

care settings and a sound reference concerning outbreak identification, investigation, and prevention. The text is clearly set out, logical, up to date, and includes useful illustrations and exhaustive suggested-reading sections. However, attempting to write a book for a broad readership, ranging from infection-control specialists to medical students, sometimes makes it difficult for an author to meet the appropriate knowledge level of such a heterogeneous target group. Some sections seem to lack some depth or to be unnecessarily simplified from the viewpoint of the experienced infection-control professional or health-care epidemiologist, while being considered quite complicated by the novice student, who definitely has to go through the introduction chapters.

In conclusion, we would certainly advise departmental and institutional libraries to add this book to their shelves. It is highly recommendable as a reference and as a practical tool for developing, implementing, evaluating, or optimizing an outbreak investigation, prevention, or control program in various health-care settings.

**Sonia O Labeau RN MNSc**  
Faculty of Healthcare Vesalius  
University College Ghent  
Ghent, Belgium

**Stijn I Blot MNSc PhD**  
Faculty of Healthcare Vesalius  
University College Ghent  
and  
Faculty of Medicine and Health Sciences  
Ghent University  
and  
Department of Infectious Diseases  
Ghent University Hospital  
Ghent, Belgium

The authors have disclosed no conflicts of interest.

**Inhalation Studies: Foundations and Techniques**, 2nd edition. Robert F Phalen. New York: Informa Healthcare. 2009. Hard cover, illustrated, 320 pages, \$179.95.

The second edition of this book was written as a result of the explosion of knowledge, since its first edition in 1985, in the field of aerosol medicine, the increased appreciation of nonpulmonary effects of inhaled substances, and the introduction of new devices for production and characterization of aerosols.

The typeset of the text is easy to read, and the statements are clear and logically

sound. Inside an attractive cover, the book has a good balance of text, tables, and figures. I found only one major typographical error, on all the odd pages of the running title in Chapter 2 “The Respiratory Tract.” While the book contains meaningful tables, few carry excessive information or extensive narrative (Chapters 1, 6, and 9). In a couple of the tables (in Chapters 1 and 7), along with several sections of the book, the author lists some useful references that could have been better utilized by creating a table as an appendix, where each section highlighted the “must-read” references with comments previously used in separate chapters. Almost 30 pages list close to 800 references. However, the author chose old references for topics that certainly have more recent citations. As an example, the 1978 citation of Giordano’s paper on mucus rheology and mucociliary clearance should have been replaced by any or all the series<sup>1</sup> on airway mucus that appeared in the *European Respiratory Journal* in 1997 and 1998 or a chapter in Rubin’s 2008 book on mucus-controlling drugs.<sup>2</sup>

The book has 10 chapters. The first chapter, on aerosols and gases, introduces the main concepts of particle size distribution, aerosol properties, and aerosol dynamics, with an entire page dedicated to definitions of key aerosol terms. An interesting segment of this chapter is dedicated to explaining the properties of gases, explaining very briefly important features of cigarette smoke. The section on size distribution and aerosol dynamics is very detail-driven. A plethora of normalized equations that fit commonly encountered particle size data are shown.

The second chapter, on the respiratory tract, covers relevant anatomical aspects, deposition of aerosol particles, and uptake of inhaled gases. A table nicely explains how compartments of the respiratory tract are used for analyzing particle inhalation. Instead of a mere summary of an anatomy textbook, I commend the author for pairing anatomical sections with descriptions on how particle deposition is affected in each segment of the respiratory tract. I will surely use this 35-page section to expand my material on anatomy and physiology of the respiratory tract. The only bit of surprise was Phalen’s preference for using several citations from the field of toxicology in this anatomy section.

Chapter 3, on establishing and controlling exposures, provides detailed informa-

tion on aerosol and gas generation. Phalen explains the differences between monodisperse and polydisperse aerosols and expands on the process of gas generation, which includes compressed gas cylinders and vaporization and sublimation systems, among others. While describing the necessary air purification and conditioning of the research physical environment, Phalen lists the criteria for selecting aerosol and gas generators and explains the importance of output stability in the atmosphere where particles are being analyzed.

The following chapter, on characterizing exposures, explains what should be measured and the instrumentation required for aerosol and gas characterization, along with various sampling protocols. Phalen describes characterization of exposures as an essential element in inhalation toxicology. A nice table lists some of the most common aerosol-measurement instruments for inhalation studies.

Chapter 5, on methods for exposing subjects, compares various inhalation exposure methods. Several figures provide enough detail to understand how the different systems work. However, only half a page is dedicated to systems for ambient-air pollutants with human subjects. The discussions of ethical responsibilities are all written from the perspective of using only animal subjects.

Chapter 6 covers testing for toxicity, and defines quantitation, morphometry, and pulmonary function. Unfortunately, Phalen unnecessarily repeats some content from Chapter 2, in an attempt to bring new description of the airways response to inhaled materials.

Chapter 7 provides an overview of the experimental designs, in particular those that directly apply to repeated exposures.

A detailed description of exposure systems, animal housing, necropsy, data handling, physical space, and shop support is the main content of Chapter 8, which describes facilities and support necessary for selecting the right animal laboratory.

Chapter 9, on animal models, covers various issues, including considerations about the different species used in inhalation research, and comparison of physiologic and anatomical features of humans and animals. A very interesting segment covers the controversial issue of extrapolation from laboratory animals to humans, and provides a table of animal models commonly used to study some lung diseases.

