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Key Facts

More than 110,000 people in the United States have been diagnosed with bronchiectasis.

While people of all ages can get it, the risk increases with age.

The costs of treating bronchiectasis are about $630 million per year.

Fewer than 1 in 20,000 people ages 18 to 34 have the disease.

But 1 in 350 have it by age 75.

It occurs more in women than in men.

Treatment is aimed at clearing mucus, preventing infections, and reducing inflammation.
Living Well With Bronchiectasis

Bronchiectasis is when the airway walls, known as bronchi, thicken or enlarge. This is caused by chronic inflammation and/or repeated infections. In fact, bronchiectasis means “dilated airways.” (“Bronchi-” means the airways of the lungs, and “-ectasis” means an organ that is enlarged or dilated.) Bronchiectasis damages your airways, which makes it hard for mucus to leave the body. As a result, mucus builds up in the lung. This attracts bacteria and microbes that lead to infection. Chronic infections lead to chronic inflammation, and more mucus. Chronic inflammation causes additional thickening and widening of the airways.

Over time, it gets harder to breathe. But there’s good news—the process can be slowed down by catching inflammation and infections early.

This guide will introduce you to bronchiectasis – its causes, symptoms and risk factors; how it is diagnosed; how it is treated; and how to manage the condition to minimize its impact.
CT Scan

Enlarged and thick-walled bronchi (airways)
What Is Bronchiectasis?

Bronchiectasis is when the airway walls, known as bronchi, thicken or enlarge. This is caused by chronic inflammation and/or repeated infections.

In a normal lung, there are little hair-like structures, known as cilia, on the airways. Cilia sweep mucus and particles out of the lungs. But in people with bronchiectasis, cilia are destroyed. Mucus and particles can’t be cleared from the lungs.

As a result, mucus builds up in the lung. This attracts bacteria and microbes that lead to infection. Chronic infections lead to chronic inflammation, and more mucus. Chronic inflammation causes additional thickening and widening of the airways. Over time, it gets harder to breathe.
How Does Bronchiectasis Affect Your Body?

Bronchiectasis is a long-term condition that can be treated but never cured. Lung function gradually declines over years.

People with bronchiectasis have good and bad periods. During bad times, they have flare-ups, known as exacerbations. Flare-ups can last days or weeks. They vary in severity. The sooner people go to the doctor for treatment, the less damage to the lungs from the infection. Along with medications, other measures can help prevent declining lung function.
Common Symptoms

The most common symptoms are:

- Coughing up a lot of mucus.
- Shortness of breath that’s worse during flare-ups.
- Feeling run-down or tired, especially during flare-ups.
- Fevers and/or chills, usually during flare-ups.
- Wheezing or a whistling sound while you breathe.
- Coughing up blood or mucus mixed with blood, a condition called hemoptysis.
- Chest pain from increased effort to breathe.
- Thickening of skin under nails, known as clubbing.
Causes Of Bronchiectasis

There are two kinds of bronchiectasis: cystic fibrosis (CF)-bronchiectasis and non-CF bronchiectasis. Between one-third and one-half of bronchiectasis cases in the United States are associated with CF.

Bronchiectasis is often a part of diseases that affect the whole body. Non-CF bronchiectasis can develop from:

- Low levels of infection-fighting proteins in the blood. This is known as “humoral immunodeficiency.”
- Recurring or chronic infections, such as tuberculosis or nontuberculous mycobacteria (NTM)
- Inflammatory bowel disease, including Crohn’s disease and ulcerative colitis
- Rheumatologic diseases, including rheumatoid arthritis and Sjögren’s disease
- Alpha1-antitrypsin deficiency. This is the genetic cause of COPD in some people.
- Chronic obstructive pulmonary disease or COPD
- Asthma
- Immune system weaknesses, such as HIV or uncontrolled diabetes
- An allergic lung inflammation, allergic bronchopulmonary aspergillosis, that causes airway swelling
- Recurring or chronic pulmonary aspiration. This is when a person inhales food, liquids, saliva, or stomach acids into the lungs.
- Damage to the hair-like structures lining the airway, making them not work properly. This is known as primary ciliary dyskinesia.
- Something people are born with (or congenital).
Risk Factors

The most common risk factors are:

- Being diagnosed with cystic fibrosis (CF)
- Having a chronic inflammatory lung disease
- Chronic or severe lung infections (such as tuberculosis)
- Aspirations that chronically damage the lungs

How Is Bronchiectasis Diagnosed?

