CONDITION

Hypersensitivity pneumonitis

Hypersensitivity pneumonitis is lung inflammation caused by an immune reaction to certain inhaled particles.

WHAT IT IS
Immune-related lung inflammation after repeated inhaled exposures

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Shortness of breath, cough, fatigue, fever

WHAT CAUSES IT
Immune reaction to inhaled particles or chemicals

HOW IT IS DIAGNOSED
Exposure history, high-resolution CT, lung tests, sometimes biopsy

MAIN TREATMENT
Exposure avoidance, anti-inflammatory treatment, oxygen, pulmonary rehabilitation

CAN IT BE CURED?
Sometimes - early exposure removal may stop inflammation

IS IT AN EMERGENCY?
Sometimes - severe breathlessness or blue lips

LONG-TERM OUTLOOK
Often improves early; fibrosis may cause lasting breathing problems

Overview

Hypersensitivity pneumonitis is a lung condition caused by an immune reaction to something you breathe in. Common triggers include proteins from birds, mold, bacteria in contaminated water, and some workplace materials.

The tiny air sacs and supporting tissue deep inside the lungs become inflamed. This can make it harder for oxygen to move into the blood. Symptoms may appear suddenly after a heavy exposure or develop gradually after repeated smaller exposures.

Doctors often describe the condition as nonfibrotic or fibrotic . Nonfibrotic hypersensitivity pneumonitis mainly involves inflammation and may improve when the trigger is removed. Fibrotic hypersensitivity pneumonitis includes lung scarring, called pulmonary fibrosis . Scarring may be permanent and can sometimes continue to worsen.

Finding the trigger matters because avoiding it is a central part of treatment. However, the source is not always obvious, and some people never identify a specific exposure.

Symptoms

Symptoms can begin within hours of a strong exposure. In other people, they develop over months or years and may not seem connected to a particular place or activity.

Common symptoms include:

Symptoms that appear quickly may ease over several hours or days after you leave the exposure. They can return when you encounter the trigger again.

With longer-term inflammation or fibrosis, breathlessness may gradually become more noticeable. Everyday activities such as climbing stairs, carrying shopping, or walking uphill may become harder.

These symptoms can occur with asthma, infection, other inflammatory lung conditions, and heart problems. Symptoms alone cannot confirm hypersensitivity pneumonitis.

- Shortness of breath, especially during activity
- A dry cough
- Tiredness or reduced stamina
- Fever, chills, or flu-like feelings after exposure
- Chest tightness
- Reduced appetite or unplanned weight loss

Causes and risk factors

The condition develops when the immune system reacts strongly to small particles that reach deep into the lungs. It is not an infection, although bacteria or fungi growing in an environment can release the particles that trigger the reaction.

Possible sources include:

Exposure may happen at home, at work, or through a hobby. A bird may no longer be present while its proteins remain in carpets, furniture, or dust. Mold can also be hidden behind walls or beneath flooring.

Most exposed people do not develop hypersensitivity pneumonitis. Individual immune responses, the amount and length of exposure, and possibly genetic factors help determine

who becomes affected. Smoking does not protect the lungs and can cause other serious lung problems.

- Bird feathers, droppings, or proteins from pigeons, parrots, chickens, and other birds
- Mold in hay, grain, compost, buildings, humidifiers, or ventilation systems
- Bacteria or mold in hot tubs and contaminated water systems
- Fungi used in some food production
- Certain chemicals used in manufacturing, painting, or insulation

Diagnosis

There is no single test that confirms every case. Diagnosis usually combines your symptoms, a detailed exposure history, lung imaging, breathing tests, and sometimes samples from the lungs.

You may be asked about birds, pets, water damage, heating and cooling systems, humidifiers, hot tubs, farming, woodworking, and workplace chemicals. The timing of symptoms in relation to work, travel, or time at home can provide useful clues.

A high-resolution CT scan produces detailed images of the lungs. It may show inflammation, trapped air, or patterns of fibrosis. The pattern can help specialists distinguish hypersensitivity pneumonitis from other lung conditions.

Pulmonary function tests measure how much air your lungs hold, how quickly you can breathe out, and how well oxygen moves from your lungs into your blood. These tests help show the condition's effect and provide a baseline for follow-up.

Other investigations may include:

Exposure-related blood antibodies show that your immune system has encountered a substance. They do not prove that it is causing lung inflammation.

Diagnosis may involve a respiratory specialist, radiologist, and pathologist reviewing the findings together. An occupational or environmental health assessment can help investigate possible triggers.

- Blood tests for antibodies linked to particular exposures
- Oxygen measurements at rest and while walking
- Bronchoscopy, in which a thin tube collects fluid from the lungs
- A lung biopsy when other findings do not provide a clear diagnosis

Treatment and management

The most important step is reducing or stopping exposure to the trigger. This can be straightforward when the source is a workplace material or hobby, but difficult when particles remain in a building or the trigger is uncertain.

Management may involve professional mold removal, changes to work practices, cleaning or replacing contaminated equipment, or avoiding a particular animal or activity. A basic mask may not prevent exposure to very small airborne particles. Workplace respiratory protection should be selected and fitted through an appropriate safety program.

Some people need corticosteroids like prednisone or hydrocortisone , which reduce immune-related inflammation. These medicines may help symptoms and short-term lung function, particularly when inflammation is active. They do not remove the cause or reverse established fibrosis. Longer treatment can have important side effects, so monitoring is needed.

Specialists may consider other medicines that alter immune activity when inflammation continues or corticosteroid side effects are a concern. If progressive lung fibrosis develops, an antifibrotic medicine may be considered. Antifibrotic treatment aims to slow further loss of lung function rather than remove existing scars.

