

You and your Immune System



Patient information

bpl 

Bio Products Laboratory

a commitment for life

A familiar story

“ Even as a very young child I can remember getting ill a lot with sore throats, earaches, coughs and other infections and having to visit my doctor all the time.

Once I started school I noticed that I got sick a lot more than the other children in my class, often taking antibiotics and other medicines to get better. I had to stay at home quite a lot to receive treatment. This made it a bit harder to make friends because I missed out on lots of activities at school, birthday parties and sleepovers because I wasn't well enough to go.

Luckily I did make some good friends who didn't mind that I was often unwell. They would come and visit me after school sometimes on the days when I couldn't go in and tell me what they had been up to.



By the time I went to senior school I had already had bouts of bronchitis and pneumonia, which meant that my lungs didn't work as well as they should. I got tired too quickly to take part in sports and games and that made me feel quite left out too.

However, thanks to the continued support of my friends and family and understanding from my teachers, I was able to pass my exams and went on to work. It was quite different from school. There was less exposure to germs as well.

I was pretty tired and felt really run down for the first few months and kept getting colds and tummy bugs, even though it was summer. I put this down to the stress of starting a new job and tried to have as little time off sick as possible.

Eventually I settled into the routine. As the months and years passed, I made new friends, progressed through the company and enjoyed my job. However, I was still getting ill a lot more than the people I worked with and had to go to see my GP every time.

One day she said that I might be a bit anaemic and that she wanted to take some samples of my blood to send away to be tested. When the results came back she still wasn't sure, so I had to have some more tests done and some examinations at hospital.

Then, in the end, my hospital doctor explained to me that the reason I had been getting sick so often with so many different illnesses over the years was that I had a disease called Primary Immunodeficiency (PID), also known as Primary Antibody Deficiency (PAD).

She explained that PID is an immunodeficiency disease, which means that it affects my body's immune system – the part of my body which should have been fighting off the bacteria and viruses, which is why I kept getting ill. ”

Our immune system

The immune system is made up of the following components:-

Tonsils & adenoids – site of collection of lymphocytes

Thymus – involved in lymphocyte (white blood cell) development

Lymph nodes – one of the sites of antibody formation

Liver – contains large numbers of phagocytes. It is also responsible for producing proteins which help the immune system

