

The Limping or non-weight bearing child

Author: Dr M Lazner / Mr S N Maripuri / Mr T Crompton
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Background

- Some important diagnoses will differ according to the age of the child
 - a bony injury or bone sepsis is more likely than an irritable hip in the very young i.e. toddler age group
 - Irritable hip is much *less* likely in the >10 years group – consider SUFE, muscle strain, bony problem
- Trauma is likely to feature in the history but may not be relevant to the final diagnosis

Diagnoses to consider

1-4 years	4-8 years	>8 years
<ul style="list-style-type: none"> ○ Missed developmental dysplasia of the hip (DDH) ○ Toddlers fracture ○ Transient synovitis of the hip (aka Irritable hip, child > 2 years) ○ Non accidental injury ○ Osteomyelitis ○ Splinter in foot 	<ul style="list-style-type: none"> ○ Transient synovitis of the hip ○ Legg-Calves-Perthes Disease 	<ul style="list-style-type: none"> ○ Slipped upper femoral epiphysis (SUFE) ○ Overuse syndromes / stress fractures

At all ages:

- Infections: septic joint, osteomyelitis, discitis, soft tissue
- Trauma: bony injury, sprain / strain, foreign body
- Non accidental injury
- Acute lymphoblastic leukaemia
- Bony tumours e.g. spine or long bone
- Rheumatological disorders and reactive arthritis
- Intra-abdominal pathology or inguinoscrotal disorders (testicular torsion)
- Functional limp

Assessment

Important features in the **history** include:

- Duration of symptoms – limping >2 weeks is significant
- Pain – site and severity
- Complete refusal to weight bear
- Preceding illness – there is often a history of a simple viral infection preceding a transient synovitis or reactive arthritis
- Fever or systemic symptoms – suggests infective or haematological causes
- Previous injuries or child protection concerns

General examination:

- Generalized lymphadenopathy may suggest a viral infection / haematological cause
- Excessive bruising or bruising in unusual places
- Abdomen, scrotum and inguinal area
- Spine – look for pain on flexion (e.g. on lifting both legs whilst supine or bending over) and/or midline tenderness which may be present in discitis

Limb examination

- All joints – remember that knee pain can be referred from the hip, and thigh pain can be referred from the spine
- Running may exaggerate a limp
- Neurological examination - look for ataxia.

Look	Feel	Move
<ul style="list-style-type: none"> ○ Swelling ○ Deformity ○ Asymmetry ○ Erythema ○ Foreign bodies 	<ul style="list-style-type: none"> ○ Warmth ○ Bony tenderness ○ Effusions ○ Masses ○ stress tibia 	<ul style="list-style-type: none"> ○ Active and passive movements ○ Hip abduction and rotation are often the most restricted movements in hip pathology

Investigations to consider:

- Bloods: FBC, CRP, ESR +/- blood culture
- Imaging: plain films of suspected bone or joint, pelvis frog-leg lateral
Ultrasound scan of joints
CT / MRI

Plain x-rays:

- Perthes / SUFE
- Chronic osteomyelitis (bony changes only evident after 14-21 days)
- Tumours
- Developmental dysplasia of hips (> 6 months of age)

Ultrasound scan

- Will visualise large joint effusions (eg septic hip)
- Effusion of transient synovitis can also be seen on USS
- Psoas muscle abscess
- Developmental dysplasia of hips (< 6 months of age)

