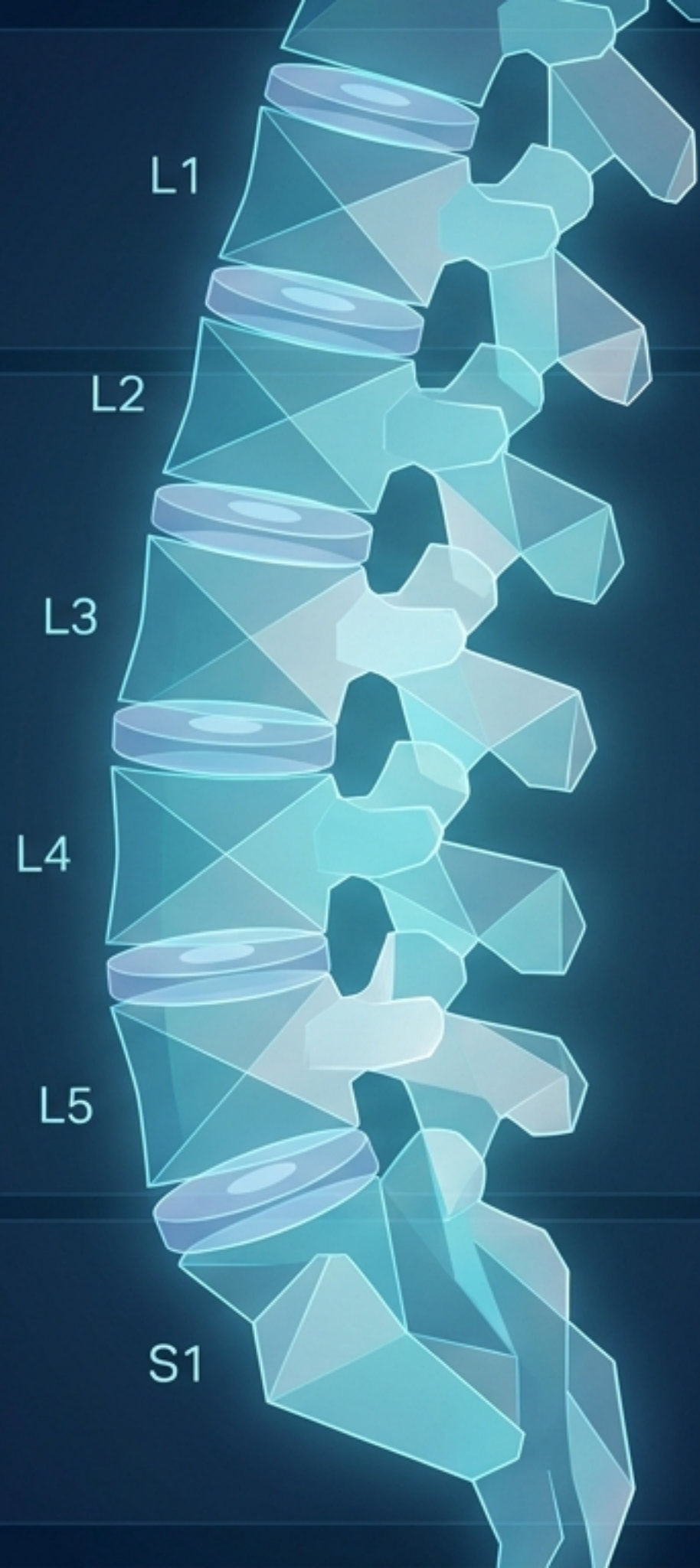




# Back Pain & Lumbar Radiculopathy

Evidence-Based Pathways, Triage Protocols, and Management Guidelines for the Australian Primary Care Interface.

Based on Med2Date Clinical Guidelines.



## The Burden



Affects 4.0 million Australians annually (16% of the population).



The leading cause of disability.

