ANMC Pediatric Acute Hematogenous Septic Arthritis/Osteomyelitis Guideline

Signs and Symptoms

- Fever
- Joint warmth, swelling, and/or tenderness (Frequency: Knee>hip>ankle>elbow=shoulder)
- Refusal to bear weight or range extremity
- Pseudo-paralysis in infants

Initial Work Up

Labs:
- CBC, ESR, CRP
- Blood culture if non-weight bearing and febrile

Radiology:
- X-Rays of the affected area

Kocher Score for Septic Arthritis

Assign 1 point each:
- Non-weight bearing
- Temperature >101.3F (38.5 C)
- ESR >40mm/hr or CRP >2.0 mg/dL
- Peripheral WBC >12,000 cells/mm^3

Kocher Score Interpretation

Risk of Septic Arthritis

Score = Risk of Septic Arthritis:

1 = 3%
2 = 40%
3 = 93%
4 = 99%

Initial Management of Kocher Score ≤1

Candidate for close outpatient observation

Ibuprofen 10 mg/kg q6h PRN pain

Repeat workup if no improvement or wosening in 2-3 days

Initial Management of Kocher Score ≥2

Urgent diagnosis and management is critical to prevent long-term joint damage.

- Make NPO and start IV fluids
- Collect blood culture if not already obtained
- Consult orthopedics *immediately*
- STAT MRI* with contrast of wide region of suspicion
- Aspiration considered for joint effusion
- Surgical drainage considered for: sub-periosteal abscess, intramedullary abscess, soft tissue abscess or necrotizing fasciitis, septic joint.
  - If NO SURGERY: consider needle aspiration of joint effusion or area of osteomyelitis
- Send sample for cell count, gram stain, and culture.
- **Initiate empiric antibiotics as soon as culture is obtained.**
- Admit to the hospital including infectious disease consult
- Narrow to targeted antibiotic therapy based on specimen results

Synovial fluid WBC Counts Typically Seen in Septic Arthritis:
>25,000cells/microL (hip), >50,000cells/microL (all other joints); PMN predominance

Antibiotic Selection

Common Organisms: *Staphylococcus aureus,* Beta-hemolytic Streptococci, *Haemophilus influenza a, Kingella kingae*

	Preferred Therapy	Anaphylactic Beta-Lactam Allergy	IV to PO Conversion Criteria
Empiric therapy¥	**Vancomycin** – initial dose 15 mg/kg/dose IV q6h (Max 4g/day; pharmacy will manage dosing) **AND** **Ceftriaxone** 100 mg/kg/day IV q24h (Max 2g/dose)	**Vancomycin** initial dose 15 mg/kg/dose IV q6h (Max 4g/day; pharmacy will manage dosing) **AND** **Gentamicin** 5-7.5 mg/kg/day IV (pharmacy will manage dosing)	• Afebrile x48h • CRP <3 mg/dL (no indication to repeat ESR) • Susceptibility of organism reveals adequate oral therapy option • No further surgery planned

Treatment Duration and Follow-up

Septic Arthritis

- At 3 week visit: CBC, ESR, CRP and x-ray
- If evidence of osteomyelitis by x-ray or ESR >20 mm/hr or CRP >1 mg/dL, extend therapy to 6 weeks
- End of therapy: Stable x-ray, ESR <20mm/hr, CRP <1mg/dL

Osteomyelitis

- At 3 week visit: CBC, ESR, CRP
- At 6 week visit: CBC, ESR, CRP and x-ray
- End of therapy: Stable x-ray, ESR <20mm/hr, CRP <1mg/dL

Considerations

* If sedation required for MRI, with appropriate coordination MRI and surgery can often be performed under one anesthesia
If delay to antibiotics of >6 hours, consider empiric antibiotics in discussion with orthopedics and pediatrics
¥Empiric antibiotics selected to *cover MRSA, MSSA, beta-hemolytic streptococci, Haemophilus influenza a, Kingella, and enteric GNRs*

