HOW TO EVALUATE HEALTH/MEDICAL INFORMATION-'RELATIVE RISK' VS 'ABSOLUTE RISK'

http://patient.info/health/absolute-risk-and-relative-risk
http://www.naturalnews.com/019368_absolute_risk_relative.html

One of the most difficult things anyone diagnosed with breast cancer faces is how to make an informed health decision. There is so much information out there and deciding which information is credible and which is not, is often overwhelming. It is important to be able to compare the benefits of a treatment or procedure to its risks. We have compiled this material from several sources and hope that it proves useful to you.

Relative risk is a comparison between two groups of people, or in the same group of people over time. Absolute risk is the number of people experiencing an event in relation to the population at risk. Relative risk reduction tells you by how much the treatment reduced the risk of bad outcomes relative to the control group who did not have the treatment.

Absolute risk reduction - also called risk difference– is the most useful way of presenting research results to help your decision-making. It is a way of measuring the size of a difference between two treatments. It simply tells you how much better or worse one treatment is at reducing a particular outcome in terms of the actual numbers (or rates) of people who experience the outcome compared with another treatment.

Relative risk is always stated as a percentage. To make sense out of relative risk, you've got to know the absolute risk. The absolute risk is simply the total risk for whatever is being studied.

With the announcements about the harm from therapies that had claimed to be safe - HRT, antidepressants, Vioxx, etc., and the past topsy-turvy news reports about eggs, butter/margarine, vitamins, effects of violence of TV on children, diet and cancer, etc., the public is growing increasingly skeptical of health information via the news media. Media hype, politics and money often influence what is reported, and facts can be omitted, or altered so as to influence outcomes. Relative Risk vs. Absolute Risk is just one of the many examples.

When reporting medical studies, Relative risk reduction (RRR) refers to the percentage of the decrease achieved by the group receiving intervention vs. the group that did not receive the intervention (the control group). Absolute risk reduction (ARR) refers to the actual difference in risk between the treated and the control group. **Almost all reports in the popular media, many in the medical literature, and pharmaceutical advertisements almost without exception, present risk results as relative risk reductions rather than absolute risk reductions, which often make the data seem more impressive than they actually are.** *{Understanding the Risks of Medical Interventions, Improving Patient Care -Family Practice Management)*

An absolute difference is a subtraction; a relative difference is a ratio. Because this choice may influence how big a difference "feels," patients need to be alert to the distinction.

For example, a decrease in risk from 3% to 2% is a 33% relative risk reduction, but only a 1% absolute risk reduction.

When understanding the real potential benefits and risks of a drug or a procedure (the relative risks interpreted as absolute risks), patients and doctors may better be able to decide whether it is appropriate to forego a treatment - a treatment that may not only be expensive but have unwanted or dangerous side effects. *Do drug company promotions influence physician behavior? www.ncbi.nlm.nih.gov/pmc/articles/PMC1071337*

Studies in the Lancet demonstrated that physicians are more likely to prescribe medications when results are presented as Relative risk reductions rather than Absolute risk reductions. If drug X reduces mortality from 0.2 to 0.1 percent, this is a 50 percent relative reduction, yet a small decrease.

The headlines read, Tamoxifen Cuts Breast Cancer Risk by 50% in Healthy Women! - ***YET*** it turns out, among all the women in a study who took tamoxifen, less than 2% got breast cancer, and among those that took the placebo, less than 3% got breast cancer. The real difference was 1%. *{How To Lie With Statistics, Real Health Breakthroughs, Dr. William Campbell Douglass, 2004}*

However, tamoxifen was found to increase the relative risk of stroke 29% in these women. But in terms of absolute risk it was a small percentage - an increase of 1.06 percent compared with 0.76 percent for the control group. *{Slightly increased risk of ischemic stroke found with tamoxifen, Medical News Today - October 2004}*

EXAMPLE: The Swedish mammography trials reported in The Lancet, show a current relative death benefit of 20 percent among women who have mammograms. That's based on the determination that out of 129,750 women who were invited to begin having mammograms in the late 1970s and early 1980s, 511 died of breast cancer over the next 15 years--a death rate of 0.4 percent. In the comparison group of 117,260 women who were not invited, there were 584 breast cancer deaths over the same period--a death rate of 0.5 percent. That is, indeed, a 20 percent relative benefit in favor of mammography. But the absolute difference between the two groups after eight years of mammography is seven deaths a year in a female population of 250,000.

