Ashford and St. Peter's Hospitals
NHS Foundation Trust

Atraumatic paediatric hip pain and limping child Emergency Department guideline

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Guideline History		
Date	**Comments**	**Approved By**
23/03/22	Update on previous version	Paediatric Guideline Committee, Orthopaedic Department, Emergency Department
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Introduction

Atraumatic hip pain is a frequent presentation to the paediatric emergency department. The most common diagnosis is transient synovitis. The clinical challenge is to distinguish this from the numerous other differentials including septic arthritis. Good history and clinical examination are essential, with investigations only required in a minority of patients.

Assessment

Analgesia

- Prior to any assessment ensure the patient has been prescribed appropriate analgesia for their level of pain.

History

- Careful history of any recent injury, or viral illness
- Ask about any related symptoms e.g. pain or swelling of other joints, rashes, bruising, fever, weight loss, pain progressing or waking child at night
- Note any recent antibiotic treatment (partially treated septic arthritis or osteomyelitis)
- In NAI there may be no history of injury given by the parent

Examination

- The child must be undressed to their underwear or nappy, including socks and shoes
- General appearance of child well/unwell
- Temp, HR, RR, BP, 02 sats
- Gait: Ask the child to walk towards you or parent, if very young child, and assess the gait
    - A limp may become more obvious when the child runs
    - If the child can kneel or crawl, an injury is likely to be below the knee
- Examine the legs for swelling, bruising or deformity or decreased muscle mass
- The feet should be examined, including the soles, and between the toes
- Check for tenderness or increased temperature of bones or joints
- Check range of movements of joints and if movement is limited by pain
- Lower limb reflexes should be checked and full neurological exam if indicated
- The back should be examined for scoliosis and bony tenderness
- The pelvis and sacroiliac joints should also be examined
- The abdomen should be examined, looking for any masses, scars, tenderness hepatosplenomegaly, hernia, inguinal lymph nodes and scrotal swellings, including torsion of the testis
- If there is bruising or a petechial rash, the child should be examined for lymph nodes
- The chest should be auscultated as pneumonia can cause pain, and may occasionally lead to an altered gait

- Remember that hip pathology can present as referred pain to the knee.

Exclusions

The below management algorithm applies specifically to atraumatic pain originating from the hip. The following must be identified and treated on their individual basis:

- Trauma - consider bony and musculoskeletal causes. This includes toddler's fracture which is typically a spiral break in the distal two thirds of the tibia after a twisting injury during a fall. The initial x-ray may be normal.
- Abdominal or Testicle pain - consider differential for abdominal pain including appendicitis and testicular pain including testicular torsion, UTI, epididymitis, and hernias.
- Previous hip pathology (e.g. DDH) – consider early discussion with orthopaedic team
- Multiple joints involved – consider systemic and rheumatological causes
- Clearly no hip involvement – follow history and examination findings direction

Investigations

Any patient identified with red flag features should be investigated with bloods and imaging directed at the most likely differential.

X-ray is useful to look for fractures, Perthes and SUFE. It is less useful for joint effusions, osteomyelitis, or septic arthritis. Frog lateral (FL) view alone is generally sufficient to identify SUFE, Perthes, or hip dysplasia.

Ultrasound can detect a joint effusion but is not diagnostic unless the joint is aspirated. This can be done by Point of Care Ultrasound (POCUS) or by the radiology department.

MRI can detect osteomyelitis, septic arthritis, Perthe's disease, bone tumours and discitis. This is typically performed on an OP basis.

Differentials

Transient synovitis/Minor MSK injury

Transient synovitis (TS) is a benign condition involving the inflammation of the synovium. The exact aetiology is unknown but often has a viral prodrome. It is common in 3- to 8-year-olds but can occur at any age. It is a diagnosis of exclusion and there are no specific tests for it. A well child, with no red flags can be considered to have a working diagnosis of TS.

