## Lumbar Radiculopathy: Before the Referral

Carlo Santaguida
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Unité de gestion de la douleur
Alan-Edwards
Pain Management Unit

Canadian
INTERVENTIONAL
PAIN COURSE 2021

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Institut et hôpital neurologiques de Montréal
Montreal Neurological Institute and Hospital

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# Disclosures/COI

- Chief Medical Officer/Founder of Careaxis
- Consultant for Stryker and Medtronic

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# Objectives

- Understand the organizational limitations of how we provide spine care
- Understand the patient phenotype that responds well to surgery
- Understand the expectations for conservative therapy with different lumbar spine conditions




# CANMEDS

- Collaborator- efficiently using services of other specialities
- Health advocate- opioid avoidance and optimization of patient trajectory
- Scholar- analysis of surgical trials of lumbar radiculopathy
- Professional- prioritization of treatments that are effective

# Patient 1-The Subacute Patient

- 37 yo M with back and right leg pain radiating to lateral malleolus and 1st webspace for 2months.
- No appreciable numbness or weakness
- SLR +ve at 60 degrees
- Leg VAS score originally 10 now 5
- Physiotherapy 2x/week since onset
- Naproxen PRN and Pregabalin 75mg po BID

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# Patient 2 -Acute patient with a deficit

- 37 yo M with acute sciatica. Notably uncomfortable. Cannot sit for any length of time
- Complaining of pain descending to lateral malleolus to 1st webspace
- Associated numbness and weakness
- DF 4/5 and EHL 4-, SLR +ve almost immediately
- Has not had any treatment

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# Patient 3 -Acute Patient with Urinary Incontinence

- 37 yo M  sciatica for 1 week.  He had one episode of urinary incontinence today.
- Pain descends down to lateral malleolus and 1st webspace, no weakness
- SLR +VE, no numbness other than first webspace
- No saddle anesthesia, Rectal tone intact




# Patient 4 -Chronic Patient that has Tried Everything

- 37 yo M with Worker's compensation claimant
- Diagnosis: Entorse lombaire
- Symptoms worsening for 2 years characterized low back and midback pain radiating to neck.  There is a lesser component of non dermatomal leg pain
- Completed 100 sessions of physiotherapy, six separate cortisone injections
- Hydromorph contin 6mg po BID, Hydromorphone 2mg po q4hrs PRN

# Patient 5- Grandmother who can no longer do the groceries

- 81 yo woman in good health finds progressively harder to walk
- She's comfortable sitting, but when she is upright she develops low back pain and numbness and problems with equilibrium in both legs.
- She has lost her autonomy and is dependant on her kids for grocery shopping and can no longer walk to her apartment swimming pool
- SLR –ve, no weakness, and sensory deficits

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## The Spine Care Paradox

- This creates a paradox
  - High demand for specialist evaluation
  - Majority do not benefit from it
- More money does not seem to be the answer
  - provinces that spend more on health care per capita do not have shorter wait times than those that spend less.
  - Expanding the infrastructure cannot feasibly accommodate the demand

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Esmail N, Hazel M, Walker MA. Waiting your turn: hospital waiting lists in Canada, 2008 Report. Fraser Institute; 2008. Report.

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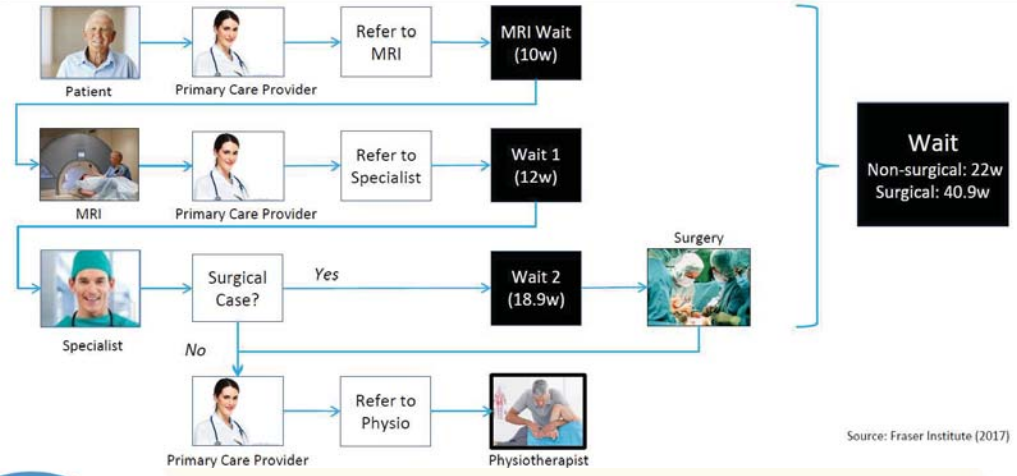
# Waiting for spine care in Quebec




