Communicable (Infectious) Diseases

Diseases are classified as either **communicable** or **noncommunicable**. Communicable diseases are spread to other people and they are caused by viral, bacterial, parasitic, or fungal infection. Non-communicable diseases, also known as non-infectious diseases, are not transferred and are typically caused by heredity, deficiencies in nutrition or factors involving the environment.

Infectious diseases kill more people worldwide than any other single cause. Infectious diseases are caused by germs. Germs are tiny living things that are found everywhere - in air, soil and water. You can get infected by touching germs.

There are four main kinds of germs:

- Bacteria - one-celled germs that multiply quickly and may release chemicals which can make you sick
- Viruses - capsules that contain genetic material, and use your own cells to multiply
- Fungi - primitive vegetables, like mushrooms or mildew
- Protozoa - one-celled animals that use other living things for food and a place to live[1]

Bacteria

Bacteria are living things that have only one cell. Under a microscope, they look like balls, rods or spirals. They are so small that a line of 1,000 could fit across a pencil eraser. Most bacteria won't hurt you - less than 1 percent makes people sick. Many are helpful. Some bacteria help to digest food, destroy disease-causing cells and give the body needed vitamins. Bacteria are also used in making healthy foods like yogurt and cheese.

But infectious bacteria can make you ill. They reproduce quickly in your body. Many give off chemicals called toxins, which can damage tissue and make you sick. Examples of bacteria that cause infections include *Streptococcus*, *Staphylococcus*, and *E. coli*.

Antibiotics are the usual treatment. When you take antibiotics, follow the directions carefully. Each time you take antibiotics, you increase the chances

[1] National Library of Medicine (2023). Infectious Diseases
http://www.nlm.nih.gov/medlineplus/infectiousdiseases.html

that bacteria in your body will learn to resist them. Later, you could get or spread an infection that those antibiotics cannot cure.

Strep Throat

Streptococcal infections (strep for short) cause a variety of health problems. There are two types: group A and group B. Antibiotics are used to treat both.

Group A strep causes -

- Strep throat - a sore, red throat, sometimes with white spots on the tonsils
- Scarlet fever - red rash on the body
- Impetigo - a skin infection
- Toxic shock syndrome
- Cellulitis and necrotizing fasciitis (flesh-eating disease)

Group B strep can cause blood infections, pneumonia and meningitis in newborns. A screening test during pregnancy can tell if you have it. If you do, I.V. antibiotics during labor can save your baby's life. Adults can also get group B strep infections, especially if they are elderly or already have health problems. Strep B can cause urinary tract infections, blood infections, skin infections and pneumonia in adults.[2]

Tuberculosis (TB)

In developed countries, such as the United States, many people think TB is a disease of the past. TB, however, is still a leading killer of young adults worldwide. Some 2 billion people—one-third of the world's population—are thought to be infected with TB bacteria, *Mycobacterium tuberculosis* (*Mtb*).

TB is a chronic bacterial infection. It is spread through the air and usually infects the lungs, although other organs and parts of the body can be involved as well. Most people who are infected with *Mtb* harbor the bacterium without symptoms (have latent TB), but some will develop active TB disease. According to World Health Organization estimates, each year 8 million people worldwide develop active TB and nearly 2 million die.

One in 10 people who are infected with *Mtb* may develop active TB at some time in their lives. The risk of developing active disease is greatest in the

[2] National Library of Medicine (2016). Streptococcal infections. https://medlineplus.gov/streptococcalinfections.html

first year after infection, but active disease often does not occur until many years later.

TB in the United States[3]

In 2022, the Centers for Disease Control and Prevention (CDC) reported 8,300 cases of active TB. While the overall rate of new TB cases continues to decline in the United States since national reporting began in 1953. In addition to those with active TB, an estimated 13 million people in the United States have latent TB. Please see this 1 minute video from the CDC to learn five things about TB.

Minorities are affected disproportionately by TB, which occurs among foreign-born individuals nearly nine times as frequently as among people born in the United States. In 2021, racial and ethnic minority groups accounted for 88% of TB cases reported in the United States. 71.4% of all TB cases reported in the United States occurred among individuals who were not born in the United States.

Tuberculosis (TB) is a bacterial infection caused by a germ called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs, but they can also damage other parts of the body. TB spreads through the air when a person with TB of the lungs or throat coughs, sneezes or talks. If you have been exposed, you should go to your doctor for tests. You are more likely to get TB if you have a weak immune system.

