Introduction:

- 1st generation chiro
- 27 years clinical experience
- Author
  - Text Documentation and the Guidelines
  - Articles: JMPT
- Plaintiff and defense witness
- Review doc
- Teacher/Instructor
Collaborative care

› Patient communication skills
› Patient education
› Freedom of choice

Dr. Medneedlestickerbonecutter,
I am referring Mr. I.M. Hurt for XYZ.
He has completed an appropriate course of conservative care with sub-optimal outcomes. After your intervention, I will provide evidence-based conservative care, education, follow-up, and keep you abreast of outcomes. Enclosed you will find a summary of treatment to date.
Sincerely,
Dr. Bonecracker
Acupuncture

- Not recommended for acute low back pain.
- Recommended as an option for chronic low back pain using a short course of treatment in conjunction with other interventions.
- Acupuncture has been shown to add to the treatment effect of conventional therapy (improving pain and function) when compared to conventional therapy alone.

Acupuncture

- Overall outcomes from trials have been mixed, with some lower-quality trials producing positive results, but trials with higher validity scores tending to be negative or inconclusive.
- There is a tendency for patient expectations to influence the outcome independently of the treatment itself.

Acupuncture

- Initial trial of 3–4 visits over 2 weeks
- With evidence of objective functional improvement, total of up to 8–12 visits over 4–6 weeks (Note: The evidence is inconclusive for repeating this procedure beyond an initial short course of therapy.)
Adhesiolysis, percutaneous

- Not recommended due to the lack of sufficient literature evidence (risk vs. benefit, conflicting literature). Also referred to as epidural neurolysis, epidural neuroplasty, or lysis of epidural adhesions, percutaneous adhesiolysis is a treatment for chronic back pain that involves disruption, reduction, and/or elimination of fibrous tissue from the epidural space.

Lysis of adhesions is carried out by catheter manipulation and/or injection of saline (hypertonic saline may provide the best results).

- It has been suggested that the purpose of the intervention is to eliminate the effect of scar formation, allowing for direct application of drugs to the involved nerves and tissue, but the exact mechanism of success has not been determined.

There is a large amount of variability in the technique used, and the technical ability of the physician appears to play a large role in the success of the procedure. In addition, research into the identification of the patient who is best served by this intervention remains largely uninvestigated.
Adhesiolysis, percutaneous

- Preliminary suggested criteria for percutaneous adhesiolysis while under study:
  - The 1-day protocol is preferred over the 3-day protocol.
  - All conservative treatment modalities have failed, including epidural steroid injections.
  - The physician intends to conduct the adhesiolysis in order to administer drugs closer to a nerve.
  - The physician documents strong suspicion of adhesions blocking access to the nerve.
  - Adhesions blocking access to the nerve have been identified by Gallium MRI or Fluoroscopy during epidural steroid injections.

Aerobic exercise

- Recommended. Aerobic exercise is beneficial as a conservative management technique, and exercise of as little as 20 minutes twice a week can be effective in managing low back pain. At a minimum, a graded walking program is generally desired.

- A recent study of the long term impact of aerobic exercise on musculoskeletal pain, in a prospective cohort of 866 healthy seniors followed for 14 years, found that exercise was associated with a substantial and significant reduction in pain even after adjusting for gender, baseline BMI and attrition, and despite the fact that fractures, a significant predictor of pain, were slightly more common among exercisers.
Antidepressants

› Acute low back pain: Not routinely recommended.

› Chronic low back pain: Tricyclic antidepressants can produce moderate symptom reduction for patients with chronic low back pain. The effect on function has not been determined. SSRIs do not appear to be beneficial. SNRIs have not been evaluated.

Antidepressants

› Radiculopathy: There are no medications that have been shown to be efficacious for treatment of lumbosacral radiculopathy. (Dworkin, 2007)

Anti-inflammatory medications

› Recommended for acute LBP.

› Anti-inflammatories are the traditional first line of treatment, to reduce pain so activity and functional restoration can resume. (vanTulder–Cochrane, 2000) (Airaksinen, 2006)
A comprehensive review of clinical trials on the efficacy and safety of drugs for the treatment of low back pain concludes that available evidence supports the effectiveness of non-selective nonsteroidal anti-inflammatory drugs (NSAIDs) in acute and chronic LBP, of muscle relaxants in acute LBP, and of antidepressants in chronic LBP. (Schnitzer, 2004)

Gi symptoms & cardiovascular risk

There is also a school of thought that anti-inflammatories may delay healing of sprains as they do in fractures. (Talmage, 2002) This has not been proven by quality studies, so anti-inflammatory medications are recommended if they help the patient return to normal functional activities by reducing pain.