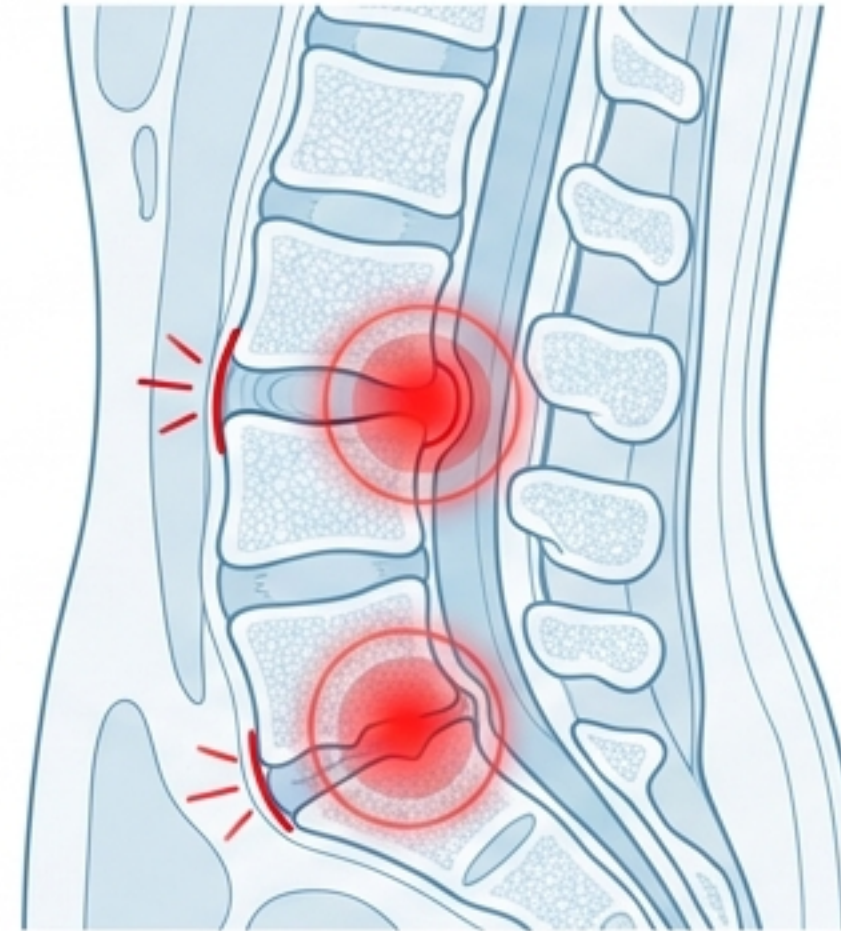


Costs the healthcare system \$4.8 billion per year.



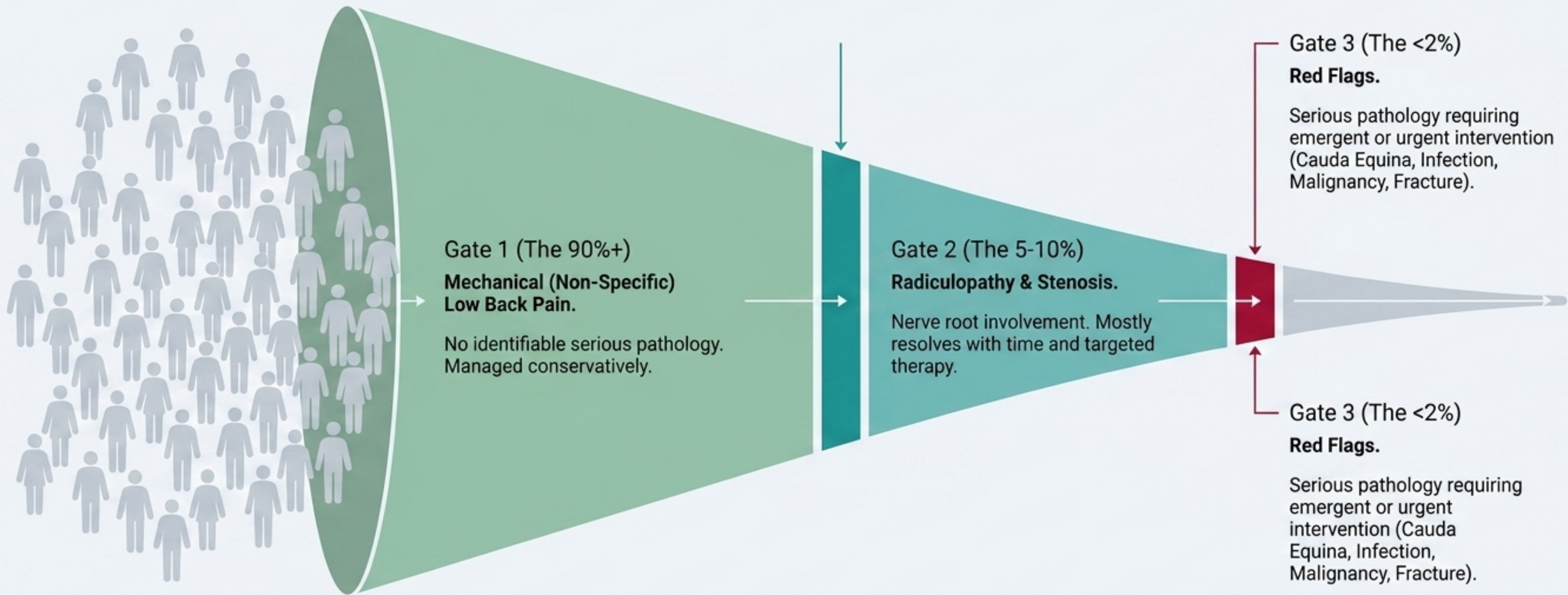
GPs manage ~85% of presentations.

## The Imaging Paradox



Routine imaging causes harm through label anxiety. 30–60% of completely asymptomatic adults have disc bulges. 60% of asymptomatic adults over 40 have degenerative disc changes. We treat the function, not the scan.

