Cardiac + Respiratory
FOUNDATION NZ

ASTHMA

Fundamental information on managing your asthma

This handbook provides information about asthma, from the various symptoms you may experience, to the different types of medication you may be prescribed. Importantly, this handbook also provides tips and advice about how to manage your condition and live a fulfilling life.

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Introduction

This handbook contains information and advice about asthma to help you better understand and manage your condition, from recognising the various symptoms of asthma and the importance of having a personalised asthma action plan, to understanding how your prescribed medicines work and what to do in an asthma emergency.

Good asthma management ensures that asthma is well-controlled and doesn't impact on daily life.

With 1 in 8 people living with asthma, asthma is a common respiratory condition in New Zealand. It can be potentially serious if it is not well-managed, and sadly even life-threatening should a severe asthma attack (or 'asthma emergency') occur.

This booklet is also for friends, caregivers, and family of someone with asthma. Learning about asthma will equip you with the necessary information required to support you and your whānau.

For more resources, check out the asthma pages on:
www.cardiacandrespiratory.org.nz

The Cardiac and Respiratory Foundation NZ is here to support you with tools and resources.

The information in this handbook is for adolescents and adults (12 years and over) with asthma.

For information about asthma in children under 12 years of age, please see the Cardiac and Respiratory Foundation's Managing Your Child's Asthma booklet.

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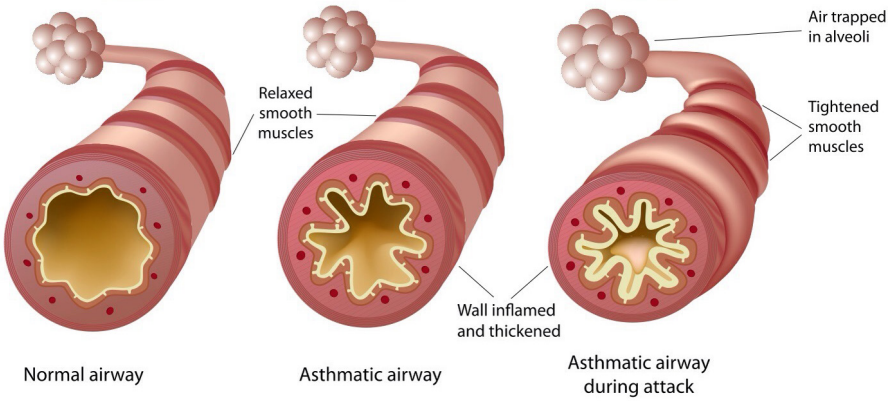
What is asthma?

Asthma is a disease of the airways in the lungs. People with asthma have overly sensitive airways. When faced with certain "triggers", the airways tighten, partially close up, swell inside and make more mucus. This makes it hard to breathe in, and even harder to breathe out.

The image shows a normal lung airway, where air can pass in and out easily. In the asthmatic airway, the airway wall has become inflamed and thickened, leaving less space for air to pass through. During an asthma attack or flare-up, the muscles around the airway tighten, constricting the airway further. Air becomes trapped in the alveoli (air sacs) at the ends of the airways, which makes it harder to breathe.



What causes asthma?

Asthma is caused by a combination of genetic and environmental factors. While we don't know why so many people have asthma, we do know that it is most common in developed countries like New Zealand, the United Kingdom, Australia, and the United States.

It may be related to 'modern living' - perhaps to changes to the environment, our diet, or different exposure to some infections. It is likely that all of these things have an effect. Hopefully in the future, researchers will come up with a way of preventing people from getting asthma.

What are the symptoms of asthma?

The most common symptoms of asthma are:

- Wheezing (your breath might make a 'whistling' sound from your chest as you breathe in and out),
- Shortness of breath,
- Tightness in the chest,
- Coughing.

You may experience one of these symptoms or a combination of them. Symptoms may occur suddenly as an asthma flare-up (asthma attack) or they may come on gradually. It is important to know exactly what to do if you or someone you care for has an asthma flare-up, or an asthma emergency and needs urgent treatment by your primary healthcare team, primary care After Hours service, ambulance service, or hospital emergency service.

Every person with asthma should be given a personalised asthma action plan by their healthcare practitioner. An asthma action plan is a written self-management plan, with clear instructions on how to recognise and respond to worsening asthma symptoms using your prescribed medication.

Who gets asthma?

In New Zealand, over 615,000 people take medication for asthma - this is an estimated 1 in 8 New Zealanders. For children, asthma is one of the most common causes of hospital admissions. On average, 96 people die from asthma in New Zealand each year – that's nearly two people each week.

Anyone can get asthma, and it can start at any time of life. Asthma tends to run in families, although not everyone in the family will have it.

Asthma can be allergic or non-allergic depending on the **'triggers'.** Allergic asthma is triggered by allergens like dust mites, pollen, animal dander or mould. Non-allergic asthma can be triggered by other causes like air temperature, stress or cold and flu viruses.

Many people with allergic asthma will also have other allergic conditions like hay fever or eczema, and a family history of these conditions. A child whose parents or other close relatives already have asthma or allergies has a higher chance of developing these conditions. The chance is increased if both parents are affected.

While there is no cure for asthma, there are many things you can do to manage it effectively to ensure you live a full and active life. The first step is to learn as much as you can about the condition and how to manage it.

Asthma in children

Large numbers of children are still being admitted to hospital with asthma, and some of these will have had a potentially life-threatening asthma attack.

In children under five years of age, wheeze and coughing is common and is often triggered by a respiratory viral illness, like a cold. Not all wheezing is asthma. By school age, at least half of children who wheeze will have 'grown out' of their symptoms.

For information about asthma in children (under 12 years of age), read more here, and see our Managing Your Child's Asthma booklet.

Adult-onset asthma

Adult-onset asthma refers to the onset of asthma for the first time in someone of middle age or older. The usual symptoms of asthma are generally present – varying degrees of breathlessness, wheeze and a productive cough. However, there are some features that make adult-onset asthma different to that seen in the younger age group.

Causes

We do not understand why symptoms develop at a certain age; or why they might disappear. For some people, adult-onset asthma may be caused by a recurrence of childhood asthma or brought on by an illness like bronchitis.

Smoking does not cause adult-onset asthma, although it can trigger an attack. Smoking is the most common cause of Chronic Obstructive Pulmonary Disease (COPD), which has similar symptoms of breathlessness, cough, and sometimes wheeze. COPD is a progressive lung condition that causes narrowing of the bronchial tubes in the lungs. COPD is an 'umbrella' term for the diseases emphysema, chronic bronchitis and long-standing asthma, and is the fourth leading cause of death in New Zealand.
See here for more information on COPD.