Symptoms of TB in the lungs may include-

- A bad cough that lasts 3 weeks or longer
- Weight loss
- Coughing up blood or mucus
- Weakness or fatigue
- Fever and chills
- Night sweats

If not treated properly, TB can be deadly. You can usually cure active TB by taking several medicines for a long period of time. People with latent TB can take medicine so that they do not develop active TB.

Viral Infections

Viruses are capsules with genetic material inside. They are very tiny, much smaller than bacteria. Viruses cause familiar infectious diseases such as the

[3] Center for Disease Control (2023). Tuberculosis. https://www.cdc.gov/tb/default.htm

common cold, flu and warts. They also cause severe illnesses such as HIV/AIDS, smallpox and hemorrhagic fevers.

Viruses are like hijackers. They invade living, normal cells and use those cells to multiply and produce other viruses like themselves. This eventually kills the cells, which can make you sick.

Viral infections are hard to treat because viruses live inside your body's cells. They are "protected" from medicines, which usually move through your bloodstream. Antibiotics do not work for viral infections. There are a few antiviral medicines available. Vaccines can help prevent you from getting many viral diseases.[4]

Influenza

Flu is a respiratory infection caused by a number of viruses. The viruses pass through the air and enter your body through your nose or mouth. Between 5% and 20% of people in the U.S. get the flu each year. The flu can be serious or even deadly for elderly people, newborn babies and people with certain chronic illnesses.

Symptoms of the flu come on suddenly and are worse than those of the common cold. They may include-

- Body or muscle aches
- Chills
- Cough
- Fever
- Headache
- Sore throat

Is it a cold or the flu? Colds rarely cause a fever or headaches. Flu almost never causes an upset stomach. And "stomach flu" isn't really flu at all, but gastroenteritis.

The main way to keep from getting the flu is to get a yearly flu vaccine. If you get the flu, your health care provider may prescribe medicine to help your body fight the infection and lessen symptoms. Watch these videos to learn more about the flu[5]

- How to know if you have the flu

[4] National Library of Medicine (2023). Viral infections. https://medlineplus.gov/viralinfections.html
[5] National Library of Medicine (2022). Flu. https://medlineplus.gov/flu.html

- Flu Attack! How A Virus Invades Your Body

COVID-19

In Jan 2020, we heard about a new very contagious virus strain spreading in China. Fast forward 3.5 years later, according COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU), 677 million people globally have contracted COVID, over 6 million dead. In the United States, over 89 million cases in the US with over 1,000,000 deaths.[6]

What is COVID-19

The virus responsible for the COVID-19 pandemic, SARS-CoV-2, is part of a large family of coronaviruses. Coronaviruses usually cause mild to moderate upper-respiratory tract illnesses, like the common cold. However, SARS-CoV-2 can cause serious illness and even death. Why people's COVID-19 symptoms vary so greatly isn't fully understood.

How To Protect Yourself From COVID-19

To protect yourself and prevent the spread of COVID-19, the CDC recommends handwashing, vaccinations, getting tested if needed, following guidelines if you have been exposed, and staying home if you have a suspected or confirmed case of COVID-19.

How COVID-19 Vaccines Work

COVID-19 vaccines help our bodies develop immunity to the virus that causes COVID-19 without us having to get the illness. Check out this video on COVID-19 vaccines

Different types of vaccines work in different ways to offer protection. But with all types of vaccines, the body is left with a supply of "memory" T-lymphocytes as well as B-lymphocytes that will remember how to fight that virus in the future.

It typically takes a few weeks after vaccination for the body to produce T-lymphocytes and B-lymphocytes. Therefore, it is possible that a person could be infected with the virus that causes COVID-19 just before or just after

[6] John Hopkins (2023). Coronavirus resource center. https://coronavirus.jhu.edu/map.html

vaccination and then get sick because the vaccine did not have enough time to provide protection.

Sometimes after vaccination, the process of building immunity can cause symptoms, such as fever, fatigue or soreness at the injection site. These symptoms/side effects are normal and are signs that the body is building immunity.[7]

Types of Vaccines

Below is a description of how each type of vaccine prompts our bodies to recognize and protect us from the virus that causes COVID-19. None of these vaccines can give you COVID-19.