Recommended as an optional form of exercise therapy, where available, as an alternative to land-based physical therapy. Aquatic therapy (including swimming) can minimize the effects of gravity, so it is specifically recommended where reduced weight bearing is desirable, for example extreme obesity. There may be advantages to weightless running in back pain recovery. (Ariyoshi, 1999) (Burns, 2001)
RCT concluded that water-based exercises produced better improvement in disability and quality of life of patients with CLBP than land-based exercise, but in both groups, statistically significant improvements were detected in all outcome measures.

Recommended as an option, in an occupational setting, for treatment, where there is access to proven programs. There is moderate evidence that back schools have better short-term effects than other treatments for chronic low back pain, and there is evidence that back schools in an occupational setting are more effective than in non-occupational settings. There is no good evidence for the use of back schools for prevention, as opposed to treatment. (Daltroy-NEM, 1997) (van Tulder-Cochrane, 2000) (van Tulder, 2000) (BlueCross BlueShield, 2001) (Linton-Spine, 2001) (Heymans-Cochrane, 2004) (Airaksinen, 2006)
Back schools

- Training workers about proper material handling techniques or providing them with assistive devices are not effective interventions by themselves in preventing back pain. (Martino–Cochrane, 2007)

Behavioral treatment

- Recommended as option for patients with chronic low back pain and delayed recovery.

- Recent clinical trials concluded that patients with chronic low back pain who followed cognitive intervention and exercise programs improved significantly in muscle strength compared with patients who underwent lumbar fusion or placebo. (Keller, 2004) (Storheim, 2003) (Schonstein, 2003)

Behavioral treatment

- ODG cognitive behavioral therapy (CBT) guidelines for low back problems:
  - Screen for patients with risk factors for delayed recovery, including fear avoidance beliefs. See Fear avoidance beliefs questionnaire (FABQ).
  - Initial therapy for these “at risk” patients should be physical therapy exercise instruction, using a cognitive motivational approach to PT.
  - Consider separate psychotherapy CBT referral after 4 weeks if lack of progress from PT alone:
    - Initial trial of 3–4 psychotherapy visits over 2 weeks
    - With evidence of objective functional improvement, total of up to 6–10 visits over 5–6 weeks (individual sessions)
Biofeedback

- Not recommended as a stand-alone treatment, but recommended as an option in a cognitive behavioral therapy (CBT) program to facilitate exercise therapy and return to activity. There is fairly good evidence that biofeedback helps in back muscle strengthening, but evidence is insufficient to demonstrate the effectiveness of biofeedback for treatment of chronic low back pain. Biofeedback may be approved if it facilitates entry into a CBT treatment program, where there is strong evidence of success.

Botulinum toxin (Botox®)

- Under study for chronic low back pain, if a favorable initial response predicts subsequent responsiveness, as an option in conjunction with a functional restoration program.

- Considering its high cost and the small differences compared with control treatments, its use should be reserved only for patients with pain refractory to other treatments. There are also potentially significant side effects including death. (De Andrés, 2010)

Botulinum toxin (Botox®)

- Paravertebral administration of botulinum toxin A in patients with chronic low back pain may relieve pain and improve function. Initial data from small trials suggest that botulinum toxin is effective, alleviating back pain in selected patients. On the basis of these promising results, additional study in larger trials is warranted. If approved, the number of trial injections should be limited to one, followed by exercise.
In a recent double-blind, randomized, placebo-controlled study, administration of botulinum toxin A into paraspinal muscles using a novel technique produced significant pain relief in 60% of patients with chronic, refractory low back pain. A similar yield of 53% was noted in another prospective, randomized, open-label study of 75 patients, with 14 months of follow-up. In this study, an early response predicted later responsiveness, with 91% of the responders continuing to respond to repeat injections.

Group health insurers do not generally cover this treatment for back pain. (Aetna, 2005) (Blue Cross Blue Shield, 2005)

Not recommended for low back pain, in the absence of neuropathic pain, unless used as a treatment for depression, where it may be recommended. While bupropion has shown efficacy in neuropathic pain there is no evidence of efficacy in patients with non-neuropathic chronic low back pain.
Chemonucleolysis (chymopapain)

- Not recommended. Studies of chemonucleolysis have shown it to be more effective than placebo, and it is less invasive but less effective than surgical discectomy; however, there are few providers experienced in this procedure since it is not used any more in the U.S. because of reports of anaphylaxis and neurologic complications. (Gibson, 2000) (Kim, 2002)

Colchicine

- Not recommended due to the lack of sufficient literature evidence (limited and conflicting literature). Colchicine is an anti-inflammatory agent primarily used in the treatment of gout. Research evidence is limited and conflicting on whether colchicine, given either orally or intravenously, is an effective treatment for patients with acute low back problems. Serious potential side effects have been reported with use of this medication. (Bigos, 1999)

Corticosteroids (oral/parenteral/IM for low back pain)

- Not recommended for acute non-radicular pain (i.e. axial pain) or chronic pain. (Holve, 2008) (Finckh, 2006) (Friedman, 2006)
Corticosteroids (oral/parenteral/IM for low back pain)

- Criteria for the Use of Corticosteroids (oral/parenteral for low back pain):
  - (1) Patients should have clear-cut signs and symptoms of radiculopathy;
  - (2) Risks of steroids should be discussed with the patient and documented in the record;
  - (3) The patient should be aware of the evidence that research provides limited evidence of effect with this medication and this should be documented in the record;
  - (4) Current research indicates early treatment is most successful; treatment in the chronic phase of injury should generally be after a symptom–free period with subsequent exacerbation or when there is evidence of a new injury.

