

Insect Bites and Stings

Rapid-onset skin reaction is likely to be an inflammatory or allergic reaction rather than an infection.

Biting insects inject salivary proteins that trigger hypersensitivity reactions which may resemble infection and cause redness, swelling and itching around the bite site. Around two-thirds of patients presenting to out-of-hours care receive antibiotics - typically flucloxacillin - despite most bites being inflammatory rather than infected. This unnecessary prescribing contributes to antimicrobial resistance (AMR), avoidable side effects, and increased healthcare costs without improving outcomes.

Inflammation vs Infection

Biting parts introduce mechanical trauma, but true secondary bacterial infection takes time to establish, typically arising 48–72 hours later due to epidermal layer of skin breach from intense scratching.

Clinical Feature	Local Inflammatory / Allergic Reaction	Secondary Bacterial Infection (Cellulitis)
Onset of Symptoms	Rapid, immediate, or within hours of the bite/sting.	Delayed; typically emerges 48 to 72+ hours post-injury.
Primary Symptom	Intense itching is the dominant patient complaint.	Progressive throbbing pain, deep tenderness, and localized heat.
Erythema & margins	Well-demarcated or diffuse redness centered symmetrically on the bite. Max diameter reached within 24–48 hours.	Spreading, poorly-demarcated erythema that expands progressively over days, often traveling asymmetrically.
Induration & oedema	Soft, pitting, or localized fluctuant puffiness corresponding to histaminergic release.	Firm, hard, tense induration or 'woody' texture that is highly tender to light palpation.
Systemic symptoms	Absent. No systemic pyrexia, chills, or constitutional symptoms (unless anaphylaxis on onset).	May be present: Pyrexia (temp $\geq 38.0^{\circ}\text{C}$), chills, localized lymphadenopathy, or ascending lymphangitic streaks.
Response to elevation & time	Improves or stabilizes significantly with elevation, ice packs, and topical or oral antihistamines.	Continues to worsen and spread despite cold compresses or standard anti-inflammatory/antihistamine therapy.

Management of insect bite

For non-infected local inflammatory or allergic skin reactions, treatment must focus aggressively on symptom relief, breaking the 'itch-scratch' cycle, and preventing mechanical barrier breakdown.

Do not prescribe antibiotics.

Recommend the following practical interventions:

- **First steps:**
Wash the area gently with soap and water to remove residual vector salivary debris.
- **Physical Measures:**
Apply a cold compress or wrapped ice pack for 10–15 minutes sequentially to minimize localized inflammation.
- **Topical corticosteroids:**
Apply a mild-to-moderate topical corticosteroid cream e.g., Hydrocortisone 1% cream, thinly over the affected area 1 to 2 times daily for 3–5 days (for a maximum of 1 week). This provides rapid, targeted anti-inflammatory control, reducing the urge to scratch and thereby avoiding secondary bacterial inoculation.
- **Oral antihistamines:**
Short-acting or non-sedating oral antihistamines (e.g., Cetirizine, Loratadine, or Fexofenadine) can be utilized to alleviate systemic itch.
For severe nocturnal pruritus that interrupt sleep, a sedating antihistamine (e.g., Chlorphenamine at night) may provide symptomatic benefit via central sedation, though evidence regarding direct efficacy on local bite site resolution is equivocal. This may not be suitable for elderly patients given the anticholinergic effects.
- **Analgesia:**
Advise simple systemic analgesics like Paracetamol or Ibuprofen to manage localized inflammatory throbbing or discomfort.
- **Consider referral or seek specialist advice for people if:**
 - They are systemically unwell.
 - They are severely immunocompromised (e.g., active chemotherapy, high-dose systemic biologics, or advanced HIV) and have symptoms or signs of an infection.
 - They have had a previous systemic allergic reaction to the same type of bite or sting.
 - The bite or sting is in the mouth or throat, or around the eyes.
 - It has been caused by an unusual or exotic insect.
 - They have a fever or persisting lesions associated with a bite or sting that occurred while travelling outside the UK

Diagnostic Threshold for Antimicrobial Therapy

If antibiotic treatment is warranted, oral antibiotics are preferred over topical antibiotics, as suspected infection should be treated with systemic therapy rather than topical antimicrobial agents.