MRI

- Osteomyelitis
- Discitis

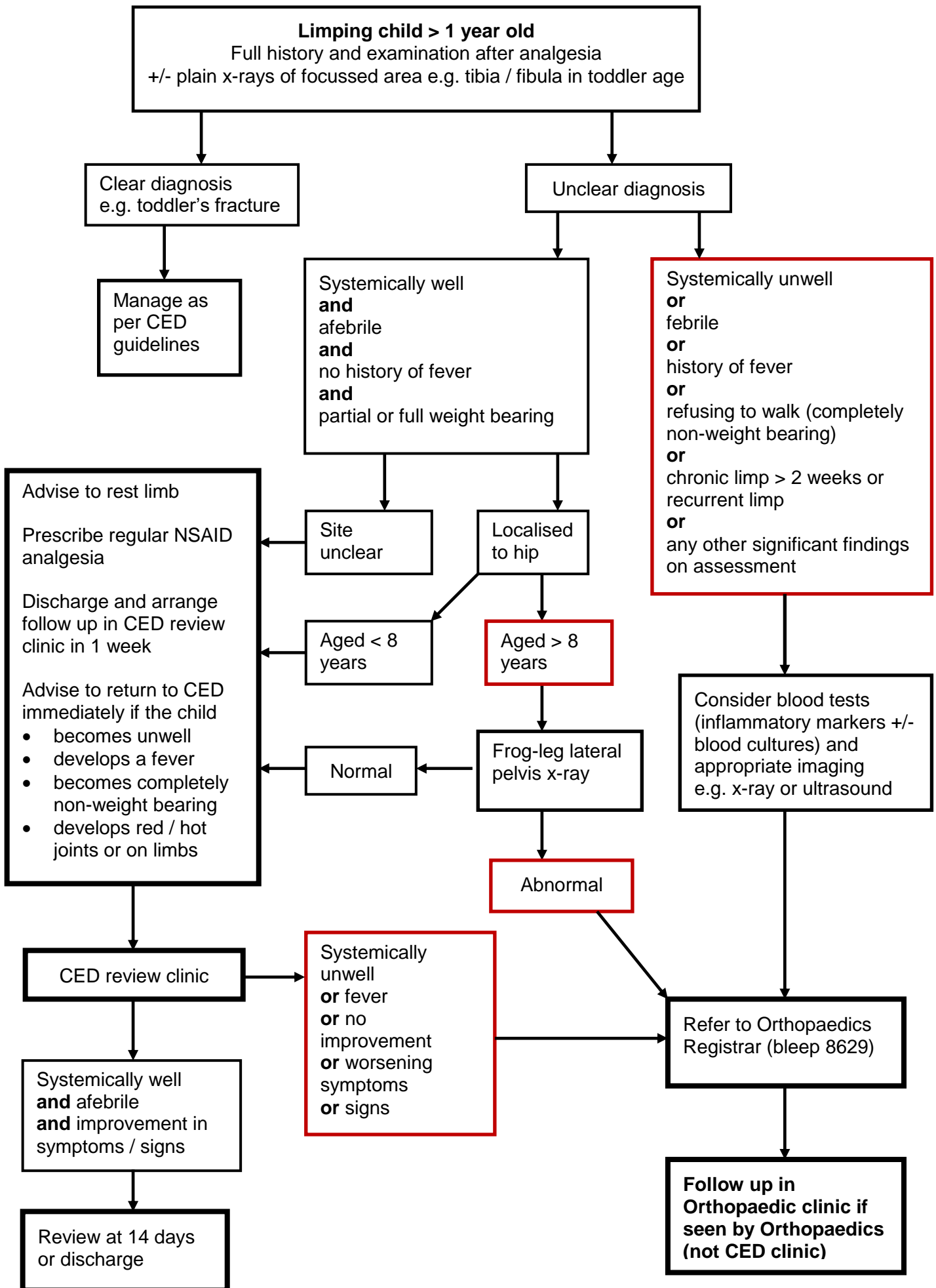
Management

See flow chart on next page

Notes

- Involve Orthopaedics if considering septic hip / osteomyelitis / discitis or Perthes / SUFE or DDH
- NSAIDs – ibuprofen 5-10 mg/kg 3 – 4 times a day / naproxen 5 mg/kg BD

Management of the limping child



Notes on specific problems:

Transient synovitis of the hip vs. infection: a common diagnostic dilemma.