Disc prosthesis

- Not recommended in the lumbar spine, but under study in the cervical spine, with recent promising cervical results.
- Information on use in the cervical spine. Other than spinal fusion, there are currently no direct comparison studies, and artificial disc outcomes in the lumbar spine are about the same as lumbar fusion, but neither results have demonstrated superiority compared with recommended treatments, including nonoperative care. See separate document with all studies focusing on Disc prosthesis. Studies have concluded that outcomes in patients with disc disease are similar to spinal fusion.

Disc prosthesis

- Aetna considers FDA–approved prosthetic intervertebral discs medically necessary for spinal arthroplasty in skeletally mature person with lumbosacral degenerative disc disease at one level from L3 to S1, and who have failed at least 6 months of conservative management. (Aetna, 2007) Blue Cross/Blue Shield: Coverage is not recommended. (Blue Cross/Blue Shield, 2007)
Surgical discectomy for carefully selected patients with radiculopathy due to lumbar disc prolapse provides faster relief from the acute attack than conservative management, although any positive or negative effects on the lifetime natural history of the underlying disc disease are still unclear. Unequivocal objective findings are required based on neurological examination and testing. (Gibson-Cochrane, 2000) (Malter, 1996) (Stevens, 1997) (Stevenson, 1995) (BlueCross BlueShield, 2002) (Buttermann, 2004)

A recent RCT compared decompressive surgery with nonoperative measures in the treatment of patients with lumbar spinal stenosis, and concluded that, although patients improved over the 2-year follow-up regardless of initial treatment, those undergoing decompressive surgery reported greater improvement regarding leg pain, back pain, and overall disability, but the relative benefit of initial surgical treatment diminished over time while still remaining somewhat favorable at 2 years. (Malmivaara, 2007)

**Indications for Surgery**

- **Discectomy/laminectomy** --
  - Required symptoms/findings; imaging studies; & conservative treatments below:
  - I. **Symptoms/Findings** which confirm presence of radiculopathy. Objective findings on examination need to be present. Straight leg raising test, crossed straight leg raising and reflex exams should correlate with symptoms and imaging.
Discectomy/ laminectomy

- (EMGs are optional to obtain unequivocal evidence of radiculopathy but not necessary if radiculopathy is already clinically obvious.)
- II. Imaging Studies, requiring ONE of the following, for concordance between radicular findings on radiologic evaluation and physical exam findings:
  A. Nerve root compression (L3, L4, L5, or S1)
  B. Lateral disc rupture
  C. Lateral recess stenosis
- Diagnostic imaging modalities, requiring ONE of the following:
  1. MR imaging
  2. CT scanning
  3. Myelography
  4. CT myelography & X-Ray

Discectomy/ laminectomy

- Conservative Treatments, requiring ALL of the following:
  A. Activity modification (not bed rest) after patient education (>= 2 months)
  B. Drug therapy, requiring at least ONE of the following:
    1. NSAID drug therapy
    2. Other analgesic therapy
    3. Muscle relaxants
    4. Epidural Steroid Injection (ESI)

Discectomy/ laminectomy

- Support provider referral, requiring at least ONE of the following (in order of priority):
  1. Physical therapy (teach home exercise/stretching)
  2. Manual therapy (chiropractor or massage therapist)
  3. Psychological screening that could affect surgical outcome
  4. Back school
Epidural steroid injections (ESIs), therapeutic

- Recommended as a possible option for short-term treatment of radicular pain (defined as pain in dermatomal distribution with corroborative findings of radiculopathy) with use in conjunction with active rehab efforts.

Criteria for the use of Epidural steroid injections:

- Note: The purpose of ESI is to reduce pain and inflammation, thereby facilitating progress in more active treatment programs, reduction of medication use and avoiding surgery, but this treatment alone offers **no significant long-term functional benefit**.
- (1) Radiculopathy must be documented. Objective findings on examination need to be present. Radiculopathy must be corroborated by imaging studies and/or electrodiagnostic testing.
- (2) Initially unresponsive to conservative treatment (exercises, physical methods, NSAIDs and muscle relaxants).