If, however, there is history of strenuous activity prior to development of symptoms than minor musculoskeletal injury may be more likely. A frog lateral XR should be considered if there is concern of avulsion fracture from forceful contraction of thigh muscles during sports activity. A fracture should be discussed with orthopaedics.

If a working diagnosis of TS or minor MSK injury is made, advice on rest and simple analgesia should be given. Parents/carers should be advised to seek medical attention if symptoms worsen, a fever/systemic upset develops, or there is no improvement in 72 hours.

If presenting after 72 hours of symptoms, consider FL view X-ray. If presenting after 7 days of persistent symptoms patient should be investigated thoroughly as per red flag.

Septic Arthritis

Septic arthritis typically presents with fever, complete non weight bearing, pain and a hip held in flexion and abduction. Most such patients are under 4 years of age but can happen at any age.

Any child with fever and limp/swollen joint must have septic arthritis excluded. These should be all investigated as red flag with bloods, Xray and USS.

Kocher's criteria can be used as a risk prediction tool in suspected cases:

Feature	**Point**
Fever ≥38.5	+1
Non weight bearing	+1
ESR >40mm/hr or CRP >20	+1
WBC >12,000cells/mm3	+1

(1 point = 3% probability for septic arthritis / 2 points = 40% probability / 3 points = 93% probability / 4 points = 99.6% probability)

Septic arthritis is an orthopaedic emergency and requires admission, intravenous antibiotics, and surgical drainage.

Osteomyelitis of proximal femur and pelvis

Osteomyelitis is an infection of the bone either by haematogenous spread or locally from wound, trauma, or procedure. It typically presents with more insidious onset of pain, bony tenderness and with systemic features such a fever or general malaise.

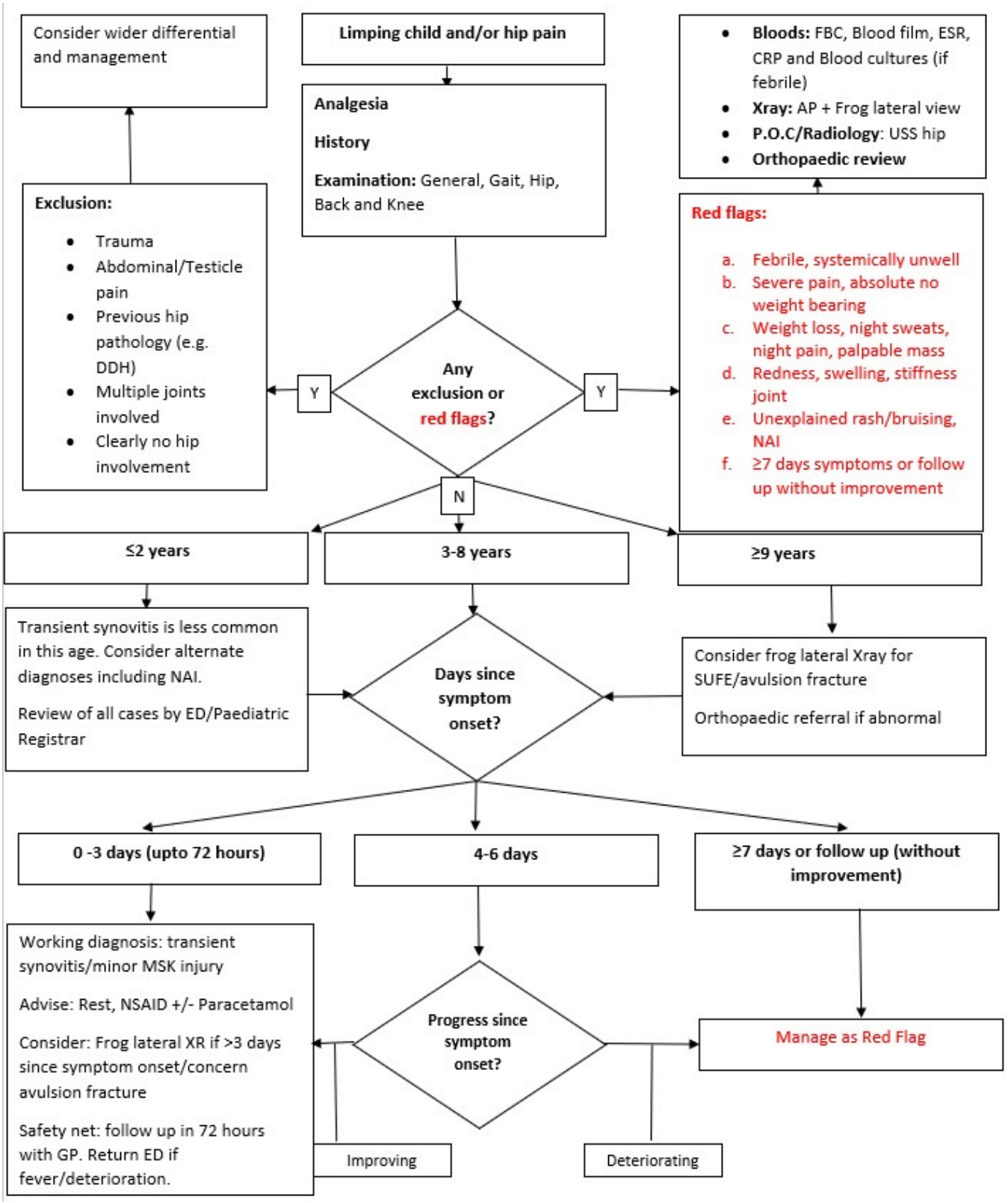
Initial bloods may show WBC raised in 35-40%, ESR >20mm/hr in 70-90% and CRP elevated in 98% of cases. Radiographs will be normal in the initial 7-10 days. After this signs of periosteal elevation or abscess formation may be visible. MRI may be required for definitive diagnosis.

