



**National
Asthma
Council** AUSTRALIA

National Asthma Council Webinar Series

Asthma Medications and Devices Session 2

Asthma Best Practice For Health Professionals

Supported by the Australian
Government Department of Health

Welcome

- Topics Covered Today
 - Asthma Medications
 - Medication Delivery Devices
 - Correct Device Technique

Learning Objectives

- Identify the different classes of medications used in asthma management
- Describe the importance of correct device technique in maintaining asthma control
- Demonstrate correct technique for the different asthma devices

Medication classes for asthma

- There are two main classes of medication:
 - Relievers
 - Short acting beta₂ agonists
 - Preventers
 - Non steroidal
 - Inhaled corticosteroids
 - Long acting beta₂ agonists
 - Muscarinic antagonists
- Other medications

ASTHMA & COPD MEDICATIONS

SABA RELIEVERS



Bricanyl Turbuhaler †[▲]
terbutaline 500mcg



Ventolin Inhaler †[▲]
salbutamol 100mcg



Airomir Autohaler †[▲]
salbutamol 100mcg



Asmol Inhaler †[▲]
salbutamol 100mcg

NON STEROIDAL PREVENTERS



Singulair Tablet [▲]
montelukast
4mg • 5mg • 10mg



Montelukast Tablet [▲]
montelukast
4mg • 5mg • 10mg
Generic medicine suppliers



Intal Inhaler †
sodium cromoglycate
1mg • 5mg
*Intal Forte



Tilade Inhaler †
nedocromil sodium
2mg

ICS PREVENTERS



Flixotide Inhaler †
fluticasone propionate
50mcg* • 125mcg • 250mcg
*Flixotide Junior



Fluticasone Cipla Inhaler †
fluticasone propionate
125mcg • 250mcg



Flixotide Accuhaler †
fluticasone propionate
100mcg* • 250mcg • 500mcg



Pulmicort Turbuhaler †
budesonide
200mcg • 400mcg



QVAR Inhaler †
beclomethasone
50mcg • 100mcg



QVAR Autohaler †
beclomethasone
50mcg • 100mcg

SAMA MEDICATION



Atrovent Metered Aerosol †[▲]
ipratropium 21mcg



Alvesco Inhaler †
ciclesonide
80mcg • 160mcg

ICS/LABA COMBINATIONS



Symbicort Turbuhaler †
budesonide/formoterol
100/6 • 200/6 • 400/12 #



DuoResp Spiromax †
budesonide/formoterol
200/6 • 400/12 #



Symbicort Rapihaler †
budesonide/formoterol
50/3 • 100/3 • 200/6 #



Flutiform Inhaler †
fluticasone propionate/formoterol
50/5 • 125/5 • 250/10



Seretide MDI †
fluticasone propionate/salmeterol
50/25 • 125/25 • 250/25 #



Fluticasone + Salmeterol Cipla Inhaler †
fluticasone propionate/salmeterol
125/25 • 250/25 #



Seretide Accuhaler †
fluticasone propionate/salmeterol
100/50 • 250/50 • 500/50 #



Breo Ellipta †
fluticasone furoate/vilanterol
100/25 # • 200/25

all units in mcg

LAMA MEDICATIONS



Spiriva Respimat # †
tiotropium 2.5mcg



Spiriva Handihaler #
tiotropium 18mcg



Bretaris Genuair #
acclidinium 322mcg



Seebri Breezhaler #
glycopyrronium 50mcg



Incruse Ellipta #
umeclidinium 62.5mcg



Trelegy Ellipta [▲]
fluticasone furoate/
umeclidinium/vilanterol
100/62.5/25

LAMA/LABA COMBINATIONS



Spiolto Respimat [▲]
tiotropium/olodaterol
2.5/2.5



Brimica Genuair [▲]
acclidinium/formoterol
340/12



Ultibro Breezhaler [▲]
indacaterol/glycopyrronium
110/50



Anoro Ellipta [▲]
umeclidinium/vilanterol
62.5/25

all units in mcg



This chart was developed independently by the National Asthma Council Australia with support from Boehringer-Ingelheim, DSK Australia, Mundipharma and Teva Pharma Australia

