Objectives

- Discuss incidence, prevalence and economic impact of low back pain
- Discuss current guidelines and classification systems
- Present current updated Treatment Based Classification System (TBC)
- Case examples

LBP defined

- Pain, stiffness or muscle tension below the costal margin and above the inferior gluteal folds
- Can be with or without leg pain
- Chronicity
  - Acute < 6 weeks
  - Sub-acute 6 to 12 weeks
  - Chronic > 12 weeks
LBP
- Common disorder that is a burden to individuals and society
- Lifetime prevalence approximately 84%
- 60 to 80% of Americans will suffer an episode of LBP resulting in loss of work
- Economic Impact
  - USA: annual cost over $50 billion

Low Back Pain
- Non-Mechanical
  - Prevalence 3%
- Mechanical
  - Prevalence 97%

Pathologies
- Red Flag / Non-mechanical (prevalence 1%)
  - Neoplasia
  - Infection
  - Inflammatory arthritis
  - Paget and Scheuerman disease

Pathologies

- Red Flag / Visceral (prevalence 2%)
  - Aortic aneurysm
  - Pelvic
  - Renal
  - GI


Pathologies

- Mechanical LBP (prevalence 97%)
  - Strain
  - DDD / facet
  - Herniated disc
  - Stenosis
  - FX
  - Spondy
  - Congenital
  - Instability


- Approximately 85% of patients are unable to be given a specific structurally based (patho-anatomic) diagnosis
  “Non-specific low back pain”

- How can we effectively treat this large group?

Guidelines vs Classification Systems

- Guidelines
  - Summary of available evidence
  - Developed from a clinical perspective
- Classification Systems
  - Match treatments to patient sub-groups using a clinically driven decision making process

American College of Physicians & American Pain Society

- Acute LBP
  - Spinal Manipulation
- Chronic / sub-acute LBP
  - Interdisciplinary rehabilitation
  - Exercise therapy
  - Acupuncture
  - Massage therapy
  - Spinal manipulation
  - Yoga
  - Cognitive behavioral therapy


European Spine Journal 2011

Intervention Effectiveness

- Exercise Therapy
- "Back School"
- TENS
- Heat / Cold
- Low-level Laser Therapy
- Patient Education
- Traction
- Massage
- Behavioral Treatments
- Lumbar Support
- Multidisciplinary Treatment

European Spine Journal 2011

Intervention Effectiveness

- Exercise Therapy
- “Back School”
- TENS
- Heat / Cold
- Low-level Laser Therapy
- Patient Education


European Spine Journal 2010

- Summary of recommendations for the treatment of low back pain
  - Acute or Sub acute
    - Re-assure patients
    - Advise to stay active
    - Prescribe meds if necessary (time contingent)
    - Discourage bed rest
    - Do not advise a supervised exercise program


European Spine Journal

- Summary of recommendations for the treatment of low back pain
  - Chronic low back pain
    - Discourage use of modalities
    - Short term use of meds / manipulation
    - Supervised exercise
    - Cognitive behavioral therapy
    - Multidisciplinary treatment

Treatment results?
- Despite much research there is little consensus on the most effective treatments for individuals with non-specific low back pain.
- Guidelines summarize research
  - Heterogeneous sample sizes + wide inclusion criteria
  - Diluted treatment effect

Classification Systems
- Mechanical Diagnosis and Treatment (MDT)
- Treatment Based Classification (TBC)
- Pathoanatomic Based Classification (PBC)
- Movement System Impairment Syndromes (MSI)
- O’sullivan Classification System

Treatment Based Classification (TBC)
- Developed in 1995
- 3 “levels”
  1. Referral?
  2. Staged based on acuity if symptoms
  3. Classified into “syndromes”

History and examination drive the decision making process
Treatment Based Classification (TBC)

- Updated in 2007
  - Clinical trials showed improved patient outcomes
  - Clinical prediction rules were further developed
  - FABQ (fear avoidance)
  - 4 classification groups emerged

Group into one of four categories based on patient response to examination:
- Specific Exercise
- Mobilization
- Immobilization (stabilization)
- Traction

Specific Exercise

- Prescribe exercises that "centralize", reduce symptoms or address the primary condition
  - Centralization: pain arising from the spine and felt laterally or distally into an extremity is reduced and moves to a more central position during certain movements
  - Creates a "directional preference"
  - Similar to McKenzie approach
Specific Exercise

- Inclusion criteria:
  - Centralization with two or more movements in the same direction
  - Or
  - Centralize with movement in one direction and peripheralize with an opposite movement

