The Pain Response: Nature’s Warning System

Seth A. Waldman, MD | Director, Division of Pain Management
Assistant Attending Anesthesiologist
Clinical Assistant Professor of Anesthesiology, Weill Cornell Medical College

You’re getting ready for a big trip when you pick up your overstuffed suitcase and—bam!—you feel a sharp twinge of pain in your lower back. Your reaction? You drop the suitcase, sit down, maybe rub your lower back for a while, and assess how bad the situation is before you make another move.

Maybe it’s just a pulled muscle. Or an aggravation of an old injury. Or perhaps you’ve herniated a spinal disk. Whatever the cause, the pain tells you that something is wrong, and that you have to stop what you’re doing and make a change to address the problem.

Pain is nature’s way of protecting you from further injury or harm. Pain can also be your first step toward recovery; when you are in pain, you are more likely to rest and allow the injury to heal. And pain may tell you that you need to make some other changes in your life going forward, so that it is less likely to happen again.

Developed through millions of years of evolution, pain is a biological response to external stimuli in all living creatures designed to increase their chance of survival. What distinguishes the perception of pain in humans from that in animals, however, is the behavioral component.

When we are in pain, we suffer. We may feel sad or frustrated that we can’t do the things we’d like to do. We may develop anxiety or depression if the pain becomes chronic, and we may fear it will never resolve or will get worse. In people, pain is a highly complex phenomenon that differs from person to person, depending on genetic, social and environmental circumstances.

The Brain and Pain

Pain is a feeling stimulated by a complex interaction of signals in the nervous system. When you touch a hot surface, for example, receptors in your skin called “nociceptors” detect the heat and send signals via sensory nerves to your spinal cord. Those signals pass to a motor nerve controlling the muscles in your arm, which almost instantaneously causes the muscles to contract so you pull your hand away from the hot surface. In the case of an injury, nerve signals along the pathways connected to the area where the injury occurred travel to the spinal cord and brain, where pain is perceived, and you feel the pain.

But that’s only part of the equation. While your nervous system plays a key role in the conduction of signals triggered by a pain-inducing event, much of the way you perceive pain has to do with the nature of the pain—sharp or dull, throbbing or constant, localized or widespread—and its cause. Is the pain caused by an injury to or compression of nerve tissue, such as a bulging herniated disk pressing on a nearby nerve? Is it caused by inflammation or muscle spasms?

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While pain is complex to understand and treat, a number of innovative approaches have improved the management of both acute and chronic pain. Where do you begin? Your primary care provider is a good place to start to assess your pain. Then a healthcare team comprised of pain management specialists from multiple disciplines is optimal so you can learn about the numerous options available, and find the one that works best for you.

Your Pain Management Team
An accurate evaluation of the nature of your pain is vital in order to tailor a regimen of care that will meet your needs. Where is the pain located? How intense is it? When did it begin? Does it get worse at certain times of the day, or with certain movements or activities? The answers to these questions will guide your treatment. This assessment can be performed by your primary care provider, as well as by the pain management specialists you may see.

For many patients, the primary care provider may be the only doctor they need to see. He or she may prescribe medications, such as nonsteroidal anti-inflammatory drugs (like ibuprofen or naproxen) or muscle relaxants, to relieve the pain. Opioid medications are most frequently prescribed on a short-term basis for the treatment of acute pain, such as pain resulting from surgery or an injury, and may be used in combination with other types of medications. For chronic pain, care must be individualized. The response to pain medication varies from one person to the next, and needs to be assessed frequently in each patient.

