



Your Health

Cancer: Why Haven't We Found A Cure?©

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Cancer is one of the most widely researched areas in medicine. If we can create robotic arms and 3D printed hearts, why can't we cure cancer yet? The answer is actually surprisingly simple. Cancer is often seen as one disease when, in fact, cancer is actually a number of different diseases. Every type of cancer has its own profile. The process of cancerous cell growth and spread can be very different depending on where it's located in the body. It's for this reason that some cancers can be cured whilst others have a very poor survival rate. You may have heard of some childhood Leukemias being cured in the news – the cure rate for some Leukemias in children can be up to 90%! This is usually possible through chemotherapy. It's currently unclear as to why children tend to overcome cancer better than adults but research is currently being undertaken to try and find out.

Some cancers are especially lethal. One of the most notorious is pancreatic cancer. This is a particularly hard cancer to overcome due to its location. The pancreas, which is partly responsible for digestion, is located very centrally in the body and has the liver, bile duct, small intestine, gall bladder and stomach all very near it. What this basically means is that, given the unfortunate diagnosis of pancreatic cancer, there is a reasonably small distance for the cancerous cells to metastasize over to one of the organs listed earlier. Metastasis is essentially a word for a secondary tumor formation at a secondary site. One of the ways to tell if a tumor is a new cancer or a metastasis is by looking at the tissue type. If a tumor found on your bladder is made out of lung tissue, you know that this is a metastasis of lung cancer. If you have lung cancer and the tumor on the bladder tests as bladder cancer, you would have two different cancers at the same time (although you would be very unlucky!)

Now that we know cancer is in fact a range of diseases, rather than just one, what are we doing to try and cure it? There are two ways of attacking cancer, a 'one size fits all' approach and a more targeted option. Often these can be used at the same time or one after the other.

Let's begin by the most well-known cancer treatment, chemotherapy. This is essentially a combination of drugs that targets the multiplication of cells. Unfortunately, chemotherapy can't tell the difference between healthy cells and cancerous cells and can therefore end up killing some healthy cells. Chemo would be classed as a 'one size fits all' treatment option. However, as cancer cells divide more quickly than healthy cells, chemotherapy targets cancerous cells more than healthy ones.

Next up, radiotherapy. This works by blasting radiation into the cancerous cells and destroying their DNA. This causes the cancerous cell to die. Unfortunately, much like chemo, radiotherapy can damage the surrounding cells and also damage their DNA. Having said this, as these cells are healthy, they often have the ability to repair themselves. Given the broad spectrum of cancers that this therapy can treat, this is classed as a 'one size fits all' approach too.

Third we have immunotherapy. This is a field of particular interest, as this treatment option would be classed as a 'targeted' or 'personalized' approach. There are many different types of immunotherapy but they all work in a similar way. The process works by essentially training your immune system to detect and kill cancerous tumors. A key part of a successful immune response is the ability to produce antibodies. These are proteins that bind to pathogens or abnormal cells and flag them up for white blood cells to see them and eat them. Monoclonal antibody immunotherapy works by injecting lab grown antibodies into the blood that can detect a particular cancer protein and target it for destruction by the immune system.

The final option, which can be used preventatively or post diagnosis is surgery. Simply cutting out the tumor can stop it spreading. Surgeons usually have to take out a significant amount of tissue to make sure that no cancer is left behind as it could grow back and metastasize if left in the body.

This week's advice: The prevalence of cancer looks like it's increasing over time, but it's not worth worrying about. Let's not forget that the reason cancer and mental disorders seem to be increasing is due to the fact that we are living longer! Hopefully one day, we may find a 'one size fits all' cancer cure to treat all types of cancer but until then, keep optimistic and live your life to the full.

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