Health-care providers may use various tests to diagnose bronchiectasis and find the cause. These tests include:

- **Blood tests.** They check for
  - conditions associated with bronchiectasis
  - an infection
  - low levels of infection-fighting blood cells

- **Chest CT (or CAT) scan and/or radiograph.** A CT scan can show the extent and location of lung damage. It can also show abnormal thickness and irregular airways.

- **Mucus (sputum) culture.** This checks for growth of bacteria or other microbes.

- **Lung function tests.** These tests measure your breathing for:
  - how much air you take in
  - how much air you expel
  - how well your lungs get oxygen to your blood

- **Bronchoscopy.** A flexible, narrow tube (known as a bronchoscope) is inserted into the airways. In more severe or resistant cases, it helps find blockages and sources of infection and inflammation.
Questions To Ask Your Doctor

Patients with bronchiectasis should get regular checkups. Making notes before your visits, as well as taking a family member or friend, can help.

Questions include:

- Why did I get this disease?
- Is it contagious?
- Is my type of bronchiectasis genetic?
- How often should I provide a mucus sample?
- What are the signs and symptoms of a flare-up?
- What should I do when I have a flare-up?
- What can I do to prevent a flare-up?
- What vaccinations should I have to prevent lung infections?
- What if prescribed medications don't help me, even though I take them as directed?
- Should I take an over-the-counter cough and cold product?
- What can help with the emotional toll of having lung disease?
- What can I do to improve my lung condition?
- What type of exercise might help?
- What changes should I make to my diet?
- Are there support groups?
The three goals of bronchiectasis treatment are:

- Fight infections
- Thin mucus (making it easier to clear from the lungs)
- Open the airways (using bronchodilators)

Doctors have many options for treating bronchiectasis. Your doctor will select the most appropriate one, or a combination, based on your condition and health status. Generally, medications fall into three categories:

- Antibiotics
- Macrolides
- Mucolytics
Antibiotics

Antibiotics are typically the first line of attack against infections. Based on the severity of your condition, your doctor will give you antibiotics that you either take by mouth or receive through your veins (intravenously). Some antibiotics can be inhaled using a hand-held device called a nebulizer. It converts the medicine into a mist.

Macrolides

Macrolides are a type of antibiotic that not only kill certain types of bacteria but also reduce inflammation in the airways. Azithromycin and clarithromycin are examples of macrolides. They are sometimes used over several months. This may be beneficial for some people but also may have serious side effects, including:

- diarrhea
- nausea
- hearing loss
- dizziness
- development of resistant bacteria in the lungs

Talk with your health-care provider about whether the use of macrolides is right for you.

Mucus-Thinning Medication

Mucus-thinning medications, known as mucolytics, help people with bronchiectasis get mucus out of their lungs. A nebulizer turns the medicine into a mist. The mist is inhaled deep into the lungs. Medicine given through a nebulizer helps to dissolve mucus in the airways. The mucus then can be coughed up more easily. In cases of bronchiectasis caused by CF, another inhaled mucolytic may be prescribed.
Using An Inhaler

There are two main categories of medications, both of which are inhaled:
1. metered-dose inhaler (MDI),
2. DISKUS®

Metered Dose Inhaler (MDI)

MDIs may look the same on the outside, but each brand works differently. For details on how to use and care for your inhaler, read the patient instruction sheet to find out how to:
- use
- clean
- get ready to use (prime)
- maintain the inhaler

Priming

If your MDI is new or you haven’t used it in a while, the medicine may separate. Make sure the amount of medicine you inhale is the correct amount. To do this, release one or more sprays into the air (priming). Read your patient instruction sheet for priming instructions.

STEP 1: Take the cap off your MDI. Look for dust, lint, or other objects and remove them. Shake the MDI well, if your patient information tells you to.

STEP 2: Sit up straight or stand up. Blow out as much air from your lungs as possible.

