Cystic Fibrosis Foundation

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Lung Health

What You Should Know About Germs



Germs are all around us. For people with cystic fibrosis (CF), some germs can cause serious lung problems. This pamphlet lists some of those germs. It also explains how germs are spread.

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How Do Germs Spread?

Germs* (pathogens), like **bacteria** and **viruses** that cause lung infection, can spread between people in many ways. These are known as **routes of transmission**. The 3 main ways are (1) by **contact**, (2) in a **droplet** or (3) through tiny remains of droplets floating in air **(airborne)**.

The most common way germs spread is by contact. This is also called **direct** or **indirect contact transmission**.

Direct contact is when germs spread by bodies touching, such as through shaking hands, hugging or kissing. Viruses that cause common colds, **respiratory syncytial virus (RSV)** and CF-specific germs like ***Pseudomonas aeruginosa (Pseudomonas)*** and ***Burkholderia cepacia* complex *(B. cepacia)*** are spread this way.

Indirect contact involves touching something with germs on it, like touching a doorknob or sharing a cup. Germs spread to you when you touch something with germs on it and then touch your eyes, nose or mouth.

When a person talks, sings, coughs, sneezes or laughs, droplets are made. These tiny drops of liquid may have germs inside. The droplets with germs can land in the eyes, noses or mouths of others. This is how germs can be spread by **droplet transmission**. These drops can travel 3 to 6 feet through the air before they fall to the ground. The **flu (influenza)** and **whooping cough (pertussis)** are spread this way.



Some germs travel through the air on specks of dust or particles made when a person talks, sings, sneezes, coughs or laughs. These germs can float in the air for a long time. They can be carried a long way by air currents. Illness occurs when people breathe in the germs floating in air. **Tuberculosis (TB), measles** and **chicken pox** are some of the germs spread by **airborne transmission.**

Cystic Fibrosis Foundation Approved by the Education Committee

*Brief definitions of the words that appear in bold can be found on page 4.



Prevent Infections

- Clean your hands
- Keep shots up to date
- Use and throw away tissues
- Clean and disinfect nebulizers
- Avoid sick people
- Do not share eating utensils or cups

Germs and CF

Germs cause infection. There are 3 major groups of germs: bacteria, viruses and **fungi and molds**. Many CF germs are spread by contact and droplets from coughing, sneezing and nose blowing. See the table "Germs in CF" on page 5 to learn about some of the germs that people with CF can get.

Some germs (like the viruses that cause colds, the flu and RSV) affect people with and without CF. But when people with CF get a respiratory virus, they may get sicker because of their lung disease. Other germs (like the bacteria *Pseudomonas and B. cepacia*) are more common and cause more harm in people with CF than in people who do not have CF.

Why do people with CF get more and worse lung infections? The altered gene that causes CF leads to an error in how salt moves in and out of the cells in the lungs. This causes thick, sticky mucus. Germs stick, stay and grow well in this mucus in the lungs. White blood cells in the body attack the germs, which can also hurt the lungs. The airways swell because of **inflammation** and make more mucus. More germs grow, and the cycle continues.

This cycle can be slowed with treatments. **Airway clearance techniques (ACT)** and mucus thinners make it easier to get rid of the lung mucus. Antibiotics help by killing bacteria. Anti-inflammatory medicines help lessen the swelling.

Home Sweet Home

Germs are everywhere. They live in the air, soil and humans. Humans are natural homes to the most **contagious** germs. Some CF germs also like moist places (soil and water). Equipment like nebulizers that touch mucus or **mucus membranes** (such as the mouth) or that aren't cleaned well can be great homes for germs. CF medicines that are stored or used in the wrong way can also be a home for germs. If you let CF germs visit, they will move in!

People with CF can get germs from people who have CF. They can also get germs from people without CF. Try to avoid people who are sick. Some germs come from what's around you. ***Aspergillus*** can cause lung infections. It can be found in nature and in the dust at construction sites.

Clean Your Hands

Cleaning your hands is the best way to stop the spread of germs.

There are 2 ways to clean hands. One is to wash your hands with soap and water; it is best to use **antibacterial** soap. The other way is **hand gel (hand sanitizer)**. A hand gel made of 60% or more ethyl alcohol kills germs. Most hand gels are alcohol-based and clean hands quickly. They can kill germs better than soap and water. They do not work well if you can see **debris** (dirt) on your hands.



Follow this rule: If you see debris, clean with antibacterial soap and water. If you do not see debris, clean with hand gel. Carry hand gel with you to use before eating and after blowing your nose, coughing, sneezing or shaking hands.

Hand Washing Steps

- Wet hands with warm water.
- Apply soap. Liquid antibacterial soap is best.
- Rub hands together to lather.
- For 15 seconds, scrub back and front, up to the wrist and between fingers. Clean under nails.
- Rinse in warm running water.
- Use a clean towel to dry hands. Paper towels are best.
- Using the paper towel, turn off the faucet.

