zeidan said. The fact that it didn't, he added, "suggests that we can use opiates and nonopiate medications in addition to meditation to compound the pain-relieving effects."

The next step needed in the research, he explained, is to identify the neurotransmitters and receptors that trigger the pain-reducing effects of mindfulness meditation.

Studies need to be conducted to determine who would benefit most from mindfulness practices and the optimal time and methods for such practices to reduce pain, Zeidan said.

Additional research also is needed to compare mindfulness-based techniques like meditation directly with opioid and non-opioid medications, Briggs added.

"It is a very interesting lack in our research portfolio," Briggs said. "People propose meditation compared to a [patient health] education control, but not this direct head-to-head comparison or even a study to see if the availability of mindfulness training results in reduced opioid use."

Schoemaker said researchers and clinicians need to broaden the end point for pain relief studies beyond a numeric scale to holistically evaluate how the therapy improves the patient's overall quality of life.

Integration and Adoption

If the collective evidence becomes solid enough for clinicians to add mindfulness to their toolbox of pain management therapies, they'll need education about how to use the treatments and refer patients to behavioral health specialists or training classes.

"The struggle is that physicians are not used to incorporating behavioral health into [pain management]," Stanos said.

The weight of the CDC guideline will make it easier for physicians to discuss nonpharmacologic pain management

approaches with patients, noted Nitin S. Damle, MD, an internist in Wakefield, Rhode Island, and president-elect of the American College of Physicians. While recent studies have produced promising clinical results, the logistical challenge lies in referring patients to mind-body programs.

"There is not a lot of coordination between these services and traditional internal medicine, and so it is difficult to get the proper referrals done," Damle said. That can be especially challenging in rural areas, he

added, which may lack health care professionals trained in such techniques.

One way to make mindfulness meditation and other mind-body therapies more easily available is to incorporate them into hospital- or clinic-based pain management programs. The pain service program at Swedish Medical Center, for example, folds mindfulness meditation and CBT directly into pain management programs, Stanos noted. Trained experts—physical therapists and psychologists—are

on staff to show patients how mindfulness meditation may help ease their pain.

Despite the limited evidence to date, Briggs suggested that physicians may want to consider mindfulness meditation as part of their pain management approach.

"The relative low risk [of adverse events] makes it not inappropriate to recommend mindfulness practice to patients as a supplement to other ongoing strategies to control chronic pain," Briggs said. ■