UW Integrative Medicine
Department of Family Medicine

University of Wisconsin
SCHOOL OF MEDICINE
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An Integrative Approach to Low Back Pain

Background

Chronic low back pain (LBP) is one of the most common conditions managed in primary care. Current treatments for pain and disability lasting longer than a year are expensive, with questionable efficacy and safety. There is a need to intervene early to prevent long-term disability.

A growing body of evidence suggests that treating non-cancer related nociceptive chronic pain with opioid medications may not be the ideal nor least harmful approach. Recent research even suggests that chronic opioid use can decrease pain threshold through the development of opioid-induced pain sensitivity, a process called opioid-induced hyperalgesia.[1, 2] This research reveals that prolonged opioid treatment not only results in a loss of anti-nociceptive desensitization, but also leads to activation of a pro-nociceptive sensitization, which is clinically called hyperalgesia. A large study from Denmark of over 10,000 non-cancer chronic pain patients concluded that opioid treatment of long-term/chronic non-cancer pain does not fulfill any key outcome treatment goals of pain relief, improved quality of life, nor improved functional capacity.[3] Further, opioid abuse and misuse, adverse effects, escalating doses, and even overdose and death are well known and frustrating challenges for health care practitioners and clinical staff. Most importantly, it may distract the patient and clinician from focusing on what the body may need to heal.

Ten Year Trends in Medicare Spending for Low Back Pain[4]

- ↑ Epidural steroid injections by 629%
- ↑ Opioid expenditures by 423%
- ↑Lumbar MRI by 307%
- ↑ Spinal fusion rate by 220%

Despite these increases, there has been no improvement in patient outcomes or disability.

An Integrative Approach

Courtesy: NIAMS

Evidence-based recommendations published by the National Institute of Clinical Excellence (NICE) from the United Kingdom for the management of LBP support the clinical application of manual therapy, acupuncture, non-steroidal anti-inflammatory drugs, psychological therapy and exercise. [5] A 2008 report of a pragmatic randomized controlled trial of warehouse workers with low back pain found that naturopathic care (defined as acupuncture, relaxation exercises, exercise and dietary advice, and a back care booklet) improved quality-adjusted life-years over the 6-month study period and significantly reduced societal costs by $1212 per participant compared to a control group (who received standardized physiotherapy education and a back care booklet).[6] An approach to consider for patients with LBP is one that will minimize the use of costly and largely ineffective treatments and incorporate those recommended by NICE and suggested by the Herman et al. study.

An integrative approach to LBP focuses on three objectives: 1) to empower patients to assume an active role in their care, 2) to decrease pain and increase function and quality of life, and 3) to prevent chronic disability with reduced need for long-term therapies such as medications, injections or manipulation. Involvement of a therapeutic team is central to this approach.[7] Patients can be guided through the treatment process by their primary care clinicians, or by a health coach/educator who is knowledgeable about the various treatment options and manages the process, working closely with patients and their primary care clinicians.

Patients will benefit from:

- **Evidence-based therapies for the treatment of low back pain.** Our integrative approach is based on NICE evidence-based guidelines. Key research studies are also cited below.
- **An individualized patient-centered approach.** No therapy for LBP has been found to be superior to another. When a number of therapies are comparable, treatment success may be enhanced by patients having a choice to select options that resonate most with their specific interests, life circumstances, and beliefs (cultural, health, spiritual). Opioid pain medications can provide benefit for people with chronic pain syndromes. It is best if these are prescribed based on the unique needs of the patient by a primary care clinician who knows the patient's history and has established a therapeutic relationship.
- **Continuity of care.** Patients will be guided by their primary care clinicians with whom they have on-going relationships. They could also benefit from a health coach/educator who supports them throughout the treatment process involving a variety of modalities. At times, referral to a pain clinic may be necessary, but therapy should start within the therapeutic relationship of the patient's medical home. Research has shown that this relationship can improve care and reduce cost.[4]

First Rule Out Specific Causes for Low Back Pain

As with any approach for LBP, it is important to rule out specific causes, which would require other treatment approaches.

