
From: Beckhardt, Stacey
Sent: Tuesday, June 19, 2007 7:15 PM
To: Castagno, Paula
Cc: Sarah Handza; Catherine Collier
Subject: FW: APF Distributed the Treatment Options Guidebook to Soldiers and Family Members
Attachments: APF Treatment Options - A Guide for People Living in Pain.pdf

FYI. Stacey

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From: Sarah Handza [<mailto:SHandza@cooneywaters.com>]
Sent: Monday, June 18, 2007 10:37 AM
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Cc: Lisa Weiss; Catherine Collier; Jacqueline Davis
Subject: APF Distributed the Treatment Options Guidebook to Soldiers and Family Members

Hi Stacey.

PLAINTIFFS TRIAL
EXHIBIT
P-03634_00001

APF's June newsletter covered their visit to Walter Reed Army Medical Center where they continued their work with Dr. Trip Buckenmaier and discussed pain care for military veterans. APF staff also provided over 1,200 free pain materials to

soldiers and family members, including the Treatment Options guidebook (attached). This is great news because, as you know, the guidebook includes a description of breakthrough pain.

On page 64, there is a mention of transbuccal delivery of fentanyl, but it is out of date, saying that "research is underway." I've made a note that we should ask APF if/when they plan to update the Treatment Options guidebook.

Best,

Sarah

PAIN MONITOR

June 2007

APF NEWS

The day after Memorial Day APF staff members Mické Brown, Tamara Sloan Anderson, and Stan Gajda (Afghanistan Veteran) visited the Walter Reed Army Medical Center (WRAMC). Continuing APF's ongoing work with Dr. Trip Buckenmaier (click here <<http://action.painfoundation.org/site/R?i=Nh4IFc0qghCK3UTYJP1B-g..>> for transcripts of online chats), APF staff met with the Pain Task Force, discussed APF's Mil/Vet Initiative, the pending Military/Veteran Pain Care Act legislation, and our goals to increase awareness for better pain care of Mil/Vets. We discussed ways to improve communication and provide pain care resources to Dept. of Defense (DoD) staff, patients and their family members. APF's advocacy efforts in collaboration with the fabulous work being done at WRAMC and other VA and DoD facilities with wounded warriors received some well deserved news coverage in this weeks Newsweek magazine titled, "The New War on Pain <<http://action.painfoundation.org/site/R?i=12n5wkKj8EFqFB28dNZ0Yg..>> ." The APF staff also met individually with soldiers in various stages of recovery from traumatic amputations and other traumas, and met with family members and soldiers at the on-site housing facilities the Fisher Houses and the Mologne House. APF provided over 1,200 free pain materials to soldiers and family members, including our Treatment Options <<http://action.painfoundation.org/site/R?i=Es4EMGzgZD3iGp9RiGy6dA..>> guidebook, and we hope to be able to continue to provide these materials for free for the thousands of soldiers and family members who are treated at WRAMC and other trauma facilities.

Support the American Pain Foundation and our efforts to bring better pain care to Military and Veterans. By donating now <http://action.painfoundation.org/site/R?i=74HEqoyOBndT_q3Xy8lrgg..> , you will help us:

* Provide online chats specifically for veterans, bringing guest experts to speak about issues such as amputations and pain, PTSD and pain, the culture of pain in the military, battlefield pain medicine, etc. and provide monitored online support for veterans with pain and their family members.

- * Develop and provide free pain treatment educational materials and resources to veterans and family members.
- * Advocate for the passage of the Military/Veterans Pain Care Act, to improve pain care in the DoD and VA and to increase research on pain in this population.
- * Develop Military/Veteran Pain Advocates in regions around the country to assist veterans with pain.
- * Collaborate and advocate with other Veteran Service Organizations to make pain care a priority and a right for all veterans.

Secure online donations to APF's Military/Veteran Pain Initiative can be made by clicking here

