



ALLERGIA- JA ASTMALIITTO
ALLERGI- OCH ASTMAFÖRBUNDET

Asthma



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Asthma

The information in this booklet is primarily intended for school-age children and adults with asthma. Asthma is an inflammatory disease affecting the mucous membranes of the airways of the lungs characterised by reversible airway obstruction. Typical symptoms include coughing, sputum (mucus) production, wheezing and shortness of breath. Asthma affects approximately 10 % of the population in Finland. It is also estimated that approximately 5 % experience symptoms reminiscent of asthma from time to time.

Asthma is the most common chronic disease in children. The majority of people with asthma have allergies and they react to allergens in indoor air. As the patients grow older, the effect of allergies decreases. Asthma is the second most common chronic disease that requires medication after hypertension (high blood pressure). Every year nearly 240,000 people living in Finland receive health insurance reimbursements for asthma medications. ■



Asthma is an inflammatory disease

“Typical symptoms include coughing, sputum production, wheezing and shortness of breath.”

Asthma is an inflammatory disease affecting the mucous membranes of the airways. The reaction of the mucous membranes is usually triggered by an infection caused by an allergy (allergens) or a microbe (viruses, bacteria). Prolonged and recurring asthma inflammation leads to lung dysfunctions and in particular narrowing of the airways. The degree of airway constriction varies from person to person. Many of those with asthma have a strong tendency for bronchoconstriction (bronchial hyperreactivity) that manifests as responses to different triggers. Those with severe and chronic asthma may

develop permanent structural changes in the airways, such as connective tissue overgrowth on mucous membranes and the layer of muscle surrounding the airways. Both the inflammation of mucous membranes and the resulting airway constriction are protective reactions that block inhaled foreign substances. In asthma, the airways react to triggers too strongly and frequently in situations where there is no actual threat to the body. ■

Symptoms and causes

Inflamed mucous membranes produce sputum (mucus) that the patient coughs up. When the bronchial tubes begin to narrow, sputum production and coughing lead to wheezing and shortness of breath.

Long-term coughing, especially during nights, is often the first symptom of asthma. The symptoms are the same in children but they may also include slow growth, tiredness and withdrawing from playing and exercising. Vital functions have a circadian rhythm which is more profound in asthma, resulting in airway constriction in the early hours of the morning. When asthma is properly

managed, the situation improves and the rhythm returns to normal.

People with allergies react to many dusts they inhale, such as pollen, animal dander (skin flakes) and other air impurities. Respiratory infections, colds and influenza are, however, by far the most important triggers that worsen symptoms in patients with or without allergies. Most children with asthma are allergic to some allergen present in the surrounding air they inhale. In adults, non-allergic asthma, which means that there are no signs of sensitisation to allergens, is as common as allergic asthma. ■



Role of outdoor and indoor air

In Finland, the flowering period of alder and birch trees in the spring triggers allergic symptoms in approximately a million people who mainly suffer from a runny nose and eye symptoms, but also from asthma.

In the spring, fine-particle urban dust causes nasal and eye symptoms and exacerbates asthma. In city centres symptoms are triggered by traffic pollution and especially particulates inhaled deep into the airways. Despite this, Finland ranks among the top countries in global urban air quality comparisons.

“Poor ventilation is the mother of all indoor air problems.”

Indoor dust and pollutants are more important in the management of asthma than outdoor air quality. Indoor air quality is made worse by factors such as improper cleaning, hoarding, indoor smoking, pets (for patients with allergies), microbial growth (bacteria, fungi) in damp materials following water damage and sometimes chemicals released from building and decoration materials. Poor ventilation is the mother of all indoor air problems. ■

