# Insect Bites & Stings

Clinical Guideline

Urgent Care

**Obtain History & Physical**
Timing, location, type of insect
See Annotation A – D

**Is there concern for anaphylaxis?**
Criteria 1. Hives + other system *or*
Criteria 2. Known allergy + airway involvement or hypotension

Yes

***Give Epinephrine:***
- *<25kg (55lb) -> 0.15mg (EpiJr)*
- *≥25kg (55lb) -> 0.3mg (Epi)*

*See Urgent Care* Anaphylaxis guideline for further management details

No

**Tick exposure, large target lesion or other features concerning for Lyme disease?**

Yes

See Urgent Care Tick Bites and Lyme Disease guideline for further management details

No

**Determine type of reaction (Annotation E)**
Key Points: Timing, location, and type of insect (if known)

**Typical local reaction (including large local reactions and skeeter syndrome)**
- Starts within 6-12 hours, peaks at 24-48 hours then slowly improves
- Remove stinger if present
- Avoid opening pustules related to fire ant stings
- Administer cetirizine 1mg/ml in clinic.
- Recommend continued cetirizine at home and other symptomatic care*

**Toxic reaction to numerous stings**
- Follow anaphylaxis treatment workflow if symptoms indicate.
- Immediate transfer to ER for patients with significant reactions not amenable to epi.
- Prompt removal of any insects or stingers still attached to skin or entrapped in clothing.

**Papular Urticaria:**
- Consider in clinic cetirizine 1mg/ml
- Continue antihistamines daily until one week after symptom resolution.

**Bacterial super-infection concerns**
- Occurs more than 48- 72 hours since initial bite
- Obtain culture if open, weeping, purulence or crusting areas are present. Do not swab / culture intact skin
- Mild / superficial skin infections may be treated with topical mupirocin
- Cellulitis – see Annotation B. Treat with appropriate empiric oral antibiotic

**Urticaria without any other systemic symptoms or history of anaphylaxis:**
- Administer cetirizine 1mg/ml in clinic.
- Recommend continued cetirizine at home.

**Significant Reaction**
- Oral antihistamine (e.g., Cetirizine) daily, x 1 week *beyond resolution of symptoms.*
- Add diphenhydramine or hydroxyzine at night as needed.
- Prescription topical steroids to lesions:
  - Hydrocortisone 2.5% ointment to face or folds.
  - Triamcinolone 0.05% or 0.1% ointment or mometasone 0.1% ointment on the body only – twice a day for up to 10 days as needed.
  - **Do *not* prescribe** a class I topical steroid (ultra-high potency)
- *Consider a short course of oral steroids only for a very large symptomatic bite or sting, or numerous bites, especially if affecting function (vision, eating/ drinking, or ambulation). Use prednisone or prednisolone 1mg/kg daily up to 50 mg for 3-5 days.*
- Hymenoptera ( including sawflies, wasps, bees, and ants) stings are considered clean for the purposes of tetanus vaccination. A tetanus booster is not necessary unless soil exposure.

**Symptomatic care treatments**
- Calamine lotion or an itch relieving cream such as Sarna® or Aveeno®
- A paste of baking soda and water
- Cool compresses
- 1% hydrocortisone cream or ointment
- Ibuprofen or acetaminophen
- Elevate limb if the sting is on an extremity

**Patient & Family Education**
- Include in the AVS Urgent Care discharge instructions entitled “Insect Bite or Sting” (.ucdcinsectbite).
- Avoid topical products with local anesthetics or H1-antihistamines (such as diphenhydramine cream) due to the possibility of systemic absorption and contact hypersensitivity.
- Elevate an area of significant swelling.

**Follow up**
Recheck by PMD within 48 hours of treatment if there are concerns of developing or worsening infection.

## Annotations

### A. Definition & Etiology

1. Insect bites and stings are common and usually benign. Most reactions are mild and localized, but sometimes they are more pronounced and rarely even life-threatening. More advanced reactions include large local reactions and systemic allergic and anaphylactic reactions. A common concern is the possibility of a secondary bacterial infection, especially cellulitis. Secondary infections are relatively uncommon, but it is important to recognize and treat if present.
2. Typical reactions to bites and stings are caused by an immunologic response to proteins in the saliva of the insect. The more serious reactions are usually caused by an allergic reaction.

