



**Oxford University Hospitals**  
NHS Foundation Trust

## **Oxford Tertiary Hospital Referral Pathway for Urgent Radiological Investigations for Paediatric Septic Arthritis: Are We Sensitive and Specific Enough?**

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# Introduction

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In our tertiary hospital in 2016, only 4% of urgent paediatric ultrasounds (US) performed for septic arthritis (SA) were positive.

Over-investigation resulted in increased radiology workload as well as undue stress for the patient and parents. Paediatric SA is an emergency requiring prompt diagnosis with timely US including percutaneous US guided aspiration and treatment to prevent serious complications.

We updated our “Kocher’s criteria” based pathway to make the criteria for urgent US stricter, with children presenting with 0 or 1 red flags from Kocher’s criteria no longer requiring an US.

# Purpose and objectives

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- To ensure that the proportion of positive septic arthritis cases scanned is larger than prior to the current guideline being implemented.
- To ensure our pathway appropriately identifies children requiring urgent US investigation without missing positive cases.
- To ensure that the current pathway is compliant.

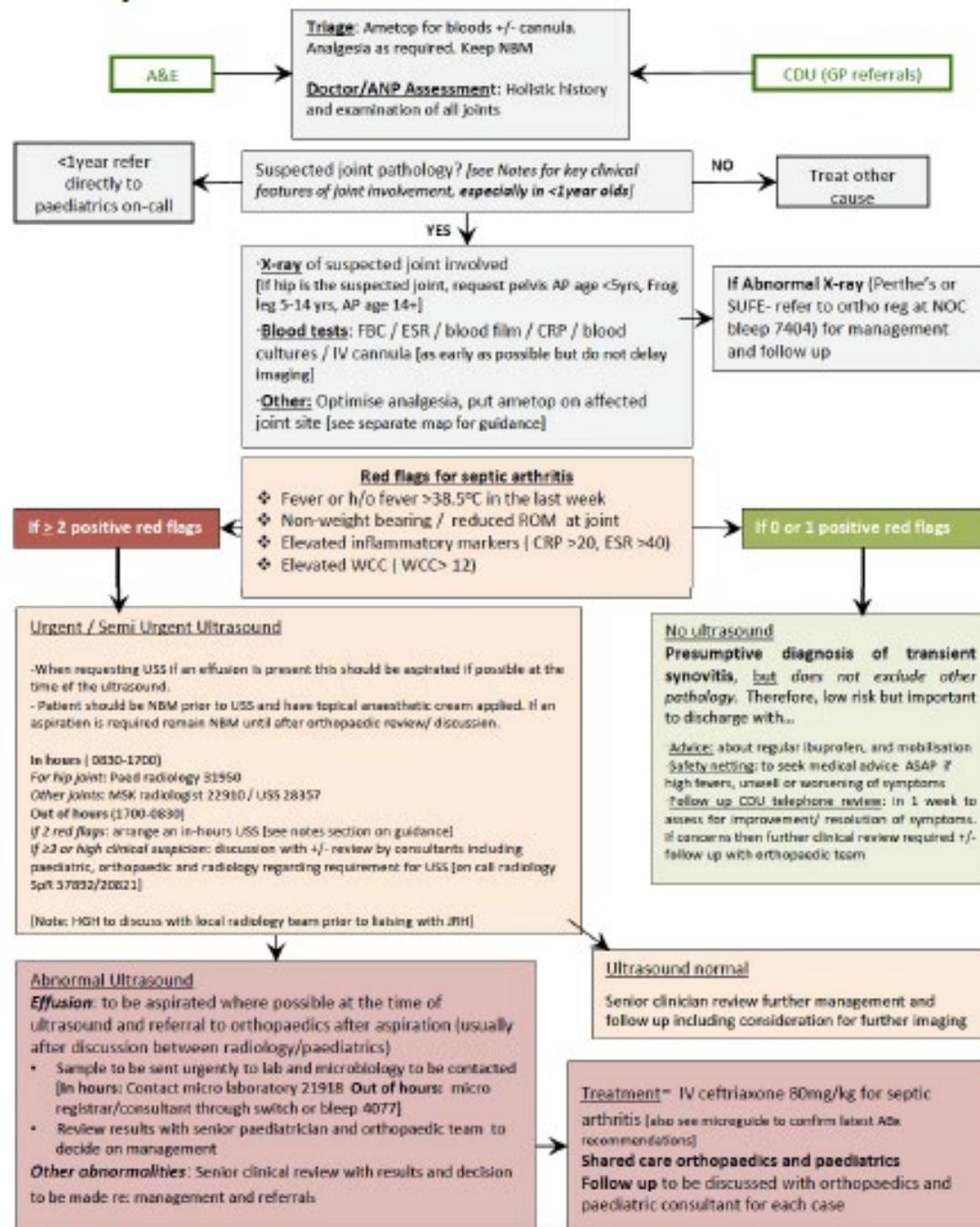


Figure 1: Guideline for Child with Suspected Septic Arthritis and No History of Trauma.

