



National
Asthma
Council AUSTRALIA

National Asthma Council Webinar Series

Paediatric Asthma Update in 2020 Session 3

Asthma Best Practice For Health Professionals

Supported by the Australian
Government Department of Health

Welcome

- Topics Covered Today
 - Australian Asthma Handbook
 - Paediatric asthma pathophysiology
 - Triggers
 - Diagnostic principles in children
 - Management principles in children
 - Written Asthma Action Plans in children
 - Acute medical management of children in Primary Care
 - Asthma and COVID 19 guidelines

Learning Objectives

- Define the pathophysiology of paediatric asthma
- Identify the steps involved in the diagnosis of Paediatric asthma - referring to the Australian Asthma Handbook
- Describe the classification and management of asthma across the different ages in children
- Summarise the important information to be included in a Written Asthma Action Plan
- Define the steps in managing acute asthma in primary care

Australian Asthma Handbook

www.asthmahandbook.org.au

The screenshot shows the homepage of the Australian Asthma Handbook. At the top, there is a dark blue navigation bar with menu items: "Diagnosis", "Management", "Acute Asthma", and "Clinical Issues", each with a dropdown arrow. A search icon is located in the top right corner. The main content area features a large background image of a child swinging on a swing set. Overlaid on this image is the title "Australian Asthma Handbook" and the subtitle "The National Guidelines for Health Professionals". Below the title is a search bar with the placeholder text "Search for a symptom, resource or diagnosis" and a "Search" button. Underneath the search bar, there are "Popular Searches" for "Thunderstorm", "Older Adults", and "Prevention". Three icons represent "Diagnosis" (stethoscope), "Management" (clipboard with checkmark), and "Resources" (book). A "Recommended for you" section follows, with a left arrow and a right arrow. It contains three article thumbnails: "Investigating asthma-like symptoms in adolescents and young adults" (showing a woman), "Investigating new asthma-like symptoms in older adults" (showing a man), and "Diagnosing asthma in children" (showing a smiling child).

National Asthma Council www.nationalasthma.org.au

The screenshot shows the National Asthma Council Australia website. At the top, there is a navigation bar with the following items: Council, Handbook, and Sensitive Choice. Below this is a dark blue navigation menu with dropdowns for Understanding Asthma, Living with Asthma, Health Professionals, and Asthma First Aid (which is highlighted in pink). To the right of the menu are links for About Us, News & Events, and Support Us, along with a search icon.

The main content area features a large blue banner with the text: "The National Asthma Council Australia" and "We are the national authority for asthma knowledge, setting the standard for asthma care." To the right of the banner is a photograph of a smiling female healthcare professional with a stethoscope.

Below the banner, there are several promotional cards:

- Australian Asthma Handbook:** A card with the National Asthma Council logo and the text "Major new edition" and "Australia's National Guidelines for Asthma Management". A dark blue bar at the bottom of this card says "Version 2.0 online now!".
- COVID-19 and your asthma patients:** A card with the text "It's crucial for people with asthma to maintain good asthma control as novel coronavirus (COVID-19) spreads." and a "Learn more" link with a right-pointing arrow.
- Celebrating respiratory nurses on International Nurses Day:** A card with the text "This month, we're acknowledging the important work of nurses and sharing stories from those working in respiratory care." and a "Learn more" link with a right-pointing arrow.

The bottom of the screenshot shows a Windows taskbar with the search bar, taskbar icons for various applications, and system tray information including the date and time (1:30 PM, 11/05/2020).

Children and Asthma Facts

- Asthma is:
 - One of the most common childhood conditions
 - The most common cause for presentation to primary care, emergency departments and for admission to hospital in children
- 20-25% of hospital admissions for asthma occur in February
- Asthma is more common in boys than girls aged 0-14, but more common in females aged 15 and over
- Not all children with wheeze have asthma: 2 out of 3 children with recurrent wheeze aged 1-5 don't have asthma at age 6
- 21% of children aged 1-12 who have asthma reported disturbed sleep from asthma over the previous 4 weeks¹

Remember

- Asthma is a chronic lung disease, which can be controlled but not cured
- Asthma is defined by the presence of **both**:
 - excessive variation in lung function
 - variable respiratory symptoms

Narrowing of the airway is due to:

- Inflammation of the lining of the airway
- Constriction of the smooth muscles in the walls of the airway
- Increased mucous production

Triggers for Asthma in Children

Triggers vary among children and symptoms can often be delayed after exposure to the trigger.