An antibiotic should only be considered if the presentation occurs **at least 48 hours after the initial bite or sting**, shows clear clinical signs of infection, AND satisfies **THREE OR MORE** of the following acute criteria:

- Objective, spreading erythema (rapidly expanding outward from the focal core).
- Intense localized pain or prominent structural tenderness upon light palpation.
- Severe localized swelling or structural induration.
- The skin surrounding the bite or sting feels markedly hot to the touch

AND displays at least ONE of the following advanced infectious progressions:

- The localized redness or swelling is documented as actively spreading or expanding beyond initial margins.
- Purulent discharge, localized pustules, or fluctuating exudate oozing from the bite core.
- Associated systemic constitutional symptoms (e.g., documented pyrexia $\geq 38.0^{\circ}\text{C}$, rigors, malaise).

If antibiotics are indicated as there are signs and symptoms of infection, please see the [Cellulitis guideline](#).

Atypical infections

Clinicians must maintain vigilance for specific vector-borne diseases that present similarly to or alongside standard insect bites.

- **Lyme Disease (*Borrelia burgdorferi*):** Look for an expanding 'bullseye' rash (Erythema Migrans) typically emerging 3 to 30 days following a known or suspected tick attachment. This rash is pathognomonic for Lyme Disease and requires immediate initiation of a 21-day course of Doxycycline (or Amoxicillin if contraindicated), irrespective of localized secondary bacterial signs. Do not wait for serological confirmation.
- **Travel related bites:** For individuals returning from endemic travel zones presenting with a bite accompanied by unexplained fever, chills, severe headaches, or flu-like constitutional symptoms, suspect malaria, dengue, or other arboviruses and rickettsial infections.
- **For bites from specific insects:** further advice can be found [here](#)

Patient advice

Empowering the patient through robust, documented safety-netting advice decreases anxiety, satisfies the consultation cycle, and mitigates the clinical urge to overprescribe 'just in case' back-up antibiotics.

- **Mark area of inflammation:** Draw a boundary line around the existing edge of the erythema using a marker/pen. Instruct the patient/caregiver to observe if the redness extends significantly beyond this boundary over the subsequent 48 hours.
- **De-escalate infection anxiety:** Reassure the patient explicitly that local redness, swelling, and itch are standard immune system responses to insect saliva. Confirm that these localized signs can normally persist or fluctuate for up to 10 days without indicating bacterial infection.
- **Explicit worsening triggers:** Provide clear, objective reasons for re-consultation. Instruct the patient to seek urgent medical review if they develop a high fever, sudden spreading chills, a dramatic increase in deep-tissue pain, or if the redness aggressively breaches the marked pen-line margin.
- **Scratch Mitigation:** Educate on non-pharmacological scratching alternatives (e.g., firm pressing on the itchy area, applying chilled gel-packs) to prevent fingernail-mediated trauma, which introduces transient bacteria into the deep dermis.
- **For insect bites and stings images:** [NHS website](#) & [DermNet](#)
- APC Patient Information Leaflet [here](#)
- Insect bites is one of the conditions that can be managed by community pharmacy via [Pharmacy First](#). Antibiotics supplied through Pharmacy First may not always fully reflect local recommendations, as supply under the service is restricted to the NHS England national specification.

References

1. Finnikin S.J., Wilcock J., Edwards P.J., et al.
Presentation and management of insect bites in out-of-hours primary care: a descriptive study. BMJ Open. 2023;13:e070636.
2. Wilcock J., Hawthorne K., Reeve J., et al.
Are insect bites responsible for the rise in summer flucloxacillin prescribing in United Kingdom general practices? Family Practice. 2023;40(5–6):753–759.

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