Initial management includes admission, intravenous antibiotics, and consideration for bone biopsy/aspiration.

Summary Differentials

Differential	Suggestive features	Investigations
Osteomyelitis	• often more insidious pain • more localised to bone than joint • may co-exist with septic arthritis	• MRI (may need sedation)
Transient synovitis/'Irritable Hip'	• Viral prodrome • Well child • Usually, weight bearing	• No diagnostic test • Can have effusion (sterile)
Bone tumour/leukaemia	• Pain- often worse at night Bruising etc. • Weight loss • Night sweats	• FBC & film, LDH, urate • X-ray • MRI
Psoas abscess	• Fever • Pain on hip flexion • Often insidious	• Abdo USS
Appendicitis	• Abdominal pain etc	• Surgical opinion • Abdo USS
Slipped upper femoral epiphysis	• Early teens • Obesity • Hypothyroidism/Trisomy21	• Hip x-ray • Orthopaedic opinion
Perthes disease	• Younger child • Male • Chronic	• Hip x-ray • Orthopaedic opinion
Cellulitis	• Cutaneous signs	• Culture (blood/skin)

Management Algorithm



2. Supporting References

1) NICE. https://cks.nice.org.uk/topics/acute-childhood-limp/.
2) Bomer, J., Klerx-Melis, F. and Holscher, H., 2013. Painful paediatric hip: frog-leg lateral view only!. *European Radiology*, 24(3), pp.703-708.
3) Hudak, K.E., Faulkner, N.D., Guite, K., Muchow, R., Narotam, V., Nemeth, B., Halanski, M. and Noonan, K. (2013). Variations in AP and Frog-Leg Pelvic Radiographs in a Pediatric Population. Journal of Pediatric Orthopaedics, 33(2), pp.212–215.
4) Harrison WD, Vooght AK, Singhal R, Bruce CE, Perry DC. The epidemiology of transient synovitis in Liverpool, UK. *J Child Orthop*. 2014.
5) R Singhal, D C Perry, F N Khan, D Cohen, H L Stevenson, L A James. The use of CRP within a clinical prediction algorithm for the differentiation of septic arthritis and transient synovitis in children. J Bone Joint Surg Br. 2011
6) https://www.mdcalc.com/kocher-criteria-septic-arthritis
7) Emile Oliver, Pranab Sinha, Murtaza Khwaja, Michael Thilagarajah. How not to miss infective causes of hip pain in children. British Journal of Hospital Medicine. 2021

