

## BOA Standard

# Management of musculoskeletal soft tissue infections: Life-threatening conditions including Necrotising Fasciitis and Myositis; Native large joint infections; Abscesses and cellulitis.

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### Background and Justification:

Severe soft tissue infection requires emergency, multidisciplinary management to prevent mortality or significant morbidity. The treatment of necrotising infection is urgent surgical intervention.

### Inclusions:

Patients with clinical and/or laboratory confirmation of soft tissue infection involving the limbs, pectoral or pelvic girdle, or native joints.

### Exclusions:

Fracture-related<sup>1</sup> and peri-prosthetic joint<sup>2</sup> infection.

### Standards for Practice:

1. Locally agreed multi-specialty pathways are required for all patients presenting with musculoskeletal soft tissue infections.
2. Pathways should identify the speciality with primary clinical responsibility.
3. A patient presenting with evidence of sepsis must have the "[sepsis six](#)"<sup>3</sup> protocol initiated immediately.
4. If necrotising fasciitis / myositis is suspected:
  - a. Surgery is required urgently and should not be delayed by medical and intensive care management, imaging, or inter-hospital transfer.
  - b. In all cases broad spectrum parenteral antibiotics must be started without delay, under the guidance of a microbiologist and determined by local policy.
  - c. Immediate surgical debridement of necrotising infection should be performed by suitably qualified surgeon(s) (NCEPOD 1).
  - d. Surgery must include a documented systematic assessment of skin, subcutaneous fat, fascial planes, neurovascular structures and all muscle groups.
  - e. Multiple deep tissue samples should be taken for microscopy and culture and labelled as "necrotising infection" with immediate transfer to the laboratory.
  - f. A decision to amputate should be made by at least two consultants\*. Primary closure should not be performed at the index operation.
5. All patients with a necrotising infection should be undergo review by the treating team within 6 hours of diagnosis or surgery.
6. Failure to improve after surgical debridement implies incomplete resection of infected tissue and should mandate further surgical exploration.
7. If a patient with major necrotising infection is considered unfit for surgery, the reasons should be clearly documented, and they should be referred for end-of-life care.
8. Native joint infections should be treated according to standards outlined in the BOAST for the acute management of peri-prosthetic joint infection<sup>2</sup>, recognising the time critical nature of chondral injury. Aspirate should include samples for crystallography.
9. Cellulitis of the limbs should be managed by a single medical or surgical specialty following a locally agreed pathway, irrespective of proximity to a joint.
10. Simple abscesses in systemically well patients can be considered for incision and drainage under local anaesthesia or sedation, with or without image guidance, in a suitable clean environment.
11. Deep/complex abscesses and those in diabetic patients may require formal surgical drainage in an operating theatre.

<sup>1</sup> [www.boa.ac.uk/resource/boast-fracture-related-infections.html](http://www.boa.ac.uk/resource/boast-fracture-related-infections.html)

<sup>2</sup> [www.boa.ac.uk/resource/boast-acute-management-of-peri-prosthetic-joint-infection.html](http://www.boa.ac.uk/resource/boast-acute-management-of-peri-prosthetic-joint-infection.html)

<sup>3</sup> <https://cks.nice.org.uk/topics/sepsis/management/management/>

\* Two consultants from different specialties including (but not limited to) Intensive Care, Anaesthesia, Orthopaedics, Plastic Surgery

**Advisory notes / technical tips** regarding the surgical management of necrotizing infections:

1. The aim of surgery is to:
  - a. Confirm the diagnosis and isolate causative organisms
  - b. Define the extent of the disease
  - c. Excise the disease.
2. Tissues may be classified according to three zones<sup>1</sup>:
  - Zone 1: the area of obvious necrosis, with fixed staining, thrombosed blood vessels or haemorrhagic bullae.
  - Zone 2: areas of likely infection with warm, red skin, exquisite tenderness, or induration (this may include seemingly normal skin over an area of non-adherent fascia).
  - Zone 3: normal skin and fascia.
3. Debridement should proceed in a logical manner and contain zones 1 & 2 and a 3cm cuff of zone 3 skin and fascia.
4. The absence of 'dishwater fluid' and a positive 'sweep test' does not rule out necrotising infection.
5. Ideally 5 samples from all zones should be taken for microbiological culture using separate sterile instruments and a no touch technique.
6. Samples from zone 3 should be labelled separately and identified as being from the "healthy zone".
7. Laboratories should be informed of incoming specimens.

<sup>1</sup> Wong CH, Yam A, Tan A, Song C. Approach to debridement in necrotising fasciitis. *Am J Surg* 2008. **196**(3): 19-24.