<<http://action.painfoundation.org/site/R?i=1XSNLz74w7hx1kVVF0hB6g..>> . If you prefer, you can mail your donation to: American Pain Foundation, Mil/Vet Pain Initiative, 201 N. Charles Street, Suite 710, Baltimore, MD 21201.

~~~~~

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*American Pain Foundation*

Dedicated to eliminating the undertreatment of pain in America.

**Treatment Options:**  
A Guide for People  
Living with Pain



## *American Pain Foundation*

Dedicated to eliminating the undertreatment of pain in America.

### WHO WE ARE

Founded in 1997, the American Pain Foundation is an independent nonprofit 501(c)3 organization serving people with pain through information, advocacy and support. Our mission is to improve the quality of life of people with pain by raising public awareness, providing practical information, promoting research, and advocating to remove barriers and increase access to effective pain management.

### WHAT WE DO

**Serve** as an information clearinghouse and resource center for people with pain, their families and their caregivers, the general public, healthcare professionals, policymakers and the media.

**Promote** recognition of pain as a critical health issue; correcting damaging myths about pain and pain management, and seeking to remove the stigma often experienced by those with pain.

**Advocate** for changes in professional training, regulatory policies, and health delivery systems to ensure that people with pain have access to high quality care.

**Encourage** healthcare professionals to assess pain routinely and provide immediate, ongoing, effective care.

**Mobilize** organizations and individuals who care about better pain management.

### HOW YOU CAN HELP

If you would like to further our mission, please visit our web site, [www.painfoundation.org](http://www.painfoundation.org), and join the growing number of APF members. Membership is free and open to all. APF members receive online support and resources and useful publications like the *Pain Community News*, which features the latest news about pain and the *Pain Monitor*, which provides updates on pain news and policy issues.



Dear Friend:

As you pick up this publication, you may be asking yourself lots of questions: Can my pain be better controlled? Are there options available that I don't know about? How do various treatments differ? What non-drug therapies are used to manage pain? What questions should I ask my doctor, nurse, pharmacist or social worker about pain?

Treatment Options was written to help answer these and other questions related to pain care. Whether you've just started experiencing pain, have lived with it for several years, or are a caregiver to someone in pain, this guide was written to serve as a useful resource. Each subsection provides easy-to-understand information about a variety of treatment options from medications to psychosocial interventions, rehabilitation therapies, surgical interventions and much more. Words boldfaced in **green** are some common pain terms and are defined at the end of the book.

We trust this will inspire hope and help you in your quest for better pain care. You should not have to suffer with your pain. As always, it is important to talk to your healthcare provider to decide what approach is right for you. Please feel free to share your thoughts and comments by sending an e-mail to [info@painfoundation.org](mailto:info@painfoundation.org). We will update the online version of this book periodically, so check for new tips and information at [www.painfoundation.org](http://www.painfoundation.org).

**Will Rowe**  
*Executive Director*  
*American Pain Foundation*





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- American Pain Society
- American Society for Pain Management Nursing
- American Society of Regional Anesthesiologists
- Association of Oncology Social Work
- Healing Touch International
- Intercultural Cancer Council
- International Association for the Study of Pain
- Midwest Nursing Research Society
- National Association of Social Workers
- Oncology Nursing Society



Treatment Options: A Guide for People Living with Pain v



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#### READ THIS BOOK TO FIND OUT:

- Why pain management is important
- How to talk with your healthcare provider about pain
- Information about a variety of drug and non-drug treatment options
- Important goals of therapy
- Benefits and drawbacks of various treatments
- Promising new treatments

As you are reading, remember some approaches span various treatment settings and specialists. For example, some psychosocial interventions, such as hypnosis and guided imagery, may also be advocated for and used by specialists in complementary medicine. This is also true for some rehabilitative techniques (e.g., Rolfing, myofascial therapy).

#### WHY IS MANAGING PAIN IMPORTANT?

**Persistent pain** can interfere with your enjoyment of life. It can make it hard to sleep, work, socialize with friends and family and accomplish everyday tasks. When your ability to function is limited, you may become less productive. You may also find yourself avoiding hobbies and other activities that normally bring you happiness in order to prevent further injury or pain. Ongoing pain can cause you to lose your appetite, feel weak and depressed.

Try not to allow your physical illness or pain to take over your life. Pain *is* a part of you, but it is *not* YOU. It is *not* who you are. Managing your pain is an important step to reclaim your life and ensure it does not control you.

#### ESTABLISHING A DIAGNOSIS AND ASSESSING YOUR PAIN

To correctly diagnose your pain, your healthcare provider may:

- Perform a complete physical exam
- Complete a pain assessment
- Ask detailed questions about your medical history and lifestyle
- Order blood work, X-rays and other tests

*Note: Because of the current state of medical science and limited pain research, there are some causes of pain which might not be able to be confirmed with current medical technology and diagnostic tests.*

It is important to give your healthcare provider a complete picture of your pain history. This information will help him or her to determine the right treatment plan for you. To complete a pain assessment, your healthcare provider may ask the following questions about your pain:

- Location
- Intensity
- Description of the sensation(s)
- Nature: Onset, duration, fluctuations
- What makes it better?
- What makes it worse?
- How does it affect your sleep, mood, appetite, activity?

Pain can affect your emotional outlook, your ability to concentrate, your energy level and your sense of self.



If you keep a pain journal, be sure to share it with your healthcare provider. If you don't, consider starting one today. The American Pain Foundation's Pain Notebook is an easy-to-use tool to help you keep a record of your pain (when it occurs, for how long, the level or type of pain, etc.), response to various treatments over time, improvements in daily function and side effects. The *Pain Notebook* can help guide your communication with your healthcare provider and is available by calling 1-888-615-PAIN (7246).

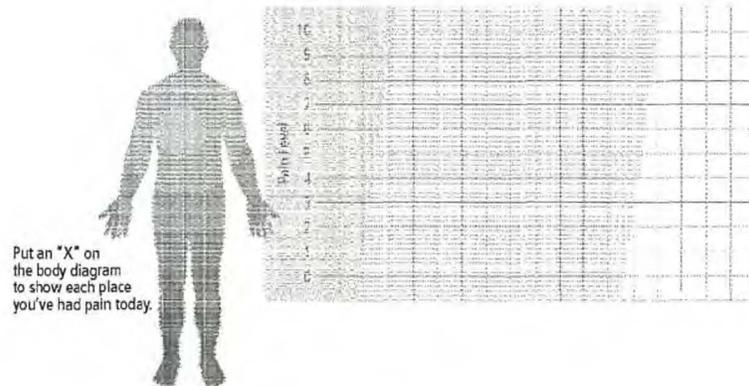
Finding good pain care and taking control of pain can be hard work. As a person with pain, you should become your own best advocate. Learn all you can about pain and possible treatments, and insist on the care you need and deserve.

Use descriptive language when explaining your pain. Describe your pain with words like: sharp, crushing, throbbing, shooting, deep, pinching, tender, aching, among others. Your healthcare provider may also use a pain scale to help assess your pain. Pain scales are tools that can help you describe the intensity of your pain and help your doctor or other healthcare providers diagnose or measure your level of pain. Three types of scales are commonly used: numeric, verbal and visual.

With **numerical scales**, you use numbers from 0 -10 (0 being no pain and 10 being the worst pain ever) to rate the intensity of your pain.

**Verbal scales** contain commonly used words such as "mild," "moderate" and "severe" to help you describe the severity of your pain.

**Visual scales** use aids like pictures of facial expressions, colors or gaming objects such as poker chips to help explain the severity of your pain. One type, the Wong Baker Faces Pain Rating Scale, features facial expressions to help you show your healthcare provider how much pain you feel. Body diagrams may be used to help pinpoint where your pain is located.





## Mapping Treatment Plan

Pain is complex and unique to each individual. For this reason, your healthcare team will consider many aspects of your pain and daily life before recommending a treatment program, including:

- Type of pain (whether it is **acute** or **chronic**)
- Category of pain (**nociceptive** or **neuropathic**)
- Intensity of your pain
- Your physical condition, coping ability and challenges
- Your lifestyle and preferences for treatment

### YOUR PAIN MANAGEMENT TEAM

Common pain problems can often be managed by your primary care provider or treating healthcare professional. This individual could be a physician, nurse practitioner or physician's assistant. When pain is more difficult to treat, help from additional healthcare professionals and others with specialized training in pain may be required. Some of these disciplines may include, but are not limited to:

- Specialty physicians from the fields of neurology, neurosurgery, physical medicine, anesthesia, orthopedics, psychiatry, rheumatology, for example.
- Nurses
- Pharmacists
- Social Workers
- Psychologists
- Case Managers
- Chiropractors
- Physical Therapists, Occupational Therapists, Physiatrists
- Complementary/Alternative Medicine Practitioners

Remember, a therapeutic relationship is a two-way street. It develops over time and trust and open communication are essential. Be sure to find a healthcare professional who is not only trained to treat your pain disorder, but is also willing to work with you to manage your pain. At each follow-up visit, a re-assessment of your pain and pain management plan is very important in order to evaluate the effectiveness of your treatment.

### GOALS OF PAIN THERAPY

Your pain management team will work with you to map out a treatment plan tailored to your specific needs. Successful pain management aims to:

1. Lessen the pain
2. Improve functioning
3. Enhance your quality of life

These are considered the hallmarks of pain management and "best practices."

In some cases, pain is best managed using a combination of treatments. This is referred to as a "multi-modality" approach. For example, your healthcare provider may prescribe a medication along with activities to reduce stress (e.g., yoga, deep-breathing exercises). To improve daily functioning, specific therapies may be suggested to increase muscle strength and flexibility, enhance sleep and reduce fatigue, and assist you in performing usual activities and work-related tasks.



While there are a variety of treatment options available for those living with pain, different therapies might not work for everyone. Finding the right combination may take time, but often makes the critical difference in your care. As always, it is important to weigh the risks and benefits of different pain treatments and consult your healthcare provider before starting or changing any treatment.

Pain management is an ongoing process, not just a one-time concern. Finding the right combination of therapies may take time, but often makes the critical difference in your care.

There are factors that can interfere with therapies, including:

- How different drugs interact with each other when taken together
- How different foods might affect how a drug works when taken together
- How different treatments can either complement each other or cause harm
- How your general health and personal habits can play a role in pain treatment (for example, smoking tobacco can interfere with pain treatment and increase pain levels)

#### TREATING THE WHOLE PERSON

The impact of pain requires an understanding that the whole person experiences pain; that is, the mind, body and spirit. Integrative medicine supports the use of “conventional” treatments, for example, drugs, counseling, exercise or surgery, along with “complementary” pain-relieving techniques like acupuncture, bio-feedback, massage or chiropractic manipulations. This allows healthcare providers to offer more **holistic care**.

#### TREATING THE CAUSE OF YOUR PAIN

Whenever possible, your healthcare provider should make every effort to treat the cause of your pain. For example:

- If you are a diabetic, it is important to control your blood sugar, because that may prevent nerve and blood vessel damage that can result in a variety of painful problems commonly seen with this disease.
- If you have rheumatoid arthritis, you may be prescribed drugs to treat the arthritis itself because pain medicines will not prevent the disease from damaging your joints.
- If you have migraine headaches, there are medicines that can prevent or reduce the frequency and severity of headaches, reducing the need to use pain medications.
- If you have osteoporosis, your provider may recommend that you take medications to strengthen your bones to help prevent fractures that could result in pain and disability.
- Surgery also plays a critical role in pain control. Replacement of a knee or hip may provide relief of pain and reduce or eliminate the need for analgesics.

Pain is complex and involves every aspect of your being. Because it is not just a physical experience, there is no magic pill to take away the pain.



#### HELPFUL HINTS ON YOUR ROAD TO PAIN RELIEF

Keep the following tips in mind as you seek treatment for your pain:

- **Chronic pain** can result in physical and psychological challenges. It is important to accept support from loved ones — you need and deserve all the help you can get.
- Be sure to seek treatment as early as possible to avoid further problems.
- Do not allow your physical illness or pain to take over your life. Pain is a part of you, but it should not define who you are.
- Try not to let past frustrations of failed treatments stand in your way; there are a wide range of treatments available as detailed in this guide. While your pain might not go away completely, there are ways to reduce it so that it is bearable and you can reclaim parts of your life.
- Keep a pain journal.
- Only you know the extent of your pain and how it's impacting your life. Don't be afraid to speak up.
- Before going to your appointments, write down any questions you might have and take them with you; it's easy to forget things and you may not have much time with your provider.
- Bring a relative or friend to your appointments to provide any support you might need. They can also take notes and help you to remember things that were said.
- Be certain there is someone on the healthcare team that you can call if you have any questions or concerns after you have been taking your medicine for awhile. Make sure you know how to get in touch with them.
- Know your treatment options. Your healthcare provider should share information about your condition, pain and possible treatment options, but you should also inform yourself.



#### AVAILABLE TREATMENT OPTIONS

The following areas of pain treatment should be considered:

- Pharmacotherapy (drug options)
- Psychosocial Interventions (coping, counseling, etc.)
- Rehabilitation Techniques (re-conditioning, re-training and lifestyle changes)
- Complementary and Alternative Medicine (CAM)
- Injection and Infusion Therapies
- Implantable Devices and Surgical Interventions

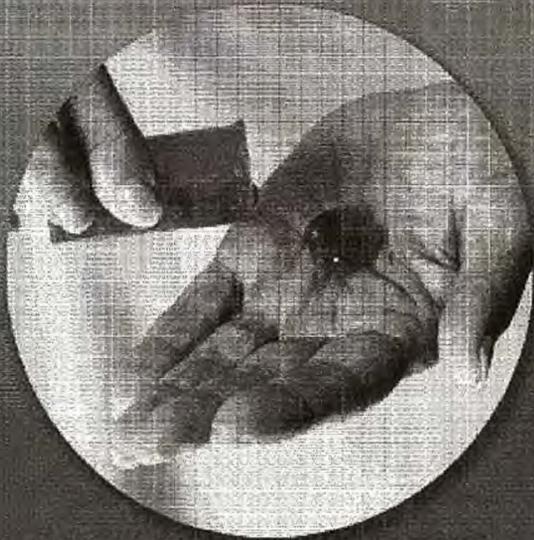
Healthcare professionals who treat pain may not have experience in using or performing every treatment option available. Some pain treatment options require special areas of expertise or training. Referrals to those specialists may be required. Insurance coverage of pain treatment options vary widely, if covered at all.

The information in this guide is provided to help readers find answers and support. Readers are encouraged to share and discuss this information with their doctor.

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*Disclaimer Statement: This information is provided for educational and information purposes only. APF is not engaged in rendering medical advice or professional services, and this information should not be used for diagnosing or treating a health problem. APF makes no representations or warranties, expressed or implied. Providing references to other organizations or links to other resources or websites does not imply that APF endorses the information or services provided by them. Those organizations are solely responsible for the information they provide.*

# Pharmacotherapy





## USING MEDICINES TO CONTROL PAIN

### *An overview of pharmacotherapy*

Medications play an important role in the treatment of pain. Many different medicines can be used to help relieve pain. A few, such as aspirin, ibuprofen and acetaminophen, can be purchased in a pharmacy or supermarket without a prescription, but most pain relievers are only available with a prescription from your healthcare provider. Some medications used to treat pain are not usually thought of as pain medicines, but they have been shown to relieve specific types of pain. For example:

- Some drugs used to manage depression or seizures can be used to treat neuropathic or nerve pain.
- Some steroid medications, such as prednisone and dexamethasone, may be used to treat pain caused by inflammation or bone disease.
- Some medications used to relax muscles or treat insomnia or anxiety may be used in the overall management of pain.

Don't be afraid to ask your healthcare provider questions about prescribed medications. Be certain to address the following:

- Why a particular medicine was chosen to manage your pain problem.
- The associated risks and benefits of the drug; common side effects, as well as recommended steps should these side effects appear.
- Exactly how you should take your pain medicine, including the dosage (how much) and how often.
- Whether there are other drugs, foods, drinks, vitamins or herbal supplements that you should not take at the same time. For example, grapefruit juice has been shown to interfere with the action of many medications.

Some pharmacies do not carry every type of pain medication. You can always call your pharmacy to find out if the drug or drugs you are prescribed are available and whether they are covered by your health insurance plan. Tell your provider if you cannot afford to pay for your medicine. Sometimes he/she may be able to prescribe a less expensive medication that works in the same way or help you access the medication at a reduced cost or, sometimes, at no cost. Several pharmaceutical companies have special programs that will assist people with financial need.

## CLASSES OF ANALGESICS FOR PAIN CONTROL

There are three major classes of medications for pain control:

**Non-opioids:** non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen

**Opioids** (may also be called **narcotics**): codeine and morphine are examples

**Adjuvant analgesics:** a loose term referring to the many medications originally used to treat conditions other than pain, but now also used to help relieve specific pain problems; examples include some antidepressants and anticonvulsants. Some of these drugs have been shown to work well for specific types of pain.

Drugs that have no direct pain-relieving properties may also be prescribed as part of a pain management plan. These include medications to treat insomnia, anxiety, depression and muscle spasms. They can help a great deal in the overall management of pain in some persons.



## THE NON-OPIOIDS

### NSAIDs

There are many different drugs in this family of pain relievers. They all relieve mild to moderate pain and reduce fever and inflammation. They decrease the formation of natural substances in the body called prostaglandins. Prostaglandins serve to protect a number of areas in the body such as the stomach and kidneys. They are also produced at sites of injury or inflammation and allow pain receptors in the surrounding area to become more sensitive to pain. *By decreasing prostaglandins, NSAIDs lessen the sensation of pain and reduce inflammation.*

### Classes of NSAIDs

Aspirin (acetylsalicylic acid) is the oldest NSAID and was introduced into medicine in 1899. A large number of aspirin-like drugs have been developed since that time. Aspirin, ibuprofen, naproxen and ketoprofen are the only NSAIDs available over-the-counter (OTC) without a prescription. A different class of NSAIDs, the selective COX-2 inhibitors (or coxibs), were not marketed until quite recently and were developed to reduce the risk of ulcers caused by NSAIDs. Only one selective COX-2 inhibitor, celecoxib, is still available at this time.

### Clinical uses

NSAIDs are effective against mild to moderate pain, and are important for the management of both acute and chronic pain. For example, an NSAID may be the only analgesic needed to control pain after a minor injury or surgical procedure. They are often used in combination with other drugs such as opioids for treating pain after surgery because, when combined in this way, the pain can often be well controlled with a smaller dose of the opioid. This may help to avoid some of the common side effects of opioids. NSAIDs are especially effective for relieving pain due to inflammation or pain in persons whose cancer has spread to the bone. There is no research evidence that they relieve neuropathic pain or are of particular benefit for treating the pain of fibromyalgia.

There is no evidence that one NSAID is a better pain reliever than another; however, each individual may get better pain relief from one than from another. Finding the right NSAID to treat persistent pain is a matter of trial and error. It may take awhile for the drug to work, so you and your provider will need to allow an adequate trial of the drug before judging its benefit. NSAIDs have an important limitation, called a dose *ceiling*. Taking doses above the ceiling dose will significantly increase the risk of serious side effects, such as kidney failure, which can be life threatening.

### How to take these medicines

All NSAIDs are effective when taken by mouth. Different NSAIDs last for different lengths of time, so one must be careful to follow dosing instructions. There is one NSAID, ketorolac (Toradol®), available for injection into a muscle or a vein, which makes it useful to treat pain after surgery or trauma especially when persons may not be able to take medicines by mouth. Others that can be given by injection may be available in the near future.

In an attempt to avoid some of the serious side effects of NSAIDs, topical preparations have also been developed. Topical NSAIDs work at

### Common side effects of NSAIDs

- GI distress
- Stomach ulcers
- GI bleeding
- Delayed blood clotting
- Decreased kidney function
- Possible increased risk of stroke or heart attack with selective COX-2 inhibitors



the site of pain and inflammation and do not get into the blood stream like medications taken by mouth. One topical NSAID is a solution that is rubbed on the skin, another is in the form of a patch. Topical NSAIDs have been shown to decrease pain and increase function in persons with osteoarthritis and to relieve acute pain associated with soft tissue injuries such as sprains and strains. Be very cautious about buying topical NSAIDs from the Internet as the consistency of their delivery systems and the actual dose delivered are unproven and may result in unsafe or unsatisfactory results.

#### ***Side effects***

The most common side effects of NSAIDs involve the gastrointestinal (GI) tract. They can produce anything from heartburn to ulcers to bleeding. Serious problems, like ulcers or bleeding, can occur without warning. While taking these medicines with food or milk may reduce stomach upset, this will not protect you against the development of ulcers or bleeding from the GI tract. The risk of a GI bleed is increased in older adults, in those who are also taking aspirin or a steroid such as prednisone, and in those who have had ulcers or any kind of NSAID-induced GI problem in the past. The risk of bleeding from an ulcer is also greater if you are taking a blood thinner such as warfarin (Coumadin). Your healthcare provider may tell you to check your stools for hidden blood. If you ever notice that your stool contains blood or appears darker than usual, contact your healthcare provider immediately.

