

Low Back Pain

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Low Back Pain

- Objectives

- Review a new "*evidence-based clinical practice guideline*"
- Review many of the available treatments for the common types of low back pain

Low Back Pain

- In the United States,
 - About 25% of adults report having back pain in the past three months
 - Back pain is the 5th most common reason to see a doctor

Low Back Pain

- Chronic back pain
 - Often defined as pain for >3 months
 - Very common
 - 5-8% of U.S. population
 - 19% of working adults
 - More than 25 million U.S. adults
 - About one-third of people still have pain a year after an acute episode

Low Back Pain: Impact

- Back pain is a public health problem
 - Annual U.S. health care costs: >\$25 billion
 - Annual lost work productivity: >\$7 billion

Low Back Pain: 2007 Evidence-Based Guideline

- Published: *Annals of Internal Medicine*
(Chou et al, 2007)
- Joint project of the American College of Physicians and the American Pain Society
- Purpose: Evaluation and management of acute and chronic low back pain not associated with major trauma
- Expert panel reviewed all published studies and developed seven recommendations

Low Back Pain: 2007 Evidence-Based Guideline

- Recommendations #1 - #4 of the guideline are about evaluation
- Recommendations #5 - #7 are about treatments

Low Back Pain: Background Information

- Most acute and chronic pain is “nonspecific”
 - No clear cause in about 85% of cases
 - Assumed to be “musculoskeletal” but uncertain mechanisms
 - Findings on MRI, like arthritis or disk abnormalities, do not correlate with pain
 - Most back pain resolves in a few weeks, but in some cases, pain recurs periodically or becomes persistent