Common Triggers:

- Respiratory infections such as the common cold
- Exposure to cigarette smoke, E-cigarettes and water pipes
- Weather conditions, such as cold air, rapid temperature changes
- Allergens, animals, pollens or mould, outdoor air pollution
- Exercise

Children: 0-12 months

- **Wheezing infants aged less than 12 months should not be treated as asthma**
- Wheezing in this age group is most commonly due to acute viral bronchiolitis or to small and/or floppy airways
- Advice should be obtained from a paediatric respiratory physician or paediatrician before administering short-acting beta₂ agonists, systemic corticosteroids or inhaled corticosteroids to an infant under 12 months

Children: 1-5 years Diagnosis

Many infants and preschoolers wheeze when they have viral respiratory infections and may not have asthma

- Diagnosis is based on:
 - History – family history of asthma, personal history of eczema or allergic rhinitis, maternal smoking during pregnancy, previous wheezing episodes, noisy breathing, frequency and timing of previous episodes
 - Physical examination – conduct a general physical examination, observe for signs of rhinitis, observe breathing, auscultation for wheeze (wheeze is suggestive, but not diagnostic), look at the shape of the chest
 - A treatment trial - response to inhaled bronchodilator



Children: 1-5 years Management

- Manage symptoms with as-needed reliever therapy during wheezing episodes in children that have been shown to be salbutamol-responsive in a treatment trial
- A small proportion may need a regular preventer for symptoms (wheezing, cough, breathlessness) that occur at least 4-6 weekly and disrupt child's sleep or play
 - Start with a low dose inhaled corticosteroid or montelukast
- Provide parents/carers with a written asthma action plan
- pMDI with spacer with or without a mask remain the recommended first line choice of device

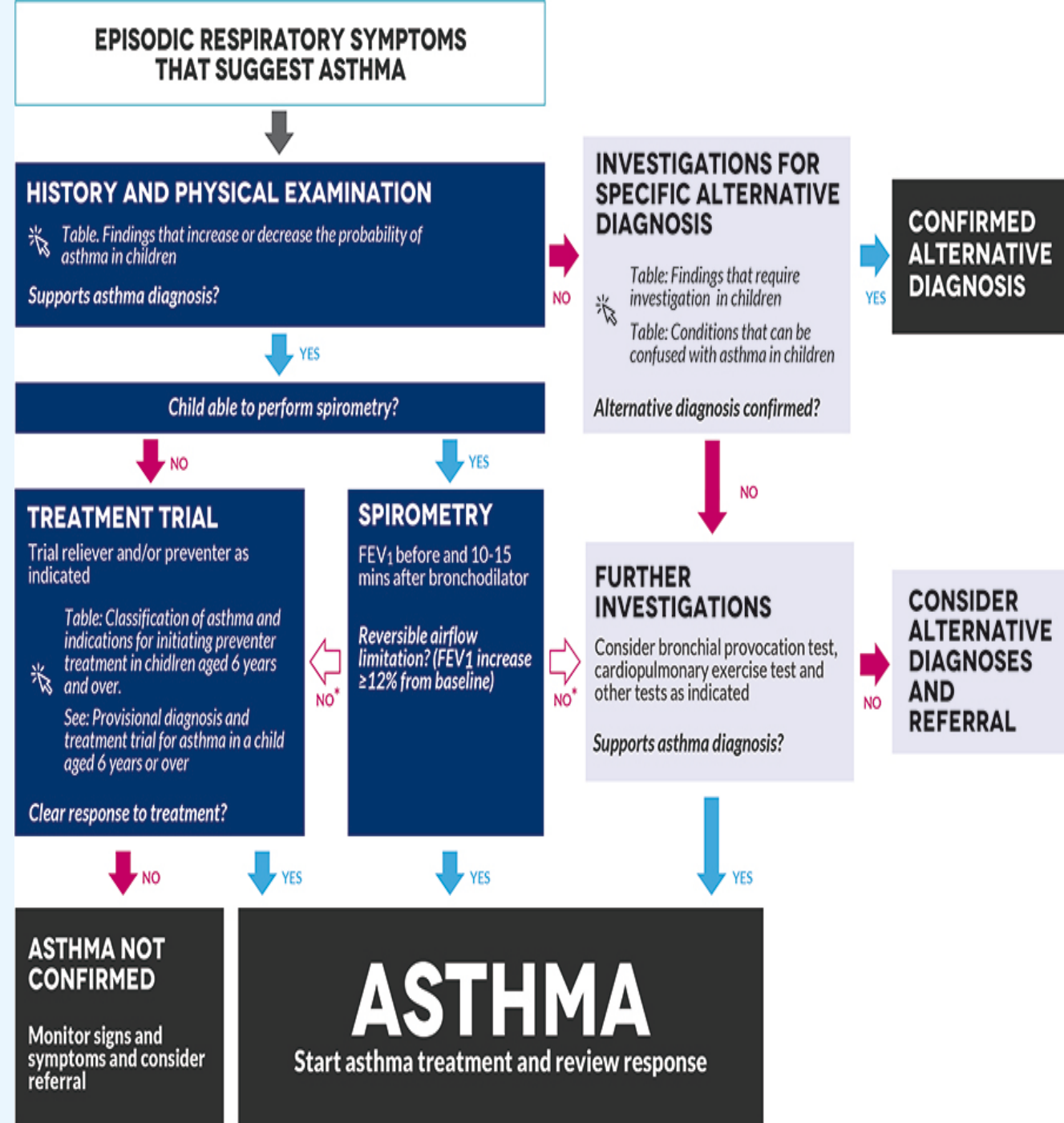


6 years and over: Diagnosis

The diagnosis can be made with more certainty in this age group

- Based on:
 - History
 - Physical examination
 - Diagnostic testing (e.g. spirometry)
 - Treatment trial