National Asthma Council Australia
Leading the attack against asthma

RESOURCES

TREATMENT GUIDELINES

Australian Asthma Handbook: asthmahandbook.org.au
COPD-X Plan: copdx.org.au

INHALER TECHNIQUE

How-to videos, patient and practitioner information
nationalasthma.org.au
Inhalers/MDIs should be used with a compatible spacer

LABA MEDICATIONS



Oxis Turbuhaler †
formoterol
4mcg • 12mcg



Serevent Accuhaler †
salmeterol
50mcg

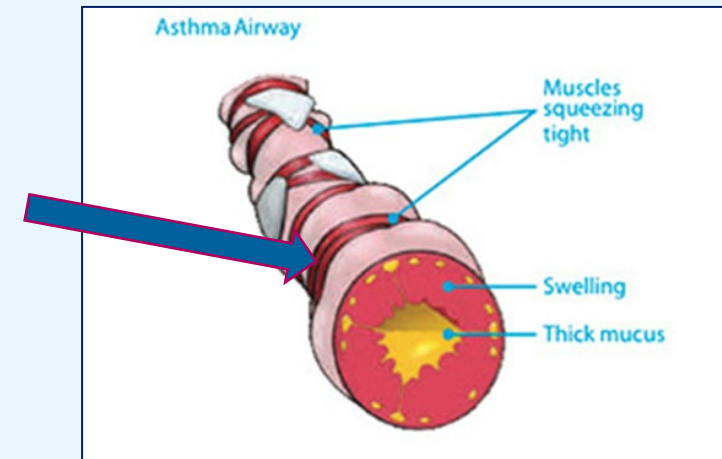


Onbrez Breezhaler †
indacaterol
150mcg • 300mcg

Relievers

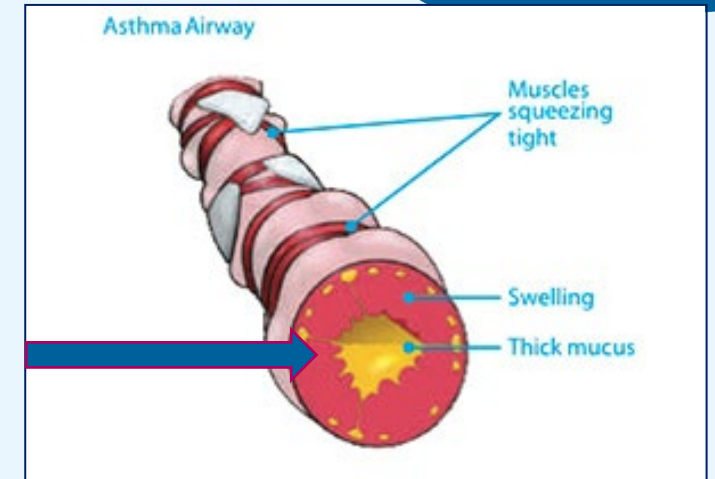
Short-acting beta₂ agonists (SABAs)

- Used on an as needed basis (PRN)
- Have a direct bronchodilator effect (up to 4h)
 - Works within minutes
 - Relieve the symptoms of asthma due to airway narrowing
- Mainstay for acute relief of asthma symptoms
- Relievers include:
 - *Ventolin, Asmol, Airomir*
 - *Bricanyl*
- Common side effects may include:
 - Tremors/shakes/palpitations
 - Hyperactivity in children



