

# Causes of Cancer: Everything Old Is New Again

In early October 2015 a fleeting flurry of news reports appeared <sup>(1)</sup> about a study funded by the Cancer Council of Australia and undertaken at the Queensland Institute of Medical Research, now called the Berghofer Medical Research Institute <sup>(2)</sup>. The study said about 37,000 Australian cancer cases could be prevented each year if people made just six simple lifestyle changes.



Given over 123,000 new cancer cases are diagnosed in Australia each year, preventing 37,000 of them would make quite an impact.

Some of these media reports also presented this study as a fundamental shift in our thinking on cancer. Was it?

In 1981, Richard Doll and Richard Peto of Oxford University published what was to become a landmark study <sup>(3)</sup>. Based on a comprehensive analysis of known cancer risks at the time, Doll and Peto proposed around 80 % of cancers in the USA were preventable with 35 % due to diet and 65 % to attitude and lifestyle factors.

While delivering the annual Florey lecture to the University of Adelaide in September 2013 <sup>(4)</sup>, Professor Ian Frazer of the University of Queensland and the developer of the human papilloma virus vaccine for cervical cancer categorized the causes of cancer as follows:

## **30 % of cancer is caused by what we do to ourselves.**

- 30 % of cancer is caused by what we've done to the environment
- 30 % of cancer is caused by what you catch.
- Only 5 – 10 % of cancers are genetic.

The recent Cancer Council of Australia study says essentially the same thing – a third of all cancers in Australia are preventable with the majority attributed to the six lifestyle factors. So the recent Cancer Council of Australia report is not fundamentally new. In 35 years, only the relative importance of the causative factors for cancer has changed <sup>(5)</sup>. And while people continue to debate these ratios, as the above comparison shows, the fundamental principle remains: Cancer is a preventable disease and you have more control over your health than any doctor ever will. The fundamentally important questions all these studies raise are:

1. What will you do with this control?
2. Why isn't the message that cancer is a preventable disease getting through?

Let's look at what these studies mean for you.

## **30 % of cancer is caused by what we do to ourselves.**

What sort of things are we talking about? The recent Cancer Council of Australia / QIMR, Berghofer Medical Research Institute study tells us the major ones:

- Alcohol;
- Smoking;
- Poor Diet;
- Obesity;
- Lack of regular exercise; and
- Excessive exposure to UV light.

According to the Cancer Council study, these six lifestyle factors are potentially responsible for around 90 % of preventable cancers. What we eat and how we live is completely under our control.

## **30 % of cancer is caused by what we've done to the environment.**

By this Prof Frazer is talking about environmental pollutants and artificial chemicals.

There are over 80,000 human produced chemicals in common use, with around 2,000 more being added each year. Frighteningly, we only have reliable safety data for around 7 % of them. That we know so little about these chemicals and that they are used everywhere is a whole topic on its own. Especially when there is considerable evidence some of these chemicals are far from benign.

Living in the industrial age there is no way we can escape environmental pollutants. They are in the air we breathe, the water we drink, the food we eat, out-gassing from our cars and the buildings we live and work in. But this is not where most of your chemical exposure comes. Your choices and

lifestyle have far greater influence on the number and quantity of potentially harmful chemicals you are exposed to: What are the cleaning products you use around the home? What shampoo, conditioner, deodorant, cosmetics, perfume? Can you use something else? Do you need to use them at all? Do you need blue water in the toilet to make it "safe"? Do you need to bomb for cockroaches or cover every square inch of the house with surface spray every time a spider sneaks through your defences? Do you really need anti-bacterial socks, dishcloths, air freshener? What chemicals and poisons are you spraying in the garden? Do you know where your food comes from? Was it grown with antibiotics, hormones, pesticides, fungicides, growth promoters? Were they grown in a country with the same safety standards? What is it packed in? What additives and preservatives were used? You might not like the answers.



## what you eat contributes to your overall health



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If you want to take the load off your body and avoid these chemicals and their potential side effects, then look to the choices you make. Don't volunteer to be a victim and practice the precautionary principle.

### 30 % of cancer is caused by what you catch

Here Prof Frazer is talking about infectious agents - viruses, bacteria, fungi and parasites implicated in cancer - and there are quite a few. There are two things to do:

1. Avoid the infectious agents implicated in cancer
2. Keep your immune system at the top of its game

While you have limited control over the microorganisms you may be exposed to, many of the infectious agents implicated in cancer are either part of your normal flora or so common most people have either been exposed to them or are carrying them by the time they're 60.

