MANAGEMENT OF DATA IN CLINICAL TRIALS
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William J. Pesce  
President and Chief Executive Officer

Peter Booth Wiley  
Chairman of the Board
For all my professional colleagues, past and present.
CONTENTS

Preface ix
Acknowledgments xi

1 Introduction 1
2 Study Design and Planning 12
3 Data Definition, Forms, and Database Design 33
4 Computer Systems for Data Management and Data Entry 56
5 Patient Registration 76
6 Local Data Management Systems 94
7 Central Quality Control of Data 106
8 Data Management and Good Clinical Practice 121
9 Software Tools for Trials Management 140
10 Follow-Up and Close-Out Phase 155
11 Training, Education, and Documentation 163
12 Clinical Trials Collaboration Models 175

Bibliography 180
Index 181
In this second edition of this text, I still try to provide a general overview of the steps involved in managing data in clinical trials, but I have updated the text to include discussion of some key aspects that have changed in the last few years. In particular, there have been many advances in computing technology which impact on clinical trials, and there have been a lot of changes in the implementation of Good Clinical Practice legislation in many countries. The information should be of use to anyone who is working in the field of clinical trials, but particularly those who are working with trial data. This includes Clinical Research Associates, Data Coordinators, physicians, nurses, and statisticians. In my experience, most of these individuals receive little training in the practical aspects of clinical trials, and, while sound in theory, they are often at a loss when it comes to details. I have found a lack of published material covering this field, and I hope that this book, at least in part, fills the existing gap.

Along with discussing the more traditional aspects of data management—the design and completion of case report forms—I have included information on the planning phase of a trial, use of computers and other technology, training and education, possible models for partnership between academia and the pharmaceutical industry, and the implementation of Good Clinical Practice. Much of what I have included is based on (a) my own experience in the field of data management and (b) the questions that I have frequently been asked. For the most part the chapters follow the life of a trial from the design stage to the analysis stage, with emphasis on the systems that are needed for managing data. While my own experience has been primarily with cancer clinical trials conducted in the United States and Europe, I have tried to make the
information general and applicable to all kinds of trials. If I was aware of differences in systems for different types of trials and trials done in different countries, I have tried to point out these differences in the text.

The goal of the book is to help you to manage trial data in a way that ensures the timeliness and integrity of the data collected. Not every chapter will be relevant to everyone who reads it, but my hope is that all readers will find some information in the book that will assist them in their clinical trials environment.

ELEANOR McFADDEN
ACKNOWLEDGMENTS

In 1992 I was invited to work with a group of individuals in the preparation of a series of manuscripts on data management for a special edition of *Controlled Clinical Trials*. The edition was finally published in 1995. That collaboration expanded my knowledge of clinical trials beyond my own specialized area of cancer trials, and it showed me the similarities and differences between cancer trials and other disease areas. The idea of this text originated during the collaboration, and many of my suggestions in this book are enhanced by the final publications and the knowledge freely shared by my colleagues in that project—in particular, my primary coauthor, Fran LoPresti. The Society for Clinical Trials continues to provide me with knowledge of clinical trials in other disease areas.

Since moving back to Scotland in 2000, I have been involved in collaborations with the Breast International Group (BIG) based in Brussels. This has expanded my knowledge of international clinical trials, and I particularly thank Carolyn Straehle, Martine Piccart, Stella Dolci, and Kris Vantongelen for sharing their expertise. I would also like to thank the reviewers appointed by John Wiley & Sons for their valuable comments. I hope that I have addressed them adequately in the final version of the book.

There are four individuals to whom I owe a special debt. During my 20 years in the Eastern Cooperative Oncology Group (ECOG), I have had the privilege of working with two statisticians who have themselves made many important contributions to the design and conduct of clinical trials: Marvin Zelen, Ph.D., and David Harrington, Ph.D. The third person, the late Paul Carbone, M.D., served as the Group Chair of ECOG for 20 years and was truly a pioneer in developing new treatments for patients with cancer. My
statistical colleague, Richard Gelber, Ph.D., has helped Frontier Science in Scotland by establishing the collaboration with BIG and also by sharing his extensive knowledge of breast cancer trials.

Finally I would like to thank Issy Dickson for saving me from the vagaries of word processing software by typing this manuscript.

ELEANOR McFADDEN
INTRODUCTION

Clinical trials are utilized in many clinical specialties to test the efficacy of a specific treatment or intervention in a group of patients/subjects, and inferences are then drawn about the use of the treatment in the general population. There are different types or phases of clinical trials, but they all have one common feature. The results that are reported at the end of the trial are only as good as the quality of the data collected and analyzed as part of the trial. A “good” result of a clinical trial is a result that provides the correct answers to the questions asked, not necessarily one that is positive or statistically significant.

Good data management practices are essential to any clinical trial, yet this area is one that can be neglected during the planning stages of a trial. This book discusses the various stages of the life of a trial from planning to analysis, and it focuses on the management of the data during each stage.

Clinical trials can be large or small; they can involve one clinical center or multiple centers. Multicenter trials allow more rapid accrual of patients to a trial, and therefore the answers to the questions being asked are available more quickly. The results of multicenter trials are also more easily generalized to the population as a whole because the trial includes patients from a variety of settings, rather than just a single site. Large multicenter trials usually have a Coordinating Center with a wide range of responsibilities, including input in trial design, quality control and computerization of trial data, interim and final analyses of the data, and preparation of a report on the results. The Coordinating