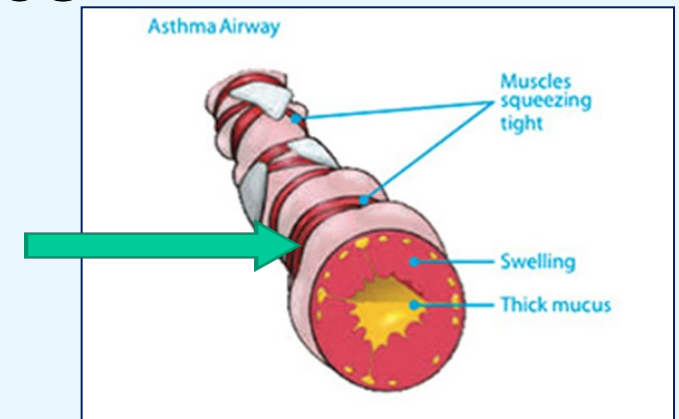
Preventers

- Have anti-inflammatory properties
- Taken regularly
- Preventers include:
 - Non steroidal
 - Oral montelukast (e.g. *Singulair*)
 - Cromones (e.g. *Intal*)
 - Inhaled corticosteroids (ICS)
 - budesonide (*Pulmicort Turbuhaler*), fluticasone propionate (*Flixotide*, *Fluticasone Cipla*, *Axotide*), ciclesonide (*Alvesco*), beclometasone (*Qvar*), fluticasone furoate (*Arnuity Ellipta*)
- ICS side effects may include:
 - Common: throat irritation, dysphonia, oral thrush
 - Long-term high ICS dose use: e.g. cataracts, osteoporosis
- Give lowest possible dose to maintain good asthma control



Long-acting beta₂ agonists (LABAs)

- Produce prolonged bronchodilation
- **For asthma: SHOULD ONLY BE PRESCRIBED WITH ICS**
 - Safer than using alone
 - More effective than increasing the dose of ICS
- Usually taken regularly to reduce symptoms
- LABAs for asthma include:
 - Formoterol (Oxis) - onset of action 1–3 minutes
 - Salmeterol (Serevent) - onset of action 15–20 minutes
- Side-effects similar to relievers

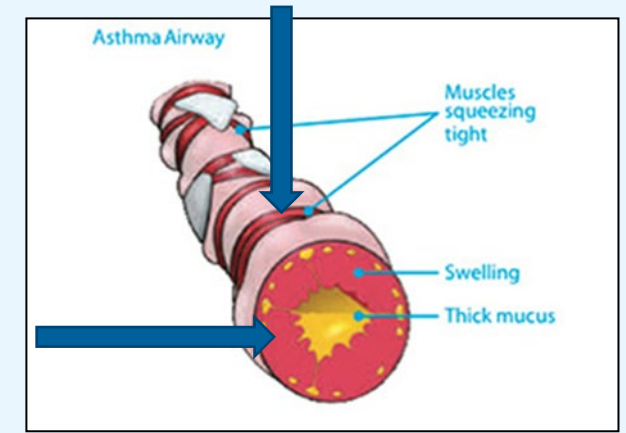


Combination therapy

- A single device consisting of a preventer (ICS) and a long acting beta2 agonist (LABA)

Common combinations:

- Fluticasone propionate/salmeterol (*Seretide, Fluticasone & salmeterol Cipla, Salplus F, Pavtide*)
 - Budesonide/formoterol (*Symbicort, DuoResp Spiromax*)
 - Fluticasone furoate/vilanterol (*Breo Ellipta*)
 - Fluticasone propionate/formoterol (*Flutiform*)
-
- Side effects: due to ICS - dysphonia, oral thrush



Muscarinic antagonists for asthma

- *Atrovent* (Ipratropium bromide)
 - Only to be used for **severe acute asthma** together with a short acting bronchodilator e.g. in a hospital emergency department
- *Spiriva Respimat* (Tiotropium) For children >6 and adults with moderate/severe asthma as an add on therapy
 - Currently on high dose ICS & LABA combination therapy
 - Had >1 severe flare up within previous 12mths

Other medications

- Oral corticosteroid medications
 - Potent anti-inflammatory agents
 - Reserved for use with severe flare-ups of asthma
 - No need for tapering of courses under 2 weeks
- Severe asthma medications - criteria to access,* under a specialist and administered by injection
 - Omalizumab (*Xolair*)
 - Add on treatment for severe allergic asthma > 6 years old
 - Mepolizumab (*Nucala*)
 - Add on treatment for severe eosinophilic asthma >12 years old
 - Benralizumab (*Fasenra*)
 - Add on treatment for severe eosinophilic asthma >12 years old

Inhaler devices for Asthma

Inhaled medications

- Deliver medication directly to airways
- Quicker onset of action
- Reduce risk of potential systemic adverse effects