Source: Fraser Institute (2017)

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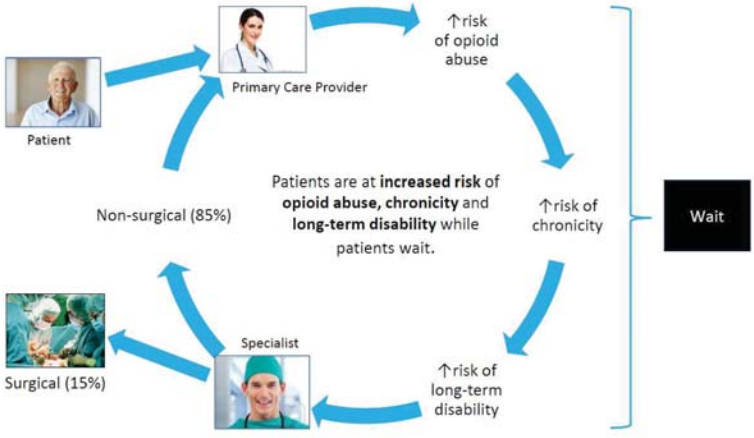
# The true cost of over-medicalization

**$8.4B**
Annual indirect costs of chronic pain to Quebec*




*Overall estimate of economic burden of chronic pain due to job loss and sick days alone.

Source: Martell BC, et al. (2007), Hill JC, et al. (2011), Harris SA & Rampersaud Y (2016), Phillips & Schopflocher (2008).

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# Identification of the chief complaint

- The avoidance of lay terminology pseudo-anatomical terminology is not helpful
- Examples:
  - I have 3 disk herniations
  - I have severe foraminal stenosis
  - Sciatic nerve is compressed


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# Treatment based Back Pain Classification

**Table 1. Patient Interview Questions**

| | |
|---|---|
| Determining the Patient's Pain Syndrome | 1. Where is your pain the worst?<br>2. Is your pain constant or intermittent?<br>3. Does bending forward increase your typical pain? |
| Mandatory: Determining the Patient's Bowel and Bladder Status | 4. Since the start of your pain, has there been any change in your bowel or bladder function? |
| Determining the Patient's Disability Level and Confirming Site of Dominant Pain | 5. What can't you do now that you could do before your pain started and why? |
| Assessing the Mechanical Aspects and History of the Patient's Pain | 6. What are the relieving movements or positions?<br>7. Have you had this type of pain before?<br>8. Have you had treatment in the past and was it effective? |

Hall, Ochsner J 2014


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# Treatment based Back pain classification

- Back dominant
  - Pattern 1: Flexion based pain
  - Pattern 2: Extension based pain
- Leg dominant
  - Pattern 3: Constant leg pain (sciatica), neurological symptoms
  - Pattern 4: Intermittent pain, flexion or extension aggravated

Hall, Ochsner J 2014

# MRI Request= Surgeon Consultation

- Inappropriate MRI Request may worsen patient outcome (but not patient satisfaction)

*Table 3.* **Results From Meta-analysis of Randomized, Controlled Trials of Routine Imaging Versus Usual Care Without Routine Imaging***