- **mRNA vaccines** contain material from the virus that causes COVID-19 that gives our cells instructions for how to make a harmless protein that is unique to the virus. After our cells make copies of the protein, they destroy the genetic material from the vaccine. Our bodies recognize that the protein should not be there and build T-lymphocytes and B-lymphocytes that will remember how to fight the virus that causes COVID-19 if we are infected in the future. (Pfizer and Moderna vaccines)
- **Protein subunit vaccines** include harmless pieces (proteins) of the virus that causes COVID-19 instead of the entire germ. Once vaccinated, our bodies recognize that the protein should not be there and build T-lymphocytes and antibodies that will remember how to fight the virus that causes COVID-19 if we are infected in the future.
- The Johnson and Johnson vaccine is a viral vector vaccine. It is no longer available for use in the United States as of May 6, 2023. **Vector vaccines** contain a modified version of a different virus than the one that causes COVID-19. Inside the shell of the modified virus, there is material from the virus that causes COVID-19. This is called a "viral vector." Once the viral vector is inside our cells, the genetic material gives cells instructions to make a protein that is unique to the virus that causes COVID-19. Using these instructions, our cells make copies of the protein. This prompts our bodies to build T-lymphocytes and B-lymphocytes that will remember how to fight that virus if we are infected in the future.[8]

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[7] Center for Disease Control (2023). COVID-19.https://www.cdc.gov/coronavirus/2019-nCoV/index.html
[8] Center for Disease Control (2023). Overview of COVID-19 Vaccines.
https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/overview-COVID-19-vaccines.html

Common Cold

Sneezing, sore throat, stuffy nose, coughing - everyone knows the symptoms of the common cold. It is probably the most common illness. In the course of a year, people in the United States suffer 1 billion colds.

You can get a cold by touching your eyes or nose after you touch surfaces with cold germs on them. You can also inhale the germs. Symptoms usually begin 2 or 3 days after infection and last 2 to 14 days. Washing your hands and staying away from people with colds will help you avoid colds.

There is no cure for the common cold. For relief, try

- Getting plenty of rest
- Drinking fluids
- Gargling with warm salt water
- Using cough drops or throat sprays
- Taking over-the-counter pain or cold medicines

However, do not give aspirin to children. And do not give cough medicine to children under four.

Hepatitis B

Hepatitis B is one type of hepatitis - liver disease- caused by the hepatitis B virus (HBV). Hepatitis B spreads by contact with an infected person's blood, semen or other body fluid. An infected woman can give hepatitis B to her baby at birth.

If you get HBV, you may feel as if you have the flu, or you may have no symptoms at all. A blood test can tell if you have it. HBV usually gets better on its own after a few months. If it does not get better, it is called chronic HBV, which lasts a lifetime. Chronic HBV can lead to scarring of the liver, liver failure or liver cancer.

There is a vaccine for HBV. It requires three shots. All babies should get the vaccine, but older children and adults can get it too. If you travel to countries where Hepatitis B is common, you should get the vaccine.[9]

Infectious mononucleosis

Infectious mononucleosis, or "mono,'' is an infection caused by the EpsteinBarr virus. The virus spreads through saliva, which is why it's

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[9] National Library of Medicine (2021). Hepatitis B. https://medlineplus.gov/hepatitisb.html

sometimes called "kissing disease." Mono occurs most often in 15 to 17 year-olds.
However, you can get it at any age. Symptoms of mono include

- Fever
- Sore throat
- Swollen lymph glands

Sometimes you may also have a swollen spleen. Serious problems are rare. A blood test can show if you have mono. Most people get better in two to four weeks. However, you may feel tired for a few months afterward. Treatment focuses on helping symptoms and includes medicines for pain and fever, warm salt water gargles and plenty of rest and fluids.[10]

Fungi

If you have ever had athlete's foot or a yeast infection, you can blame a fungus. A fungus is actually a primitive vegetable. Mushrooms, mold and mildew are examples. Fungi live in air, in soil, on plants and in water. Some live in the human body. Only about half of all types of fungi are harmful.

Some fungi reproduce through tiny spores in the air. You can inhale the spores or they can land on you. As a result, fungal infections often start in the lungs or on the skin. You are more likely to get a fungal infection if you have a weakened immune system or take antibiotics.

Fungi can be difficult to kill. For skin and nail infections, you can apply medicine directly to the infected area. Oral antifungal medicines are also available for serious infections.[11]

Yeast Infections (or Candida)

Candida is the scientific name for yeast. It is a fungus that lives almost everywhere, including in your body. Usually, your immune system keeps yeast under control. If you are sick or taking antibiotics, it can multiply and cause an infection.