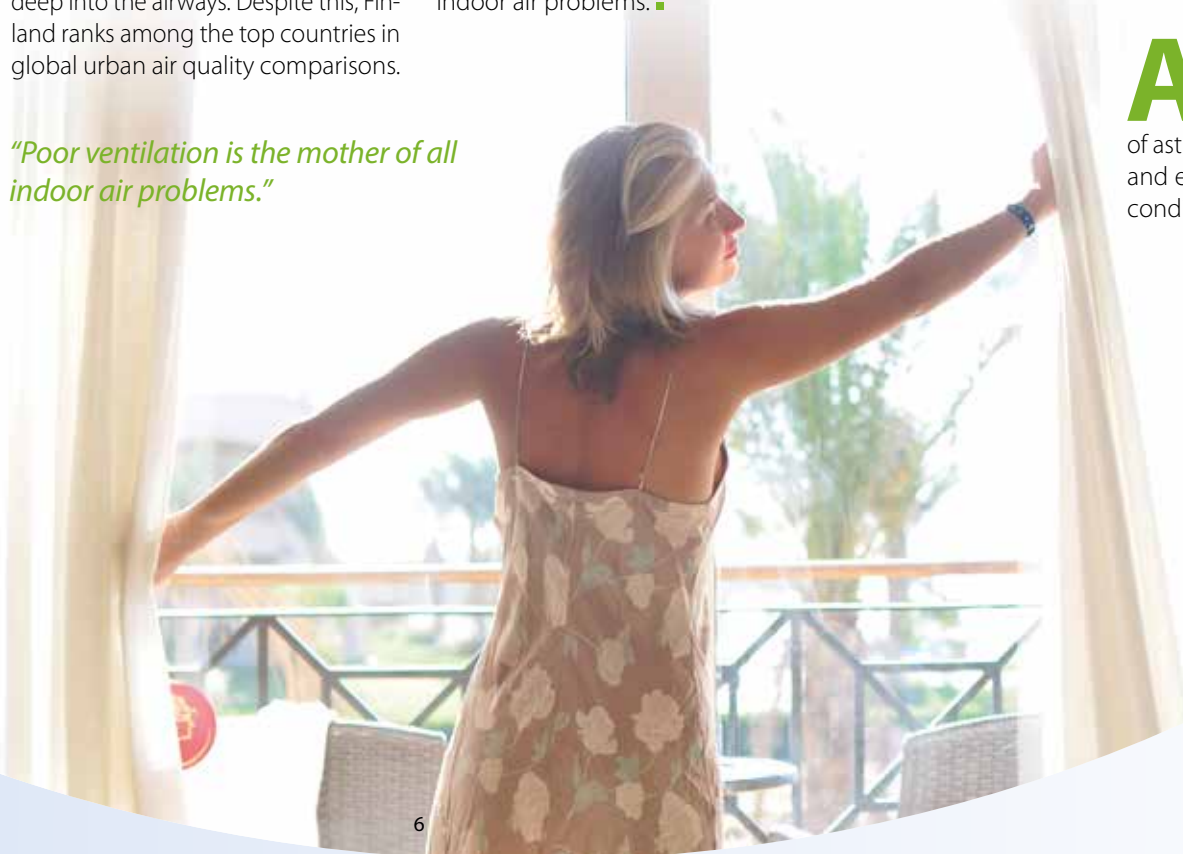
Exercise-induced asthma

Exercise-induced asthma Breathing speeds up during physical activity and heat and moisture escape from the airways. This irritates the inflamed mucous membranes and causes the airways to narrow. The symptoms are

caused in particular by the face becoming cold. If asthma is not properly managed, physical stress causes coughing, sputum production and wheezing. When the asthma inflammation is treated, the patient will tolerate physical stress. ■

Heredity

Asthma is often associated with strongly hereditary allergic predisposition, but it may also occur independently of allergies. Strong tendency of the airways to narrow is the most important factor affecting the development of asthma, and it is also influenced by hereditary predisposition. Lifestyle choices and environmental triggers affect the development and exacerbation of the condition. Humans are prisoners of their own genes only to a certain degree. ■



Recovery

Childhood asthma usually resolves on its own. Roughly a half of children with asthma experience no symptoms at the latest when they reach puberty. In some cases, however, the condition recurs in adulthood after a period of no symptoms. The prognosis of adult-onset asthma is generally good if the condition is diagnosed early and treated efficiently.

