

A new method to analyze randomized clinical trials

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Recent developments in biostatistics and bioinformatics are reshaping the landscape of clinical research. With the number of promising new molecules available for clinical testing, trials need to detect a drug's benefit and harm as fast as possible. There are three major ways in which the clinical development process can potentially be accelerated and/or improved. First, by making use of biomarkers and surrogate endpoints, whenever possible. Second, by designing trials with provisions for interim analyses and adaptations whenever appropriate. Third, by focusing on endpoints that combine clinical relevance and statistical sensitivity. Most endpoints currently recommended for regulatory approval make use of a surprisingly small fraction of the available data, for instance whether a subject is in a given state of disease or experiences certain symptoms at a fixed time point, without regard to repeated measurements of the disease state or symptoms over time. In situations where the patient may experience a number of untoward events, such as tumor progression and death, it is customary to analyse the time to the first event and ignore all subsequent events. Throwing away some of the available data may result in a loss of statistical power, which could be viewed as a minor price to pay in order to define an endpoint that is "clinically relevant". This talk will present a new method of analysis that is useful when interest focuses on multiple, prioritized outcomes. The outcomes can be of any type (such as binary responses, times to event, or even repeated measurements over time). The method is fully non-parametric and leads to a universal measure of treatment effect. The interest and potential of the method will be illustrated by an example in advanced colorectal cancer.

References

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2. Buyse M. Reformulating the hazard ratio to enhance communication with clinical investigators. *Clinical Trials* 5:641-2, 2008.