One area of increasing concern is the rapid rise in the use of e-cigarettes (vaping). Many vapes contain nicotine, including products that claim to be nicotine-free. Vapes contain additives and flavours which have been approved for use in food products, but haven't been tested as to whether they are safe when inhaled into the lungs.

It is too early to tell how (or if) vaping plays a role in the development of asthma. However, research has so far found that vaping and second-hand vaping can irritate the lungs, cause coughing and worsen symptoms of respiratory conditions like asthma.

Treatment

In contrast to childhood asthma, adult-onset asthma is more commonly persistent and permanent. For this reason, preventative medication is prescribed to help prevent permanent damage to the lungs. Medications are often needed continuously to help keep adult-onset asthma under control.

One of the difficulties in adult life is that lung function tends to fall after middle age. Certain conditions such as smoking or asthma may be associated with a faster rate of deterioration of lung function. If asthma is under-treated in adult life, there is a risk that lung function may deteriorate more quickly and never recover.

In some cases it is best to use regular medication in order to protect lung function every day, rather than risk permanent deterioration. For treatment, the key issue is to maintain your best lung function at all times.

Women and asthma

Asthma and periods

Some women find that their asthma is worse around the time they first start menstruating, although this usually settles down as their menstrual cycle becomes established. However, women with severe asthma may find that their symptoms are worse just before or during menstruation.

Keeping a Peak Flow and Symptom Diary will help you clarify whether this is an issue for you. If you don't already have one, talk to your healthcare practitioner about an asthma action plan, and whether it could include taking extra treatment during the week before your period.

Some over the counter medications used for period pain (aspirin and other non-steroidal anti-inflammatory tablets, e.g. ibuprofen (Nurofen®), mefenamic acid (Ponstan®), naproxen (Naprogesic®) and diclofenac (Voltaren Rapid®) can induce an asthma attack in some people. Paracetemol (Panadol®) is usually a safe pain reliever.

The oral contraceptive pill has no effect on asthma.

Asthma during pregnancy

The most important advice for pregnant women is don't smoke, and this is even more important if there is a family history of asthma. Around one third of women find their asthma improves in pregnancy, one third find it stays the same and one third find their asthma gets worse.

If your asthma gets worse, you may need to increase your medication and revise your asthma action plan with your healthcare practitioner. You will also need to discuss your plans for the delivery of your baby.

If your asthma is severe, the delivery may be best handled in a hospital environment in order to access appropriate support if required.

During labour and delivery you have the same choice of pain medication as any woman. If you do have an asthma attack or flare-up during pregnancy, treat it as you would normally.

Inhaled asthma treatment will not harm your baby during pregnancy. Your baby will do best if you are breathing well, so it is important that your asthma is well-controlled. Having poorly controlled asthma, or having an asthma flare-up during pregnancy, increases the risk of pregnancy complications such as low birth weight or pre-term birth.

Ask your healthcare practitioner or lead maternity carer about having more frequent check-ups for your asthma if you are experiencing any worsening asthma symptoms.

Breastfeeding

Inhaled asthma medications are not found in breast milk. If you have to use corticosteroid tablets (e.g. prednisone), the small quantities found in the breast milk will not have any harmful effect on your baby.

Managing your asthma

Some people with asthma may think their asthma is better controlled than it really is. They get used to feeling the way they do and may put up with asthma symptoms and being limited in their daily activities.

Asthma symptom control is described as either **good**, **partial** or **poor** based on symptoms during the previous four weeks.

Good asthma control is:

- Experiencing daytime symptoms (coughing, wheezing etc) no more than two days a week;
- Using your short-acting reliever inhaler no more than two days a week (not counting the doses you may need to use prior to exercise to prevent symptoms);
- No limitation of your daily activities (work, school, exercise, play); and
- No asthma symptoms during the night or on waking.

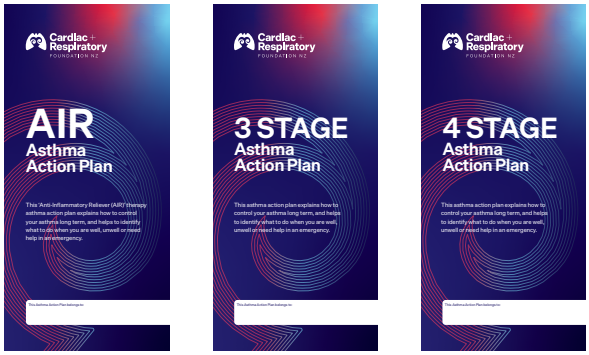
Most people with asthma can lead a healthy, active life when they manage their condition well. Here are the key steps that you can follow to better manage your asthma:

- Follow an asthma action plan
- Take your medication as prescribed
- Avoid exposure to your asthma triggers
- Use a peak flow meter
- Visit your health team regularly
- Flu and COVID-19 vaccination
- Keep active
- Be smoke-free
- Be vape-free

Follow an asthma action plan

Everyone diagnosed with asthma should have a written asthma action plan.

An asthma action plan is a personalised self-management plan, prepared by your healthcare practitioner, alongside you. It can be provided in print or digital form and is designed to be easily shared, for example: with other family members, whānau, school, work, sports coaches and others.



Adolescents and adults will use one of three asthma action plans (AIR Asthma Action Plan, 3 Stage Asthma Action Plan, or the 4 Stage Asthma Action Plan) depending on the medicines prescribed for them by their healthcare practitioner.

Asthma action plans are available in English, te reo Māori, Samoan, Tongan and Simplified Chinese.

An asthma action plan contains:

- Your name, the name of your healthcare practice, the name of the healthcare practitioner who has prepared the plan, their signature and the date.
- The names and current doses of your preventer and reliever inhalers (note: for the AIR Asthma Action Plan, this will be a single combination

Managing your asthma *CONTINUED*

inhaler containing budesonide/formoterol), plus any other medicines prescribed for your asthma (e.g. a short course of prednisone tablets).

- A "traffic light"-based management system, outlining what symptoms indicate that your asthma is under control, getting worse, or moving to severe or to a life-threatening asthma emergency.
- Instructions on how to increase the dose of your reliever and preventer inhaler, or combination budesonide/formoterol inhaler.
- Instructions on when you need to contact your healthcare practitioner for a same-day appointment.
- Instructions on when to start taking oral prednisone and how to take this medication (if it has been prescribed for you).
- For those with peak flow instructions, it will record your best and worst peak flow readings at each level of the plan.