Your doctor can prescribe medications to protect your stomach from NSAIDs, but some of these can be expensive and also have their own side effects. The most effective are the proton pump inhibitors, including omeprazole, which are available over-the-counter. The selective COX-2 inhibitors were designed to be easier on the stomach and avoid GI problems common to the older NSAID drugs. Unfortunately, recent studies show that if you take COX-2 inhibitors with aspirin, you are likely to have as many stomach problems as if you were taking one of the older drugs.

NSAIDs may also decrease kidney function, which is a significant problem in elders. As a result, the body may retain water, which would be dangerous in persons who have high blood pressure or heart failure. The older NSAIDs interfere with blood clotting and have to be discontinued hours to days before surgery. An advantage of the COX-2 inhibitors is that they do not affect blood clotting. NSAIDs can cause "hypersensitivity reactions" with symptoms similar to an allergic reaction. Some cause headaches or slow thinking.

Recently, concern has been raised about the possibility that NSAIDs, including the COX-2 selective inhibitors, may increase the risk of heart attack and stroke. Although the research is still limited, there is evidence that a small increased risk of these complications occurs whenever an NSAID is taken for a period of time. Two COX-2 inhibitors (Vioxx® and Bextra®) were taken off the market in response to this concern.

#### ***Should I take these pain medicines?***

It's been known for a long time that NSAIDs can cause life-threatening side effects in some persons. There are 10,000 to 20,000 deaths each year because of the side effects of this class of medicines. In spite of that, these drugs are widely used. A third of Americans over the age of 65 take NSAIDs daily. If you are taking NSAIDs for musculoskeletal pain, keep in mind that there are a variety of non-drug and drug therapies available that are helpful as well. The risks from NSAIDs are greater if higher doses are used or if these drugs are taken for more than a period of months. Discuss these risks with your healthcare provider, particularly if you may be at risk because of a

history of heart disease, stroke, peripheral vascular disease, hypertension, kidney disease or ulcers. Whenever an NSAID is taken for pain, it is prudent to use the lowest effective dose and to stop the therapy unless it is clearly needed over time. Though NSAIDs are commonly used medications, they do have dangers and must be used appropriately.

#### **Acetaminophen**

Acetaminophen can be used to relieve mild to moderate pain and treat fever, but it is not an NSAID and does not reduce inflammation. It produces few, if any, side effects at the doses that can relieve pain, but it can damage the liver when used in large doses. Acetaminophen overdose is a medical emergency. The labeling specifies an upper limit of 4 grams in 24 hours (which is equivalent to just eight Extra Strength Tylenol®). Persons with liver disease or a history of alcohol abuse should limit their use to much less than this and should consult their healthcare provider about the safest and most appropriate dose to use.

There are many combination pain medicines that contain an opioid with acetaminophen. Be careful with these drugs as they contain different amounts of acetaminophen. Be sure to check the amount with your pharmacist. Don't decide to take extra acetaminophen on your own if a combination pain medicine is not controlling your pain because you may end up using too much acetaminophen and that could cause liver damage. Be aware that many OTC cough, cold and sinus remedies and combination pain relievers also contain acetaminophen, meaning you could be taking more of the drug than you realize. You should also be aware there is a risk of kidney damage if you take acetaminophen for months or years, especially if you take it together with an NSAID.



#### **OPIOID ANALGESICS (NARCOTICS)**

Opioid analgesics are another important class of medications that are very effective pain relievers. As mentioned before, they may also be called "narcotics." Unfortunately, this term is used by law enforcement to refer to drugs that are abused. Cocaine and heroin are called narcotics even though they are very different kinds of drugs. Calling opioid analgesics "narcotics" reinforces myths and misunderstandings as it places emphasis on their potential abuse rather than on the importance of their use as pain medicines. In the pain treatment world, the word opioid is used when speaking about this class of medications.

#### **Clinical uses**

Opioids are an essential option for treating moderate to severe pain associated with surgery or trauma, and for pain related to cancer. They may also be an important part of the management of persistent pain unrelated to cancer. These medicines block pain messages in the body, but they also affect the way we feel about our pain and help us better tolerate it. Our body produces natural opioids (endorphins) as part of its survival response to danger and injury. Because the medications of this class work in the same way as endorphins, they work very well in blocking pain.

Despite the great benefits of opioids, they are often under-used. For a number of reasons, providers may be afraid to give them and the public may be afraid to take them. Some feel opioids should not be used to treat persistent pain except in persons



who are dying. Others are concerned that the average person will become addicted to these drugs. These concerns lead to confusion and hesitation on the part of some providers to prescribe these for pain control. Adding to the problem is the increase in abuse of prescription drugs in the U.S. Persons with addictive disease (in the past, the term "addicts" was used) have obtained and misused these drugs. Others have taken them illegally through pharmacy thefts or under false pretenses in order to sell them "on the street" for profit.

Obviously, it is very important to get the facts about these effective and powerful pain medicines because their under-use has been responsible for much unnecessary suffering. Those affected by pain, providers, patients and family alike, need to be well-informed to be sure that myths and misunderstandings do not get in the way of effective pain control.

#### ***Classes of opioid analgesics***

Familiar medicines in this family of drugs are codeine and morphine. But there are several others that your provider might use for different pain problems. These include hydrocodone, oxycodone, hydromorphone, meperidine, methadone, propoxyphene and fentanyl. Generic and brand name drugs are available, so you may have heard hydrocodone referred to as Vicodin® and oxycodone as Percocet®. Both of these products contain acetaminophen. Opioid pain medicines are not all alike. They differ in how well they control pain, how much you have to take, how long they last and in the routes by which they can be given.

Some opioids such as codeine, hydrocodone and propoxyphene usually are not preferred for the management of severe pain. Tramadol, although not classified as an opioid, is another drug that has some opioid effects and can be beneficial for mild to moderate pain. Persons taking an antidepressant or an antipsychotic drug along with Tramadol may be at increased risk of seizures.

The side effects of codeine become unacceptable if given at high doses. Some people do not make the natural enzyme that breaks codeine down into a pain relieving chemical in the body. In those people, taking codeine for pain is like taking a sugar tablet.

The dose of hydrocodone is limited because it only comes in combination with acetaminophen and, as was mentioned before, acetaminophen can be toxic to the liver in large doses. In the doses usually prescribed for pain, propoxyphene is only as effective as aspirin or acetaminophen. High doses may not be tolerated and toxic doses are associated with serious risk of heart problems.

Meperidine is another opioid for which dose and length of use must be limited because it is metabolized (breaks down) to a chemical that can cause tremors, twitches or even seizures. Although it can provide relief of severe pain, it should only be used in small doses and for short periods (less than 3 days) in healthy adults. More and more hospitals are either restricting or avoiding its use.

The other opioids can relieve severe pain. Their doses can be gradually increased over time. There is no ceiling dose as there is with the NSAIDs. As pain worsens, these medications continue to be useful unless side effects occur. It is a myth that opioids, like morphine should only be used at the final stages of a seriously painful disease. When pain is severe, opioids should be considered.



### **Ways to take these medicines**

One of the advantages of opioid drugs is that they can be given in so many different ways. For example, they can be given by mouth, rectal suppository, intravenous injection (IV), subcutaneously (under the skin), transdermally (in the form of a patch) or into a region around the spinal cord. Patches, IV injections and infusions are very important for patients who cannot swallow or whose GI tracts are not working normally.

Many people benefit from having some form of control in taking their pain medications, whether they are at home or in the hospital. Your healthcare provider may give you the option of taking doses of the opioid on an "as needed" basis at home. You may wish to discuss this option with your healthcare provider.

Another way of allowing you to control the dosing of an opioid is called "patient-controlled analgesia" or PCA. You may have heard of intravenous or subcutaneous patient-controlled analgesia (IV-PCA; SQ-PCA) that is used after surgery or sometimes for severe pain in persons with cancer (see *Infusion Therapy* section). On the horizon is a new patch delivery system that gives an extra dose of medication across the skin; this is called a patient-controlled transdermal system (PCTS).

Pain medicine can also be delivered into your back through a very small tube called an epidural or intrathecal catheter. This may be an excellent way to give an opioid if you are having major surgery of the chest, stomach, pelvis or limbs. Opioids may be given through an intrathecal catheter for chronic pain if a person has not responded to more conservative approaches to treatment.

### **The duration of opioid pain relief**

In the absence of a special "extended-release" formulation, most opioids provide just several hours of pain relief after a dose. The extended-release formulations (also called "modified-release," "controlled-release," "sustained-release" and sometimes "long-acting") can be pills or patches and can provide pain relief from eight to as long as 24 hours. NEVER crush, chew or take these long-acting medications differently than prescribed. These changes can destroy the time-release feature and cause an overdose.

Fentanyl is available in a patch worn on the skin for the treatment of persistent pain. The drug is absorbed slowly under the skin and then is absorbed into the blood stream. The patch can give pain relief for as long as 72 hours. DO NOT put heat on the patch after you have placed it on the skin because the drug could get into your blood very quickly and cause side effects, and even a possible overdose. Fentanyl is also available in a lozenge. In this formulation, it has a quick onset and short duration of effect that makes it especially useful for the treatment of "breakthrough" pain.

Pain is considered "breakthrough pain" when it "breaks through" the pain medication being used to treat persistent pain. Breakthrough pain (BTP) can occur suddenly — in bursts and may last for short periods of time. BTP can also be experienced during pain-producing activities. BTP can result when the dose of a long-acting opioid begins to wear away.

Opioids can be given as the only treatment for pain, but as mentioned earlier, they are often prescribed in combination with non-opioids or with one of the adjuvant analgesics. A long-acting drug may be used to treat persistent pain. It may be the only medication required to keep pain under control. When moments of increased pain occur two or three times a day or more, a short-acting (SA) medication may be added.



### Side effects

The most common side effects of opioids include constipation, nausea and vomiting, sedation (sleepiness), mental clouding and itching. Some people may also experience dizziness or difficulty urinating. Respiratory depression, a decreased rate and depth of breathing, is a serious side effect associated with overdose.

The good news is that most side effects go away after a few days. However, side effects may continue in some people. Constipation is most likely to persist. Some pain experts believe all patients started on an opioid also should be taking a stool softener or a laxative. Others believe that this treatment is appropriate only if a patient is prone to developing significant constipation because of advanced age, poor diet, other diseases, or the use of other constipating drugs. Your healthcare provider can give advice on what to eat and what medicines to use to treat constipation. Always make certain to drink plenty of fluids and be as active as possible.

If any of the other side effects don't go away, they can also be treated. Be certain to tell your provider if you are having any problems. Serious side effects such as delirium or respiratory depression can occur if the dose is increased too quickly, especially in someone who is just starting to take opioids. Tell your provider if you are unable to concentrate or think clearly after you have been taking an opioid for a few days. Report other medications you may be taking that make you sleepy. Do not drive when you first start taking these drugs or immediately after the dose has been increased. Most persons will adapt to these medicines over time and can drive safely while taking them for pain control. If side effects remain troublesome, your provider may switch you to a different opioid. The amount of pain relief can be maintained after such a switch and often the side effects can be reduced.

### Common drugs that can cause physical dependence

- Opioids
- Stimulants
- Sedatives
- Steroids
- Certain Antidepressants
- Certain Heart Medications
- Caffeine

### Tolerance, physical dependence and addiction

You and your healthcare provider may worry about tolerance, physical dependence and addiction. It's sometimes easy to confuse the meaning of these words. Tolerance refers to the situation in which a drug becomes less effective over time. However, many persons with persistent pain don't develop tolerance and stay on the same dose of opioid for a long time. Many times when a person needs a larger dose of a drug, it's because their pain is worse or the problem causing their pain has changed.

Physical dependence means that a person will develop symptoms and signs of withdrawal (e.g., sweating, rapid heart rate, nausea, diarrhea, goosebumps, anxiety) if the drug is suddenly stopped or the dose is lowered too quickly. *Physical dependence is normal*; any patient who is taking an opioid on a regular basis for a few days should be assumed to be physically dependent. This does **NOT** mean you are addicted. In fact, many non-addictive drugs can produce physical dependence. To prevent withdrawal from

occurring, the dose of the medication must be decreased slowly.

If you believe that you no longer need to take the opioid medication or want to reduce the dose, it is essential to speak to your provider. They will guide you on how to decrease your dose over time to prevent the experience of withdrawal.



Persons who have an addiction have lost control over use of the drug and continue to use it even when the drug is doing them or others harm. The term addiction now refers to a medical diagnosis and is defined as a primary, chronic, neurobiological disease, with genetic, psychosocial, and environmental factors influencing its development and expression. It is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving (From the American Pain Society, American Academy of Pain Medicine and American Society of Addiction Medicine <http://www.asam.org/pain/definitions2.pdf>).

People with the disease of addiction may abuse their medications, engaging in unacceptable behaviors like increasing the dose without permission or obtaining the opioid from multiple sources, among other things. Opioids get into the hands of drug dealers and persons with an addictive disease as a result of pharmacy theft, forged prescriptions, Internet sales, and even from other people with pain. It is a problem in our society that needs to be addressed through many different approaches.

Some people who are not substance abusers also engage in these types of behavior. Even if this results in part from a desperate desire to obtain pain relief, it is unacceptable and your healthcare provider must intervene to stop the behavior.

Restricting access to the most effective medications for treating pain is not the solution to drug abuse or addiction. However, your provider may establish very clear guidelines to ensure that you take the opioid as prescribed. Some physicians will require you to sign an agreement (see Table 1) before opioids are prescribed.

**Table 1: COMMON FEATURES OF AN OPIOID AGREEMENT**

- Sign an opioid agreement to be kept in your medical file (ask for your own copy)
- Obtain prescriptions from only **one** doctor
- Have your prescriptions filled at **one** pharmacy
- Come in for regular office visits (every 2-4 weeks or so)
- Agree to have periodic urine drug screening
- Bring your pills in to be counted during visits
- Follow any additional rules not listed above

Once your prescription is filled, it is of the utmost importance that these medications are kept in a secured location to prevent access to children or others. According to law enforcement reports, theft of personal supplies of pain medications stored in the home does occur. If this happens to you, report it immediately to your local police department. Ask for a copy of this report, so you may share it with your healthcare provider. It is very important to remember that drugs of all kinds have a potential to hurt us, but when used properly and with supervision they can be life-savers and give all of us a quality of life we deserve.

#### **ADJUVANT ANALGESICS**

Adjuvant analgesics are drugs that are used to treat other illnesses, but have been found to provide relief for certain kinds of pain. These include certain antidepressants, anticonvulsants, corticosteroids and some other drugs used by pain specialists. Adjuvant analgesics are particularly important for the treatment of neuropathic pain. This kind of



pain may be difficult to treat. Drugs recommended for the treatment of neuropathic pain are listed in *Table 2*. You will notice opioid analgesics and tramadol are listed. Finding the drug that works best for you is a matter of trial and error. Your provider will consider your age, your general health and the cost of the medications. Combining different drugs may give the best results. For example, a recent study confirmed that combining gabapentin and morphine gives better relief for neuropathic pain than using either one alone.

**Table 2: MEDICATIONS FOR NEUROPATHIC PAIN**

| Medication                                                                                   | Uses and Impact on Pain                                                                                                                                                  |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Opioid analgesics and tramadol                                                               | These medications were discussed earlier.                                                                                                                                |
| Lidocaine patch                                                                              | Put the patch where it hurts and follow your healthcare provider's instructions about changing it on a daily basis. Do not place it on areas of broken skin.             |
| Antidepressants*<br>Tricyclics such as amitriptyline,<br>nortriptyline, desipramine, doxepin | Dose is increased gradually. These have many possible side effects such as sleepiness, dry mouth, blurred vision, weight gain, decrease in sexual desire or performance. |
| Venlafaxine and duloxetine                                                                   | Generally, these have fewer side effects than tricyclics; your doctor will gradually increase the dose of these as well.                                                 |
| Certain anticonvulsants†<br>Gabapentin                                                       | Usually needs to be increased gradually over a period of time.                                                                                                           |
| Pregabalin                                                                                   | Increasing the dose to the effective range can be done more quickly and requires fewer steps than gabapentin.                                                            |

\*There are many other antidepressants, but they don't work as well for pain.

†Older anticonvulsants such as carbamazepine, phenytoin and valproic acid may have benefit; newer drugs are also being used in some patients.

**Corticosteroids** may be useful for treatment of severe inflammatory pain. They can be taken by mouth or injected where there is inflammation. These can cause serious side effects so your provider will use the lowest effective dose for the shortest possible time period. Typical examples include prednisone and dexamethasone. Ask about the potential side effects of corticosteroids. Be sure to notify your healthcare provider if you experience new or worsening joint pain after using prescribed corticosteroids.

**Muscle relaxants** may decrease muscle pain, but often causes sleepiness. They are usually used for a short period time, such as following a muscle injury or with some diseases that may cause muscle spasms.



### **Topical Analgesics**

There are other drugs that are effective when used topically. One of these topical analgesics is capsaicin, which comes from chili peppers. It must be applied several times a day for about six weeks to get benefit. It can cause burning where it is applied, so you have to be very careful that you don't get it in your eyes. There are many other ointments that you can buy in the pharmacy; some contain menthol and may be helpful for musculoskeletal pain.

### **Local Anesthetics**

Local anesthetics are very important for providing pain control and can be used in many different ways. Many persons have had an injection of lidocaine before having dental work or before having stitches. Longer term administration of a local anesthetic can be done alone or in combination with opioids to block pain in specific regions of the body; this is usually administered in the spine through a catheter. Chronic pain can be treated with a lidocaine patch, as mentioned above. There are also local anesthetic preparations that can be applied to skin and open wounds in the form of a cream or ointment to prevent pain from a needle stick. Disposable devices can be used as another way to deliver anesthetics around an incision or site of injury.

### **Drugs for Anxiety, Depression and Sleep**

Persons with persistent pain may become anxious or depressed or they may have trouble sleeping. Treatment of anxiety and depression may decrease the need for pain medicines. On the other hand, relief of pain may significantly reduce anxiety and depression. There are many effective drugs for depression; as mentioned previously, some are helpful with pain, others are not. Selective serotonin reuptake inhibitors (SSRIs) are often used for depression; they are also beneficial to persons who are anxious. The dose of these drugs needs to be increased slowly over time so they can take a while to begin to work. If persons are extremely anxious, they can get quick benefit from the use of a benzodiazepine. The drug diazepam (Valium®) is a member of that class. There are several medications to treat sleep problems. Several that are available without a prescription contain antihistamines. Others that are more likely to help are available only with a prescription.