Red Flags for Low Back Pain

- Hx of cancer (metastasis?)
- Severe radiculopathy (foot drop, muscle atrophy)
- Infection (immune status, steroids)
- Cauda Equina Syndrome (incontinence, bilateral leg weakness, saddle anesthesia)
- Fracture (trauma, osteoporosis)
- Pain that awakes at night
- Sudden onset ("worst pain of my life")

Treatment Approaches

We have organized treatment recommendations into three categories:

1. External/Physical (Chiropractic, Osteopathic Manual Therapy, Massage Therapy, Acupuncture and NSAID therapy)
2. Internal/Emotional
3. Reconditioning (strength and support)

Work with your patient to incorporate <u>one therapy from each of the three groups</u> into the treatment plan to help reduce chronic pain. The timing of each is up to you and your patient.

1st Therapy Group Options

- **External/Physical**
  - **High velocity, low amplitude (HVLA) forces to joints of the spine.** Chiropractive and osteopathic manipulation may involve both thrust and non-thrust techniques. Sometimes these are also described as direct (going beyond the physiologic barrier, the range of motion that a person can achieve with her/his own effort) and indirect (staying within the physiologic barrier). Direct techniques (HVLA) of the spine have been found to improve pain and function in both acute and chronic low back pain compared to sham manipulation, exercise therapy and pain medications.[8-10] All major international guidelines (Cochrane, European, Italian and American) recommend spinal manipulation as a treatment option for both acute and chronic LBP.

    

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    Courtesy: NCCAM

    Patients with LBP are most likely to respond to manipulation if they have pain for less than 16 days, symptoms that do not radiate past the knee, and low fear-avoidance.[11]

  - **Non-thrust manual (Non-HVLA) therapy.** These technques include muscle energy techniques, strain-counterstrain, myofascial release, spine mobilization and cranio-sacral therapy. Most of these are also considered "indirect" techniques (except for muscle energy), since they do not involve manipulation that goes beyond the physiologic barrier. These techniques are used by many different clinicians including osteopaths, chiropractors, physical therapists and massage therapists among others. A meta-analysis of these techniques used under the umbrella of osteopathic manipulative therapy showed when used in combination based on the unique needs of the individual, there was signficiant improvement in pain compared to sham and no treatment controls.[12] Indirect techniques also appear to show benefit for those with both acute and chronic LBP.[9]

  - **Massage.** A Cochrane review states that massage produces similar improvement in back function and pain as exercise and better short-term outcomes compared to mobilization, relaxation therapy, physical therapy, acupuncture and self-care education.[13] In a study of 401 patients with chronic LBP, randomization occured into three groups; 1) structural massage, 2) relaxation massage and 3) usual care. Both massage groups did better than usual care at 10 weeks for both function and symptom scores with benefits lasting up to six months. There was no signficant difference between the two types of massage.[14]

    

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- **Acupuncture**
  Compared to no treatment, acupuncture reduces pain and improves function in those with chronic LBP. It appears to work better when combined with other therapies such as spinal manipulation and exercise therapy.[15] In a study of 298 patients with chronic LBP, acupuncture and "minimal acupuncture" (superficial needling at nonacupuncture sites), 12
  sessions over eight weeks resulted in improvement in pain for both acupuncture groups compared to no treatment. Benefits persisted up to 52 weeks.[16] Acupuncture appears to be more beneficial for chronic LBP than acute LBP.[17]

NOTE: It is interesting that in the study comparing acupuncture and sham acupuncture to no treatment, both acupuncture treatments showed benefit over no treatment. We see this with many other therapies as well. The clinical encounter itself may have benefit in helping reduce pain despite the technique used. The intention we have to be of service to others is a significant healing factor.