Antimicrobial Stewardship Program Approved 2018; Updated April 2023

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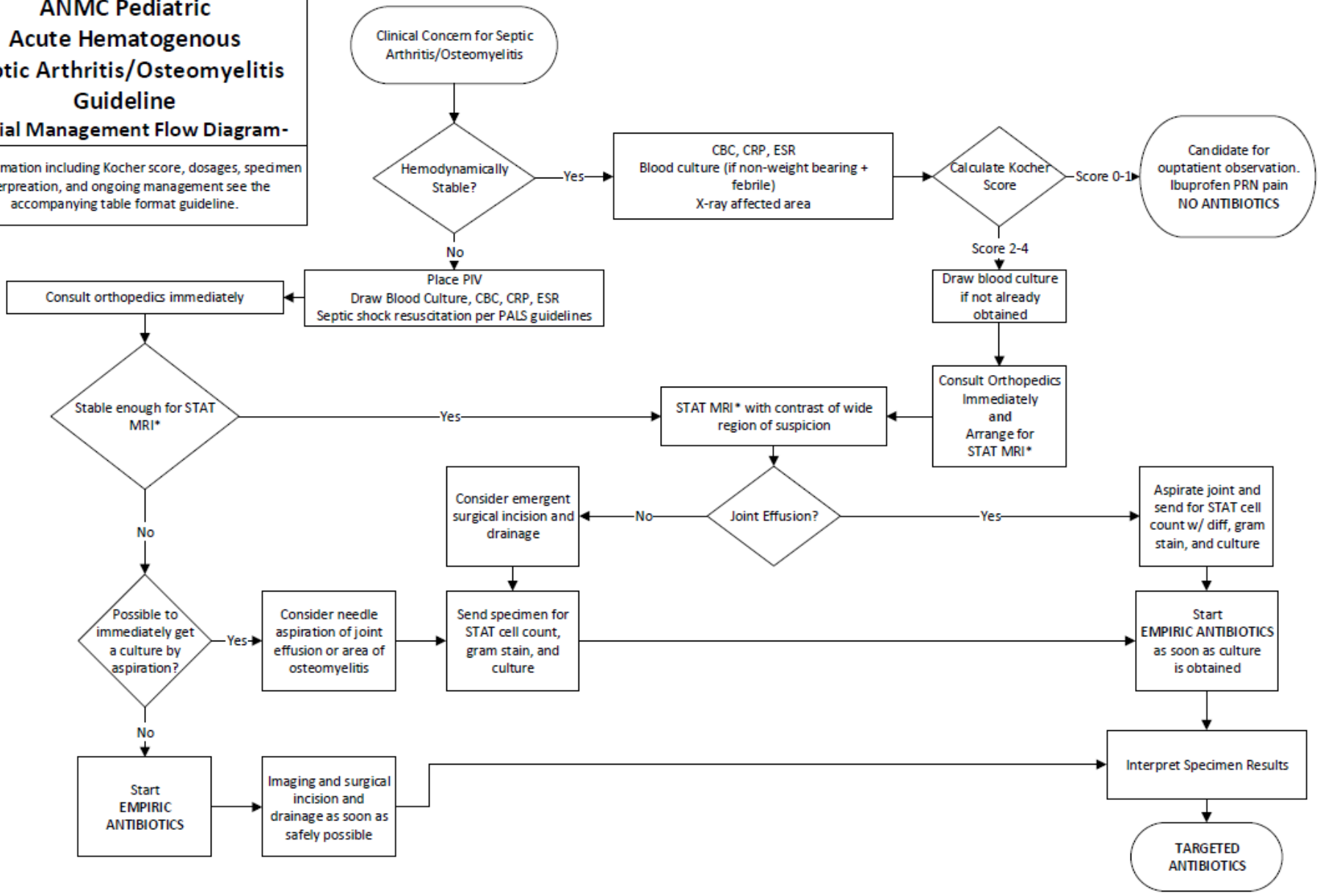
-Initial Management Flow Diagram-

For information including Kocher score, dosages, specimen interpreation, and ongoing management see the accompanying table format guideline.



Goal 1: Obtain sample prior to starting antibiotics if patient stable Goal 2: Start empiric antibiotics as soon as possible after specimen collection Goal 3: Transition to targeted antibiotics as soon as possible based on specimen results	**Empiric Antibiotics:** Preferred Therapy: Vancomycin + Ceftriaxone Type I PCN Allergy: Vancomycin + Gentamicin **Targeted Antibiotics**: Based on gram stain and culture	*If requires sedation for MRI consult anesthesia for sedation with goal of MRI + surgery to be performed under one sedation. If delay MRI of >6 hours consider **EMPIRIC ANTIBIOTICS** in discussion with orthopedics and pediatrics.