# Diagnostic Funnel



# Urgency Timeline

## Emergent (<24h)

### Cauda Equina Syndrome

**Action:** Urgent MRI & Surgical Consult.

## Urgent (24-48h)

### Spinal Infection

**Triggers:** Fever, IVDU, immunosuppression, CRP >50.

**Action:** Blood cultures, MRI with Gadolinium.

## Prompt (<2wks)

### Malignancy / Fracture

**Triggers:** >50yrs, weight loss, night pain, trauma, >65yrs, steroids.

**Action:** MRI/CT, X-ray (fracture).

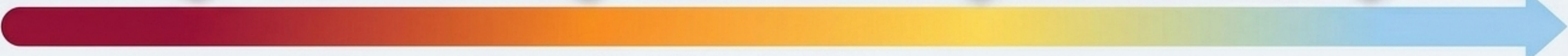
## Non-Urgent

### Inflammatory SpA

**Triggers:** Onset <40, morning stiffness >30m.

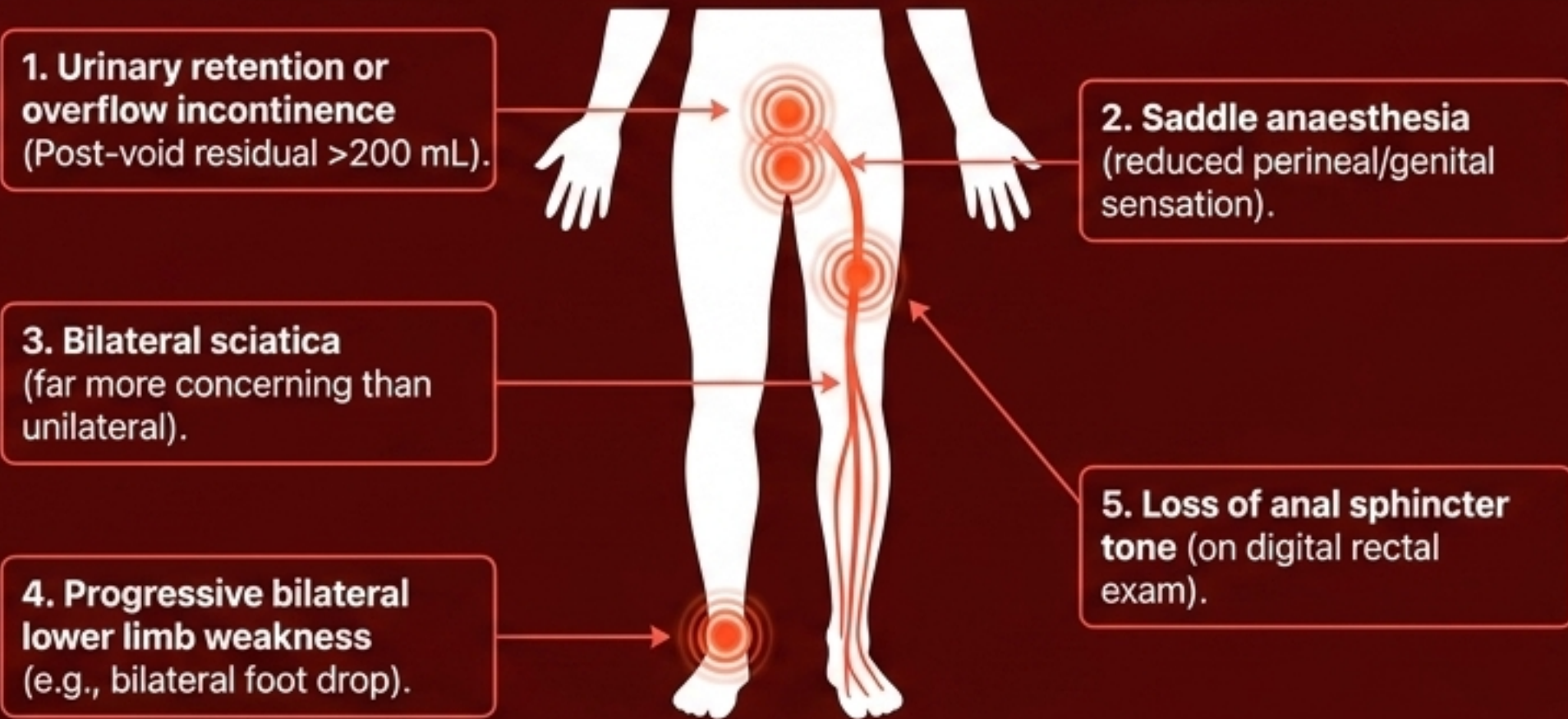
**Action:** Rheumatology referral, HLA-B27, SIJ MRI.


Urgency Timeline



## SURGICAL EMERGENCY: Cauda Equina Syndrome (CES)

Delayed decompression (>48 hours) drastically worsens functional outcomes.  
Arrange same-day MRI and surgical review.



	Mechanical Low Back Pain	Inflammatory Back Pain
Age of Onset	Any age.	Almost always <40 years (typically 20–35).
Onset Speed	Variable, often linked to movement/injury.	Insidious and gradual.
Movement Response	Worsens with exercise, improves with rest.	Improves with exercise, worsens with rest.
Morning Stiffness 	Minor, <30 minutes.	Significant, >30 minutes.
Night Pain	Positional.	Characteristic waking in the second half of the night.

**Footer Note:** For suspected SpA, request ESR, CRP, HLA-B27, and SIJ MRI (STIR + T1).

# Pathway A: Mechanical Low Back Pain (The 90%)



## Reassure & Educate

Backs are strong.  
Pain does not equal structural damage.  
Most episodes resolve within 6 weeks.



## Stay Active

### **DO NOT PRESCRIBE BED REST.**

Bed rest >48 hours increases chronicity.  
Encourage graded return to normal activities and walking.