Acupuncture vs. Epidural Steroids for LBP[18-21]

	Acupuncture	Epidural Steroid
Evidence of benefit	++	+
Cost/QALY	$	$$$$
Patient Cost (with insurance)	$$$	$
Potential Harm	+	++
Supported by NICE guidelines	Yes	No

Cost/QALY: Cost/Quality adjusted life year. The cost in relation to the amount of quality of life obtained from the therapy. Cost/QALY is pushed downward by the amount of quality in life one obtains from a therapy in comparison to the cost of the procedure.

NICE: National Institute of Clinical Excellence

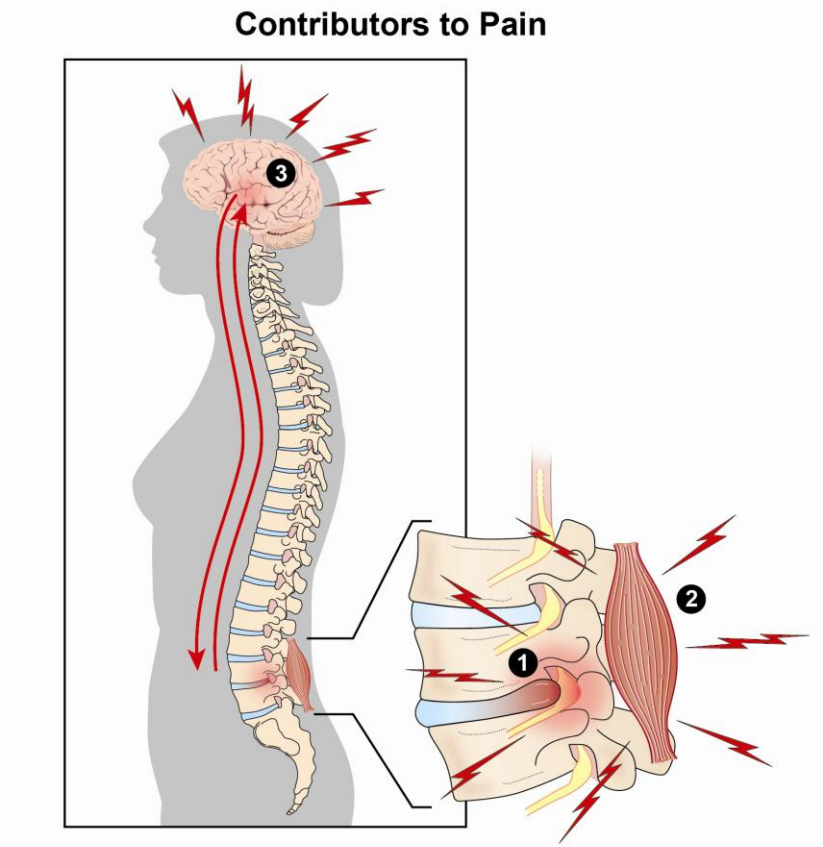
- **NSAID Therapy**
  Offer NSAID therapy as appropriate. Some options include:
  - Ibuprofen 200 mg (3-4 tablets with food) three-four times daily
  - Naproxen Sodium 220 mg (2 tablets with food) three times daily
  - Nabumetone *(Relafen)* 500-750 mg (1-2 with food) twice daily.

2nd Therapy Group Options

- **Internal/Emotional**
  Addressing the psychological effects of pain has been studied quite extensively and summarized in the NICE guidelines for chronic low back pain (CLBP)[22]. A meta-analysis of the data in 2007 supported the effects of psychological interventions in reducing self-reported pain, pain-related interference, depression, and disability, while increasing health-related quality of life among persons with CLBP.[23] Cochrane reviews also support this therapy as an important ingredient in any case of CLBP.[24, 25]

NOTE: Creating positive expectations from within the therapeutic relationship towards reducing pain can result in pain reduction levels as good as morphine (28.4% reduction).[26]

Studies done to evaluate patients with LBP to see if they were candiates for surgery resulted in surprising findings. When discography was performed, dye was injected into the disc space to see if pain was reproduced at a specific spinal level. The researchers found that it was not the amount of disc protrusion or herniation that was most associated with the severity of pain, but the patient's severity of psychological distress.[27, 28] Many asymptomatic individuals will have disc herniation on MR imaging.[29] Often, the disc gets blamed for pain innappropriately as the sole cause of pain while the suffering and distress of the patient is not addressed.