Spleen – site of collection of immune system cells

Peyer's patches – typically contain B cells, plasma cells and germinal centres

Bone marrow – where cells of the immune system originate

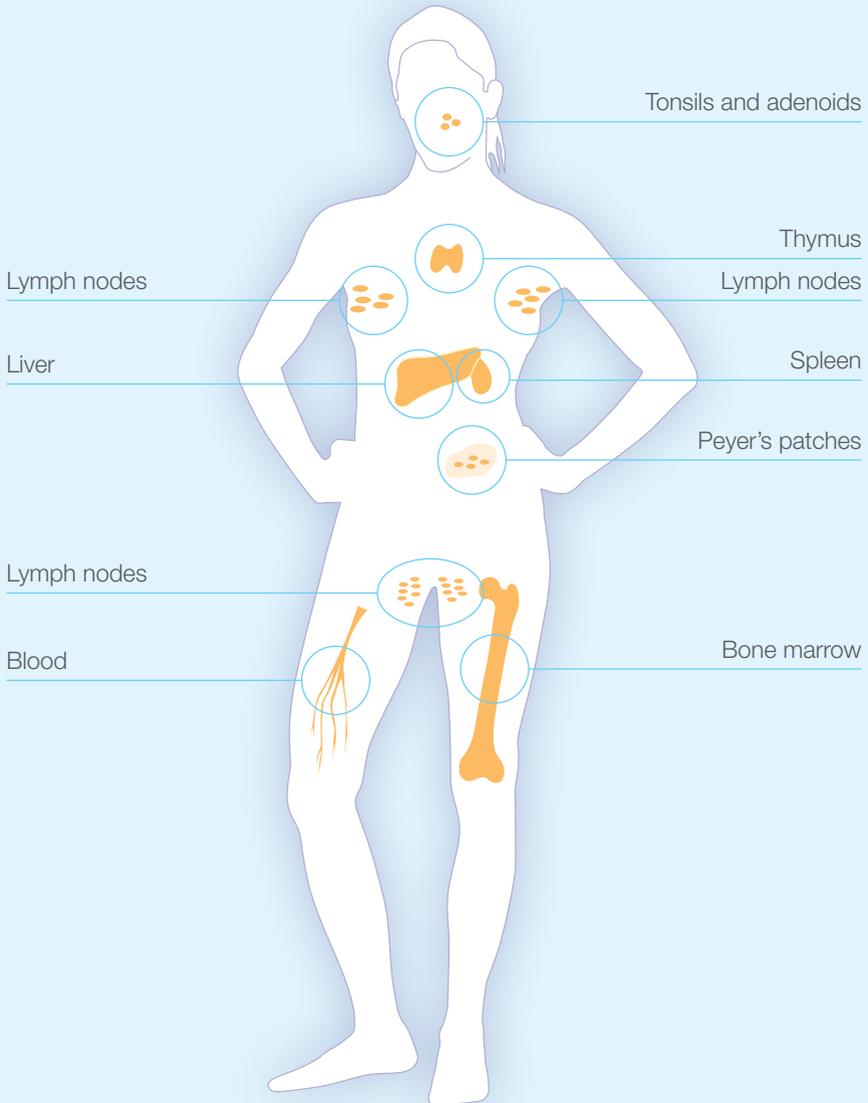
Blood – carries cells and proteins of the immune system around the body



DID YOU KNOW?

- > Primary Immunodeficiency (PID) is also known as Primary Antibody Deficiency (PAD).
- > PID is an umbrella term for immunodeficiency disease





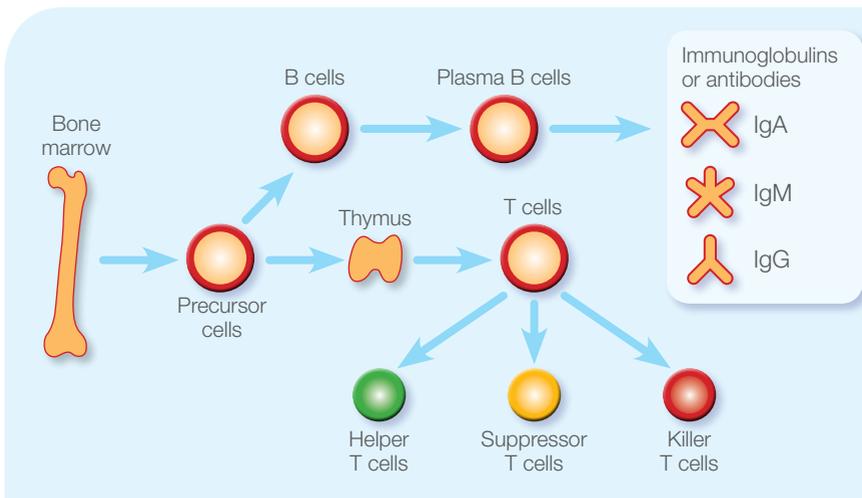
How our immune system works

Our body's immune system is designed to protect us against invading germs and help keep us well.

If our immune system is healthy it sends out a whole team of different types of protectors – called antibodies. These stop germs as soon as they get into our bodies, so they don't make us ill. This team is made up of protectors called B cells, T cells, immunoglobulins, phagocytes and complement. They have different jobs but all join forces to work together to help protect our bodies from infection.

B cells are some of our most important protectors. They are special white blood cells which are made in our bone marrow and which, themselves, make immunoglobulins.

