Published in final edited form as:

Clin Trials. 2013 October ; 10(5): 645–646. doi:10.1177/1740774513499977.

Proceedings of the University of Pennsylvania annual conference on statistical issues in clinical trials: Emerging statistical issues in Biomarker Validation for Clinical Trials

Jonas H Ellenberg and Susan S Ellenberg

Department of Biostatistics and Epidemiology, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, USA.

Keywords

clinical trials; biomarker validation

This issue of *Clinical Trials* contains the proceedings of the fifth in a series of symposia held at the University of Pennsylvania on current statistical issues in clinical trials. This symposium, held in spring 2012, focused on emerging statistical issues in biomarker validation for clinical trials, a topic highly relevant to the ever-increasing concerns about clinical trial efficiency

While the titles of the papers in the Table are self explanatory, the presentations and panel discussions offer a very broad spectrum of viewpoints and emphases from both long-time and more recent researchers. Simple questions which create difficult statistical issues such as how to calibrate new biomarkers against imperfect gold standards; regulatory perspective on when biomarkers are ‘good’ enough to be used in clinical trials; how to quantify treatment effect explained by biomarkers subject to measurement error are addressed (see Table). Other topics include fraud in Omics biomarker validation, and the approach to assessing clinical utility along with statistical validation. Expert panels provided thoughtful commentary on the presentations, and there were provocative and insightful questions and comments from the floor; these discussions are included along with the papers.

The Penn conference series is aimed at facilitating advances in approaches to the statistical design, implementation and analysis of clinical trials. Earlier conferences in this series focused on proof-of-concept studies and ‘go–no go’ decision making [3], development of targeted therapies [4], comparative effectiveness studies [5] and emerging statistical issues in the conduct and monitoring of clinical trials [6]

Acknowledgments

The NIH (NCI) provided conference grant funding 5R13CA132565-05, GRANT 00249811. The Center for Clinical Epidemiology and Biostatistics at the University of Pennsylvania provided scientific and logistical support and the American Statistical Association and the Society for Clinical Trials provided in-kind support for the conference.

Author for correspondence: Jonas H. Ellenberg, Department of Biostatistics and Epidemiology, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, USA. jellenbe@mail.med.upenn.edu.

References

1. Eisenstein EL, Collins R, Cracknell BS, et al. Sensible approaches for reducing clinical trial costs. *Clin Trials*. 2008; 5(1):75–84. [PubMed: 18283084]
2. Morrison BW, Cochran CJ, White JG, et al. Monitoring the quality of conduct of clinical trials: A survey of current practices. *Clin Trials*. Jun; 2011 8(3):342–49. [PubMed: 21730082]
3. Ellenberg JH, Mick R, Ellenberg SS. Proceedings of the University of Pennsylvania annual conference on statistical issues in clinical trials: Early, translational and proof of concept studies: The ‘go/no go’ decisions. Foreword *Stat Med*. May 10; 2010 29(10):1059–60. PMID: 20419757.
4. Ellenberg JH, Ellenberg SS. Proceedings of the University of Pennsylvania annual conference on statistical issues in clinical trials: Statistical issues in developing targeted therapies. Foreword. *Clin Trials*. 2010; 7(5):513–15. PMID: 20861200.
5. Ellenberg JH, Ellenberg SS. Proceedings of the University of Pennsylvania annual conference on statistical issues in clinical trials: Statistical issues in comparative effectiveness research. Foreword. *Clin Trials*. 2012; 9(1):5. PMID: 22334462.
6. Ellenberg JH, Ellenberg SS. Proceedings of the University of Pennsylvania annual conference on statistical issues in clinical trials: Emerging statistical issues in the conduct and monitoring of clinical trials. Foreword. *Clin Trials*. 2012; 9(1):5. PMID: 23250941.

Table

2012 Conference on Emerging Statistical Issues in Biomarker Validation for Clinical Trials

Speaker	Institution	Topic
Dan Sargent	Mayo Clinic	Biomarkers and surrogate end points-the challenges of statistical validation
Lisa McShane	NIH/NCI	The Omics of biomarker validation: Statistical performance and clinical utility
Gene Pennello	FDA	Assessment of biomarker assay and performance. When are biomarkers ready for prime time?
Tianxi Cai	Harvard	Evaluating prognostic accuracy of biomarkers in nested casecontrol studies
Panel Discussion I & Floor Discussion: Dave DeMets (U Wisconsin); Phyllis Gimotty (U Pennsylvania); Jay Siegel (J&J)		
Colin Begg	Memorial Sloan-Kettering	Testing the incremental predictive accuracy of new markers.
Yongming Qu	Eli Lilly	Quantification of treatment effect explained by markers in the presence of measurement error
Rebecca Betensky	Harvard	Importance of calibrating new biomarkers against imperfect gold standards
Panel Discussion II & Floor Discussion: Victor DeGruttola (Harvard); Lisa LaVange (FDA); Eric Rubin (Merck)		
Susan Ellenberg		Closing Remarks