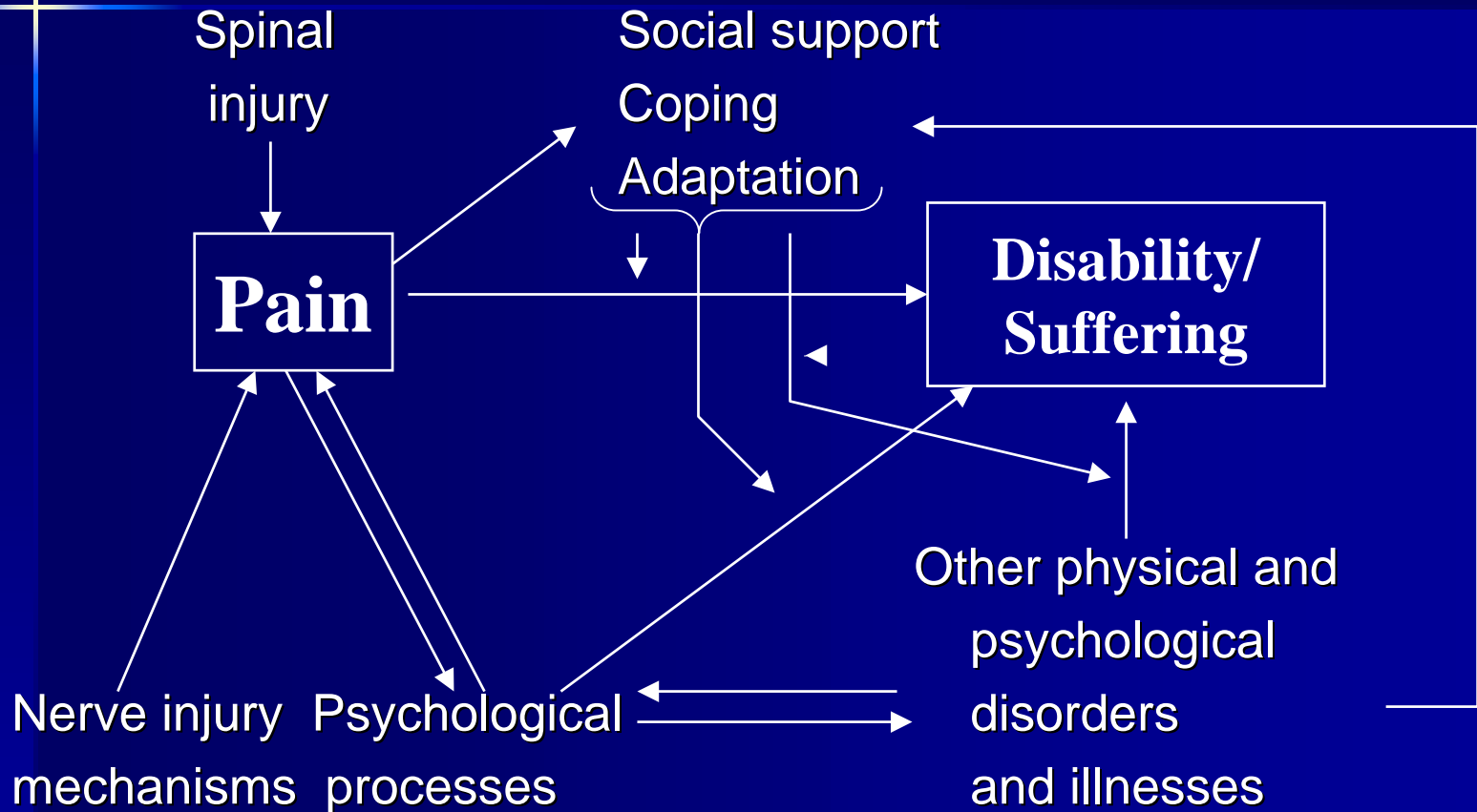
Low Back Pain: Background Information

- Clear etiology for the pain in 15% of patients
 - Spinal causes
 - Muscle strain or other soft tissue injury
 - Osteoarthritis of spinal joints
 - Disk degeneration or tears
 - Spondylolisthesis
 - Osteoporosis
 - Scoliosis
 - Neuropathic pain
 - Radiculopathy or polyradiculopathy
 - Other causes
 - Ankylosing spondylitis
 - Benign or malignant tumors
 - Infections of the disk or other structures
 - Diseases affecting other structures near the spine

Evidence-Based Guideline: Recommendation #1

- Conduct a focused history and physical examination (*strong recommendation, moderate quality evidence*)
- Questions to be answered:
 - Is this nonspecific back pain, or is there a specific cause that should be treated?
 - How to characterize pain and disability

Focused History: Formulation



Evidence-Based Guideline: Recommendation #2 and #3

- Patients with acute nonspecific low back pain **should not** routinely obtain imaging (*strong recommendation, moderate quality evidence*)
- Patients with acute pain and severe neurological dysfunction or suspicion of a severe underlying condition **should obtain a prompt work-up** with imaging (*strong recommendation, moderate quality evidence*)

Evidence-Based Guideline: Recommendation #2 and #3

- Why not get CT or MRI of nonspecific back pain?
 - No change in outcome
 - Expensive
 - CT exposes to radiation
 - Findings may lead to unnecessary interventions like surgery

Evidence-Based Guideline: Recommendation #2 and #3

- There are no studies that evaluate the impact of diagnostic studies if nonspecific low back pain persists more than 1-2 months
- Usual approach: Evaluation for **persistent nonspecific back pain only** if the results may change recommended therapies