Make sure the diagnosis is correct!



Diagnosis in Children

A provisional diagnosis of asthma can be made if the child has all of :

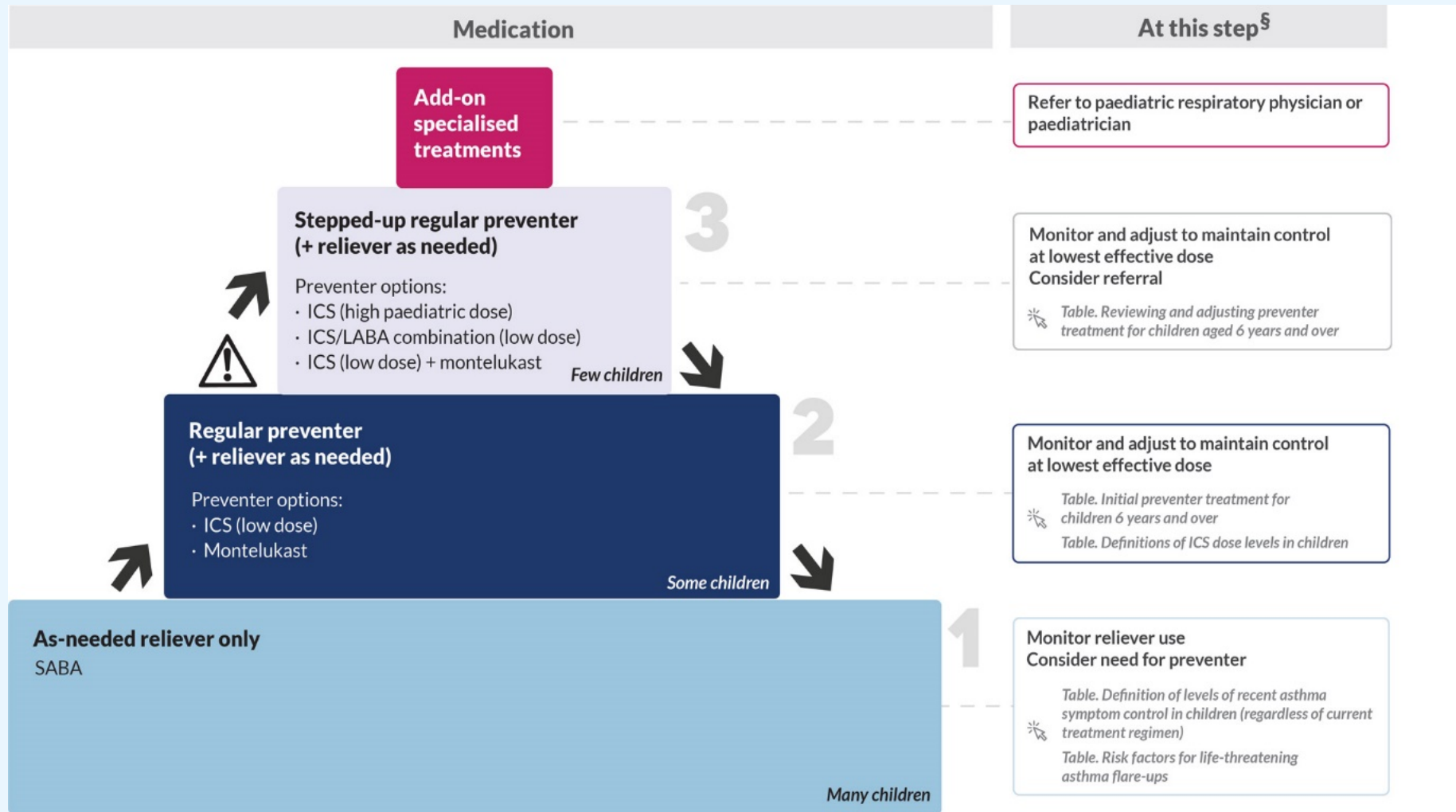
- Wheezing accompanied by breathing difficulty or cough
- Other features that increase the probability of asthma such as a history of allergic rhinitis, atopic dermatitis or a strong family history of asthma and allergies
- No signs that suggest an alternative diagnosis
- Clinically important response to bronchodilator demonstrated on spirometry (if child is able to perform)