Facet joint diagnostic blocks (injections)

- Recommend no more than one set of medial branch diagnostic blocks prior to facet neurotomy, if neurotomy is chosen as an option for treatment (a procedure that is still considered “under study”). Diagnostic blocks may be performed with the anticipation that if successful, treatment may proceed neurotomy at the diagnosed level.
Facet joint diagnostic blocks (injections)

- Current research indicates that a minimum of one diagnostic block be performed prior to a neurotomy, and that this be a medial branch block (MBB). Although it is suggested that MBBs and intra-articular blocks appear to provide comparable diagnostic information, the results of placebo-controlled trials of neurotomy found better predictive effect with diagnostic MBBs.

Facet joint diagnostic blocks (injections)

- Criteria for the use of diagnostic blocks for facet “mediated” pain:
  - Clinical presentation should be consistent with facet joint pain, signs & symptoms.
  1. One set of diagnostic medial branch blocks is required with a response of ≥ 70%. The pain response should last at least 2 hours for Lidocaine.
  2. Limited to patients with low-back pain that is non-radicular and at no more than two levels bilaterally.
  3. There is documentation of failure of conservative treatment (including home exercise, PT and NSAIDs) prior to the procedure for at least 4-6 weeks.
  4. No more than 2 facet joint levels are injected in one session (see above for medial branch block levels).

Facet joint diagnostic blocks (injections)

5. Recommended volume of no more than 0.5 cc of injectate is given to each joint.
6. No pain medication from home should be taken for at least 4 hours prior to the diagnostic block and for 4 to 6 hours afterward.
7. Opioids should not be given as a “sedative” during the procedure.
8. The use of IV sedation (including other agents such as midazolam) may be grounds to negate the results of a diagnostic block, and should only be given in cases of extreme anxiety.
Facet joint diagnostic blocks (injections)

9. The patient should document pain relief with an instrument such as a VAS scale, emphasizing the importance of recording the maximum pain relief and maximum duration of pain. The patient should also keep medication use and activity logs to support subjective reports of better pain control.

10. Diagnostic facet blocks should not be performed in patients in whom a surgical procedure is anticipated. (Resnick, 2005)

11. Diagnostic facet blocks should not be performed in patients who have had a previous fusion procedure at the planned injection level. [Exclusion Criteria that would require UR physician review: Previous fusion at the targeted level. (Franklin, 2008)]

Facet joint radiofrequency neurotomy

Criteria for use of facet joint radiofrequency neurotomy:

1. Treatment requires a diagnosis of facet joint pain using a medial branch block as described above. See facet joint diagnostic blocks (injections).

2. While repeat neurotomies may be required, they should not occur at an interval of less than 6 months from the first procedure. A neurotomy should not be repeated unless duration of relief from the first procedure is documented for at least 12 weeks at ≥ 50% relief. The current literature does not support that the procedure is successful without sustained pain relief (generally of at least 6 months duration). No more than 3 procedures should be performed in a year’s period.

3. Approval of repeat neurotomies depends on variables such as evidence of adequate diagnostic blocks, documented improvement in VAS score, decreased medications and documented improvement in function.

4. No more than two joint levels are to be performed at one time.

5. If different regions require neural blockade, these should be performed at intervals of no sooner than one week, and preferably 2 weeks for most blocks.

6. There should be evidence of a formal plan of additional evidence-based conservative care in addition to facet joint therapy.
Fusion (spinal)

- Not recommended for patients who have less than six months of failed recommended conservative care unless there is objectively demonstrated severe structural instability and/or acute or progressive neurologic dysfunction, but recommended as an option for spinal fracture, dislocation, spondylolisthesis or frank neurogenic compromise, subject to the selection criteria outlined in the section below entitled, "Patient Selection Criteria for Lumbar Spinal Fusion," after 6 months of conservative care.

- After screening for psychosocial variables, outcomes are improved and fusion may be recommended for degenerative disc disease with spinal segment collapse with or without neurologic compromise after 6 months of compliance with recommended conservative therapy.

- According to the recently released AANS/NASS Guidelines, lumbar fusion is recommended as a treatment for carefully selected patients with disabling low back pain due to one- or two-level degenerative disc disease after failure of an appropriate period of conservative care.
Fusion (spinal)

- A recently published well respected international guideline, the "European Guidelines," concluded that fusion surgery for nonspecific chronic LBP cannot be recommended unless 2 years of all other recommended conservative treatments – including multidisciplinary approaches with combined programs of cognitive intervention and exercises – have failed, or such combined programs are not available, and only then in carefully selected patients with maximum 2–level degenerative disc disease. (Airaksinen, 2006) For chronic LBP, exercise and cognitive intervention may be equivalent to lumbar fusion without the potentially high surgical complication rates.