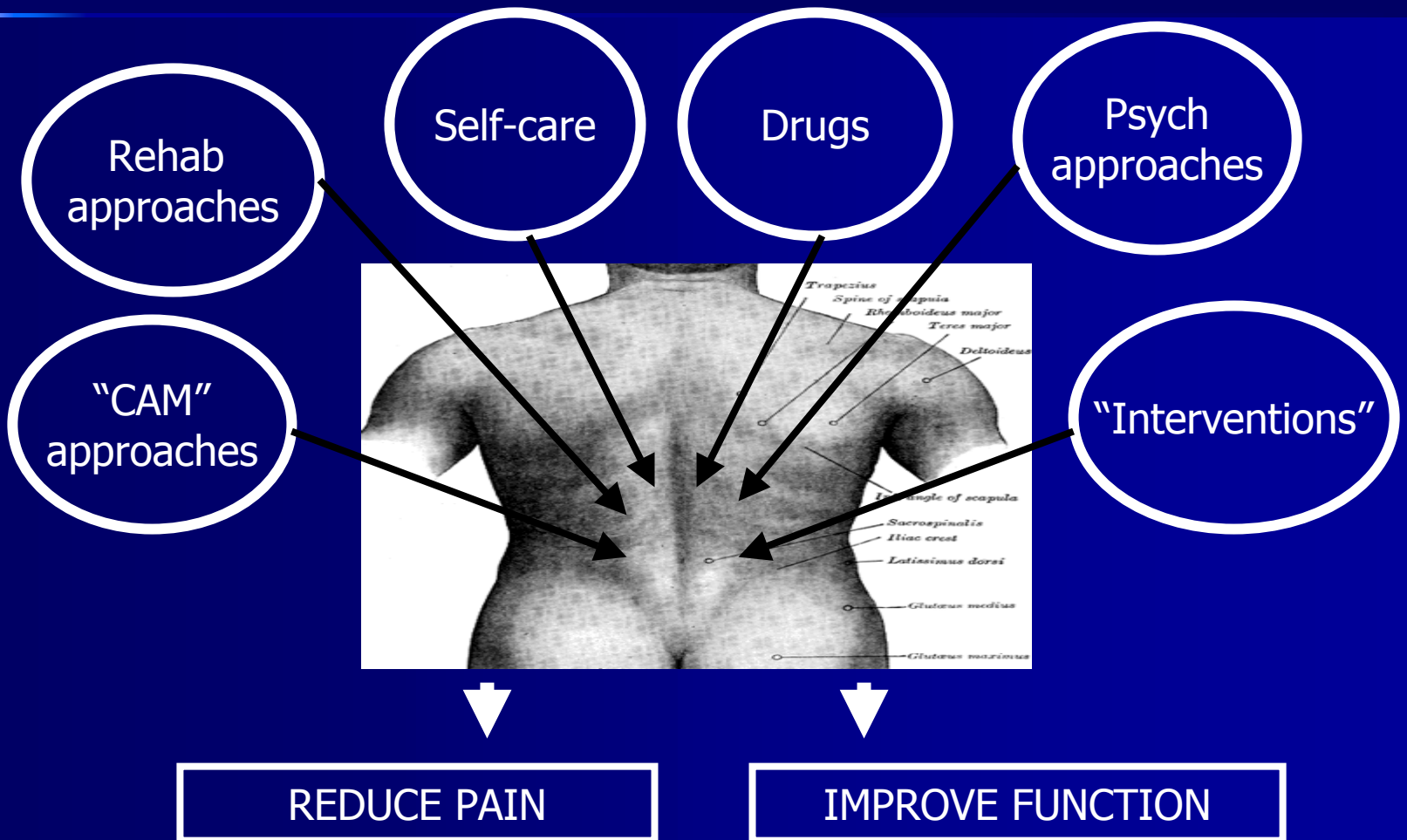
Evidence-Based Guideline: Recommendation #4

- Doctors should evaluate patients with **persistent pain** who also have nerve pain (*strong recommendation, moderate quality evidence*)
 - Evaluate with MRI or CT
 - Potential candidates for surgery or epidural steroid injection

Low Back Pain: 2007 Evidence-Based Guideline

- Recommendations #5 - #7 of the guideline are about treatment

Low Back Pain: Numerous Treatments



Evidence-Based Guideline: Recommendation #5

- Provide patients with information and self-care options (*strong recommendation, moderate quality evidence*)

Low Back Pain: Self-Care Options

- Key information

- Most acute pain, with or without sciatica, resolves within a month
- Whether pain is acute or chronic, stay active
 - Bedrest for no more than a few days during acute event
 - Try to function

Low Back Pain: Self-Care Options

■ Other options

– For acute pain, consider application of heat

– For chronic pain

- Consider medium-firm mattress (not firm)