Cleaning with Hand Gels

- Put a nickel-sized amount in the palm of one hand.
- Rub gel on all parts of your hands, fingers and nails.
- Rub your hands together until dry.
- Do not rinse or dry your hands with a towel.

When to Clean Hands

- At a doctor's office, waiting room or lab.
- After you cough, sneeze and blow your nose.
- After using automatic teller machines (ATMs), handrails, elevator buttons, public telephones, grocery carts and other people's pens.
- At shared play places and gymnasiums.

Keep Vaccines Up to Date

ALL PEOPLE should get all **vaccinations** (shots) advised by the **Centers for Disease Control and Prevention (CDC)**.

The shots help prevent illness. It is vital that you or your child get these shots. The relatives, day care and health care staff and close friends of those with CF also should get these shots to prevent the flu and other infections. Ask your doctor what shots you or your child need. Keep your own record of the shots you or your child get too.

Lower the Risk

When people cough or sneeze, they should always use a tissue. Always throw used tissues in a trash can. Don't forget: coughs spread germs 3 to 6 feet. Stay at least 3 feet away from people who are sick or have CF. Avoid being in enclosed or poorly ventilated places, such as cars, with other people who have CF. Do not share respiratory equipment. Clean your hands often when you are in public exercise places.

Clean, disinfect and air-dry your or your child's nebulizers the right way to kill germs. Avoid doing airway clearance in the same room with other people with CF. Don't forget: coughing and sharing things like eating utensils, cups, soda cans or water bottles spread germs. To learn more about the best ways to kill germs, see "Stopping the Spread of Germs" or watch "Infection Control & Germs" on the CF Foundation website (www.cff.org).

You can't avoid germs. You CAN lower the risk of catching and spreading germs. First, clean your hands well. Second, get the right shots, like the yearly flu shot. Your CF care center can answer questions about how germs may affect you and what you can do to avoid the spread of germs.



Needed Shots

- Influenza (flu)
- Diphtheria, tetanus, pertussis (DTP)
- Haemophilus B (Hib)
- Hepatitis A & B
- Measles, mumps, rubella (MMR)
- Pneumococcal
- Polio
- Varicella (chicken pox)
- Meningococcal



The CF Foundation's *B. Cepacia* Policy

People with CF who have B. cepacia *should not attend CF Foundation-sponsored events. There is an increased risk of spreading the germ. See the full CF Foundation* B. cepacia *policy at www.cff.org.*

Words Defined



Airborne: In the air.

Airborne transmission: The spread of germs through the air.

Airway clearance techniques (ACT): Methods to loosen and clear thick, sticky lung mucus so it can be coughed out (like chest physical therapy).

Antibacterial: Something that kills bacteria and stops its growth.

Aspergillus or ***Aspergillus fumigatus:*** A fungus found in nature that can grow in the lungs.

Bacteria: Tiny organisms that can cause infection. Antibiotics can kill most bacteria.

Burkholderia cepacia **complex** *(bur-cold-AIR-ee-uh suh-PAY-shuh)* or ***B. cepacia***: A group of bacteria that can be spread between people with CF. These bacteria cause severe lung infections.

Centers for Disease Control and Prevention (CDC): A U.S. government agency that works to prevent disease and protect health and safety.

Chicken pox: An illness caused by a virus that easily spreads between people. It causes itchy skin blisters. A shot can prevent chicken pox.

Contact: When 2 surfaces touch.

Contagious: Able to be spread between people (like an illness).

Debris: Remains of something like dirt, mucus or medicine.

Direct contact transmission: Spreading germs by touching someone's body.

Droplet: A tiny drop of liquid from the mouth, nose or lungs.

Droplet transmission: Spreading germs by droplets, like when sneezing or coughing.

Flu (influenza): A virus that causes sore throat, cough, fever, muscle pain, weakness and lung illness. A yearly shot can help prevent the flu.

Fungi and molds: Tiny organisms, like *Aspergillus*, that can cause illness in people.

Germs: Tiny organisms, like bacteria, viruses and fungi, that can cause infection.

Hand gel: A substance that contains alcohol to kill germs.

Hand sanitizer: See Hand gel.

Indirect contact transmission: Spreading germs by touching something that another person has touched (like a doorknob or cup) with any part of the body.

Inflammation: Swelling of a body part from infection or injury.

Measles: An illness caused by a virus. It is spread by tiny remains of droplets floating through air. A shot can prevent measles.

Mucus membranes: Places in the body that make mucus. They are found in the nose, mouth, lungs, esophagus, stomach and intestines.

Pathogens: Germs that cause illness.

Pseudomonas aeruginosa (Soo-duh-MOAN-us uh-roo-gin-OH-suh) or ***Pseudomonas***: Bacteria often found in the lungs of people with CF. It causes chronic lung problems.