Fusion (spinal)

- In acute spinal cord injury (SCI), if the spine is unstable following injury, surgical fusion and bracing may be necessary. (Bagnall–Cochrane, 2004) (Siebenga, 2006)

Fusion (spinal)

- According to the recent Medicare Coverage Advisory Committee Technology Assessment, the evidence for lumbar spinal fusion does not conclusively demonstrate short–term or long–term benefits compared with nonsurgical treatment for elderly patients. (CMS, 2006)
Gabapentin (Neurontin®)

- Recommended as a trial for lumbar spinal stenosis (LSS). Gabapentin, which has been used in the treatment of neuropathic pain, may be effective in the treatment of symptoms associated with LSS. Statistically significant improvement was found in walking distance, pain with movement, and sensory deficit. (Yaksi, 2007)

Gabapentin (Neurontin®)

- Gabapentin has been shown to be effective for treatment of diabetic painful neuropathy and postherpetic neuralgia and has been considered as a first-line treatment for neuropathic pain. There is limited evidence to show that this medication is effective for acute pain, and for postoperative pain, where there is fairly good evidence that the use of gabapentin and gabapentin-like compounds results in decreased opioid consumption. This beneficial effect, which may be related to an anti-anxiety effect, is accompanied by increased sedation and dizziness. Also recommended as a trial for chronic neuropathic pain that is associated with spinal cord injury.

Hardware implant removal (fixation)

- Not recommend the routine removal of hardware implanted for fixation, except in the case of broken hardware or persistent pain, after ruling out other causes of pain such as infection and nonunion.
IDET (intradiscal electrothermal annuloplasty)

- Not recommended. Also known as intradiscal electrophoral annuloplasty. **Proposed indications**: The procedure is suggested for discogenic pain that is non-radiculic and that has not responded to conservative treatment as an alternative to a fusion procedure.

A 2005 Cochrane review concluded that the effectiveness of IDET remained unproven.

Implantable drug-delivery systems (IDDSs)

- Recommended only as an end-stage treatment alternative in selected cases of chronic intractable pain.

- This treatment should only be used relatively late in the treatment continuum, when there is little hope for effective management of chronic intractable pain from other therapies.
**Implantable drug-delivery systems (IDDSs)**

- The specific criteria in these cases include the failure of at least 6 months of other conservative treatment modalities, intractable pain secondary to a disease state with objective documentation of pathology, further surgical intervention is not indicated, psychological evaluation unequivocally states that the pain is not psychological in origin, and a temporary trial has been successful prior to permanent implantation as defined by a 50–70% reduction in pain and medication use.

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**Kyphoplasty**

- Recommended as an option for patients with pathologic fractures due to vertebral body neoplasms, who may benefit from this treatment, but under study for other vertebral compression fractures, consistent with recent higher quality discouraging studies of a similar procedure, vertebroplasty (Kallmes, 2009) (Buchbinder, 2009), and if used for osteoporotic compression fractures should be restricted to selected patients failing other interventions (including bisphosphonate therapy) with significant unresolving pain.

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**Indications for Surgery – Kyphoplasty**

- (1) Presence of unremitting pain and functional deficits due to compression fracture from:
  - (a) Osteolytic metastasis, myeloma, hemangioma (Recommended)
  - (b) Osteoporotic compression fractures (Under study);
- (2) Lack of satisfactory improvement with medical treatment (e.g., medications, bracing, therapy);
- (3) Absence of alternative causes for pain such as herniated intervertebral disk by CT or MRI;
- (4) Affected vertebra is at least one third of its original height. (Ledlie, 2006)
- (5) Fracture age not exceeding 3 months, since studies did not evaluate older fractures.
- For average hospital LOS if criteria are met, see Hospital length of stay (LOS).
Laminectomy/ laminotomy

- Recommended for lumbar spinal stenosis. For patients with lumbar spinal stenosis, surgery (standard posterior decompressive laminectomy alone, without discectomy) offered a significant advantage over nonsurgical treatment in terms of pain relief and functional improvement that was maintained at 2 years of follow-up, according to a new SPORT study.

Laminectomy/ laminotomy

- Laminectomy is a surgical procedure for treating spinal stenosis by relieving pressure on the spinal cord. The lamina of the vertebra is removed or trimmed to widen the spinal canal and create more space for the spinal nerves.

Ligamentous injections

- Not recommended. Ligamentous injections involve the injection of various substances (especially sclerosing agents) into interspinal ligaments and ligamentous muscle attachments in the low back. The theory behind such treatment is that this stimulates formation of scar tissue in ligaments. Ligamentous and sclerosant injections are invasive and not recommended in the treatment of patients with acute low back problems. The injections can expose patients to serious potential complications.
Sympathetic block

- This block is commonly used for differential diagnosis and is the preferred treatment of sympathetic pain. For diagnostic testing, use three blocks over a 3–14 day period. For a positive response, pain relief should be 50% or greater for the duration of the local anesthetic and pain relief should be associated with functional improvement. Should be followed by intensive physical therapy.

Manipulation under anesthesia (MUA)

- Not recommended for back conditions in the absence of vertebral fracture or dislocation.