STEP 3: Hold the inhaler with the mouthpiece at the bottom and the top pointing up. Depending on what your doctor says, or what the instruction sheet says, put the mouthpiece 1 to 2 inches in front of your mouth, or put it between your teeth and close your lips around it. Keep your tongue out of the way of the spray.

STEP 4: Begin to breathe in slowly, then start the inhaler a split-second later. If you wait too long, you won’t have enough breath to inhale the medicine deep into your lungs. Breathe in slowly for 3-5 seconds, or until your lungs are full.

STEP 5: Hold your breath for 10 seconds. If you can’t hold your breath for 10 seconds, hold your breath for as long as you can.

STEP 6: If you need another puff of medicine, wait 1 minute. After 1 minute, shake the MDI again if patient instructions recommend it. Repeat steps 2 through 5.

STEP 7: Put the cap back on the MDI. If your medicine is a type of steroid hormone called corticosteroid, rinse your mouth with water after you have taken your last puff of medicine. Make sure you spit the water out – DO NOT SWALLOW IT.
Using DISKUS® Inhaler

**STEP 1:** Hold the DISKUS® inhaler in your left hand and put the thumb of your right hand in the thumb grip. Push the thumb grip away from you as far as it will go until the mouthpiece shows. It will snap into place.

**STEP 2:** Hold the DISKUS® inhaler in a level, flat position with the mouthpiece towards you. Slide the lever away from the mouthpiece as far as it will go until it clicks. The number on the counter will count down by 1. The DISKUS® is now ready to use.

**STEP 3:** Before you breathe in your medicine from the DISKUS® inhaler, breathe out as long as you can. Hold the DISKUS® level and away from your mouth. Do not breathe into the mouthpiece.

**STEP 4:** Put the mouthpiece to your lips. Breathe in quickly and deeply through the DISKUS®. Do not breathe in through your nose.

**STEP 5:** Remove the DISKUS® inhaler from your mouth and hold your breath for about 10 seconds, or for as long as you can. Breathe out slowly as long as you can.

**STEP 6:** To close the DISKUS® inhaler, place your thumb in the thumb grip and slide it back towards you as far as it will go. Make sure the DISKUS® device clicks shut and you cannot see the mouthpiece.
Using A Nebulizer

Nebulizers turn medicines into a mist that you can breathe into your lungs. There are three basic parts:
1. the nebulizer cup that holds the medicine;
2. a machine that converts the medicine into a mist; and
3. a mask or mouthpiece for breathing in the mist.

Nebulizers are small and quiet, and it usually takes from 8 to 10 minutes to receive a full dose of medicine.

Here's how to use a nebulizer:

**STEP 1:** Always wash your hands before you use the nebulizer. This keeps the machine, the medicine, and your lungs germ-free.

**STEP 2:** Check the machine to make sure the air filter is clean and plug it in. Attach the tubing, mouthpiece, or mask.

**STEP 3:** Look at your medication. Is the vial crushed or damaged? Is the medication a strange color? Has it expired? If you answer “yes” to any of these, call your pharmacist for a new supply.

**STEP 4:** The medicine in the vial is premixed. All you have to do is snap it open and pour the medicine into the nebulizer cup.

**STEP 5:** Put the mouthpiece in your mouth, or put the mask firmly over mouth and nose.

**STEP 6:** Turn on the machine. Breathe in and out slowly through your mouth until all the medicine is gone or there is no more mist coming out. Keep the machine upright at all times.

**STEP 7:** Turn off the machine. Remove the cup.

**STEP 8:** Follow the nebulizer instructions to keep the cup, mouthpiece, and tubing clean. When it’s clean and dry, put the equipment where it will stay clean and dust-free.

The nebulizer parts don’t last forever. Over time, the plastic can break. Replace them and the air filter as recommended in the instructions.
Treating Bronchiectasis: Airway Clearance Devices

Some patients use devices to clear out mucus. Some of these devices have the patient exhale into a hand-held device, for example. This causes air to enter the airway, helping to break up mucus. Other devices are wearable, like a vest. They shake the chest to help loosen mucus. Talk to your doctor about whether any of the following devices are right for you.