Rather than tossing around percentages and odds ratios, by Dr. Russell Harris, an internist and clinical epidemiologist at the University of North Carolina School of Medicine, asks his female patients to imagine "a thousand people just like you. It's easier to understand that way."

According to his calculations if none of 1,000 50-year-old women ever has a mammogram, 13 will die of breast cancer before they reach the age of 75--not a large number to begin with because breast cancer, despite the attention it currently is receiving, accounts for only about 2 percent of all deaths. Next, imagine that each of the 1,000 women has a mammogram every year for the next 10 years. Assuming the Swedish studies are valid, how will that affect the breast cancer death toll?

Not by nearly as much as most women believe. Of the 13 women who would have died of breast cancer without mammograms, 10 still will die of breast cancer.

The absolute benefit of mammography for women in their 50s, according to Harris, is three lives saved--or, to be more precise, three breast cancer deaths avoided--for every thousand women who have annual mammograms for 10 years, a total of 3,333 individual mammograms to prevent one death.

EXAMPLE: Which drug would you rather take? One that reduces your risk of cancer by 50 percent, or another drug that only eliminates cancer in one out of 100 people? Most people would choose the drug that reduces their risk of cancer by 50 percent, but the fact is, both of these numbers refer to the same drug. They're just two different ways of looking at the same statistic. One way is called **relative risk**; the other way is **absolute risk**.

Here's how it works: Let's say that in a trial involving 100 people, two people would normally get breast cancer during the trial duration, but when all 100 people are put on the drug, only one person gets breast cancer, meaning the reduction of breast cancer is one person out of 100. Yet the pharmaceutical industry will exclaim that the relative risk reduction is 50 percent because one is 50 percent of two. In other words, the risk is cut in half from a relative point of view.

The headlines promoting this drug, therefore, will always talk about the relative risk -- "A whopping 50 percent reduction in risk!" -- and these headlines will be parroted by the mainstream press, medical journals, the FDA, doctors and drug marketing reps who are always pushing and exaggerating the supposed benefits of their drugs while minimizing their risks. Because, you see, even though this drug may help one out of 100 people, its side effects create increased risks to all 100 people.

Helping to decide about taking a treatment

The decision on whether to take a treatment needs to balance various things, such as:

- What is the absolute risk of getting the disease to start with?
- How serious is the disease anyway?
- How much is the absolute risk reduced with treatment?
- What are the risks or side-effects in taking the treatment?

- How much does the treatment cost? Is it worth it to an individual if the individual is paying, or is it worth it to the country if the government is paying?

It may help to look at a couple of examples:
Say your absolute risk of developing a certain disease is 4 in 1,000. If a treatment reduces the relative risk by 50%, it means the 4 is reduced by 50%. Therefore, the treatment reduces the absolute risk from 4 in 1,000 to 2 in 1,000. Not really much in absolute terms.

- If it were a minor disease, one which you are likely to recover from, you are not likely to bother to take the treatment.
- If it is a fatal disease, you might consider taking the treatment - any reduction in risk may be better than none. However:
    - Say there was a 1 in 100 risk of developing serious side-effects from treatment. You are then not likely to want the treatment, as the risk from serious side-effects is higher than the risk from the disease.
    - If there were no risk from the treatment, you might consider the treatment worthwhile.
    - If the treatment were very expensive:
        - Then you may not be able to afford it and decide to take the risk without treatment.
        - If the government is paying, it might decide not to fund this treatment, as the reduction in absolute risk is not great and many people would need treatment to benefit one person.

However, on the other hand, say your absolute risk of developing a different disease is 4 in 10 and a treatment reduces the relative risk by 50%. Your absolute risk goes down to 2 in 10 - this is now a big reduction.