| Outcome | Short Term (<3 Months) | | Long Term (>6 Months to ≤1 Year) | |
|---|---|---|---|---|
| | Results, by Specific Scale | Analysis (95% CI) | Results, by Specific Scale | Analysis (95% CI) |
| Pain | SF-36 bodily pain (0 to 100 scale): 3.0 (−2.0 to 8.0), 2 trials; VAS (0 to 10 scale): 1.0 (0.46 to 1.54), 1 trial | Pooled SMD: 0.19 (−0.01 to 0.39); 3 trials | SF-36 bodily pain: −2.1 (−5.1 to 0.80), 3 trials; VAS: 0.08 (−0.02 to 0.18), 1 trial | Pooled SMD: −0.04 (−0.15 to 0.07); 4 trials |
| Function | RDQ (0 to 24 scale): 0.48 (−1.4 to 2.3), 3 trials | Pooled SMD: 0.11 (−0.29 to 0.50); 3 trials | RDQ: 0.34 (−0.65 to 1.3), 3 trials; Aberdeen low back score (0 to 100 scale): −3.1 (−4.2 to −2.0), 1 trial | Pooled SMD: 0.01 (−0.17 to 0.19); 4 trials |
| Quality of life | EQ-5D (0 to 1 scale): −0.10 (−0.17 to −0.03), 1 trial; EuroQoL subjective score (0 to 100 scale): 2.0 (−1.5 to 5.5), 1 trial | Pooled SMD: −0.10 (−0.53 to 0.34); 2 trials | EQ-5D: −0.005 (−0.06 to 0.05), 2 trials; EuroQoL subjective score: −7.0 (−10 to −3.7), 1 trial | Pooled SMD: −0.15 (−0.33 to 0.04); 3 trials |
| Mental health | SF-36 mental health (0 to 100 scale): 2.3 (−6.3 to 11), 2 trials | Pooled SMD: 0.12 (−0.37 to 0.62); 2 trials | SF-36 mental health: 0.61 (−4.4 to 5.6), 3 trials | Pooled SMD: 0.01 (−0.32 to 0.34); 3 trials |
| Overall improvement† | Risk difference: −7.8% (−14% to −1.3%) | Relative risk: 0.83 (0.65 to 1.06); 4 trials | Risk difference: −7.8% (−17% to 1.8%) | Relative risk: 0.82 (0.64 to 1.05); 1 trial |

EQ-5D = European Quality of Life—5 Dimensions; EuroQoL = European Quality of Life; RDQ = Roland Disability Questionnaire; SF-36 = Short Form-36; SMD = standardized mean difference; VAS = visual analogue scale.
* From reference 6. Negative results favor routine imaging for pain and function, whereas positive results favor routine imaging for quality of life and mental health.
† Dichotomous outcome, defined as back pain resolved, normal activities resumed, and patient rating of "symptoms much improved" or at least "very pleased."

Chou, R
Lancet 2009

- With the exception of rare red flag scenarios, contraindications, there is never a role for a CT

# MRI interpretation

- Cauda equina is also an anatomical term
- 84% of MRIs are unchanged with first onset of LBP
- Asymptomatic >60: 90% have DDD or disk bulging, 36% have a disk herniation, 21% have spinal stenosis

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Boden et al. JBJS 1990,
Carragee Spine J 2006

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# Red flags for early imaging-simplified

- Major risk factors for metastatic cancer
- Risk factors for infection (fever, IV drug use, recent bacterial infection)
- Multiple levels of neurologic symptoms
- Cauda equina

Chou et al. Ann Intern Med 2011

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# Lumbar radiculopathy-Natural History

- Many lower quality studies, but consensus that majority of patients improve in first 6 weeks
- Although there are variable amounts of disability before the recovery phase
- Personal anecdote: Casual polling >90% of surgeons would take up front surgery, 2 spine surgeons had surgery in the first 2 weeks of onset

NASS guideline 2012

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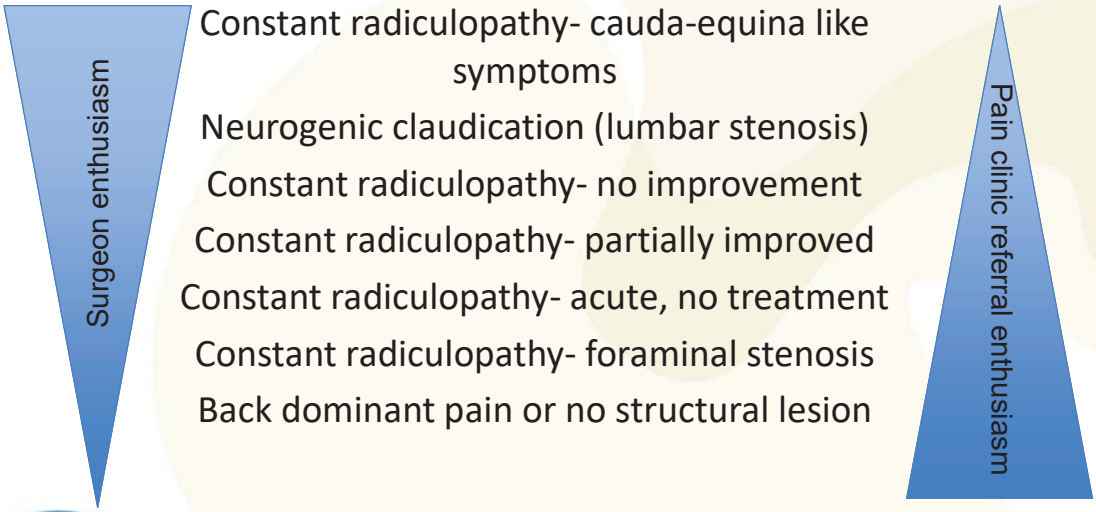
# Surgical Candidacy- my perspective

