

**Case 14**  
**Spinal Examination**  
**Revision**

Prof M J H McCarthy  
Consultant Spinal Surgeon

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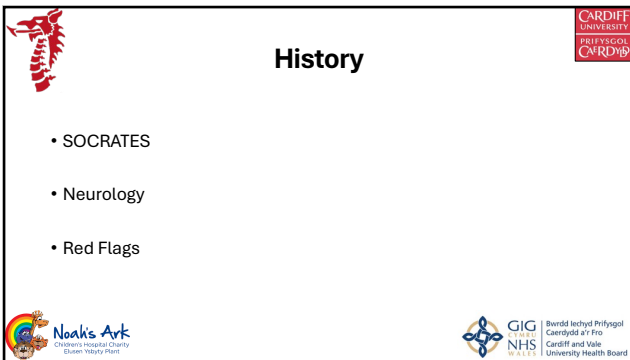


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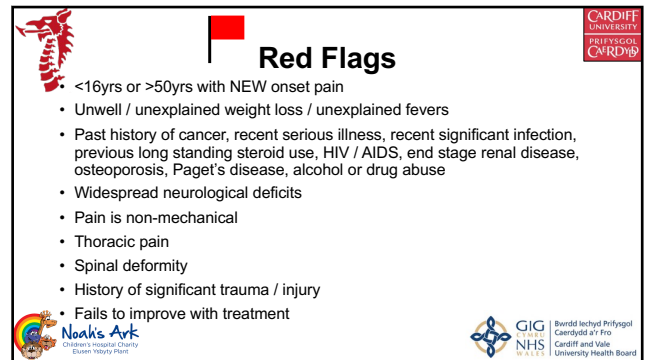


**History**

- SOCRATES
- Neurology
- Red Flags

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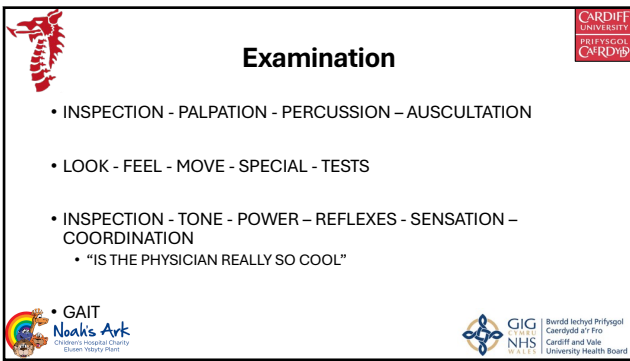


**Red Flags**

- <16yrs or >50yrs with NEW onset pain
- Unwell / unexplained weight loss / unexplained fevers
- Past history of cancer, recent serious illness, recent significant infection, previous long standing steroid use, HIV / AIDS, end stage renal disease, osteoporosis, Paget's disease, alcohol or drug abuse
- Widespread neurological deficits
- Pain is non-mechanical
- Thoracic pain
- Spinal deformity
- History of significant trauma / injury
- Fails to improve with treatment

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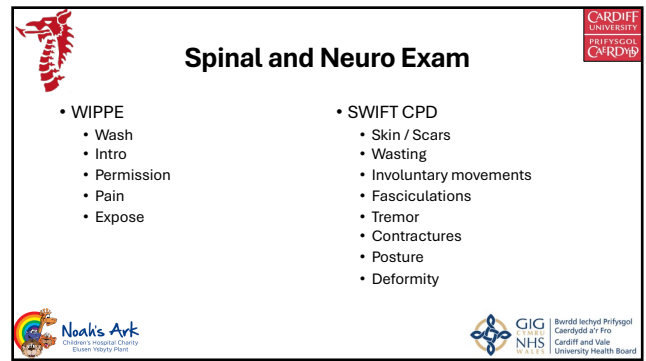


**Examination**

- INSPECTION - PALPATION - PERCUSSION – AUSCULTATION
- LOOK - FEEL - MOVE - SPECIAL - TESTS
- INSPECTION - TONE - POWER – REFLEXES - SENSATION – COORDINATION
  - "IS THE PHYSICIAN REALLY SO COOL"
- GAIT

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**Spinal and Neuro Exam**

- WIPPE
  - Wash
  - Intro
  - Permission
  - Pain
  - Expose
- SWIFT CPD
  - Skin / Scars
  - Wasting
  - Involuntary movements
  - Fasciculations
  - Tremor
  - Contractures
  - Posture
  - Deformity

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## Spinal Examination

- LOOK
  - Assess for normal thoracic kyphosis and lumbar lordosis, presence of any spinal deformities, scoliosis, kyphosis, skin changes, scars
  - Head above pelvis from in front and from the side
- FEEL
  - Palpate for tenderness
  - Spinous processes, paraspinal muscles, sacroiliac joints (PSIS)