Research shows that people who use an asthma action plan have better control over their asthma. Having an asthma action plan reduces emergency visits to primary care or After Hours surgeries, reduces hospital admissions, and reduces reliever medication use.

Asthma action plans should be reviewed and updated at least once a year, or if there is a change to your medication.

Visit our website to view the downloadable and print version templates of the three adolescent and adult asthma action plans.

Take your medication as prescribed

It is important that you understand how your asthma medicines and inhalers work, and you take them as prescribed. It may be tempting to skip your medication when you are feeling well, however this increases your chances of having an asthma flare-up or a life-threatening asthma emergency.

Avoid exposure to your asthma triggers

A 'trigger' is something that makes asthma worse or brings on an asthma attack or flare-up.

Triggers are different for everyone and often it's not just one trigger that sets off an asthma attack but a combination of several triggers around the same time.

Knowing as much as you can about your 'asthma triggers' is important so that you can avoid or reduce your exposure to them.
This will make your asthma easier to manage.
See "Common Asthma Triggers" on page 10.

Use a peak flow meter

A peak flow meter is a small plastic device with a measuring gauge down the side, which measures how fast you can blow air out of your lungs. When your airways are fully open and you are well, you will get a high reading. When your airways start to get narrow and you are experiencing asthma symptoms, the reading becomes lower.

Keeping track of your peak flow readings, together with your symptoms, will quickly pick up any changes or trends in your asthma control. This allows you to act quickly by following the instructions in your asthma action plan.

Visit our website to download or print a **Peak Flow and Symptom Diary** here.

Visit your health team regularly

It is important to build a partnership with your healthcare practitioner, asthma educator and pharmacist. Following their advice should help you reduce the number of symptoms you experience. See your healthcare practitioner if your asthma is interfering with your daily activities or worrying you in any other way.

Flu and COVID-19 vaccination

It is very important for people with asthma to keep up-to-date with flu and COVID-19 vaccinations. For people with poorly or partially controlled asthma, flu and COVID-19 can make you very sick and cause serious asthma flare-ups (attacks).

Managing your asthma *CONTINUED*

The flu vaccine is free for people with asthma who are prescribed a regular preventer medicine. The vaccine is also provided free to all people 65 years and over; as well as pregnant women. See here for more information on flu vaccination.

The COVID-19 vaccination is safe and effective for people with asthma and other respiratory conditions. The COVID-19 vaccination programme was rolled out in New Zealand in 2021. You can find the latest advice on vaccinations here.

Keep active

Being physically active is especially important for people with asthma, as it improves our lung capacity and blood flow, and is calming, fulfilling and fun.

However, for many people with asthma, physical activity can trigger symptoms such as wheezing, tightness of the chest, or coughing during or after exercise. Some people may attribute this to aging or a lack of fitness, but they might have poorly controlled asthma or exercise-induced asthma.

Most breathlessness with exercise is due to asthma that is not well-controlled. This poorly controlled asthma with narrowed airways is more noticeable when people exercise. See your healthcare practitioner to review your asthma medicines and inhaler technique, and ask for an asthma action plan.

Some people, however, have true **exercise-induced asthma (EIA)** where the exercise is actually causing the airway narrowing, rather than simply making it more noticeable.

The good news is that it is easy to find out if you have EIA. Ask your healthcare practitioner or Asthma Society for a peak flow meter. Take your peak flow reading before and after exercise.

If your peak flow rate drops 20% after exercise, then you have EIA. Using your reliever inhaler 5 to 15 minutes before exercise can make exercise possible.

Be smoke-free

Cigarette smoke contains 7,000 chemicals, hundreds of which are known to be harmful. The lungs are particularly damaged by inhaling cigarette smoke.

Why is smoking especially harmful to people with asthma?

- It reduces your lung function
- It may increase your chances of having asthma flare-ups
- It makes your day-to-day asthma control harder to achieve and increases the need for asthma medications
- It may increase your sensitivity to other environmental triggers (e.g. pets, pollens and chemicals)
- It increases your chance of permanently damaging your airways, including developing chronic obstructive pulmonary disease

Make it a rule that your home is smoke-free at all times for everyone. Let other people know, asking them to go outside to smoke or vape. It is now illegal to smoke or vape in cars with children under the age of 18 present.

For help with quitting, visit Quitline (0800 778 778), one of our asthma partners, your pharmacy, the National Heart Foundation, or the Cancer Society.

Be vape-free

The rapid rise in the use of e-cigarettes (vaping) is a growing concern. Many vapes contain nicotine, including products that claim to be nicotine-free. Vapes contain additives and flavours which have been approved for use in food products, but haven't been tested as to whether they are safe when inhaled into the lungs.
While we don't know the exact cause of asthma, we do know that asthma is believed to be caused by a combination of genetic and environmental factors. It is too early to tell how (or if) vaping and second-hand vaping can irritate the lungs, cause coughing and worsen symptoms of respiratory conditions like asthma.

Common asthma triggers

Animals

Family pets can trigger asthma in some people. Allergens can be found in their saliva, hair, urine, and dander (dead skin flakes) and are carried in the air on very small particles. Dander, which is shed on carpet and upholstery, is also a food source for the dust mite, another common trigger.

In general, cats produce more severe allergic reactions than dogs as they tend to stay indoors for longer. Certain short-haired or non-shedding dog breeds are known for being safer for people with asthma. Talk to your healthcare practitioner or vet before getting a family pet.

If you can't avoid having a furry pet, have someone else keep it well groomed, keep it out of the bedroom, vacuum carpet, curtains and upholstery regularly using a motorised brush and a HEPA filter.

If you move into a house that has had a pet, you will need to clean it thoroughly. It can take three to four months of regular deep cleaning to get rid of all the allergens.

Viruses

Colds, flu and COVID-19 are viruses that affect the airways in different ways. They can trigger asthma or cause worsening symptoms.

While the common cold is not normally serious, the flu and COVID-19 can be. For those with asthma it is important to follow your asthma action plan to ensure your asthma is well-controlled. You may find it helpful to record your peak flow readings and/or your symptoms to monitor control of your asthma.

Vaccination is the best way to avoid getting the flu and COVID-19.

Pollen and plants

A number of plants are associated with triggering asthma and hay fever symptoms in some people, especially in spring and early summer.

As a rule, wind-pollinated plants tend to be more problematic than plants pollinated by insects or birds, as their lighter, smaller pollen is more likely to be inhaled.

Problem plants, which may cause increased asthma symptoms include: pines, oaks, grasses, privets and birches.

Any plant that produces lots of pollen can be especially dangerous for people with asthma.

