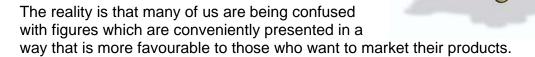# WHAT DO YOU KNOW ABOUT RISK OF DISEASE?
by John Appleton

How many times have you read glowing reports about pharmaceutical drugs that claim to reduce your risk of a particular disease by up to 50%? We see it all the time with cholesterol drugs that reduce risk of heart attacks and strokes by significant percentages and drugs for Osteoporosis that claim to do much the same. It sounds fantastic doesn't it – a pill for every ill – an answer to every medical condition? If we took them all we would be in good shape (or so we are led to believe).

The reality is that many of us are being confused with figures which are conveniently presented in a way that is more favourable to those who want to market their products.

To understand how easily people and even physicians can be misled, consider this scenario from - www.annieappleseed.com:

In a clinical trial, one hundred (100) women (the subjects) take a new drug to see if it reduces the risk of breast cancer, and one hundred (100) women (the controls) take a placebo (dummy pill).

Assume that after five years, researchers release data showing that two of the women who took the drug (the subjects) develop breast cancer and four of the women who took the placebo (the controls) develop breast cancer.

Based on this data, which "headline" is correct?

'New Miracle Drug Cuts Breast Cancer Risk by 50%!"

'New Drug Results in 2% Drop in Breast Cancer Risk!"

If you said both headlines are correct, you are right. The headlines represent two different ways to express the data. The first headline expresses what is known as the **relative risk reduction** - the two women who took the drug (subjects) and developed breast cancer equal half the number (50%) of the four women who took the placebo (controls) and developed breast cancer.

The second headline expresses the **absolute risk reduction** - 2% of the subjects (2 out of 100) who took the drug developed breast cancer and 4% of the controls (4 out of 100) who took the placebo developed breast cancer - an absolute difference of 2% (4% minus 2%).

If you manufactured this new drug, which headline would you prefer? If you are considering a drug to reduce your risk of breast cancer, would you be willing to take a drug (particularly if it is associated with potentially serious side effects) that would reduce your **absolute risk** for breast cancer by just 2%?

The big issue is the way we perceive the numbers - 50% sounds a heck of a lot better than 2% doesn't it?   Sorting through the numbers can be tricky, but can also help put the "headlines" in perspective

Still confused? - Imagine someone having a 10% risk of dying during the next 5 years as a result of complications of high blood pressure.

If his or her risk will decrease from 10% to 7% after taking a hypertensive pill during several years, then:

The **relative risk** reduction will be **30%** (10% - 7% = 3% and 3% is 30% of 10%) an encouraging result so it seems and this is what is promoted to the media and to doctors.

The **absolute risk** reduction will be **3%** (10% - 7% = 3%) which doesn't sound very encouraging at all. A change in diet and lifestyle might be significantly more effective.

Imagine buying 2 lottery tickets instead of the usual 1. You will double your chances of winning, increasing your chances by 100% (sounds impressive) which is a **relative increase** in chances. If with 2 lottery tickets, your chance of winning is 2 in 20 million (number of tickets sold) your **absolute increase** in your chances of winning is 0.0001%"

How could we make it easier to understand the figures and thus be able to make an informed decision?

A helpful way to do this is to seek data on '**Numbers Needed To Treat'** (NNT). If all the statistics were presented in this way the facts would become very obvious. NNT very simply is the number of people who need to take the treatment in order for one person to benefit.

NNT is calculated by dividing 100 by the **absolute risk** - e.g. if a drug reduces the risk of a bad outcome from 50% to 40%, the **absolute risk** is 50% - 40% = 10%   Therefore the **NNT is 10** (100 divided by 10 = 10). If the **NNT** is a small number efficacy of the treatment is readily apparent.

 An excellent example of a low **NNT** is today's standard antibiotic therapy to eradicate ulcer-causing H. pylori stomach bacteria. If the drug is given to 11 people, and 10 will be cured the **NNT** is 1.1.

Dr Nortin M. Hadler, professor of medicine at the University of North Carolina at Chapel Hill says "Anything over an **NNT** of 50 is worse than a lottery ticket; there may be no winners," From what I have seen by investigating clinical trials of some drugs there are many lotteries out there. I suspect that an appropriate diet and plenty of exercise would record very low **NNT** figures – a lot cheaper too.

It's important to ask questions about any treatment that is offered thus making it easier to take a decision on how to proceed. When it comes to drugs, Medsafe has a superb database of information about all drugs that are prescribed in New Zealand. For those with internet access (using Google), just type in the drug name with "Medsafe Data Sheet" alongside it or ask your doctor to bring it up on his/her screen.

Knowledge is power. Make sure that you have the knowledge that you need to make an informed decision.

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