

## PROFESSION

### Communicating health risks can be tricky

Even physicians can misunderstand the implication of statistics such as relative risk reduction, a study says.

By **KEVIN B. O'REILLY**, *amednews* staff. *Posted April 8, 2011.*

How medical risks are perceived can vary by the way in which the statistical reality is portrayed. A new systematic review finds that patients and physicians struggle to interpret health probabilities.

The review, published March 16 by The Cochrane Collaboration, which analyzes the evidence for the efficacy of health care interventions, examined 35 studies of how well patients, physicians and medical students understand various methods of communicating risks ([www.ncbi.nlm.nih.gov/pubmed/21412897/](http://www.ncbi.nlm.nih.gov/pubmed/21412897/)).

For example, most people have an easier time understanding the three-year risk of a hip fracture due to not taking an osteoporotic drug if it is expressed as a frequency, 100 patients in 1,000 will have a fracture. This is in contrast with expressing this as a percentage -- a 10% probability.

If the drug benefits the patient by cutting the 10% risk in half, the so-called relative risk has been cut by 50%. In this case, the risk is 50% lower, relative to the 10% of patients who would have been injured without intervention.

The problem is that most study subjects told the relative risk reduction believe that the beneficial effect of the drug is larger than it is in reality. What experts call the "absolute risk reduction," or "risk difference," is only 5%. That is, if 10 in 100 patients are likely to have the hip fracture, and 5 fewer patients are injured because they take the drug, then the drop considering the absolute number of 100 patients is 5%.

Another way of expressing this same idea is to use the term "number needed to treat." In this case, that would mean saying that 20 patients need to receive the drug treatment for three years to avert one hip fracture.

It is not clear why so many people find probability statistics confounding, said the study's lead author, Elie A. Akl, MD, PhD, MPH, associate professor of medicine at the University of Buffalo State University of New York School of Medicine & Biomedical Sciences.

"People have theorized and related this to the evolution of human cognition," Dr. Akl said. "People are used to thinking in terms of natural frequencies -- how likely is something to occur out of thousands. They are not used to thinking in terms of probabilities."

#### Statistical struggles

Doctors are not any better than patients when it comes to correctly interpreting the meaning of relative risk statistics, the review found.

"People would be surprised -- they would think that doctors, who are supposed to be trained to help patients make decisions, would at least understand the statistics and the different forms of statistics," Dr. Akl said. "From the point of view of these studies, that was not the case."

Medical students and residents need more training in evidence-based medicine to help them understand the different forms of communicating risks to patients, Dr. Akl said.

Most studies have looked at how well patients understand different kinds of statistics or how persuasive they find them to be. It is yet to be determined which approach best helps patients make decisions consistent with their preferences, Dr. Akl said.

In the meantime, he said, physicians should err on the side of giving patients more information with which to make medical decisions.

"It's always better to give the full picture," Dr. Akl said. "Just giving the relative risk reduction is only part of the picture, part of the truth. The whole truth means also giving the absolute risk reduction. ... For patients interested in knowing and being fully informed before making a decision, the way to do that would definitely be to present them with both statistics."

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