Other parts of care may include:

Treatment choices are based on the type of lung changes, symptom severity, oxygen levels, and whether the condition is stable or progressing.

- Oxygen therapy when blood oxygen levels are low
- Pulmonary rehabilitation to support exercise, breathing, and energy management
- Vaccination and infection-reduction measures, especially during immune-suppressing treatment
- Support to stop smoking or avoid secondhand smoke
- Lung transplantation assessment for a small number of people with advanced lung damage

Complications

Repeated or ongoing inflammation can cause pulmonary fibrosis. Scarred lung tissue becomes stiff and is less able to transfer oxygen.

Possible complications include low blood oxygen, reduced ability to exercise, and respiratory

failure in advanced cases. Fibrosis can also raise pressure in the blood vessels of the lungs, called pulmonary hypertension , which may strain the right side of the heart.

Medicines that suppress immune activity can increase the risk of infection and cause other side effects. Regular monitoring helps balance these risks against the expected benefit.

Prevention

There is no certain way to prevent the first immune reaction. Most people do not know they are susceptible before symptoms begin.

Once hypersensitivity pneumonitis is suspected or diagnosed, preventing repeated exposure may reduce further inflammation. The correct action depends on the source. It may require environmental testing, professional building repairs, changes at work, or stopping a particular hobby.

Cleaning visible mold without fixing the moisture source is unlikely to solve the problem. Do not enter heavily contaminated areas without suitable protection. If the exposure is work-related, an occupational health or workplace safety service can help assess safer working arrangements.

Living with it and what to expect

Nonfibrotic hypersensitivity pneumonitis may improve over weeks or months after the trigger is removed, although recovery is not guaranteed. Symptoms can return after another exposure.

When fibrosis is present, the scarring usually does not disappear. Some people's lung function remains stable after exposure ends. Others have a gradual decline despite avoiding the suspected trigger. The outlook is generally more concerning when fibrosis is extensive or continues to progress.

Follow-up may include symptom reviews, breathing tests, walking oxygen measurements, and occasional CT scans. These checks look for meaningful changes over time rather than day-to-day fluctuations.

You may need to pace demanding activities during recovery. Pulmonary rehabilitation can help you exercise safely and manage breathlessness. Portable or home oxygen can support activity when oxygen levels are low, but it does not treat the underlying inflammation.

Living with an uncertain environmental trigger can be stressful. Keeping notes about

symptoms, locations, work tasks, hobbies, and travel may reveal patterns and make follow-up discussions more useful.

When to get medical help

Arrange a routine medical appointment if you have a cough or breathlessness that persists, especially if it changes between home, work, or time away. Mention bird contact, water damage, mold, farming, hot tubs, and dusty or chemical work.

Seek prompt medical advice if diagnosed symptoms are worsening, normal activities are becoming harder, fever persists, or your oxygen reading is lower than the range set for you. A new fever or productive cough during immune-suppressing treatment may indicate an infection rather than a flare.

Call emergency services for severe breathlessness at rest, blue or grey lips, confusion, fainting, or an inability to speak in full sentences. Sudden chest pain or rapidly worsening breathing also needs emergency assessment.

Common questions

Is hypersensitivity pneumonitis contagious?

No. You cannot catch it from another person. Several people in the same place may become unwell if they share the same environmental exposure.

Is hypersensitivity pneumonitis the same as pneumonia?

No. Pneumonia is usually caused by an infection. Hypersensitivity pneumonitis is an immune reaction to inhaled material. The symptoms and scan findings can overlap, so testing may be needed to tell them apart.

Will my lungs heal after I avoid the trigger?

Inflammation may improve, particularly when the condition is found before fibrosis develops. Established scar tissue usually remains. Continued follow-up shows whether lung function is recovering, stable, or declining.

Can I keep my bird if it caused the condition?

Continued exposure can lead to further lung inflammation. Bird proteins can also remain in household dust after the bird is removed. Decisions about removing a bird and cleaning the home should be based on the strength of the exposure evidence and specialist advice.

Can mold in my home cause hypersensitivity pneumonitis?

Certain molds can trigger the condition, but finding mold does not prove it caused your symptoms. The building's moisture problem, your exposure pattern, CT findings, and other test results must be considered together.

Can hypersensitivity pneumonitis turn into cancer?

It does not turn into cancer. Fibrotic hypersensitivity pneumonitis can still cause serious long-term breathing problems, so ongoing assessment remains important.

Sources

- Raghu G, Remy-Jardin M, Ryerson CJ, et al. "Diagnosis of Hypersensitivity Pneumonitis in Adults: An Official ATS/JRS/ALAT Clinical Practice Guideline." American Journal of Respiratory and Critical Care Medicine . 2020;202(3):e36-e69.
- Fernández Pérez ER, Travis WD, Lynch DA, et al. "Diagnosis and Evaluation of Hypersensitivity Pneumonitis: CHEST Guideline and Expert Panel Report." CHEST . 2021;160(2):e97-e156.
- National Heart, Lung, and Blood Institute. "Hypersensitivity Pneumonitis." Patient information on causes, symptoms, diagnosis, and treatment.
- Vasakova M, Morell F, Walsh S, Leslie K, Raghu G. "Hypersensitivity Pneumonitis: Perspectives in Diagnosis and Management." American Journal of Respiratory and Critical Care Medicine . 2017;196(6):680-689.
- Flaherty KR, Wells AU, Cottin V, et al. "Nintedanib in Progressive Fibrosing Interstitial Lung Diseases." New England Journal of Medicine . 2019;381:1718-1727.