Guideline 9.2.5 – First Aid for Asthma

Summary

To whom does this guideline apply?

This guideline applies to adults and children.

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 for the first aid treatment of acute asthma:

1. Follow the person's Asthma Management Plan [Good Practice Statement].
2. If no Asthma Management Plan in place, start treatment with reliever medications following the Asthma First Aid Plan as soon as practicable [Good Practice Statement].
3. If the person does not improve within 5 minutes, or is having a severe asthma attack, send for an ambulance [Good Practice Statement].

Abbreviations

Abbreviation	Meaning/Phrase
ANZCOR	Australian and New Zealand Committee on Resuscitation
PPE	Personal Protective Equipment

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1.0 | Introduction

Asthma is a disorder of the smaller airways of the lungs. People with asthma have sensitive airways which can narrow when exposed to certain triggers, leading to difficulty in breathing. This is known as an acute exacerbation of asthma, or asthma attack.[1-3]

Three main factors cause the airways to narrow:[2]

1. The muscle around the airway tightens (bronchoconstriction).
2. The inside lining of the airways becomes swollen (inflammation).
3. Extra mucus (sticky fluid) may be produced.

In asthma, symptoms are made worse by triggers. Every person's asthma is different and not all people will have the same triggers. Triggers are more likely to provoke asthma in those with poorly controlled asthma. Triggers can include:[3-5]

- respiratory infection
- irritants (e.g. cigarette, woodfire or bushfire smoke, perfumed or cleaning products)
- inhaled allergens (e.g. dust mites, mould spores, animal dander, grass/tree pollen)
- cold air, exercise, laughing/crying
- non steroidal anti-inflammatory agents (e.g. aspirin, ibuprofen)
- sulfite additives (food preservatives)
- food allergy – while usually accompanied by other symptoms such as rash or vomiting, isolated severe asthma may occur as the only presentation
- food colourings and flavours
- emotional triggers such as stress.

2.0 | Recognising an Asthma Attack

Asthma can be recognised by the following signs and symptoms:[1-4]

- a dry, irritating, persistent cough, particularly at night or early morning, with exercise or activity
- chest tightness
- shortness of breath
- wheeze (high pitched whistling sound during breathing).

2.1 | Signs and symptoms of a severe asthma attack include some or all of the following:

- gasping for breath (with or without wheeze)[1, 3, 6]
- inability to speak more than one or two words per breath[1, 3, 6]
- severe chest tightness[1, 3, 6]
- 'sucking in' of the throat and rib muscles, use of shoulder muscles or bracing with arms to

help breathing[1, 3, 6]
- blue discolouration around the lips[1, 3, 6]
- pale and sweaty skin[1, 3, 6]
- distress and anxiety[1, 3, 6]
- decreased level of consciousness[1, 3, 6]
- little or no improvement after using reliever medication/s[1, 3, 6]
- symptoms rapidly getting worse or using reliever more than every two hours.[1, 3, 6]

As well as the above symptoms, young children may appear restless, unable to settle or become drowsy. They may have problems eating or drinking due to shortness of breath and may experience vomiting.

An asthma attack can take anything from a few minutes to a few days to develop. Other conditions can mimic asthma, but asthma is the common cause particularly in a person known to have asthma.[7] If the person has a history of anaphylaxis and is carrying an epinephrine (adrenaline) autoinjector (e.g. EpiPen™ and Anapen™), consider this possibility and treat according to ANZCOR Guideline 9.2.7.

3.0 | Managing an Asthma Attack

Many people with asthma have personal Asthma Action Plans which have a series of steps to follow if they are experiencing an asthma attack. If a person has an Asthma Action Plan, follow the plan.[8, 9]

If there is no Asthma Action Plan in place or you are unable to locate an action plan then use the Asthma First Aid Plan below (refer to section 3.1).

If a person is experiencing any signs of severe asthma (refer to section 2.1) send for an ambulance immediately and then continue to follow the person's Asthma Action Plan/Asthma First Aid Plan till the ambulance arrives.

If a severe allergic reaction is suspected, follow First Aid Management of Anaphylaxis (refer to ANZCOR Guideline 9.2.7).

*Many fatal cases of food-induced anaphylaxis occur in those with asthma.[10] In persons with asthma known to be at risk from anaphylaxis where it is uncertain whether the person is suffering from asthma or anaphylaxis, it is appropriate to administer an epinephrine (adrenaline) auto-injector first followed by asthma reliever medication. The harm of not treating anaphylaxis outweighs the risk of unnecessary epinephrine (adrenaline) administration [Good Practice Statement].

If at any time the person becomes unresponsive and is not breathing normally, commence resuscitation following the Basic Life Support Flowchart (refer to ANZCOR Guideline 8).