Some common contributors to back pain include:
1) irritation of a nerve from a disk, **2**) muscle spasms, and **3**) stress.
Back pain can affect mood, and mood can affect the back pain.
Being de-conditioned or overweight can make the pain worse.

There are a number of psychological methods from which the patient can choose:

- **Cognitive Behavioral Therapy (CBT).** A 5 year follow up study of 213 individuals with CLBP revealed that those who received CBT had reduced pain, increased physical activity, quality of life and general health. There was also a significant cost benefit with a reduction in total cost and missed days of work.[30] This therapy can be obtained through many psychologists and counselors. It may be especially helpful to choose a professional who is experienced in pain management.

NOTE: Chronic pain can cause atrophy of brain tissue.[31,32] But cognitive behavioral therapy[33] and aerobic exercise[34, 35] can prevent this process and increase the brain tissue.

- **Emotional Awareness.** Internalizing stress or "holding it in" can exacerbate physical pain. William Boyd MD, a pathologist at the turn of the 20th century said, *The sorrow that hath no vent in tears may make other organs weep.* This has proven true in the treatment of low back pain. Disclosing these emotions in a positive way by recognizing the stress that an individual may hold in the back has been described extensively by John Sarno, MD.

Books by John Sarno MD, on Emotional Awareness

- ***Healing Back Pain: The Mind-Body Connection*** (1991) Warner Books, Inc.
- ***The Mind-Body Prescription*** (1998) Warner Books, Inc.
- ***The Divided Mind*** (2006) HarperCollins Publishers

Although there are reports that many individuals with CLBP have benefited from this approach, the research on Sarno's method has been limited. A case series of 51 patients with CLBP were followed from 3-12 months after completing a course that encouraged the individual to be aware of the relationship between pain and internalized stress. Pain was reduced by an average of 52%, medication use decreased and individual activity levels increased. Those with pain for more than three years benefited most.[36] A study using this approach for fibromyalgia patients has also shown benefit.[37]

Howard Schubiner is a leader in offering this therapy. See his resources at:

- Mind/Body Awareness Writing Exercise on the University of Wisconsin-Madison Department of Family Medicine Integrative Medicine website. (http://www.fammed.wisc.edu/sites/default/files//webfm-uploads/documents/outreach/im/handout_mbs_workbook.pdf)
- http://www.unlearnyourpain.com/

- **Mindfulness.** Mindfulness is the process of bringing awareness to the present moment without judgment.[38] Instead of distracting the individual's awareness away from pain, mindfulness teaches to bring one's attention to it. (For more information on this approach, see our handouts *Meditation for Health and Happiness-Clinician Version* and *Meditation for Heatlh and Happiness-Patient Version*).

Bob Stockfield
Courtesy:NCCAM

Imaging studies have shown that mindfulness activates multiple areas of the brain in treating pain. Stimulation of the orbito-frontal cortex results in reframing sensory events, possibly away from fear and anxiety towards acceptance.[39] In patients with chronic pain, low mindfulness scores are associated with higher levels of fear and pain catastrophizing.[40] Mindfulness meditation's benefit on pain is in part related to its effect on reducing anxiety and bringing one's attention to the present moment.[41] Although studies on mindfulness and CLBP are few, a study of 37 older adults (>65 yo) with CLBP resulted in less pain and improved function compared to a wait list control group.[42] When an 8-week mindfulness based stress reduction program (MBSR) was compared to a multi-disciplinary pain program for chronic pain, both were found to reduce distress and pain intensity after three months.[43]