Yeast infections affect different parts of the body in different ways:

- Thrush is a yeast infection that causes white patches in your mouth

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[10] National Library of Medicine (2016). Infectious Mononucleosis. https://medlineplus.gov/infectiousmononucleosis.html
[11] National Library of Medicine (2019). Fungal Infections. https://medlineplus.gov/fungalinfections.html

- Esophagitis is thrush that spreads to your esophagus, the tube that takes food from your mouth to your stomach. Esophagitis can make it hard or painful to swallow
- Women can get vaginal yeast infections, causing itchiness, pain and discharge
- Yeast infections of the skin cause itching and rashes
- Yeast infections in your bloodstream can be life-threatening

Antifungal medicines eliminate yeast infections in most people. If you have a weak immune system, treatment might be more difficult.[12]

Parasitic Diseases

Parasites are living things that use other living things - like your body - for food and a place to live. You can get them from contaminated food or water, a bug bite, or sexual contact. Parasitic diseases can cause mild discomfort or be deadly.

Parasites range in size from tiny, one-celled organisms called protozoa to worms that can be seen with the naked eye. Some parasitic diseases happen in the United States. Contaminated water supplies can lead to Giardia infections. Cats can transmit toxoplasmosis, which is dangerous for pregnant women. Others, like malaria, are common in other parts of the world.

If you are traveling, it's important to drink only water you know is safe. Prevention is especially important. There are no vaccines for parasitic diseases. Some medicines are available to treat parasitic infections.[13]

Pneumonia

Pneumonia is an inflammation of the lung, usually caused by an infection. Three common causes are bacteria, viruses and fungi. You can also get pneumonia by accidentally inhaling a liquid or chemical. People most at risk are older than 65 or younger than 2 years of age, or already have health problems.

If you have pneumonia, you may have difficulty breathing and have a cough and a fever. A physical exam and history can help determine if you have pneumonia. Chest x-rays and blood tests can help determine what is wrong. Treatment depends on what made you sick. If bacteria are the cause,

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[12] National Library of Medicine (2017). Hepatitis. https://medlineplus.gov/yeastinfections.html

[13] National Library of Medicine (2017). Parasitic Diseases. https://medlineplus.gov/parasiticdiseases.html

antibiotics should help. Viral pneumonia may get better with rest and drinking liquids.

Preventing pneumonia is always better than treating it. The best preventive measures include washing your hands frequently, not smoking, and wearing a mask when cleaning dusty or moldy areas. There is a vaccine for pneumococcal pneumonia, a bacterial infection which accounts for up to a quarter of all pneumonias.[14]

Optional: For more information on this topic, see or listen to: What You Need to Know About Infectious Diseases

Immunity and Immunizations

This section explains more in detail about how your immune system works to prevent you from getting sick. Knowing how your immune system works may help you understand how vaccines work with your immune system to protect you.

What is the Immune System?

The immune system is a network of cells, tissues, and organs that work together to defend the body against attacks by "foreign" invaders. These are primarily microbes—tiny organisms such as bacteria, parasites, and fungi that can cause infections. Viruses also cause infections, but are too primitive to be classified as living organisms. The human body provides an ideal environment for many microbes. It is the immune system's job to keep them out or, failing that, to seek out and destroy them.

When the immune system hits the wrong target, however, it can unleash a torrent of disorders, including allergic diseases, arthritis, and a form of diabetes. If the immune system is crippled, other kinds of diseases result.

The immune system is amazingly complex. It can recognize and remember millions of different enemies, and it can produce secretions (release of fluids) and cells to match up with and wipe out nearly all of them.

The secret to its success is an elaborate and dynamic communications network. Millions and millions of cells, organized into sets and subsets, gather like clouds of bees swarming around a hive and pass information back

[14] National Library of Medicine (2021). Pneumonia https://medlineplus.gov/pneumonia.html

and forth in response to an infection. Once immune cells receive the alarm, they become activated and begin to produce powerful chemicals.

These substances allow the cells to regulate their own growth and behavior, enlist other immune cells, and direct the new recruits to trouble spots.

In addition, scientists are rapidly unraveling the genetic blueprints that direct the human immune response, as well as those that dictate the biology of bacteria, viruses, and parasites. The combination of new technology and expanded genetic information will no doubt reveal even more about how the body protects itself from disease.

Mounting an Immune Response

Infections are the most common cause of human disease. They range from the common cold to debilitating conditions like chronic hepatitis to life threatening diseases such as AIDS. Disease-causing microbes (pathogens) attempting to get into the body must first move past the body's external armor, usually the skin or cells lining the body's internal passageways.