When primary care recommendations are not sufficient to relieve your pain, there are a number of pain management physicians you can see. Pain management doctors include:

- **Anesthesiologists**, who can prescribe analgesic (pain-relieving) medications and perform “interventional” procedures (such as steroid injections) and nerve blocks.
- **Neurologists**, who can manage pain related to the nerves and spinal cord. They prescribe medications and also perform interventional procedures and nerve blocks. Some people with nerve pain benefit from anticonvulsant drugs.
- **Physiatrists**, who are trained in rehabilitation medicine. They can diagnose problems involving the muscles, nerves and bones which impact movement and function. Physiatrists also perform interventional procedures such as steroid injections.
- **Spine and Neurosurgeons**, who can sometimes correct the cause of the pain surgically (such as removing a herniated spinal disc pressing on a nerve).
- **Orthopedic surgeons and rheumatologists**, specialists in diagnosing and treating musculoskeletal conditions that result in acute and chronic pain.
- **Psychiatrists**, who can prescribe certain medications to manage pain and its effects (such as depression and anxiety) and also provide psychotherapeutic support.

How do you find a pain management specialist? A referral from your primary care physician is a good place to begin. If you seek one on your own, be sure to find someone with the proper credentials, such as one who participates in a program certified by the Accreditation Council for Graduate Medical Education and/or certification from the American Board of Pain Medicine. Advanced practice nurses can also be certified.
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by the American Nurses Credentialing Center in pain management.

The best scenario is a pain management center where your care is coordinated and your team members are communicating with each other so each one knows what the other has recommended. Ideally, a nutritionist should be part of your team as well, since your diet affects your overall well-being.

The Pain Management Arsenal
There are a number of surgical and nonsurgical treatments available to manage pain. If chronic pain is caused by an arthritic joint and all other therapies have been exhausted (such as medication, physical therapy, or injections), joint replacement (such as a knee or hip) can result in significant pain relief.

Nonsurgical approaches include analgesic medication, physical and occupational therapy, acupuncture, and nutritional and emotional support. (See the articles on the psychology of pain on page 6 and nonmedical treatments for pain on page 7.)

Interventional treatments achieve relief in many patients with pain. These include:

- **Epidural steroid injections** in the spine or joints to relieve pain or diagnose a specific condition.
- **Nerve blocks**, injections given to determine if a specific nerve root is the source of the pain; blocks can also be used to reduce inflammation and pain.
- **Intrathecal pumps**, which are surgically implanted and deliver pain medication to the precise location in the spine where pain is originating.
- **Discography**, the use of X-rays and a special dye to peer inside the spinal discs to see if they are causing a patient’s pain.
- **Spinal cord stimulation**, which employs electrical impulses to interfere with the way pain is perceived in the brain.
- **Rhizotomy**, the use of heated electrodes applied to specific nerves to turn off the transmission of pain signals to the brain.

Be patient: You may have to try a number of different approaches or consult with different specialists to learn how to manage chronic pain. When you see a new specialist, ask him or her how long it might take before you should expect relief. If you don’t feel comfortable after that period has passed, it may be time to consult another specialist.

A multidisciplinary pain management team will not only coordinate your care, but ensure that your emotional needs are met as well. Having a healthcare provider who advocates for you and serves as the focal point for your care can be comforting and help you feel cared for, and prevent the frustration and isolation that can develop in people with chronic pain.
The Culture of Pain

M. Cary Reid, MD, PhD | Associate Professor of Medicine, Weill Cornell Medical College
Associate Attending Physician, NewYork-Presbyterian Hospital

While every human being experiences pain, the perception of that pain — and his or her response to it — can vary greatly among different cultures, ethnic groups, ages, and genders. In some cases, those differences have to do with variability in pain perception, while in other cases, there may be a cultural reluctance to report pain. These differences lead to disparities in pain management and the undertreatment of pain among different population groups.

A National Challenge
The issue of pain management is so significant that it has drawn the attention of the government, which convened an Institute of Medicine Committee on Advancing Pain Research, Care, and Education. The Committee reported its findings and recommendations in a 350-page book published in 2011, called Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research.

The Committee concluded that:
• Pain represents a national challenge.
• A cultural transformation is necessary to better prevent, assess, treat and understand pain of all types.