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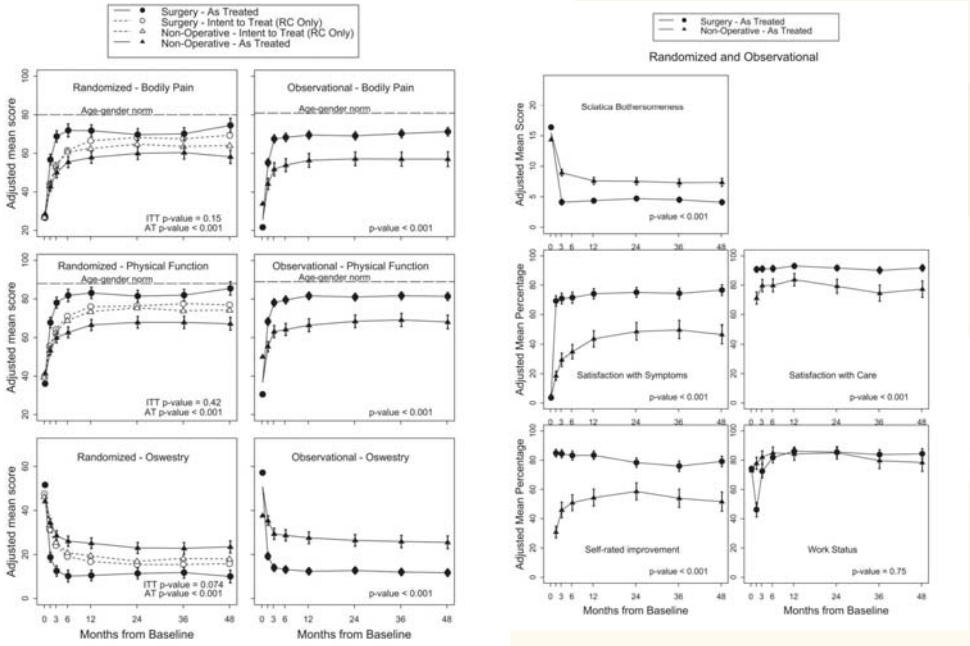
# Non-op improve, but discectomies do better (6 weeks conservative care)




neuro Weinstein et al. Spine (Phila Pa 1976). 2008

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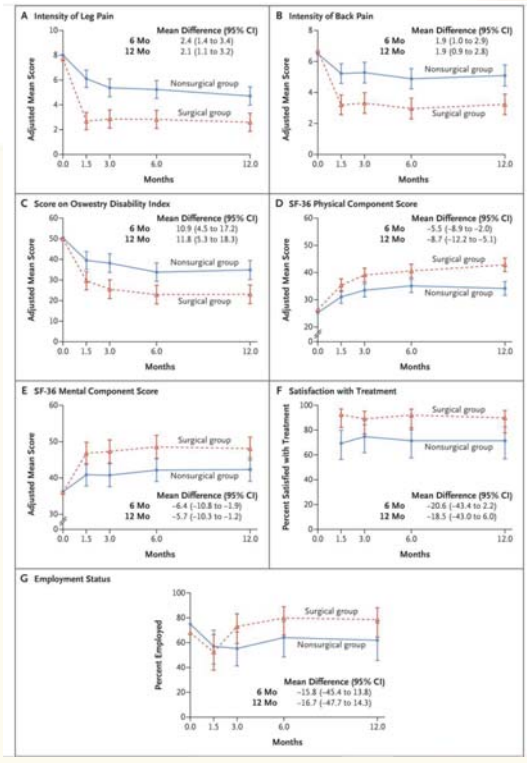
## Delayed discectomy (4-12months) may offer benefits

