

as a starting point for a more detailed investigation of the subject.

Despite its overall length, **Principles of Health Care Ethics** cannot claim to be exhaustive. As ethics issues permeate the delivery, practice, and advancement of medical care, not even 110 essays could be expected to deal with all of them. With any collection of essays one can quibble with what the editors decided was important enough to include and what was left out. That said, I was struck by the absence of discussion on some common and contentious ethics subjects. For instance, nowhere in 800 pages did I see any mention, much less a review, of the concept of medical futility, and yet some less contentious—one might even argue passé—subjects, such as the distinction between extraordinary and ordinary care, were granted space.

The editors kept the authors to a page limit; all of the essays are very similar in length. Though this is laudable, given philosophers' tendency to be long-winded, the result is a work that lacks proportionality. A key ethics concept, such as informed consent, receives a similar span as does a specific and specialized problem, such as living donor organ transplantation. Likewise, contentious and difficult issues, such as the concept of personhood, are dealt with in as many pages as relatively settled matters, such as ethics consultation. But this lack of proportionality is understandable, and in fact necessary, given the editors' clear priority on providing a broad sampling of ethics issues in health care.

Ultimately, **Principles in Health Care Ethics** succeeds on 2 fronts. It offers clinicians and medical practitioners a starting place to understand key concepts and problems in medical ethics. As such, it is a valuable reference text. It will be important, however, for members of ethics faculty or committees to understand the structure of the text in order to direct others to it. On the shelf it has the appearance and a title that makes it look like a master work suitable for doctoral students rather than a source book for ethics education. (For the third edition I would suggest the editors consider a title change.) The work also succeeds in offering tightly written explorations of rather esoteric subjects, even for ethicists, that makes the book entertaining to pull from the shelf for 15 minutes on a topic that one may have never really thought of from an ethics perspective. In this latter role, **Principles of Health Care Ethics** will appeal to a much

smaller number of philosophers and medical ethicists—people who find these things fun.

Mark R Tonelli MD MA

Department of Medicine
University of Washington
Seattle, Washington

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How to Report Statistics in Medicine: Annotated Guidelines for Authors, Editors, and Reviewers, 2nd edition. Thomas A Lang and Michelle Secic. Philadelphia: American College of Physicians. 2006. Soft cover, illustrated, 490 pages, \$54.95.

Informative and accurate reporting of scientific investigation is a collaborative process between the authors, peer reviewers, and journal editors. Lack of a clear understanding of biostatistics at any step of the scientific or writing/revision process can cloud the communication of an investigator's results and lessen the impact of a given publication. Yet developing an in-depth understanding of biostatistics can be a daunting (potentially miserable) challenge. Fortunately for most of us, an in-depth knowledge of statistics is unnecessary, because clarity in the reporting of biostatistical results can be achieved without knowing the intricate mathematical details underlying biostatistics theory. With little more than a handful of published guidelines to facilitate reporting of statistics, many authors, reviewers, and journal editors have relied upon on-the-job training, gained through years of reading, writing, reviewing, and editing manuscripts, to replace formal biostatistics coursework and published guidelines. Nevertheless, studies of the quality of statistical reporting in high-impact journals have consistently found high rates of errors in the application and interpretation of statistical information.

The authors of *How to Report Statistics in Medicine* recognized these problems and, in 1997, published the first edition of this book to "provide a set of detailed, comprehensive, and understandable guidelines for reporting statistical information in medicine... [and]... to make the guidelines more accessible to nonstatisticians." Their updated 2nd edition, which builds on the strengths of the first, thoroughly achieves that aim. The result is a superb, simple though broad, detailed guide directly appli-

cable to anyone involved in the publication of biomedical science. The authors have successfully divorced the often prohibitory complexity inherent to biostatistics and study design from the necessity of accurate, intuitive reporting of results in biomedical publications.

The book is divided into 6 sections, the first three of which are well organized into logically and often hierarchically structured chapters. Each chapter begins with an introduction to the chapter's primary statistics topic (eg, summary measures, correlation, analysis of variance), followed by definitions of key terms. Subsequent pages present bulleted annotated guidelines that walk the reader through statistical issues to address when crafting and reviewing the introduction, methods, results, and discussion sections of a manuscript. Correct implementations of the guidelines are illustrated in examples throughout the text. Special cases, where a particular guideline may not apply, and methods to check statistical calculations for accuracy, whenever possible, are also highlighted in each chapter. Ample easy-to-read tables and high-quality figures and charts illustrate their points throughout the chapters. Up-to-date references for the guidelines are printed at the ends of the chapters.

Part 1, "Guidelines for Reporting Statistics in Medicine," lays the groundwork for the remaining sections. It begins with a chapter on summary statistics (eg, mean, median, standard deviation) and develops these statistics further in subsequent chapters on analysis of variance, correlation, regression analysis, and so on. When discussing the merits and mechanics of a particular statistical test, the text notably steers clear of presenting mathematical formulas and instead presents the assumptions of each statistical test and common pitfalls in their presentation.