One Man’s Mild Ache Is Another’s Agony
Studies have found that different populations report pain in different ways. For example:
• African Americans report greater pain than whites after surgery and in association with a variety of conditions, including AIDS, angina, arthritis and headache, as well as some musculoskeletal conditions.
• Mexican Americans, who comprise the largest Hispanic group in the United States, are less likely to report chronic limb pain, back pain, or facial or dental pain than either blacks or whites.
• Asian Americans are less likely to report pain than whites.
• Women are more likely to report pain than men.
• Older individuals (age 75+) are less likely to report pain than younger people.

Disparities in Pain Management
In addition to differences in pain reporting, there is variability in how patients’ pain is evaluated and treated. African Americans, Hispanics and low-income and less-educated patients are less likely to have their pain adequately assessed and managed. These findings have been reported across a variety of patient care settings, including emergency departments, nursing homes and outpatient practices. There has been increasing attention focused on these disparities and on the need to build cultural competence among healthcare providers.

The way patients manage their pain may also be influenced by cultural preferences. For example, older Hispanic and African American patients use prayer and spirituality as a primary means of coping with pain — more so than non-Hispanic whites. Minority patients are also more likely to use herbal, folk, or traditional remedies, a choice which may be driven by cost as much as culture.

It is vital for healthcare providers to be aware of their patients’ preferences for pain management tools, and equally important for patients to inform their providers of those preferences. Also important is letting providers know about barriers to using cer-
The way you perceive pain is also influenced by other factors, such as where you are, what other stresses you may be dealing with at the time, and what other stimuli you may be encountering. For example, if you break your leg hiking in the wilderness, your desire to seek shelter may override your perception of the pain so you can survive.

Pain Is Personal

The perception of pain varies dramatically from one individual to the next, and is not necessarily linked to the severity of an injury. Much of our perception has to do with our DNA. Some people are genetically predisposed to have lower or higher thresholds for feeling pain than other people.

In addition, psychological factors play a critical role, with stress often amplifying the way a person perceives his or her pain. Having a support system can make the experience easier, while not having others around to help you can make it more challenging to handle the pain. The way people cope with adversity on a daily basis significantly affects their ability to handle pain as well. (See the article on page 6 for more about the psychology of pain.)

Studying Pain

Scientists have made tremendous strides in understanding the biological, cognitive, and psychological underpinnings of pain. However, while much is known about the causes and effects of pain, much remains to be learned. Laboratory and clinical researchers continue to study the biology of pain and evaluate new approaches to treating it.

Speak Out About Your Pain

It is very important to let others know the nature of your pain so that you can obtain relief. How much is it affecting your daily activities? Is it keeping you awake at night? Are you feeling fearful or anxious? There’s no way that your family members, caregivers or healthcare providers can know how much pain you are in without you telling them. Not telling others about the nature of your pain can lead to undertreatment. Verbalizing how your pain feels is the first step to managing it effectively.
Mind Over Matter: The Psychology of Pain

Nomita Sonty, PhD, MPhil | Associate Clinical Professor
Director, Psychology Pain Fellowship Program | Columbia University College of Physicians and Surgeons

There’s no doubt that pain is very real. Acute pain is evolution’s answer to helping us identify events in our lives that can harm us. Yet how we perceive, respond to, and cope with pain is different from person to person and is very much influenced by psychological factors, some of which may extend back to the distant past.

Who you are affects your perception of pain. An obsessive person may pay a lot of attention to detail, taking copious notes on his or her pain and being unable to be distracted from it. A very dramatic person may say, “My whole body hurts,” and demonstrate their suffering. A stoic person, on the other hand, may try to “tough it out” and delay seeking medical help.

An anxious person may not want a lot of details from the doctor, for fear of hearing something potentially catastrophic. This person may call a doctor frequently with questions about slight changes in the pain or something he or she has read about the medications prescribed. Some people take a “catastrophic” approach to life. They may ruminate about the pain, magnifying it in their minds and then feeling helpless in their ability to manage it. These people perceive their pain as extreme and may say things like, “This pain is killing me” or “I’ll never walk again.”