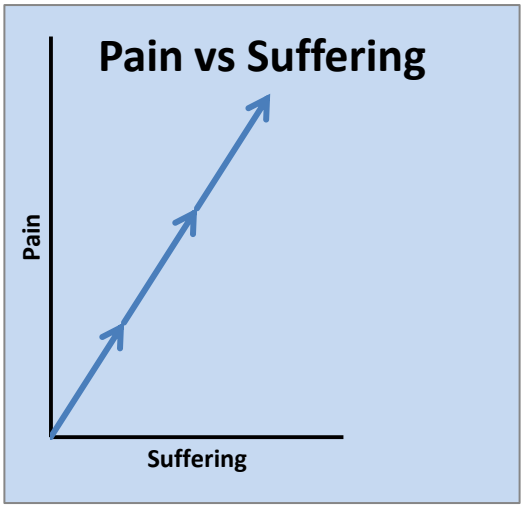
NOTE: Encouraging a self-reflective process to understand how emotions and stressful life events influence pain severity is the most neglected aspect of pain management and often the most important to prevent persistent pain and dysfunction.

RELATIONSHIP BETWEEN PAIN AND SUFFERING

Pain and suffering influence each other. The more suffering, the more pain. The more pain, the more suffering. Both need to be addressed. When you treat one you treat the other.

Treatment for pain: medications, acupuncture, OMT, massage, etc.

Treatment for suffering: trusting relationship with clinician, cognitive behavioral therapy, emotional awareness, mindfulness, spiritual connection.



3rd Therapy Group Options

- **Reconditioning (strength and support)**
  Back pain results in stiffness and loss in strength and range of motion as the body protects itself against pain triggers. The longer the pain lasts, the worse this becomes, and the individual starts to carry the body in a new position of dysfunction and imbalance, which can exacerbate pain syndromes. It is very important to regain a balance of musculo-skeletal flexibility, strength, support and function.

    - **Physical Therapy.** Physical therapy is a well-established modality for helping regain movement, strength, flexibility and function. Research has shown that when the physical therapist is able to match a program to the unique needs of the individual, the benefits are much greater than that obtained from simply following a treatment algorithm for LBP.[44]

- **Yoga Therapy.** Yoga means "yoke" or union of mind and body. Through asanas (body poses) and a mindful awareness of the unity of body and mind it combines many of the important therapies discussed above. Yoga in the treatment of back pain should be tailored towards this condition.

  A number of randomized controlled trials (RCT) have shown that yoga improves pain and function in those with CLBP.[45-47] Ninety healthy adults with CLBP were randomized to a 24-week Iyengar yoga therapy class (a therapeutic form that places special attention on alignment) or to a control (standard medical care) and evaluated at 12 weeks, 24 weeks and 48 weeks after the start of the intervention. The yoga group had greater reductions in three primary outcomes that all reached significance by 24 weeks: functional disability (-7.3 vs. -2.3 (P<.01) on the 10 point Oswestry Disability Index score), pain intensity (-17.6 vs. -4.4 (P<.001) on a 100 point Visual Analog Scale score), and depression (-4.2 vs. -0.5 (P< .001) on the 63- point Beck Depression Inventory II.) At 48 weeks the superiority of the yoga intervention persisted. There was also a non-significant trend in reduced medication usage in the yoga group.[45]

  A blinded RCT of 101 individuals with CLBP compared improvement in back-related functional status (as measured by a modified Roland Disability Scale (RDS)) of three 12-week interventions: a therapeutic viniyoga class (a form that modifies positions according to individual needs), an exercise class and an evidence-based back education book. The yoga intervention group outperformed the book and exercise group at 12 weeks. These benefits were even greater between yoga and the book education at 26 weeks.[46]

  Identify yoga therapy classes in your area specifically tailored towards back health.

- **Structured Fitness Classes.** Many communities offer a variety of structured fitness classes, which can improve the health of the back. Patients can look for classes such as strengthening the core, flexibility, spine ball, and pilates. Caution patients to ask about the credentials/experience of the class leader. Low-cost classes can be found at community centers, school-community recreation programs, senior centers, and YMCAs. Fitness centers are another good source for classes.

