

## IMMUNE SYSTEM PROBLEMS

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**Abstract:** Also, sometimes your immune system mounts an attack when there is no invader or doesn't stop an attack after the invader has been killed. These activities result in such problems as autoimmune diseases and allergic reactions.

**Keywords:** lymph nodes, spleen stores, thymus.

**White blood cells:** Serving as an army against harmful bacteria and viruses, white blood cells search for, attack and destroy germs to keep you healthy. White blood cells are a key part of your immune system. There are many white blood cell types in your immune system. Each cell type either circulates in your bloodstream and throughout your body or resides in a particular tissue, waiting to be called into action. Each cell type has a specific mission in your body's defense system. Each has a different way of recognizing a problem, communicating with other cells on the defense team and performing their function.

**Lymph nodes:** These small glands filter and destroy germs so they can't spread to other parts of your body and make you sick. They also are part of your body's lymphatic system. Lymph nodes contain immune cells that analyze the foreign invaders brought into your body. They then activate, replicate and send the specific lymphocytes (white blood cells) to fight off that particular invader. You have hundreds of lymph nodes all over your body, including in your neck, armpits, and groin. Swollen, tender lymph nodes are a clue that your body is fighting an infection.

**Spleen:** Your spleen stores white blood cells that defend your body from foreign invaders. It also filters your blood, destroying old and damaged red blood cells.

**Tonsils and adenoids:** Because they are located in your throat and nasal passage, tonsils and adenoids can trap foreign invaders (for example, bacteria or viruses) as soon as they enter your body. They have immune cells that produce antibodies to protect you from foreign invaders that cause throat and lung infections.

**Thymus:** This small organ in your upper chest beneath your breast bone helps mature a certain type of white blood cell. The specific task of this cell is to learn to recognize and remember an invader so that an attack can be quickly mounted the next time this invader is encountered.

**Bone marrow:** Stem cells in the spongy center of your bones develop into red blood cells, plasma cells and a variety of white blood cells and other types of immune cells. Your bone marrow makes billions of new blood cells every day and releases them into your bloodstream.

**Skin, mucous membranes and other first-line defenses:** Your skin is the first line of defense in preventing and destroying germs before they enter your body. Skin produces oils and secretes other protective immune system cells. Mucous membranes line the respiratory, digestive, urinary and reproductive tracts. These membranes secrete mucus, which lubricates and moistens surfaces. Germs stick to mucus in the respiratory tract and then are moved out of the airways by hair-like structures called cilia. Tiny hairs in your nose catch germs. Enzymes found in sweat, tears, saliva and mucus membranes as well as secretions in the vagina all defend and destroy germs.

**Stomach and bowel:** Stomach acid kills many bacteria soon after they enter your body. You also have beneficial (good) bacteria in your intestines that kill harmful bacteria.

The lymph, or lymphatic, system is a major part of the immune system. It's a network of lymph nodes and vessels. Lymphatic vessels are thin tubes that branch, like blood vessels, throughout the body. They carry a clear fluid called lymph. Lymph contains tissue fluid, waste products, and immune system cells. Lymph nodes are small, bean-shaped clumps of immune system cells that are connected by lymphatic vessels. They contain white blood cells that trap viruses, bacteria, and other invaders, including cancer cells.

White blood cells are the cells of the immune system. They are made in one of your lymph organs, the bone marrow. Other lymph organs include the spleen and thymus.

**Severe combined immunodeficiency (SCID).** This is an example of an immune deficiency that is present at birth. Children are in constant danger of infections from bacteria, viruses, and fungi. This disorder is sometimes called “bubble boy disease.” In the 1970s, a boy had to live in a sterile environment inside a plastic bubble. Children with SCID are missing important white blood cells.

**Temporary acquired immune deficiencies.** Your immune system can be weakened by certain medicines, for example. This can happen to people on chemotherapy or other drugs used to treat cancer. It can also happen to people following organ transplants who take medicine to prevent organ rejection. Also, infections like the flu virus, mono (mononucleosis), and measles can weaken the immune system for a brief time. Your immune system can also be weakened by smoking, alcohol, and poor nutrition.

AIDS. HIV, which causes AIDS, is an acquired viral infection that destroys important white blood cells and weakens the immune system. People with HIV/AIDS become seriously ill with infections that most people can fight off. These infections are called “opportunistic infections” because they take advantage of weak immune systems.

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