Chapter 10 deals with regulations and guidelines, to minimize methodological pitfalls commonly reported by the Food and Drug Administration in nonclinical laboratory studies.

Overall, I found the content very informative and well organized. Phalen keeps a consistent tone and style throughout the textbook, which helps tremendously in the reading of detailed information. Although the title may lead some readers in the respiratory care community to believe that aerosol medicine will be a good chunk of the book, the emphasis is on inhalation toxicology and the study of animal subjects. This textbook is primarily intended for active researchers and graduate students in inhalation toxicology. In fact, the subject subheadings used at its publisher's Web site includes terms such as asphyxiating, poisonous, toxicology, and air pollution. However, there is no question that professionals in medicine, engineering, and environment regulation certainly could benefit from some sections. Its applicability to respiratory therapy is limited to content in few chapters that classic textbooks already include.

**Ruben D Restrepo MD RRT FAARC**

Department of Respiratory Care  
The University of Texas Health Sciences  
Center at San Antonio  
San Antonio, Texas

The author has disclosed no conflicts of interest.

**REFERENCES**

1. King M. Experimental models for studying mucociliary clearance. *Eur Respir J* 1998; 11(1):222-228.
2. Rubin BK. Mucus-controlling drug therapy. In: *Respiratory care pharmacology*, 7th edition. St Louis: Mosby; 2002;163-190.

**Medical and Health Science Statistics Made Easy**, 2nd edition. Michael Harris and Gordon Taylor. Sudbury, Massachusetts: Jones & Bartlett. 2009. Soft cover, 115 pages, \$29.95.

Reading the medical literature is a key component of the daily practice of most clinicians. Appraisal of medical research articles is essential to guiding medical decisions with the best evidence, and requires a basic understanding of statistics. However, basic statistical terminology and tests is a small proportion, if present at all, of the

formal training of health-care professionals, and has little reinforcement during continuing medical education. Yet there is an ever-increasing assembly of complex statistical tests used in observational studies, randomized trials, and meta-analyses, which challenge the reader.

Addressing the need for a concise handbook of medical statistics, **Medical and Health Science Statistics Made Easy**, 2nd edition, is an updated version of the first edition published in 2003. The original authors performed this revision; one is a general practitioner with a specialty in medical education, and the other, a statistician with advanced training. This practical and concise overview of statistical tests and terminology is a paperback volume with 91 pages of text. Prefacing the body of the text is an instructional section titled "How to Use This Book." Seven sections compose the body of the text, and review 19 statistical topics grouped by category. The final section, "Statistics at Work," gives examples of statistics from the medical literature. The index and glossary are thorough. Throughout the text, the figures and tables are large enough to read and illustrate difficult statistical concepts. As clearly stated in the preface, the intended audience is health-care professionals in training, who seek a basic knowledge of medical statistics.

The first section describes how the book is structured. For each of the 19 topics, "thumbs up" symbols grade the difficulty, and stars quantify the importance. The authors studied 4 major journals (*New England Journal of Medicine*, *Journal of the American Medical Association*, *Lancet*, and *British Medical Journal*) to see how often various statistical concepts are used, which informed the number of stars for each topic. This section also explains the "Watch Out For..." paragraphs, which describe common pitfalls and tips for each topic. This section also offers a road map of topics for readers who are preparing for an exam, or in a hurry, or daunted by statistics, or desire a complete course.

The body of the text begins with "Statistics That Describe Data," an overview of the most commonly used statistical devices such as percentages, mode, mean, and standard deviation. This is a useful and thorough review of straightforward topics that many readers take for granted. As in subsequent sections, graphs and figures are provided to illustrate the use of these statistics in the literature, as well as the calculations

from which these summary statistics are derived.

The second and third sections review statistical tests for confidence and differences between groups (eg, *t* test, confidence interval, *P* value). These are more difficult concepts, and the authors provide more detail about the derivation and theory. Tests of differences come in many varieties, with specific applications, and the authors highlight the various terms and appropriate applications.

The fourth and fifth sections review statistical tests of risk and relationships, such as odds ratios, relative risk, regression, and correlation. These topics are closely related and appropriately grouped. The "Watch Out For..." sections for relative risk and correlation are extensive, and require more time to review. Of note, the authors neglected to explain how tests of inference can be used in regression, despite the common presentation of *P* values with corresponding regression coefficients. Although more advanced than some material covered in this handbook, the basic assumptions of regression models, such as independence of observations, are not mentioned. However, the focus on the difference between regression and correlation is well highlighted, with explanations such as, "Regression and correlation are easily confused. Correlation measures the strength of the association between variables. Regression quantifies the association."

The sixth section addresses survival analysis with Kaplan-Meier estimates and Cox regression. These topics are briefly explained, with illustrations that are easy to read and supported by additional examples in the "Statistics at Work" section at the conclusion of the book. Little redundancy is present between this discussion of Cox regression and the earlier mention in section 5.

The seventh section is a review of sensitivity and specificity, statistical tests employed in clinical investigations and screening. This important topic is covered in the longest section of the text (5 pages), which includes useful and easily located definitions. A brief discussion of the kappa statistic concludes this section. Next, bulleted paragraphs reviewing prevalence, incidence, multiple testing, and 1-tailed and 2-tailed tests are provided, as they are important concepts that did not logically fit into the other sections.

The book concludes with 5 detailed examples of the use of statistics in major med-