- Exercise and stretching

- Read self-care education books

- Consider groups that provide education and supervised exercise

Evidence-Based Guideline: Recommendation #6

- Consider the use of medications with proven benefits
 - Medication selection based on severity of pain and functional deficits, potential benefits and risks (strong recommendation, moderate-quality evidence)
 - Medication selection based on evidence from studies, but there are few studies of drugs for back pain and very little long-term data

Evidence-Based Guideline: Recommendation #6

- For acute pain, based on the evidence, doctors may consider:
 - Acetaminophen or a nonsteroidal anti-inflammatory drug (NSAID) as a first-line therapy
 - An opioid for short-term use
 - A “muscle relaxant” for short-term use
 - No evidence to support the use of an oral or parenteral corticosteroid

Evidence-Based Guideline: Recommendation #6

- For acute flares of chronic pain, based on very limited evidence, doctors also may consider several herbal therapies:
 - Devil's claw
 - Willow bark
 - Capsicum

Evidence-Based Guideline: Recommendation #6

- For chronic pain, based on limited evidence:
 - Acetaminophen or a nonsteroidal anti-inflammatory drug (NSAID)
 - Gabapentin for pain related to nerve injury
 - A “tricyclic” antidepressant may have some small benefit but is usually not first-line treatment
 - Cautious use of an opioid

Evidence-Based Guideline: Recommendation #6

- For chronic pain, based on both limited evidence and on anecdotal experience, doctors may consider:
 - Acetaminophen or a nonsteroidal anti-inflammatory drug (NSAID)
 - An analgesic antidepressant
 - Gabapentin or pregabalin for pain related to nerve injury
 - Another “analgesic anticonvulsant”, or other nontraditional analgesic, for nerve injury pain
 - Tizanidine, cyclobenzaprine, or cautious use of another “muscle relaxant”
 - Cautious use of long-term opioid therapy

Medications for Acute and Chronic Pain: NSAIDs

- Gastrointestinal Risks
 - Some medications reduce the risk
 - Omeprazole or other proton pump inhibitors
 - Misoprostol
 - Famotidine or other H2 blockers at high doses
 - Using a COX-2 selective drug reduces risk
 - Only celecoxib now marketed in the U.S.
- Kidney toxicity
 - No way to reduce risk

Medications for Acute and Chronic Pain: NSAIDs

- Cardiovascular toxicity
 - Risk of atherothrombotic disease
 - Risk of heart failure
 - Some NSAIDs reduce the benefit from once-daily aspirin therapy

Medications for Acute and Chronic Pain: NSAIDs

- Cardiovascular toxicity
 - All NSAIDs have a small risk of these complications
 - Long-term therapy with NSAIDs must be undertaken with caution in patients at increased risk of cardiovascular complications

Medications for Acute and Chronic Pain: Muscle Relaxants

- “Muscle relaxants”
 - Heterogeneous drugs grouped together because they were approved for “musculoskeletal conditions” or “spasticity”
 - Benzodiazepines also used as muscle relaxants
 - Mechanisms of action largely unknown
 - Sedation and mental clouding are the main side effects

Medications for Acute and Chronic Pain: Muscle Relaxants

- “Muscle relaxants”
 - Numerous drugs are available
 - Cyclobenzaprine (Flexeril[®])
 - Carisoprodol (Soma[®])
 - Orphenadrine (Norflex[®])
 - Methocarbamol (Robaxin[®])
 - Metaxalone (Skelaxin[®])

Medications for Acute and Chronic Pain: Muscle Relaxants

- “Muscle relaxants”
 - Do not relax muscle
 - Evidence of benefit for acute low back pain
 - No evidence that one is better than another
 - Main side effect is sedation

Medications for Acute and Chronic Pain: Muscle Relaxants

- Benzodiazepines
 - Most common is diazepam (Valium®)
 - Can relax muscle
 - Evidence of benefit for acute low back pain
 - No evidence of benefit over “muscle relaxant” drugs
 - Main side effect is sedation

Medications for Acute and Chronic Pain: Muscle Relaxants

- Tizanidine (Zanaflex[®])
 - On the market for spasticity
 - Relaxes skeletal muscle
 - Evidence of benefit in low back pain
- Baclofen (Lioresal[®])
 - Also on the market for spasticity
 - No evidence of benefit in low back pain

