

Allergic reaction in the lungs (hypersensitivity pneumonitis)

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Information for Patients

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What is hypersensitivity pneumonitis?

Hypersensitivity pneumonitis is a disease of the lungs caused by an allergic reaction to certain dusts (allergens), fungus, moulds, chemicals, or other substances that we cannot always identify that you breathe in.

The allergens are often things that are naturally found at home, work, or in the environment. They may contain fungus spores from mouldy hay or bird droppings. Sometimes the cause cannot be found.

- This allergy causes inflammation in your lungs.
- If found early, and you avoid whatever it is that is causing the reaction, the inflammation can often be reversed. However, it is often already well established by the time people are diagnosed.
- Sometimes hypersensitivity pneumonitis can cause lung scarring known as chronic hypersensitivity pneumonitis if it is not detected early and you continue to be exposed to the substances.

How does hypersensitivity pneumonitis affect your body?

When you breathe in something that you are allergic to, you will not notice any problems the first time. Some people may develop symptoms after a large exposure or after lots of smaller exposures.

The tiny air sacs in the lungs become inflamed as their walls fill with white blood cells and, occasionally, the air sacs may also fill with fluid. The inflammation can get better within a few days if you stop breathing in the allergen. If you breathe in the allergen repeatedly, the inflammation in the lung continues. This may lead to some parts of the lung developing scar tissue (fibrosis). When your lungs have scar tissue, you may have trouble breathing normally and the process becomes chronic.

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How serious is hypersensitivity pneumonitis?

It is very important to catch this disease in the early stages to prevent permanent lung damage. If the process is caught in the early stages and if you avoid the exposure then it can sometimes be reversed.

It can become a serious condition for some people whose lungs develop scarring. Lung scarring (also called pulmonary fibrosis) may happen in the later stages of the disease. The lung scarring is permanent. Unfortunately, there is no cure or effective treatment for long-standing (chronic) hypersensitivity pneumonitis.

What are the symptoms?

A variety of materials that are inhaled as a fine dust can cause hypersensitivity pneumonitis. It can take several months to a number of years to develop allergy to the dust. Only a small number of people who inhale these dusts actually develop hypersensitivity pneumonitis.

You may feel like you have caught the flu when the attack happens at first. It appears about 4 to 6 hours after you inhale the dust. The symptoms seen are:

- dry cough
- shortness of breath
- chest tightness
- fever
- chills
- tiredness

The initial symptoms may last for as little as 12 hours but may continue for several days in some people. If you have repeated exposure to the dust, the following symptoms may be seen:

- shortness of breath when moving around
- dry cough
- weight loss that is unexpected

What causes hypersensitivity pneumonitis?

There are more than 300 known substances that, when inhaled as a fine dust, have been known to cause hypersensitivity pneumonitis. Many are not known. Some commonly seen problems are given specific names depending on what seems to be the cause, including:

- **Farmer's lung:** seen in farmers and cattle workers; this condition is caused by breathing mould that grows on hay, straw, and grain.
- **Bird fancier's lung:** also called pigeon breeder's disease; caused by breathing particles from feathers or droppings of many species of birds.
- **Humidifier lung:** can develop by breathing in fungus growing in humidifiers, air conditioners, and heating systems, particularly if they are not well maintained.

- **Hot tub lung:** may develop by breathing in bacteria that may be found in the water vapour coming from indoor hot tubs.

It is important is that you know what you have and how it is treated and managed.

What are the risk factors?

If you work in certain occupations, then you may have a higher risk of developing hypersensitivity pneumonitis. This includes farmers; vegetable or dairy cattle workers; bird and poultry handlers; veterinary workers and animal handlers; grain and flour processing and loaders, lumber milling; wood stripping, and paper and wallboard manufacturers. Another risk factor is inhaling certain chemicals produced in plastic manufacturing, painting, and the electronics industry. Even if it was some time ago it is still worth mentioning.

Most people who work in such occupations do not develop hypersensitivity pneumonitis. It appears that certain genetic factors determine if you are going to develop hypersensitivity pneumonitis or not. Unfortunately, at this time, there is not much information about the genes that are responsible for this.

How is hypersensitivity pneumonitis diagnosed?

It is diagnosed by asking questions about your history and what you might have been exposed to. Your doctor will also examine you, listen to your lungs with a stethoscope, and may order some tests.