Inhaler devices

- Up to 90% of people use their devices incorrectly
- 22–56% of health care providers have never received any formal education on device usage
- Clear instruction and physical demonstration is essential
- Correct technique is not maintained unless instructions are repeated regularly

“matching the right inhaler to the right patient is key to ensuring effective therapy and good compliance”

Roche N,& Dekhuijzen R *Journal of Aerosol Medicine & Pulmonary Drug Delivery* Vol29, Number 0, 2016

Consequences of incorrect device use

- Reduced deposition of medication to the lungs
- Increased risk of oral side effects from ICS
- Loss of short-acting beta₂ agonist (SABA) effect leading to:
 - poorer asthma symptom control
 - overuse of medication
 - greater burden on medical services
 - 50% increased risk of hospitalisation
 - Increased emergency department visits
 - Increased use of oral corticosteroids
 - reduced quality of life

Types of inhalers

- Manually-actuated pressurised metered-dose inhalers (pMDIs) (conventional puffer)
- Breath-actuated pressurised metered-dose inhalers (BA pMDIs)
- Dry powder inhalers (multi-dose and capsule types) (DPIs)
- Soft mist inhalers (SMIs)

7 Steps to using an inhaler device

1. Prepare the inhaler device
2. Prepare or load the dose
3. Breathe out, fully and gently, but not into the inhaler
4. Place inhaler mouthpiece in the mouth and seal the lips around the mouthpiece
5. Breathe in:
 - **pMDI and SMI: Slow, steady and deep**
 - **DPI: Quick and deep**
6. Remove inhaler from the mouth and hold the breath for up to 10 seconds
7. Wait for a few seconds then repeat as necessary

General tips - dry powder devices

- Do not need to be shaken
- Must be held correctly as per device instructions
- Hold breath after inhalation (5-10 seconds)
- Breathe out away from the device
- If a capsule device, ensure capsule is pierced correctly and discarded after use



General tips - metered dose inhalers

- Must be shaken between each dose
- Must be held upright
- Should be used with a spacer and a mask for young children



Spacer and pMDI suggested checklist

1. Assemble spacer (if necessary)
2. Remove inhaler cap
3. Check dose counter (if applicable)
4. Hold inhaler upright and shake well
5. Insert inhaler upright into spacer
6. Put mouthpiece between teeth without biting and close lips to form good seal
7. Breathe out gently, into the spacer
8. Hold spacer horizontal and press down firmly on canister once
 - a) Breathe in slowly, deeply and fully, hold breath for about 5 seconds (**recommended**)

OR

- a) Breathe in and out normally for 4 breaths (tidal breathing)
9. Remove spacer from mouth
10. Breathe out gently
11. Remove inhaler from spacer
12. If an extra dose is needed, repeat steps 4 to 13
13. Replace cap and disassemble spacer

MDI/Puffer suggested checklist

1. Remove cap and check dose counter (if applicable)
2. Hold inhaler upright and shake well
3. Breathe out gently, away from the inhaler
4. Put mouthpiece between teeth (without biting) and close lips to form good seal
5. Start to breathe in slowly through mouth and, at the same time, press down firmly on canister
6. Continue to breathe in slowly and deeply
7. Hold breath for about 5 seconds or as long as comfortable
8. While holding breath, remove inhaler from mouth
9. Breathe out gently, away from the inhaler
10. If an extra dose is needed, repeat steps 2 to 10
11. Replace cap



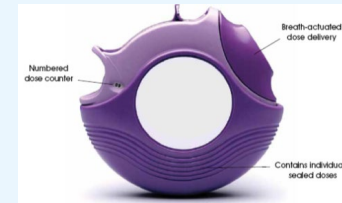
Autohaler suggested checklist



1. Remove cap
2. Hold inhaler upright and shake well
3. Push lever up
4. Breathe out gently, away from inhaler
5. Put mouthpiece between teeth (without biting) and close lips to form a seal
6. Breathe in slowly and deeply. Keep breathing in after “click” is heard
7. Hold breath for about 5 seconds or as long as comfortable
8. While holding breath, remove inhaler out of mouth
9. Breathe out gently, away from inhaler
10. Push lever down
11. If extra doses are needed, repeat from step 2
12. Replace cap

