MedicalXpress

Debunking 13 common cancer myths

November 7 2019, by Joanne Duffy

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Cancer myths irritate me. Not only because they fly in the face of scientific research, but also because they prey upon people who are just trying to do their best to live a healthy life.

These myths start to get especially dangerous when they might affect

someone's response to a cancer diagnosis, so I reached out to some researchers at the ICR to find out which myths bug them the most. Here are the top 13:

1. There's no cancer in my family, so I can't get cancer

There are many types of cancer which you are more likely to develop if someone in your family has had them, but a very small number of cancers are inherited. There is lots of research looking into genes which might identify those at higher risk of developing cancer, and whether this risk affects other people in the family.

But the overwhelming majority of cancers are caused by changes to your DNA that happen over the course of your lifetime, in response to changes in your environment or the ageing process.

2. Cancer treatments poison us and make cancer worse

Cancer is easy to kill. If you put some cancer cells in a dish and pour some bleach on them, they won't survive for very long. Pouring bleach on some bacteria growing in a petri dish would have much the same effect, but we don't take bleach when we have an infection, for the same reason we don't take it when we have cancer.

The reason finding cancer treatments is so hard is because cancer cells are just normal cells which have turned malignant. Anything that kills a cancer cell is therefore likely to kill your own healthy cells as well. The ideal cancer drug is selectively toxic – it will only harm the cancer cells and leave your own cells unscathed.

While older chemotherapy treatments are famously difficult for patients

and come with a whole host of nasty side effects, modern research is focused on developing smarter, kinder treatments.

Many of these treatments focus on training your immune system to spot cancer cells and fight them, or therapies which target the genes that have caused the cancer in the first place.

While some older cancer treatments may not be as kind as more modern therapies, they don't make cancer worse.

3. Cancer is a fake disease invented by pharmaceutical companies

Cancer is very much a real disease. There's not a whole lot else to say on this one. Watch this video of a patient affected by the ICR's research:

4. Pylons/mobile phones cause cancer

The theory behind this myth is that excessive exposure to radiofrequency energy from cellular phones causes cancer. The basic cause of cancer is damage to your DNA, a discovery that was made at the ICR.

But there is no evidence that radiofrequency waves cause DNA damage, which is what leads to cells becoming cancerous, so the pylons/mobile phone myth simply doesn't add up. Radiofrequency waves are nowhere near as strong as other types of radiation like x-rays or UV, which can break the chemical bonds in DNA.

If you've ever heard someone suggest that childhood leukaemia is caused by radiowaves or pollution, Professor Mel Greaves has published research which shows that there is a clear, biological cause of the

disease.

You can read more from Professor Greaves in this blog post which tackles more myths about the causes of leukaemia.

5. Microwaves cause cancer

Not dissimilar to the mobile phones myth above, this one stems from a belief that the radiofrequency waves in microwaves can somehow increase the incidence of cancer.

But just like mobile phones, the radiofrequency waves are much too low in energy to cause the damage to DNA which leads to cancer.

6. Vaccines mess with our immune systems and cause cancer

Vaccines prevent disease by exposing the immune system to small, often inactive, amounts of infectious material that help it recognise the real disease when it comes along.

There is no link between vaccines and an increased risk of cancer. Cancer patients can't receive vaccines when undergoing treatment, since their immune systems are usually weakened by these therapies and vaccines require someone to have a functioning immune system in order to work properly.

There are actually two vaccines which can protect against cancer – the HPV and HBV vaccines. The HPV vaccines prevents against the Human Papilloma Virus, which is linked to cervical, anal, throat and other cancers. The HBV vaccines protects against the hepatitis B virus, which can cause long–term damage to the liver and increase the risk of liver

cancer.

7. Knocks and traumas cause cancer

Some people think that it's possible for an injury to cause cancer – you may have heard anecdotes about someone being involved in a car accident who later goes on to be diagnosed with cancer.

Injuries often require thorough medical examinations including imaging like x-rays and MRIs, and these scans can reveal cancers which were already present before the accident happened.