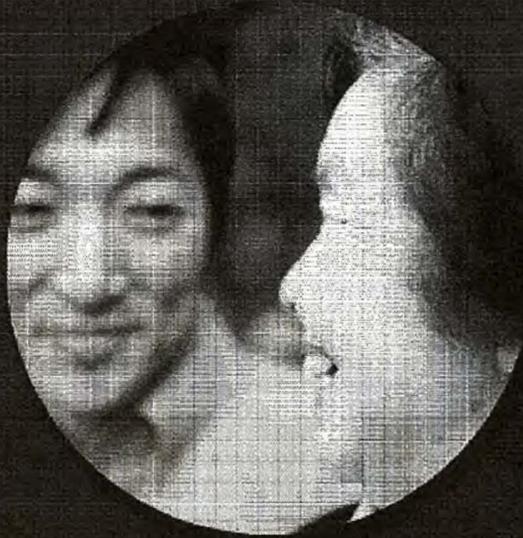


**Table 3: IMPORTANT CONSIDERATIONS THAT HELP GUIDE THE USE OF PAIN MEDICINES**

1. A thorough understanding of your pain (a pain assessment) is essential to any decision about what pain medicines you should take.
2. The severity and type of pain will guide the choice of medications. You may have more than one type of pain.
3. The dose of a medication and the time between doses is based on the specific properties of the medication and how a person responds to the drug. These things can vary from one drug to another and from one person to another. With some drugs, the dose needs to be slowly increased over time before it is known if it will help to control pain.
4. Your provider may combine two or more pain medicines that work in different ways in order to provide the best pain relief with the fewest side effects.
5. Some medications take time to begin to work; this is especially true for some drugs used to treat persistent pain: it can take days, weeks or even sometimes months to know what drug will work best for you.
6. If your pain is chronic and usually present, your healthcare provider will probably offer you medication on a regular schedule. Preventing pain from returning or getting worse is the best way to control it. Your provider may refer to this as “staying on top of the pain” or “staying ahead of the pain.”
7. The addition of non-drug therapies, both physical and behavioral (see *additional sections in this publication*), may result in better pain relief and fewer side effects.
8. The purpose of pharmacotherapy is to relieve pain and improve function. Improved function after surgery means, for example, being able to cough, breathe deeply and move about. Improved function in persons living with persistent pain may mean being comfortable while engaging in work or the activities of daily living.

Pain management is complex and often requires several attempts with different combinations of medications to find the best treatment plan for an individual. Medications are often one part of a person's pain management plan and can be quite effective when used properly. *Table 3* discusses helpful tips that guide the use of pain medicines. Remember, using medication to relieve pain is only one treatment option. They work well when combined with other approaches as discussed throughout this book.

# Psychosocial Interventions





### PSYCHOSOCIAL INTERVENTIONS

Pain is complex and unique to each individual. As with other aspects of life, each of us brings pre-existing thoughts, feelings, beliefs, expectations and behavior patterns to any health experience. Understanding the impact of pain requires that we expand our view to consider the whole person — the mind, body and spirit.

Research shows that pain can affect your emotions and behavior and interfere with your ability to concentrate, manage everyday tasks and cope with stress. Likewise, stress and emotional pressures can make pain worse, provoking “flare ups” and contributing to alterations in the immune system response. These relationships are not always easily recognized or readily fixed by medical procedures or medications alone.

As the science of pain moves forward, there is growing evidence that interventions (drug and non-drug) used to influence emotions, thinking and behavior can aid in the reduction of pain and associated distress. For example, studies are uncovering a biological link between the brain systems involved in depression and pain regulation. Some antidepressant medications may have analgesic properties, which may be because these systems have shared properties. Some people experience depression due to chronic pain. Others may begin to realize that depression was present before their pain began. Depression can make the experience of living with persistent pain more difficult and should be diagnosed and treated.

Others may falsely believe that referral for psychological pain treatment means that their pain is not physical, or feel they are being labeled as having a mental illness rather than a physical problem. You may feel hesitant to try psychosocial therapies due to the associated stigma, or the fear that your provider will no longer treat the physical symptoms of your pain or try new treatment options. Don't let these fears interfere with your willingness to try a broad class of potentially safe and effective treatments. Consider these a gift to yourself — an investment in your peace of mind and quality of life.

### PSYCHOLOGICAL CONSULTATION, COUNSELING & STRESS MANAGEMENT

#### Consultation

Many people believe knowledge is *power*. In fact, you may be reading this book to increase your pain knowledge and put it to good use. While reading, ask yourself:

1. How does your pain affect the way you think and act?
2. How does your pain affect your loved ones and co-workers?
3. How do they react to you?
4. Does this help or hinder your recovery and healing?
5. Are there ongoing stressors in your life?

For example, you may find that previous relationship patterns are no longer working for you. Stress and emotions, such as fear and anger, increase pain, which can then heighten stress levels. These kinds of cycles are important to recognize and modify. This action may decrease your pain and, at the same time, boost your sense of control over your life. Change is difficult. Working with a skilled therapist who understands chronic pain may help you recognize the “unhealthy” stressors in your life and guide you through making necessary life changes.



Your healthcare providers may recommend that you consult a behavioral health professional. This could be a social worker, psychologist or psychiatrist, or a therapist with special training in chronic pain. No, they do not think that “you are crazy” or that your pain is “only in your head.” This evaluation may include testing and interviews to help assess how you cope with pain. It is important to:

- Identify how your pain interferes with your daily life and relationships
- Understand the stressors that worsen your pain and distress
- Determine which coping skills are helpful and which are harmful

When people have had pain for a long time, they develop ways to deal with pain, which are called coping strategies. Some of these strategies may help, while other may not. As a result, you may need to learn new ways to cope. There are a range of strategies that can help in this process. The following therapies may be recommended:

- Relaxation Therapy (relaxation, mindfulness, imagery)
- Biofeedback Training
- Behavioral Modification
- Stress Management Training
- Hypnotherapy
- Counseling (individual, family or group)

#### COGNITIVE TECHNIQUES

Some techniques used in stress management include relaxation training, meditation, hypnosis, biofeedback and behavior modification. Common to these approaches is the belief that people have the ability to self-manage some aspects of pain, such as changing attitudes, thoughts feelings or behaviors.

**Relaxation therapies** teach people how to relax tense muscles, reduce anxiety and alter their mental state. Both physical and mental tension can make pain worse. Headaches or back pain, muscle tension or spasms can be part of the problem. Meditation, which aims to produce a state of conscious relaxation, is sometimes combined with therapies that assist you in thinking of pain as a distant part of you. This skill of detachment helps to regain a sense of control. This approach may be particularly helpful when fear or anxiety accompanies pain.

- **Mindfulness Meditation** is a concentration practice during which people focus their attention on a specific object, most commonly on breathing patterns. For example, the focus might be on the experience of the breath entering the nostrils when inhaling and again when exhaling. When our minds wander off the breath (which is natural to do), we acknowledge that it has wandered and bring it back to the breath. Conscious awareness can bring about a sense of calm, patience, reduced muscle tension and pain and a clear sense of reality. When beginning this practice, you may experience anxiety or increased pain. This is because you may not have spent time being quiet with yourself. It is best to start a meditation practice with the help of a meditation teacher who can give you suggestions on how to proceed when these feelings arise.



Once mastered, meditation can be used in many situations, such as reducing the intensity of pain during flare ups, decreasing anxiety while sitting in the dentist chair and reducing the urge to scream during a traffic jam.

- **Guided Imagery** is a conscious meditation technique. Advocates of imagery believe our imagination is a potent healer, which has been overlooked by practitioners of Western medicine. Imagery may help relieve pain, promote healing from injury or illness, and/or ease depression, anxiety and sleeplessness. Thoughts have a direct influence on feelings and behavior. Negative thoughts may promote sadness and hopelessness, while positive thoughts breed pleasure and drive.

Imagery has been found to be very effective for the treatment of stress. Imagery relaxes the body by aiding the release of brain chemicals that serve as the body's natural tranquilizers. These chemicals lower blood pressure, heart rate and anxiety levels. Practitioners who specialize in imagery may recommend it for a variety of different conditions such as headaches, chronic pain in the neck and back, high blood pressure, spastic colon and cramping due to premenstrual syndrome. Several studies suggest that imagery can also boost the immune system and, therefore, promote healing.

Most guided imagery techniques begin with relaxation followed by the visualization of a mental image. For example, imagine a color for pain and then gradually replace that color with one that is more pleasing. Another is visualizing a peaceful scene, such as the ocean surf, wooded forest, fishing at a quiet pond or watching the sunset. Practicing guided imagery with music or aromatherapy may enhance the overall experience. This eventually may stimulate the ability to relax and create a mental image when those favorite sounds or scents are present.

- **Biofeedback training** teaches people how to recognize their physical reaction to stress and tension by using a variety of monitoring procedures and equipment. Physical responses that might be monitored include brain activity, blood pressure, muscle tension and heart rate. These involuntary responses generally increase with stress (known as the "stress response"), which can accompany pain. By measuring these physical reactions, you can learn relaxation and breathing techniques to help return these responses to normal levels of activity. Often when the stress response is lowered, so is the intensity of pain.



- **Behavioral modification** (sometimes called operant conditioning) is aimed at changing habits, behaviors and attitudes that can develop from living with chronic pain. Some people are overwhelmed by pain and may become dependent, anxious, homebound or perhaps even bedridden. Living with pain is influenced and sometimes complicated by social, family, legal, insurance and political factors. For example, some people are told they will lose financial benefits or other types of critical support if they improve. Those involved in lengthy lawsuits may hesitate to get better or gain function due to the fear that they will lose any chance of financial compensation,



which they believe they deserve. In some instances, pain has spurred an unhappy employee to leave a job in which they never felt valued. At times, having pain becomes a way of saying "no" to situations or people we have never been able to refuse. In some families, pain becomes a way to express anger, get care or be excused from responsibilities. These situations are damaging far beyond what is happening in your body. It is very important to understand how pain fits into the larger context of your life so you can identify ways to diminish harmful influences.

When appropriate, vocational counseling and rehabilitation can help to create a gradual path to more productive, fulfilling employment so that worries about the loss of compensation are replaced with possibilities. Behavioral modification can help people separate the multitude of issues surrounding pain and devise a step-by-step approach to confronting challenges through behavior change and shifting attitudes.

#### **STRESS MANAGEMENT**

Stress and anxiety can influence pain in ways you may not realize. Additionally, depression and feeling disheartened influences the ability to cope with pain and any other challenging life experience. When pain levels increase and the usual relief methods do not work as well as before, anxiety and catastrophic thoughts can cause more distress. This can result in a vicious cycle, which can often be avoided or managed. A first step in gaining control over this cycle is to create a process to observe your thoughts and understand your unique, individual pattern. This can be a beginning step in changing how much pain is allowed to rule your quality of life.

#### **Simple Stress Management Suggestions**

- **Structure and Predictability:** Try to set and keep a routine schedule of activities, rest and medications. Some people find that controlling the pace and abruptness of change reduces stress. While it is sometimes difficult to predict change, you may find aspects of your daily routine that you can control.
- **Activity:** Find an activity or exercise program that you like and make it part of your daily routine. It might be Tai Chi, yoga, walking or water aerobics. Talk with your pain practitioner for guidance about how to introduce any of these into your pain management regimen. It has been said that once you repeat something at least 25 times, it becomes a new habit.
- **Positive Outlook ("Self-talk"):** Many people living with persistent pain may wonder how to have a positive attitude about their situation when they haven't done so before. Some may find the pain experience too devastating and overwhelming. Others believe they can move beyond their pain to use positive language or think thoughts that give a sense of power rather than those that seem discouraging. You may have to practice this skill over and over and experiment with the results but ... *First you need to hear yourself...* and perhaps you may need to ask those who know you well about how they hear you. You may want to consider the following suggestions as you think about your personal "self-talk."



- Practice POSITIVE self-talk: You are a whole person with a past and a future, with special talents and accomplishments. Do not allow pain to take that away from you.
- Celebrate your successes, no matter how small they may appear!!!
- Concentrate on being around people and places that make you feel valued and *GOOD about yourself*.
- Think about those friends, family members, social settings, projects and/or work situations that bring meaning, joy and satisfaction to your life; surround yourself with these influencers.
- Think about the situations and/or people who cause you to feel badly and either limit your exposure to them or learn to interact with them so they do not affect your body, your pain and your feelings about yourself.
- **Balance:** Learn how to live in the moment. Experience the now, by shutting off the constant chatter in your mind: your thoughts, plans and perceptions; quiet the pressures caused by expectations from yourself as well as from others.
- Coping techniques that help you relax may already be part of your life and it will be easy to build them into your pain management plan. You may want to learn from others. These techniques might include meditation, prayer, walking, nature, soothing music or scents (lavender, cinnamon, ylang-ylang, vanilla).
- Practice deep breathing whenever you feel stressed:
  - \* Inhale slowly and deeply through your nose, hold for a count of five.
  - \* Exhale slowly (through your nose helps slow you down) for a count of ten.
  - \* Repeat three to four times until you feel relaxed.
- Remember what is really important to you in life and make this a priority.

#### **HYPNOTHERAPY/HYPNOSIS**

Therapeutic or medical hypnosis is a method of directing one's focused attention inward to achieve benefits like relaxation and the lessening of pain and/or anxiety. With a skilled hypnotherapist, you can explore your own potentials for greater control over your experience of pain. Once you have practiced with the hypnotherapist, self-hypnosis can be taught.

Although hypnosis has been shown to reduce **pain perception**, it is not clear how the technique works. Some studies have shown that a proportion of those with moderate to severe pain were able to achieve total relief while under hypnosis. Other studies report that hypnosis reduces anxiety and depression.

#### **COUNSELING**

Living with pain can evoke a range of feelings from fear and anger to hopelessness, confusion and isolation. Family and other significant people in your life may have similar feelings. Counseling for you and, in some cases, with your family can help. Working either in private sessions or within support groups may be suggested. Most of us are familiar with acute pain and react to our loved ones and friends with the expectation that over time the pain will go away. When that doesn't happen, we may continue to act as if it will eventually go away if we ignore it long enough or seek additional medical input to search for the cause and cure. It is very difficult to imagine that persistent pain may be a lifelong condition. Many find tremendous benefit from individual or group counseling specifically focused on pain and related worries. Trained professionals can teach useful skills, and provide needed emotional support and guidance. When choosing a therapist, working with a counselor with experience in pain management is preferable.

Physical Rehabilitation *for*  
Pain Management





## PHYSICAL REHABILITATION FOR PAIN MANAGEMENT

Physical methods have been used for pain relief for centuries. Reportedly, Hippocrates (420 BC) — considered the father of medicine — used a warm water bag to treat pain from sciatica. Today, there are a variety of skilled healthcare professionals with specialized training in the use of physical techniques that help reduce pain. Many work in the field of rehabilitative medicine, and include physiatrists (physicians who specialize in physical medicine), physical therapists, occupational therapists and exercise physiologists.

### ● **Physiatry**

**Physiatry** — also called Physical Medicine and Rehabilitation — is a branch of medicine focusing on the diagnosis, treatment and management of disease primarily using "physical" methods of care, such as physical therapy and other methods. Physiatrists provide a wide variety of treatments for the musculoskeletal system (the muscles and bones) and do not perform surgery. Because the back is the core of the musculoskeletal system, many physiatrists are considered specialists in treating back pain. A number of physiatrists have additional training in special areas, like sports medicine, brain (e.g., stroke) or spinal cord injury, pain management or pediatric medicine.

Some physicians of rehabilitative medicine have had different training than others. They may be Doctors of Medicine (MDs) or Doctors of Osteopathy (DOs). A DO has attended an independent medical school and received identical training in basic science and clinical medicine as MDs; however, they are trained to use a holistic approach to healthcare that includes an additional 300-500 hours of training in osteopathic manipulative medicine (OMT). Most DOs practice no differently than MDs, and not all continue to use OMT. To find a DO who uses OMT in their practice, you must ask if they specialize or have additional interest in osteopathic manipulative medicine.

DOs are different than chiropractors (see *CAM section*). Chiropractors are independent practitioners with limited licenses to practice spinal manipulation and may incorporate nutrition into their practices. Unlike DOs or MDs, they cannot prescribe prescription medications, admit patients to hospitals or perform surgery.

### ● **Physical Therapy**

Physical Therapists (PTs) provide services that help restore function, improve mobility, relieve pain and prevent or limit permanent physical disabilities of those suffering from injuries or disease. They restore, maintain and promote overall fitness and health. They work with accident victims, as well as individuals with disabling conditions such as low-back pain, arthritis, heart disease, fractures, head injuries and cerebral palsy.

Therapists first examine medical histories and then test and measure the individual's strength, range of motion, balance and coordination, posture, muscle performance, respiration and motor function. They help determine one's ability to be independent and assist with the return to the community/workplace after an injury or illness. The overall goal is to improve and maximize how an individual performs in their work setting and at home.

Physical therapists use a variety of treatment methods to relieve pain and reduce swelling including electrical stimulation, hot packs, cold compresses, traction, deep-tissue massage and ultrasound. They also teach patients to use assistive or adaptive devices, such as crutches, prostheses and wheelchairs. Exercise training is often

provided, which can be performed at home to help advance recovery by reducing immobility and improving flexibility, strength and/or endurance. As treatment continues, physical therapists document the individual's progress, conduct periodic examinations and modify therapies when necessary. Besides tracking progress, they help identify areas that may require more or less attention.

PTs consult and practice with a variety of other professionals, such as physicians, dentists, nurses, educators, social workers, occupational therapists, speech-language pathologists and audiologists. Some treat a wide range of conditions; others specialize in areas such as pediatrics, geriatrics, orthopedics, sports medicine, neurology, pain management and cardiopulmonary physical therapy.



#### ● Occupational Therapy

Occupational therapists (OTs) help people perform tasks required for daily living and in the work setting. They work with those who have mentally, physically, developmentally or emotionally disabling conditions. OTs help to improve their basic movement and thinking skills, as well as adaptive behaviors when there is a permanent loss of function. Their overall goal is to help individuals have independent, productive and satisfying lives.

Occupational therapists assist in performing activities of all types, ranging from using a computer to mastering everyday needs such as dressing, cooking and eating. Physical exercises may be used to increase strength and skillfulness. Therapists instruct those with disabilities in the use of adaptive equipment, including wheelchairs, splints and aids for eating and dressing. They can design or make special equipment needed at home or at work.

Some occupational therapists treat individuals whose ability to perform in a work environment has been impaired. OTs can help arrange for work re-training and/or new employment, and may team up with the individual and the employer to evaluate the work environment, plan work activities, and provide a progress report on work performance. If needed, they help modify the work environment so that work can be successfully completed.

#### ● Exercise Physiology

Exercise physiologists (EP) are commonly seen working in wellness or fitness centers. Their duties include developing exercise routines and educating people about the benefits of exercise. EPs may also work in clinical settings prescribing exercise for individuals with special risks, such as cardiac and pulmonary disease. Services they may provide include:

- Assessment of functional abilities, including monitoring cardiovascular and metabolic state
- Risk profile for various exercise modes and intensities
- Health-behavior change counseling and management
- Specific physical activity prescription (to accommodate current health status)