The occurrence of symptoms also depends on how well the condition is managed. Spontaneous resolution is not unheard of but the predisposition to asthma does not go away. Properly managed asthma does not impair the patients' ability to function and work, and poses no danger to life. ■

Associated conditions

Allergic asthma, allergic rhinitis, allergic conjunctivitis and atopic eczema (infantile eczema, eczema in creases of elbows and knees, sometimes hives) are associated conditions resulting from the body's tendency to become sensitive to environmental allergens. The majority of people with asthma also suffer from allergic rhinitis. Efficient treatment of the associated symptoms is important also for the balanced management of asthma. The first symptoms in children are usually eczema and food-triggered symptoms that later develop into respiratory allergy and asthma. ■

Asthma is not an emotional disorder

Asthma is caused by the predisposition to airway constriction and inflammation and often also by allergic tendency. Stress, depression and grief contribute to the development and exacerbation of the condition and the symptoms becoming chronic. Patients with severe asthma may suffer from impaired ability to function as well as depression and social problems. ■

Breathing dysfunctions

Hyperventilation, or over-breathing, is a breathing pattern disorder that causes difficulty breathing reminiscent of asthma. A hyperventilating person breathes too strongly compared to their need for oxygen, which results in a distressing and overwhelming feeling, tightness in chest, sudden fatigue, numbness in hands and dizziness. The symptom usually occurs on its own but is sometimes triggered by asthma. It is resolved when the asthma is managed properly. The factors behind hyperventilation are the sensitivity of the respiratory centres

of the central nervous system and often also stress. Hyperventilation is not dangerous and it often resolves on its own or by breathing into a paper bag. Another common breathing dysfunction is vocal cord dysfunction (VCD). It is characterised by a feeling of being unable to breathe as well as wheezing and rasping noises during inhalation. In asthma, wheezing noises can be heard during exhalation. Breathing dysfunctions are treated with breathing and relaxation exercises under the guidance of a physiotherapist. ■

Occupational asthma

Many substances that people come into contact with at work, such as animal dander, flours, chemicals or professional hair products, can cause sensitisation and asthma. If an employee's asthma is determined to be caused by an allergen or chemical in their working environment, their asthma is considered an occupational disease and further exposure to the trigger must be avoided. Many people with asthma experience exacerbated symptoms in a dusty working environment or in strenuous line of work, and their asthma is referred to as occupational asthma. Their condition will not, however, meet the criteria of

the Finnish Occupational Accidents, Injuries and Diseases Act (Työtapa-turma- ja ammattitautilaki, 459/2015) if it cannot be proven that the asthma was triggered by exposure to the allergen or chemical. Proving the causality requires conducting exposure tests at the respiratory diseases unit of a local hospital or at the Finnish Institute of Occupational Health. Most people with asthma can continue at their jobs as long as they see to the appropriate protection and medication against the triggers together with the occupational healthcare service provider and their employer. ■

Prevention

Small children with atopic eczema (infantile eczema, eczema in creases of elbows and knees) and food allergies have an increased risk of developing a respiratory allergy. Reducing the risk is difficult but babies should be breastfed, with solid foods introduced between the age of four to six months. Parents should not smoke. Avoiding contact with pets is irrelevant in the prevention of allergies in a small child. Antibiotics should only be prescribed to infants of under 12 months when seriously indicated. Children should be

vaccinated according to the National Immunisation Programme of Finland. Abstaining from vaccinations will not prevent asthma from developing but it can cause a risk of a life-threatening infection.

Allergic rhinitis is a risk factor of asthma. The risk can be reduced with proper treatment of colds and viral infections, abstaining from smoking, keeping fit and the early treatment of even the smallest symptoms that refer to asthma. ■



Instructions of the Finnish Allergy Programme for allergy prevention:

■ Prevention of sensitisation – primary prevention

- Emphasis on breastfeeding. Solid foods introduced at 4 to 6 months.
- No unnecessary avoidance of environmental and dietary exposures (foods, pets).
- Boosting natural immunity by spending more time in the nature.
- Regular exercise improves immunity.
- Eating a diet rich in fruits, vegetables, root vegetables and berries improves immunity (traditional Baltic Sea diet).
- The majority of microbes in the environment are beneficial and good for health.
- Antibiotics should only be taken if they are absolutely necessary.
- Probiotic microbes (certain foods, probiotic products) strengthen natural immunity.
- No smoking (parental smoking increases the risk of asthma in children).