So while it might seem like the two are related, they usually aren't. Some types of cancer, like myeloma, can also cause weaknesses in bones, making them more likely to break, or increase your likelihood of severe bruising, which may lead you to see your doctor who then go on to spot the cancer.

8. Alkaline water reduces cancer risk

This myth is incredibly pervasive, to the point that some people have 'alkylisers' installed on their kitchen sinks in the hope that drinking alkaline water will reduce their risk of developing cancer.

The story goes that cancer can only grow in an acidic environment, so by eating alkaline foods, you can change your body's pH and thereby eliminate your risk of cancer.

Except that you can't.

The tumour microenvironment – which is the area of cells and tissues that directly surrounds a tumour – tends to be acidic. Each organ and

tissue in your body has its own optimum pH range in which it functions best, and your body has incredibly tightly regulated systems to make sure the pH never goes outside of this range.

You cannot change the pH of your body by eating alkaline foods. The first place anything you consume goes is your stomach, which is a nice big bath of pH 2 hydrochloric acid.

9. Sharks don't get cancer

Yes they do. Sharks get cancer at a rate much lower than humans, but they do still get the disease.

This myth is one of those pervasive ones that is repeated by all kinds of people and the general idea seems to be that if sharks don't get cancer, there might be something about them which holds the key to curing or preventing the disease in humans.

There is some evidence that cartilage is antiangiogenic – this means that it prevents the development of blood vessels. Cancer needs blood vessels to be able to grow and thrive, so the theory goes that if sharks are made of mostly cartilage, they won't have the kinds of bodies that can support the growth of tumours.

It's an oversimplification, and sharks do get cancer.

We can learn lots about cancer by studying which animals get it and how it develops – you can read more about that in this blog post.

10. Vitamin B17 cures cancer

No, you don't need to clean your glasses, you did read that correctly. You

may not have heard about vitamin B17 and that's because…it doesn't exist.

Vitamin B17, also called laetrile, is touted as an alternative therapy for cancer, but there is no evidence that it works. It's a man–made version of a chemical found in lots of different plants, and it contains cyanide.

There is no reliable evidence that it works as a cancer treatment – or as a treatment for anything else. It's not available for sale in the UK or Europe, due to lack of evidence of its effectiveness.

11. There is a hidden secret cure for cancer

If there is, we'd love to hear about it! The big issue with this myth is of course the notion that cancer is one disease, and it can be cured by any one drug or treatment. The reality is that cancer is an incredibly complex and varied disease. It always has its basis in genetics, but there is a world of a difference between rhabdomyoscaroma and neuroblastoma.

Categorising cancers into groups which have common characteristics helps researchers know where to focus, and helps clinicians know which treatments are likely to be most effective.

So there is no one cure for cancer, because cancer is not one disease.

12. Your superfood diet will prevent cancer

While eating a healthy, balanced diet with plenty of fruit and vegetables is important to maintain good overall health and has been linked with reduced cancer risk, no particular food item can be singled out as having a significant impact in either preventing or treating cancer.

News headlines occasionally report that 'X food fights cancer' – but these are usually extrapolations of the real research.

While I do love the idea of scientists shooting blueberries out of a cannon at cancer cells growing in a dish, the reality is usually that one single chemical compound from one type of plant is methodically tested to assess its ability to selectively kill cancer cells, and the research is then published in the academic literature.

Not as jazzy, but still very important work!

13. You won't lose someone you love to cancer

Sadly, there is still a long way to go when it comes to improving cancer treatments, and it's a myth that we won't still lose people to the disease. Scientists and clinicians are making leaps and bounds when it comes to researching cancer, its causes and potential solutions to fight it.

The ICR's new Centre for Cancer Drug Discovery will focus on trying to outsmart cancer as the disease evolves to adapt to the latest treatments, and the pace of developments in artificial intelligence means we're always taking steps forward in beating the disease.

I'll be taking about 30,000 steps forward on 13 October in the Royal Parks Half Marathon to raise funds for the ICR – and I'll be keeping the devastating truths of cancer in my mind every step of the way.

More information: To support Joanne and donate to the ICR, please visit her fundraising page: uk.virginmoneygiving.com/fundr … anneDuffy3&pageUrl=1

Provided by Institute of Cancer Research