- Exercise supervision or delivery for individual or group settings

They provide the pain management team regular reports on individual progress.



## REHABILITATIVE TECHNIQUES

The most common physical methods for pain management offered by rehab services are:

### ● Exercise

Exercise and physical activity are beneficial not only for the body, but also the mind, spirit and soul. Making a commitment to carve out a little time for exercise everyday is challenging for those who do not live with pain. It is much more difficult when simple movements like walking and changing positions causes pain.

Exercise not only keeps you healthy, it also helps reduce pain over time. Weight-bearing and cardiovascular exercise strengthens your heart, lungs, bones and muscles. This becomes even more important as we age. Physical activity protects against falls and bone fractures in older adults. Research also suggests that exercise may help control joint swelling and pain caused by arthritis. If we don't "use it, we lose it." Exercise helps preserve strength, agility and independence as we age.

The benefits of exercise are not only physically tangible; exercise has a profound effect on your mental state as well. Regular physical activity helps you cope with stress, improve your self-image, and ease anxiety and depression by releasing pleasure chemicals in our brains called endorphins. Research even suggests that physical fitness can make you more mentally alert. By incorporating group exercise with friends or family into your routine, you can also use exercise to strengthen your bonds with others. Connecting with friends and family is a key aspect of good emotional health. Too often, living with pain, leads to isolation.



*Here are a few tips:*

- Find something that you enjoy.
- Remember your routine need not start out at a vigorous pace. Try walking. Look into yoga classes to help you stretch and become more flexible. Tai Chi offers a low impact workout that promotes physical and mental well-being.
- Ask your instructors if they have experience working with those who live with chronic pain.
- Consult your healthcare professional before beginning any exercise program.

### ■ Hydrotherapy, Heat and Cold

Hydrotherapy is the use of water to maintain health or promote healing. Water has been part of healthcare since the beginning of civilization. Today, aspects of hydrotherapy are taught as part of healthcare training. Also known as Aquatic or Pool Therapy, the use of therapeutically warm water and exercise may help ease painful muscles and joints. Gentle movement may help build strength, relax stiff joints and sore muscles. Water buoyancy greatly reduces the pressure on joints, making it easier to perform range of motion exercises.

The use of ice packs, hot water bottles, heating pads and counter-irritant preparations, like Tiger Balm, Icy Hot or Ben Gay, are familiar in popular culture. For example, many use the application of ice to a sprained ankle or soaking in a hot

tub to soothe sore muscles. Steam can open clogged sinuses; ice packs can relieve swelling. Cold-based hydrotherapies, such as ice packs and cold compresses, decrease swelling and pain by constricting blood vessels and numbing nerve endings. On the other hand, heat-based hydrotherapies, such as whirlpools and hot compresses, have the opposite effect. As the body attempts to throw off the excess heat and keep body temperature from rising, dilation of blood vessels occurs, providing increased circulation to the area being treated. This helps relax muscle spasms and relieve pain.

Today hydrotherapy is a part of the physical therapy department of virtually every hospital and medical center. Various techniques using water are considered standard strategies for rehabilitation and pain relief. Many forms of hydrotherapy are also available at health spas and resorts. Be sure to check with your healthcare provider and verify the credentials of the spa before going.





#### • **Myofascial Therapy**

A gentle blend of stretching and massage, myofascial release therapy uses hands-on manipulation of muscle and skin to relieve pain and promote healing. According to practitioners of myofascial release, scarring or injury to this network of connective tissue and muscle is a major cause of pain and restricted motion. The easy stretch is aimed to alleviate these problems by breaking up, or releasing, constrictions or snags in the fascia. People with longstanding back pain, fibromyalgia, recurring headaches, sports injuries and other chronic pain disorders may benefit from this technique.

Myofascial release is part of a larger philosophy of healing that emphasizes the importance of mind-body interactions and preventive care. It is based on the idea that poor posture, physical injury, illness and emotional stress can throw the body out of alignment, which causes the fascia and muscle to become tight and constricted. Scarring or adhesions form. The gentle and sustained stretching of myofascial release is believed to free adhesions and soften and lengthen the fascia. The stretch may be held for one to two minutes, and sometimes for up to five minutes, before a softening, or "release," is felt. The release indicates that the muscle is relaxing, fascial adhesions are slowly breaking down, or the fascia has realigned to its normal position. The process is then repeated until the tissues are fully elongated.

Sessions typically last 30 minutes to an hour and may be given one to three times a week depending on your condition. Some people immediately feel better - even free of pain - and are able to move their joints more freely as soon as the session is over. Others feel some discomfort that night or the next day. Any soreness should subside within a day or two, and you should feel less pain and be able to move more easily than you did before.

Exercises are tailored to your individual needs, and you should be given exercises to do at home. Unlike stretching routines for specific sports, these exercises will be designed to lengthen the muscles and connective tissues in various directions. To relieve tightness in the pelvic region, for instance, you may lie with your hip resting on a small foam ball for several minutes.

#### • **Osteopathic Manipulation Treatment (OMT)**

Osteopathic medicine is a form of conventional medicine that highlights diseases arising in the musculoskeletal system. This practice follows an underlying belief that all of the body's systems work together, and disturbances in one system may affect function elsewhere in the body. The use of a hands-on technique called osteopathic manipulation treatment (OMT) may be considered to help reduce pain, restore function and promote health and well-being.

OMT covers a wide range of services including spinal manipulation, connective tissue release, soft-tissue techniques, muscle energy and cranial osteopathy. It is considered more comprehensive than a chiropractic spinal adjustment. OMT works to release blockages in a person's body to promote health. By removing restrictions in the muscles, nerves, blood vessels, ligaments, etc., the patient's body is able to move more freely allowing it to heal itself more effectively. As previously stated, some DOs practice osteopathic manipulation, particularly those who specialize in physical medicine.



● **Splints**

Casts, splints and braces are more commonly known as tools to support and protect injured bones and tissue following an injury. By shielding the injury, they allow for more rapid healing and help prevent further injury. They can also help reduce pain, swelling and muscle spasms.

At times, pain from inflammation, like in arthritis, causes swelling, which, in turn, increases pain. Your provider may suggest a splint to help you rest the affected area. Periodic rest with support and elevation may help to reduce the swelling and pain that has already occurred.

Wearing splints or braces during certain activities may also be recommended to help prevent pain, particularly when repetitive motion is a primary cause. Whether you are advised to wear a splint all day or only at night, this technique may help decrease additional irritation and lessen the degree of swelling and pain that might occur without one.

Protective devices such as light compression gloves/socks or splints, may be recommended if you have neuropathic pain that affects your hands and/or feet. These may help reduce swelling and decrease pain from light touch or light pressure.





#### ● **Transcutaneous Electrical Nerve Stimulation (TENS)**

TENS is a method commonly managed by physical therapy as a means to decrease pain without needles or surgery. The TENS unit is designed to block or prevent pain by providing opposing stimulation to compete with the unpleasant signals that cause pain. The TENS sensation(s) interrupt pain signals in the body. The mechanisms by which TENS can relieve pain are not understood.

TENS can be used in the treatment of acute and chronic pain, including pain of the lower back, neck, pelvis, nerves (CRPS/RSD, **neuritis**) and muscles (fibromyalgia, myofascial).

Used properly, TENS units are very safe, and do not hurt to apply or wear. The best time to wear TENS is during activities or times of the day when your pain is generally the most severe. The sensation should feel comfortable or pleasurable when the unit is turned on. They are battery-operated (9-volt). A TENS unit will NOT electrocute you. To prevent an unintentional shock, they should NOT be worn in the shower or bath tub or be turned up too high. It is not recommended to be used with a demand-type cardiac pacemaker. Also, there are specific areas of the body that should be avoided, like over the larger blood vessels (arteries) in the neck.

#### **ADDITIONAL PHYSICAL METHODS**

There are other physical methods that may be offered to aid in pain reduction and improvement of movement. Depending on the practice size, location and experience of the providers may determine the scope of services. These methods may be performed by a physical therapist with special training or a complementary practitioner (see *CAM section*).

#### ● **Chiropractic** (See *CAM section*)

#### ● **Craniosacral Therapy**

A gentle form of manipulation, **craniosacral therapy**, is a hands-on healing technique typically practiced by physical therapists, massage therapists and chiropractors. Craniosacral therapists believe the movement of spinal fluid within and around the central nervous system creates a vital body rhythm, no less important to health and well-being than the heartbeat or breath. Health problems develop, they contend, when blockages occur. Practitioners assert that craniosacral therapy reestablishes the normal flow of fluids and thus restores health.

By law, craniosacral therapists are not allowed to make a medical diagnosis. For this reason, the technique should not be confused with cranial osteopathy, a diagnostic and therapeutic method of treatment that is practiced by highly trained osteopathic physicians. A session usually lasts from 20 minutes to an hour.



- **Feldenkrais (Functional Integration)**

The **Feldenkrais Method** is a form of somatic education that uses gentle movement and directed attention to improve movement and enhance human functioning. Through this method, you learn to improve your ease of motion, increase your range of motion, expand your flexibility and coordination, and rediscover your ability to move gracefully and effectively. These improvements may enhance functioning in other aspects of your life such as pain reduction.

The **Feldenkrais Method** is based on principles of physics, biomechanics and an understanding of learning and human development. By expanding the self-image through movement sequences that bring attention to the parts of the self that are **out** of awareness, the method enables you to include more of yourself in your everyday activities.

- **Rolfing (Structural Integration)**

**Rolfing** emerged from the concept that humans function most efficiently and comfortably when key parts of the body, such as the head, torso, pelvis and legs, are properly aligned. There are different versions of Rolfing. Rolfing is a form of myofascial massage guided by the contours of the body. Rolfers use their fingers, hands, elbows and knees to place deep pressure and shift bones into proper alignment. Their goal is to increase range of motion and make movement easier by correcting posture misalignments. Rolfing can sometimes be painful.

- **Trager Approach**

The **Trager Approach** is a form of movement consisting of a series of gentle, passive movements, along with rotation and traction of arms and legs to relieve muscular tightness without pain. This technique was developed in the early 1900s to help polio victims. Some with chronic pain due to muscle spasm have reported noticeable pain relief beginning with the first session.

The practitioner moves select parts of the body in a light rhythmical fashion so that you can experience the feeling of this light, effortless movement. The goal of each session is to help reduce stress and to find more effective ways to deal with stressful situations. Added benefits are enhanced conscious awareness, greater flexibility, improved self image, greater energy and reduced constriction and rigidity.

The following are commonly recommended techniques, which can be done at home as part of a self-care program.

**Ice.** Ideal for pain related to recent injury, re-injury of inflammation like with strains, sprains and bruises. It can easily be done anywhere. Cold has a numbing effect. However, placing ice directly on your skin can cause nerve damage. Be sure to place a thin towel or pillow case between your skin and the cold source, whether using ice cubes in a plastic bag, a frozen pack of peas (or corn) or a gel pack. Ice for 20 minutes, and then remove it until the surrounding skin returns to normal temperature before re-applying. This can be repeated on a regular basis every two hours throughout the day.

**Compresses.** To make a wet compress, soak a cloth in hot or cold water and squeeze out the excess until the desired amount of moisture remains. Single or double compresses may be used. Grain pillows, gel-packing and certain heating pads (follow the manufacturer directions) can be used. A single compress involves the use of the wet cloth over the affected area. A double compress includes placing a dry material such as wool or flannel over the wet compress.

A cold compress can be used to decrease swelling, reduce blood flow to an area or inhibit inflammation. Cold should not be used in the presence of circulation disorders, like peripheral vascular disease, certain heart conditions and diabetes, unless pre-approved by your healthcare professional.

A hot compress can have an analgesic effect, thereby decreasing pain. When using hot water, the double compress serves to retain the heat. Hot compresses can also be used to lessen the discomfort from muscle cramping or spasm and improve blood flow to a particular part of the body. Separate, alternating or simultaneous use of hot or cold compresses can be applied for pain relief depending on the individual preference. When using a microwave to heat a gel pack or grain pillow, please follow the directions to avoid extreme heat that could cause skin burn.

**Baths.** Either immersing the entire body or simply the affected part of the body can be

helpful. Hot full-immersion baths can help with arthritic discomfort and conditions where muscles are in painful spasm, such as fibromyalgia. For a neutral (or tepid) bath the temperature should be neither too hot nor too cold. These are mainly used for relaxation purposes and to treat stress-related ailments such as insomnia, anxiety and nervous exhaustion. Cool baths can relieve swelling or inflammation.

**Sitz baths.** Taking sitz baths involves partially immersing the pelvic region. A hot sitz bath can help reduce pain from hemorrhoids, abdominal cramping or sciatica. A special sitz bath seat can be purchased at most pharmacies.

**Cold friction rubs.** A friction rub involves massaging a particular area of the body with a rough washcloth, terry towel or loofah that has first been placed in ice water. Friction rubs have a toning effect that helps to increase circulation and tighten muscles.

**Counter-irritants.** Better known as heating or cooling creams, lotions or salves applied to the skin over the painful area. They are either gently rubbed around the skin surface or used with massage or myofascial release treatments. They can be used as a single agent for either the preferred heat or cooling effects, alternating between the two sensations or in combination with a therapy that provides the opposite effect.

**Alternating.** Use one preparation that heats, wait for effect to wear off and skin returns to normal temperature, wash off remaining product before applying opposite preparation that cools.

**Combination.** Apply product that heats. Be sure to protect the skin by placing plastic wrap over area, then place ice pack on top. Remove ice pack within 15-20 minutes and wait 30 minutes before reapplication of ice pack.

Whenever these preparations are used, it is important to avoid using two therapies that enhance the same temperature effect to avoid heat or cold burns to the skin. For example, if you plan to take a hot shower or apply a heating pad to an area previously treated, wait for the product effect to wear away and wash off any remaining product.

Complementary &  
Alternative Medicine  
{CAM}





### COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM)

Many Americans are using complementary and alternative medicine (CAM) therapies, and many conventional (allopathic) doctors are incorporating these therapies into their practices. Medical schools across the country — including Yale and Harvard — now offer courses in complementary and alternative medicine (CAM). In 1999, the National Institutes of Health opened the National Center for Complementary and Alternative Medicine (NCCAM) to evaluate these methods. NCCAM was created to advance the scientific study of CAM to help answer questions about safety and the effect on health promotion, disease prevention and/or management of medical disorders.

#### CAM Therapies and Practices On the Rise

More and more Americans are turning to CAM to help manage and treat various health problems, including pain and stress.

Consider these facts:

- According to surveys, seven out of ten Americans use some form of CAM.
- Americans spend at least \$34-47 billion on CAM therapies, exceeding out-of-pocket expenses for all U.S. hospitalizations. CAM is expected to grow by 15 percent each year.
- People report using CAM because these methods mirror their personal beliefs, values and philosophical orientations toward life.
- Many people use CAM to help relieve back pain, joint pain, severe headache and pain associated with migraines, dental and jaw pain and for a variety of other reasons.
- Being able to deliver integrated medicine, which incorporates proven CAM therapies into “mainstream” care, is increasingly important to consumers and healthcare providers.

#### CAM: What Is It?

NCCAM defines CAM as “a group of diverse medical and healthcare systems, practices, and products that are not presently considered to be part of conventional medicine.” Most CAM therapies take a *holistic* approach to care — treating the mind, body and spirit. Some of these approaches, such as acupuncture, mind-body therapies (e.g., biofeedback), yoga and massage are widely used and accepted. For this reason, they have been *integrated* into medical care. Integrative approaches may be the most effective for people living with pain. For example, acupuncture, mind-body techniques, energy therapies and chiropractic care can be used along with analgesics (pain

*Much of the information presented in this chapter is adapted from the National Center for Complementary and Alternative Medicine (NCCAM) Web site and educational materials on CAM. For more information, visit [nccam.nih.gov](http://nccam.nih.gov).*

medication) to reduce pain. Other CAM therapies are not widely accepted by the medical community and some carry risks, so make sure to speak with your healthcare provider about CAM.

CAM is expected to grow as therapies are proven safe and effective, adopted into routine healthcare and new approaches become known.

**What is the difference between complementary medicine, alternative medicine and integrative medicine?**

**Complementary medicine** is used **together with** conventional medicine. An example of a complementary therapy is using massage therapy to help lessen a patient's discomfort for the relief of musculoskeletal pain/discomfort.

**Alternative medicine** is used in place of conventional medicine. An example of an alternative therapy is using a special diet to treat cancer instead of undergoing surgery, radiation or chemotherapy that has been recommended by a conventional doctor.

**Integrative medicine** combines conventional medical therapies and CAM therapies for which there is some high-quality scientific evidence of safety and effectiveness.

**NCCAM classifies CAM therapies into five categories:**

**1. Alternative Medical Systems**

Alternative medical systems are built upon complete systems of theory and practice. Often, these systems have evolved apart from and earlier than the conventional medical approach used in the United States. Examples of alternative medical systems that have developed in Western cultures include homeopathic medicine and naturopathic medicine. Examples of systems that have developed in non-Western cultures include traditional Chinese medicine and Ayurveda.

**2. Mind-Body Interventions**

Mind-body medicine uses a variety of techniques designed to enhance the mind's capacity to affect bodily function and symptoms. Some techniques once considered CAM have been part of conventional medicine for decades, like patient support groups and cognitive-behavioral therapy. Other mind-body techniques are still considered CAM, including meditation, prayer, mental healing and methods that encourage creative expression such as journaling, art or music.

**3. Biologically Based Therapies**

Biologically based therapies involve substances found in nature, such as herbs, foods and vitamins. Some examples include dietary supplements and herbal remedies. This may include the use of other substances that have unsubstantiated scientific value, such as shark cartilage used in cancer treatment.

**4. Manipulative and Body-Based Methods**

Manipulative and body-based methods are based on manipulation and/or movement of one or more parts of the body such as chiropractic techniques, osteopathic manipulation and therapeutic massage.



### 5. Energy Therapies

Energy therapies involve the use of energy fields. They are of two types:

**Biofield therapies** are intended to affect energy fields that surround and penetrate the human body. The existence of such fields has not yet been scientifically proven. Some forms of energy therapy manipulate biofields by applying pressure and/or manipulating the body by placing the hands in, or through, these fields. Examples include Qigong, Reiki and Therapeutic Touch.

**Bioelectromagnetic-based therapies** involve the unconventional use of electromagnetic fields, such as pulsed fields, magnetic fields, or alternating current or direct-current fields.

## OVERVIEW OF CAM THERAPIES

### Alternative Medical Systems

- **Homeopathic medicine** is an alternative medical system. In homeopathic medicine, there is a belief that "like cures like." Highly diluted quantities of medicinal substances are given to cure symptoms, when the same substances given at higher or more concentrated doses would actually cause those symptoms. To date, there is no scientific evidence supporting the use of homeopathic medicine for pain.
- **Naturopathic medicine**, or naturopathy, is an alternative medical system. Naturopathic medicine proposes that there is a healing power in the body that establishes, maintains and restores health. Practitioners work with the patient with a goal of supporting this power through treatments such as nutrition and lifestyle counseling, dietary supplements, medicinal plants, exercise, homeopathy and treatments from traditional Chinese medicine.