In some people, anxiety or depression may have existed before the pain, while in others it comes afterward. For example, people who are chronically depressed may have a heightened perception of their pain. Or pain can cause or worsen depression or anxiety, especially when it is chronic or inhibits a person’s ability to pursue favorite activities.

Tools You Can Use

The good news is that help is available. Psychotherapy, support groups and meditation can help you become aware of the psychological responses that aggravate the pain and teach you new ways to cope with it.

Sometimes medications are necessary to help with the process. In fact, when anxiety and depression co-exist, there are medications approved to treat both. For example, the medicine duloxetine is indicated for the treatment of depression, anxiety, chronic musculoskeletal pain, diabetic nerve pain, and fibromyalgia.

Psychotherapy can help you address your thoughts, feelings and behaviors associated with chronic pain. It can also help you become aware of an event in your past that is affecting your current response to pain.

For example, if you experienced a traumatic event decades ago, but didn’t adequately address your feelings about it, that trauma may resurface as you deal with the new traumatic experience of your current pain, and this feeling may magnify the way you perceive your pain. Psychotherapy can help you deal with your current situation by helping you work through the old trauma first.

Through therapy, you may learn to become more psychologically flexible and accept your current situation. By working through old and current issues, you may become more open to seeking help through physical therapy, taking medication as prescribed, becoming more social, or following an exercise or rehabilitation program.

Some patients find support groups to be enormously helpful. Chronic pain often results in withdrawal from friends and family. Some friends may not feel they can deal with your pain, and they may walk away. The grief that results from all of these losses can increase your suffering. It therefore sometimes helps to meet with others sharing similar experiences, which can prevent social isolation. Support groups are also a great resource for finding out about other activities that you can engage in.

Mind-body approaches can lift your mood and improve your conditioning. Yoga, t’ai chi and meditation can assist you in resurrecting your personal spirit, and lead you on a path to addressing your loss of function and your personal growth. (See the article on page 7 for more information.)

A Word About Stress

Anything that changes your daily routine and forces you to make accommodations can be a source of stress. You may feel stressed if you can no longer go for a run because of...
In addition to medication, surgery, and interventional techniques, there are a variety of “nonmedical” approaches that have helped many people achieve pain relief. Some people find relief through their spirituality. Others take refuge in classes focusing on mind-body approaches, such as yoga and t’ai chi.

Here are some examples of complementary approaches to pain relief:

**Physical therapy and rehabilitation medicine:** A physiatrist—a doctor specializing in physical and rehabilitation medicine—can help identify the biomechanical factors underlying your pain. Does your back hurt only when you twist to one side? Does your knee ache only when you go down a flight of stairs, but not when you go up? Many painful disorders can be relieved by modifying a patient’s activities or changing the mechanics of movement.

After assessing your pain, a physiatrist can prescribe a customized regimen of physical therapy (to rebalance the body’s mechanics and help you gain strength and flexibility to support injured structures) or occupational therapy (which focuses on fine-motor movements, such as those of the hands, and can also address faulty mechanics). Patients typically see a therapist two to three times a week for several weeks. Often changes in the mechanics of movement can shift the load placed on a joint, achieving pain relief. Medications may also be prescribed to help you feel comfortable as you go through such rehabilitation.

When rehabilitation is not sufficient to relieve pain, a physiatrist may recommend certain interventional procedures (such as injections in the spine or joints) or additional diagnostic tests—such as MRI or “electro-diagnostic” techniques, which can identify certain neurological or muscular disorders. For more on those methods, see the article on page 2 and 3. If the pain is still not relieved, a surgical consultation may be recommended.

**Mind-body approaches:** Yoga and t’ai chi can help you relax while increasing your flexibility, encouraging you to breathe, and bringing your focus to the present. Meditation is another useful relaxation technique that can make you feel more “centered.” Such approaches can reduce stress, which can exacerbate your perception of pain.

Your body is assaulted every day with stimuli, some of which can cause pain. But your brain has an amazing ability to block out many of those stimuli so you can get through your day. This is why pain sometimes feels worse when you are in bed at night; because there are no other stimuli, your brain becomes more aware of any pain you may be feeling. Stress can also cause the brain to become more aware of stimuli, so reduced

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back pain, or play soccer because of a knee injury. Don’t give up the activity altogether. You might be able to find another way to stay involved in ways that you can manage.