- **Back Exercises.** At the very least, patients should be given direction on exercises that they can do at home to help with flexibility, mobility and strengthening. Consultation or guidance from an exercise physiologist or personal trainer can personalize an exercise plan. Following are some on-line resources.
  - **Patient handout on neck pain** from the McKinley Health Center at the University of Illinois at Urbana-Champaign: http://www.mckinley.illinois.edu/Handouts/neck_pain/neck_pain.htm
  - **Patient handout on managing chronic back pain** from the McKinley Health Center at the University of Illinois at Urbana-Champaign: http://www.mckinley.illinois.edu/Handouts/manage_chronic_back/manage_crhonic_back.htm

- **Video for patients demonstrating back exercises** from The Patient Education Institute on Medline-Plus**:** http://www.nlm.nih.gov/medlineplus/tutorials/backexercises/htm/_yes_50_no_0.htm
- **Video for patients demonstrating five back stretches and exercises to maintain a healthy back** from SpineUniverse, a website leader in providing patient and professional health care education: http://www.spineuniverse.com/wellness/exercise/5-back-pain-stretches-exercises-video

- **Feldenkrais Method®**

Feldenkrais Method® is a form of somatic education that uses movement, light touch, and imagery to improve physical functioning. It is educational and experiential. This approach is not structural, rather it works with the body's nervous system, promoting body awareness, and helping individuals to become aware of habitual patterns of movement that are poor or restricted. It exposes a person's nervous system to different movement options and relationships among different parts of the body. The individual is gently guided to find her/his own optimal movement. The premise is that given enough choices, a person's brain will opt for the most efficient movement for each function. It is also not a strengthening or conditioning approach; people can have strong core strength, and yet not move efficiently. Feldenkrais helps individuals learn to perceive how they move, where they hold tension, and where they exert unnecessary effort. Evidence for its use in CLBP is limited. It has been found to be most helpful for those with long-term injuries that may have resulted in structural imbalance.

There are two options for experiencing Feldenkrais:

- **Awareness Through Movement Class.** These are group classes led by a Feldenkrais practitioner. The practitioner verbally guides individuals through sequences of gentle movements. People become aware of their habits and rigidities, while they explore more efficient ways to move.
- **Functional Integration Individual Sessions.** The practitioner works one-on-one with an individual, communicating through gentle touch, movement, and words. The process enhances awareness and provides new information to the neuromuscular system, resulting in positive changes to organization and function.

Feldenkrais practitioners must complete 740-800 hours of training over 3-4 years.

- Find certified Feldenkrais practitioners and authorized Student *Awareness Through Movement* Teachers on the website of the Feldenkrais Guild of North America at: http://www.feldenkrais.com/practitioners/find/
- For more information on this modality, see the website of The Feldenkrais Method® of Somatic Education: http://www.feldenkrais.com/method/frequently_asked_questions/
- View a demonstration of a Feldenkrais Method® practitioner treating LBP. http://www.fammed.wisc.edu/our-department/media/618/feldenkrais-low-back-pain.

Summary

There are a number of therapeutic options from which the clinician and patient can choose for LBP. An important part of the therapeutic process is the trust, compassion and guidance of the clinician who knows the patient well and provides follow-up and support. The patient with pain needs a guide to organize this therapy and implement it efficiently. There is potential harm from having too many isolated therapies that focus on a symptom or body part without having a guide who recognizes the whole person and her/his unique needs. The primary care clinician/medical home will:

1. Listen to the patient's story and understand which therapies will likely be of most benefit.
2. Encourage the incorporation of one therapy from each category above (structural, mind-body and reconditioning)
3. Provide support and regular follow up. Refer to spine specialists as needed if the patient does not show improvement.
4. Maintain a therapeutic relationship and ongoing support.

We have also developed a corresponding handout for patients on this topic.

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