3. Supporting relevant trust guidelines

Guideline for the management of osteomyelitis and septic arthritis in Paediatric patients

2. Guideline Governance

a. Scope

This guideline is relevant to all staff caring for all children from 0-18 years old across the emergency department, inpatient ward and outpatient department.

b. Purpose

i. This guidelines aims to facilitate a common approach to the management of children. At times deviation from the guideline may be necessary, this should be documented and is the responsibility of the attending consultant.

ii. This guideline is subject to regular review to ensure ongoing evidence based practice.

c. Duties and Responsibilities

All healthcare professionals responsible for the care of all children 0-18years should be aware of practice according to this guideline.

d. Approval and Ratification

This guideline will be approved and ratified by the Paediatric Guidelines Group.

e. Dissemination and Implementation

i. This guideline will be uploaded to the trust intranet 'Paediatric Guidelines' page and thus available for common use.
ii. This guideline will be shared as part of ongoing education within the Paediatric Department for both medical and nursing staff.
iii. All members of staff are invited to attend and give comments on the guideline as part of the ratification process.

f. Review and Revision Arrangements

a. This policy will be reviewed on a 3 yearly basis by the appropriate persons.
b. If new information comes to light prior to the review date, an earlier review will be prompted.
c. Amendments to the document shall be clearly marked on the document control sheet and the updated version uploaded to the intranet. Minor amendments will be ratified through the Paediatric Guidelines Group. A minor amendment would consist of no major change in process, and includes but is not limited to, amendments to documents within the appendices.

g. Equality Impact Assessment

Background • Who was involved in the Equality Impact Assessment
Author and the supervising consultants.
Methodology • A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age) • The data sources and any other information used • The consultation that was carried out (who, why and how?)
All groups of staff and patients were taken into consideration and there is no bias towards or against any particular group.
Key Findings • Describe the results of the assessment • Identify if there is adverse or a potentially adverse impacts for any equalities groups
There is no evidence of discrimination.
Conclusion • Provide a summary of the overall conclusions
There is no evidence of discrimination.
Recommendations • State recommended changes to the proposed policy as a result of the impact assessment • Where it has not been possible to amend the policy, provide the detail of any actions that have been identified • Describe the plans for reviewing the assessment
This guideline is appropriate for use.

h. Document Checklist

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

Title of the document:

Policy (document) Author:

Executive Director: N/A

		Yes/No/ Unsure/NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	**Yes**	
	Is it clear whether the document is a guideline, policy, protocol or standard?	**Yes**	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	**Yes**	
	Is the purpose of the document clear?	**Yes**	
	Are the intended outcomes described?	**Yes**	
	Are the statements clear and unambiguous?	**Yes**	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	**Yes**	
	Who was engaged in a review of the document (list committees/ individuals)?		**Emergency, Paediatric and Orthopaedic Departments**
	Has the policy template been followed (i.e. is the format correct)?	**Yes**	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	**Yes**	

		Yes/No/ Unsure/NA	Comments
	Are local/organisational supporting documents referenced?	**Yes**	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	**Yes**	
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?	**Yes**	
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	**Yes**	
	Does the plan include the necessary training/support to ensure compliance?	**Yes**	
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	**Yes**	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	**Yes**	
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	**Yes**	
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	**Yes**	

Committee Approval (Paediatric Guidelines Group)			
If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner			
Name of Chair	**Dr Claire Mitchell**	**Date**	**31/03/2022**
Ratification by Management Executive (if appropriate)			
If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner			
Date: n/a			