Children: 6 years and over

Management

- All school-aged children with asthma need a reliever to use when they have asthma symptoms
- Regular preventer treatment is indicated for those symptoms that occur at least 4-6 weekly and disrupt the child's sleep or play
 - Dose is determined by risk and severity of flare ups
 - Review regularly to assess control
- Treatment may need to be stepped up to include **add on therapy**
 - Montelukast
 - Combination therapy
 - Tiotropium > 6 years with mod-severe asthma

Stepped approach for 6-11 years



- Advise/prescribe reliever to be carried at all times
- Assess each patient's individual risk factors and comorbidities
- Ask parents (and children, when appropriate) about their goals and concerns, and implement shared decision-making
- Provide education and a written asthma action plan

All patients

Asthma control in children

Good control	Partial control	Poor control
<p>All of:</p> <ul style="list-style-type: none"> • Daytime symptoms† ≤2 days per week (lasting only a few minutes and rapidly relieved by rapid-acting bronchodilator) • No limitation of activities‡ • No symptoms§ during night or when wakes up • Need for SABA reliever# ≤2 days per week 	<p>Any of:</p> <ul style="list-style-type: none"> • Daytime symptoms† >2 days per week (lasting only a few minutes and rapidly relieved by rapid-acting bronchodilator) • Any limitation of activities* • Any symptoms during night or when wakes up†† • Need for SABA reliever# >2 days per week 	<p>Either of:</p> <ul style="list-style-type: none"> • Daytime symptoms† >2 days per week (lasting from minutes to hours or recurring, and partially or fully relieved by SABA reliever) • ≥3 features of partial control within the same week

Reasons for Poor Asthma Control

- Medication related issues
 - Incorrect device technique
 - Poor adherence to preventer therapy
 - Allergies – allergic rhinitis, hay fever
 - Uncontrolled trigger exposure –cigarette smoke, allergens, chemicals
- Limited knowledge of asthma and self management
- No asthma action plan or regular asthma review
- Diagnostic issues:
 - It's not asthma

Alternative Diagnosis

Finding	Notes
Persistent cough that is not associated with wheeze/breathlessness or systemic disease	Unlikely to be due to asthma
Onset of signs from birth or very early in life	Suggests cystic fibrosis, chronic lung disease of prematurity, primary ciliary dyskinesia, bronchopulmonary dysplasia, congenital abnormality
Family history of unusual chest disease	Should be enquired about before attributing all the signs and symptoms to asthma
Severe upper respiratory tract disease (e.g. severe rhinitis, enlarged tonsils and adenoids or nasal polyps)	Specialist assessment should be considered
Crepitations on chest auscultation that do not clear on coughing	Suggest a serious lower respiratory tract condition such as pneumonia, atelectasis, bronchiectasis
Unilateral wheeze	Suggests inhaled foreign body
Systemic symptoms (e.g. fever, weight loss, failure to thrive)	Suggest an alternative systemic disorder
Feeding difficulties, including choking or vomiting	Suggests aspiration – specialist assessment should be considered
Inspiratory upper airway noises (e.g. stridor, snoring)	Acute stridor suggests tracheobronchitis (croup)
Persistent voice abnormality	Suggests upper airway disorder
Finger clubbing	Suggests cystic fibrosis, bronchiectasis
Chronic (>4 weeks) wet or productive cough	Suggests cystic fibrosis, bronchiectasis, chronic bronchitis, recurrent aspiration, immune abnormality, ciliary dyskinesia
Focal (localised) lung signs	Suggests pneumonia
Nasal polyps in child under 5 years old	Suggests cystic fibrosis
Severe chest deformity	Harrison's Sulcus and Pectus Carinatum can be due to uncontrolled asthma, but severe deformity suggests an alternative diagnosis
Obvious breathing difficulty, especially at rest or at night	Specialist assessment should be considered
Recurrent pneumonia	Specialist assessment should be considered

Asthma review in children

As a general guide, review each child's asthma:

- Every 3-6 months when asthma is stable and well controlled, more frequently as required
- 2 weeks prior to beginning of school year
- 4-6 weeks after any medication changes – step up or down
- Within 2-3 days of a hospital presentation, then again 4 weeks later
- Use validated questionnaires to assess recent symptom control
 - Test for Respiratory and Asthma Control in Kids (TRACK) < 5 years
 - Childhood Asthma Control Test (C-ACT) 4-11 years

At each asthma review

- Assess recent asthma symptoms
- Assess if the child has any risk factors for future adverse events e.g. previous severe life-threatening acute asthma or hospital admission, history of sudden severe unpredictable asthma flare-ups
- Perform spirometry as required (for children > 6 years)
- Check adherence to treatment
- Check inhaler technique
- Check the written asthma action plan is up to date
- Check modifiable environmental factors including exposure to tobacco smoke or significant airborne allergens
- Ask whether parents or child have any concerns about the treatment (e.g. cost, potential side effects)