Using AerobiKa®

A commonly prescribed airway clearance device that helps you cough is AerobiKa®. (There is a full list of airway clearance devices below.) Here are directions to use the AerobiKa®.

**STEP 1:** Look at the resistance indicator and make sure it is set where your doctor recommended.

**STEP 2:** Sit up tall and place the mouthpiece in your mouth. Close your lips tightly around the mouthpiece.

**STEP 3:** Take in a deep breath and hold it for 3 seconds.

**STEP 4:** Breathe out as long as possible through the mouthpiece. Don’t use force. Keep your cheeks firm and steady while you exhale.

**STEP 5:** Repeat steps 2 through 4 for 10 to 20 breaths. Try not to cough while complete these steps.

**STEP 6:** After the 10 to 20 blows, do 2 to 3 small coughs followed by a big cough to bring the mucus up and out. Try not to swallow the mucus.

**STEP 7:** Repeat these steps for 15 minutes, 2 to 4 times a day, as your doctor prescribes.

Cough Assist Device:

Coughing is important and useful for getting rid of mucus in your lungs. A cough assist device helps you cough harder to get rid of the mucus.
Treating Bronchiectasis: Chest Physical Therapy

Chest physical therapy, also known as chest physiotherapy, includes a variety of methods for loosening mucus from the lungs so it can be cleared. Techniques used for bronchiectasis are:

- Chest percussion
- Controlled coughing
- Cough assist device
- Deep breathing exercises
- Vibration (oscillation)
- Administer by entering the lungs (intrapulmonary)
- Gravity (laying with head and chest facing down, also called postural drainage)

Chest percussion:
This is controlled tapping or clapping on the body. Clapping is most common. A percussive vest is a convenient and portable option. It automatically tightens then loosens around the chest.

Oscillating Positive Expiratory Pressure (PEP):
Patients blow into a portable hand-held PEP device. It contains a small ball that moves up and down. This creates vibrations in the lungs. The vibrations help release mucus from airway walls. That makes it easier to cough out of the lungs. Several examples of PEP devices are:

- Acapella®
- AerobiKa®
- Flutter®

Intrapulmonary Percussive Ventilation (IPV):
This device is a pressurized aerosol machine that turns medications into a mist. The mist is inhaled as the machine oscillates. This vibrates the chest and loosens mucus.
HUFF Cough

A huff cough is a simple and useful way for controlled breathing. Here are instructions on how to use this method.

**Controls coughing:**

This is often used with chest percussion. This kind of coughing provides a way to loosen mucus to be pushed out of the lungs.

**HUFF Cough**

**STEP 1:** Sit comfortably in a chair. Purse your lips and take 3 to 5 slow, deep breaths using your diaphragm (diaphragmatic breathing).

**STEP 2:** Take a normal breath.

**STEP 3:** Squeeze your chest and stomach muscles. Open your mouth. Push out your breath while whispering the word “huff.” It should sound like a forced sigh. Some people find it helpful to press on the lower chest at the same time. Repeat once. Spit out any mucus as it comes up.

**STEP 4:** Return to pursed-lip and diaphragmatic breathing.

**STEP 5:** Repeat the entire cycle 2 to 4 times.
Diaphragmatic Breathing
(Abdominal Breathing)

The simplest form of deep breathing is using your diaphragm to breathe. Here are instructions on how to use this technique.

STEP 1: In a comfortable position, relax your neck and shoulders.

STEP 2: Put one hand on your stomach (abdomen) and one hand on your chest.

STEP 3: Breathe in (inhale) slowly through your nose to the count of 2. Feel your stomach muscles relax. Your chest should stay still.

STEP 4: Make your stomach muscles tighten and breathe out (exhale) while you count to 4. Feel your stomach muscles tighten. Your chest should stay still.

Deep breathing exercises:

Deep breathing exercises expand your lungs so that you can draw in more air. This makes it easier to breathe. You can combine deep breathing exercises with mucus loosening methods to help clear your lungs.