Transient synovitis: idiopathic inflammation of hip joint synovium with effusion. Typical age is 3 – 10 years. There is usually a history of preceding minor illness or trauma. Children tend to weight bear with a limp and have mild restriction of hip movements. They may have a tender groin. They are almost always afebrile. Will gradually improve over 10 days. Treat with rest and NSAIDs and arrange follow-up (can be with GP) in 7-10 days.

Infections: usually have severe pain and do not weight bear at all. The children are usually febrile and will often be systemically unwell and irritable. Inflammatory markers are usually raised – WBC > 12; CRP is an early sensitive marker; ESR is specific but less sensitive than CRP.

Septic hip: usually acute onset with severe hip pain, limited hip movement and spasm with passive movements. Gold standard investigation is aspiration of the joint but USS is often used.

Osteomyelitis: usually haematogenous spread to metaphyses of growing bones. There is often local swelling, erythema and tenderness. Bony changes on plain films are not evident until 14 – 21 days (periosteal elevation then lucencies). Diagnose with bone scan or MRI. **Discitis:** infection of intervertebral disc space. Usually back pain and tenderness and inability to flex spine. ESR usually elevated. Diagnose with bone scan or MRI.

Developmental dysplasia of the hip: more likely if history of breech delivery, if there is a family history, and in girls. If it is not picked up in neonatal period DDH usually presents as a painless limp. Examination usually reveals a short leg if unilateral or a classical waddling gait if bilateral. There is usually limited abduction of the affected hip(s). Plain x-ray will be diagnostic > 6 months.

Cerebral palsy: The child will have a painless limp and may toe walk. Limbs will be hypertonic and hyper-reflexic.

Toddlers fracture: a spiral fracture of the distal tibia. There may be a history of minor trauma (usually twisting of the foot, for example getting leg caught going down a slide) or no trauma at all. Often the child refuses to weight bear. There may be bony tenderness over the tibia. Plain x-ray may show a fracture or frequently does not. Treat with analgesia and conservative management unless parents are keen for a cast. A study in RCH ED has shown children who are not immobilised walk sooner.

Legg-Calve-Perthes disease: an idiopathic avascular necrosis of the femoral head. It usually affects 4 – 10 year olds and is more common in boys. There is usually a history of chronic limp and pain. Hip movements are restricted. Plain x-rays are usually normal in the early stages. The first x-ray sign is increased density of the femoral head. Can also be shown on bone scans. Approx 1.5% of children with transient synovitis of the hip develop Perthes disease (but the relationship is controversial). Often management is conservative.

Slipped upper (capital) femoral epiphysis (SUFE): the head of the femur slips posteriorly and inferiorly relative to the neck at the epiphysis. There is usually a history of chronic limp and pain but it may present acutely as non weight bearing. Children with SUFE often complain of knee. They are commonly overweight and have limitation of hip movements. It is diagnosed on frog leg lateral films of the hip. It may require operative management.

Iliopsoas muscle inflammation: from intra-abdominal or retroperitoneal disease (eg appendicitis) or psoas muscle abscess. Typically the child holds their hip in flexion and complains of pain with passive extension of the hip. Psoas muscle abscess is diagnosed with USS or CT.

Overuse syndromes: usually in physically active children or sports players. Pain and limping typically occurs with activity. The usual management is rest (+/- crutches +/- cast or splint) and NSAIDs.

Stress fractures – repetitive loading of the lower limbs. Usually affects the tibia or fibula. May be seen on x-rays as sclerotic lines or a periosteal reaction. Confirm on bone scan.

Calcaneus apophysitis (Sever's disease) – child complains of heel pain. Can be chronic or intermittent.

Patellar tendonitis

Apophysitis of tibial tubercle (Osgood-Schlatter disease) – classically occurs in footballers. The child complains of knee pain and tenderness over tibial tubercle.

Osteochondritis dissecans – a portion of subchondral bone within the joint becomes avascular. Typically occurs around the knee.

Tarsal coalitions – fusion of some of the tarsal bones. Diagnose on x-ray.