For example, if you can walk the same route where you used to run, go out and do that. And if you can’t play soccer, try to get together with friends to watch a game instead. Staying involved with your activities in other ways can help you remain engaged and reduce your risk of isolation.

What You Can Do

There are steps you can take to prevent pain from getting the best of you:

1. **Assess your situation.** How threatening is this pain to your well-being?
2. **Identify your resources.** Is there a therapist you can see, a group you can join, a class you can take, or a friend you can talk to?
3. **Make a choice to seek help.** You don’t need to feel embarrassed or stigmatized by pain; we all deal with it at one point or another.
4. **Be open to the idea of medication.** Many people fear having to take daily medication, but it may relieve your pain and enable you to enjoy your life. Not all medications are the same, and not all pain-relieving medications lead to addiction.
5. **Focus on what you can do,** rather than on what you can’t.
6. **Take care of yourself.** Making sure you eat a healthy diet, get enough sleep and stay as physically active as you can will go a long way toward your overall wellness—both physically and mentally.

Above all, remember that you don’t have to go it alone. Help and support are available every step of the way; don’t be afraid to ask for it.

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**Acupuncture:** With roots in Chinese medicine that extend back up to 3,000 years, acupuncture remains a well-regarded method of pain management. The technique involves the insertion of very fine-gauge needles into specific energy points in the body. Clinical studies have found that acupuncture actually raises the level of endorphins, chemicals that act as the body’s natural painkillers.

You may need only one to two acupuncture treatments for acute pain. Chronic pain typically requires treatments twice a week for four to five weeks. Ask your acupuncturist how many treatments are needed before you can expect results. The acupuncturist may know after three to four treatments if the technique is going to work; if there is no improvement in symptoms, there is usually no need to go on.

Once relief has been achieved, you may come back for additional treatments on an as-needed basis, or receive less frequent treatments to maintain improvement. The needles are so fine that they do not hurt like injection or blood-drawing needles; many
While pain can be a source of stress, frustration and anxiety, it can also be an optimal time for re-evaluating your life. Spiritual approaches to pain management can be beneficial by focusing on the whole person: body, mind and spirit. When you integrate these three components of who you are, you better understand what is being asked of you when you are in pain.

Support is available to help you tap into your spirit to manage your pain. Specialists are trained as good listeners and learn to reflect back to you that they understand what is going on in your life, so don’t be afraid to reach out for help.

**Name It, Claim It, Tame It**
The first step in your spiritual journey with your pain is acceptance. You may be reluctant to admit that it is a problem. You may ask, “Why me?” You may fear that it will inhibit your independence. These are all valid feelings. But in order to cope with your pain, you first need to accept it. Name it: “I have pain.” Claim it: “This pain is mine to deal with.” And then tame it: “What can I do to manage this pain and feel better?”

Often people come to us with other “baggage” from the past which interferes with the ability to accept pain. We can help them unload this emotional baggage. This may be one of the toughest parts of your journey. But once you’ve accepted your pain, you are on your way to learning how to cope with it.

**Identify Your Sources of Strength**
Once you’ve claimed your pain, you can start to evaluate the relationships you’ve had in your life. What worked? What didn’t? What or who served as sources of strength for you? Draw on the experiences in your past that helped you tap into your positive spirit.

For some people it is their belief in a higher power and in the power of prayer. For others it is a spouse, sibling, or close friend. Others may find strength and solace in nature, in music, or in their pets. Some people find that just holding a photo of a pet they love helps them feel better.

Similarly, think about whether you are holding onto something that detracts from your positive spirit. Is there someone you need to forgive? Do you need to forgive yourself? Many times, the heartache of a past relationship can exacerbate your physical pain. Learning to forgive and move on can help you let go of the hurt.