- **Traditional Chinese Medicine (TCM)** is the current name for an ancient system of healthcare from China. TCM is based on a concept of balanced qi (pronounced "chee"), or vital energy, that is believed to flow throughout the body. Qi is thought to regulate a person's spiritual, emotional, mental and physical balance and to be influenced by the opposing forces of yin (negative energy) and yang (positive energy). Disease is believed to result from the flow of qi being disrupted and yin and yang becoming imbalanced. Among the components of TCM are herbal and nutritional therapy, restorative physical exercises, meditation, acupuncture and therapeutic massage.

**Acupuncture** is a method of healing developed in China at least 2,000 years ago. Acupuncture has a growing acceptance in the field of conventional medicine. Today, acupuncture describes a family of procedures involving stimulation of anatomical points on the body by a variety of techniques. American practices of acupuncture incorporate medical traditions from China, Japan, Korea and other countries. The acupuncture technique that has been most studied scientifically involves penetrating the skin with thin, solid, metallic needles that are manipulated by the hands or by electrical stimulation.





**Acupressure** is an ancient Chinese healing method that involves applying pressure to certain meridian points on the body to relieve pain. These meridians start at the fingertips, connect to the brain, and then connect to the organ associated with the specific meridian. Acupressure relaxes muscular tension and balances what are thought to be the vital life forces of the body. The patient lies fully clothed on a soft massage table while the practitioner presses gently on points situated on various parts of the body. The session is non-invasive and gentle. An average session lasts for about one hour. However, most people require a number of sessions to complete a treatment.

- **Reflexology** is a healing art based on the principle that specific points on the feet and hands correspond to specific parts of the body. By applying pressure to the feet or hands, an increase in circulation and energy is stimulated to specific bodily and muscular functions. People often experience deep relaxation and sense of well-being.
- **Ayurveda** is an ancient Eastern Indian approach to healthcare that has been practiced primarily in the Indian subcontinent for 5,000 years. Ayurveda includes diet and herbal remedies and emphasizes the use of body, mind and spirit in disease prevention and treatment.

#### **Mind-Body Interventions**

*The mind is the most powerful healing tool.*

Mind-body techniques focus on influencing changes at the higher brain centers where information is processed for the perception of pain, where thought can interrupt the pain message, as well as your feelings and fears. Simple changes in our thoughts can change our behavior. For example, when we learn to turn off our negative “self-talk” and change our internal conversation to a dialogue with positive messages, our mood lifts and we feel better physically, emotionally and spiritually.

Mind-body techniques are powerful options to incorporate into daily living. Examples include distraction, meditation, prayer, guided imagery, hypnosis, relaxation/breathing exercises (commonly used in prepared childbirth classes) and biofeedback.

- **Mindfulness Meditation** (See *Psychosocial section*)
- **Prayer** is often considered a spiritually-focused meditation. Prayer has been shown to have dramatic effects. Prayer is used to promote healing, relieve pain, enhance comfort and relaxation and ease the transition during life changes.
- **Guided Imagery** (See *Psychosocial section*)
- **Hypnosis/Hypnotherapy, Relaxation and Breathing Exercises and Biofeedback** (See *Psychosocial section*)
- **Mind-Body Disciplines** are techniques and practices aimed at integrating mind, body and spirit by achieving physical conditioning, as well as a state of peace, being centered or feeling grounded. Yoga and Tai Chi are centuries old, whereas Pilates was developed in the early 1900s.
- **Pilates** is a method of body conditioning that focuses on the core postural muscles essential to spinal alignment, muscular flexibility and strength. By using spring-based equipment, the person uses their own body’s resistance to improve strength,



circulation, posture and breathing, critical to decreasing pain and improving body awareness and muscular tone. A teacher should have experience in working with individuals with chronic pain, be certified through a 400-600 hour certification program and have a fully equipped studio.

- **Tai Chi** is an ancient Chinese discipline. In addition to its physical benefits, there are certain psychological effects as well. Tai Chi also provides a form of meditation. This form of meditation is rooted in self-control, which can come from learning how to create a natural balance (harmony) within yourself. The effect of this harmony is to capture both physical and spiritual well-being.

Tai Chi, as it is practiced in the West today, can best be thought of as a yoga and meditation combined. There are a number of *forms* (also called 'sets') which consist of a sequence of movements. Many of these movements are originally derived from the martial arts and from the natural movements of animals and birds. Tai Chi is performed slowly, softly and gracefully with smooth and even transitions between forms.

*The concentration used to execute Tai Chi fosters a calm and tranquil mind.*

Learning Tai Chi forms correctly provides a practical ground for learning balance, alignment, fine-motor control, rhythm of movement and the peace of silence. Tai Chi can help you to better stand, walk, move and/or run. Many practitioners notice benefits in terms of correcting poor postural, alignment or movement patterns which can contribute to tension or injury. The meditative nature of the exercises is calming and relaxing.

- **Yoga** is an ancient Indian discipline that teaches balance, flexibility and meditation. In its most authentic expression, yoga is not exercise or religion, but an ancient method of stilling the mind, cultivating kindness and compassion towards ourselves, and resisting the urge to over-identify with the physical body. There are different forms of yoga. For example, Hatha yoga is considered the oldest comprehensive form of self care — physical, mental, emotional and spiritual — to bring balance and enhanced wellbeing. Hatha yoga includes body positions or poses, breathing techniques, relaxation and sustained concentration or meditation.

The poses (*asanas*) improve posture through stretching, toning and strengthening the muscles, joints and the spine. They also stimulate and balance the internal organs, glands, nervous system, and circulatory and respiratory systems. Through proper breathing, the mind is calmed and the whole body is cleansed and revitalized. By learning relaxation techniques before and after yoga poses, the body and mind can experience a new form of rest. A goal of the practice of yoga is to learn how to find the calm, quiet place inside yourself, which can console you during times of stress, pain or the need for restoration.





### Biologically Based Therapies

- **Aromatherapy** involves the use of essential oils (extracts or essences) from flowers, herbs and trees to promote health and well-being. Essential oils have been used for thousands of years all over the world, and may be used in a bath, vaporizer, spritzer bottle or in other ways. Most essential oils are diluted for use in water, cream or non-scented oils. Some essential oils may be used topically. When using essential oils, you should be told about the expected benefits and risks and the proper way to use them.
- **Dietary supplements** are products (other than tobacco) taken by mouth that contain a "dietary ingredient" intended to supplement the diet. Congress defined the term "dietary supplement" in the Dietary Supplement Health and Education Act (DSHEA) of 1994. Dietary ingredients may include vitamins, minerals, herbs or other botanicals, amino acids and substances such as enzymes, organ tissues, and metabolites. Dietary supplements come in many forms including extracts, concentrates, tablets, capsules, gel caps, liquids and powders. They have special requirements for labeling. Under DSHEA, dietary supplements are considered foods not drugs.

Herbal remedies and supplements are increasingly being used and studied for pain treatment and pain-related symptoms. Ideally, they should be recommended and monitored by a healthcare professional. If you are using them without supervision, please report this to your healthcare provider. Examples are:

- Feverfew: Migraine headache; arthritis
- Glucosamine & Chondroitin: joint pain, like with arthritis or degenerative disease
- Ginger: Anti-inflammatory as with arthritis; reduces nausea
- Ginkgo Biloba: Migraine headache; lower leg pain due to poor circulation
- Ginseng: Fibromyalgia; Chronic fatigue
- Kava Kava: Tension headache, insomnia, neuropathic pain
- Melatonin: Insomnia
- Pycnogenol: Arthritis
- St. John's Wort: Sciatica, arthritis, and neuropathic pain, depression
- Tiger Balm (Menthol; Camphor): Muscular pain and spasm (used with massage; myofascial release)
- Valerian Root: Insomnia, anxiety, nervousness, spasms, muscle cramps

- **Nutrition.** Maintaining an ideal body weight supports health and well-being and reduces excess burden on painful conditions, including back and knee pain, arthritis and diabetes. If this is a problem for you, a dietician can help you pursue a weight loss program. This can help relieve pain associated with low back pain or joint pain disorders.

Eliminating nicotine and minimizing alcohol use is also beneficial. There is increasing evidence that smoking tobacco has a strong influence on the prevalence of low back pain. Limiting alcohol lowers the risk of alcohol related neuropathies and pancreatitis. Most medications used for pain treatment should not be taken while drinking alcohol. Excessive alcohol intake changes the liver where the filtering of most pain medications takes place upon entering the bloodstream. As the liver becomes damaged, medication therapy is less effective.



### Manipulative and Body-Based Methods

- **Chiropractic Care** is a therapeutic approach that focuses on the relationship between bodily structure (primarily that of the spine) and function, and how this relationship affects the protection and restoration of health. Chiropractors use spinal manipulative therapy as a basic treatment tool.

The roots of chiropractic care can be traced to the beginning of recorded time. Ancient writings mention spinal manipulation and the adjustment of the lower extremities to ease low back pain. The primary belief of the chiropractic profession supports a natural method of healthcare that includes a deep respect for the human body's ability to heal itself without the use of surgery or medication. Chiropractors give careful attention to the biomechanics, structure and function of the spine, its effects on the musculoskeletal and neurological systems, and the role played by the proper function of these systems in the preservation and restoration of health.

Chiropractors frequently treat individuals with a variety of pain disorders, such as headaches, joint pain, neck pain, low back pain and sciatica. They also treat patients with osteoarthritis, spinal disk conditions, carpal tunnel syndrome, tendonitis, sprains and strains.

- **Osteopathic Medicine** (See *Rehabilitative section*)

- **Massage** therapists manipulate muscle and connective tissue to enhance function of those tissues and promote relaxation and well-being.

Massage is an old healing art with many techniques and approaches. Massage acts directly on the nervous system, activating the opposite of the "fight or flight syndrome" and promoting relaxation. It eases painful and tight muscles using stretch that gently separates individual muscle fibers that may have become bound and knotted together. This reduces spasm.

Massage can help:

- Increase range of motion in your joints by releasing muscle tension around them;
- Enhance circulation, cleansing your body of waste products (toxins) that can cause fatigue and soreness;
- Stimulate the healthy production of the joint's natural lubrication; and,
- Relieve secondary pain that builds up around a primary pain or injured site.

Secondary pain has been known to last longer than the primary cause. For example, headaches can be caused from tense shoulder and neck muscles, shooting leg pain can originate from tight low back muscles and stiff hip joints. Massage aids in the release of endorphins (your body's natural morphine) that reduces pain and gives the sensation of feeling good.

It is most important to drink plenty of water following massage to help rid the body of toxins that are released. Massage also promotes a restful sleep by helping the body and mind relax. At the same time, people experience an overall increase in vitality, energy and alertness.



● **Therapeutic Massage** is the biomechanical manipulation of soft tissue for the purpose of restoring or maintaining balance within and among the various systems of the body-mind complex while the body is at rest and the mind is letting go. Aromatherapy, music therapy and special massage lotions are frequently used. Therapeutic massage should be administered by an individual with special training and certification in this form of body-mind work.

● **Simple Massage** is either self-massage or a focused-area massage performed by a family member, friend or healthcare provider without special certification in therapeutic massage. This type of massage may be used with counter-irritant products, like Tiger Balm, Icy Hot or warmed lotion/creams.

#### Energy Therapies

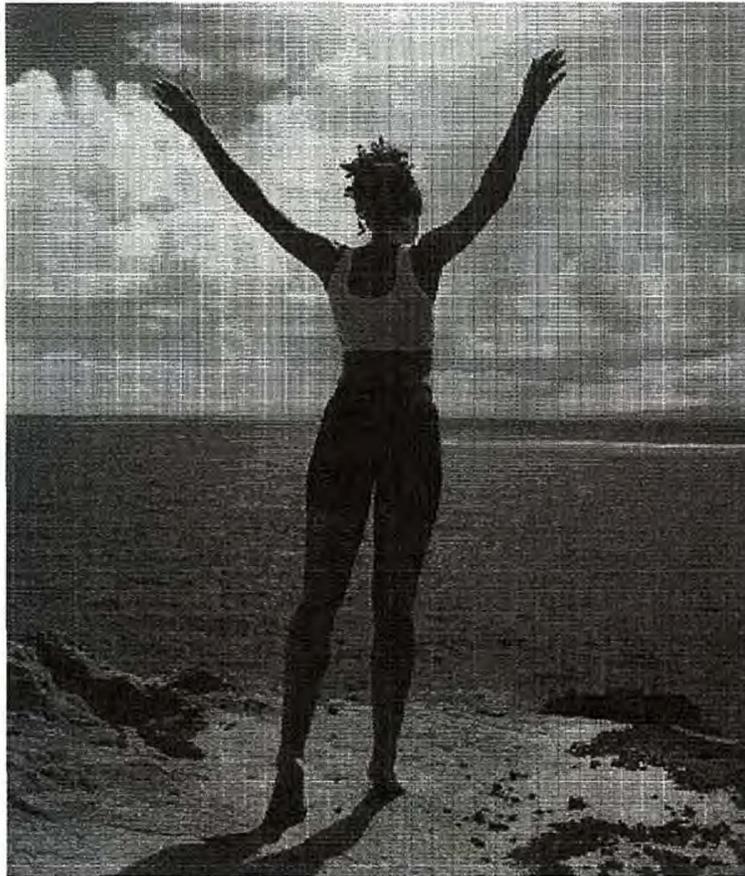
- **Biofield (also known as Touch) Therapies** originate from an ancient technique called "laying-on of hands" or the "sharing of energy." The recipient of the therapy may either accept or reject that "healing" energy.
- **Qigong** is a component of traditional Chinese medicine that combines movement, meditation, and regulation of breathing to enhance the flow of energy in the body, blood circulation and immune function.

The word Qigong is a combination of two ideas: "Qi" means air, breath of life, or vital energy of the body, and "gong" means the skill of working with, or cultivating self-discipline and achievement. The art of Qigong consists primarily of meditation, relaxation, physical movement, mind-body integration and breathing exercises. It is believed that regular practice of Qigong helps to cleanse the body of toxins, restore energy, reduce stress and anxiety, and help individuals maintain a healthy and active lifestyle.

- **Healing Touch** is an energy balancing therapy provided by practitioners to promote healing, relieve pain, increase relaxation, reduce anxiety, prevent illness, manage symptoms of illness and ease dying. Treatments involve light touch on and above the body in the individual's energy field (biofield). Certification of practitioners is provided by Healing Touch International.
- **Reiki** is a Japanese word representing Universal Life Energy. Reiki is a technique used for stress reduction and relaxation that allows one to tap into an unlimited supply of "life force energy" to improve health and enhance the quality of life. Reiki is based on the belief that when spiritual energy is channeled through a Reiki practitioner to another, the spirit can be healed, which in turn heals the physical body. Special training and credentialing is required.



- **Therapeutic Touch** is based on the premise that it is the healing force of the therapist that affects the patient's recovery; healing is promoted when the body's energies are in balance. By passing of the therapist's hands over the patient, they can identify energy imbalances and share energy for healing. Therapeutic Touch involves special training through Nurse Healers Professional Associates International, as well as extensive practice and experience.



### Bioelectromagnetic-based therapies

- **Magnet Therapy** uses magnets, which produce a type of energy called magnetic fields, to treat or ease the symptoms of various diseases and conditions, including pain. Most magnets that are used are called “static” magnets because the magnetic field is not changed. Electromagnetic therapy, the use of magnets with electrical currents, is used only under supervision of a healthcare provider.

#### Including CAM in Your Pain Management Plan: Some Things to Consider

Surprisingly, nearly half of those using complementary and alternative therapies do not tell their primary care doctors about it — either out of embarrassment, fear of being reprimanded and/or not recognizing the importance of informing their providers. But it's important to tell your healthcare providers the whole truth. If you are thinking about incorporating CAM approaches into your pain management plan, here are some things you should do:

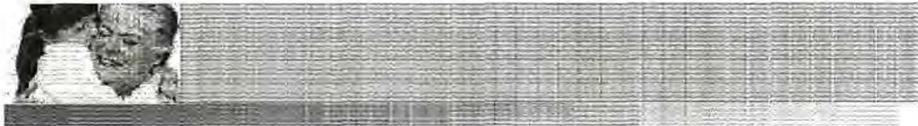
- **Consult with your healthcare provider.** Discuss all conventional and CAM treatments you are using. Ask about CAM therapies, and how they can be included in your pain management plan.
- **Assess the safety and effectiveness of the therapy.** A safe therapy does no harm when used as intended. An effective therapy is one that has measurable benefits. Ask your provider about the safety and effectiveness of the therapy you are interested in. He or she may not be familiar with the type of therapy you are using or plan to use, so bring as much information as you can.
- **Seek out the evidence.** Research studies evaluating CAM therapies are ongoing. Scientific evidence for the benefits of some CAM therapies is extensive, while for others it may be lacking and/or in progress.
- **Talk to the practitioner.** Ask about his or her education, additional training, licenses, and certifications — both conventional and CAM. Will he or she provide you with information about the therapy (e.g., how it is administered, its purpose, any possible side effects)?
- **Investigate the practitioner's expertise, background, qualifications and competence.** Contact your state or local regulatory agency with authority over the type of treatment you are seeking. Check to see if the practitioner is licensed to deliver services he or she claims to provide. Talk to your provider and other patients about the practitioner.
- **Consider the quality of service delivery.** Learn about how and where the therapy is given, and whether it meets regulated standards for medical safety and care. Visit the practitioner's setting. Ask about how many patients he or she sees, and how much time is spent with patients. It is important to know that some therapies take longer to provide a significant effect; however, more lasting results may occur. Give yourself a timeframe in which you think you should see results based on information you have gathered.
- **Think about the costs.** Learn about which treatments will be reimbursed by your medical insurer. Many CAM treatments are not covered yet. Contact several practitioners and see what they're charging for similar therapies.



- **Look at YOURSELF.** Consider what you can do on your own first. Eliminate or significantly decrease potentially harmful habits commonly used to relieve stress: drinking too many caffeinated beverages (coffee, tea, sodas), using alcohol, smoking cigarettes and eating comfort foods. These may be rewarding in the short-term, but when used repeatedly, they significantly contribute to the pain problem. Begin to change those habits by pursuing activities that are rewarding, satisfying and relaxing: walking in the park, listening to music, gardening, playing with your children or pets. Group social support is also extremely beneficial. Group therapy can be as simple as talking with close friends and loved ones, who will listen. Remember to do the same for them.
- **For safety, know the source of your products.** Explore the company that is making the products you chose to use. Ask questions about their standards for manufacturing of the product, quality control and standardization of active ingredients in the product.

# Injection and Infusion Therapies





## INJECTION AND INFUSION THERAPIES

Injection and infusion therapies may be used for the management of both acute and chronic pain. Acute pain, which you might experience after surgery or a major trauma, may be controlled optimally with pain medications delivered directly into your vein (intravenous) or your spine (intraspinous, which includes epidural or intrathecal), or with local anesthetics injected prior to your procedure (regional anesthesia). Persistent or chronic pain, which is defined as pain lasting longer than three months, may require injection (nerve block) or infusion therapies if other therapies (oral medications, physical therapy, etc.) do not provide adequate pain relief. In this section, we will discuss injection therapies, neuroablative therapies, minimally invasive surgical procedures, infusion therapies and implantables.

### Injection Therapies

Injection therapies may be used to treat painful conditions in many areas of the body. The term nerve block was originally used for an injection that targeted specific nerves. It is now associated with any procedure involving placing a needle into a muscle, joint, spine, or around a specific group of nerves, followed by the injection of medication(s) or delivery of some other treatment such as electricity, heat or cold.

Nerve blocks can be used to:

- *Diagnose pain (diagnostic nerve blocks)* – This can help determine if your pain is coming from a nerve, muscle or joint. It may also help identify nerve pathways causing your pain.
- *Predict the effects of permanent nerve blocks (prognostic nerve blocks)* – Certain nerve blocks are first done with a numbing (local anesthetic medication). If you have relief from this type of block, a more permanent type of block, which will provide longer lasting pain relief may be recommended. The local anesthetic block may “predict” what kind of result you will have with the permanent block.
- *Prevent development of chronic pain syndromes (prophylactic nerve blocks)* – Development and spread of certain types of sympathetic nerve pain conditions may be slowed or stopped by using prophylactic nerve blocks.
- *Provide pain relief (therapeutic nerve blocks)* – When the cause of your pain is known, a therapeutic nerve block may provide a reduction in pain that serves as a complement to other pain treatment options.

Prior to any procedure, your pain specialist may perform a complete pain assessment in order to select the most appropriate injection therapy. This usually includes a complete physical exam and a review of your full medical history, including any testing you may have had (X-rays, CT scans, MRIs, etc.), as well as your personal preferences. This will allow your provider to develop a treatment plan tailored to your specific condition and needs. Your pain specialist should go over the type of block, benefits and risks, and potential side effects in detail before getting your consent to perform the procedure.

The most common medications injected include local anesthetics, corticosteroids and neurolytic drugs. (For additional information, see *Pharmacotherapy* section).

- *Local anesthetics* can numb a painful area by “blocking” sensory and pain pathways. Commonly used local anesthetics are lidocaine and bupivacaine.
- *Corticosteroids* reduce inflammation around the nerves to decrease pain. Commonly used corticosteroids are methylprednisolone acetate and triamcinolone.

- *Neurolytic drugs* destroy nerve pathways to produce a more permanent effect. These drugs include absolute alcohol and phenol, which are otherwise not commonly used in chronic pain management.

In all cases, the area to be injected will be cleaned with an antiseptic solution before any medication or solution is injected into the affected area, which will be numbed with a local anesthetic. Fluoroscopy (a special X-ray) is used for some nerve blocks in order to guide the placement of the needle.

#### **What to Expect Prior to the Procedure (Preparation)**

What you may need to do to prepare for each injection therapy will depend on the type of injection and the setting in which the pain specialist will perform the procedure (private office, ambulatory surgery center, hospital center, etc.). Particularly for nerve blocks or minimally invasive surgery, you might need to consider:

- Food and liquids – you **may** be asked to refrain from eating or drinking for a certain period of time prior to your procedure.
- Transportation – you **may** be asked to have someone drive you home after the procedure.
- Medications – you **may** be asked to stop certain medications (blood thinners) prior to your procedure.
- Intravenous (IV) – you **may** have an IV placed prior to your procedure with or without IV fluids running.
- Conscious sedation – you **may** be given medications either before or during your procedure to calm you, make you sleepy while remaining aware and able to follow directions, or to relieve your pain. You should be given specific instructions prior to receiving any type of sedation. These medications may interfere with your memory and functioning, which is why you need to bring a friend or family member with you to listen to your discharge instructions and drive you home.
- Positioning – you **may** be asked to get onto an exam or X-ray table and lie still for a period of time. Be sure to let the pain specialist know if you will require any special assistance.
- Allergies – it is very important that you report if you are allergic to any medications, especially any reactions you may have had to local anesthetics, corticosteroids, iodine, IV dye or shellfish.
- Risk of exposure to radiation (if X-ray/fluoroscopy is used); this is a particular concern in pregnancy.

#### **General Risks**

As with any procedure, there are risks of serious complications. While these are uncommon, your pain specialist will be prepared to treat them immediately. Admission to the hospital for at least an overnight observation could be recommended for any of the following:

- Uncontrolled bleeding
- Unplanned perforation of a vital organ located close to the treatment area
- Unplanned nerve damage causing weakness or numbness to the surrounding area of treatment
- Allergic reaction from the local anesthetic causing difficulty breathing



## Types of Injection-Based Therapies (e.g., Nerve Blocks) and How They are Used

### Diagnostic Injection

#### ● Discogram

A discogram is a procedure used to determine which disc(s) in your lower back is causing your back or leg pain. Fluoroscopy is used and X-ray pictures of the discs are taken. This procedure may be performed by a pain specialist or a specialty trained radiologist. You may be asked to take copies of your X-rays back to the physician who ordered the discogram for their review if that is preferred over a written report of findings by the performing physician.

Conscious sedation is commonly used for this procedure. You will be placed in the prone (face down) position on an X-ray table. A thin needle will be placed into each disc being tested and solution will be injected to increase pressure in the disc in an attempt to recreate your pain. You will be asked if the injection of the solution "reproduces" your pain or not. If it does, then this may be the disc that is causing your pain and further treatment options may be available.

### Injections

#### ● Botulinum Toxin Injection

An injection of botulinum toxin into the muscle/muscle group causing you pain. This toxin causes temporary paralysis of these muscles. This injection may be done if you have dystonia, a disorder characterized by cramping muscles, certain headaches or other conditions where muscles are in chronic spasm causing pain.

The dosage of botulinum toxin is very small. The relief effect takes time to notice. It may take 2-3 days before muscle relaxation is achieved. This effect generally lasts months, but requires follow-up before a repeat injection is recommended. If a poor response or no response occurs with a previous injection, the value of proceeding with further injections should be reviewed first.

#### ● Sacroiliac (SI) Joint Injections

An SI joint injection is the injection of medication into the sacroiliac joint in your buttock region. This may be done if you have a certain type of low back/buttock pain.

Fluoroscopy may be used to guide placement of a needle into the SI joint, and inject a local anesthetic or local anesthetic/steroid solution.

#### ● Trigger Point Injections (TPI)

TPIs are the injection of medications into your muscles. These muscle "trigger points" are usually painful when you press directly on them.

TPIs may be done to treat trigger point pain from chronic spasm, Myofascial Syndrome or Fibromyalgia. A needle will be inserted into the painful trigger points and a local anesthetic with or without steroid will be injected.

### Nerve Blocks

The nerve blocks described below are a representation of the most common nerve blocks done for pain conditions. Ask your healthcare provider about these and nerve blocks not discussed in this section.



- **Axillary Block**

An axillary block is an injection of a local anesthetic around a group of nerves located in your underarm area. This type of block may be done if you have Complex Regional Pain Syndrome (CRPS), nerve pain in your arm, or for diagnostic purposes.

You will lie flat with the affected arm stretched out with your palm up. A needle will be inserted into your underarm and a local anesthetic is injected. You may feel a sharp tingling sensation at the time of injection. Don't worry, this is normal. This confirms that the needle is in the proper place.

- **Celiac Plexus/Hypogastric Plexus Block**

These blocks involve the injection of a local anesthetic into the area of a group of nerves which supply the abdominal organs, called celiac plexus nerves. These blocks are performed most commonly for the treatment of upper abdominal pain due to chronic pancreatitis, cancer and pelvic pain. Fluoroscopy is used to guide the placement of needle to the area. After the needle is in the proper area, local anesthetic will be injected in the area of the celiac plexus nerves.

- **Epidural Steroid Injection (ESI)**

An ESI is the injection of a small amount of steroid into the epidural space that surrounds the spinal cord and spinal nerves. This can be done in the neck (cervical), mid back (thoracic) or low back (lumbar or caudal).

An ESI may be performed if you have back and/or leg pain, neck and/or arm pain. The pain may be due to a herniated spinal disc, spinal stenosis (narrowing of the spinal canal space), or degeneration of your spinal bones (vertebrae) or compression fractures. All of these conditions may cause irritation and inflammation, which may be the root cause your pain.

Fluoroscopy is commonly used as a guide for needle placement, so typically, you will be lying face down on an X-ray table. If X-ray is not used, you may be sitting or lying on your side during the procedure. Conscious sedation may be optional and would require IV placement prior to the procedure. Sometimes, IV placement is required for the first procedure, or if you have a history of fainting or sudden drops in your blood pressure during medical procedures (better known as a vagal response).

The needle may not be placed in exactly the same site as your pain; the medication injected will "float" to coat the nearby nerves. You may feel some pressure in the area of the injection or some re-creation of your pain symptoms as the medication (steroid or steroid/local anesthetic) is injected. This feeling is normal and will go away in a short period of time.

- **Facet Nerve Blocks**

A facet nerve block is performed if it is suspected that your back or neck pain may be caused by irritation or inflammation of the small nerves near the facet joints of the spine. Pain from facet nerves can occur from injuries that involve twisting and straining while lifting heavy objects or falling. Facet joints are on the back of your spine, one on each side, near the bony spine, but not near the spinal cord.

Fluoroscopy is used to guide the placement of needles to the area. After correct needle placement is confirmed, a small amount of local anesthetic will be injected near the facet nerve.



- **Intercostal Nerve Blocks**

An intercostal nerve block is the injection of a local anesthetic or a neurolytic agent in the area between two ribs. This may be performed for pain due to nerve injury around the rib area. A needle will be inserted into the intercostal space and a local anesthetic, local anesthetic/steroid, or neurolytic solution is injected.

Because the pain specialist is working close to your lung, you should be made aware that a pneumothorax (collapsed lung) is a possible complication. A highly skilled practitioner, a calm, quiet environment, along with very small and short needles are used to avoid this complication. It is very important that you do not move during the injection phase of this procedure.

- **Lumbar Sympathetic Block**

A lumbar sympathetic block is the injection of local anesthetic around a group of nerves (lumbar sympathetic "nerve chain" or plexus) in your low back (lumbar) region. This is typically recommended if you have Complex Regional Pain Syndrome/RSD, severe peripheral vascular disease, or neuropathic pain (pain coming from the nerves). Fluoroscopy is used to guide the placement of the needle to the area. After the needle is in the proper area, local anesthetic will be injected in the area of the lumbar plexus nerves.

- **Stellate Ganglion Block**

A stellate ganglion block is the injection of local anesthetic around a group of nerves (cervical sympathetic "nerve chain" or plexus) in the base of the front of your neck. This type of block may be done if you have Complex Regional Pain Syndrome/RSD or severe peripheral vascular disease.

You may experience a temporary drooping of your eyelid, blurred vision on the side that was injected or minor swallowing difficulties. You should be monitored closely by skilled healthcare professionals until these go away and you are able to swallow liquids without difficulty.

- **Occipital Nerve Block**

An occipital nerve block is the injection of local anesthetic around the occipital nerves, which are located in the back of your neck near the base of the skull. This may be useful in the diagnosis and treatment of headache and jaw pain. A needle is inserted around your occipital nerve and a local anesthetic or local anesthetic/steroid solution is injected.

- **Selective Nerve Root Block**

A nerve root block is the injection of a local anesthetic/steroid solution around a nerve root after it leaves the spine, also called the paraspinal region. This may be performed to diagnose a particular pain problem (to determine if your pain is coming from a nerve, muscle or joint) or as an alternative treatment approach to an epidural steroid injection (for a herniated spinal disc or spinal stenosis, which is the narrowing of the spinal space).

Fluoroscopy is used to guide the placement of a needle to the area of the involved nerve root. You may experience a small electric shock-like sensation (similar to when you hit your "funny bone"). This will confirm if the needle is in the right place. A small amount of local anesthetic/steroid or steroid solution will be injected.



## OTHER

### ● Epidural Blood Patch

An epidural blood patch is done when a person has a spinal headache, usually from a myelogram or lumbar puncture. This type of headache can occur when there is a hole or tear in the dura (the covering of the spinal fluid/spinal cord), which causes spinal fluid to leak through. A severe headache results. This headache is usually different from a typical headache; it usually is not present when you lie down and painful when you stand up. Nausea and vomiting commonly occur when the pain is severe.

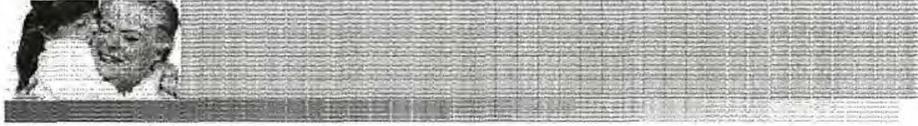
The blood patch is the injection of your own blood, which is first taken from your arm, into the epidural space in your spine. An IV (intravenous) will be started in your arm prior to the procedure.

The pain specialist will insert a needle into the epidural space in your spine. An assistant will then draw blood from your arm through the IV. This is done in sterile conditions. Your blood is then injected through the needle in your back. That needle is removed. The blood remains in your epidural space where it will clot or "patch" the hole/tear.

### What to Expect After a Procedure

Different injection procedures will have all, some or none of the following considerations. The antiseptic solution will usually be washed off of the area that was injected, and a small dressing (band-aid\*) will be placed over the injection site. Your provider may monitor your vital signs (blood pressure, pulse, respirations, etc.) for a period of time. If you had an IV, it will be removed. You will be given instructions of what to expect when you go home, which might include:

- *Numbness* – common if a local anesthetic was used. Use caution with any area that is numb. Do not walk or drive with a numb leg, or apply heat or ice to the area until all feeling has returned.
- *Soreness* – common at the injection site after any type of injection. You may put ice on the area.
- *Low Blood Pressure* – may be common for a short period of time if you have had a sympathetic block. You will be monitored until your blood pressure is within your normal limits.
- *Mild to Moderate Headache* – may be from steroids if they were used. An over-the-counter medication of your choice may be used. If you have a severe headache, with or without nausea and vomiting, please call your pain specialist as soon as possible.
- *Increase in pain level or change in pain location* – common for the first 24 hours after the injection/block.
- *Hot flashes, facial redness, mood changes, increased appetite and menstrual irregularities* – common for the first few days to weeks post injection/block. This is due to the effects of the steroid that was injected. These will go away with time.
- *Increased blood sugar* – If you are a diabetic, your blood sugar may be higher than normal for the first 3-5 days after an injection/block. Please contact the healthcare provider who treats your diabetes for any advice before the procedure is scheduled to make plans on what to do when/if this happens after the procedure.
- *Activity* – after a Blood Patch, your activity should be minimal for the first 24 hours. Rest is necessary so as not to dislodge the patch. All other injections/blocks often do not restrict activity. Use your judgment and be careful not to overdue it just because you may be feeling better; this can prevent re-injury.



Please call your pain specialist if you experience any of the following:

- Redness, swelling or drainage around/from the injection/block site
- Persistent bleeding from injection/block site
- Severe headache (may or may not be accompanied by nausea and vomiting)
- Fever
- Stiff neck
- Weakness not present prior to the injection

#### NEUROABLATIVE THERAPIES

Neuroablative therapies usually produce a longer lasting effect than nerve blocks. These therapies use thermal (heat or cold) or chemical agents (alcohol or phenol) to “destroy” certain nerves or nerve chain pain pathways, thereby providing you with prolonged pain relief. Your pain specialist might choose one of the following therapies if your pain is severe, expected to persist, and cannot be lessened by other therapies. However, in some cases, special cautions must be given about potential nerve damage and return of pain that can be the same or even worse than before.

#### THERMAL THERAPIES

##### ● Radiofrequency Facet Rhizotomy

A facet rhizotomy destroys facet nerve(s) either in the lower back (lumbar) or the neck (cervical) region, using radiofrequency (heat) waves. This procedure is done if you have pain due to disease in the facet joints of your spine, and you have had pain relief from your facet nerve blocks.

You will be placed in the prone position. Your back or neck will be cleaned with an antiseptic solution and the skin area will be numbed with a local anesthetic. Fluoroscopy is used to guide the placement of the needle probe to the area of the facet nerve. Radiofrequency waves are transmitted to lesion (destroy with heat) the involved nerve(s). This temporarily stops sensation from that area, which may last for an average of 6 months or more.

##### ● IntraDiscal ElectroThermal Therapy (IDET)

IDET may be considered if you have “cracks” or fissures in the wall of one of your spinal discs, or if the inner disc tissue has “herniated” into the fissure. Since these fissures are filled with small nerve endings, this may be a source of chronic back pain.

IDET is the application of thermal energy (heat) to a section of a spinal disc wall. This may result in the contraction or closure of that “crack” in the spinal disc wall or a reduction in the bulge of the inner disc material.

An IV will be placed in your arm and you will be given sedation. You will be placed in the prone position on an X-ray table. Fluoroscopy is used to guide a needle into place. An electrothermal treatment catheter is inserted through the needle, and the heating element is started. Once the heating is done, the catheter and needle are removed.

You should be given special instructions after this procedure with regard to activity, physical rehabilitation and other considerations.



- **Cryoanalgesia**

Cryoanalgesia is the application of thermal energy (cold) to a nerve or nerve chain to “freeze” it with nitrous oxide or carbon dioxide gas. Cryoanalgesia may still be available in some pain specialty practices, but it is limited due to the unavailability of equipment from old or new manufacturers.

Cryoanalgesia may be done if you have rib pain, pain after lung/chest surgery, facial pain or pain from a neuroma.

Your positioning will depend on the area being treated. The cryoanalgesia probe will be placed around the nerve to be “frozen” when the gas is activated. This process forms an “ice ball” around the nerve to freeze it. This temporarily stops sensation from that area, which may last for an average of 3-6 months and sometimes more.

#### CHEMICAL THERAPIES

- **Celiac Plexus (Destructive) Block**

A celiac plexus destructive block is the injection of an alcohol or phenol in the area of a group of nerves which innervate (supply) the abdominal organs. It is performed most commonly for the treatment of upper abdominal pain due to chronic pancreatitis or cancer, and *usually after you have had pain relief from a diagnostic celiac plexus block.*

After the needle is in the proper area, alcohol or phenol will be injected in the area of the celiac plexus or hypogastric plexus nerves.

- **Lumbar Sympathetic (Destructive) Block**

A lumbar sympathetic block is the injection of alcohol or phenol around a group of nerves (lumbar sympathetic nerve chain) in your low back (lumbar) region. This may be done if you have Complex Regional Pain Syndrome/RSD, severe peripheral vascular disease, or neuropathic pain (pain coming from the nerves) and *you have had pain relief from a diagnostic lumbar sympathetic block.*

Fluoroscopy is used to guide placement of a needle to the grouping of nerves in your low back. After correct needle placement, alcohol or phenol will be injected.

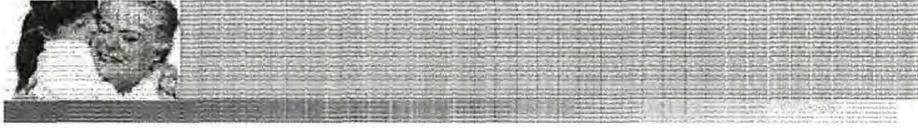
#### MINIMALLY INVASIVE SURGERY

- **Vertebroplasty (therapeutic)**

Percutaneous **vertebroplasty** is a procedure that allows health professionals to stabilize vertebrae damaged by compression fractures by injecting bone cement into the collapsed vertebrae. The aim of a vertebroplasty is to improve the strength and stability of the injured vertebrae and to eliminate pain.

When conservative treatment fails to alleviate pain associated with vertebral





compression fractures, this method may be suggested. The most common complication following vertebroplasty is a transient increase in pain at the injected level. This is readily treated with NSAIDs and typically resolves within 48 hours.

Your care after any of these procedures will be similar to that after having an injection/nerve block. Your pain specialist may provide you with additional instructions depending on the type of procedure performed.

- **Kyphoplasty**

Like Vertebroplasty, kyphoplasty is used to treat bone fractures due to osteoporosis — the loss of calcium from bones resulting in weakened bone structure that increases the risk of fracture. Kyphoplasty includes an additional step when compared to vertebroplasty. Prior to injecting the cement-like material, a special balloon is inserted and gently inflated inside the fractured vertebrae. The goal of this step is to restore height to the bone thus reducing deformity of the spine. Pain is reduced which allows you to return to normal daily activities after either procedure.

#### **INFUSION THERAPIES**

Infusion therapies, especially intravenous (IV) drug delivery, are a convenient and effective way to control your pain. Giving pain medications through a catheter placed in your vein or spine means you may get faster and more effective pain relief, especially after surgery, injury or trauma. The following are common infusion therapies.

- **Subcutaneous (SC)**

The SC route is usually used for chronic pain, not acute pain because pain medication given this way will take longer to work. A small needle is placed under your skin into your subcutaneous or “fatty” tissue. The needle is connected to a hollow tubing and infusion pump, which will deliver the pain medication into the SC tissue. The medication is then absorbed by your body and distributed to relieve your pain. SC infusion can successfully be used in the home setting, but require visits from home health personnel.

- **IV Bolus**

Small amounts of pain medication are given through an IV catheter by a doctor or nurse. IV boluses are good for fast control of severe or acute pain on a short-term basis. IV boluses can provide immediate pain relief, but this might only last for 45-60 minutes, so additional boluses will have to be given. IV boluses are usually only used in a hospital setting.



- **IV Continuous Infusion**

When moderate to severe pain over a long period of time (i.e. a few days after surgery) is expected, a continuous infusion may be used. A continuous dose of pain medication is delivered through an IV by an infusion pump, which means you will have a constant level of pain relief. This is usually started after your pain has been controlled with IV boluses. IV continuous infusions are usually only used in a hospital setting, where a healthcare provider can monitor you.

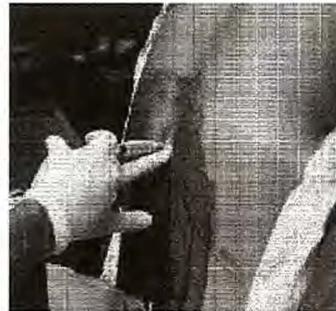
- **IV Patient-controlled Analgesia (PCA)**

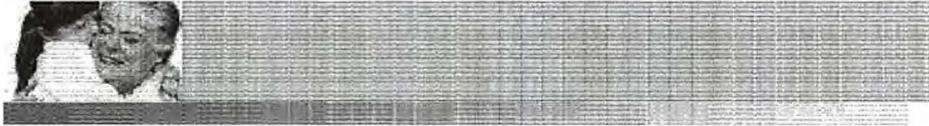
IV PCA is a method of pain relief to help you feel comfortable. It is routinely used after surgery or during a painful illness. By pushing the patient control button for the PCA infusion pump, you can give yourself small amounts of pain medication. Your doctor will order the amount of pain medication and indicate how often you can have it. The benefits of PCA are rapid pain relief when you need it, the possibility of using less pain medicine and having fewer side effects, and a sense of control over your pain. You will be given specific instructions on using PCA by your provider. IV PCA is usually used in a hospital setting, but may be used at home for severe, chronic pain.

- **Intraspinal Drug Delivery**

Infusing pain medications and/or local anesthetics directly into the epidural — in front of the spinal fluid space (epidural analgesia) or spinal fluid space (intrathecal analgesia) — is a method of pain relief used after surgery, painful injury or illness. This can help you get better pain relief and help you move better after surgery. It is also possible to use less pain medicine and have fewer side effects, which should help your recovery. With epidural analgesia, a small hollow tube (catheter) is placed in the space between the covering around the spinal cord and the bones of the spine; with intrathecal analgesia, the catheter is placed in the spinal fluid. The catheter may be inserted in the operating room before surgery, on a hospital floor/intensive care unit, or as an outpatient in a pain center or outpatient surgical center. A dressing will be put over the area where the catheter goes into your skin, and the catheter will be taped along your back up to your shoulder. An anesthesiologist (doctor specializing in giving anesthesia), or pain management specialist will order the amount of pain medicine to be given by a specialized infusion pump. Special training is required for nurses who assist in the monitoring and care of this infusion system.