Small Canadian RCT with problems with cross over

There is a persistent benefit to surgical treatment despite delayed symptom duration




Bailey et al. N Eng J Med 2020

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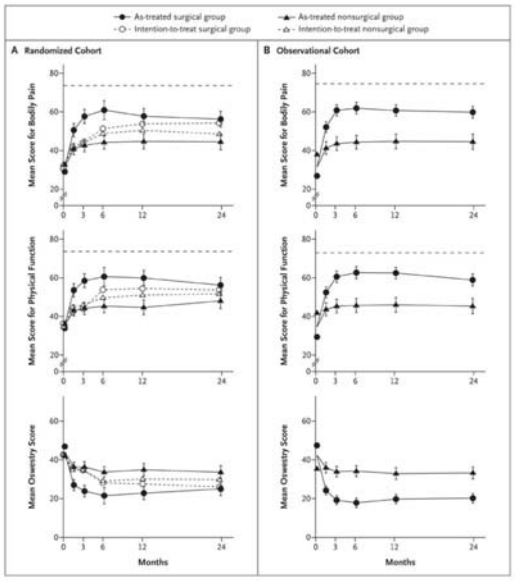
# Lumbar stenosis has more stable natural history, surgery effective

- Less upside to natural history
- Surgery provides runway for symptom duration, long term data converges over 8 yrs




Weinstein et al N Eng J Med 2008

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# Conservative care- Limited evidence for any pharmacology

*Table 4.* Pharmacologic Therapies Versus Placebo for Radicular Low Back Pain

| Drug | Pain | | | Function | | |
|---|---|---|---|---|---|---|
| | Magnitude of Effect | Evidence | SOE | Magnitude of Effect | Evidence | SOE |
| NSAIDs | Unable to estimate | 1 SR (2 RCTs) | Insufficient | - | - | - |
| Benzodiazepines: diazepam | Relative risk, 0.5 (95% CI, 0.3-0.8) for pain relief | 1 RCT | Low | No effect | 1 RCT | Low |
| Antidepressants: duloxetine | Unable to estimate | 1 RCT | Insufficient | Unable to estimate | 1 RCT | Insufficient |
| Systemic corticosteroids | No effect | 6 RCTs | Moderate | No to small effect | 6 RCTs | Moderate |
| Gabapentin/pregabalin | Unable to estimate | 5 RCTs | Insufficient | Unable to estimate | 5 RCTs | Insufficient |

*Table 2.* Pharmacologic Therapies Versus Placebo for Acute Low Back Pain

| Drug | Pain | | | Function | | |
|---|---|---|---|---|---|---|
| | Magnitude of Effect | Evidence | SOE | Magnitude of Effect | Evidence | SOE |
| Acetaminophen | No effect | 1 RCT | Low | No effect | 1 RCT | Low |
| NSAIDs | Small (pain intensity); no effect (pain relief) | 1 SR (4 RCTs), 1 RCT | Moderate | Small | 2 RCTs | Low |
| Opioids | No evidence | - | - | No evidence | - | - |
| Skeletal muscle relaxants | Pain relief: relative risk, 1.72 (95% CI, 1.32-2.22) at 5–7 d | 1 SR (4 RCTs), 1 RCT | Moderate | No evidence | - | - |
| Benzodiazepines | Unable to estimate | 2 RCTs | Insufficient | Unable to estimate | 2 RCTs | Insufficient |
| Antiseizure medications | No evidence | - | - | No evidence | - | - |
| Systemic corticosteroids | No effect | 2 RCTs | Low | No effect | 2 RCTs | Low |

NSAID = nonsteroidal anti-inflammatory drug; RCT = randomized, controlled trial; SOE = strength of evidence; SR = systematic review.

