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Meeting summary and closing remarks‡

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1. INTRODUCTION

Thank you for your participation in the 7th biennial CDC and ATSDR Symposium on Statistical Methods. I would like to present a summary of some of topics that we have heard about at this symposium and some closing remarks.

Closing remarks for the symposium programme have traditionally been reserved for the editor of the journal *Statistics in Medicine*. Unfortunately Dr Ralph D'Agostino of Boston University, co-editor, could not be present today. However, I would like to acknowledge the role that Dr D'Agostino and his predecessor, Dr Ted Colton, also from Boston University, have played in this series of symposia since its inception in 1988. They have provided support and encouragement for the series and publication of its proceedings. As a matter of fact, the proceedings from this conference will represent the 12th anniversary of the collaboration between CDC/ATSDR and *Statistics in Medicine*.

Beginning with the symposium on Statistics in Surveillance in 1988, these symposia have had as their theme statistical methodology issues in the public health community. The collaboration between CDC/ATSDR and *Statistics in Medicine* has greatly helped dissemination of the results and ideas that have been presented through each symposium. Likewise, we can expect to see the results and ideas expressed in this symposium included in proceedings in an upcoming issue of *Statistics in Medicine*.

I would also like to thank the CDC and ATSDR Statistical Advisory Group, which you have been hearing about, for their support of this symposium series. It is with their help that the planning process for this symposium came together. The planning committee for this symposium was composed of representatives from every Center and Institute at CDC and ATSDR as well as representatives from the Atlanta chapter of the American Statistical Association, Emory University and the University of Cincinnati. I believe that the diversity of the planning committee has been very well represented by the diversity of papers which we have heard and seen here, as well as by the diversity of the audience. We have 320 registrants for this symposium from 28 different states, including representatives from academia, business, state and local health departments, and representatives from four federal agencies.

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2. THEME

The theme for this 7th Biennial Symposium on Statistical Methods has been 'Emerging statistical issues in public health for the 21st century'. Past symposia have focused on surveillance, clustering of health effects, evaluation of intervention and preventive strategies, use of multisource data, small area statistics, and statistics for public health decision making. This symposium again addressed such traditional methodological issues as regression and other multivariable methods, but it also included issues such as reporting findings to the media, confidentiality and data systems. Although methodologic and analytic issues remain central to our discipline, in an era of increasing demands and accountability, issues such as confidentiality are becoming increasingly important to the statistical community. Hence our theme, 'Emerging statistical issues for the 21st century'.

3. SUMMARY

Presentations during this symposium have dealt with many of the diverse challenges we face, both current ones and emerging ones. We have heard about confidentiality and disclosure limitations, of advances in genetic research and how ethical considerations have led to some changes in informed consent and the types of issues we must address in performing studies. We have heard about methods to deal with the media – to use candour to develop credibility and also of the need to always be prepared when dealing with the media.

We have heard about the effect of recent legislation on research and public health statistics, of the link between survey data analysis and clinical trials, and of models that may be appropriate for dealing with group randomized trials as compared with standard clinical trials. We have also heard of the importance of mechanistic modelling and the link between toxicology and epidemiology and about innovative graphical and mapping designs for data analysis and presentation. We have been reminded of the link between the actual world and a counterfactual world where different considerations of medical data, economic data, and psychological and social conduct apply – and of how these worlds interrelate and are important in developing our analyses of causal effects and health risks.

Symposium presentations have included new approaches to spatio-temporal data analyses, survey methodologies to collect sensitive data, survival analysis, analysis of missing values, longitudinal data analysis, analysis of public health interventions, methods for estimating incident rates and probabilities, as well as discussions of techniques to address such problems as multicollinearity or clustering. Traditional multivariate analyses have been represented as well as more recently developed techniques such as data mining and risk assessment.

4. STRENGTHENING SCIENCE

An assessment of this symposium on statistical methods might best be done in the context of how it fits in with other challenges facing CDC/ATSDR and the public health community. The CDC Director, Dr Jeffrey Koplan, recently enumerated several priorities for CDC/ATSDR [1]. The first of these is to '*strengthen science for public health action*'. Dr Koplan went on to remark that strong science has been the bedrock of CDC's public

health activity since the agency was created more than 50 years ago, and that using that science to make real and measurable differences in people's lives is a challenge we face. Three things are important to continue this history of public health successes and to build a strong, flexible and supportive public health infrastructure. First, strong science should be promoted, including laboratory, epidemiology, social, behavioural and biomedical prevention and health systems research. Many of these disciplines have been represented in this symposium. Second, a skilled and highly effective workforce is necessary to put that science to use. Third, integrated information and surveillance systems should be developed to improve our ability to monitor the effectiveness of the use of science to improve the public's health. This is in line with new legislation that we heard about yesterday. I hope this symposium has helped to address each of these three points.

As Dr Koplan remarked, 'the overarching challenge is to continue to conduct scientific inquiry that results in public health activity. Importantly and in the area of increasing demands for government accountability both from legislators and the public, we must ensure that science has demonstrable practical value'.

We must ensure that science can withstand public and political scrutiny. We must also ensure that our external communications explain how the science we conduct through the different methodologies and techniques we have learned here and elsewhere, coincide and are consistent with the public health actions we propose. I hope that this symposium has helped meet this challenge.

On behalf of the Statistical Advisory Group, I would like to thank all of you for coming and sharing your talents with us. I think the quality of the speakers, the posters, and the audience discussion has shown us that we can collectively rise to Dr Koplan's challenges. Thank you again, and I look forward to seeing the proceedings and the discussion from this symposium as a special issue of *Statistics in Medicine*. We hope to see you again at our next symposium in 2001.

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