Epidural/intrathecal analgesia is usually used in a hospital setting, but may be used at home for cancer pain.





- **IV Regional Blocks**

IV regional blockade, also known as a Bier Block, is a method of producing pain relief (analgesia) in an arm or leg by injecting medications intravenously, while the blood supply (circulation) in the arm or leg is cut off (occluded). This may cause temporary numbing (anesthesia) of the extremity, if a local anesthetic drug is used. Many patients are sent for physical therapy after the block, so their arm or leg can be exercised without pain. Your doctor may recommend this type of block if you have severe pain from Complex Regional Pain Syndrome or nerve injury.

- **Anesthetic Infusions**

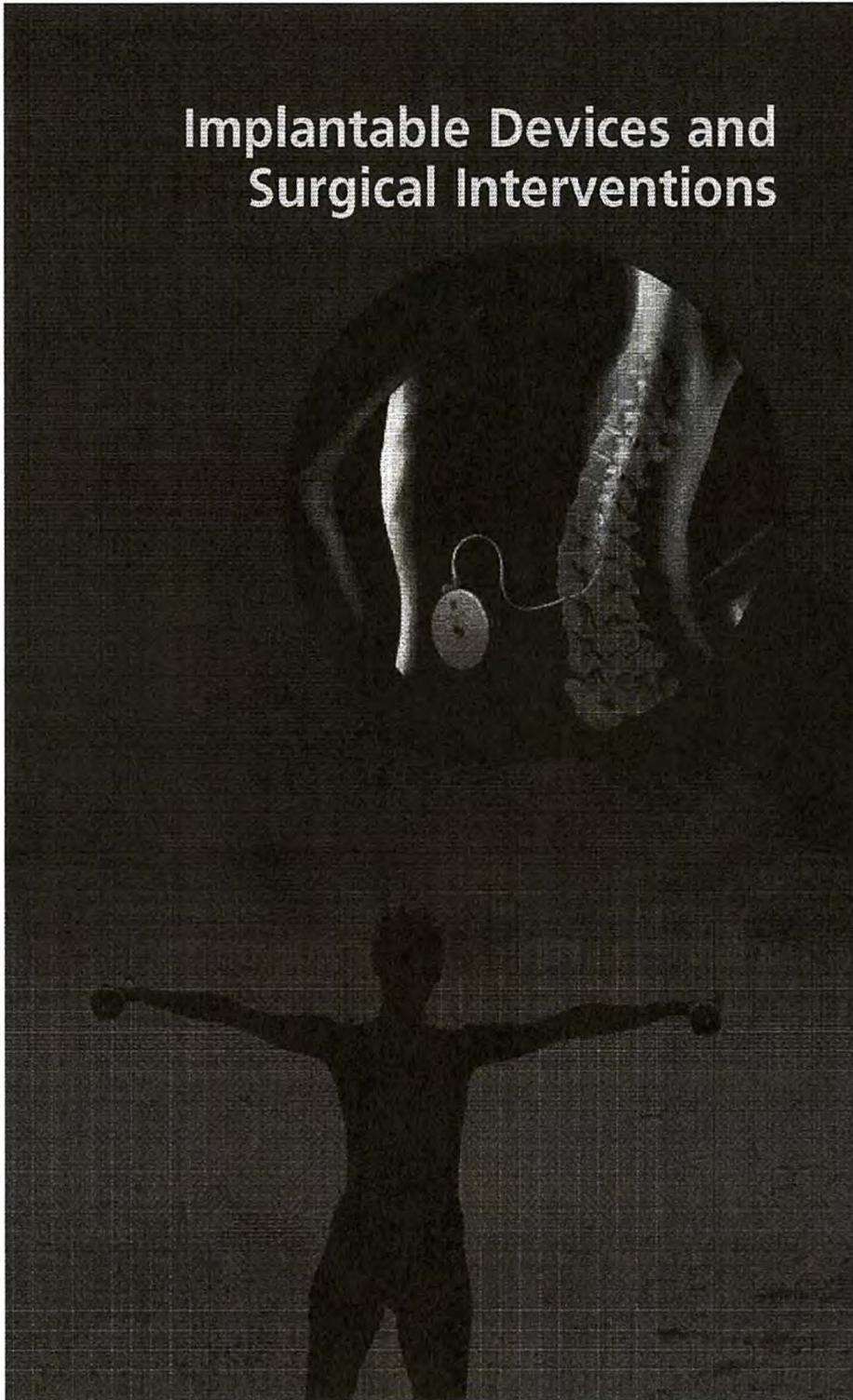
IV Anesthetic Infusion is the infusion of a local anesthetic such as lidocaine through an IV catheter. This method can be used to treat chronic neuropathic pain (pain coming from nerves). The local anesthetic is given over a 30-60 minute period of time; you will be monitored for a period of time after that determined by your pain specialist. This may be done in an outpatient or ambulatory care setting.

- **Disposable Anesthetic Systems**

PainBuster and ON-Q are two of the systems available that provide a continuous infusion of local anesthetic directly into the surgical wound. Your healthcare provider might recommend this method of pain control if you are having knee, hip, shoulder or abdominal surgery. The advantage to this system is it can be used on an outpatient basis. A small catheter is placed directly into the surgical site, and your skin closed around the catheter. A small device will deliver local anesthetic to the wound site for 24-48 hours. You will be instructed on care and removal of the catheter.



# Implantable Devices and Surgical Interventions





### IMPLANTABLES

Advances in medical technology have greatly impacted pain management delivery systems. Pumps and stimulators have been designed so they can be surgically placed under the skin. This helps reduce the risk of infections that is more common with external devices and provides targeted pain relief to major nerves and the spinal cord, depending on the system selected. External devices tend to be recommended for short-term pain problems when pain relief is expected to decrease over time. Internal (implantable) devices may be more appropriate for persistent pain problems that require long-term pain reduction.

### SPINAL CORD STIMULATION (SCS)

SCS therapy may be used to treat chronic pain that has been objectively confirmed in the neck or arms, chest, mid to low back or legs. It is most effective in treating pain coming from the nerves (nerve damage). Your pain specialist will perform a SCS "trial," a test to see if the therapy will help to relieve your pain. If the trial is successful, a surgical procedure will be required to "implant" the SCS system.

Physicians require special training to insert either temporary or permanent SCS. Often, nurses who specialize in pain management are trained in adjusting and monitoring these systems following placement.

SCS uses a small battery-type device, called a pulse generator or receiver, to deliver electrical impulses to a "lead" (catheter with electrodes along the tip), which is placed near nerves along the spinal cord. The electrical impulses, or stimulation, interfere with the transmission of pain signals to the brain. In successful cases, the brain perceives the more pleasant tingling sensation (stimulation) and not the pain sensation.

SCS therapy may be used to treat: chronic pain in the neck or arms, chest, mid to low back and legs that has been objectively confirmed. It is most effective in treating pain coming from the nerves (nerve damage). Your pain specialist will perform a SCS "trial," a test to see if the therapy will help to relieve your pain. If the trial is successful, a surgical procedure will be required to "implant" the SCS system.

There are two types of SCS systems, *Implantable Pulse Generator (IPG)* or *Radiofrequency (RF)*.

The IPG system is known as an internal system; all components (generator connected to the lead) are implanted under your skin. The IPG is typically implanted in your buttock or abdomen, with the lead in your spine. You or your pain specialist may program the system using a programmer held over the generator. In older systems, the IPG will need to be replaced when the generator becomes depleted (battery wears out). This usually requires an outpatient surgical procedure. Newer systems have battery/generators that are rechargeable by placing a small device over the generator. Many patients prefer this system, which is advantageous in terms of not having to have repeat surgery for battery changes. The IPG systems offer great advantages in supporting daily activity (can be used while showering, bathing, swimming) along with cosmetic features (nothing can be seen on the outside).

The RF system, on the other hand, is known as an external system. It uses a rechargeable type battery, located in a small controller called a transmitter. The transmitter is connected to an antenna, which must be placed on your skin over a receiver (usually implanted in your buttock or abdomen). The receiver is then connected to the lead, which is placed in your spine. Some advantages to this system include: no additional surgical procedures required and higher power outputs may be possible.



Disadvantages are that it cannot be used while showering, bathing, or swimming, the transmitter and antenna must be worn continuously outside the body to receive the stimulation, and wardrobe issues may be present.

Prior to undergoing a SCS trial, your pain specialist should provide you with detailed information on the therapy, system components, benefits and risks, and potential complications. This information can help you decide if SCS is right for you.

#### **IMPLANTED INTRASPINAL DRUG DELIVERY SYSTEMS**

Intraspinal Drug Delivery is the continuous infusion of pain medications, possibly including opioids, local anesthetic drugs, baclofen, or other drugs into your spinal fluid via a catheter and implanted infusion pump. Physicians require special training to insert implantable systems. Often, nurses who specialize in pain management are trained in filling, adjusting and monitoring these systems following placement.

Your pain specialist may choose this type of advanced pain treatment therapy if you have chronic pain due to cancer, or other chronic pain condition that has been objectively diagnosed. As in SCS therapy, this option should be considered only after conservative methods have been tried and failed. There are many similarities to SCS therapy: a trial infusion of the opiate medication will usually be done to assess your response; a surgical procedure will be required to implant the system; the system lies totally beneath the skin; from time to time the infusion pump must be replaced when the battery is depleted.

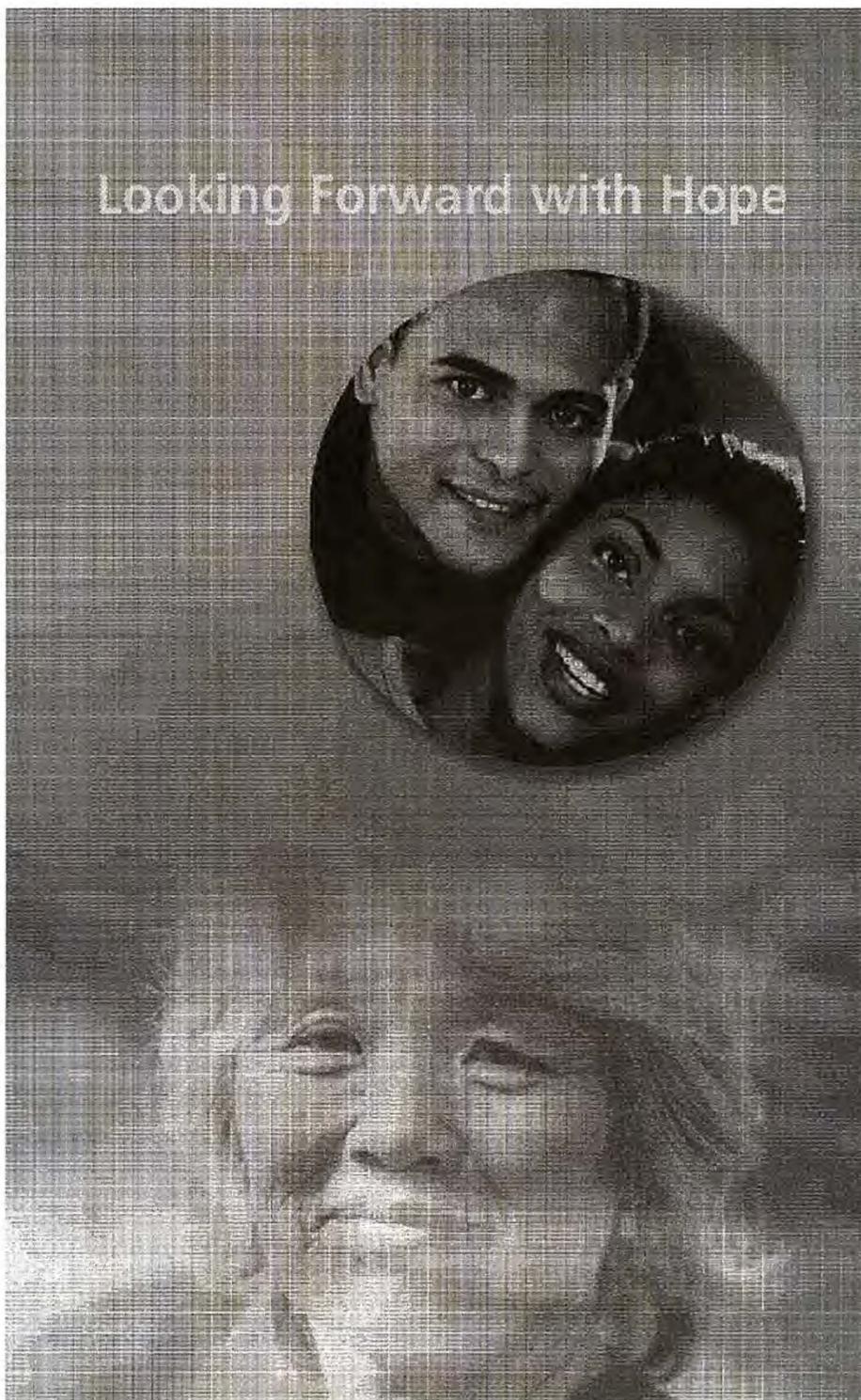
The implanted drug delivery system consists of a small flexible catheter, placed in the spinal fluid, connected to a drug infusion pump, and implanted in your abdomen. The medication is placed into the pump via a small port (covered opening) in the top of the pump. Your pain specialist will decide which drug is right for you based on your trial.

A computerized program is used to tell the pump which drug is being used and how much of the drug you are to receive per day.

Prior to undergoing a drug infusion trial, your pain specialist should provide you with detailed information on the therapy, system components, benefits and risks, and potential complications. This information can help you decide if intraspinal drug delivery is right for you.



Looking Forward with Hope





## LOOKING FORWARD WITH HOPE!

### **What's in the Pipeline?**

Over the years, new medications and technologies have emerged for the treatment of pain. A variety of pharmaceutical and medical technology companies have been carefully working within their research and development departments to improve drugs and delivery systems and create new treatment options for pain. They work closely with some of the best and brightest pain researchers and pain clinicians. As pain research advances, new ideas are generated and explored. There is hope in the future!

We have seen new preparations of "old" opioids expand with the introduction of longer acting versions in pill form. Work continues so that eventually every opioid that traditionally comes in a short-acting form will have a long-acting version. Today, we have morphine and oxycodone options. Next, hydrocodone, oxymorphone and hydromorphone will be an option. Also, new combination drugs that contain opioids along with other medications are entering clinical trials. Some of these preparations are expected to enhance pain relieving effects. Others are expected to eliminate the "sought after" pleasurable effects when long-acting versions are improperly altered by those who would misuse.

Patch therapy has gained popularity, whether in the form of an opioid, NSAID or anesthetic. Generic versions of fentanyl have entered the market. Hopefully, offering other medications or combination of medications in patch form will be created. The introduction of transbuccal delivery systems for fentanyl has launched a new concept. Some companies are working on improving the onset of oral drug action by speeding it up. Research is underway that uses an effervescent delivery system to create more rapid onset versions of short-acting drugs. One such preparation has been reported to taste like taking a teaspoon of a gentle carbonated cola or soda (pop). This may be very appealing to those who experience breakthrough pain and would prefer faster relief.

Although two of the three COX-2 inhibitors have been taken off the market because they increased the risk of heart attack and stroke in some persons, research is in process to improve the safety of these drugs. It wouldn't be surprising to find new preparations of NSAIDs become available in the next few years.

New adjuvants, such as gabapentin, pregabalin and duloxetine for neuropathic pain, are showing great promise as they may provide better pain relief with fewer side effects. Anesthetic patches, creams and solutions have helped with local pain problems, such as open wounds, diabetic neuropathy and shingles pain. The release of a shingles vaccine was announced in May 2006. This approach is expected to decrease the occurrence of shingles in older or immune-compromised individuals and hopefully reduce the incidence and severity of shingles pain. More research in neuropathic pain will generate new treatment options.

We can expect the introduction of drugs that work by unique mechanisms. For example, Ziconotide, from a snail toxin, was introduced in 2004. Though this must be given through an implantable infusion pump, it has helped in the treatment of severe pain disorders that have not responded to other therapies. More substances that block pain in newly discovered ways are being investigated. Drugs that work on nicotine and capsaicin receptor sites in the nervous system might be the next breakthrough. Others are investigating drugs to "turn off" parts of nerve cells that become "irritated" in the presence of pain stimuli or when some pain relieving drugs, like morphine have been used for a long period of time.



Emerging medical technology is another promise of hope. Creating new and improving current infusion devices and stimulators is on the rise. Recently, a rechargeable battery for implantable pumps was introduced to the marketplace. This should help to decrease the need to replace pumps every five years. That is a cost savings in pain, suffering and healthcare dollars. The creation of smaller, more compact pumps and stimulator systems will not only help decrease the discomfort of implantation, but expand this option for very thin persons and the younger population living with persistent, complex pain. New stimulator devices for the brain and the periphery are undergoing clinical trials now. There is much to look forward to, but for those in pain the future cannot come fast enough.





## CONCLUSION

In summary, understanding and effectively managing pain can be challenging. Since you may have consulted several medical professionals already, you are well aware of the difficulty in receiving adequate pain diagnosis and care. It is very important for you and your healthcare providers to work as a TEAM to treat your pain effectively. Asking for help from professionals who have more experience in specialized areas may be recommended. That way, a pain management program can be designed to meet your needs.

As part of the pain "investigation," a comprehensive pain assessment should be completed. Knowing as much information as possible about your pain experience will make it easier for your provider to diagnose and decide if your pain condition is treatable by behavioral changes, medication adjustments and/or the inclusion of other specialists or techniques.

When there is a challenging pain problem to address, working with well-trained and experienced pain management specialists is ideal. There are many more complicated therapies than those discussed here that could be helpful to some.

Fortunately, there are also some pain problems that are easily managed, and a primary care provider often can handle the problem very well. The main point is to understand that most pain can be managed, and that all people have the right to have their pain problems addressed.

### Disability Determination

The overall goal for pain management is to reduce pain and improve function so that each individual living with persistent pain may regain a quality of life. When pain cannot be adequately reduced or when function is impaired, other options may need to be pursued. Pain experts in rehabilitative medicine (See *Rehabilitative section*) are often trained experts in the evaluation of those who may require some form of disability classification. This process is better known as a disability determination. More information about disability evaluations and the government sponsored program under Social Security can be found at <http://www.ssa.gov/disability/professionals/bluebook/> or by calling 1-800-772-1213.



## Common Pain Terms

**Pain:** an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (IASP/APS 1992); The inability to identify tissue damage sufficient to explain the pain is not proof that the pain is of psychological origin (Portenoy, Kanner 1996); Pain is whatever the experiencing person says it is, existing whenever said it does (McCaffery 1968). Pain is personal and subjective (APS 1999), therefore, the individual's self-report on pain is the single most reliable indicator of pain (AHCPR 1992).

**Acute Pain:** pain of sudden onset usually from a single, "fixable" event commonly seen with surgery, accidental injury or inflammation, however, can be from unknown cause; short duration from days to less than 3-6 months as associated with healing; considered our biological red flag that sends warning signals through the nervous system that something is either wrong within the body or that a hurtful activity should be avoided to prevent further or repeat damage.

**Allodynia:** pain caused by a stimulus or action that does not normally cause pain, like light touch or pressure, subtle temperature change, gentle breeze on skin (Mersky 1986).

**Breakthrough Pain:** pain that flares up or emerges through the comfort state obtained from drug and/or non-drug pain relief methods.

**Central pain:** pain started or caused by damage to the central nervous system (spinal cord, brain); this is a disorder of the nervous system or a disruption of normal nervous system activity.

**Chronic Pain:** pain lasting longer than expected healing time, may last for many months, years or a lifetime, may be constant or in intervals; cause may be unknown or result of recent or previous acute pain episode; may be related to another chronic disorder, such as arthritis, peripheral vascular disease, diabetes, or cancer (disease, treatment or aftermath as a survivor); often cancer-related pain and non-cancer-related pain are discussed as separate, distinct pain problems.

**Deafferentation Pain:** pain due to alteration or damage to the central nervous system (central pain or neuropathic pain) or may be alteration of nervous system within larger nerves or nerve roots before entry into central nervous system.

**Escape Pain:** another term used to describe breakthrough pain.

**Hyperalgesia:** an increased response to a stimulus that normally would induce a mild discomfort (Mersky 1986).

**Intractable Pain:** old term (outdated) used to describe chronic pain resistant to pain treatment; may be seen as diagnosis of those experiencing chronic persistent pain.

**Lacinating Pain:** stabbing, knifelike pain (Portenoy and McCaffery 1999).

**Neuralgia:** pain along a nerve or nerves (Mersky 1986).

**Neuritis:** pain caused from the inflammation of a nerve or nerves (Mersky 1985).



**Neuropathic Pain:** pain started or caused from alteration of the nervous system (McCaffery and Pasero, 1999).

**Nociceptive Pain:** another term used to describe acute pain as a response to a noxious (unpleasant) stimulus activating nerve cells to send pain signals along the nervous system for recognition and response. The nervous system is working appropriately.

**Pain Flares:** pain that suddenly erupts or emerges with or without an aggravating event or activity.

**Pain Perception:** the natural process of recognizing, defining and responding to pain (McCaffery and Pasero, 1999).

**Pain Threshold:** the least experience of pain that is recognized (or) the lowest level of stimulus that is perceived as painful (Mersky 1986).

**Pain Tolerance:** the greatest level of pain that an individual is prepared to (or willing to) tolerate (Mersky 1986).

**Paroxysmal Pain:** pain that occurs in waves or patterns, intermittent in nature; may be related to muscle spasm or visceral pain disorders.

**Peripheral Neuropathic Pain:** pain started or caused from alteration of nerves or nerve roots (McCaffery and Pasero, 1999).

**Persistent Pain:** pain that lasts 12 or more hours every day.

**Radicular Pain (Radiculopathy):** pain from an alteration within one or more nerve roots (Bonica 1990).

**Somatic Pain:** pain within the muscles and/or bones (McCaffery and Pasero 1999).

**Visceral Pain:** pain within internal organs (McCaffery and Pasero 1999).



## REFERENCES

- Definitions Related to the Use of Opioids for the Treatment of Pain  
American Society of Addiction Medicine  
<http://www.asam.org/pain/definitions2.pdf>
- MedlinePlus  
National Library of Medicine  
<http://medlineplus.gov/>
- National Center for Complementary & Alternative Medicine  
National Institutes of Health  
<http://nccam.nih.gov/health/>
- National Institutes of Health  
<http://www.nih.gov/>
- Pain & Policy Studies Group  
University of Wisconsin  
<http://www.medsch.wisc.edu/painpolicy/>
- Pain Management Guidelines for the Older Persons  
American Geriatric Society  
<http://www.americangeriatrics.org/products/positionpapers/JGS5071.pdf>
- RxList: The Internet Drug Index  
<http://www.rxlist.com/>
- Use of Opioids for the Treatment of  
Chronic Pain  
American Pain Society  
<http://www.ampainsoc.org/advocacy/opioids.htm>

*Note: Many resources and a more comprehensive list of links relating to this Treatment Options Book can be found through the American Pain Foundation's Web site or toll-free telephone information service.*



#### RESOURCES - FIND A PAIN SPECIALIST

American Academy of Medical Acupuncture  
(323) 937-5514  
[http://www.medicalacupuncture.org/acu\\_infolgeneralinfo.html](http://www.medicalacupuncture.org/acu_infolgeneralinfo.html)

American Academy of Pain Management  
(209) 533-9744  
<http://www.aapainmanage.org/info/Patients.php>

American Academy of Pain Medicine  
<http://www.painmed.org/membership/>

American Academy of Physical Medicine and Rehabilitation  
(312) 464-9700  
<http://www.aapmr.org/>

American Association of Naturopathic Physicians  
(866) 538-2267  
<http://www.naturopathic.org/>

American Chiropractic Association  
(703) 276-8800  
[http://www.amerchiro.org/level1\\_css.cfm?T1ID=13](http://www.amerchiro.org/level1_css.cfm?T1ID=13)

American Holistic Medical Association  
(505) 292-7788  
<http://www.holisticmedicine.org/public/public.shtml>

American Holistic Nurses Association  
(800) 278-2462  
<http://www.ahna.org/practitioners/index.html>

American Osteopathic Association  
(800) 621-1773  
[http://www.osteopathic.org/index.cfm?PageID=findado\\_main](http://www.osteopathic.org/index.cfm?PageID=findado_main)

American Pain Society  
(847) 375-4715  
<http://www.ampainsoc.org>

American Society of Addiction Medicine  
(301) 656-3920  
<http://www.asam.org/search/search2.html>



American Society of Interventional Pain Physicians  
(270) 554-9412  
<http://www.asipp.org/>

American Society for Pain Management Nursing  
(888) 34-ASPMN / (888) 342-7766  
<http://www.aspmn.org/>

American Society of Regional Anesthesia & Pain Medicine  
(847) 825-7246  
<http://www.asra.com/>

#### RESOURCES

American Alliance of Cancer Pain Initiatives  
(608) 265-4013  
<http://www.aacpi.wisc.edu/>

American Cancer Society  
(800) ACS-2345  
<http://www.cancer.org>

American Chronic Pain Association  
(800) 533-3231  
<http://www.theacpa.org/>

American Pain Foundation  
(888) 615-PAIN (7246)  
<http://www.painfoundation.org>

Beth Israel Medical Center  
Department of Pain Medicine and Palliative Care  
<http://www.stoppain.org/>

CancerCare  
(800) 813-HOPE (4673)  
<http://www.cancer.org>

City of Hope Pain/Palliative Care Resource Center  
<http://www.cityofhope.org/prcl>

Mayday Pain Project  
<http://www.painandhealth.org/index.html>

National Chronic Pain Society  
(281) 357-HOPE (4673)  
<http://www.ncps-cpr.org/>



National Family Caregivers Association  
(800) 896-3650  
<http://www.thefamilycaregiver.org/>

National Pain Foundation  
(303) 783-8899  
<http://www.nationalpainfoundation.org/>

Pain Assessment Scales  
<http://www.partnersagainstpain.com/index-mp.aspx?sid=3&aid=7825>

Pain Assessment Scales for Children  
<http://www.childcancerpain.org/content.cfm?content=assess07>

Pain Assessment Scales in Multiple Languages  
<http://www.partnersagainstpain.com/index-mp.aspx?sid=3&aid=7692>

Pain Clinical Trials Resource Center  
<http://www.centerwatch.com/ctrl/PainFoundation/default.asp>

Pain.com  
<http://www.pain.com/>

Partnership for Prescription Assistance  
(888) 4PPA-NOW / (888) 477-2669  
<https://www.pparx.org/Intro.php>

Patient Advocate Foundation  
(800) 532-5274  
<http://www.patientadvocate.org/>

Spine Universe  
<http://www.spineuniverse.com/>

Whole Health MD Therapies Reference Library  
<http://www.wholehealthmd.com/ME2/Default.asp>

Yoga for Chronic Pain  
<http://www.painfoundation.org/page.asp?file=ManageYourPain/Yoga/Intro.htm>



#### BOOKS

*Managing Pain Before It Manages You, Revised Edition* – M.A. Caudill-Slosberg (Guilford Press, 2001).

*The War on Pain* – S. Fishman & L. Berger, (Harper Collins, 2001).

*The Savvy Woman Patient: How and Why Your Sex Matters to Your Health* - P. Greenberger & J. Wider, Eds. (Capital Books, 2006)

*Pain: Clinical Manual, 2nd edition* – M. McCaffrey, & C. Pasero (Mosby, 1999).

*Mayo Clinic on Chronic Pain, 2nd edition* – J. Rome, Ed. (Mayo Clinic Health Information, 2002).

*The Truth About Chronic Pain: Patients And Professionals On How To Face It, Understand It, Overcome It* – A. Rosenfeld (Basic Books, 2004).

*Cognitive Therapy for Chronic Pain: A Step-by-Step Guide* – B.E. Thorn (Guilford Press, 2004).

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*An amazing document.*  
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*First, let me say how much I enjoyed reading this publication—it is very well developed and informative. I couldn't think of a thing that might have been missed. I think it will be very well-received by the general public. Y'all have done an exemplary job!!*  
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*This book is just AWESOME, AWESOME, AWESOME. It makes me so mad I didn't have this when my family and I were trying to understand different therapies and getting hopelessly confused! You all should be SO proud of what you have done here.*

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