■ Prevention of exacerbation and treatment of symptoms – secondary prevention

- Boosting natural immunity by spending more time in the nature.
- Regular exercise is important for both adults and children, especially those with asthma.
- Diets rich in vegetables, berries and fruits improves asthma management.
- Probiotic foods and products boost natural immunity.
- Allergen-specific immunotherapy:
 - allergens as they are (foods)
 - sublingual tablets (Timothy-grass etc.)
 - subcutaneous immunotherapy (injections)
- Allergic infections (inflammation) in skin and airways are treated early and intensively.
- No smoking (smoking decreases the effectiveness of asthma medications).

At the doctor's office

A doctor interviews the patient to learn more about their symptom history and checks their lungs, heart and the skin and the mucous membranes of the nose. The patient monitors their breathing in the mornings, evenings and during symptoms for a period of two weeks using a peak expiratory flow meter (PEF monitoring).

The patient also performs post bronchodilator tests where they inhale a bronchodilator (usually salbutamol)

after the initial inhalations and measures the PEF values again after 15 minutes. More accurate lung volumes are measured using spirometry and impulse oscillometry in small children. A bronchodilation test is performed, and changes in the exhalation flow rate per second are monitored at the same time. The airways' tendency to narrow is examined with an exposure test using either histamine or methacholine. If necessary, an exercise challenge test is performed where patients exercise on a stationary bike or treadmill or run either outdoors or indoors. A free running test is the easiest way to trigger an asthma attack especially in children.

Allergies are diagnosed by conducting skin prick tests, by measuring the amount of allergen antibodies (IgE antibodies) in blood and sometimes by performing exposure tests with a suspected allergen.

Asthma inflammations are examined by measuring exhaled nitric oxide levels. The nature of the inflammation can also be diagnosed by testing blood, sputum or nasal mucus samples. Monitoring of patients with properly diagnosed and well-managed asthma can also be overseen by specially trained asthma nurses. ■

Treatment

The primary treatment of symptoms of asthma are medications that often resolve the symptoms altogether. Reducing the amount of airborne allergens at home and work is a key element in the treatment of allergic asthma. Some allergies, such as pollen and animal dander allergies as well as bee and wasp sting allergies, can be treated with immunotherapy, in

which the patient is gradually desensitised to an allergen by injecting small amounts of it under the skin. Grass pollen (Timothy-grass) immunotherapy is administered via sublingual tablets. Food allergies are treated by avoiding the food triggers, but desensitisation using the culprit foods under the supervision of a healthcare professional is becoming more common. ■

Medication

Primarily and basic medications for both asthma and allergic rhinitis are inhaled corticosteroids that reduce mucous membrane inflammation. Narrowing of the airways is resolved when the inflammation goes down. Inflammation treatment can be continuous or periodic. If a patient only experiences symptoms during the pollen season, periodic treatment may be enough. However, the medication is often not used regularly enough and many patients also underestimate their symptoms.

In addition to steroid inhalers, patients with mild asthma also treat

occasional symptoms with quick-relief bronchodilators (β_2 -agonists). How often a bronchodilator is needed is an indicator of the success of inflammation treatment. Patients with properly managed asthma need to use a bronchodilator only rarely. If a patient experiences frequent symptoms despite appropriate anti-inflammatory medication, they use a bronchodilator regularly. In a case like this, the patient can try a combination therapy of corticosteroids and a bronchodilator. Majority of the people with asthma, however, use a flexible combination therapy and do not need a bronchodilator every day. ■



Anti-inflammatory drugs for asthma

The most important anti-inflammatory drugs used to treat asthma are inhaled steroids that are usually used mornings and evenings. Using a steroid inhaler only once a day (in the evening) may be enough when the asthma is under control, but during an exacerbation period it may need to be used up to four times in a day. Those with mild and occasional symptoms can use inhaled steroids in periods of two to four weeks. Leukotriene inhibitors available in tablet form block the actions of major inflammatory mediators, or leukotrienes. Leukotriene inhibitors can be used in the management of mild inflammation or as a medication to support corticosteroids. Theophylline tablets slightly reduce mucous membrane inflammation and may be useful especially for patients with chronic obstructive pulmonary disease (COPD) caused by smoking. Steroid nasal sprays are the most efficient treatment for allergic rhinitis associated with asthma.