- Chou et al. ANN Int med 2017

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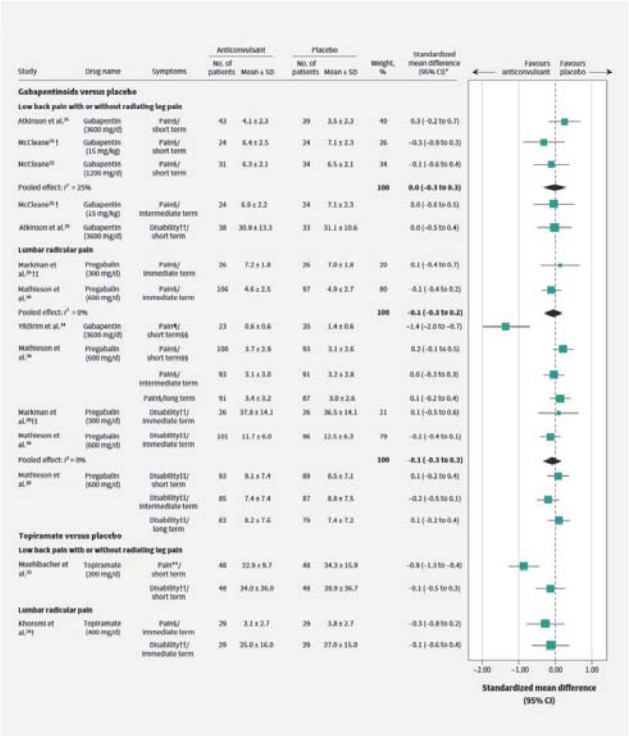
# Conservative care- anti convulsants

- Commonly used, high rate of adverse events
- Warn patients about weight gain, titrate dosing

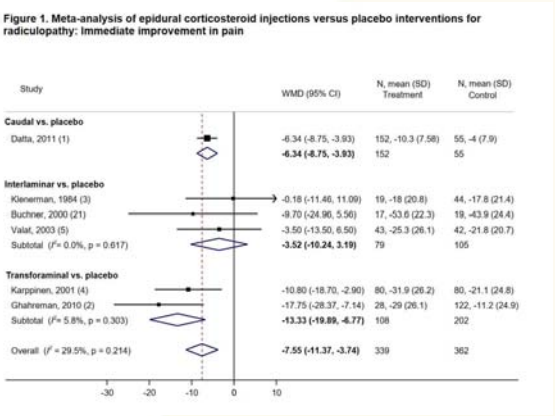


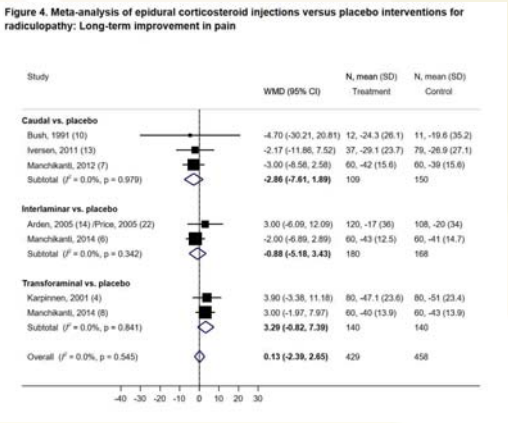

Enke et al. CMAJ 2018

# There is limited role for opioids

- Withdrawl symptoms manifest as leg and/or back pain
- Tachyphylaxis gives patients the sense of worsening
- High risk of dependency

# Epidural Foraminal Injections- can be a short term option




Chou et al. Ann Int med 2015

# Surgical Candidacy- my perspective

Surgeon enthusiasm

Constant radiculopathy- cauda-equina like symptoms

Neurogenic claudication (lumbar stenosis)

Constant radiculopathy- no improvement

Constant radiculopathy- partially improved

Constant radiculopathy- acute, no treatment

Constant radiculopathy- foraminal stenosis

Back dominant pain or no structural lesion

Pain clinic referral enthusiasm

# Conclusions

- We can do a better job at organizing health care around spine conditions i.e early epidural foraminal injections for acute disk herniations
- Surgeons can more reliably treat leg pain
- Conservative care type and duration should vary by phenotype

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# Summary-Conservative therapy

- Neurogenic claudication i.e extension aggravated intermittent leg pain- **conservative therapy less important**, ideally movement based physio, short trial of 1st line meds. **Early referral recommended**
- Sciatica i.e constant leg pain, **conservative therapy very important**, ideally epidural foraminal block, physio and trial of 1st line meds. **Later referral recommended**

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