



# CAAC

## Carolina Asthma & Allergy Center

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[www.carolinaasthma.com](http://www.carolinaasthma.com)

### IMMUNODEFICIENCIES



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Almost everyone has had a bacterial, fungal or viral infection of some kind in their life. The immune system is made up of cells, tissues, proteins, and organs that defend the body against germs and organisms. Our immune system helps battle infections along with medications such as antibiotics, anti-virals, and anti-fungals. Typically our bodies will recover and develop new antibodies to fight off future infections. For individuals with a primary immunodeficiency it is much harder to fight off a new infection or recover from an existing infection.

Immunodeficiencies decrease the body's ability to fight off infections. There are two different categories, either primary or secondary. Primary is when the immune system is absent or impaired in its ability to fight off infections due to a genetic defect. Primary immunodeficiencies are not contagious. Secondary is acquired, as in HIV infection, malnutrition, diabetes, the critically ill and elderly, and those that are immunosuppressed from treatments such as radiation and chemotherapy. At the Carolina

Asthma and Allergy Center we diagnose and treat patients with immunodeficiencies.

#### **About Immunodeficiencies:**

- There are approximately 1 million Americans and 10 million people world wide with primary immunodeficiencies.
- The World Health Organizations recognizes over 150 primary immunodeficiency disorders
- An infant's protective maternal antibodies are absent by 6 months after birth which is why many patients are diagnosed in infancy and childhood. However, some types of immunodeficiency can present in adulthood.
- An immunodeficiency is suspected when a patient has an above average number of infections or has unusual infections.
- Common sites affected include the sinuses, ears, lungs, and the gastrointestinal tract.
- Infections can be chronic or have a prolonged recovery compared to someone with a normal immune system.
- Patients respond poorly to antibiotics.

### **Basics of our immune system:**

- B cells make immunoglobulins (antibodies), that kill germs such as bacteria, fungi, and viruses.
- The different immunoglobulins are IgG, IgA, IgM and IgE.
- IgA is the body's first line of defense against pathogens and is found in saliva, tears, and mucus.
- IgG is the antibody that mainly works on the secondary immune response. It crosses the placenta so mothers pass on their antibodies to their children to help them fight infection for the first 6 months of life.
- IgM participates in the early immune response.
- IgE is the antibody that mediates allergic reactions.
- Protector cells include T-cells and phagocytes.
- Complement proteins enhance the function of protective cells and antibodies.
- Phagocytes kill germs by attacking them.
- There are three different T-cells. Killer T-cells kill germs. Helper T-cells recruit more killer cells and tell the B cells to make more antibodies. Regulatory T-cells let the other T-cells and B-cells know when the body is better so that they can stop making antibodies.

When our bodies have deficiencies of any of the above cells it is hard for our bodies to fight off infections.

### **Ten warning signs for children. (Jeffrey Modell Foundation [info4pi.org](http://info4pi.org))**

1. Eight or more new ear infections within 1 year.
2. Two or more serious sinus infections within 1 year.
3. Two or more months on antibiotics with little effect.
4. Two or more pneumonia's within 1 year.
5. Failure of an infant to gain weight or grow normally.
6. Recurrent, deep skin or organ abscesses.
7. Persistent thrush in mouth or elsewhere on skin, after age 1.
8. Need for intravenous antibiotics to clear infections.
9. Two or more deep-seated infections.
10. A family history of a primary immunodeficiency.

### **Diagnosis:**

- Made through a medical history, physical exam, blood tests, and response to vaccines to test the immune system.
- Complete blood count (CBC).
- Immunoglobulins (Antibodies) IgG, IgA, IgM, and IgE.
- There are several other blood tests that may be needed to help make a diagnosis.

### **The most common immunodeficiency is IgA deficiency. Others include:**

- Common Variable Immune Deficiency
- X-Linked Agammaglobulinemia
- Severe Combined Immune Deficiency
- Chronic Granulomatous Disease
- Wiskott-Aldrich Syndrome
- Hyper IgM Syndrome
- DiGeorge Syndrome
- IgG Subclass Deficiency and Specific Antibody Deficiency
- Ataxia Telangiectasia
- Hyper IgE Syndrome
- Complement Deficiencies

**Treatment** depends on the type of immunodeficiency. The most common deficiencies are treated by using antibiotics for recurrent infections and antibody replacement. Antibody replacement is typically provided through intravenous infusions or subcutaneous injections.

It is also important to maintain **a healthy lifestyle** by following these tips:

- Maintain good nutrition.
- Exercise regularly.
- Good hygiene, wash hands, do not share food or beverages.
- Get adequate sleep and rest.
- Decrease stress.

If an immunodeficiency is suspected please make an appointment with a CAAC Board Certified Allergist/Immunologist.

Websites:

[www.primaryimmune.org](http://www.primaryimmune.org)

[www.info4pi.org](http://www.info4pi.org)