Norfolk and Norwich University Hospitals NHS Foundation Trust

James Paget University Hospitals NHS Foundation Trust

The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust

Joint Trust Guidelines for the Limping Child with no History of Trauma

A Clinical Guideline

For Use in:	Children's Assessment Unit
By:	Medical and Nursing staff
For:	Children (0-16) presenting with a limp or acute lower limb pain but with no history of trauma
Division responsible for document:	Women / Children
Key words:	Limping, child, irritable, hip, septic, arthritis, osteomyelitis, limp
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If Yes - does the strategy/policy deviate from the recommendations of NICE? If so why?	N/A

Quick Reference

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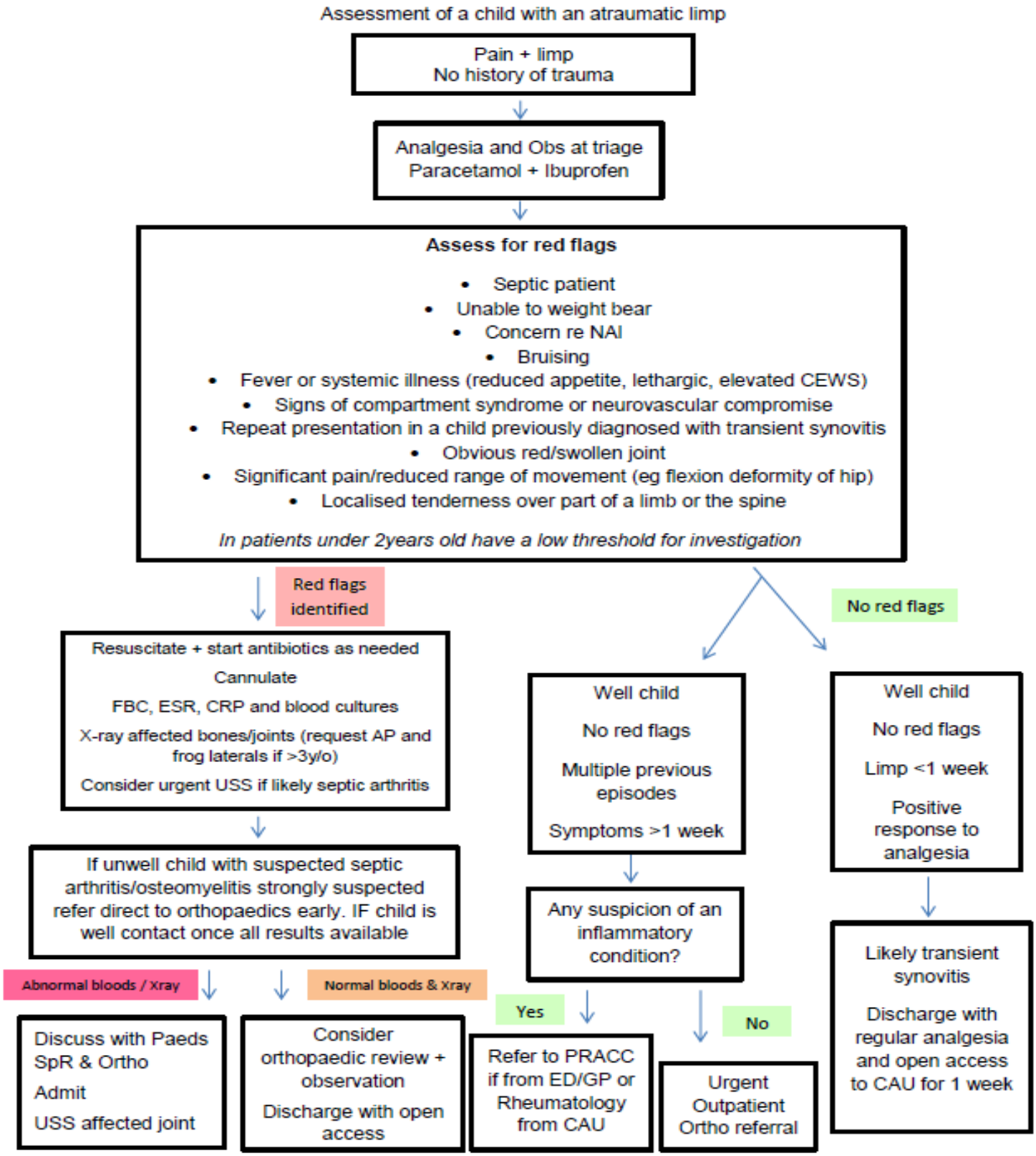

Version and Document Control:

Version Number	Date of Update	Change Description	Author
4.1	02/06/2020	Document is now a 3 trust document. Local supporter added: Dr Abigail Reeve, Paediatric Consultant (JPUH).	Dr Julie Riechmann Dr Charlotte Lindsay Dr Aravind Shastri Mr Anish Sanghrajka

This is a Controlled Document

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Objective of Guideline

To promote thorough assessment and rational management of children with acute lower limb pain, limp or non-weight bearing, without a history of injury or trauma.