**Learn What You Can and Cannot Control**
Life is full of experiences and events, many of which are out of our control. Trying to control everything in our lives can lead to frustration and be physically and emotionally exhausting. Evaluate each aspect of your life and separate it into two columns: what you can’t control, and what you can. Learn how to cope with what you can’t control, and focus your energies on what you can control.

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Evaluate each aspect of your life and separate it into two columns: what you can’t control, and what you can. Learn how to cope with what you can’t control, and focus your energies on what you can control.
Meditation allows you to center yourself and be present for a period of time. You can picture yourself in a favorite place, such as a beach or at the top of a mountain.

For example, you may not be able to take your favorite high-intensity exercise class because you ruptured a disk in your back, but your doctor told you that you can take a gentle yoga class. Or you may not be able to go running while you recover from knee surgery, but you can choose to spend that time working on that novel you’ve always wanted to write.

Learning to Find Comfort

While some people find spiritual comfort in a house of worship, there are simple ways you can tap into your spirituality and find distraction from your pain, wherever you are:

- **Meditation** allows you to center yourself and be present for a period of time. Ten to fifteen minutes is a good length of time to start. Get into a comfortable seated position, supporting yourself with pillows if you wish. You can picture yourself in a favorite place, such as a beach or at the top of a mountain. You can focus on your breath or on a candle… whatever works for you. There is no judgment during this time. You might wish to repeat, either aloud or in your head, a mantra such as, “I need comfort.” If you find yourself distracted by continuously checking the clock to see how much time has passed, set a timer for yourself. (Free or inexpensive meditation timer apps that use soothing chimes and gongs are also available for cell phones.)

- **Visual imagery** is similar to meditation in that it can take you back to a place where you once received comfort. Did you find comfort in your mother’s arms? Or at a vacation spot? Or in your own backyard? Whatever works for you, put on some soothing music and take yourself back there for a little while. The distraction and stress reduction can help relieve your pain.

- **Journaling** is another wonderful way to tap into your spirit. Writing down your thoughts and feelings in a journal or notebook can be very healing. Consider writing a story about yourself, where you would like to go, and whom you would like to have along on your journey.

- **Accepting the help of others** is also important to avoid isolation and the feeling that you have to get through this experience on your own. Living with pain can be challenging. Accepting this challenge, agreeing to take care of yourself, and drawing support from those around you can help resurrect your nourishing spirit.
patients are surprised at how relaxed they feel during each 20- to 30-minute session.

Acupuncture is a safe treatment when performed properly. It is an especially attractive option for older patients, who may be taking multiple medications and don’t want to add a pain medication to their daily regimen. If you are interested in trying acupuncture, be sure to find a trained practitioner (in New York State, a license is required). You can ask your doctor for a referral or find an acupuncturist through a major medical center.

Chiropractic care: Chiropractors re-establish balance in the body through manipulations of the spine called “adjustments.” Chiropractic adjustments can relieve pain by removing pressure on a nerve or muscle. Chiropractors are increasingly providing comprehensive care and can serve as vital members of your pain management team.

Massage therapy: Licensed massage therapists offer services that can be very beneficial for patients with tight muscles. Massage therapy improves blood flow and can relieve muscle spasms that may be causing pain.

Whatever route you choose to follow, complementary techniques may help you find comfort and relief from your pain. Be sure to let your doctors know if you pursue one of these approaches so that all members of your healthcare team are informed of your care.

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Laura Robbins, DSW
Senior Vice President
Education & Academic Affairs
Associate Scientist, Research Division
Designated Institutional Officer, GME

Edward C. Jones, MD, MA
Assistant Attending
Orthopedic Surgeon
Medical Editor

Contributing Writer: Rosie Foster, MA
Special Thanks:
Barbara Wukovitz, RN, BSN, BC

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Marcia Ennis
Director, Education Publications and Communications

Sandra Goldsmith, MA, MS, RD
Director, Public and Patient Education

Robyn Wiesel, CHES
Program Coordinator, Public and Patient Education

Design: Tracie Haner Valentino

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