For individuals who are affected by pollen and plants, the best solution is avoidance:

- On windy days, keep windows closed and stay indoors where possible, especially in the early morning and evening.
- Keep car windows closed. Put air conditioning on air recirculation mode for cooling so as not to bring outside air into the car.
- Remove any plants that trouble you from your garden.

For hay fever symptoms, talk to your healthcare practitioner or pharmacist about possible treatments.

Use pollen forecasts to help you gauge the likely risk of exposure to your triggers.

Metservice includes pollen levels in their forecasts – www.metservice.co.nz

Physical activity

Exercise is good for everyone, including people with asthma, as it improves lung capacity and blood flow, relieves stress and is fun. For some people with asthma, physical activity can trigger asthma symptoms (wheezing, tightness in the chest, coughing or shortness of breath) during or after exercise. This may be due to asthma that is poorly controlled, which is more noticeable when you exercise. It is important to see your healthcare practitioner for a review of your asthma medication.

However, some people have true **exercise-induced asthma (EIA)**, where the exercise is actually causing the airway narrowing.

Take your peak flow reading before and after exercise. If your peak flow rate drops 20% after exercise, then you have EIA. Using your reliever inhaler 5 to 15 minutes before exercise can make exercise possible.

Common asthma triggers *CONTINUED*

Medications

Most medicines are safe for people with asthma, but some can trigger asthma symptoms or make them worse. This includes prescription medicines, over the counter medicines, and even some natural and herbal products.

You should always check with your healthcare practitioner or pharmacist that the medicine you plan to take is safe and will not trigger your asthma.

Examples of medicines that may trigger asthma include:

- Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) e.g. ibuprofen, diclofenac, naproxen.
- Beta blockers (contained in some blood pressure medication and in eye drops used to treat glaucoma).
- Complementary or herbal products e.g. echinacea and royal jelly.

Workplace triggers

Asthma caused by exposure to a trigger or triggers in the workplace is known as **occupational asthma**. Manufacturers, builders and farmers are most at risk of being affected by occupational asthma.

People who have not had asthma before can develop it through an allergic reaction to a substance in the workplace. This may happen even after years of working safely with the substance. Dusts from wood, plastics, flour, grain etc. and chemical fumes from paint and glue are common workplace triggers.

If you think you may be at risk of developing occupational asthma, discuss the problem with your healthcare practitioner, employer or union. You should be aiming to remove or minimise your exposure to the harmful substance.

Contact WorkSafe New Zealand, New Zealand's primary workplace health and safety regulator, for advice: 0800 030 040.

Smoke / fumes

Triggers in the air can include:

- Factory smoke
- Car exhaust fumes
- Cigarette smoke and e-cigarette (vaping) emissions
- Fly sprays
- Strong perfume
- Aerosol cleaning sprays
- Formaldhyde from paints and building materials

Unflued gas heaters and open fires produce air pollution which can significantly affect the lungs and worsen asthma symptoms. We recommend replacing these heating options with flued gas heaters or electric heaters.

Emotions

Some people find that strong or changing emotions can make their asthma worse. At times you may need professional help to learn to manage your emotions.

Your healthcare practitioner will be able to refer you to an appropriate professional.

Temperature

Changes of temperature can affect people with asthma, so try to keep your home at an even temperature. It may help to use a thermostatically-controlled heater in bedrooms at night to keep the temperature around 18°C.

Wearing a thin, warm scarf loosely around your lower face when out in cold, dry air can help warm the air you breathe. If you know that certain weather affects your asthma, you may need to increase your medicine during that time.

Location and home environment

Current research studies indicate that the prevalence of asthma is fairly similar across New Zealand. People have different, individual responses to their environment, so it is very difficult to predict how visiting or living in certain regions will affect your asthma.

Common asthma triggers *CONTINUED*

If you are thinking of moving to a new place, it is worth investigating the presence of any known asthma triggers. You need to consider the outdoor environment (what plants are growing locally, locations of factories or sources of smoke or pollutants) as well as the house itself. You will want to check ventilation, heating and insulation in your new home, as well as the building products used.

Asthma medication

The following information is about medication for people with asthma aged 12 years and older.

For further information on asthma medication for children under 12 years of age, please see the Managing Your Child's Asthma booklet or refer to the information about asthma here on our website.

Medication plays a very important role in the day-to-day management of asthma. It is important to understand how your medicines work and then to take them as directed by your healthcare practitioner.

There are two main types of asthma medicine:

- **Preventer** inhalers treat the inflammation in your airways, which is the underlying cause of asthma. This medication reduces the risk of an asthma flare-up (attack). Read more on page 13.
- **Reliever** inhalers bring quick relief from asthma symptoms (cough, wheeze, tightness in the chest, shortness of breath). Reliever medication works by relaxing the bands of muscles around the airways which tighten during an asthma flare-up (attack). Read more on page 15.

Until recently, the majority of people with asthma were treated by using separate preventer and reliever inhalers. Now, the recommended treatment for people with asthma aged 12 years and older is a combination 2-in-1 inhaler containing the preventer medicine budesonide and the reliever medicine formoterol.

The brand names for this inhaler are Symbicort® and DuoResp Spiromax®. This inhaler can be used as either a reliever treatment alone, or as a regular scheduled maintenance and reliever treatment.

Read more on page 16 under 'Recommended Treatment'.

Inhalers

Inhalers are one of the most common and effective ways to treat asthma. If you are prescribed an inhaler, you need to know how to use it properly. Your healthcare practitioner should demonstrate how to use your inhaler when you first get one, and you should regularly check your inhaler technique with your healthcare practitioner, pharmacist, or asthma educator.

If you don't use your inhaler correctly, you won't get the full dose of your medicine.

There are two main types of inhaler devices in New Zealand:

Pressurised metered-dose inhalers are often called "puffers". These devices deliver the medicine in a gas form directly to your lungs. Puffer inhalers work best when used with a spacer. Read more on page 18.

Dry powder inhalers deliver medicine in a powder form. These inhalers are also known as breath-activated inhalers, as you breathe in the medicine directly from the inhaler. Read more on page 18.

Other devices to manage asthma

Spacers are plastic cylinders that attach to puffer inhalers. Spacers help ensure the medicine reaches your lungs and doesn't just end up in the back of your mouth and throat. Spacers are recommended for everyone using puffer inhalers, including adults. Read more on page 19.

Nebulisers are devices that turn liquid medicine into a fine mist that you can breathe in easily. A nebuliser can be useful for people with asthma; however, research has found that reliever puffers used with **spacers** can be just as effective. Read more on page 19.