Respiratory syncytial virus (RSV): A virus that can cause severe lung illness. It most affects young children and older people.

Routes of transmission: How germs move between people. This happens by contact (direct or indirect), from droplets or through the air (airborne).

Tuberculosis (TB): A serious lung illness. It is spread through the air on tiny remains of droplets.

Vaccinations: Shots that prevent illness.

Viruses: Tiny organisms that can cause infections.

Whooping cough (pertussis): An illness caused by a bacteria that can spread between people. It is spread by droplets. A shot can prevent this.

Germs in CF

GERMS	HOW SPREAD?	LIVING WHERE?
Influenza (flu) – A virus that any person can catch. It makes people with CF sicker than it does people without CF. A yearly flu shot can prevent this. People with CF who are 6 months and older and their families and friends should get the yearly shot.	Droplets	In any person who has the flu.
Common cold viruses – Many types of viruses cause colds. They often affect the nose and throat. People with CF aren't more likely to get colds than people without CF, but they may get sicker.	Contact	In people with colds or on items they've touched.
Respiratory syncytial virus (RSV) – A virus that can cause severe lung illness. It most affects young children and older people.	Contact	In people who have RSV. RSV can cause common cold symptoms in older children and adults. The virus can live on a surface for six hours.
***Staphylococcus aureus* –** (STAFF-ih-low-cock-us OR-ee-us) *(S. aureus)* and methicillin-resistant *S. aureus* (MRSA). Often the first bacteria found in the lungs of people with CF. MRSA is more resistant to antibiotics than other bacteria and is harder to treat.	Contact	In people who have *S. aureus* or MRSA on the skin or in the nose or lungs.
***Pseudomonas aeruginosa* –** (Soo-duh-MOAN-us uh-roo-gin-OH-suh) *(Pseudomonas)*. Bacteria that causes many lung problems in people with CF. About 35% of children with CF have it in their lungs. About 73% of adults with CF have it. It can be resistant to antibiotics.	Contact	Often unknown and in other people with CF and on respiratory equipment that has not been cleaned the right way. It may live in nature, or on other objects. It can live on a surface for hours.
***Burkholderia cepacia* complex –** (bur-cold-AIR-ee-uh suh-PAY-shuh) *(B. cepacia)*. A group of bacteria spread between people with CF. It can lower lung function quickly. In the U.S., less than 3% of people with CF have this.	Contact	In other people with CF and on respiratory equipment that has not been cleaned the right way.
Nontuberculous mycobacteria (NTM) – A group of bacteria that can cause lung problems in people with CF. Researchers are studying how common it is and its effect on people with CF.	Airborne	In nature and on respiratory equipment that has not been cleaned the right way.
***Aspergillus fumigatus* –** A fungus found in the lungs of people with CF. It can cause allergic bronchopulmonary aspergillosis (ABPA) in some.	Airborne	In nature. It gets into the air through building materials and activities, gardening, lawn mowing and water leaks.
***Stenotrophomonas maltophilia* –** *(S. maltophilia)*. Bacteria that can cause lung problems in people with CF. It may resist antibiotics. Researchers are studying how common it is and its effect on people with CF.	Maybe contact. More research is needed.	Much is unknown. It may live in other people with CF, in nature or on respiratory equipment and other objects that have not been cleaned the right way.
***Achromobacter xylosoxidans* –** *(A. xylosoxidans)*. Bacteria that can cause lung problems in people with CF. Researchers are studying how common it is and its effect on people with CF.	Maybe contact. More research is needed.	Much is unknown. It may live in other people with CF, in nature or on respiratory equipment and other objects that have not been cleaned the right way.

Learn More: CF Foundation Resources

The facts in this pamphlet are based on "Infection Control Recommendations for Patients With Cystic Fibrosis: Microbiology, Important Pathogens, and Infection Control Practices to Prevent Patient-To-Patient Transmission," written by Lisa Saiman, MD, MPH; Jane Siegel, MD; and those involved in the CF Foundation's Consensus Conference on Infection Control. You can find that paper and more information on the CF Foundation's website **(www.cff.org)**.

You can also learn more by watching a webcast on CF and germs at **www.cff.org/LivingWithCF/Webcasts.**



For more information, visit:

Centers for Disease Control and Prevention (CDC) (hand-washing tips):
www.cdc.gov/cleanhands

National Institutes of Health:
Vaccinations: http://www.nlm.nih.gov/medlineplus/immunization.html

Infection Control: http://www.nlm.nih.gov/medlineplus/infectioncontrol.html

Henry the Hand Foundation (fun hand-cleaning resources for kids):
www.henrythehand.com

TeensHealth:
http://kidshealth.org/teen/your_body/health_basics/handwashing.html#cat20119

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