Rationale for the recommendations

A pre-guideline survey found that both paediatricians and orthopaedic surgeons were managing children presenting with a limp and a possible diagnosis of irritable hip or septic arthritis. The management varied in investigations undertaken, admission and follow-up arrangements. This guideline was developed following a review of the literature and agreement between specialties to rationalise the management of such children.

Major differential diagnoses of a child with a limp.

Condition:	Typical features:
Septic arthritis (hip or other joint)	Any age. Most common <2yrs. Often painful (pseudo-paralysis), non-weight bearing, fever and unwell – these are not necessary. Reduced ROM of affected joint. CRP > 20 is likely to be associated with septic arthritis.
Osteomyelitis	Any age, similar features to septic arthritis BUT often more indolent presentation. Partial treatment with antibiotics common. Look for bone tenderness. In under 2's often co-exists with septic arthritis
Transient synovitis of the hip (Irritable hip)	3-9 years. Post viral. Pain and limp, decreased ROM of hip but not as painful as septic arthritis
Fracture – non-accidental injury or unrecognised trauma	Take history carefully. Be alert to late presentations, inconsistencies. Toddler fracture – often minor fall resulting in undisplaced tibial fracture. Be aware of fractured fibula
Inflammatory arthritis (reactive, JIA, lyme disease, HSP)	Joint swelling and heat (not detectable in hip). Decreased ROM but not as painful as septic arthritis. Longer history. Limping and pain and stiffness worse in morning/ after period of rest
Late presentation of Developmental Dysplasia	Always walked with limp. May have asymmetrical skin creases, shortened leg, look for a limitation of abduction in flexion
Perthes disease	3-10 years, boys>girls. Limp with groin, thigh or knee pain. Decreased ROM with internal rotation of hip often reduced first

Slipped upper femoral epiphysis (SUFE)	8-15 years, boys>girls. Longer history limp, sudden minor trauma often worsens pain and leads to presentation, knee pain common, decreased ROM hip
Neoplasia - leukaemia	Night pain. General malaise. Weight loss, hepato-spleno megally, pallor, bruising
Neoplasia - Osteosarcoma	Pain, localised swelling (knee especially), often no history of systemic symptoms or night pain
Discitis	<5y/o Patient refusing to walk. Back pain. Loss of lumbar lordosis on examination
Neurological	Always consider neurological causes in a longstanding limp.

Assessment

Initial assessment and documentation:

Pain - assess on pain scales according to age. Give appropriate analgesia
Normal observations – inform a doctor urgently if concerned about sepsis.
Weight (height if able to stand).

Medical assessment:

Key points of history

- Pain – site, severity, radiation, duration, exacerbating and relieving factors. Limp – similar detail.
- A history of preceding viral symptoms is often found in irritable hip.
- Preceding streptococcal sore throat / diarrhoeal illness in reactive arthritis.
- Fever height, duration, frequency.
- Recent antibiotic use may mask or partially treat a septic arthritis / osteomyelitis.
- Is the child considered to be generally well or unwell? Is s/he eating and drinking normally.
- Duration of symptoms – between 1 and 5 days associated with increased risk of infection.

Examination key points

- Is the child generally well or unwell?
- What is the gait and are they able to weight bear?
- Observe, palpate and move all bones and joints (look for heat, erythema, swelling, pain, restriction). Ensure you examine the spine.
- Severity of pain?
- Fever ≥38.5°C is likely to be associated with increased risk of infection.
- Conduct a detailed neurology examination, including eliciting deep tendon reflexes (DTR). Remember, a child who is not weight bearing and has abnormal neurological findings like absent reflexes may have an underlying neurological cause to their limp.

Follow algorithm for management.

Contact orthopaedic registrar on call on bleep 0996 if septic arthritis or osteomyelitis are suspected in an unwell patient.

For Outpatient referrals:

- *PRACC Clinic:* Discuss with and email CAU Consultant On Call or Night registrar
- *Rheumatology Clinic*: Make a referral using link on intranet (Electronic Forms)
- *Orthopaedic Clinic* in 7-10days: Email secretaries: Kelly.tilbury@nnuh.nhs.uk / Deanna.elliott@nnuh.nhs.uk. Also email paeds ortho Consultant On call (switch are aware of names) that day: Helen.Chase@nnuh.nhs.uk / Anish.Sanghrajka@nnuh.nhs.uk / Graeme.Carlile@nnuh.nhs.uk

Medication doses as per BNF November 2019:

Patient Age	Paracetamol Dose
28 weeks - 32 weeks CGA	20 mg/kg 1st dose, then 10–15 mg/kg 8–12 hrly PRN, Max 30 mg/kg/day
32 weeks CGA + above	20 mg/kg 1st dose, then 10–15 mg/kg 6–8 hrly PRN. Max 60 mg/kg/day
1–2 months	30–60 mg 8hrly, Max 60 mg/kg/day
3–5 months	60 mg 4–6 hrly, Max QDS
6-23 months	120 mg mg 4–6 hrly, Max QDS
2-3 years	180 mg mg 4–6 hrly, Max QDS
4-5 years	240 mg mg 4–6 hrly, Max QDS
6–7 years	240–250 mg 4–6 hrly, Max QDS
8–9 years	360–375 mg mg 4–6 hrly, Max QDS
10–11 years	480–500 mg mg 4–6 hrly, Max QDS
12–15 years	480–750 mg mg 4–6 hrly, Max QDS
16–17 years	0.5–1 g mg 4–6 hrly, Max QDS

Patient Age	Ibuprofen dose
1-2 months	5 mg/kg TDS-QDS
3-5 months	50 mg TDS; Max 30 mg/kg/day.
6-11 months	50 mg TDS-QDS, Max 30 mg/kg/day
1-3 years	100 mg TDS, Max 30 mg/kg/day
4-6 years	150 mg TDS, Max 30 mg/kg/day
7-9 years	200 mg TDS, Max 30 mg/kg/day. Max 2.4g/day
10-11years	300 mg TDS, Max 30 mg/kg/day. Max 2.4g/day
12-17years	300–400 mg TDS, Max 600 mg QDS

Upper Reference Range Limits for bloods:

- WCC >12
- ESR >20
- CRP >20

General Advice

Careful and full examination is imperative if clues concerning non-accidental injury, osteomyelitis and septic arthritis at any site or inflammatory arthritis are to be detected. Fully expose, palpate and move all bones / joints including the spine. Ensure full general examination is done including ENT and urine dip if febrile. Consider haemarthroses in child with excessive bruising. Developmental dysplasia of hip may present late with limp. If red flags are identified then organise bloods and necessary imaging concurrently.

X-Ray affected bones / joints (or whole of lower limb if very difficult to localise problem). If a fracture is present consider mechanism and any child protection issues. Refer to orthopaedics for fracture management or in suspected primary bone malignancies (bleep orthopaedic SpR on call on 0996).

ASO titre, anti-DNAse B and viral serology if reactive arthritis likely. ANA, autoantibody screen, immunoglobulins and rheumatoid factor are indicated if arthritis is likely but are not required urgently, or at first presentation.

The key is not to miss children with a septic hip joint since severe destruction of the joint can occur within 24 hours if not treated. If they are non-weight bearing despite analgesia and you suspect infection, inform the paediatric orthopaedic team early. If any doubt, investigate with blood tests and consider USS and aspiration / observation / admission / paediatric orthopaedic opinion. If any bony abnormality such as Perthes, SUFE or primary bone tumours are seen on X-ray refer to paediatric orthopaedic team.

Admission guidance

Any child who is not able to weight bear after appropriate analgesia should be admitted.

If a child is generally unwell (fever and/or significant pain and tenderness) they need investigation and likely admission for a period of observation. A paediatric orthopaedic opinion should be sought for any admitted child.

Parents should be given open access to phone the children's assessment unit and return to hospital in the next 2 weeks with the same problem. The parent information sheet at the end of this guideline should be given to them, with instruction to return if:

- The child is not better after 7 days of rest.
- The child develops a high temperature or is generally not well in himself or herself.
- The child is in more pain or is not able to put weight on their leg to walk.
- If they have any concerns they should phone 01603 289774.

Clinical Audit Standards derived from guideline

- Initial point of contact should be paediatric on call team.
- Appropriate investigations when required.
- Appropriate referral to orthopaedics.
- Irritable hips given analgesia and advise sheet.

Monitoring of: Length of time in CAU, any delay in diagnosis and treatment of septic arthritis / osteomyelitis

Summary of development and consultation process undertaken before registration and dissemination

The authors listed above have developed the guideline and circulated for comment from paediatricians, orthopaedic surgeons, paediatric/MSK radiologists, nursing staff on CAU, A&E consultants, junior medical staff. Changes were made following these discussions.

Distribution list / dissemination method

CAU, A&E, Intranet
Trustdocs

Abbreviations

ANA – anti-nuclear antibody
AP – Antero-posterior
BC - Blood culture
CAU – Children's Assessment Unit
CRP – C-reactive protein
DDH – Developmental Dysplasia of the Hip (previously known as congenital dysplasia of hip)
ENT – Ear, nose and throat
ESR – Erythrocyte sedimentation rate
FBC – Full blood count
GA- general anaesthetic
HSP- Henoch Schönlein purpura
JIA – Juvenile idiopathic arthritis
MSK - musculoskeletal
ROM – range of movement
SHO – senior house officer
SpR- specialist registrar
SUFE – slipped upper femoral epiphysis
USS – ultra-sound scan
WCC – white cell count
XR – X-Ray

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