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## Spinal Examination

- MOVE
  - assess cervical and thoracolumbar spine movements actively (+/- then passively)
  - Flexion
  - Extension
  - Lateral bending
  - Left and right rotation
- (Thoracic rotation done with pelvis secured)

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## Spinal Examination

- SPECIAL TESTS
  - Perform Schobers test – measure the lumbar spine flexion
  - Perform Adams forward bending test to assess for any fixed spinal deformity
  - Assess straight leg raising (Lasègue's sign)
- **“...and I would perform a neurological exam...”**

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## Neurological Examination

- INSPECTION
  - Posture, muscle fasciculation, contractures, scars, wasting etc.
- TONE
  - Assess muscle tone – gently move the limb passively – flaccidity / rigidity
- POWER
  - Assess power / strength (MRC grading out of 5)
  - Myotomes as per American Spinal Injury Association (ASIA)

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## Neurological Examination

- REFLEXES
  - Assess deep tendon reflexes
    - Hyper and hyporeflexia
    - Biceps / Brachioradialis / Triceps
    - Knee / Ankle
  - Assess plantar responses
- +/- Assess for inverted radial reflex and Hoffmann's sign
- +/- Assess for ankle clonus
- +/- Superficial abdominal reflexes

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## Neurological Examination

- 1 Tap on patellar ligament excites nerve endings of muscle spindle in quadriceps femoris.
- 2 Stretch signals travel to spinal cord via afferent nerve fiber and posterior root.
- 3 Afferent neuron excites motor neuron in spinal cord.
- 4 Efferent signals in motor nerve fiber stimulate quadriceps to contract, producing knee jerk.
- 5 At same time, a branch of the afferent nerve fiber stimulates inhibitory motor neuron in spinal cord.
- 6 That neuron inhibits motor neuron that supplies hamstring muscles.
- 7 Hamstring contraction is inhibited so hamstrings (knee flexors) do not antagonize quadriceps (knee extensors).

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## Neurological Examination

- SENSATION**
  - Dermatomes as per American Spinal Injury Association (ASIA)
  - Pain / temperature
  - Light touch / vibration / joint position sense
  - Assess for saddle anaesthesia and anal sphincter tone
- COORDINATION**
  - Finger nose, hand dexterity, ankle knee shin
  - Gait and Rombergs test

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Dermatomes are not really random  
We just chose the wrong anatomical position

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General Rule  
 Paraparesis = spine  
 Hemiparesis = Head

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**Muscle Function Grading**

- 1 = flaccid
- 2 = trace
- 3 = flick
- 4 = active resistance
- 5 = active resistance against gravity

**ASIA Impairment Scale (AIS)**

**Steps in Classification**

- Determine motor levels for right and left sides.
- Determine sensory levels for right and left sides.
- Determine the neurologic level of the lesion.
- Determine whether the injury is Complete or Incomplete.
- Determine AIS Impairment Scale (AIS) Grade.

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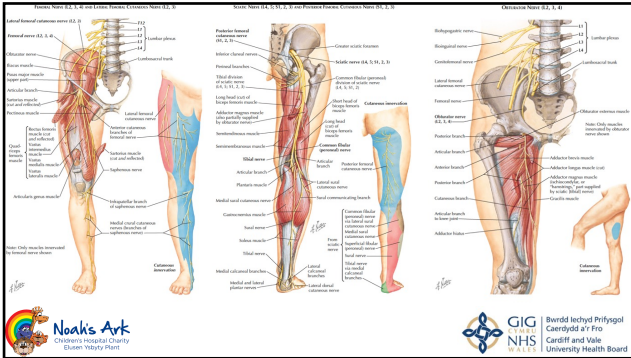
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**• DO NOT FORGET TO FEEL FOR PULSES**

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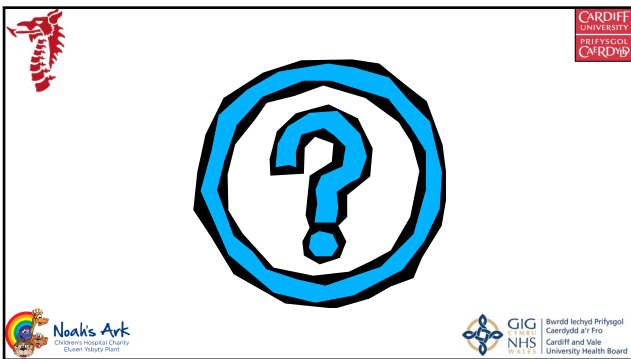
### UMN vs LMN

Sign	UMN	LMN
Weakness		
Atrophy		
Atrophy vs Weakness		
Fasciculations		
Muscle Tone		
Muscle Stretch Reflexes		
Clonus		
Plantar Response		

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	Myelopathy = CORD	Radiculopathy = ROOT
Levels affected		
Bilateral Symptoms		
Sensation		
Motor		
Tone		
Reflexes		
Gait		
Findings		

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