You can do more by making sure you keep your immune system at the top of its game. That is something you can do a lot about. There's also another reason why you'd want to.

One of the key functions of your immune system is to protect you from early cancers, whatever they may have set them off. This important role is undertaken primarily by your Natural Killer or NK Cells. Why and how they do this is another topic for another time. The important thing to remember is this: The worse your diet, the worse your immune system gets. The worse your lifestyle, the worse your immune system gets and the more chemicals and pollution you are exposed to, the worse your immune system gets. And if your immune system can't do its job of monitoring for early cancers properly, then you are at risk. Here too, you are in control.

### Only 5 – 10 % of cancers are genetic.

The popular press and the Hollywood studios make a lot about the power and effect of our genes. But are they overstating their influence? Professor Frazer's comments tell us our genes are not as important as the media would have us believe. It is often said:

"Your genes load the gun, the environment pulls the trigger."

There is overwhelming evidence to show your environment and how

you respond to it has potentially far more influence over your health than your genes. So while you may have a suspect gene – and would be well advised to do something about it – the reality is the environment and your choices have a profound effect on if and when those genes may be turned on and off.

The combination of your genes and their interactions with the environment determines your health outcome. Having the gene alone is not a reliable predictor of your fate.

So what's the take home message from all this?

The fundamental principles outlined by Doll and Peto over 35 years ago still apply (5): You have more control over your health than any doctor ever will. You always have and you always will.

So what will you do when the doctor gives you the "All Clear"? The evidence says loud and clear what you do next is potentially very important for your future.

If you go back to business as usual then you already know what your future will likely be. Your actions, choices and mindset are what brought you to where you are now – for good or ill. Without different choices it is likely exactly

the same thing will happen again. History will repeat. That's not what you want.

So you have some questions to ask: Is what you think and do today and every day supporting your recovery and wellbeing? Is it aligned with your higher purpose? Which thoughts and actions are supportive? Which are hurtful or self-destructive? Can you tell the difference? What will you change? What will you keep the same?

And what if the doctor doesn't give you the "All Clear". Don't these questions become even more important? More urgent?

The prospect of losing life or getting a second chance at life changes our perspective and values. How could it not? Every day we are alive is a moment to be cherished. Carpe diem! The crisp air of the morning tastes fresher. Sunsets are more vivid. The sound of a babbling brook is more tuneful. The laughter of a child is more magical. Friendships are more precious.

Science tells us cancer can be prevented – through the choices we make. What will your choices be?

**by Dr Stephen Hardy PhD.**

#### References and Suggested Reading

- (1) Example: 37,000 cancer cases can be avoided yearly, new report says: AAP, 7 October 2015: Available at: <http://www.sbs.com.au/news/article/2015/10/07/37000-cancer-cases-can-be-avoided-yearly-new-report-says>
- (2) Whiteman, D. C.; Webb, P. M.; Green, A. C.; Neale, R. E.; Fritschi, L.; Bain, C. J.; Parkin, D. M.; Wilson, L. F.; Olsen, C. M.; Nagle, C. M.; Pandeya, N.; Jordan, S. J.; Antonsson, A.; Kendall, B. J.; Hughes, M. C. B.; Ibiebele, T. I.; Miura, K.; Peters, S.; Carey R. N.: *Cancers in Australia in 2010 attributable to modifiable factors: Introduction and overview. Aust NZ J Public Health; 39:403 – 407, 2015; doi: 10.1111/1753-6405.12468. Available at: <http://onlinelibrary.wiley.com/doi/10.1111/1753-6405.12468/epdf>*
- (3) Doll, R. and Peto, R.: *The causes of cancer: quantitative estimates of avoidable risks of cancer in the United States today. J Natl Cancer Inst.; 66(6), 1191 – 1308, 1981.*
- (4) Frazer, I.: *Florey lecture to the University of Adelaide, September 2013: Available at: <https://www.youtube.com/watch?v=q1Qg-iHhSto>*
- (5) Blot, W. J. and Tarone, R. E.: *Doll and Peto's Quantitative Estimates of Cancer Risks: Holding Generally True for 35 Years. J Natl Cancer Inst.; 107(4): djv044, 2015. Available at: <http://jnci.oxfordjournals.org/content/107/4/djv044.full.pdf>*