# Methods

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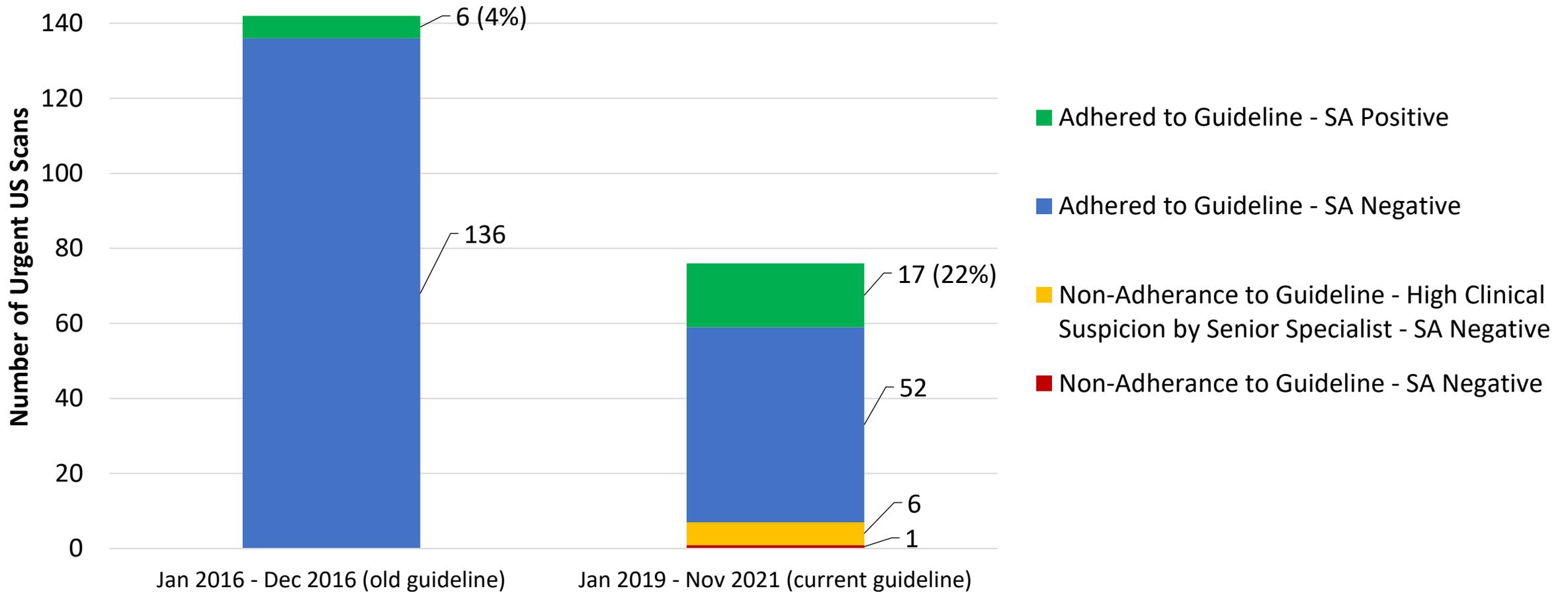
- A retrospective search of the radiology reporting system identified patients under 16 years who had US examinations of hips, knees, ankles, shoulders, or elbows between 01/01/19 to 30/11/21.
- The key word 'septic' pinpointed requests for possible SA.
- The electronic patient record was used to obtain data about presenting signs and symptoms. Patients who presented with at least two red flags of; Fever >38.5degC in the last week, non-weight bearing/reduced range of joint movement, CRP >20mg/L / ESR >40mm/h or WCC >12k/mm<sup>3</sup> as per Kocher's criteria were deemed as an appropriate referral for urgent US +/- percutaneous aspiration.
- Microbiology results confirmed positive SA cases.
- Kocher's criteria were assigned a number for data entry and recorded on the database according to the patient's presentation. Entries were assigned "Yes" if presented with at least 2 red flags and "No" otherwise. The "No" entries were counted, signifying cases which did not meet the pathway standard for urgent US.

# Results

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- Over the time period, 76 urgent US examinations were performed.
- 22% of scans were confirmed SA cases, all presenting with more than two red flags.
- Despite presenting with less than 2 red flags, 9% of cases underwent urgent US. All but 1 of these cases were reviewed by senior specialists and deemed high risk. There were no missed cases of SA.
- In the first review in 2016 prior to the current guideline, 142 US were performed in 12 months, with only 4% positive for SA.

### Total Urgent Paediatric Ultrasound Scans for Suspected Septic Arthritis and Proportion of Positive Septic Arthritis Cases 2016 vs 2019-2021



# Discussion

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- Children can present with unusual symptoms which do not follow criteria and high clinical suspicion of senior clinicians may result in urgent US.
- Awareness to accommodate exceptions to the pathway is necessary. Our trust has demonstrated good pathway adherence.
- This retrospective review shows the pathway accurately identifies those with SA and correctly refers them for urgent US without missed cases.
- The proportion of positive cases scanned has significantly increased compared to before our guideline implementation, indicating this has streamlined the workload without compromising patient care.



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# Thank you

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