## Simple Analgesia

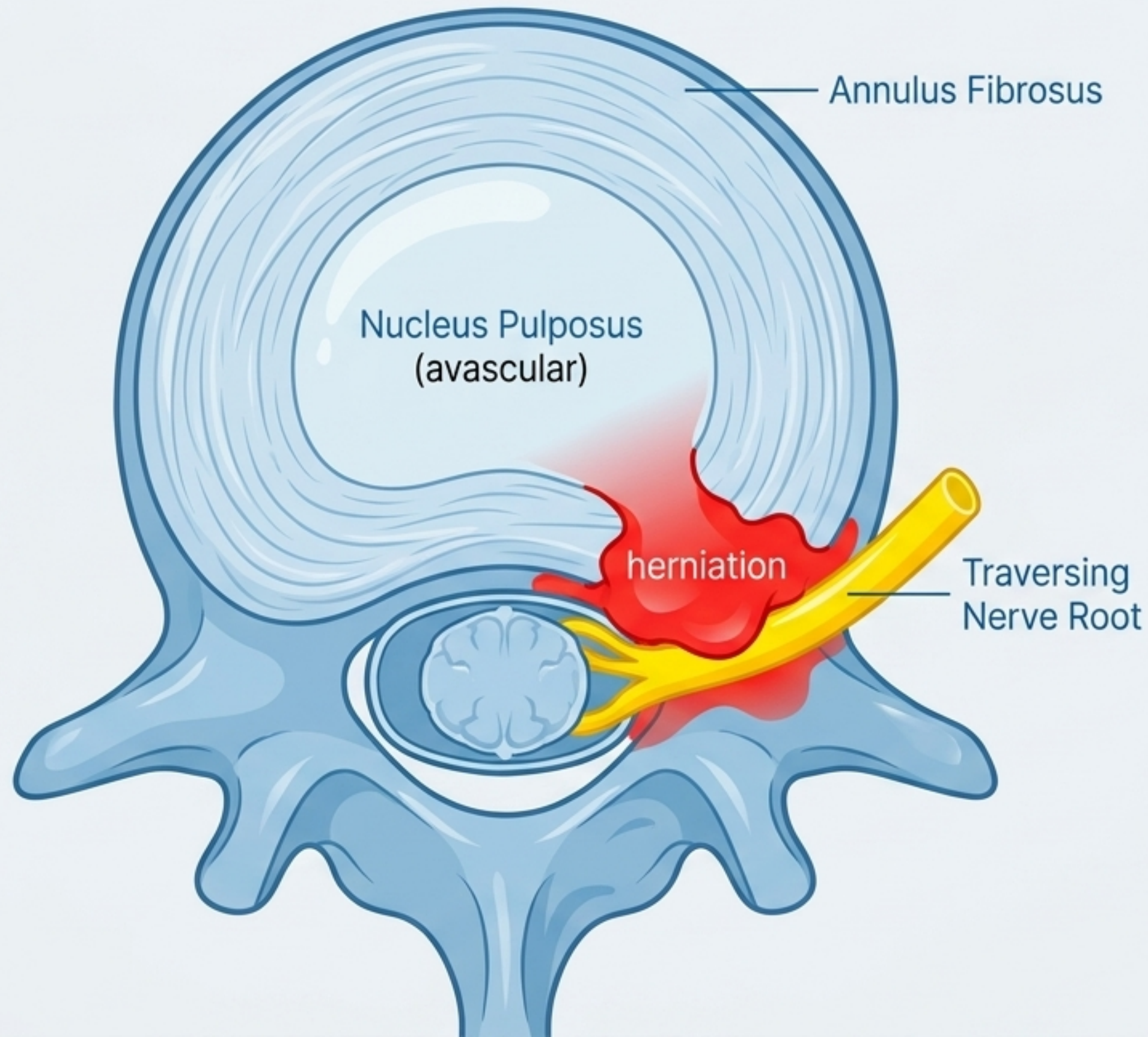
Regular paracetamol  $\pm$  NSAIDs.  
Short-course diazepam ( $\leq 5$  days) only for severe spasm  
**Avoid Opioids.**



## Physiotherapy

Refer for manual therapy and structured exercise if not improving after 2 weeks.  
Address psychosocial "yellow flags".

# Pathophysiology: The Anatomy of a Herniation



## **Mechanics:**

The nucleus pulposus breaches the annulus fibrosus, usually at the postero-lateral weak point.





## **Dual Mechanism:**

Pain is caused by both mechanical compression AND chemical radiculitis (release of inflammatory mediators like TNF- $\alpha$  and IL-6 from the avascular disc material).

## **The Danger Zones:**

L4-L5 and L5-S1 bear the highest biomechanical loads and account for ~95% of lumbar disc herniations.