Asthma medication *CONTINUED*

Add-on treatments

If you are using your inhalers exactly as prescribed but you are still having asthma symptoms, then your healthcare practitioner may consider additional treatments. These are called 'add-on' treatments because they are taken in addition to your regular inhalers.

Prednisone is a tablet form of a preventer medication. It is used in severe episodes of asthma, on top of your regular inhalers. If you are having difficulty controlling your asthma symptoms, your healthcare practitioner may prescribe a short course of prednisone. Read more on page 17.

Montelukast is a tablet form of a medicine that is used in addition to regular inhalers, when you are having difficulty controlling your asthma. It works by blocking some of the chemicals that cause inflammation and narrowing of the airways. Read more on page 17.

Biologics are a relatively new treatment used for people who have severe, uncontrolled asthma. They are used when other medications are not working to control asthma and are only available in New Zealand to people who meet certain criteria. These treatments are given as regular injections. Read more on page 18.

Inhaled medication

Preventer inhalers

Preventer inhalers treat the inflammation inside your airways, which is the underlying cause of asthma. They reduce the risk of asthma flare-ups (attacks). These inhalers also reduce the amount of mucus produced in the airways and long-term damage to the lungs.

There are two different types of preventer inhalers. Your healthcare practitioner will advise on which preventer is best for you.

Single ingredient preventer inhalers

Single ingredient preventer inhalers only contain one preventer medication. Examples of these inhalers are Beclazone®, Flixotide®, Pulmicort® and Qvar®.

These inhalers need to be taken every day as a regular scheduled maintenance treatment to control asthma. If you only take your preventer inhaler occasionally, or stop taking it if you feel well, it can cause your asthma to get worse.

These inhalers **do not** provide immediate relief from asthma symptoms if you are having an asthma flare-up (attack) and cannot be used in an asthma emergency. For this reason, they need to be used alongside a separate fast-acting reliever inhaler like Bricanyl®, SalAir® or Ventolin®.

Inhaled medication *CONTINUED*

Combination 2-in-1 preventer inhalers

Combination 2-in-1 inhalers contain both a preventer and a long-acting reliever medication. In every dose from a combination inhaler, you get preventer medication which reduces the underlying inflammation AND a long-acting reliever medication which relaxes the tightened muscles around the airways, helping you to breathe easier. Examples of this type of inhaler include Breo Ellipta®, DuoResp Spiromax®, Seretide®, Symbicort®, and Vannair®.

The combination 2-in-1 preventer inhalers Breo Ellipta®, Seretide®, and Vannair® **must be used as a regular scheduled maintenance treatment alongside a separate fast-acting reliever inhaler** (e.g., Bricanyl®, SalAir® or Ventolin®) for immediate relief of asthma symptoms, or in an asthma emergency.

The combination 2-in-1 preventer inhalers DuoResp Spiromax® and Symbicort® **can be used as either a reliever medication alone, or as a regular scheduled maintenance and reliever medication.**

These dry powder inhalers contain the **preventer** medicine ***budesonide*** and the **fast-acting reliever** medicine ***formoterol***. There is no need to have a separate reliever inhaler.

The **recommended preventer inhaler for people 12 years and older** is the 2-in-1 combination inhaler containing the **preventer** medicine ***budesonide*** and the **fast-acting reliever** medicine ***formoterol*** (DuoResp Spiromax® and Symbicort® turbuhaler). The reliever medicine, formoterol, provides immediate relief of asthma symptoms and ongoing relief of symptoms for up to 12 hours.

For people with **mild asthma**, **this inhaler can be used as a reliever alone without any maintenance treatment**; in **moderate to severe asthma**, **this inhaler can be used as both a regular scheduled maintenance and a reliever treatment**. This means you use this inhaler once or twice daily (as you would a preventer inhaler) **and** as needed to treat asthma symptoms (as you would a reliever inhaler). This treatment is called 'Single Maintenance And Reliever Therapy' (SMART) by healthcare practitioners. **You do not need a separate reliever inhaler when using this treatment.**

What's in a preventer inhaler?

All types of preventer inhalers in New Zealand contain an anti-inflammatory medicine called a corticosteroid. This is sometimes referred to as a 'steroid'. Corticosteroids are not the same as steroids used by body builders. There is a huge amount of research which shows that inhaled corticosteroids are effective and safe when used long-term.

Possible side effects from inhaled corticosteroids

Possible side effects from preventer inhalers include a husky voice, a sore throat or oral thrush. These side effects can be reduced by using a spacer (if you are using a puffer inhaler) and rinsing your mouth with water and spitting out after using your preventer inhaler.

The risk of poorly treated asthma is greater than the risk of side effects from preventer medication. If you are concerned about the possible side effects, please discuss these with your healthcare practitioner.

Reliever inhalers

Reliever inhalers bring short-term relief from asthma by relaxing the bands of muscles around your airways that tighten during an asthma flare-up (attack). When these muscles relax, air can flow in and out of your lungs more freely.

Relievers are taken as needed to relieve asthma symptoms (cough, wheeze, tightness in the chest, shortness of breath), before exercise, or during an asthma flare-up (attack) They work quickly, with the effects felt within five minutes.

There are different types of reliever inhalers.

Single ingredient reliever inhalers

Common reliever inhalers include SalAir® and Ventolin®. Both these inhalers contain the same medicine, salbutamol, and give the same dose. There is also another reliever called Bricanyl®. This contains a medicine called terbutaline which works in a similar way to salbutamol.

These reliever inhalers **do not deal** with the underlying cause of asthma, which is inflammation inside your airways. For this reason, these reliever inhalers must be used alongside a separate preventer inhaler to treat the inflammation.

If you are 12 years or over, single ingredient reliever inhalers should not be used as your only treatment for asthma,

If your asthma is well-controlled, you should only be using a maximum of three cannisters of this type of reliever inhaler in a year (this equates to more than one dose of a reliever inhaler daily). Using more than three of these reliever inhalers in a year is associated with increased risk of flare-ups (attacks), emergency department visits and hospitalisation. If you are using more than this, talk to your healthcare practitioner.

2-in-1 combination reliever inhaler

2-in-1 combination reliever inhalers include the brands DuoResp Spiromax® and Symbicort®. These contain a preventer medicine (budesonide) and a fast-acting reliever medicine (formoterol). This provides immediate relief of asthma symptoms by opening up the airways, as well as reducing the risk of an asthma flare-up (attack).

The 2-in-1 combination budesonide/formoterol inhaler cannot be used as a reliever together with another separate regularly scheduled maintenance 2-in-1 combination treatment such as Breo Ellipta® or Seretide®.

