Concern for Musculoskeletal Infection (MSI)

- Has there been any MSI workup initiated?
  - Yes
    - For initial management, refer to MSI Initial Evaluation Pathway
    - If US or MRI been completed? (If neither, refer to MSI Initial Evaluation Pathway)
  - No
    - Has US or MRI been completed? (If neither, refer to MSI Initial Evaluation Pathway)
    - Is there an effusion?
      - Yes
        - Discuss case with Orthopedic Surgery to determine need for advanced imaging and/or surgical intervention
        - Observe Us platelet nadir and WBC counts
          - < 20K
            - Manage off Pathway
            - Consider discussion with Orthopedic Surgery to determine need for advanced imaging and Infectious Disease Consult
          - > 20K
            - Obtain Urgent MRI
              - *Manage off Pathway;
              - *Consider discussion with Orthopedic Surgery to determine need for advanced imaging and Infectious Disease Consult
      - No
        - Make NPO and place IV if needed
          - • Coordinate surgical intervention if needed*
          - • Begin antibiotic therapy if additional cultures are not forthcoming
          - • Consult Infectious Disease
          - • Repeat labs, imaging, drainage, and/or cultures as indicated
          - • Consider modifying antibiotic regimen in collaboration with Infectious Disease
          - • Consider alternative diagnosis
    - Are blood cultures persistently positive?
      - Yes
        - Prepare for PICC placement for prolonged IV antibiotic therapy
        - Refer to PICC/TMC Insertion & Removal policy
      - No
        - • Discharge patient if criteria met
          - • Discharge Criteria:
            - Clinically improving (well appearing, weight-bearing if allowed, improved pain and range of motion)
            - Tolerating oral intake
            - Afebrile for at least 24 hours
            - Decreasing CRP
            - Bacteremia cleared (if initially present)
            - Home therapy arranged:
              - • Medication(s)
              - • Home health (if necessary)
            - Surveillance labs
            - Follow-up appointments arranged:
              - • Orthopedic Surgery
              - • Infectious Disease
            - Family understands illness, importance of medication adherence, and follow-up plan; family has ability to contact specialists with questions and/or concerns
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            - • Infectious Disease
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- Family understands illness, importance of medication adherence, and follow-up plan; family has ability to contact specialists with questions and/or concerns
### Intravenous Antimicrobials

<table>
<thead>
<tr>
<th>Cefazolin (First line)</th>
<th>Vancomycin (First line if history of MRSA or has MRSA risk factors)</th>
<th>Ampicillin</th>
<th>Ceftriaxone</th>
<th>Clindamycin&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daily Amount</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.3 mg/kg/dose (septic joint)</td>
<td>15-20 mg/kg/dose (Q6H)</td>
<td>50 mg/kg/dose (Q6H)</td>
<td>75 mg/kg/day (Q24H)</td>
<td>10-13.33 mg/kg/dose (Q8H)</td>
</tr>
<tr>
<td>50 mg/kg/dose (osteo)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Daily Maximum Dosing for MSI</strong></td>
<td>For severe cases: 2,000 mg (Q6H)</td>
<td>For severe cases: 2,000 mg (Q6H)</td>
<td>2,000 mg (Q6H)</td>
<td>2,000 mg (Q24H)</td>
</tr>
<tr>
<td>2,000 mg (Q8H)</td>
<td></td>
<td></td>
<td></td>
<td>900 mg (Q8H)</td>
</tr>
</tbody>
</table>

**Organism**

- **MSSA**
- **MRSA**
- **S. pyogenes** (Group A strep)
- **S. pneumoniae**
- **Kingella kingae (<5yr)**

**Labs**

Monitor for infection resolution and side effects

- Q48H: CBC with diff, CRP, ESR, BUN, Creatinine

Vancomycin requires monitoring, recommend AUC/MIC of 400-600 mg h/L

### Oral Antimicrobials

<table>
<thead>
<tr>
<th>Cephalexin</th>
<th>Clindamycin&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Amoxicillin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daily Amount</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.3-50 mg/kg/dose (TID)</td>
<td>10-13.33 mg/kg/dose (TID)</td>
<td>30 mg/kg/dose (TID)</td>
</tr>
<tr>
<td><strong>Total Daily Maximum Dosing for MSI</strong></td>
<td>1,333 mg/dose (TID)</td>
<td>900 mg/dose (TID)</td>
</tr>
<tr>
<td>900 mg (TID)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Organism</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MSSA</strong></td>
<td>++</td>
<td>+/−&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>MRSA</strong></td>
<td>+/−</td>
<td>+/−</td>
</tr>
<tr>
<td><strong>S. pyogenes</strong> (Group A strep)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>S. pneumoniae</strong></td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td><strong>Kingella kingae (&lt;5yr)</strong></td>
<td>+</td>
<td>+/−</td>
</tr>
</tbody>
</table>

**Labs**

Monitor for infection resolution and side effects

- Q48H: CBC with diff, CRP, ESR, BUN, Creatinine

*Disclaimer: Pathways are intended as a guide for practitioners and do not indicate an exclusive course of treatment nor serve as a standard of medical care. These pathways should be adapted by medical providers, when indicated, based on their professional judgement and taking into account individual patient and family circumstances.*

ChildrensOmaha.org/Pathways

Updated 12/2022

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<sup>a</sup> 23% of MSSA and 18% of MRSA isolates are resistant to clindamycin. Clindamycin should only be used if susceptibilities are known. If patient <5 years, clindamycin does not routinely cover K. kingae. Oral bioavailability for clindamycin is >90%.

<sup>b</sup> Kingella kingae can cause bone and joint infection in patients from 6 months to 5 years of age but is difficult to culture. PCR-based testing can increase yield for K. kingae identification. K. kingae predominantly causes septic arthritis but can also cause isolated osteomyelitis and tenosynovitis; it generally has a milder presentation than S. aureus. Unless microbial cause is known, K. kingae should be empirically covered in children <5 years.