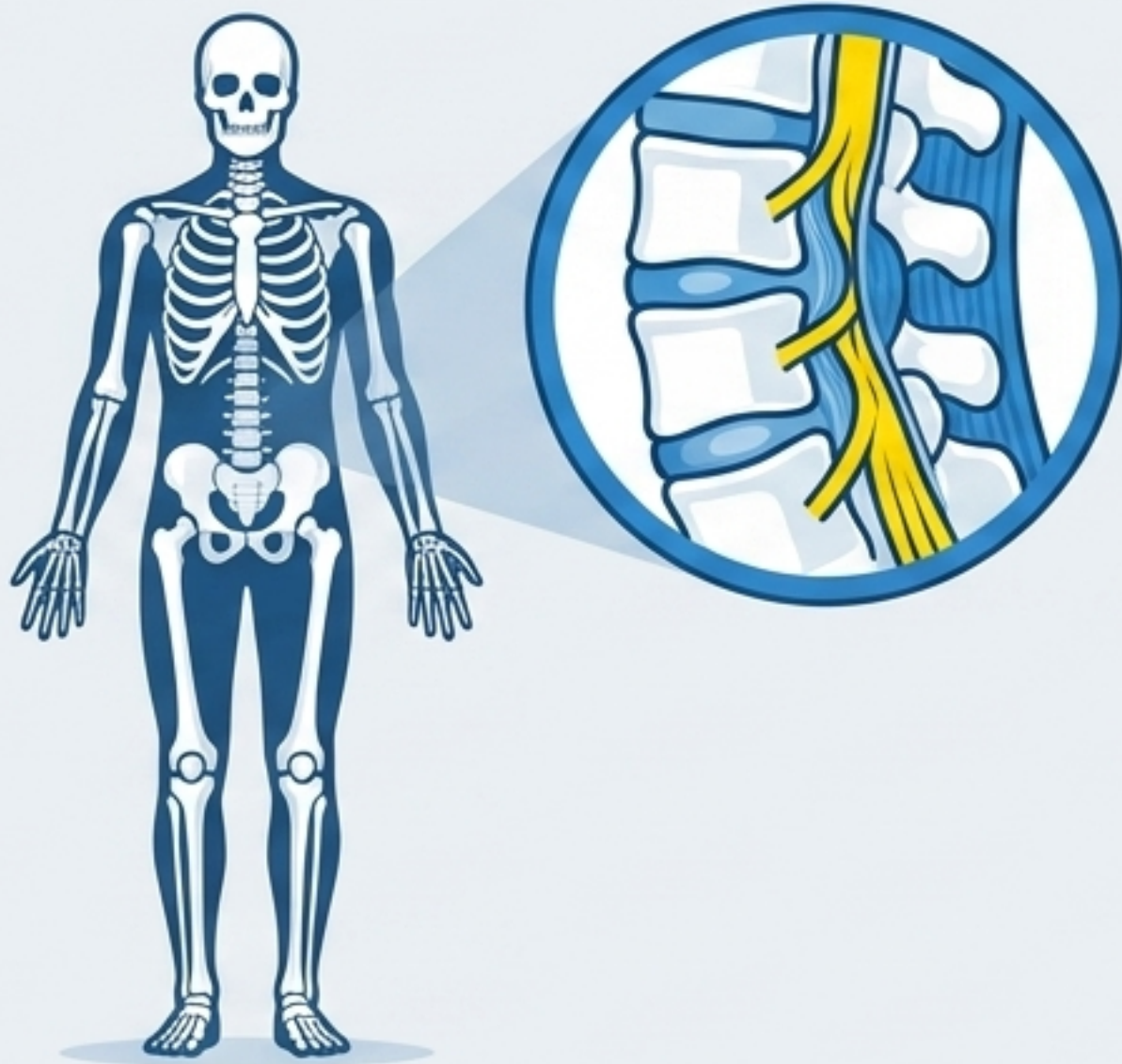
# The Nerve Root Diagnostic Matrix

Root	Pain	Motor	Sensory & Reflex	Visual
<b>L3</b>	Anterior thigh to knee.	Quadriceps (stairs).	<b>Sensory:</b> Medial knee. <b>Reflex:</b> Knee jerk diminished.	
<b>L4</b>	Anterolateral thigh to medial malleolus.	Tibialis anterior.	<b>Sensory:</b> Medial calf. <b>Reflex:</b> Knee jerk diminished.	
<b>L5</b>	Lateral leg, dorsum of foot.	Extensor hallucis longus (foot drop).	<b>Sensory:</b> First web space. <b>Reflex:</b> Normal.	
<b>S1</b>	Posterior leg, lateral foot.	Gastrocnemius (toe walk, push-off).	<b>Sensory:</b> Lateral foot/sole. <b>Reflex:</b> Ankle jerk absent/diminished.	

**Provocation Tests:** Straight Leg Raise (Sensitivity 90%). Crossed SLR (Specificity 90% - highly suggestive of herniation).

# Dynamic Stenosis & “The Shopping Cart Sign”

**Concept:** Lumbar Spinal Stenosis (LSS) is a progressive narrowing of the canal due to ligamentum flavum hypertrophy, facet arthrosis, and disc bulging.



Extension (standing/walking) narrows the canal by up to 15%, triggering neurogenic claudication.



Flexion (sitting/leaning) opens the canal, providing rapid relief.

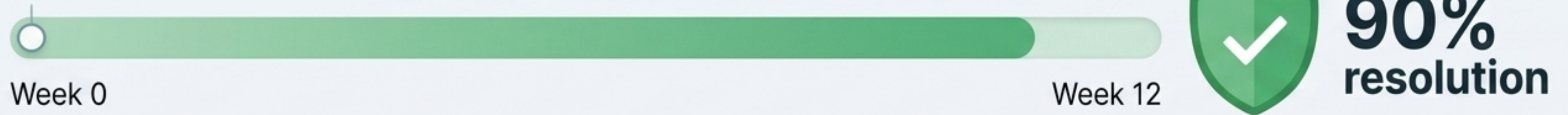
## Differentiating Claudication: Stenosis vs. PAD



	Neurogenic (Stenosis)	Vascular (PAD)
Pain Location	Buttock → thigh → leg, often bilateral.	Calf, usually unilateral initially.
Provocation	Walking, standing, lumbar extension.	Walking only.
Relief	Sitting, forward flexion, lying.	Simply standing still.
Walking Distance	Variable, worse downhill/better uphill.	Reproducible, fixed distance.
Pulses & ABPI	Normal pulses, ABPI >0.9.	Diminished pulses, ABPI <0.9.

# Pathway B: Conservative Management of Radiculopathy

**The Timeline:** ~90% of disc-related radiculopathy improves within 6–12 weeks with conservative care alone.



## Activity Modification

Avoid heavy lifting and prolonged extension. Emphasize lumbar flexion exercises and cycling (particularly for stenosis).