Medications for Acute and Chronic Pain: Muscle Relaxants

■ Conclusions

- It is common to prescribe a benzodiazepine or a “muscle relaxant” for short-term therapy of acute low back pain
- Of drugs on the market that relax muscle, evidence of benefit in low back pain is limited to tizanidine
- Given lack of evidence, use of any of these drugs for persistent pain requires a careful individual assessment of risks and benefits

Medications for Chronic Pain: Nontraditional Analgesics

■ Antidepressants

- Many studies indicate that antidepressants can potentially help any kind of pain
- Pain-relieving effects are separate from antidepressant effects
- If depression co-exists with the pain, early use of these drugs is reasonable
- Multiple drugs in several classes

Medications for Chronic Pain: Nontraditional Analgesics

■ Antidepressants

- Classes with best evidence of analgesia
 - Tricyclic antidepressants like desipramine (Norpramin[®]) have limited evidence of benefit in low back pain
 - Serotonin and norepinephrine reuptake inhibitors (SNRIs) like duloxetine (Cymbalta[®]) have not been studied in low back pain

Medications for Chronic Pain: Nontraditional Analgesics

- Topical drugs
 - Lidocaine patch (Lidoderm[®])
 - NSAID patch (Flector[®])
 - Commercially available and specially compounded creams and ointments
 - Local analgesics
 - Capsaicin
 - Tricyclic drugs
 - NSAIDs
 - Others

Medications for Chronic Pain: Nontraditional Analgesics

- Topical drugs
 - No evidence of effectiveness in low back pain
 - Because they appear to be very safe, the lidocaine patch or other topicals may be tried

Medications for Chronic Pain: Nontraditional Analgesics

■ Anticonvulsants

- Considered when neuropathic pain is likely
- Gabapentin (Neurontin®) has evidence of benefit
- Pregabalin (Lyrica®) is assumed to have similar benefit, but there are no trials in low back pain

Medications for Chronic Pain: Nontraditional Analgesics

■ Anticonvulsants

- No evidence for other drugs in neuropathic back pain, but other drugs sometimes tried when nerve pain is persistent despite therapy
- Many are available

Medications for Chronic Pain: Nontraditional Analgesics

- Other drugs used for neuropathic pain based on very limited evidence
 - Tizanidine
 - Sodium channel blockers like mexiletine (Mexital[®])
 - GABA agonists like baclofen
 - NMDA receptor antagonists like memantine (Namenda[®])
 - Cannabinoids like THC (Marinol[®])

Medications for Acute or Chronic Pain: Opioids

- Easy decision
 - Consider tramadol (Ultram[®] or Ultracet[®]) or another short-acting opioid for acute severe pain
 - Intention is to discontinue as the pain resolves
- Difficult decision
 - Long-term use of an opioid may be considered for persistent pain
 - Requires a careful assessment of individual risk and benefit

Opioid Treatment for Chronic Low Back Pain

- New paradigm

- A trial of LONG-TERM opioid therapy may be considered for ANY PATIENT with MODERATE TO SEVERE CHRONIC PAIN
- *BUT...* the decision to proceed requires a favorable analysis of four questions:
 - *What is conventional practice?*
 - *Are there other therapies with an equal or better therapeutic index?*
 - *What is the risk of adverse drug effects?*
 - *What is the risk of drug abuse, addiction, or diversion?*

Opioid Treatment for Chronic Low Back Pain

- Safe and effective prescribing requires
 - Skills to optimize pharmacological outcomes
 - Skills to minimize risks

Risk Assessment: Key Principles

- Assess and stratify risk in all patients
 - Higher risk: Personal or family history of drug abuse, or a mental illness
- Decide whether to refer to another physician for advice or management
- If the decision is made to prescribe,
 - Structure therapy to match risk
 - Monitor analgesia, side effects and function
 - Monitor drug-related behavior and make changes if needed
 - Document everything