- In the appendicular skeleton, manipulation with the patient under anesthesia (MUA) may be performed as a treatment of arthrofibrosis, particularly of the shoulder (i.e., frozen shoulder) or knee.

Manipulation under anesthesia (MUA)

- Manipulation under anesthesia (MUA) cannot be recommended at the present time. Existing studies are not high quality and the outcomes were not great, plus the procedure is expensive and has risks. There is a need for high quality studies before recommending this. (Haldeman, 1993) (Ben-David, 1994) (Aspegren, 1997) (Palmeri, 2002) (West, 1999) (Kohlbeck, 2002) (Kohlbeck, 2005) It is also not generally recommended under group health plans. (BlueCross BlueShield, 2007) (Aetna, 2004)
Massage

- Recommended as an option in conjunction with recommended exercise programs. Manual massage administered by professional providers has shown some proven efficacy in the treatment of acute low back symptoms, based on quality studies. Mechanical massage devices are not recommended. (Furlan-Cochrane, 2002) (Werners, 1999) (Cherkin, 2001) (Cherkin-Annals, 2003) (Sherman, 2004)

Microdiscectomy

- Recommended. Standard discectomy and microdiscectomy are of similar efficacy in treatment of herniated disc. (Bigos, 1999)

Muscle relaxants

- Recommended as an option in acute cases of moderate to severe LBP. OK for acute spasms. A comprehensive review of clinical trials on the efficacy and safety of drugs for the treatment of low back pain concludes that available evidence supports the effectiveness of muscle relaxants in acute LBP. (Schnitzer, 2004) (Airaksinen, 2006)
Pharmacologically, these are usually benzodiazepines, other sedative medications, or antihistamine derivatives. The therapeutic objective of muscle relaxants is to reduce low back pain by relieving muscle spasm. However, the concept of skeletal muscle spasm is not universally accepted as a cause of symptoms, and the most commonly used muscle relaxants have no peripheral effect on muscle spasm. Muscle relaxants are an option in the treatment of patients with acute low back problems. While probably more effective than placebo, muscle relaxants have not been shown to be more effective than NSAIDs.

No additional benefit is gained by using muscle relaxants in combination with NSAIDs over using NSAIDs alone. Muscle relaxants have potential side effects, including drowsiness in up to 30 percent of patients. When considering the optional use of muscle relaxants, the clinician should balance the potential for drowsiness against a patient's intolerance of other agents. (VanTulder, 2000) (Bigos, 1999)

Recommended for early use only.

There is fair to good evidence that NSAIDs are effective for reducing pain in patients with acute low back problems, and there is evidence that acetaminophen is comparable in efficacy to NSAIDs for treating back problems and with fewer side effects. (Bigos, 1999)
Nucleoplasty

- Not recommended. Nucleoplasty is a percutaneous method of decompressing herniated vertebral discs that uses radiofrequency energy [Coblation (ArthroCare Corp., Sunnyvale, CA)] for ablating soft tissue, and thermal energy for coagulating soft tissue, combining both approaches for partial disc removal.

- Given the extremely low level of evidence available for Nucleoplasty (Coblation Nucleoplasty), and the lack of clinical trials, it is recommended that this procedure be regarded as experimental at this time.

Opioids

- Not generally recommended except for short use for severe cases, not to exceed 2 weeks.

- When used only for a time-limited course, opioid analgesics are an option in the management of patients with acute low back problems.

- Recent studies document a 423% increase in expenditures for opioids for back pain, without demonstrated improvements in patient outcomes or disability rates. (Deyo, 2009)
Percutaneous diskectomy (PCD)

- Percutaneous diskectomy (PCD) is not recommended, since proof of its effectiveness has not been demonstrated. PCD is a "blind" procedure done under the direction of fluoroscopy.

- It involves placing an instrument into the center of the disc space, and either mechanically removing disc material or vaporizing it by use of a laser, to create a void so that extruded material can return to the center of the disc. Percutaneous lumbar discectomy procedures are rarely performed in the U.S., and no studies have demonstrated the procedure to be as effective as discectomy or microsurgical discectomy (Stevens, 1997) (Stevenson, 1995) (Gibson, 2000) (Boult, 2000) (Mochida, 2001) (Singh, 2009).

Percutaneous endoscopic laser discectomy (PELD)

- Given the extremely low level of evidence available for percutaneous endoscopic laser discectomy (PELD), it is recommended that this procedure be regarded as experimental at this time. (Boult, 2000) (Stevens, 1997) (BlueCross BlueShield, 2005).
Percutaneous intradiscal radiofrequency thermocoagulation

- Percutaneous intradiscal radiofrequency thermocoagulation (PIRFT) is not effective in reducing chronic discogenic low back pain. A fairly high quality study concluded that it was not effective. (Barendse, 2001) Another RCT also concluded that it provided no effective pain relief. (Erçelen, 2003) (Blue Cross Blue Shield, 2004) (Regence BlueCross BlueShield, 2005)

Percutaneous neuromodulation therapy (PNT)

- Percutaneous neuromodulation therapy (PNT) is considered investigational. Percutaneous neuromodulation therapy is a variant of PENS in which up to 10 fine filament electrodes are temporarily placed at specific anatomical landmarks in the back.