Postural Drainage:

Gravity helps drain mucus from the lungs. Patients lie in a position with the head and chest facing down. This can be effective along with percussion and/or vibration.
Treating Bronchiectasis: Oxygen Therapy

Some people with bronchiectasis may need supplemental oxygen. This can:

- Make your breathing easier
- Enhance your quality of life
- Help you live longer

Oxygen therapy also:

- Improves sleep, mood, and mental alertness
- Better allows the body to conduct everyday functions
- Prevents heart failure

There are three types of oxygen:

- **Compressed gas oxygen** in steel or aluminum containers of different sizes for home use and traveling.
- **Liquid oxygen** that changes into a breathable gas.
- **Oxygen concentrators**, electrical devices that remove nitrogen from the air.

If your health-care provider prescribes oxygen, be sure to ask about:

- The oxygen flow rate or setting, so you receive the right amount
- When you should wear it—during activity, while sleeping, or all the time
- Which type best suits your lifestyle

Traveling with Oxygen

There are restrictions if you fly with oxygen. You can use an oxygen canister supplied by the airline or an FAA-certified portable oxygen canister. There may be other limits. Check with your airline and/or oxygen supplier at least 2 weeks before you fly.
Treating Bronchiectasis: Surgery

**Bronchoscopy**: Sometimes people get a blockage in the airway. Left unchecked, it could lead to severe lung damage. To remove the blockage, you may need a bronchoscopy. A bronchoscope, a long thin tube with a light and camera at the end, is inserted either through the mouth or nose. It examines and removes whatever is in the airway.

**Lung Surgery**: This is a last resort. In cases where lung damage and/or serious symptoms don’t respond to other treatments, surgery may involve:

- Removal of part or all of a single lung. This is an option when only one lung is severely damaged, or only one lung has a severe infection that does not improve with antibiotics.
- Embolization. This stops bleeding when a lot of blood is being coughed up.
- Lung transplantation
Managing the Disease

Bronchiectasis is chronic. It usually develops slowly over time. It can never be cured. However, it is possible to slow the progress and preserve lung function. Effective management is possible when self-care is part of your daily routine, such as:

- Taking oral and inhaled medications
- Clearing mucus
- Staying well-nourished and hydrated

What To Expect

Bronchiectasis is a long-term condition. Its symptoms need to be managed every day. This includes:

- Taking medicine to keep airways open and reduce mucus
- Taking antibiotics for 2 to 3 weeks during flare-ups
- Getting lung function tests, chest radiographs, or CT (CAT) scans
- Providing mucus samples to check for infection
- Occasional hospital stays for IV antibiotics, in severe cases
- Possibly bronchoscopy, performed under sedation
Exercise and Nutrition

One of the best ways to manage bronchiectasis is by strengthening your overall health—through both exercise and nutrition. Your doctor may suggest an exercise program that can be done at home 2 to 3 times per week. Nutrition is also important. It is recommended that people with bronchiectasis meet with a nutritionist. A nutritionist can help you improve your diet and maintain a healthy weight.

Hydration

Drinking lots of fluids, especially water, helps keep mucus thinner and easier to clear from the body. It is highly recommended for people with bronchiectasis.

Immunizations

Typically, the seasonal influenza vaccine and pneumococcal vaccine are recommended for patients with bronchiectasis.

Pulmonary Rehabilitation

Your doctor may order a program of exercise, education, and support. It can improve your exercise capacity and quality of life. It also may reduce flare-ups.

Finding Support

There are several online support groups. They can be found through a simple Internet search. The American Lung Association’s Living with Lung Disease Support Community connects patients and caregivers with others facing this disease. You can call the Lung Association’s Lung Helpline at 1-800-LUNGUSA. A trained respiratory professional can answer your questions and connect you with support.

If you have cystic fibrosis, visit the website for the Cystic Fibrosis Foundation.
The CHEST Foundation, the charitable foundation of the American College of Chest Physicians, champions lung health by supporting clinical research, community service, and patient education. Through CHEST Foundation-supported programs, CHEST’s 19,000+ members engage in advancing the lung health of millions of patients in local communities around the world. More than 95 cents of every dollar raised goes toward advancing the foundation’s mission-based programming. Since its inception, the foundation has provided more than $10 million in funding for clinical research and community service, with a reach that spans more than 60 countries.

For more information about the CHEST Foundation, visit chestfoundation.org.

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