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Memorandum

To: Trialists

Fr: Curtis Meinert

Re: Relative risks

Paul Leaverton has been after me for years to join his rant against use of relative risk reduction in characterizing results of trials. Just recently I got another nudge. This time I suggested he write a piece on the topic and I would post.

He and I look forward to comments.

Misleading presentation of clinical trial results – a disturbing trend.

March 18, 2022.

Paul E. Leaverton, PhD, Geezer emeritus, USF

Curt has kindly offered this space for me to vent about what I consider to be an extremely important and prevalent scientific error dealing with clinical trials. Although it has frequently been described, I believe it merits far more attention.

A recent, outstanding, meta-analysis by Byrne, et al (1), points out that this troublesome trend is seen much too often in the presentation of clinical trial results. The simple error is emphasizing relative risk reduction over absolute risk reduction. Sometimes the estimated absolute risk change is simply ignored. In this paper, they cite the frequently misleading interpretation of statin trial results due to this tactic. While I don't want to get into the pros and cons of statin usage for both primary and secondary prevention, nor underlying motivations, there can be no argument about the misleading aspect of many statin trial summaries. Figure 1 in this paper is one of the most powerful graphs you will ever see in the medical literature.

This kind of criticism begs the question, "How can you assess the practical/clinical importance of a trial result without knowing the absolute risk change and the time span?" Answer; you can't. Yet, many simply ignore this seemingly obvious truism. Please see the classic one-page commentary by Gigerenzer, et al, (ref. 27 in the Byrne paper) to see how prevalent RR is reported without mention of the absolute risk in prominent medical journals. You may be shocked to see that it hovers around the 50 percent mark. Unacceptable science. We all should do our part to reduce this number to zero. If you know any medical/public health editors, it might help to discuss this matter with them. More effort is needed to stop this nonsense. The result has been (and is) poor evaluation of drugs, to the detriment of millions.

In their book, "Ending Medical Reversal", Prasad and Cifu, point out the high prevalence of medical practices which are ineffective or harmful. It seems certain that the misrepresentation of clinical trial results is a major contributing factor. Such abuse should cease; to eradicate a major medical and public health problem.

References.

1. Byrne P, Demasi M, Jones M, et al. Evaluating the Association Between Low-Density Lipoprotein Cholesterol Reduction and Relative and Absolute Effects of Statin Treatment. A Systematic Review and Meta-analysis. *JAMA Intern Med.* 2022; published online March 14, 2022.
2. Gigerenzer G, Wegwarth O, Feufel M. Misleading communication of risk *BMJ.* 2010; 341:c4830.doi:10.1136/bmj.c4830.
3. Ending Medical Reversal. Prasad VK, Cifu AS. Johns Hopkins University Press, Baltimore. 2015.

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