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 ^a
montelukast
4mg • 5mg • 10mg



Montelukast Tablet ^a
montelukast
4mg • 5mg • 10mg
Generic medicine suppliers



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



Tilade Inhaler †
nedocromil sodium
2mg

RESOURCES TREATMENT GUIDELINES

Australian Asthma Handbook: astmahandbook.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

ICS PREVENTERS



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



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



Fluticasone Cipla Inhaler †
fluticasone propionate
125mcg • 250mcg



Pulmicort Turbuhaler †
budesonide
100mcg • 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 #



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



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



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

all units in mcg



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



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



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



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

LABA MEDICATIONS



Oxis Turbuhaler ‡
formoterol
4mcg • 12mcg



Serevent Accuhaler ‡
salmeterol
50mcg



Onbrez Breezhaler ^
indacaterol
150mcg • 300mcg

LAMA MEDICATIONS



Spiriva Respimat # ‡
tiotropium 2.5mcg



Bretaris Genuair #
acclidinium 322mcg



Incruse Ellipta #
umeclidinium 62.5mcg



Spiriva Handihaler #
tiotropium 18mcg



Seebri Breezhaler #
glycopyrronium 50mcg

ICS/LAMA/LABA



Trelegy Ellipta ^c
fluticasone furoate/
umeclidinium/vilanterol
100/62.5/25

LAMA/LABA COMBINATIONS



Spiolto Respimat ^c
tiotropium/olodaterol
2.5/2.5



Ultibro Breezhaler ^c
indacaterol/glycopyrronium
110/50



Brimica Genuair ^c
acclidinium/formoterol
340/12



Anoro Ellipta ^c
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, GSK Australia, Mundipharma and Teva Pharma Australia



2018

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PBS PRESCRIBERS † Asthma unrestricted benefit ‡ Asthma restricted benefit ^a Asthma authority required ^ COPD unrestricted benefit # COPD restricted benefit ^c COPD authority required Check TGA and PBS for current age and condition criteria

ICS: inhaled corticosteroid | LABA: long-acting beta₂ agonist | LAMA: long-acting muscarinic antagonist | SABA: short-acting beta₂ agonist | SAMA: short-acting muscarinic antagonist

What is meant by low and high daily ICS doses in children?

Inhaled corticosteroid	Daily dose (mcg)	
	Low	High
Beclometasone dipropionate (<i>QVar</i>)	100-200	>200 (up to 400)
Budesonide (<i>Pulmicort, Symbicort</i>)	200-400	>400 (up to 800)
Ciclesonide (<i>Alvesco</i>)	80-160	>160 (up to 320)
Fluticasone propionate (<i>Flixotide, Fluticasone Cipla, Axotide</i>) (<i>Salplus F, Seretide, Pavtide</i>)	100-200	>200 (up to 500)
Fluticasone furoate (<i>Arnuity Ellipta</i>)	50	>50

Remember 2 puffs of 1, does not equal 2 puffs of another!

Devices for young children

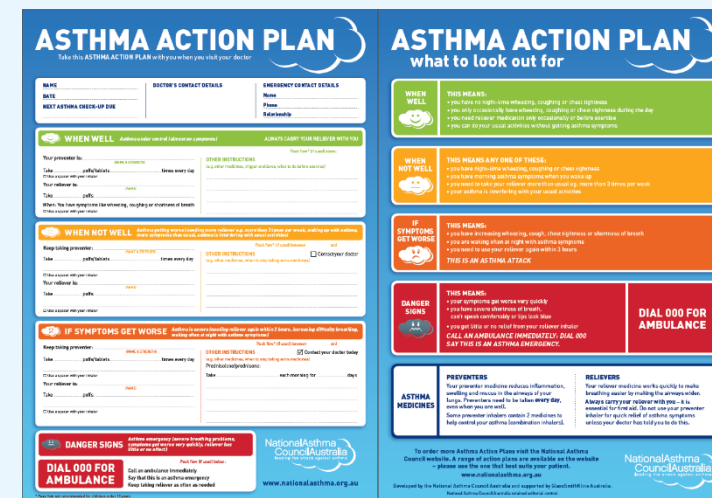
Route of administration	<2 years	2-4 years	5-7 years	>8 years
MDI, small volume spacer & mask	Yes	Yes		
MDI & spacer		Possible	Yes	Yes
Dry powder device			Possible	Yes
Breath-activated device			Possible	Yes

Always check device use at every opportunity- support child to self administer when able to