## Pharmacotherapy

First-line NSAIDs. Consider short-course oral corticosteroids (tapering over 10-14 days). Gabapentinoids for persistent neuropathic pain.



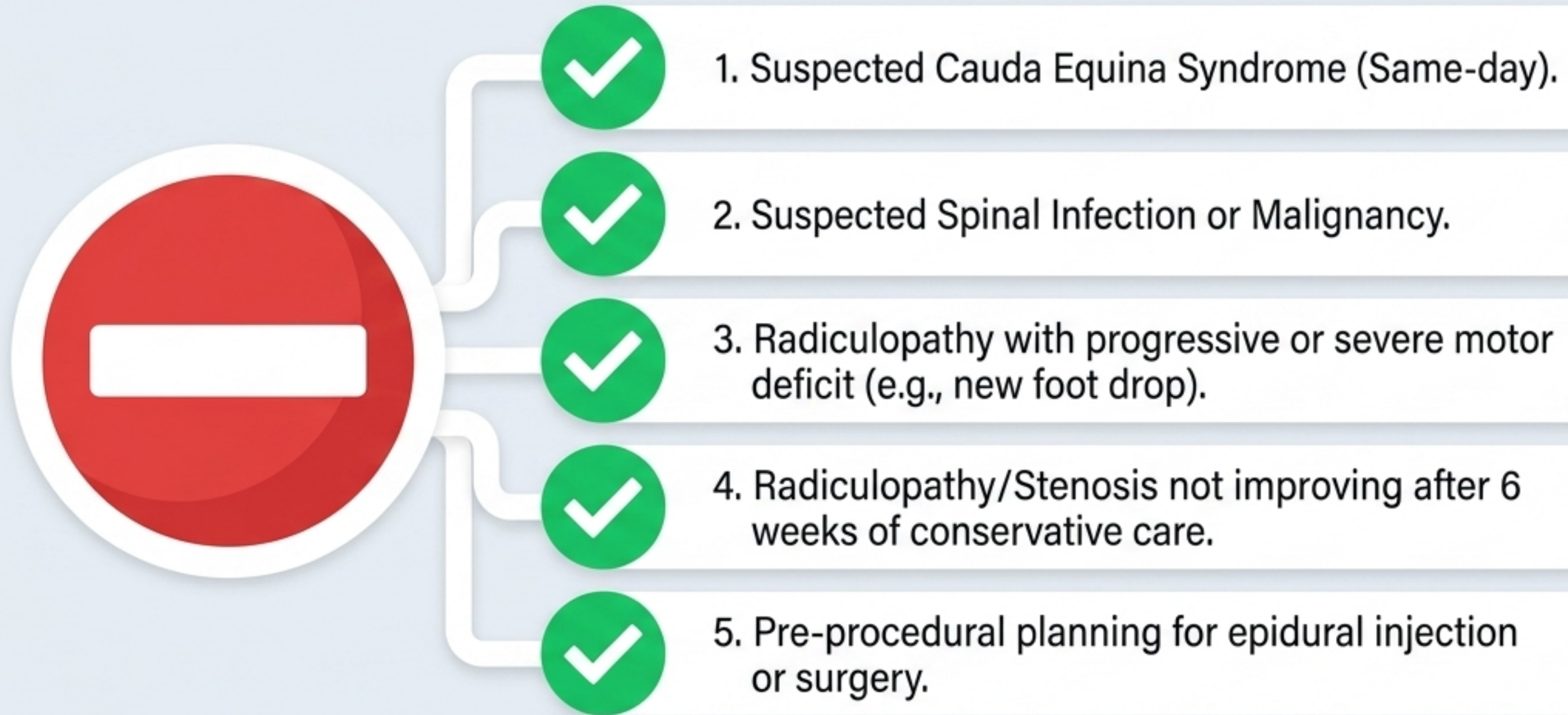
## Physiotherapy

McKenzie method, core stabilization, and targeted nerve gliding exercises.

**The 6-Week Checkpoint:** If not improving by week 6, progress to MRI and consider epidural/specialist referral.

# The Imaging Gatekeeper Rules

**Context:** 25–30% of simple LBP patients are scanned unnecessarily within 6 weeks. Routine imaging for acute mechanical pain is **NOT RECOMMENDED**.



# Risk Stratification: The STarT Back Screening Tool



## Green (Low Risk / Score 0-3):

High likelihood of spontaneous recovery.  
GP setting.

Reassurance, activity advice, simple analgesia.



## Yellow (Medium Risk / Score $\geq 4$ , low psych):

Moderate physical barriers.  
GP + Physiotherapy setting.

Structured exercise, manual therapy.



## Red (High Risk / Psych subscale $\geq 4$ ):

High risk of chronicity.

Multidisciplinary setting.

Physio + Psychology (CBT).



## Yellow Flags Box (Psychosocial Risks)

- Belief that pain = harm.
- Fear-avoidance behavior.
- Catastrophizing.
- Job dissatisfaction or pending workers' compensation claims.

# The Pharmacotherapy Stepladder

## Step 2: Neuropathic Pain (Radicular)

- **Targeted agents:** Pregabalin (titrate to 150-300mg BD) or Gabapentin. Note: PBS Authority required.
- **Alternatives:** Duloxetine (SNRI) or Amitriptyline.

## Step 1: Nociceptive Pain (Mechanical)

- **First-line:** NSAIDs (Ibuprofen/Naproxen) for 5-14 days. Use lowest effective dose; check eGFR.
- **Adjunct:** Short-course Diazepam (2-5mg TDS, ≤5 days) for severe spasm only.