Chapters in Part 2, "Guidelines for Reporting Research Designs and Activities," place the reporting of statistics in the context of study design. Each chapter catalogues the study-design components readers need to evaluate the quality of the science. For example, in the chapter on case-control studies the authors remind writers to include a statement about the source population from which the cases and controls were drawn. This section borrows heavily from previously published guidelines, such as those by the Consolidated Standards of Reporting Trials (CONSORT) group, but the exam-

ples and annotations complement and expand on the guidelines while educating the reader. This section also covers appropriate presentation of randomized controlled trials, cohort or longitudinal studies, surveys or cross-sectional studies, and case-control studies.

Part 3, "Guidelines for Reporting Integrated Research Methods," which is an entirely new section for the 2nd edition, focuses on the presentation of systematic reviews, meta-analyses, economic evaluations, and decision analyses. Again the authors borrow from guidelines, such as the Quality of Reporting of Meta-Analyses guidelines (QUOROM) and the Meta-Analysis of Observational Studies in Epidemiology (MOOSE) guidelines, but use those guidelines as an educational framework.

The remaining 3 parts of the book serve primarily as reference sections. Part 4, "Guidelines for Presenting Data and Statistics in Tables and Figures," provides an in-depth guide to generation of tables and figures, and illustrates how incorrect table and figure layout can distract or confuse the reader. This section is full of good and bad examples of tables and figures, and refers the reader back to other excellent examples in prior chapters.

Part 5, "A Guide to Statistical Terms and Tests," is an extensive glossary of terms used in the book, and many of the entries refer to the chapter(s) where the term was used.

Part 6, the appendixes, provides rules for presenting numbers in text (eg, when to use "fifty-six" instead of "56"), a guide to mathematical symbols, the spelling of various statistical tests, links to additional readings and guidelines (eg, MOOSE, STROBE [Standards of Reporting of Observational Studies in Epidemiology], ASSERT [A Standard for the Scientific and Ethical Review of Trials], STARD [Standards for Re-

porting of Diagnostic Accuracy]), and briefly discusses sources of error, confounding, and bias in biomedical research. This latter appendix, though not comprehensive, provides a useful brief encyclopedia of common biases, such as indication bias and lead-time bias, that are often encountered in biomedical research. The bibliography and index follow these sections, which are easy to use and well referenced.

Each chapter highlights common, and sometimes subtle, mistakes in reporting and interpreting results. The statistical rules of thumb given in this book are often buried deep within biostatistics textbooks, but Lang and Secic unearth these pearls and their associated references and draw needed attention to them. These rules of thumb often escape the discerning eyes of authors, reviewers, and editors of top medical journals, which can result in publication of misleading information. For example, a bullet in the first chapter reminds us that the standard error of the mean is often inappropriately used (1) instead of the standard deviation when describing the variability of the data and (2) instead of the 95% confidence interval as a measure of precision. A later chapter on reporting randomized trials points out that a more powerful alternative to subgroup analysis is to assess the potential interaction between 2 variables on the outcome of interest. In the chapter on survival analysis we are reminded that the relationship between mortality and survival rate is not straightforward; survival rate essentially serves as a surrogate end point for overall mortality. Dozens of these high-yield pearls are scattered throughout the chapters.

Although the book aims to be comprehensive, there are some notable, albeit minor, omissions. Little text is dedicated to reporting results from non-independent or clustered data, which is particularly important in health services research. Guidelines

for the reporting of statistics pertinent to genetic epidemiology are completely absent. The proliferation of inconsistently reported genetic epidemiology studies in the biomedical literature indicates the great need for such guidelines.

The authors targeted the book to non-statistician authors, editors, and reviewers. Though the book does not provide a substitute for involvement of a biostatistician during the design, implementation, and reporting of a study, it does provide a foundation of good statistical reporting on which authors, editors, and reviewers can build a successful paper. Non-statisticians are likely to gain some insight into statistics and, if the guidelines are adhered to, should be able to improve the reporting of their results. As the authors intended, this is not a textbook on statistics. Readers interested in detailed statistical formulas would do better to purchase an introductory biostatistics text. However, readers with an understanding of statistics should still benefit from the wealth of information condensed into each guideline. In short, respiratory therapists, students in any discipline, nurses, residents, fellows, faculty, scientists, pharmacists, other allied health professionals, biostatisticians, and anyone else involved in the writing and publishing of scientific papers will find **How to Report Statistics in Medicine** a useful addition to their library.

Colin R Cooke MD MSc
Division of Pulmonary and
Critical Care Medicine
Department of Medicine
Harborview Medical Center
University of Washington
Seattle, Washington

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