3.1 | Asthma First Aid Plan

<table>
<tr><th>Step</th><th>Australia (4 x 4 x 4)[1]</th><th>New Zealand (6 x 6 x 6)[11]</th></tr>
<tr><td>1</td><td colspan="2">Sit the person comfortably upright. Be calm and reassuring. Do not leave the person alone.</td></tr>
<tr><td rowspan="2">2</td><td>Without delay give four separate puffs of a reliever inhaler*. The medication is best given one puff at a time via a spacer device.[12] Ask the person to take four breaths from the spacer after each puff of medication.</td><td>Without delay give six separate puffs of a reliever inhaler*. The medication is best given one puff at a time via a spacer device.[12] Ask the person to take six breaths from the spacer after each puff of medication.</td></tr>
<tr><td colspan="2">If a spacer is not available, simply use the inhaler. Use the person’s own inhaler if possible. If not, use the first aid kit inhaler if available or borrow one from someone else.</td></tr>
<tr><td>3</td><td>Wait four minutes. If there is little or no improvement give another four puffs.</td><td>Wait six minutes. If there is little or no improvement give another six puffs.</td></tr>
<tr><td rowspan="2">4</td><td colspan="2">If there is still no improvement, send for an ambulance immediately.</td></tr>
<tr><td>Keep giving four puffs every four minutes until the ambulance arrives.</td><td>Keep giving six puffs every six minutes until the ambulance arrives.</td></tr>
</table>

*The most common reliever inhaler is salbutamol (Ventolin ®, Asmol ®, Zempreon ® (grey/blue inhaler). If a person has a different reliever you should use this instead.[8, 13, 14]

No harm is likely to result from giving a reliever inhaler to someone without asthma [Good Practice Statement].

If oxygen is available, it should be administered by a person trained in its use, following Use of Oxygen in Emergencies (refer to ANZCOR Guideline 9.2.10) [Good Practice Statement].

3.2 | Diagrams for the use of devices

WITH SPACER
Assemble the spacer. Remove inhaler cap and shake well. Place the inhaler upright into the spacer. Place the spacer mouthpiece into the victim's mouth, between the teeth with the lips sealed around it. Press firmly on the inhaler to fire one puff into the spacer. Ask the victim to breathe in and out normally for four to six breaths via the spacer. Repeat this promptly until four to six puffs have been given. Remember to shake the inhaler before each puff.

WITHOUT SPACER
When a spacer is unavailable, shake the inhaler. Place the mouthpiece into the victim's mouth, between the teeth with the lips sealed around it. Press firmly on the inhaler to administer one puff as the victim inhales slowly and steadily. Slip the inhaler out of the victim's mouth. Ask the victim to hold their breath for four seconds or as long as comfortable. Breathe out slowly away from the inhaler. Repeat this promptly until four to six puffs have been given. Remember to shake the inhaler before each puff.

4.0 | Regional differences in recommended dose and intervals

There are differences in first aid treatment recommendations between Australia and New Zealand.[1, 11] Additionally, treatment recommendations for the clinical management of acute asthma by health professionals are different again. Evidence from scientific literature does not suggest any ideal reliever type, reliever dosage or dosage interval for managing acute asthma in a first aid setting.[8, 14-18]

In Australia, the National Asthma Council Australia recommends taking 4 puffs every 4 minutes (4 x 4 x 4) whereas in New Zealand, the Asthma and Respiratory Foundation NZ recommend taking 6 puffs every 6 minutes (6 x 6 x 6).[1, 11]

Both the 2015 and 2021 International Consensus on First Aid Science did not provide any update on dosage or interval between doses for asthma management.[18, 19] This guideline is not intended to contradict current recommendations of peak asthma bodies in Australia or in New Zealand – the ANZCOR recommended treatment in 3.1 accounts for these regional differences.

Further Reading

ANZCOR Guideline 5 Breathing

ANZCOR Guideline 8 Cardiopulmonary Resuscitation

ANZCOR Guideline 9.2.7 Anaphylaxis – First Aid Management

ANZCOR Guideline 9.2.10 The Use of Oxygen in Emergencies

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About this guideline

Search date/s	September 2021 and January 2023
Question/PICO:	**P** All adults and children experiencing (symptoms consistent with) an acute exacerbation of asthma **I** Any first aid intervention **C** No intervention **O** Mortality, hospitalisation, worsening of symptoms **S** Randomized controlled trials (RCTs) and non-randomized studies (non-randomized controlled trials, interrupted time series, controlled before-and-after studies, cohort observational studies) Must include English abstract **T** $\geq$ 2010,
Method:	Scoping search of published literature (see worksheet)
Primary reviewers:	Lakshmi Sunderasan, Finlay Macneil

Other consultation	Kevin Nation
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