## Evidence Update Box

**Avoid Opioids.** They provide no meaningful benefit over simple analgesia and increase chronicity.

**Note on Paracetamol:** The PACE Trial (2014) showed paracetamol does not speed recovery for acute back pain compared to placebo, though it remains a safe option for mild symptom relief.

# Escalation Triggers: Interventions & Surgery



## Interventional (Epidurals)

Transforaminal corticosteroid injections provide short-to-medium-term relief (4-12 weeks) for MRI-confirmed disc herniation failing 6+ weeks of conservative care. Not a definitive cure.



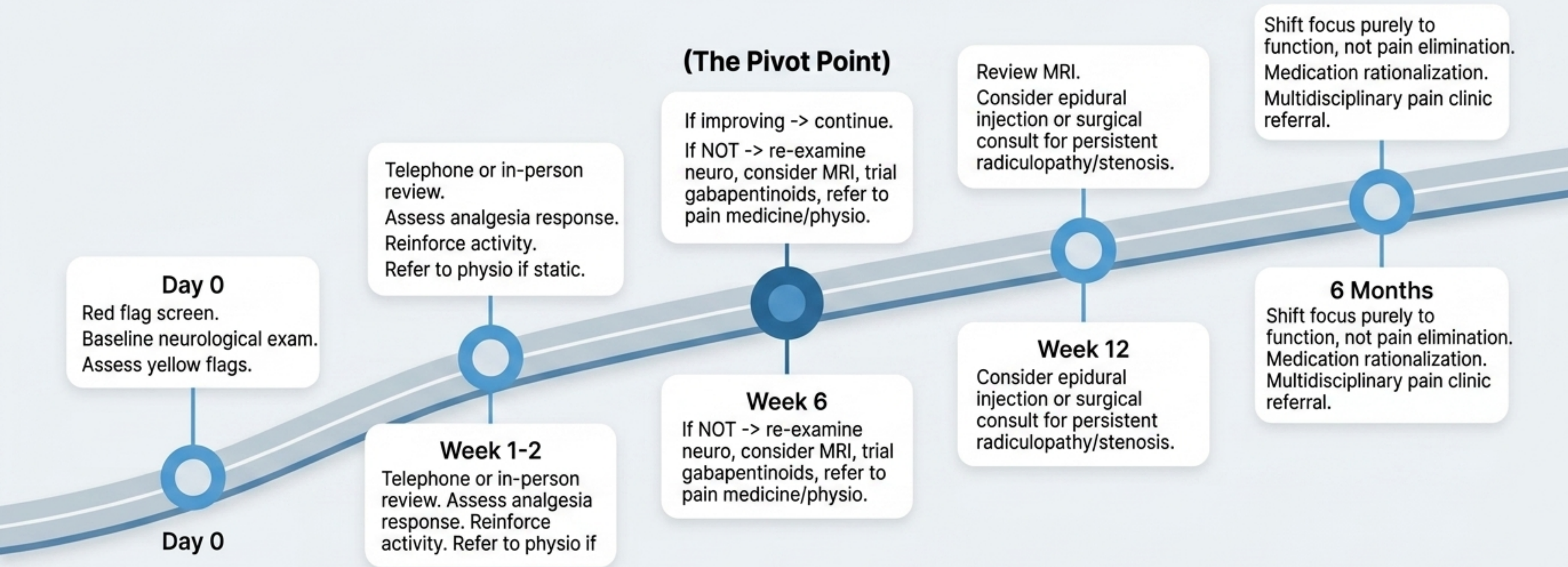
## Surgical Referral

**Absolute/Emergent.** Cauda Equina Syndrome; progressive motor deficit.

**Strong Indication:** Radiculopathy with significant motor deficit (e.g., foot drop) where surgery within 6 months yields the best outcomes (Microdiscectomy).

**Elective Indication:** Refractory neurogenic claudication (Stenosis) failing 3-6 months of conservative care (Decompressive Laminectomy).

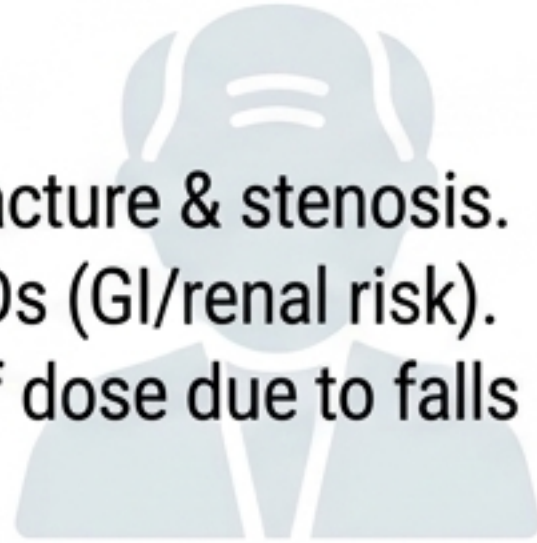
# The Monitoring & Recovery Roadmap



# Special Populations Dashboard

## Elderly (>65)

- High risk of osteoporotic fracture & stenosis.
- Extreme caution with NSAIDs (GI/renal risk).
- Start gabapentinoids at half dose due to falls risk.



## Pregnancy

- Paracetamol is first-line.
- Avoid NSAIDs in 3<sup>rd</sup> trimester (premature ductus arteriosus closure).
- MRI without contrast is safe in all trimesters.