Written asthma action plans

- Written asthma action plans improve outcomes
 - Miss school less often
 - Wake less at night and have improved symptom scores
- Written asthma action plans
 - Recognise worsening asthma
 - Increased symptoms, wheeze, cough, breathlessness especially waking from sleep
 - Give advice for adjusting medication
 - Advice when to see a Dr
 - Advice when to call an Ambulance

All children with asthma need to have a current asthma action plan



Early warning signs of asthma in children

Before breathing difficulty begins the parent/carer may receive clues that an asthma episode may be developing. These signs are often unique for each person, but may include:

- Dark circles under eyes
- Increased pallor
- Runny/stuffy nose/sneezing/eczema flare up
- Feeling tired, irritable, trouble sleeping
- Headache
- Breathlessness or coughing on exertion
- Coughing, wheezing

Refer to Asthma Action Plan

Symptoms of asthma in children

- Shortness of breath- may present as rapid, shallow breathing
- Wheeze – may be present
- Cough- particularly at night, in the morning or with exercise or excitement
- Use of accessory muscles – tracheal tug, rib retraction, abdominal muscles
- Pallor
- Lethargy, irritability

Management in General Practice

- Primary assessment
 - Mild/Moderate, severe or life-threatening
 - Pulse oximetry
- Bronchodilators
- Secondary assessment
- Management
- Follow up

Rapid primary assessment

Mild/Moderate	Severe	Life-threatening
<p>Can walk</p> <p>Speak whole sentences in one breath</p> <p>(for young children: can move around, speak in phrases)</p> <p>Oxygen sat >94%</p>	<p>Any of:</p> <p>Use of accessory muscles of respiration, tracheal tug, subcostal recession (abnormal breathing)</p> <p>Unable to complete sentences in one breath due to dyspnoea</p> <p>Obvious respiratory distress</p> <p>Oxygen sat 90-94%</p>	<p>Any of:</p> <p>Reduced consciousness or collapse</p> <p>Exhaustion</p> <p>Cyanosis</p> <p>Poor respiratory effort, soft/absent breath sounds</p> <p>Oxygen Sat <90%</p>

Management of mild/moderate

- Salbutamol pMDI via a spacer
 - Children 1-5 years: 2-6 puffs
 - Children 6 years or older: 4–12 puffs
- Repeat 20-30mins for the first hour or sooner if necessary
- Monitor & maintain oxygen saturation
 - Children: at least 95%
- Observe and monitor for at least 3 hours or
- Nil response
 - Call ambulance 000
 - Continue giving Salbutamol pMDI via a spacer
 - **Nebulised salbutamol only if patient unable to breathe through spacer**
 - Consider commencement of oral corticosteroids within the first hour