Inhaled corticosteroids are safe even if used for years. The most common secondary symptoms are a slightly hoarse voice and throat irritation. These symptoms usually go away with improved oral care – brushing teeth before taking the medication and gargling with water after it, and then spitting the water out. Taking steroid tablets over the course of months and years has side effects such as thinning of skin, weakening of the bones and changes in metabolism. Short, occasional courses of steroid tablets taken for no longer than three weeks during exacerbation periods are safe and often necessary. ■

Bronchodilators

Asthma quick-relief medicines include inhaled bronchodilators that quickly open (dilate) and help relax the muscles of the airways (bronchi) and make it easier to breathe in a few minutes. Inhaled anticholinergics affect in a similar way but more slowly.

“Asthma quick-relief medicines include inhaled bronchodilators that open the airways quickly.”

Long-acting bronchodilators are beneficial for people with constant symptoms of asthma. The side effects include mild trembling and palpitations (sensation that the heart is beating too fast) in patients who only take the medicine occasionally or who have only recently started taking it. These symptoms are not dangerous but the dosage may have to be adjusted. Substantial and regular use of bronchodilators may lead to the medicine no longer having the desired effect. Bronchodilators are not to be used as the only medication to treat asthma (monotherapy) but rather as an add-on therapy to inhaled corticosteroids. ■

"A basic medication that reduces inflammation of mucous membranes, most often an inhaled steroid, reduces the symptoms."

Allergy medications

Antihistamines (tablets, sprays, drops) are essential allergy medications. They are mainly used to relieve the symptoms of allergic rhinitis and conjunctivitis and to a lesser degree different skin symptoms. As an asthma medication they are not particularly effective. Cromolyn sodium is widely used in the treatment of allergic eye symptoms. ■

Continuous use of asthma medications

A basic medication that reduces inflammation of mucous membranes, most often an inhaled steroid, reduces the symptoms. The medicine prevents asthma attacks in long-term use but this effect develops slowly. Inhaled steroids are not a quick-relief medication like bronchodilators. At first, the steroid is inhaled daily at regular intervals. If the condition shows no symptoms for a long period, the steroid dosage is decreased and may also only be taken periodically. Those with chronic asthma need to take inhaled steroids every day.

In mild asthma, bronchodilators are used to treat and prevent coughing, wheezing, shortness of breath and exercise-induced symptoms. The medicine is taken when necessary, avoiding regular use. An extra dose of both a

bronchodilator and a steroid can be inhaled about 15 minutes before physical exertion to prevent exercise-induced symptoms. If the symptoms start to develop after physical exertion, another set of doses is inhaled.

Unnecessary anxiety about medication, especially corticosteroids, may result in neglect of the treatment, causing the condition to become chronic. Medicines are always a lesser evil than severe symptoms. The most important asthma medications, including both steroids and bronchodilators, have been developed from the substances naturally produced by adrenal glands. Even though the doses used are small, the airways react to them well. Cromolyn sodium and theophylline have been developed from natural plants. ■

Guided self-management

Every asthma patient knows their condition the best. When patients understand how the symptoms develop and how the medicines work, they can adjust their basic medications by themselves according to their doctor's instructions. Asthma is well managed when the patients monitor how often they need to use a bronchodilator and occasionally measure their peak expiratory flow rate with a PEF meter.

Guided self-management is an important practical step toward the better management of asthma. Instructions for it are provided by the doctor and nurse who supervise the treatment. It goes beyond just prescribing certain medicines as the doctor and nurse will help the patient to manage asthma and to learn how to live life to the fullest with it. ■



Exacerbation of asthma inflammation

Viral respiratory infections are the most common cause of exacerbation of asthma. Exacerbations are usually preceded by increasing symptoms or symptoms developing in the night, impaired exertion tolerance, increased need for bronchodilators or decreased effect of bronchodilators or impaired lung function. If the asthma is getting worse, the dosage and frequency of inhaled medications are doubled or quadrupled according to the doctor's instructions. The increased need to take a bronchodilator usually indicates that the dosage of corticosteroid needs to be increased. If the increased dosage fails to reduce the symptoms back to a

manageable level in one or two days, the patient will start a course of steroid tablets on their own initiative. Antibiotics do not resolve the symptoms of a common cold as it is most often caused by rhinoviruses. Antibiotics are needed if the condition is exacerbated by purulent bronchitis (infection of the airways characterised by increased mucus production), sinus infection or middle ear infection.

