Skin & Soft Tissue Infection (SSTI)

Investigation in adult hospital patients

Infection Quick Reference Guide

This flowchart is intended as a general resource for the care of adults with SSTIs. It should be used in conjunction with current guidance on the management of SSTIs. which it does not replace (see references). **NOT for use in diabetic foot infection** – see NICE guideline [NG19].

Cellulitis/SSTI mimics

Deep vein thrombosis is	Overlying a joint?	Other common:	Less common:	Rare:
Pain & swelling with less significant erythema ● Follow local/national guidelines for investigation	Consider septic arthritis, bursitis or gout ● Joint aspirate for Microscopy (inc. for crystals), culture and sensitivity [if prosthetic joint refer to ortho)	Venous or other eczema, intertrigo, lipodermatosclerosis, dependent rubor in venous insufficiency, thrombophlebitis, irritant or allergic contact dermatitis	Erythema nodosum, erythema multiforme, erythrasma, ecthyma gangrenosum, pyoderma gangrenosum, drug/chemo or radiation-induced, cutaneous infiltration of malignancy	Sweet's syndrome, leukocytoclastic vasculitis

Necrotising skin & soft tissue infections are often fatal. Presentation can be varied and visible clinical signs can underestimate the severity of illness.

Suspect if: **Severe pain, sepsis, tenderness beyond apparent skin involvement.**

Late signs: **crepitus, blisters/bullae, dusky skin discolouration or rapidly progressing cellulitis.**

Investigations & antimicrobial therapy may require broadening if:

Diabetes mellitus with ulcers, travel abroad, unusual exposures (animals, water, vegetation), injecting drug use or immunosuppression (see special patient groups*). Cover MRSA if current or previous history.

Key to flowchart

SSTIs requiring surgery + antibiotics
- Necrotising fasciitis and gas gangrene (Fournier's in pelvic/scrotal areas)
  - Clinical assessment: Urgent senior (preferably consultant) surgical (trauma or plastics) review for potential debridement + discussion with ID/micro SpR or consultant. LRINEC Score - if high suspicion do not be reassured by a low score
  - Sample type: Blood; Nose/throat/armpit/groin swab *; actual pus/tissue/blister fluid
  - First line tests: C&S if intravenous catheter then pair with peripheral set; Blood borne virus screen (HIV, hepatitis B and C)
  - Second line tests: Discuss with ID/micro and write unusual exposures on request forms as this will influence the laboratory tests performed & what is reported (HIV, hepatitis B and C); Throat swab C&S for GAS

Purulent SSTIs for I&D
- Abscesses, large carbuncles, furuncles
  - Sample type: Nose/throat/armpit/groin swab * → First line tests: MRSA screen

Non-purulent SSTIs usually requiring systemic antibiotics
- Cellulitis/Erysipelas & infected ulcers
  - Clinical assessment: Consider & treat predisposing factors, such as oedema, lymphoedema and skin disorders (e.g. tinea pedis). Facial, periorbital, orbital cellulitis? Maxfax, ENT / ophthalmology review
  - Second line tests: PVL and toxin testing
- Wound infection
  - Clinical assessment: Surgical review for potential suture removal, wound exploration and drainage
  - Second line tests: Viral PCR (fluid from vesicle if present)
- Bite wound
  - Clinical assessment: Antibiotic prophylaxis if broken skin, deep bite, high risk site or visibly contaminated. Tetanus prophylaxis. Rabies prophylaxis if animal abroad or bat in the UK
  - Second line tests: **Only skin biopsy/ tissue** Histology

SSTIs usually requiring no or topical antibiotics
- Impetigo and folliculitis. If bullous, widespread or at high risk of complications may need oral therapy

Sample type: If available, **actual** pus/tissue/blister fluid in sterile container preferred, but can send swab of material instead.* All ulcers are colonised by polymicrobial flora:
Do **not** swab ulcers or wound unless clinical diagnosis of infection made
Dry crusted areas are unlikely to yield a causative pathogen
Do **not** swab intact skin

First line tests: MC&S → **Second line tests:** Other MC&S (fungal, mycobacterial, prolonged anaerobic)

Imaging (Do not delay surgical exploration)
- Orbital/ facial cellulitis → CT orbits/ CT head
- Deep ulcer to bone → X-ray → Consider MRI

Row labels: Clinical assessment; Sample type; First line tests; Second line tests Required in specific cases

Infection Prevention and Control
Discuss if necrotising SSTI, GAS, PVL-associated *Staphylococcus aureus* or MRSA - Isolation, decolonisation & further public health measures may be required

OPAT
Consider for patients with no evidence of sepsis or uncontrolled comorbidities

Special patient groups

- **Recurrent boils/abscesses** > search for local causes such as a pilonidal cyst, hidradenitis suppurativa or foreign material > discuss PVL testing with ID/micro
- **Immunosuppression:**
  - also consider mycobacterial, fungal and viral agents
  - more aggressive approach to determining aetiological agent (e.g. aspiration, skin biopsy)
- **Injecting drug use**
  - infected thromboses
  - wider range of pathogens inc. anaerobes MRSA, *Bacillus anthracis*, and fungi
- **Water-exposure** (non-cholera Vibrio species, Aeromonas, *Pseudomonas aeruginosa*, fungi/algae)
- **Contact with animals or animal products** (Bacillus anthracis, cutaneous diphtheria, erysipeloid)
- **Contamination with soil or plant matter** (sporotrichosis, plus other fungi)
- **Travel history** (e.g. mycetoma, endemic fungi, chromoblastomycosis)
- **Jaw, thoracic or abdominal site/pelvic**, especially if intrauterine coil present (actinomycosis)

References

- Stevens DL, et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by IDSA. Clin Infect Dis 2014; 59(2): 147-59.
- Clinical Resource Efficiency Support Team. Guidelines on the management of cellulitis in adults. Belfast: CREST; 2005.
- Marwick C, et al. Severity assessment of skin and soft tissue infections: cohort study of management and outcomes for hospitalized patients. JAC. 2011;66:387–97.
- NICE and PHE. Summary of antimicrobial prescribing guidance - managing common infections. London: PHE; 2019

Abbreviations

MRSA	Methicillin resistant *Staphylococcus aureus*
OPAT	Outpatient Parenteral Antibiotic Therapy
IPC	Infection Prevention and Control
MC&S	Microscopy, culture and sensitivity
SEWS	Standardised Early Warning Score
PVL	Panton-Valentine Leukocidin
GAS	Group A streptococcus
I&D	Incision & drainage

The Royal College of Pathologists. Pathology: the science behind the cure
BIA British Infection Association
Royal College of Physicians

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