Physical therapy (PT)

- There is strong evidence that physical methods, including exercise and return to normal activities, have the best long-term outcome in employees with low back pain.

- The most effective strategy may be delivering individually designed exercise programs in a supervised format (for example, home exercises with regular therapist follow-up), encouraging adherence to achieve high dosage, and stretching and muscle-strengthening exercises seem to be the most effective types of exercises for treating chronic low back pain. (Hayden, 2005)
Physical therapy (PT)

- The use of active treatment modalities instead of passive treatments is associated with substantially better clinical outcomes. In a large case series of patients with acute low back pain treated by physical therapists, those adhering to guidelines for active rather than passive treatments incurred fewer treatment visits, cost less, and had less pain and less disability. The overall success rates were 64.7% among those adhering to the active treatment recommendations versus 36.5% for passive treatment. (Fritz, 2007)

Piriformis injections

- Recommended for piriformis syndrome after a one-month physical therapy trial. Piriformis syndrome is a common cause of low back pain and accounts for 6–8% of patients presenting with buttock pain, which may variably be associated with sciatica, due to a compression of the sciatic nerve by the piriformis muscle (behind the hip joint).

Platelet-rich plasma (PRP)

- Not recommended except in a research setting.
- Platelet–rich plasma (PRP) therapy is a recently developed technique that uses a concentrated portion of autologous blood to try to improve and accelerate the healing of various tissues.
- Platelet–rich plasma can be applied at the site of injury either during surgery or through an injection performed in the physician’s office.
Prolotherapy (sclerotherapy)

- Not recommended. There are conflicting studies concerning the effectiveness of prolotherapy, also known as sclerotherapy, in the low back. Lasting functional improvement has not been shown. The injections are invasive, may be painful to the patient, and are not generally accepted or widely used. Therefore, the use of prolotherapy for low back pain is not recommended at this time. (Colorado, 2001) (Yelland-Cochrane, 2004) (Yelland, 2004) (Hooper, 2004) (Dagenais, 2005) (BlueCross BlueShield, 2006)

Prostaglandin E1 (PGE1)

- Under study. Prostaglandin E1 (PGE1) treatment might play a part in the future of medical therapy for lumbar spinal canal stenosis. Neurogenic intermittent claudication, a prominent symptom of lumbar spinal canal stenosis, poses a substantial impairment of quality of life in patients. A variety of approaches to treatment for lumbar spinal canal stenosis have been reported, but general systemic complications make it difficult for many elderly people to undergo surgical treatment. Sometimes the only reasonable option is to receive conservative treatment. Midterm results of intravenous infusion of PGE1 (60 microg/d) for approximately 2 weeks showed that PGE1 was useful for treating intermittent claudication in patients with lumbar spinal canal stenosis. (Nakanishi, 2008)

Pulsed radiofrequency treatment (PRF)

- Pulsed radiofrequency treatment (PRF) has been investigated as a potentially less harmful alternative to radiofrequency (RF) thermal neurolytic destruction (thermocoagulation) in the management of certain chronic pain syndromes such as facet joint pain and trigeminal neuralgia. Pulsed radiofrequency treatment is considered investigational/not medically necessary for the treatment of chronic pain syndromes.
Reflexology

- Not recommended. Reflexology on the feet has no effect on pain and functioning for patients with low-back pain. (Furlan-Cochrane, 2008)

Sequestrectomy

- Recommended as an option. Standard microdiscectomy and microscopic sequestrectomy are of similar efficacy in treatment of herniated disc. See Discectomy/laminectomy. Simple fragment excision in cases of herniated lumbar discs has been reported as an alternative to standard microdiscectomy.

Shock wave therapy

- The available evidence does not support the effectiveness of ultrasound or shock wave for treating LBP. In the absence of such evidence, the clinical use of these forms of treatment is not justified and should be discouraged. (Seco, 2011)
Spinal cord stimulation (SCS)

- Recommended only for selected patients in cases when less invasive procedures have failed or are contraindicated.

- There is fair evidence that spinal cord stimulation is moderately effective for failed back surgery syndrome with persistent radiculopathy, though device-related complications are common. (Chou3, 2009)

Stem cell autologous transplantation

- Under study.

- Stem cell therapy has been used for osteoarthritis, rheumatoid arthritis, spinal injury, degenerative joint disease, autoimmune diseases, systemic lupus erythematosus, cerebral palsy, critical limb ischemia, diabetes type 2, heart failure, multiple sclerosis, and other conditions.

