Back pain in children and adolescents

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Background

- Persisting or worsening back pain is associated with serious underlying pathology.
- See table in notes section for differential diagnosis
- In the paediatric population, must consider infectious causes e.g. discitis, osteoarthritis; and malignancy.
- Non-specific musculoskeletal back pain accounts for >50% of cases. Increases with age. More common in girls/athletes. May be a history of acute minor injury or strain (heavy backpack, lifting heavy weights etc.). MSK pain tends to be thoracolumbar, localised to the paraspinal muscles and exacerbated by twisting/lifting.

Assessment

Red flags:

History
- Age ≤4 years
- Symptoms >4 weeks
- Severe, constant or progressive pain
- Night pain
- Activities limited by pain
- Morning stiffness
- Systemic features (Fever/night sweats, weight loss, malaise)
- History of limp/gait alteration
- Neurological features (bladder or bowel dysfunction, altered sensation, weakness)
- Previous malignancy
- New onset scoliosis

Examination
- Fever or tachycardia
- Altered gait
- Abnormal neurology
- Local vertebral tenderness
- Lymphadenopathy
- Abdominal mass
- Bruising

History:

- Establish the character of pain (onset, quality, location, radiation, duration, severity, progression, exacerbating/relieving factors, timing).
- Red flags
- Ask about sports (type/frequency/relation of symptoms) and the interference of pain with activity e.g. missed school/PE.

Physical examination:

1. Inspection: kyphosis, scoliosis, deformity, skin lesions/café au lait spots, muscle atrophy, gait
2. Palpation: evaluate tenderness of spine, paraspinal muscles, sacroiliac joints
3. Range of motion: flexion (ask to touch toes), extension, bend to left/right, rotation

4. Neurological assessment: knee/ankle reflexes, motor strength, sensation, straight leg raise
5. General examination: abdomen, inguinal region, hips, lymph nodes

Management

See **next page** for management pathway

- Further investigation is required for children with back pain that is not suggestive of benign mechanical back pain or has any "red flag" features.

When to consider admission or transfer to a spinal unit

- Suspicion of infection
- Disc prolapse or signs of cord compression
- Suspicion of malignancy

Outpatient referral options:

Paediatric Physiotherapy: Make a referral using the Paediatric Physiotherapy Referral form (green form). Mark it urgent (< 2 weeks) or routine (6 weeks). If urgent, discuss with Physio department on L5.

Orthopaedics: Make an urgent or routine referral with Paediatric Orthopaedics (not fracture clinic unless it is an acute injury) on OPD referral or Medway letter. If very urgent, discuss with one of the Paediatric Orthopaedic consultants.

Rheumatology: Make an urgent or routine referral to Paediatric Rheumatology on OPD referral or Medway letter.

Notes

Suggested back pain leaflet – general information and exercises

	Differential diagnosis
MSK	Muscular/mechanical pain, spondlyosis, spondylolisthesis, scoliosis, juvenile kyphosis, disc herniation, disc degeneration
Infectious	Discitis, vertebral osteomyelitis, TB, epidural abscess, sacroiliac joint infection
	Consider non-spinal infections e.g. PID, appendicitis, myalgia, pneumonia, pyelonephritis, pyomyositis, endocarditis, pancreatitis, cholecystitis
Inflammatory	Ankylosing spondylitis, psoriatic arthritis, reactive arthritis, IBD-related arthritis
Malignant	Osteodosteoma, leukaemia, lymphoma, Ewing sarcoma, neuroblastoma, osteoblastoma, osteosarcoma, neurofibroma, Langerhans cell histiocytosis
Other	Sickle cell disease, syringomelia, renal stones, chronic pain syndromes, vitamin D def

References:

1. Nigrovic PA (2018). Back pain in children and adolescents: In Drutz MD (Ed.) UpToDate. Retrieved March 21st, 2019, from https://www.uptodate.com/contents/back-pain-in-children-and-adolescents

Management pathway

- Short duration of symptoms
- Preceding minor trauma
- Clear MSK precipitant (e.g. sports injury, lifting weights)
- Normal neurological exam
- No red flag features

History
- Age ≤4 years
- Symptoms >4 weeks
- Severe, constant or progressive pain
- Night pain
- Activities limited by pain
- Morning stiffness
- Systemic features:
  - Fever/night sweats
  - Weight loss
  - Malaise
- History of limp/gait alteration
- Neurological features:
  - Bladder or bowel dysfunction
  - Altered sensation
  - Weakness
- Previous malignancy
- New onset scoliosis

Examination
- Fever or tachycardia
- Altered gait
- Abnormal neurology
- Local vertebral tenderness
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Suggestive of benign mechanical back pain

- Presence of **any** red flag feature
- Clinical assessment not in keeping with mechanical back pain

Investigation with blood tests & imaging

No indication for blood tests or imaging

- FBC, CRP, ESR, bone profile, vitamin D
- *Consider LDH / uric acid*
- *blood culture if febrile or suspicion of infection*

Choice of imaging depends on assessment:
- Plain XR spine (AP/lateral): *useful for fractures / bony lesions / spondylosis*
- Consider admitting for urgent MRI spine *if known malignancy or abnormal neurology*

- Reassurance
- Simple analgesia e.g. paracetamol/ibuprofen
- Advice/education/exercises
- Consider physiotherapy referral
- Safety netting (highlight red flags)
- For GP review to ensure resolution of symptoms

- Further management dependent on results of above
- Consider inpatient / outpatient referral to:
  - Orthopaedics e.g. pre-pubertal children – esp ≤4 years, functional disability of 4+ weeks duration, night pain, postural changes – obv scoliosis/kyphosis
  - Rheumatology e.g. early morning stiffness, known FH of rheumatological disease, positive autoantibodies, hypermobility
  - Physiotherapy > 4 years