Guideline 9.4.3 – Envenomation from Tick Bites and Bee, Wasp and Ant Stings

Summary

Who does this guideline apply to?

This guideline applies to adults, children and infants.

Who is the audience for this guideline?

This guideline is for use by bystanders, first aiders and first aid training providers.

Summary of Recommendations

The Australian and New Zealand Committee on Resuscitation (ANZCOR) makes the following recommendations:

1. The major immediate risk to the health of persons bitten or stung by insects is anaphylaxis (severe allergic reaction), although this is rare. First aid should be focused on prevention, recognition and treatment of anaphylaxis [Good Practice Statement]
2. For insect stings where there is no history or evidence of allergy, treatment should be symptomatic with local measures such as cold packs [Good Practice Statement] except for ticks as the cold pack placement may disturb the tick, triggering an allergic reaction
3. Tick bite treatment should be freezing the tick in place and further treatment by a healthcare professional according to the advice at allergy.org.au and www.tiara.org.au [1,2] [Good Practice Statement]

Abbreviations

Abbreviation	Meaning/Phrase
ANZCOR	Australian and New Zealand Committee on Resuscitation

ASCIA	Australasian Society of Clinical Immunology and Allergy
TiARA	Tick-induced Allergies Research and Awareness
CoSTR	Consensus on Science with Treatment Recommendations
ILCOR	International Liaison Committee on Resuscitation

1.0 | Introduction

Single stings from a bee, wasp or ant, while painful, seldom cause serious problems except for persons who have a severe allergy to the venom. Multiple insect stings can cause severe pain and widespread skin reaction. Multiple stings around the face can cause severe local swelling and difficulty breathing even if the person is not known to be allergic to that insect.

It is important to remember that bee stings leave behind the venom sac and sting which continues to inject venom into the skin, whilst a wasp or ant may sting multiple times without leaving a venom sac attached.[3,4]

Ticks can inject a toxin that may cause local skin irritation or a mild allergic reaction, however **most** tick bites cause few or no symptoms.

In susceptible people, a tick bite may cause a severe allergic reaction or anaphylaxis, which can be life threatening. This can also occur in people with no previous exposure or known susceptibility. This means that the management of all tick bites requires caution as advised by Australasian Society of Clinical Immunology and Allergy (ASCIA).[1]

2.0 | Recognition

Symptoms and signs may include:

2.1 | Minor

- Immediate and intense local pain.
- Local redness and swelling.

2.2 | Major/Serious

- Severe allergic reaction/anaphylaxis may occur with insect and tick bites. (Refer to ANZCOR Guideline 9.2.7) The symptoms may also include abdominal pain, vomiting or other symptoms of gastroenteritis. (ANZCOR Guideline 9.2.7)
- Airway obstruction may result from swelling of the face and tongue due to anaphylaxis, or from insect stings in or around the mouth. This may occur immediately or over several hours and always requires urgent medical care
- While by far the majority of medically important tick bites are due to allergic reactions, in rare cases, potentially dangerous neurotoxic paralysis may develop over a period of time due to the venom of the Australian paralysis tick (genus *Ixodes*). In all cases where the person is unwell, refer for urgent medical review."
- In rare cases, potentially serious mammalian (red) meat allergy may develop due to a tick bite

3.0 | Management

- If the person is unresponsive and not breathing normally, commence resuscitation, follow the Basic Life Support Flowchart (ANZCOR Guideline 8).
- Move the person to a safe place.
- If the person has signs of anaphylaxis, follow First Aid Management of Anaphylaxis Guideline (ANZCOR Guideline 9.2.7).[5]
- In the case of a bee sting, remove the sting, by any means without compressing the venom sac e.g. scrape it out, as quickly as possible[3,4].
- In the case of a tick bite, follow the advice of ASCIA.[2] For small ticks (larvae and nymphs) use permethrin cream (available at pharmacies). For adult ticks, freeze with an ether containing spray- see tiara.org.au. Avoid the use of freezing or permethrin cream for ticks close to the eyes, genitals or in ear canal
- For tick bite, if in a remote location, or freezing is not possible, consultation with healthcare professionals is recommended. If this is not possible, assess whether there is a history of anaphylaxis to tick bite. If there is a history of anaphylaxis to tick bite, the person should be carrying an adrenaline (epinephrine) auto-injector (eg Epipen™) and this should be used according to ANZCOR Guideline 9.2.7. If attempting removal of ticks in remote locations where there is no known anaphylaxis to tick bite, do not squeeze the body of the tick; use the most fine tipped forceps available to grasp the tick as close as possible to the skin.[5]
- For all bites and stings, apply a cold compress to help reduce pain and swelling (except in the case of tick bites).
- Monitor the person for signs of severe allergic reaction (difficulty speaking, breathing difficulties, collapse, abdominal symptoms and generalized rash).
- Send for an ambulance if multiple stings to the face or tongue have occurred or there is a history of anaphylaxis to the sting or tick.