Stem cell autologous transplantation

- Adult stem cells are harvested from many areas of the body, including the bone marrow, fat and peripheral blood, and they are purified and reintroduced back in the patient. According to the theory, stem cells isolated from a patient (i.e. from the bone marrow or fat) have the ability to become different cell types (i.e. nerve cells, liver cells, heart cells and cartilage cells), and they are capable of “homing in” on and repairing damaged tissue.
At present, research on intervertebral disc regeneration is at the stage of animal studies, but studies have been conducted on regenerating intervertebral discs. Done as an alternative to fusion for lumbar intervertebral disc instability, this study, for the first time, performed therapeutic intervertebral disc regeneration therapy in patients and obtained favorable findings. (Yoshikawa, 2010)

Under study. There is one randomized controlled study that has investigated topiramate for chronic low back pain. (Muehlbacher, 2006) This study specifically stated that there were no other studies to evaluate the use of this medication for this condition.

In terms of the Oswestry low back pain questionnaire scale, the differences in the placebo group and treatment group were significant, although the mean score in both groups remained ≥ 34. Reduction in pain rating index appeared to be correlated with weight reduction. Weight loss was significantly more pronounced in the group treated with topiramate than in those treated with placebo.
Topiramate (Topamax®)

- The authors felt additional research was required to see if the results could be replicated and how long-lasting benefits were.

Transplantation, intervertebral disc

- Not recommended until further research is completed. Still investigational. In this very small study, the motion and stability of the spinal unit was preserved after transplantation of fresh-frozen allogenic intervertebral discs. With further refinements, such transplantations might be a feasible surgical alternative to spinal fusion or artificial disk replacement, especially in younger patients, but more research is required. (Ruan–Lancet, 2007)

Trigger point injections (TPIs)

- Not recommended in the absence of myofascial pain syndrome.

- The evidence for TPIs when used as a sole treatment for patients with chronic low-back pain (regardless of injectate) is inconclusive and the treatment does not appear to be more effective than treatments such as laser or ultrasound.
Criteria for the use of Trigger point injections:

1. Documentation of circumscribed trigger points with evidence upon palpation of a twitch response as well as referred pain;
2. Symptoms have persisted for more than three months;
3. Medical management therapies such as ongoing stretching exercises, physical therapy, NSAIDs and muscle relaxants have failed to control pain;
4. Radiculopathy is not an indication (however, if a patient has MPS plus radiculopathy a TPI may be given to treat the MPS);
5. Not more than 3-4 injections per session;
6. No repeat injections unless a greater than 50% pain relief with reduced medication use is obtained for six weeks after an injection and there is documented evidence of functional improvement;
7. Frequency should not be at an interval less than two months;
8. Trigger point injections with any substance (e.g., saline or glucose) other than local anesthetic with or without steroid are not recommended;
9. There should be evidence of continued ongoing conservative treatment including home exercise and stretching. Use as a sole treatment is not recommended;
10. If pain persists after 2 to 3 injections the treatment plan should be re-examined.

Tumor necrosis factor (TNF) modifiers

Under study. Long-term results have not supported a recommendation.

- Tumor necrosis factor (TNF) modifiers interfere with specific components of TNF, a powerful immune factor that is important in the inflammatory process and may play a role in nerve dysfunction and pain that occurs in sciatica.
- For sciatica evidence has been accumulating in favor of a local inflammation rather than a pathology resulting only from a nerve compression.
- More research is warranted.
Vertebroplasty

- Not recommended based on recent higher quality studies.
- Vertebroplasty stabilizes the collapsed vertebra using a formulated acrylic bone cement. It is typically an outpatient procedure and requires only a local anesthetic. Once the area of the spine is numb, the cement is delivered by one or two needles.
- Vertebral compression fractures

Criteria for percutaneous vertebroplasty (while Not recommended in ODG):

- Severe debilitating pain or loss of mobility that cannot be relieved by correct medical therapy.
- Other causes of pain, such as herniated intervertebral disk have been ruled out by computed tomography or magnetic resonance imaging.
- The affected vertebra has not been extensively destroyed and is at least one third of its original height.

Work conditioning

- WC amounts to an additional series of intensive physical therapy (PT) visits required beyond a normal course of PT, primarily for exercise training/supervision (and would be contraindicated if there are already significant psychosocial, drug or attitudinal barriers to recovery not addressed by these programs).
These approaches, called Work Hardening (WH) programs, feature exercise therapy combined with some elements of psychological support (education, cognitive behavioral therapy, fear avoidance, belief training, stress management, etc.) that deal with mild-to-moderate psychological overlay accompanying the subacute pain/disability, not severe enough to meet criteria for chronic pain management or functional restoration programs.

Types of treatment: Components suggested for interdisciplinary care include the following services delivered in an integrated fashion: (a) physical treatment; (b) medical care and supervision; (c) psychological and behavioral care; (d) psychosocial care; (e) vocational rehabilitation and training; and (f) education.
Thank You!