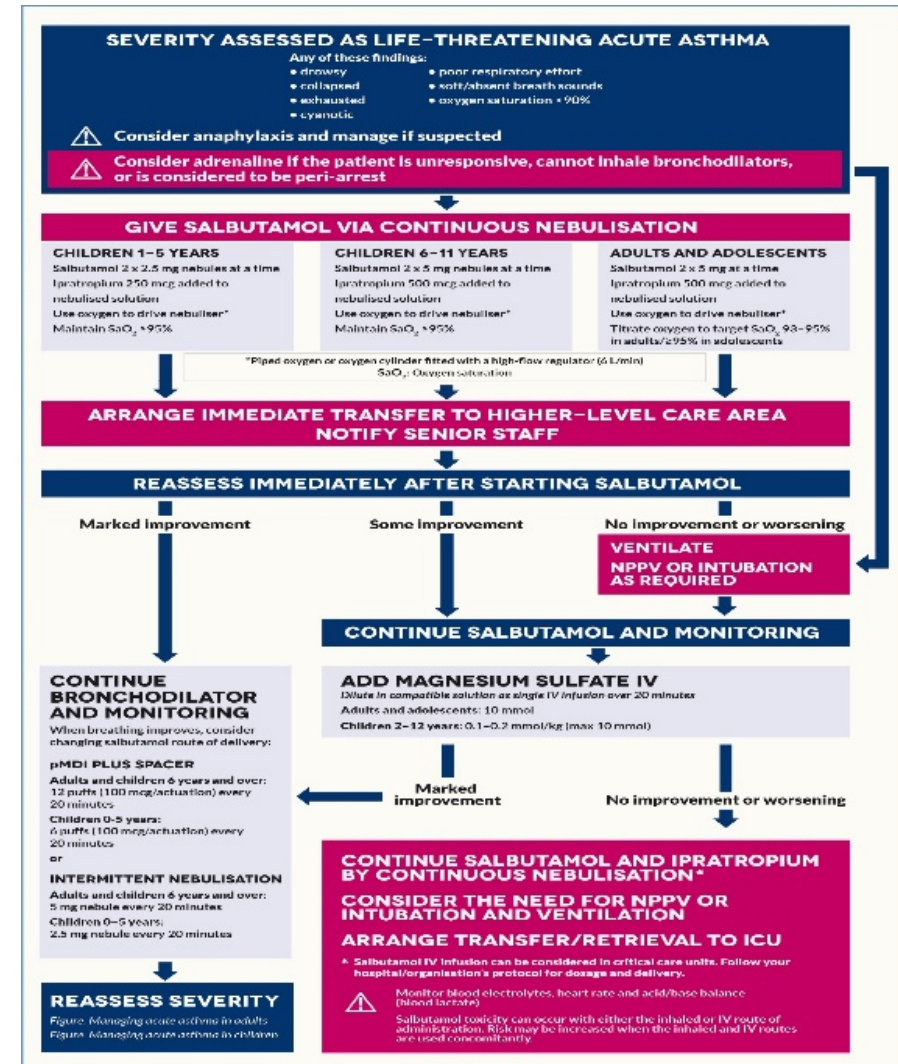
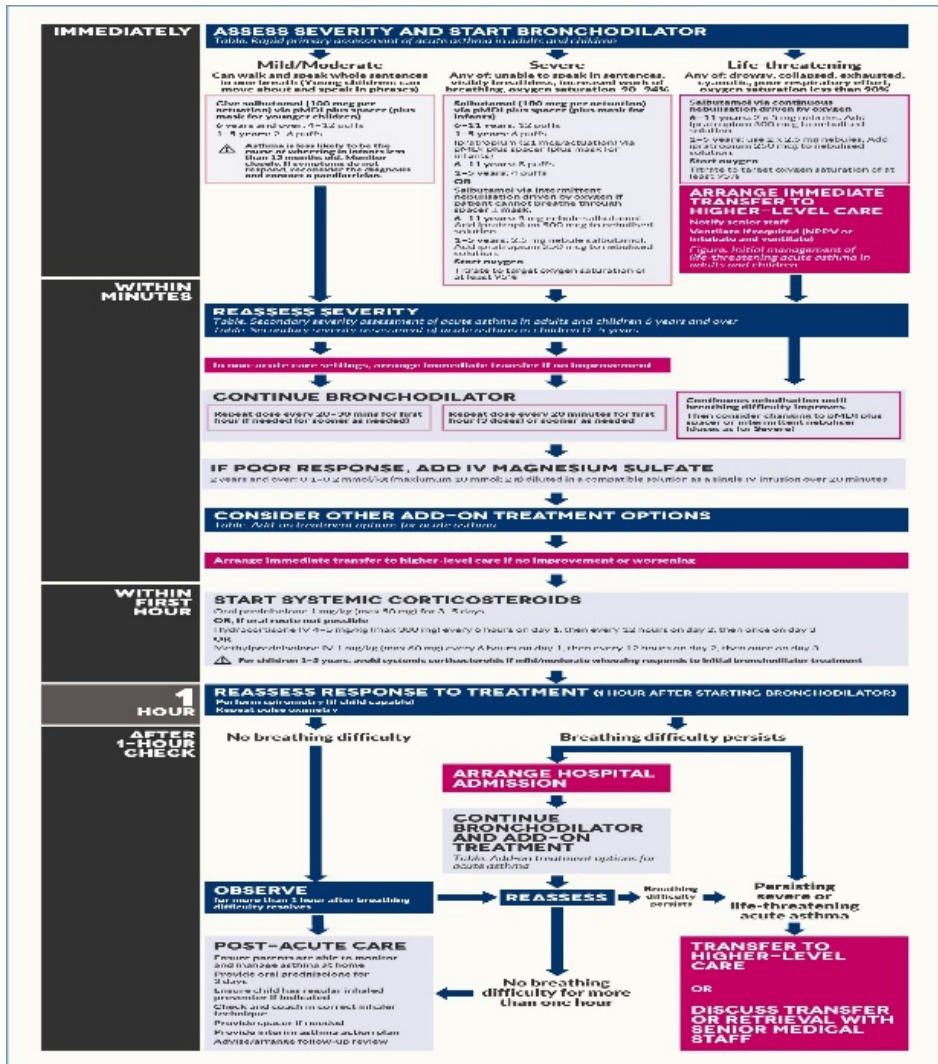
Emergency management of **life-threatening** episode

- Oxygen driven Salbutamol via continuous nebulisation
 - 1-5 years - 2 x 2.5mg nebule
 - ≥ 6 years – 2 x 5mg nebule
- Monitor & maintain oxygen saturation
 - Children: at least 95% or higher
- Arrange immediate transfer to emergency department
 - If poor response to salbutamol add nebulised ipratropium bromide
 - If no improvement or worsening add IV magnesium sulphate
- When dyspnoea improves, consider changing to salbutamol via pMDI plus spacer or intermittent nebuliser every 20 mins

