# Bone and Joint infections

## *Executive summary*

## Introduction

Bone and joint infections are serious conditions requiring prompt diagnosis and treatment to prevent disability and mortality. They consist of osteomyelitis (OM) and septic arthritis (SA). Both are bacterial infections that occur by a hematogenous spread from other parts of the body. They may result in sepsis and bone loss. These infections frequently occur in the lower limbs but can occur in the upper limbs and vertebrae.

The most common causative organism is *Staphylococcus aureus* in all ages. *Hemophilus influenza* is also common in children aged less than 5 years. In sexually active adults and adolescents, *Neisseria gonorrhoea* could be suspected. Bone and joint infections in sickle cell disease patients may be caused by *Salmonella spp*

Osteomyelitis is an infection of the bone that may be acute or chronic. Acute osteomyelitis is a medical emergency requiring a long duration of treatment with intravenous antibiotics. A chronic OM is managed by the orthopaedic surgeons and its presentation is insidious in onset, occurring over weeks and with draining sinuses on the skin.

Septic arthritis is an acute bacterial joint infection and an orthopedic emergency requiring arthrocentesis and intravenous antibiotics to prevent joint deformity and disability.

## Target users

* Doctors
* Nurses

## Target area of use

* Outpatients
* Ward

## Key areas of focus / New additions / Changes

This guideline outlines the diagnosis and management of bone and joint infections.

## Limitations

Patients with suspected septic arthritis must be referred to the orthopaedic surgeons as soon as possible.

## Presenting symptoms and signs

The symptoms and signs of OM and SA are of an acute onset (usually within days) and include:

* Fever (some babies may be apyrexial)
* Swelling of the limb or joint
* Limping or refusal to use affected limb
* Movement restriction at the joint(s) – OA
* Malaise

There may be no preceding history of trauma or penetrative injury to the affected limb.

## Examination findings:

* Fever
* Tender joint or limb swelling, non-pitting with differential warmth
* Joint movement restriction
* Painful gait

## Differential diagnoses :

* Acute OM
  + Traumatic or stress fracture
  + Cellulitis
  + Pyomyositis
  + Septicaemia (newborns)
  + Thrombophlebitis
  + Sickle cell infarction
* SA
  + Viral arthritis
  + Reactive arthritis
  + Juvenile idiopathic arthritis
  + Tuberculosis
  + Slipped capital femoral epiphysis
  + Vaso-occlusive crisis in sickle cell anaemia
  + Arthralgia

## Investigations

* ESR
* FBC
* Blood culture
* X-ray to rule out fracture, chronic OM
* MRI for Acute OM
* Joint aspiration for microscopy, culture and sensitivity – should be done before commencement of empirical antibiotic therapy
* US scan of the joints may be done in children

## Management

* Empirical antibiotic therapy is based on the commonest organisms responsible for infections – *Staph. aureus* in adults and children over 5 years and *Haemophilus influenza* for children aged under 5 years.
* For SA, antibiotic therapy is given for 2-3 weeks. If patient improves on IV antibiotics after 4-6 days, oral antibiotics can be used and continued until the end of 3 weeks.
* For OM, parenteral antibiotics should be given for at least 2 weeks before continuing on oral therapy. Duration of therapy for children is between 3-4 weeks and for adults 4–6 weeks.
* Empirical antibiotic therapy should be changed if antibiotic sensitivity results are different from current therapy.
* Serial arthrocentesis, arthroscopy or arthrotomy may be needed in SA.

**Empirical antibiotic therapy**

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| **Age** | **OM** | **SA** |
| Children under 5 years | IV Cloxacillin 25-50 mg/kg QDS *plus* Ceftriaxone 50-75 mg/kg OD for 4 -6 days *followed by* oral Amoxicillin 15 mg/kg + clavulanic acid (maximum 500 mg) orally every 8 hours to complete the treatment course. | IV Cloxacillin 25-50 mg/kg QDS *plus* Ceftriaxone 50-75 mg /kg OD for 4-6 days *followed by* oral Cloxacillin 12.5 mg/kg QDS for the duration of treatment. |
| *Children aged 5 years and above* | IV Cloxacillin 25–50 mg/kg (maximum 2 g) QDS for 4-6 days (or until clinical improvement occurs), followed by cloxacillin 25 mg/kg (maximum 500 mg) orally every 6 hours to complete the treatment course  OR  IV Ceftriaxone 50–75 mg/kg (maximum 1 g) OD for 4-6 days (or until clinical improvement occurs), followed by oral Cloxacillin 25 mg/kg (maximum 500 mg) orally QDS to complete the treatment course. | IV Cloxacillin 25-50 mg/kg QDS plus IV Ceftriaxone 25-50 mg/kg OD |
| *Adults* | IV Cloxacillin 2 g QDS for at least the initial 14 days, but preferably the entire treatment course of 4-6 weeks (if the duration of parenteral therapy is less than 4-6 weeks, the treatment course should be completed with cloxacillin 1 g orally QDS) | IV Cloxacillin 2 g QDS plus IV Ceftriaxone 1-2 g OD |

* On suspicion of septic arthritis, the orthopaedic surgeon at the teaching hospital should be informed and patient should be referred.
* All patients with bone and joint infections should be informed of the seriousness of the condition and the need for adherence to the long course of antibiotic therapy.

**Key Issues for Nursing care**

Patients suspected of having bone or joint infections should see a doctor immediately, as this is an emergency.

## References

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