Full-day course

Absolute Risk Methods and Applications in Clinical Management and Public Health

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Abstract

This course introduces absolute risk, the probability of developing a specific outcome over a specified time interval in the presence of competing causes of mortality. This course defines absolute risk and discusses how to develop and evaluate absolute risk models. We present cause-specific and cumulative incidence approaches to incorporating covariates and discuss various types of data for model building, including cohort, nested case-control, and case-control data combined with registry data. We show how to evaluate risk prediction models and discuss the use of absolute risk in individual counseling for disease prevention when interventions have adverse effects. We discuss the use of such models for disease prevention in the population, including designing prevention trials, estimating the absolute risk reduction in the population from modifying risk factor distributions, the “high risk” preventive intervention strategy, risk-based disease screening, and resource allocation.

Target Audience

The course is presented at a level that can be handled by statistics or biostatistics master’s students, or epidemiologists and medical researchers who have knowledge of basic statistics, epidemiologic designs, and a knowledge of basic concepts in survival analysis.


Ruth Pfeiffer, Ph.D. is a tenured Senior Investigator at the Biostatistics Branch of the Division of Cancer Epidemiology and Genetics, National Cancer Institute. She is an active collaborator on many research projects. Her independent research focuses on statistical methods for absolute risk prediction, problems arising in molecular and genetic epidemiologic studies and the analysis of data from electronic medical records. She is an elected Member of the International Statistical Institute, and an elected Fellow of the American Statistical Association.

Mitchell H Gail, M.D., Ph.D. is a Senior Investigator at the Biostatistics Branch of the Division of Cancer Epidemiology and Genetics, National Cancer Institute. Dr. Gail’s current research interests include statistical methods for the design and analysis of epidemiologic studies, and the development and application of models to predict the absolute risk of disease. Dr. Gail served as President of the American Statistical Association and is a member of the National Academy of Medicine.