The **recommended reliever inhaler for adults and adolescents 12 years and older** is the 2-in-1 combination inhaler containing the preventer medicine *budesonide* and the fast-acting reliever medicine *formoterol* (DuoResp Spiromax®, and Symbicort® turbuhaler).

For people with mild asthma, this inhaler can be used on its own as a reliever and only taken as needed for asthma symptoms; for people with moderate or severe asthma, this inhaler can be used both as a regularly scheduled maintenance treatment and as a reliever as needed for asthma

Reliever inhalers *CONTINUED*

symptoms. Each time you use this inhaler you get the immediate relief from the reliever medicine, plus a dose of the preventer medicine which reduces the risk of an asthma flare-up. When used on its own as a reliever treatment, it is sometimes called 'Anti-inflammatory Reliever' (AIR) therapy by healthcare practitioners.
You do not need a separate preventer inhaler if you are using AIR therapy.

Possible side effects of reliever inhalers

There can be side effects from using reliever inhalers, including fine tremors (particularly in the hands), nervous tension, headaches, muscle cramps, and a racing heart. If you start to develop a fast or irregular heartbeat, or chest pain, talk to your healthcare practitioner.

Recommended treatment for people aged 12 years and over

The recommended treatment for people with asthma aged 12 years and older is a **2-in-1 combination inhaler that contains the preventer medication *budesonide* and the reliever medication *formoterol*.**

This medication both reduces the risk of a severe attack and provides immediate relief of asthma symptoms, with ongoing relief of symptoms for up to 12 hours.

The brand names for this medication are DuoResp Spiromax® and Symbicort®.

Extensive international research has shown the 2-in-1 combination reliever inhaler containing budesonide and formoterol is far more effective in reducing the risk of severe asthma attacks than the traditional single reliever inhaler. This is because it offers a regular top-up of preventer medication to treat the underlying inflammation, as well as relieving short-term symptoms.

For people with **mild asthma,** this 2-in-1 combination (budesonide/formoterol) inhaler can be used on its own as a reliever, and only taken as needed for asthma symptoms. Each time you use this inhaler you get the immediate relief from the reliever medicine, plus a dose of the preventer medicine which reduces the risk of an asthma flare-up (attack). This treatment is sometimes called 'Anti-inflammatory Reliever' (AIR) therapy by healthcare practitioners.

You do not need a separate preventer inhaler if you are using this treatment.

For people with **moderate to severe asthma**, this 2-in-1 (budesonide/formoterol) inhaler can be used as both a reliever and a preventer. This means you use this inhaler once or twice daily (as you would with other regular scheduled maintenance preventer inhalers) and as needed to treat asthma symptoms (as you would a reliever inhaler). This treatment is called 'Single Maintenance And Reliever Therapy' (SMART) by healthcare practitioners. You do not need a separate reliever inhaler when using this treatment.

Add-on treatments

Your healthcare practitioner may consider additional or 'add-on' treatments. These medicines are taken in addition to your regular inhalers if you are still having asthma symptoms, despite using your inhalers correctly and as prescribed.

Prednisone

Prednisone is an 'add-on' treatment that your healthcare practitioner might give you as a short course (usually 5 days) if you are having a severe asthma flare-up (attack).

Prednisone comes in a tablet form and contains a medicine called a corticosteroid. Corticosteroids are not the same as steroids used by body builders. There is a huge amount of research which shows that corticosteroids are effective and safe when used in single, short courses.

Prednisone works slowly over several hours to reverse the inflammation of your airways. It is best taken with food (to avoid irritating your stomach) and first thing in the morning (to avoid disrupting your sleep).

If you need to take prednisone more than twice a year, then your asthma is not well-controlled. You should ask your healthcare practitioner to review your medicine and asthma action plan and check your inhaler technique. You may be referred to a respiratory specialist service for further assessment.

A very small number of people may need to use prednisone for long-term treatment of severe asthma. Many of these people may be eligible to use biologic treatments instead.
Read more on biologic treatments on page 18.

Possible side effects

Side effects are less likely from a short course of prednisone, but they can include:

- Indigestion or heartburn
- Increased appetite
- Difficulty sleeping
- Mood change (usually a high mood)
- Fluid retention (unusual)

For those taking longer-term, frequent, or high-dose prednisone, the following side effects are possible:

- Weight gain
- Increased risk of diabetes, hypertension and cardiovascular disease
- Thinning of bones or osteoporosis

If you are concerned about side effects, discuss these with your healthcare practitioner. If you have been using prednisone regularly over a long period of time (months or years), you should not stop taking this medication suddenly. You will need to stop gradually with supervision from your healthcare practitioner.

Montelukast

Montelukast is an 'add-on' treatment that your healthcare practitioner may prescribe if you are having difficulty controlling your asthma. It will be used in addition to your regular inhalers.

Montelukast works by blocking some of the chemicals that cause inflammation and narrowing of the airways. It cannot be used to treat an asthma flare-up or an acute asthma attack.

Montelukast comes in a tablet form and can either be swallowed with water before or after food or taken as a chewable tablet on an empty stomach.

Possible side effects:

There can be side effects with this medication, but these should improve within two weeks as your body gets used to the medication. If these side effects persist, or you are worried, then contact your healthcare practitioner.

Common side effects can include:

- Diarrhoea
- Vomiting
- Rash
- Sore throat or throat infection

Less common side effects can include:

- Sleep problems
- Muscle pain
- Changes in mood – anxiety, depression or irritability

Note: A very rare potential side effect is extreme distress or suicidal thoughts. See your healthcare practitioner immediately if you experience these symptoms or a change in behaviour or mood or sleep disturbances.

Biologics

Biologic treatments are a new 'add-on' treatment available to some people with severe, uncontrolled asthma. They are used in addition to regular medications. Biologics are also known as monoclonal antibody therapy.

Biologics work by recognising and blocking substances in the lungs that cause lung inflammation and asthma symptoms. Biologics are given as injections every four to eight weeks. Many people can learn to give themselves these injections safely at home.

There are three biologics available in New Zealand.

Omalizumab (brand name: Xolair®), mepolizumab (brand name: Nucala®) and benralizumab (brand name: Fasenra®). Omalizumab is used to treat severe allergic asthma, whereas mepolizumab and benralizumab are used to treat people with severe eosinophilic asthma: a type of asthma caused by high numbers of allergic white blood cells that cause swelling and inflammation in the lungs.

Biologic medications are funded in New Zealand for people who meet specific criteria. They are particularly good at reducing the number of asthma attacks people have and reducing their need for oral corticosteroids. As a result, biologics are mainly used for people who are still having four or more courses of prednisone per year, despite appropriate changes being made to their inhalers. Your healthcare practitioner can refer you to a respiratory specialist who will assess if you meet the criteria.