### B. Differential Diagnosis

1. Current or evolving anaphylaxis
2. Lyme Disease: consider if target-type lesion present, especially with a history of a tick bite
3. Secondary bacterial infection.
    - The stings of yellow jackets and fire ants are more likely to become infected than others.
    - Most infections occur as the result of scratching the lesion.
    - May be difficult to differentiate between allergic inflammation and inflammation caused by a secondary bacterial infection on exam. The timing of the symptoms is the most important clue to infection versus just inflammation.
    - Suspect infection when:
        - Redness, swelling and pain become dramatically worse three to five days after a sting or bite, when the typical large local reaction should begin to regress.
        - Symptoms worsen or are not improving after 1 to 2 days of treatment for inflammation.
        - Presence of fever (more than low grade).
        - Presence of pustules or purulent drainage
        - Significant tenderness to the site to touch; pain is more prominent than pr uritus.
        - Lymphangitis streaks may occur with either infection or large local reaction.

### C. Complications

1. Cellulitis and abscess considerations
    - Recommend puncture incision and drainage for abscess. Send culture.
    - Treat with Cephalexin for 5-7 days and change only if not responding or if culture confirms insensitivity. If concern of allergy or intolerance to cephalosporin or concern for MRSA, consider Clindamycin or TMP/Sulfa.

### D. Other considerations

1. Tetanus vaccination
    - Hymenoptera (large order of insects, including sawflies, wasps, bees and ants) stings are considered clean for the purpose of tetanus vaccination.
    - A tetanus booster is not necessary unless there was contamination with soil to the injured area.

## Annotations (Continued)

### E. Reaction type table

| REACTION TYPE | INSECT | NOTES |
|---|---|---|
| **Systemic allergic reactions and anaphylaxis** | Any | • Most dangerous immediate reaction to Hymenoptera stings (i.e. bees, wasps, hornets, and yellow jackets); occurs in up to 3% of stings<br>• Anaphylaxis may be rapid in onset and even cause death; it must be addressed immediately if there is any suspicion of this type of reaction<br>• Most systemic reactions to mosquito bites are topical; anaphylactic reactions to mosquito bites are very rare |
| **Toxic reaction** | Any | • Severe reaction to numerous stings. Symptoms may include nausea, vomiting, diarrhea, headache, vertigo, syncope, convulsions and fever. Rarely hemolysis, cardiac complications, renal failure, and rhabdomyolysis |
| **Delayed type reaction** | Any | • Serum sickness, vasculitis, neuritis, myocarditis, or encephalitis are rare |
| **Large local reaction (Skeeter syndrome)** | Mosquito | • Most common type of allergic reaction to mosquito bites (~10% of people develop)<br>• Typically consists of an itchy or painful area of redness, warmth, swelling, and/or induration that ranges from a few centimeter to more than 10 cm in diameter<br>• Develop within hours of the bite, progress over 8 hours to 1 to 2 days and resolve within 3 to 10 days<br>• May involve the entire periorbital region, much of the face or an entire extremity, especially in a younger child. May interfere with function of the eyes, mouth, or extremity<br>• A low grade fever and malaise may be present<br>• May occasionally have an ecchymotic appearance or be associated with blisters, vesicles, or bullae |
| **Typical local reaction** | Mosquito | • Immediate wheals or swelling with surrounding flares/redness<br>• Onset within minutes<br>• Delayed itchy, indurated/firm papules which peak in hours and may last for several days |
| | Fire ant | • Pustule-like lesions at the site of the sting within about 24 hours<br>• May be intensely pruritic |
| | Spider bite | • May cause target-type lesions (consider Lyme Disease as differential) |
| | Wasp, bee, or hornet | • Redness and an area of painful swelling (1-5 cm) at the site<br>• Onset within minutes and usually resolves within a few hours to a few days |

## References

1. Freeman, T. (2019). Bee, yellow jacket, wasp and other hymenoptera stings: Reaction types and acute management. UpToDate. Retrieved from http://www.uptodate.com
2. Goddard, J., Stewart, P. (2021). Insect and other arthropod bites. UpToDate. Retrieved from http://www.uptodate.com
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4. Schmitt, B. D. (2005). Itchy or painful insect bites brief version. Your Child's Health. New York, NY: Bantam Books.
5. Stevens DL, Bisno AL, Chambers HF, Dellinger EP, Goldstein EJ, Gorbach SL, Hirschmann JV, Kaplan SL, Montoya JG, Wade JC. (2014). Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the Infectious Diseases Society of America. Clinical infectious diseases: an official publication of the Infectious Diseases Society of America. Retrieved December 10, 2021, from https://pubmed.ncbi.nlm.nih.gov/24973422/.
6. Treatment information also provided by Joree Ruiz, PA, Dermatology, Children's Wisconsin, and by Jeanne Conner, APNP, Allergy/Asthma, Children's Wisconsin (personal communications, December 2021).

Please contact clinicalguidelines@childrenswi.org for questions or comments.

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