Accuhaler suggested checklist

1. Check dose counter
2. Open cover using thumb grip
3. Holding horizontally, load dose by sliding lever until it clicks
4. Breathe out gently, away from inhaler
5. Put mouthpiece in mouth with out biting and close lips to form a good seal, keep inhaler horizontal
6. Breathe in steadily and deeply
7. Hold breath for about 5 seconds or as long as comfortable
8. While holding breath, remove inhaler from mouth
9. Breathe out gently, away from inhaler
10. Close cover to click shut
11. If an extra dose is prescribed (not generally recommended), repeat steps starting at step 2



Ellipta suggested checklist

1. Check dose counter (do not shake the inhaler)
2. Slide to cover down until a click is heard
3. Breathe out gently, away from inhaler
4. Put mouthpiece in mouth and close lips to form a good seal. Do not block air vent with your fingers.
5. Breathe in steadily and deeply
6. Hold breath for about 5 seconds or as long as comfortable
7. While holding breath, remove inhaler from mouth
8. Breathe out gently, away from inhaler
9. Close the cover.



Spiromax suggested checklist

1. Check dose counter (do not shake the inhaler)
2. Hold inhaler upright
3. Open mouthpiece cover down until a click is heard
4. Breathe out gently, away from inhaler
5. Place mouthpiece in mouth between teeth and close lips to form a good seal. Do not block air vent
6. Breathe in forcefully and deeply
7. Hold breath for 5 seconds or as long as comfortable
8. While holding breath, remove inhaler from mouth
9. Breathe out gently, away from inhaler
10. Close the mouthpiece cap



Turbuhaler suggested checklist

1. Unscrew and remove cover (do not shake)
2. Check dose counter
3. Keep inhaler upright while twisting grip at the base
4. Twist around and then back until click is heard
5. Breathe out gently, away from inhaler
6. Put mouthpiece between teeth without biting and close lips to form a good seal. Do not cover the air vents.
7. Breathe in strongly and deeply
8. Hold breath for 5-10 seconds or as long as comfortable
9. Remove inhaler from mouth
10. Breathe out gently, away from the inhaler
11. If an extra dose is needed, repeat steps 3 to 10
12. Replace cover