- Study: 84% of patients who performed appropriate directional preference ex had significant decrease in pain and disability in 2 weeks


Centralization

Mobilization

- Inclusion criteria:
  - Duration of symptoms less than 16 days
  - No symptoms distal to the knee
  - Low FABQ (less than 19)
  - Hip internal rotation > 35°
  - Hypomobility with spring testing

- Must meet 3
  - ≥ 4 = 50% reduction in ODI score over 2 treatments

Stabilization

- Inclusion criteria:
  - Average SLR > 90°
  - Positive prone instability test
  - Positive abberant movements
  - Age < 40

- ≥ 1 = 80% probability of improvement

Traction

- Inclusion criteria:
  - Signs and symptoms of nerve root compression
    + SLR, reflex / sensory / muscular weakness
  - Pain or numbness distal to the buttock in previous 24 hours
  - Peripheralization / symptoms with extension
  + XSLR

- Must meet all criteria (short term benefit compared to no traction group)

Traction Limitations of 2007 TBC model

- 25% of test subjects met criteria for more than one subgroup
- Most common overlap: Mobilization & specific exercise
- Another 25% did not meet any subgroup

TBC 2015 Update

- Initial "first contact" triage (various health care providers)
  - 3 Managements tracks

- Rehab professional triage process
  - 3 Approaches
    - Assess risk at both levels (1st provider & rehab professional)
      - Comorbidities
      - Fear avoidance

Triage by "first contact" health care provider

- Medical management
  - Red flag
  - Screen co-morbidities

- Self-care management
  - Unlikely to develop disabling LBP during current episode
  - Provide advice / guidance

- Rehabilitation management
  - Majority of patients with LBP

Triage by rehabilitation provider

- Placed into one of 3 rehabilitation "approaches"
  - Symptom modulation
  - Movement control
  - Functional optimization

- Relies on assessment of pain, disability and perception of clinical status (risk)
  - STAR BackTool
  - Orebro Musculoskeletal Pain Questionnaire
  - FABQ
Symptom Modulation Approach

- Clinical Findings
  - Disability: high
  - Symptom status: volatile
  - Pain: high to moderate

- Treatments
  - Directional preference exercise
  - Manipulation / mobilization
  - Traction
  - Active rest
Movement Control Approach

- Clinical Findings
  - Disability: moderate
  - Symptom status: stable
  - Pain: moderate to low
- Treatments
  - Sensorimotor exercises
  - Stabilization exercises
  - Flexibility exercises

Movement Control Approach

Functional Optimization Approach

- Clinical Findings
  - Disability: low
  - Symptom status: controlled
  - Pain: low to absent
- Treatments
  - Strength and conditioning exercises
  - Work / sport specific tasks
  - Aerobic exercises
  - General fitness activity
Functional Optimization Approach

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Case 1
- 55 y/o housekeeping employee at SNF
- Injured left low back moving hospital bed
- Symptom duration: 2 weeks
- Pain: 4/10 intermittent bending / lifting
- Work status: light duty
- Medication: Naprosyn, Flexeril
- Wishes to resume resistance exercise
- PMH: HBP, TTDM

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Exam:
- FABQ: 10
- FOTO score: 55
- Lumbar AROM WNL: pain with extension overpressure (L lumbar)
- Limited P-A mobility left L4 – L5 segments
Case 1

- 55 y/o housekeeping employee at SNF
  - Decision making using updated TBC
    - Symptoms: stable
    - Pain: moderate to low
    - Disability: moderate
  - Movement control approach
    - Sensitized neurologic structure? No
    - Joint mobility impairment? Yes
    - Treatment: manipulation
    - 3 visits: 1/10 pain, FOTO score 72

Case 2

- 27 y/o graduate student / barrista
  - Belted driver in MVA 3 weeks ago
  - Pain 8/10 central low back and right leg
  - Symptoms: sleep, walk, stand
  - Meds: hydrocodone
  - Unable to return to school / work due to symptoms

Case 2

- 27 y/o graduate student / barrista
  - Exam
    - FABQ 60
    - ODI 74
    - Pain and limited AROM: flexion and extension
    - + right SLR
    - Symptoms centralize with extension
Case 2

- 27 y/o graduate student / barrista
- Decision making using updated TBC
  - Symptoms: volatile
  - Pain: high
  - Disability: high

- Symptom modulation approach
  - Symptom centralization? No, extension
  - Treatment: prescribe extension exercises
  - 6 visits: ODI 34, return to work / school

Stay tuned!

- More research to be published on TBC

Thank you!