

Review of: "Hazard Risk Reductions Should Not Be Communicated as Relative Risk Reductions for Death in Cancer Clinical Trials: Intentional or Inadvertent?"

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Misinterpretation and misreporting of hazard ratios as relative risks (also known as risk ratios) is an important problem. This mistake is frequent in oncology, and other areas of medicine. This mistake results in exaggerated claims of efficacy.

The explanations and examples in this paper are well-intended, but confused by using non-standard terminology. The abbreviation HR usually stands for 'hazard ratio'. I have never seen the term 'hazard risk', nor have I seen the the phrase 'hazard reduction' abbreviated as HR. Use of the abbreviation HR is confusing when these terms are being used in the same paper.

This is particularly so in the explanatory section headed 'Hazard Risk'. Cox proportional hazards regression models provide hazard ratios, not hazard risks. Cox proportional hazards regression models depend on the assumption that the hazards (hypothetical functions) being compared are proportional, and that the ratio of these hypothetical functions (the hazard ratio) is approximately constant over time. Three of the four examples in figure 1 have survival distributions that are violate the proportional hazards assumption, complicating their interpretation.

Another important point is that a hazard ratio reflects the whole of the survival curves (distributions) being compared, whereas a relative risk (a.k.a. risk ratio) reflects a cross-section of the curves at a particular timepoint, for example at 1 year, or at 2 years, or at the end of follow-up. The risks, risk ratio, and absolute differences differ over time and therefore depend on the selected time point.

This article could be much improved by collaborating with a biostatistician experienced with correct use and reporting of survival analyses; and, by confining the focus to misreporting and misinterpretation of hazard ratios. The additional ideas, comments, and opinions may be true, but they make the article more difficult to follow and understand.