If you get an asthma attack, try to remain calm. Inhale three to four extra doses of your bronchodilator and relax. Continue by following your self-care instructions and contact your health-care provider. ■

“Every asthma patient knows their condition the best.”

Severe asthma

Severe asthma is a multifaceted condition; it is not a single disease but a group of various conditions (e.g. severe allergic asthma). Due to its multifaceted nature, severe asthma is

also difficult to treat. The prevalence of severe asthma in adults and children is not well known. It is often estimated that roughly 5 to 10 % of all asthma sufferers have severe asthma. ■

Guided self-management of asthma

■ Recognise the signs of exacerbation

- You need to take your beta-2 agonist (quick-relief bronchodilator) more often than usually in a few days.
- You feel congested and as if you had a cold.
- You cough more than usual and develop difficulty breathing.
- Your exertion tolerance decreases.
- Your morning PEF drops from _____ to _____.

■ Prevent exacerbation

- Take two to four times your regular steroid inhaler dose for two weeks.
- Inhale your beta-2 agonist bronchodilator before taking your steroid for two weeks.
- If increasing the dosage of your inhaled medications does not relieve your symptoms in a day or two, start taking 20 mg of oral corticosteroid once a day over the course of 10 days.
- If you use a combination of a beta2-agonist and inhaled corticosteroid, start taking the steroid tablets without delay.
- Seek medical attention if your cough and shortness of breath get worse despite the increased dosage.
- Review your standard asthma management plan when you have the exacerbated symptoms under control.

Medications to avoid

Some asthma sufferers are hypersensitive to aspirin (acetylsalicylic acid) and other non-steroidal anti-inflammatory drugs, such as ibuprofen (i.e. Burana®). Those hypersensitive to these drugs should avoid them and use

medications that contain paracetamol for pain relief. Beta blockers used to treat high blood pressure and irregular heartbeat (and to decrease eye pressure) may exacerbate asthma. ■

Other ways to manage asthma

“Regular exercise is part of the management of asthma”

■ Do not smoke!

Lung symptoms will not get better for smokers. Smoking causes chronic obstructive pulmonary disease (COPD, characterised by chronic bronchitis and pulmonary emphysema) and exacerbates asthma. People who have smoked for decades may suffer from both. Asthma medications have a weakened effect on smokers. Nicotine is nearly as addictive as heroin, and nicotine replacement therapy (in the form of gum, patches, inhaler and tablets) can be used to aid smoking cessation. Medication to decrease the nicotine dependency of the central nervous system can also be used. But the most important thing is that you are determined about wanting to stop smoking. A cigarette does not light itself!

■ Exercising

Regular exercise is part of the management of asthma, and you can choose the type of exercise you do based on your own preferences. Activities suitable for asthma sufferers include Nordic walking, swimming, cycling, ball games, aerobic exercise and weight training. Jogging may trigger symptoms but it can be done if the asthma inflammation is under control. Cross-country skiing in extreme cold strains the respiratory system. Mild asthma does not typically prevent participating in competitive sports.

■ Diet

Maintaining a healthy weight is an important aspect of asthma management. If you are overweight, losing weight will decrease the frequency of symptoms and the need for medication. The traditional Mediterranean diet rich in fish, vegetables, fruits, nuts and olive oil helps ease the symptoms, as does the traditional Baltic Sea diet rich in Finnish berries, fish, root vegetables, vegetables, fruits, rye, oats and rapeseed oil. Reducing salt in your diet is also recommended. A suspected food allergy needs to be confirmed as unnecessary food-avoidance diets are already too common. Food hypersensitivities exacerbate asthma only rarely. Lactose intolerance is not an allergy but rather a condition where the body cannot digest lactose, a type of natural sugar found in milk and dairy products. Those with lactose intolerance replace traditional dairy products with lactose-free alternatives. Food additives are not dangerous to those with asthma.