The skin provides an imposing barrier to invading microbes. It is generally penetrable only through cuts or tiny abrasions. The digestive and respiratory tracts—both portals of entry for a number of microbes—also have their own levels of protection. Microbes entering the nose often cause the nasal surfaces to secrete more protective mucus, and attempts to enter the nose or lungs can trigger a sneeze or cough reflex to force microbial invaders out of the respiratory passageways. The stomach contains a strong acid that destroys many pathogens that are swallowed with food.

If microbes survive the body's front-line defenses, they still have to find a way through the walls of the digestive, respiratory, or urogenital passageways to the underlying cells. These passageways are lined with tightly packed epithelial cells covered in a layer of mucus, effectively blocking the transport of many pathogens into deeper cell layers.

Mucosal surfaces also secrete a special class of antibody called IgA, which in many cases is the first type of antibody to encounter an invading microbe. Underneath the epithelial layer a variety of immune cells, including macrophages, B cells, and T cells, lie in wait for any microbe that might bypass the barriers at the surface.

Next, invaders must escape a series of general defenses of the innate immune system, which are ready to attack without regard for specific

antigen markers. These include patrolling phagocytes, natural killer T cells, and complement.

Microbes cross the general barriers then confront specific weapons of the adaptive immune system tailored just for them. These specific weapons, which include both antibodies and T cells, are equipped with singular receptor structures that allow them to recognize and interact with their designated targets.

Immunity

Long ago, physicians realized that people who had recovered from the plague would never get it again—they had acquired immunity. This is because some of the activated T and B cells had become memory cells. Memory cells ensure that the next time a person meets up with the same antigen, the immune system is already set to demolish it.

Immunity can be strong or weak, short-lived or long-lasting, depending on the type of antigen it encounters, the amount of antigen, and the route by which the antigen enters the body. Immunity can also be influenced by inherited genes. When faced with the same antigen, some individuals will respond forcefully, others feebly, and some not at all.

An immune response can be sparked not only by infection but also by immunization with vaccines. Some vaccines contain microorganisms—or parts of microorganisms— that have been treated so they can provoke an immune response but not full-blown disease.

Immunity can also be transferred from one individual to another by injections of serum rich in antibodies against a particular microbe (antiserum). For example, antiserum is sometimes given to protect travelers to countries where hepatitis A is widespread. The antiserum induces passive immunity against the hepatitis A virus. Passive immunity typically lasts only a few weeks or months.

Immunity and Immunizations

Shots may hurt a little... but the diseases they can prevent can hurt a lot more! Immunization shots, or vaccinations, are essential. They protect against things like measles, mumps, rubella, hepatitis B, polio, diphtheria, tetanus and pertussis (whooping cough). Immunizations are important for adults as well as for children. Here's why.

Your immune system helps your body fight germs by producing substances to combat them. Once it does, the immune system "remembers" the germ

and can fight it again. Vaccines contain germs that have been killed or weakened. When given to a healthy person, the vaccine triggers the immune system to respond and thus build immunity.

Before vaccines, people became immune only by actually getting a disease and surviving it. Immunizations are an easier and less risky way to become immune.[15]

Vaccines

Vaccines are the best defense we have against serious, preventable, and sometimes deadly contagious diseases. Vaccines are some of the safest medical products available, but like any other medical product, there may be risks. Accurate information about the value of vaccines as well as their possible side-effects helps people to make informed decisions about vaccination.

Federal law requires that Vaccine Information Statements explaining vaccine benefits and risks be handed out whenever (before each dose) certain vaccinations are given. Vaccine Information Statements are available in Spanish and many different languages. In addition, more detailed information describing the benefits and risks of a particular vaccine is available in the Prescribing Information from the Food and Drug Administration.

The following sections answer common questions asked about vaccines and how vaccines are tested and monitored to ensure they are safe and effective. These sections are currently available in English only.

Vaccines are held to the highest standard of safety. The United States currently has the safest, most effective vaccine supply in history. Vaccines undergo a rigorous and extensive evaluation program to determine a product's safety and effectiveness. If a vaccine does receive approval, it is continuously monitored for safety and effectiveness.

Many partners work together to make sure vaccines are safe. Government health scientists work with manufacturers, health care providers, academia, and global health groups such as the World Health Organization to build a comprehensive vaccine safety system. At the Department of Health and Human Services, primarily three agencies work on vaccine safety:

- Centers for Disease Control and Prevention (CDC)
- National Institutes of Health (NIH)

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[15] National Library of Medicine (2022). Vaccines https://medlineplus.gov/vaccines.html

- Food and Drug Administration (FDA)

Vaccines undergo rigorous and extensive testing to determine their safety and effectiveness prior to approval. Following approval, FDA carefully monitors the quality of vaccines—all manufactured lots must pass tests before they can be used. Vaccine manufacturers also must follow strict manufacturing standards, and FDA conducts routine inspections of manufacturing sites.