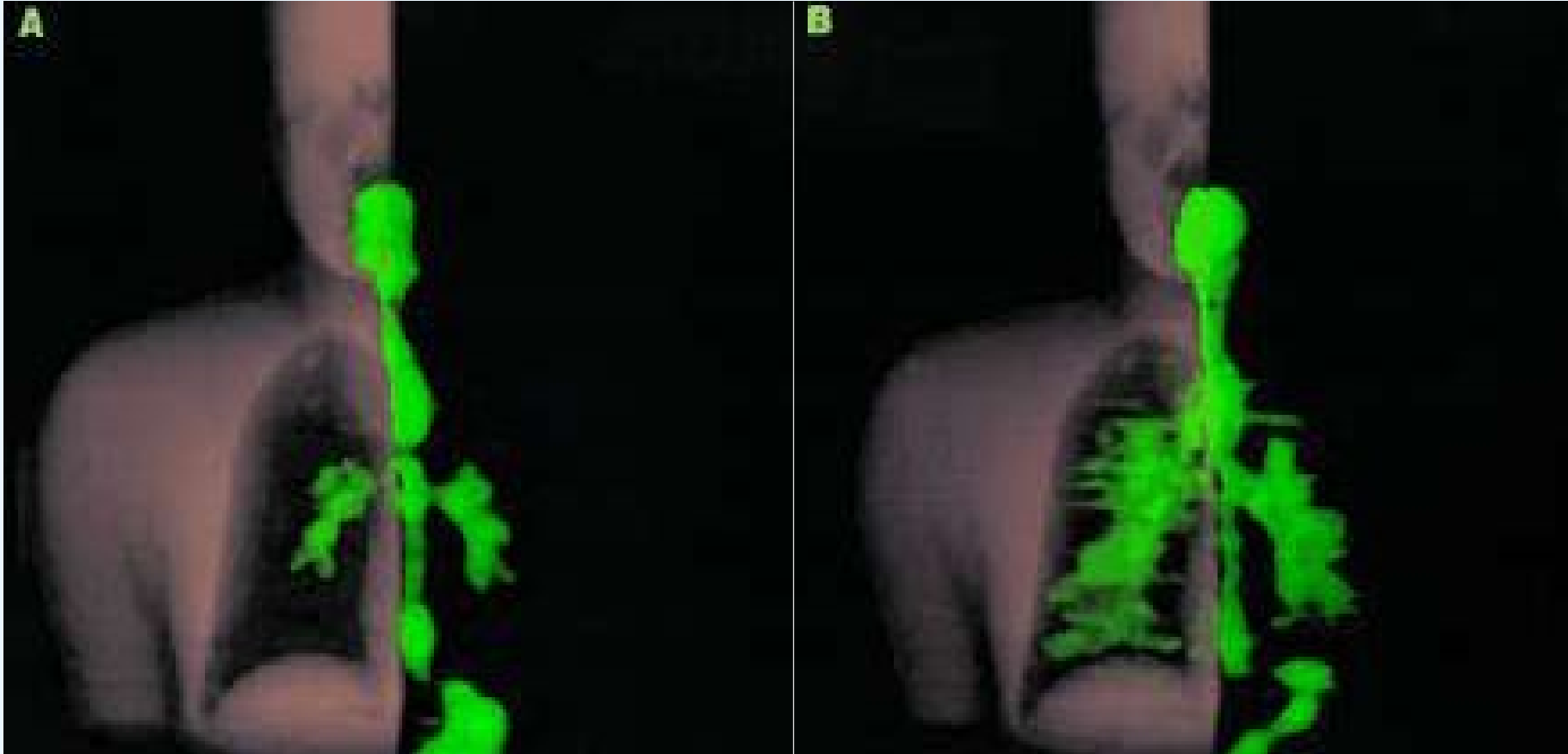


Respimat suggested checklist

1. First time load cartridge and prime device
2. Check the dose counter
3. Hold upright and keeping cap closed **TURN** base in direction of arrows until you hear a click
4. Flip cap **OPEN** until clicks
5. Breathe out, away from inhaler
6. Put mouthpiece between teeth without biting and close lips to form a good seal. Do not cover the air vents
7. Start breathing in slowly and deeply **PRESS** the button to release the dose, keep breathing in
8. Hold breath for 5 seconds or as long as comfortable
9. Remove Respimat® from mouth
10. Breathe out gently, away from inhaler
11. Close cap
12. Repeat 2-7 for a full dose of 2 inhalations



MDI & spacer deposition



PET images of TAA deposition without (A) and with (B) use of spacer during inhalation
Berridge MS et al J Nucl Med 2000

Care of spacers

- Cleaning for personal use about once a month and after the resolution of any respiratory tract infection
 - Warm soapy water
 - No rinsing or towel drying
 - Air dry overnight
- Replacement
 - Review every 6-12 months
 - Check structure for cracks and valve function

For more detailed information see:

<https://www.asthmahandbook.org.au/management/devices/spacers>

Nebulisers

- **Used only for patients**
 - With severe or life-threatening asthma requiring continuous nebulised salbutamol and oxygen
 - With complex comorbidities
- **Not recommended for home use**
 - Expensive, need power source
 - Inefficient, only 10% delivered to lower airways
 - Regular 12 monthly servicing and cleaning essential to achieve optimal response
 - New tubing and mask every 3 months
- **Nebulisers and COVID 19- minimise use**
 - Risk of aerosol particles



Resources:

- www.astmahandbook.org.au
 - current Australian asthma guidelines- online resource
- www.nationalasthma.org.au
 - Videos, brochures, charts- free to order online
- www.sensitivechoice.com
 - Consumer resources, information

Health Professional Network: nationalasthma.org.au

Twitter: [@asthmacouncilau](https://twitter.com/asthmacouncilau)

Facebook: [National Asthma Council Australia](https://www.facebook.com/NationalAsthmaCouncilAustralia)