■ Air humidifiers and purifiers

Air humidifiers are rarely necessary. The suitable indoor relative humidity level in the winter is 25–45 %. If you use an air humidifier, it is advisable to monitor the humidity levels with an instrument that measures relative humidity (i.e. hygrometer). If your home

is more humid than it should be, it will be an excellent breeding ground for microbes (bacteria and mould). Make sure your home is clean and properly ventilated. An air purifier will not treat asthma but it does reduce the amount of contaminants in indoor air. This may prevent the symptoms if you have a job or hobby that generates dust in the room. Air purifiers do not substitute for cleaning.

■ Respiratory protective devices and cold weather masks

Respiratory protective devices must be worn at all times when being exposed to dust or chemicals. Exhalation valve respirators are efficient and reasonably comfortable to wear. Physical exertion in cold weather cools and irritates the airways which may trigger asthma symptoms, but exercising may be possible when wearing a cold weather mask. In addition to the airways, asthma sufferers should also protect their faces from the cold – keeping both the face and the airways protected is equally important for those with asthma.

■ Natural remedies and complementary therapies

Antioxidant vitamins and minerals may be beneficial to the health of

mucous membranes. A balanced and normal diet usually provides enough of these vitamins and minerals. There is little evidence of the importance of complementary therapies in the management of asthma. Salt therapy may offer some help but only if the salt content of the room is correct, as excessive salt irritates the body. Natural medicines contain herbs and plant parts that may trigger allergic reactions. Let your doctor know if you take any natural medicines. Acupuncture has not been proven to help treat asthma, but it may alleviate the symptoms of allergic rhinitis.

■ Holidays in the sun

Warm and gentle weather often eases the symptoms of asthma but only if the air is pure. Many Finnish asthma sufferers feel better in a warmer and sunnier environment but asthma is still as prevalent in southern Europe as it is in Finland. Those with pollen allergies need to look into the pollen situation in their holiday destination, and it should be borne in mind that they can also become sensitive to the plants in their holiday destination. Common allergens in the Mediterranean region include pollens of olive tree and pellitory of the wall (*Parietaria diffusa*) and ragweed in North America.

Pregnancy

Asthma is not a condition that affects pregnancy. Symptoms of asthma often occur less during pregnancy, but they may also get worse. Pregnant women continue taking their asthma medications (including steroid inhaler) according to their doctor's instructions as they do not pose a danger to the foetus. ■