Inhaler devices for asthma

In order to get the correct dose of medicine into your lungs to keep your asthma well-controlled, it is important to have the correct inhaler technique. Always ask your healthcare practitioner, pharmacist or asthma educator to show you how to use your inhaler device and have this checked at least annually.

Metered-dose inhalers (MDIs)

Pressurised metered-dose inhalers (MDIs) are sometimes called aerosol inhalers or "puffers".

The medicine is contained within a canister in a gas form, and housed by a small plastic inhaler device. This type of inhaler needs to be shaken immediately before use to ensure the medicine is mixed with the gas propellant before you use it.

When the inhaler is pressed, a measured dose of medicine is released from the canister, through the mouthpiece of the plastic inhaler.

It is recommended that MDIs are used with a **spacer** (see page 19) - no matter what your age. Spacers improve the effectiveness of inhaled medications by increasing the deposition of medicine into the lungs, rather than in the mouth and throat.

Puffer inhalers are known to have a significant environmental impact. The carbon footprint of a 200-dose inhaler is equal to a 290 km journey in a small car. *Dry powder inhalers* are a more environmentally friendly option. These inhalers may not be suitable for everyone, so it is important that you discuss your options with your healthcare practitioner.

Dry powder Inhalers

Dry powder inhalers are breath activated inhalers and contain medicine in a powder form, with no propellant or carrier added to the medicine. These inhalers must not be shaken before use.

Unlike pressurised metered-dose ("puffer") inhalers, dry powder inhalers do not contain a gas propellant, which makes them a more environmentally friendly option. However, dry powder inhalers may not be suitable for everyone, so it is important that you discuss your options with your healthcare practitioner.

See our 'How To Use Inhaler Device Chart' on our website.

Dry powder inhaler devices used for the treatment of asthma include:

- Turbuhaler
- Spiromax
- Accuhaler
- Ellipta

Other devices used to manage asthma

Spacer

A spacer is a clear plastic device, designed to make a metered-dose ("puffer") inhaler easier to use. It is recommended that everyone who has a puffer inhaler (both children and adults) uses a spacer. Instead of inhaling the medicine directly from the inhaler itself in a single breath, the mouthpiece of the inhaler is inserted into an opening in the spacer. A dose from the inhaler is puffed into the chamber of the spacer and inhaled via the spacer's mouthpiece, breathing in and out normally 4 to 6 times.

There are a number of advantages to using a spacer:

- Spacers greatly increase the amount of medicine going into the lungs, rather than it ending up in the back of your mouth and throat.
- As a result of the above, spacers reduce the local side effects from preventer (corticosteroid) medication in your mouth and throat e.g. sore throat, hoarse voice and oral thrush. This also means that less medicine is swallowed and then absorbed from the intestine into the rest of the body. (Note: you should still rinse your mouth out after using your preventer medication, to avoid these side effects).
- It is easier to use a puffer inhaler with a spacer than an inhaler alone, as you do not need to coordinate your hand and your breathing.
- You can breathe in and out 4 to 6 times with a spacer. If your lungs aren't working well, you don't have to get all the medicine into your lungs in one breath only.

Spacers are not only as effective as a nebuliser, they are faster and easier to use, more portable, cheaper, and not dependent on a power supply.

Before using a new spacer

Always follow the manufacturer's instructions for the spacer you have been given to check if washing or priming is required before first use.

- The **e-Chamber Spacers** are made from anti-static plastic so do not require priming.
- The **Space Chamber Plus Spacer** and the **Volumatic Spacer** do need to be primed before using for the first time.
- To prime a spacer, wash the spacer in warm water with dishwashing liquid. Do not rinse, do not towel dry - allow to drip dry.

Where can I get a spacer?

You can get spacers free of charge from your healthcare practitioner or local Asthma Society.

Washing your spacer

Wash your spacer once a week with warm water and dishwashing liquid. Don't rinse your spacer or dry it with a towel, but instead allow it to drip dry. This reduces the electrostatic charge on the spacer and stops medicine from sticking to the sides of the space chamber.

Replacing your spacer

If used regularly, it is recommended that your spacer is replaced every 12 months. Check the spacer for any cracks or other damage routinely, and replace as needed.

Spacers are not for sharing

Each person in the family using a spacer should have their own personal spacer. Spacers are made for single person use to stop the spread of infectious disease.

Nebuliser

A nebuliser works by turning liquid medicine into a fine mist which you can breathe easily into the lungs, via a mouth piece or mask. A nebuliser can be useful for a few people with asthma, **however many clinical trials have found spacers (used with a reliever) to be equally as effective.**

Spacers are as effective as a nebuliser; they are also faster and easier to use, more portable, cheaper, and not dependent on a power supply.

Only a small number of people need a nebuliser. They are most commonly used if someone finds using a puffer inhaler and a spacer is difficult. A nebuliser should be used strictly under the

directions of a healthcare practitioner.

Those who might benefit from a nebuliser include:

- People with disabilities or people who are unable to use hand held inhalers and spacers
- People who are recommended a nebuliser by their healthcare practitioner

Note: For those patients using a nebuliser, patients must not treat acute asthma attacks or flare-ups at home without also seeking medical help.

Asthma emergencies

A severe asthma flare-up (or severe asthma attack) can happen to anyone with asthma, at any time. Symptoms may get gradually or suddenly worse.

In an asthma attack, people's airways may swell and narrow, causing wheezing, coughing and difficulty breathing.

Signs you need to start asthma first aid and seek urgent medical help (call 111 for an ambulance) immediately include:

- Symptoms get worse very quickly.
- Reliever inhaler has little or no effect.
- Difficulty talking.
- Lips or fingernails have a grey or bluish tinge.
- Nostrils flare when you breathe.
- Heartbeat or pulse is very fast.
- Skin is pulled in around the ribs or neck when the person breathes.
- Collapsing/difficult to walk.

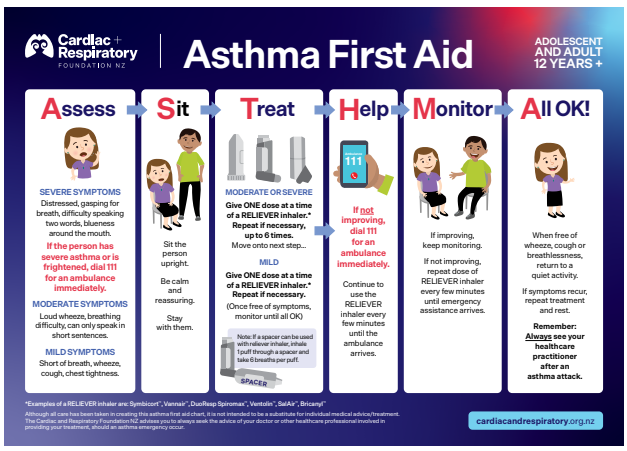
Asthma first aid: Adults and adolescents 12 years and over

Remember what to do...