## Renal Impairment

- NSAIDs contraindicated if eGFR <30.
- Mandatory dose reduction for Pregabalin/Gabapentin.
- Avoid Gadolinium contrast if eGFR <30.



## Immunocompromised

- High index of suspicion for spinal infection (Discitis/Epidural Abscess).
- Blood cultures ×2 BEFORE empirical IV antibiotics.



# Aboriginal & Torres Strait Islander Health Context

## The Burden

- 1.4x higher prevalence of back pain with earlier onset and greater functional severity.
- Presentation is often delayed due to geographic isolation and systemic barriers.

## Systemic Interventions

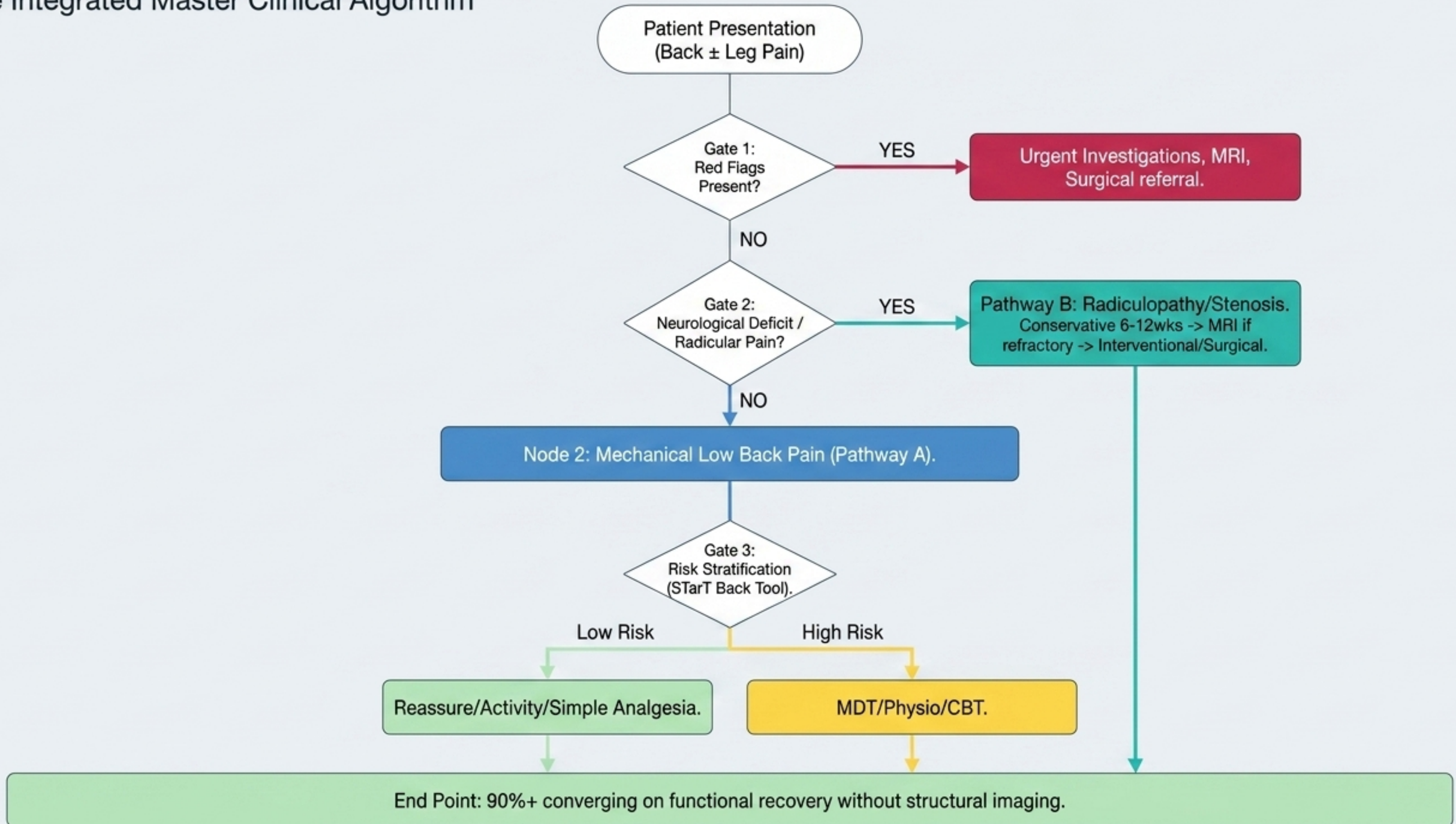
- Utilize Closing the Gap PBS co-payments.
- Leverage telehealth for surgical/pain specialist consults to avoid unnecessary aeromedical retrieval (RFDS) for imaging.
- Engage Aboriginal Health Workers for culturally safe care.

## Systemic & Clinical Context

## Clinical Alerts

- High community prevalence of CA-MRSA and TB (Pott's disease) in remote areas.
- Include MRSA coverage in empirical regimens for suspected infection.
- Elevated HLA-B27 prevalence suggests vigilant screening for inflammatory SpA in young adults.

# The Integrated Master Clinical Algorithm



**"Our goal is no longer to chase a structural diagnosis on an MRI, but to rule out the dangerous, and restore function in the benign."**



Screen rigorously for Red Flags at Day 0.



Avoid imaging for simple mechanical pain within the first 6 weeks.



Demedicalize recovery: movement is medicine, bed rest is harm.