T cells mature in the thymus – a small organ behind our breastbone – and move in our blood to reach any part of our body where they are needed. There are killer T cells, helper T cells and suppressor T cells. Killer T cells are always on the look out for cells which have become ill and then destroy them. Helper T cells keep an eye on the work of the killer T cells and call in more of them if necessary. They can also call on the B cells to make more immunoglobulins. Once the killer T cells have done their job, the suppressor T cells tell the B cells to stop making immunoglobulin.



Immunoglobulins are antibodies which help to fight bacteria and viruses.

 **Immunoglobulin A (or IgA)** antibodies protect the parts of our bodies where our skin can't form a barrier – such as in our nose and eyes, and in our tears and saliva. They also protect our intestines.

 **Immunoglobulin M (or IgM)** antibodies are the next protectors that are formed against the germs if they manage to get into our bodies. IgM is the first immunoglobulin to be formed in the blood and in the lymph system to reach the germs, slow them down and mark the germs for destruction by other immune system cells.

 **Immunoglobulin G (or IgG)** can recognise the same type of germ again and again and lies in wait to fight it off so we don't get ill. This is why, once we have had certain illnesses such as chickenpox or measles, we don't get them again. Our IgG antibodies recognise them after the first time and are able to stop them immediately if they try to attack us again.

Phagocytes are special white blood cells which eat up germs and call on other phagocytes to help if there are lots of invaders to stop.

Complement is made of many parts and works as a communicator between IgG antibodies and phagocytes.

Having PID means the immune system doesn't quite work as well as it should because it doesn't have all the parts of the protective team or some of the parts don't work properly.

This is why germs keep causing illness very easily and very often.

Helping you feel better

Having PID means that some part(s) of your protecting teams are either missing or not working properly, making it easy for germs to get into your bodies. As you will have already experienced, this means you often get ill and it probably takes a long time to feel better again, even when taking the right medicines.



“ My hospital doctor explained that PID is a genetic condition, which means that I didn't catch it from somewhere but that I was born with it. Although there is no cure for PID at the moment, she said that there was a treatment I could have to boost the effectiveness of my immune system, so that my body would have a much better chance of avoiding or minimising the risk of infections. Once I began the treatment programme I may have to stay on it for the rest of my life to give my body the best chance of managing the condition and staying as well as I can.

I was very relieved when I was diagnosed with PID because it meant that finally I found out the reason why I had been getting ill for so long. I felt very positive about the treatment because I knew that it would make me feel better. ”

Managing PID

Antibiotics

To start with, you will probably need some antibiotics to clear up any current infections that you might have. This may involve going to hospital for a short time so you can be given antibiotics and other drugs.

Immunoglobulin replacement therapy

After that, the level of your antibodies can then be corrected by replacing them with infusions of antibodies called immunoglobulins. This is called immunoglobulin replacement therapy and will need to be administered on a regular basis. It will bring your antibody levels to normal and you will feel much better than you have done.



Other things which can help

As well as regular immunoglobulin replacement therapy, there are other things you can do to make sure you feel as well as possible.

It is important to eat a healthy, balanced diet so you get all the proteins, vitamins and minerals your body needs to stay as healthy and active as possible.

Keeping up an active life is also important in order to stay fit and well.

Try to avoid close contact with people who have coughs, colds and other infections, to minimise your exposure to unnecessary germs.



Getting on with life

Once you are having treatment for PID you will feel much better and no one should be able to tell that there is anything different about you.

However, you will probably still come up against some challenges now and again, and you will have to work out how best to deal with them so that you can get on with life. For example, because you need regular immunoglobulin replacement therapy you will probably have to miss some time from school, college or work and so you will have to tell your teachers or your manager why you need to be away.

It is up to you whether you want to tell your friends what is happening. It might help them to support you better if you do, so that they understand why you are not always there or why you can't take part in certain activities.

Once they begin treatment, many people with PID lead very normal lives and get on with ordinary activities, just like everybody else.



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