Medical Management acute asthma in clinical settings

Acute asthma in children

Life threatening acute asthma



Follow up

A comprehensive assessment within 2-4 weeks to review the treatment regime

- Review recent flare up/attack
- Try to identify trigger factors associated
- Review medication regime
 - Has reliever on hand
 - Assess if preventer indicated and check adherence
 - Check device technique
- Provide a follow up written asthma action plan
- Review self management and action plan use
- Use spirometry to monitor lung function
- Review and modify the treatment plan as necessary

Community first aid protocol

1. Give 4 separate puffs of SABA via spacer
2. Take 4 breaths per puff
3. Wait 4 minutes
4. If symptoms persist, repeat steps 1-3

If still no improvement, call ambulance and continue steps 1-3 until help arrives

1 Sit the child upright.
Stay calm and reassure the child. Don't leave the child alone.

2 Give 4 separate puffs of a reliever inhaler – blue/grey puffer (e.g. Ventolin, Asmol or Alonix)
Use a spacer, if available.
Give one puff at a time with 4 breaths after each puff.
Use the child's own reliever inhaler if available. If not, use first aid kit reliever inhaler or borrow one.

3 Wait 4 minutes.
If the child still cannot breathe normally, give 4 more puffs. Give one puff at a time with 4 breaths after each puff.

4 If the child still cannot breathe normally, CALL AN AMBULANCE IMMEDIATELY (DIAL 000)
Say that a child is having an asthma attack.
Keep giving reliever.
Give 4 separate puffs every 4 minutes until the ambulance arrives.

WITH SPACER
Use spacer if available!

WITHOUT SPACER
Kids over 7 if no spacer

HOW TO USE INHALER

Not Sure if it's Asthma?
CALL AMBULANCE IMMEDIATELY (DIAL 000)
If the child stays conscious and their main problem seems to be breathing, follow the asthma first aid steps. Asthma reliever medicine is unlikely to harm them even if they do not have asthma.

Severe Allergic Reactions
CALL AMBULANCE IMMEDIATELY (DIAL 000)
Follow the child's Action Plan for Anaphylaxis if available. If you know that the child has severe allergies and seems to be having a severe allergic reaction, use their adrenaline autoinjector (e.g. EpiPen, Anapen) before giving asthma reliever medicine.

1 Sit the person comfortably upright.
Be calm and reassuring. Don't leave the person alone.

2 Give 4 puffs of a blue/grey reliever (e.g. Ventolin, Asmol or Alonix)
Use a spacer, if available.
Give 1 puff at a time with 4 breaths after each puff.
Use the person's own inhaler if possible. If not, use first aid kit inhaler or borrow one.

3 Wait 4 minutes.
If the person still cannot breathe normally, give 4 more puffs.

4 If the person still cannot breathe normally, CALL AN AMBULANCE IMMEDIATELY (DIAL 000)
Say that someone is having an asthma attack.
Keep giving reliever.
Give 4 puffs every 4 minutes until the ambulance arrives.
Children: 4 puffs each time is a safe dose.
Adults: For a severe attack you can give up to 6-8 puffs every 4 minutes.

WITH SPACER

WITHOUT SPACER

HOW TO USE INHALER

Not Sure if it's Asthma?
CALL AMBULANCE IMMEDIATELY (DIAL 000)
If a person stays conscious and their main problem seems to be breathing, follow the asthma first aid steps. Asthma reliever medicine is unlikely to harm them even if they do not have asthma.

Severe Allergic Reactions
CALL AMBULANCE IMMEDIATELY (DIAL 000)
Follow the person's Action Plan for Anaphylaxis if available. If the person has known severe allergies and seems to be having a severe allergic reaction, use their adrenaline autoinjector (e.g. EpiPen, Anapen) before giving asthma reliever medicine.

For more information on asthma visit: Asthma Foundations www.asthmafoundations.org.au National Asthma Council Australia www.nationalasthma.org.au
If an adult is having an asthma attack, you can follow the above steps until you are able to seek medical advice.
Although all care has been taken, this chart is a general guide only which is not intended to be a substitute for individual medical advice. The National Asthma Council Australia expressly disclaims all responsibility (including for negligence) for any loss, damage or personal injury resulting from reliance on the information contained. © National Asthma Council Australia 2011.

Asthma and COVID-19

Refer to Australian Asthma Handbook for reference

- Check everyone with asthma has a current written asthma action plan – telehealth if need be
- Avoid performing spirometry unless urgent
- Advise to continue with current asthma medications, including inhaled corticosteroids.
- Only use oral steroids for severe flare ups as indicated
- Avoid using a nebuliser- ***a well fitting mask and spacer with puffer is preferred***
- Advise not to share any medications or spacers even between family members
- Advise to have medications handy- reliever therapy as per action plan

Resources:

- www.asthmahandbook.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)