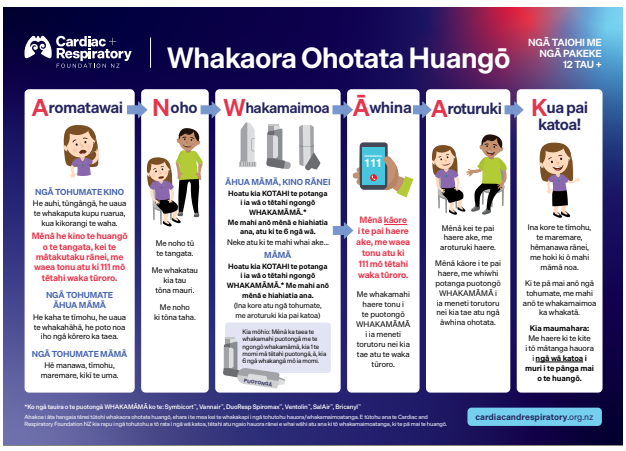
Assess
Sit
Treat
Help
Monitor
All OK!

Asthma first aid poster downloads

English



Te reo Māori



Information for patients, whānau and carers

There are a number of things that you can do to help manage your asthma:

1. Use an Asthma Action Plan

Asthma action plans can help you recognise and respond to worsening asthma symptoms using your prescribed asthma medicines.

Research shows that people who follow asthma action plans have better control over their asthma.

Download an asthma action plan and complete it with your healthcare practitioner. It can be provided in print or digital form, and is designed to be easily shared with other family members, whānau, school, work, sports coaches and others.

2. Keep your immunisations up to date

Keep your immunisations up to date by visiting your local primary healthcare provider or community pharmacy for your annual influenza (flu) vaccination and vaccination against COVID-19.

- See the latest Health New Zealand/Te Whatu Ora guidance for immunisation against COVID-19.
- See the latest Health New Zealand/Te Whatu Ora guidance for information about the annual flu vaccine.

3. Become smoke and vape-free

The best thing you can do for your respiratory health, or for that of your loved ones, is to quit smoking and vaping. If you want assistance to stop smoking, visit the Quitline website.

For information on second-hand smoke see here and for tips on making your home and car smokefree see here.

The long-term health risks of vaping are not yet known. However, research so far has found that vaping and second-hand vaping can irritate the lungs, increase coughing and worsen symptoms of respiratory conditions like asthma. Many vapes contain nicotine, including products that claim to be nicotine-free. Nicotine is highly addictive and impacts brain development in young people and can cause problems with concentration and mood. Vapes also contain additives and flavours which have been approved for use in food products, but haven't been tested if they are safe when inhaled into the lungs.

For more information on vaping, go to our Don't Get Sucked In website.

4. Create a healthy home environment

Living in a warm and dry environment is good for everyone, but for people with a respiratory condition it is vital for them to stay well. Many New Zealand houses are damp and cold which leads to more illnesses which aggravate respiratory conditions. Making your home dry, warm and pollution-free will make it healthier and save you money and energy. See here for more information on healthy homes, including how you can make your home healthy.

Health professionals who can help

If you or a family member has asthma, in addition to your healthcare practitioner / specialist, asthma educator or pharmacist, a number of people and organisations are available to help with your condition.

For friendly, local, specialised support and information, contact an asthma educator at one of our regional Asthma Societies. They can provide you with information and resources to assist you in managing your condition, including one-on-one assessment, education, advice and support. Their services are either free or available for a small charge.

A **physiotherapist** can teach techniques to control breathing patterns to manage breathlessness and to clear phlegm (mucus) from the chest. They can also give advice to improve fitness and endurance, to boost immunity levels.
Read the information from Physiotherapy NZ about how physiotherapy can help people with asthma, or visit physio.org.nz to find a local physiotherapist.

A **dietitian** can provide education and advice about nutrition for people with a respiratory illness, based upon their medical condition and individual needs. Maintaining a healthy weight may make asthma easier to manage. Your healthcare practitioner may refer you to a dietitian if appropriate.

Visit the New Zealand Dietetic Association (NZDA)'s website dietitians.org.nz to locate a dietitian in your area.

An **occupational therapist** can teach strategies for energy conservation, as well as modify the home environment to help those with severe asthma cope with basic daily tasks that may become more difficult as they manage their symptoms. Your healthcare practitioner may refer you to an occupational therapist if appropriate.

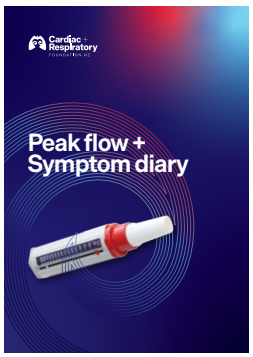
Asthma resources

The following resources can be downloaded from the Cardiac and Respiratory Foundation's website, or you can ask your healthcare practitioner or asthma educator for a printed copy:

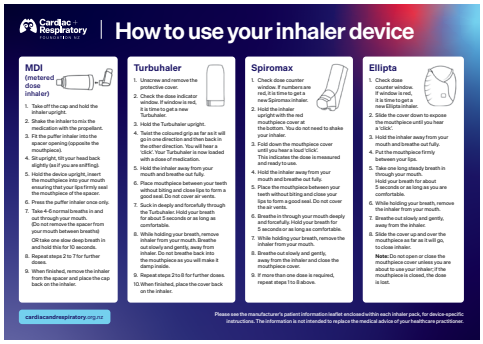
Asthma Action Plans (for 12 years and over)

Available in English, te reo Māori, Samoan, Tongan and Simplified Chinese.

Peak flow and Symptom diary



'How to use your inhaler device'



Cardiac + Respiratory
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The Cardiac and Respiratory Foundation NZ is the trusted leader in cardiac and respiratory health knowledge and advocacy for patients and health professionals in Aotearoa New Zealand.

Our purpose is to develop and support cardiac and respiratory health evidence-based practices through education, training, research and advocacy.

This booklet should not be used in place of health professional advice. For further information on this topic please talk to your healthcare practitioner or Māori health provider. The content in this booklet is not to be altered or reproduced in part or whole without written permission from the Cardiac and Respiratory Foundation NZ.

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