Evidence-Based Guideline: Recommendation #7

- In addition to self-care, consider the use of nonpharmacologic therapy with **proven benefits** (weak recommendation, moderate-quality evidence)

Nonpharmacologic Therapies for Low Back Pain

- For acute pain, based on the evidence, may consider
 - Spinal manipulation: small to moderate short term benefit
 - Exercise therapy not effective during the first month of pain

Nonpharmacologic Therapies for Low Back Pain

- For subacute pain (1-2 months), based on limited evidence,
 - if pain is in the leg and due to herniated disk or stenosis, consider
 - epidural steroid injection for short-term benefits
 - Other invasive therapies, including surgery to remove the disk (for a herniated disk) or decompressive surgery (for spinal stenosis)

Nonpharmacologic Therapies for Low Back Pain

- For subacute pain (1-2 months), based on limited evidence,
 - if pain is nonspecific, consider
 - Spinal manipulation: small to moderate short term benefits
 - Interdisciplinary rehabilitation (multidisciplinary pain therapy)
 - Functional restoration focused on work
 - Possibly exercise therapy

Nonpharmacologic Therapies for Low Back Pain

- For chronic pain, based on limited evidence, consider
 - Psychological/rehabilitative therapies
 - Cognitive-behavioral therapy
 - Progressive relaxation
 - Interdisciplinary rehabilitation
 - Exercise programs
 - Complementary and alternative medicine therapies
 - Spinal manipulation
 - Acupuncture
 - Massage therapy
 - Viniyoga-style yoga

Nonpharmacologic Therapies for Low Back Pain

- For chronic pain, there is no evidence supporting
 - Transcutaneous electrical nerve stimulation
 - Ultrasonography or diathermy
 - Interferential therapy
 - Laser therapy
 - Traction
 - Other complementary or alternative medicine techniques

Other Therapies for Chronic Low Back Pain

- For highly selected patients, pain specialists may consider
 - Trial of spinal cord stimulation for persistent nerve injury pain
 - Trial of medication infusion into the spine (implanted pump)
 - Advanced surgical techniques for replacement of disk or limiting mobility of the spine
- Very few studies of these approaches and they are not addressed by the guideline

The Good News in Low Back Pain Most Acute Pain Resolves with Conservative Therapy