Your doctor may also use a small instrument called a pulse oximeter that is placed on the finger to check the oxygen levels in your blood.

Your doctor will ask if you have exposure to any kind of dust at home or at work. Some questions that you may be asked are:

- Have you been exposed to any water damage in your house or at work, especially from humidifiers, heating systems, or air conditioners?
- Do you have a hot tub at home?
- Have you been exposed to bird droppings or do you have any birds as pets?

You can bring a family member to the doctor's visit to help you with these questions.

Your doctor may order any of the following tests to assist in the diagnosis process:

- **Chest X-ray and CT (computerized tomography) scan** that may be able to show early stages of the disease and if there is any scarring.
- **Lung function tests** show how well you breathe to see if your lungs are working correctly.
- **Blood tests** are done to find out if you have developed antibodies against the dust (allergen). These blood tests can help show if you have been exposed to a certain dust.
- **Bronchoscopy** is when a bronchoscope (small flexible tube about the size of a pencil with a video camera attached at its end) is passed either through your nose or mouth.

The scope is then passed into your vocal cords, windpipe, and the air passages. This tool can be used to collect specimens from your lung for further testing.

- **Video-assisted thoracic surgery (VATS)** or open lung biopsy is performed by a cardiothoracic surgeon under general anaesthetic (you are asleep). It is another way to get lung tissue for further testing.

How is hypersensitivity pneumonitis treated?

Once hypersensitivity pneumonitis is diagnosed, the single most important thing that you can do is avoid the dust that causes the disease.

Avoiding the dust is important both in early and later stages of hypersensitivity pneumonitis. You can live a normal life and your lungs can return to normal function if you avoid the dust in the early stages, as the disease is completely reversible in the early stages.

Completely avoiding the dust is sometimes not possible unless you remove yourself from the environment. Your doctor may recommend completely avoiding the dust by relocating to a new home or job. If you have bird fancier's lung, then it is possible you may have to give up your pet bird.

In patients who have severe cases, treatment may include prescription steroids, such as prednisone. You may be required to take this medication for up to 3 months and often longer. Steroids may help with your symptoms, however, it will not cure the disease. Steroids can also cause certain side effects such as weight gain, thinning of the bones, abnormal blood sugar levels, cataracts and increased pressure in your eyes.

Some people have benefitted from medications that suppress immunity such as mycophenolate and azathioprine, instead of steroids.

In end stage lung disease with advanced lung scarring, lung transplantation may be a consideration.

How is hypersensitivity pneumonitis managed?

You can take steps to limit exposure to certain dusts.

- Allergy causing bacteria and fungus can thrive in still water. Be sure to remove any standing water inside and outside your home.
- Immediately repair any water damage inside your home or work. This includes removing water damaged carpeting, furnishings, and drywall.
- Properly maintain your heating, ventilation, and air conditioning systems.
- Make sure that the water in heating, air conditioning, and ventilation systems is not recirculated.
- Properly dry and store farm products if you work with them.
- If you cannot completely avoid the dusts, there are certain protective devices that can reduce the chances of breathing in the dust. You can consider wearing an air-purifying respirator. Air-purifying respirators have been used to prevent acute attacks of farmer's lung. Wearing such respirators for long periods can be a challenge. Dust respirators are not found to be very helpful.

Some engineering controls, such as having an electrostatic dust filter in the return ducts of central air conditioning systems, can also be considered to reduce dust exposure.

What questions can I ask my doctor?

Making notes before your visit, as well as taking along a trusted family member or friend, can help you through the appointment with your doctor.

- I have been diagnosed with hypersensitivity pneumonitis due to an allergy to a workplace dust. Is it safe for me to continue working?
- Are there any work restrictions that I need to follow?
- Do I have to give up my pet birds?
- Should I avoid hot tubs?
- Can my family members get the disease if I have it?
- What tests will I need to confirm my diagnosis?
- How often should I get lung function tests?
- How often should I get chest X-rays and CT scans?
- Do I need to be on steroids?
- Should I use oxygen?
- Should I continue to receive flu shots and pneumonia shots?
- Is it safe for me to exercise?
- Should I make changes to my diet?
- Can I fly on a plane?
- Where can I find more information about hypersensitivity pneumonitis?

Contact details

Please do not hesitate to contact the Interstitial Lung Disease (ILD) Team on 0116 258 3949.

Further information

British Lung Foundation: <https://www.blf.org.uk/>

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