Scientists from FDA and CDC work closely to monitor reports of vaccine side effects (adverse events) after they are approved and used widely. FDA and CDC take all reports seriously, and work together to evaluate and address any potential problems.

Potential Side Effects

Vaccines, like all medical products, may cause side effects in some people. Most of these side effects are minor, such as redness or swelling at the injection site. Read further to learn about possible side effects from vaccines.

Any vaccine can cause side effects. For the most part these are minor (for example, a sore arm or low-grade fever) and go away within a few days.

Remember, vaccines are continually monitored for safety, and like any medication, vaccines can cause side effects. However, a decision not to immunize a child also involves risk and could put the child and others who come into contact with him or her at risk of contracting a potentially deadly disease.

How Well Do Vaccines Work?

Vaccines work really well. No medicine is perfect, of course, but most childhood vaccines produce immunity about 90 - 100% of the time.

What about the argument made by some people that vaccines don’t work that well . . . that diseases would be going away on their own because of better hygiene or sanitation, even if there were no vaccines?

That simply isn’t true. Certainly better hygiene and sanitation can help prevent the spread of disease, but the germs that cause disease will still be around, and as long as they are they will continue to make people sick.

All vaccines must be licensed (approved) by the Food and Drug Administration (FDA) before being used in the United States and a vaccine must go through extensive testing to show that it works and that it is safe before the FDA will approve it. Among these tests are clinical trials, which

compare groups of people who get a vaccine with groups of people who get a control. A vaccine is approved only if FDA makes the determination that it is safe and effective for its intended use.

If you look at the history of any vaccine-preventable disease, you will virtually always see that the number of cases of disease starts to drop when a vaccine is licensed. Vaccines are the most effective tool we have to prevent infectious diseases.

Prevention

Vaccines help the body's immune system prepare for future attacks. Vaccines consist of killed or modified microbes, parts of microbes, or microbial DNA that trick the body into thinking an infection has occurred. A vaccinated person's immune system attacks the harmless vaccine and prepares for invasions against the kind of microbe the vaccine contained. In this way, the person becomes immunized against the microbe: if reexposure to the infectious microbe occurs, the immune system will quickly recognize how to stop the infection.[16]

Recommended Vaccines for Young Adults

The transition to adulthood is an exciting time in a young person's life. Starting a career, getting an apartment, entering college, or joining the armed forces all offer unique rewards and challenges.

Yet young adults may not know that some vaccines can make this transitional time a healthier one.

Vaccines recommended for young adults ages 19–24 include:

- Meningococcal conjugate vaccine, which helps prevent meningococcal disease
- Tdap vaccine, which protects against tetanus, diphtheria, and pertussis (also known as whooping cough)
- HPV vaccine, which protects against the viruses that cause most cervical cancers, anal cancer, and genital warts
- Seasonal flu vaccine

There may be other vaccines recommended for young adults because their health, job, or lifestyle may put them at higher risk for certain diseases.

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[16] US Dept. of Health and Human Services (n.d.). http://www.vaccines.gov

Young adults should talk to a doctor or nurse to find out if there are other vaccines that they may need.[17]

Antibiotic / Antimicrobial Resistance

Antibiotics and similar drugs, together called antimicrobial agents, have been used for the last 70 years to treat patients who have infectious diseases. Since the 1940s, these drugs have greatly reduced illness and death from infectious diseases. Antibiotic use has been beneficial and, when prescribed and taken correctly, their value in patient care is enormous.

However, these drugs have been used so widely and for so long that the infectious organisms the antibiotics are designed to kill have adapted to them, making the drugs less effective. People infected with antimicrobial resistant organisms are more likely to have longer, more expensive hospital stays, and may be more likely to die as a result of the infection.

Antibiotics fight infections or illnesses that arise from a bacteria like strep throat or a sinus infection. Colds and the flu arise from a virus. Antibiotics will not help or cure viral infections.[18]

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[17] Center for Disease Control (2023).What vaccines are recommended for you. http://www.cdc.gov/vaccines/adults/rec-vac/index.html

[18] Center for Disease Control (2021). Antimicrobial resistance. http://www.cdc.gov/drugresistance/index.html