Occupational considerations

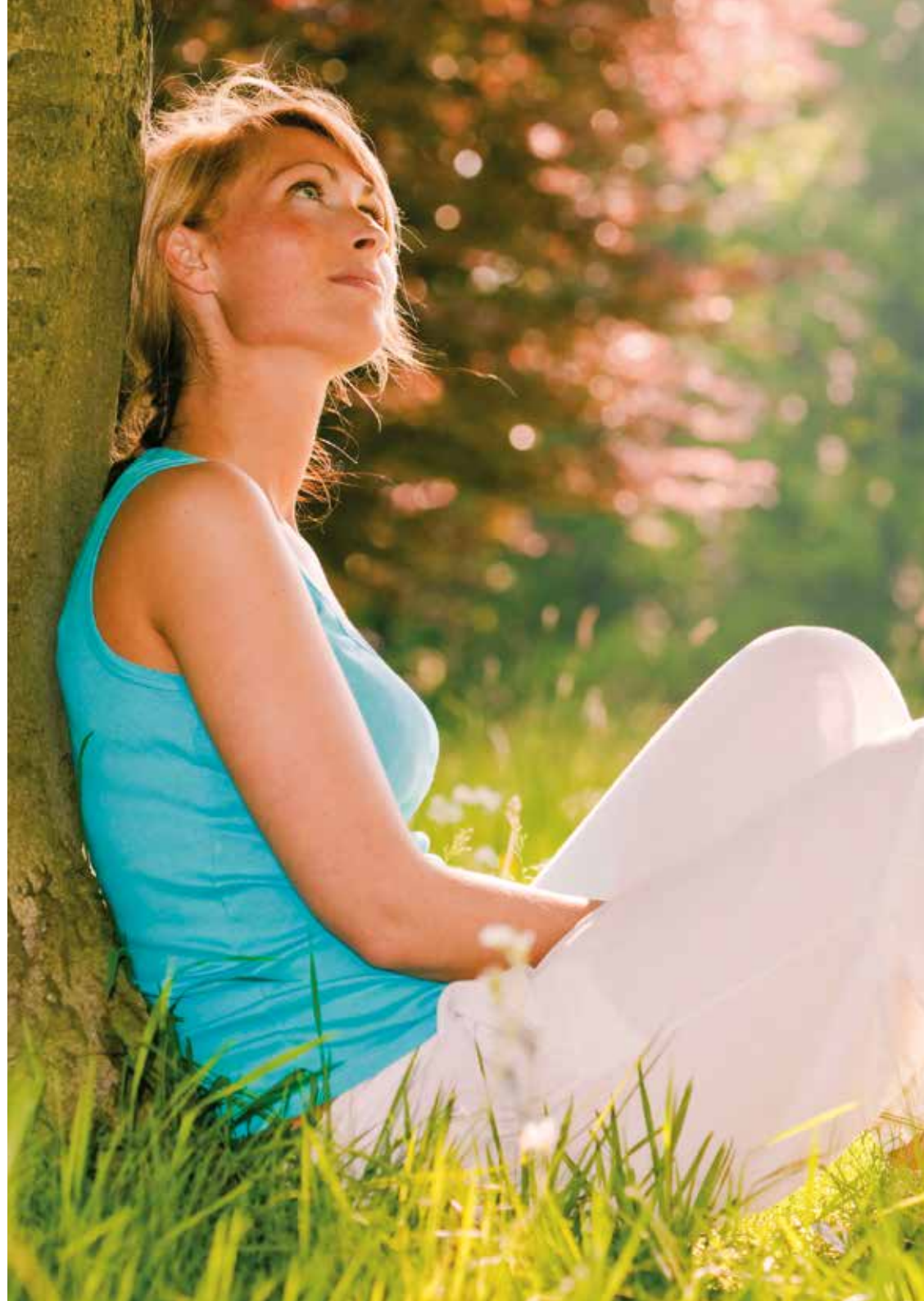
"Asthma and allergies limit the choice of occupations only in exceptional situations."

Asthma and allergies limit the choice of occupations only in exceptional situations. Working as a hairdresser, baker or cleaner and working with animals may expose those with asthma or allergies to allergens or irritants that trigger symptoms. Many people with allergies, however, do these jobs with no complications. ■

Financial support

Those with asthma are entitled to reimbursement from Kela for their medications after they have been taking the medicine regularly for six months. To apply for entitlement to special reimbursement from Kela, you will need a statement B from your doctor. The reimbursement rate is 65 % of the normal price of the medicine. Asthma medications, like other prescription medicines, count towards the annual maximum limit on out-of-pocket costs. You can also apply for reimbursement from Kela for travel expenses related to the treatment of your condition. If your asthma complicates the everyday life of your family or impairs your ability to work, you will be offered rehabilitation, support for adapting to the condition and education to a new job.

You can apply for rehabilitation allowance to provide you with an income while you participate in a rehabilitation programme. The maximum limit on out-of-pocket costs incurred by visits to public hospitals or doctors is calculated annually. If you have been prescribed equipment to help manage severe asthma, you can contact your local rehabilitation services who will help you acquire your equipment. ■





We are sensitive

Nearly a half of Finns suffer from allergy symptoms at some point in their lives. Asthma affects one in ten Finns. Allergy and Asthma Federation is a public health organisation with an aim to improve the quality of life of those with allergies and asthma.

Allergy and Asthma Federation provides materials for coping with allergies. To order the materials, contact the Federation or visit www.allergia.fi. The Allergia & Astma magazine published by the Federation is another good source of information (available in Finnish).

Allergy helpline, tel. +358 (0)600 14419

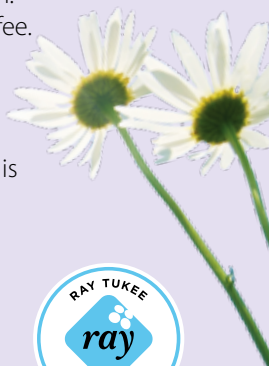
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