Instructional information regarding auto injectors can be accessed from the Australasian Society of Clinical Immunology and Allergy (ASCIA) webpage: http://www.allergy.org.au/health-professionals/anaphylaxis-resources.

Instructional information regarding killing and removing ticks can be accessed from the web link: Tick-induced Allergies Research and Awareness (TiARA) www.tiara.org.au and at www.allergy.org.au

Rationale for freezing ticks and removal by health professional

The recently published CoSTR from ILCOR on the removal of ticks advised against freezing ticks because it did not result in removal of any ticks.[6] In other countries, the rationale is that the greatest risk from tick bites is severe infections, such as Rickettsia infections, for which ticks are vectors. However, the problem in Australasia is tick allergy. Tick anaphylaxis is much more common in Australia than other countries (546 cases in a single Australian database, compared to 1 case report in the USA, 1 in France, 4 in Spain and 12 cases in Japan).[7] It is a newly recognized allergy like mammalian meat allergy after tick bite. The goal in Australasia is killing the tick *in situ*, to prevent transmission of tick allergens, which can be followed later by removal of the entire tick.[7] Tick bites in Australasia should be treated by freezing if possible and referred to a health professional for further treatment in distinction to the advice in the 2021 ILCOR CoSTR.

Acknowledgements

Australian Society of Clinical Immunology and Allergy (ASCIA)

Further Reading

ANZCOR Guideline 8 Cardiopulmonary Resuscitation

ANZCOR Guideline 9.2.7 First Aid Management of Anaphylaxis

References

1. Taylor B, Ratchford A, van Nunen S, Burns B. Tick killing in situ before removal to prevent allergic and anaphylactic reactions in humans: a cross-sectional study. Asia Pacific Allergy 2019;9:e15
2. http://www.tiara.org.au/how-to-remove-a-tick/ Accessed 12 June 2021
3. Visscher PK, Vetter RS, Camazine S. Removing bee stings. *Lancet* 1996;**348**:301-02.
4. White, J., *A Clinician's Guide to Australian Venomous Bites and Stings.* bioCSL Ltd. 235-240. https://biomedicalsciences.unimelb.edu.au/__data/assets/pdf_file/0004/3216739/A-Clinicians-Guide-to-Venomous-Bites-and-Stings-2013.pdf
5. Warrell, DA. (2019). Venomous Bites, Stings, and Poisoning: An Update. Infectious Disease Clinics of North America. 33(1):17-38.
6. Charlton NP, Carlson JN, Borra V, Singletary EM, and Zideman DA on behalf of the

International Liaison Committee on Resuscitation (ILCOR) First Aid and Pediatric Life Support Task Forces, Methods of Tick Removal: First Aid Systematic Review. 2021 February 17, 2021 Available from: http://ilcor.org (http://ilcor.org/)
7. Invited Opinion A Prof S van Nunen, ASCIA member, Convenor TiARA, received June 2021 available in worksheets at https://resus.org.au/worksheets-to-support-guidelines/.

About this Guideline

Search date/s	Sept 2020
Question/PICO:	P: For adults, children and infants, all hymenoptera bites and stings, including bees, wasps and ants I: Any first aid intervention C: No first aid O: Morbidity or mortality
Method:	1. Scoping review for all hymenoptera bites and stings, including bees, wasps and ants, but excluding ticks. The papers found and notes are shown in the attached Excel spreadsheet. The details of the searches are in the attached worksheet. 2. Systematic review of tick removal ILCOR CoSTR Feb 21. 3. Invited opinion from A Prof Sheryl van Nunen, ASCIA member, Convenor TiARA
Primary reviewers:	Finlay Macneil
Other consultation:	Geoffrey Newman-Martin, Sheryl van Nunen
Worksheet	https://resus.org.au/worksheets-to-support-guidelines
Approved:	12 November 2021
Guideline superseded:	ARC Guideline 9.4.3 - 2016

Referencing this guideline

When citing the ANZCOR Guidelines we recommend:

ANZCOR, 2026, Guideline 9.4.3 – Envenomation from Tick Bites and Bee, Wasp and Ant Stings, accessed 29 September 2026,
https://www.anzcor.org/home/first-aid/guideline-9-4-3-envenomation-from-tick-bites-and-bee-wasp

-and-ant-stings