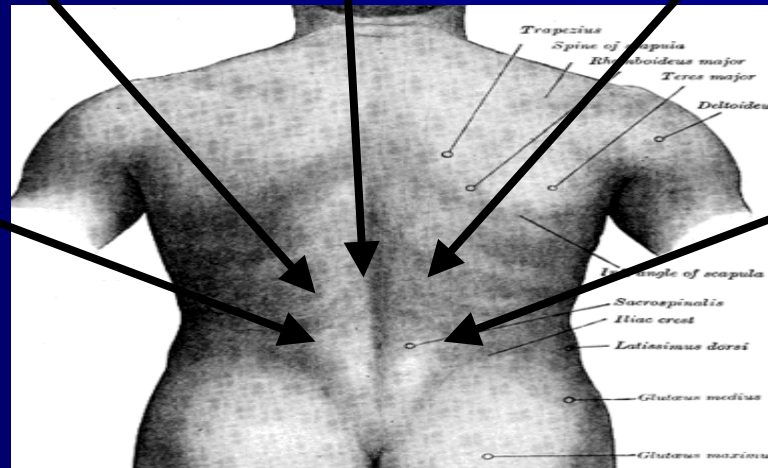
Rehab
approaches

Self-care

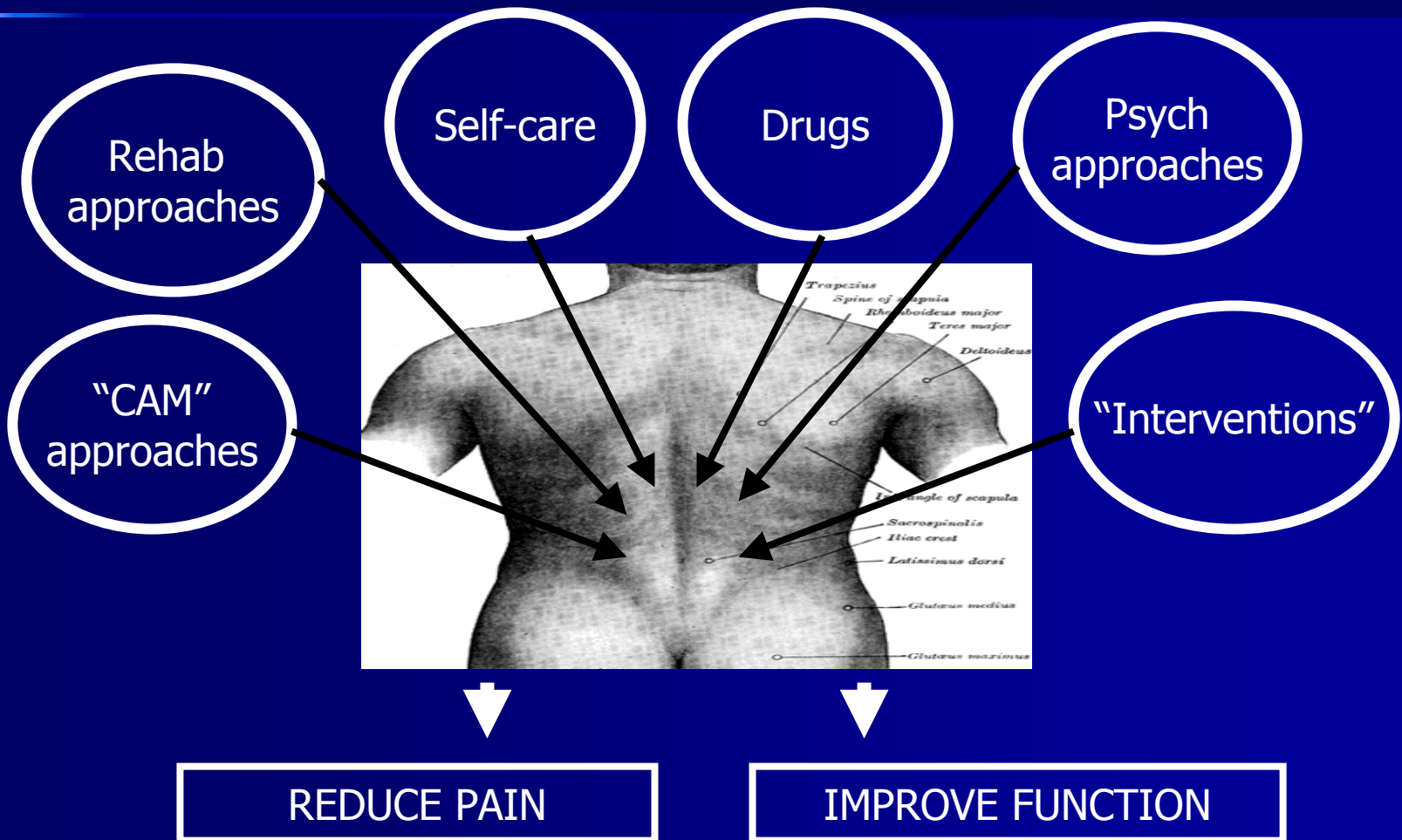
Drugs

"CAM"
approaches

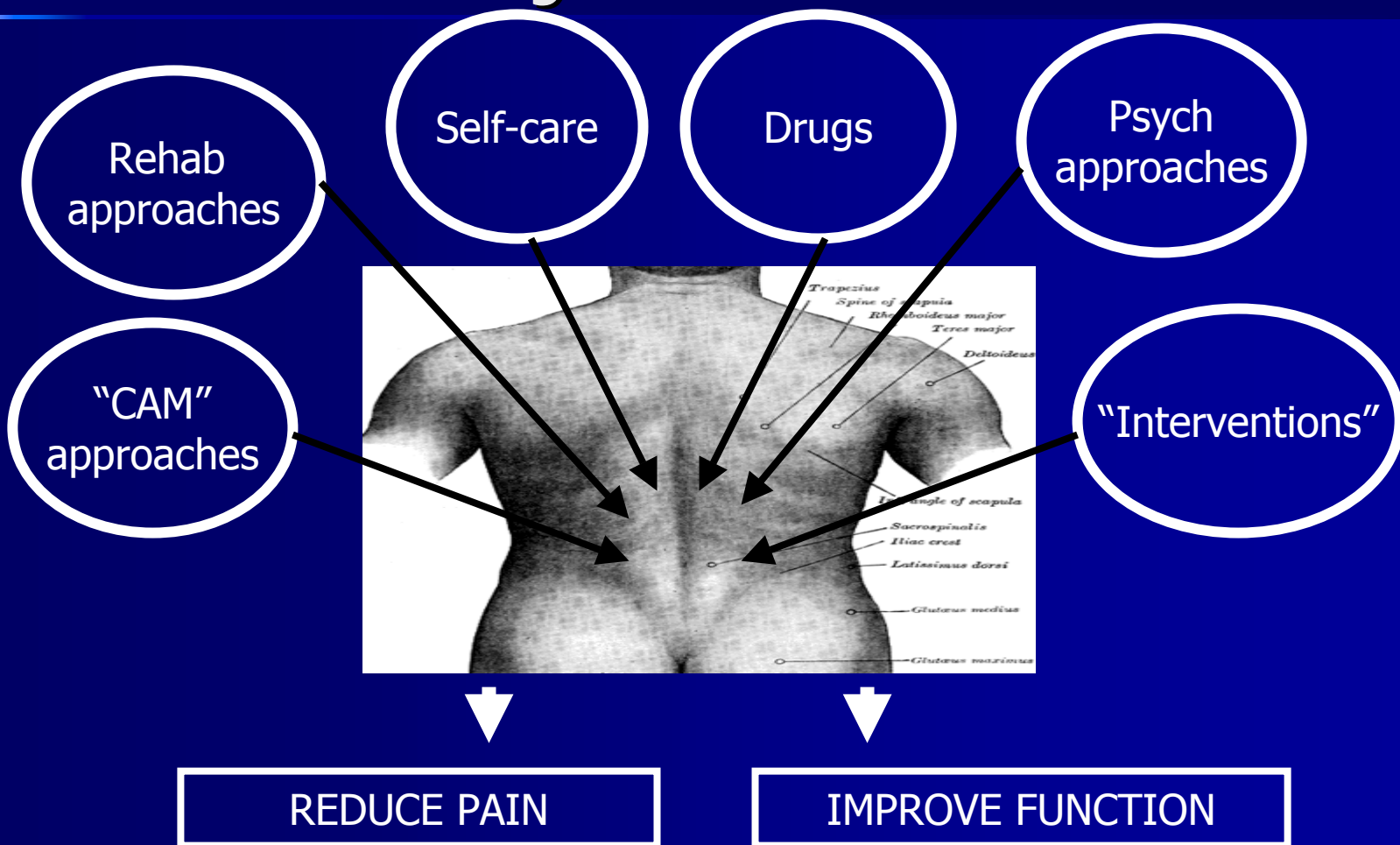
Psych
approaches



The Good News in Low Back Pain Many Evidence-Based Treatments Can Be Tried for Chronic Pain



The Good News in Low Back Pain Other Treatments Are Available for Refractory Chronic Pain



The Bad News in Low Back Pain

- Patients are faced with many options, only some of which have been studied
- There is no better than moderate quality evidence for any approach and there are very few data on long-term outcomes and treatment comparisons
- For each of the treatments recommended by the evidence-based guideline, the average magnitude of the benefit is only moderate (10-20 points on a 100 point pain or function scale)

The Bad News in Low Back Pain

- There is no guidance in the literature about when to refer to specialists, and specialist referral may or may not be beneficial
- The selection of many therapies is influenced by non-medical factors, such as the training and skills of the “provider”, advertising, availability in the community, physician incentives, bias and cost

Low Back Pain: Conclusion

- For such a complex problem, the best model is “shared decision making” between practitioners and patients