BOOK REVIEWS
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Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases, Fifth Edition


Infectious Diseases


The field of infectious diseases is blessed with a number of outstanding texts, some remarkably comprehensive and some more focused on specific infections or other narrowly defined topics. The past year has brought the publication of a fifth edition of Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases, as well as the first edition of a new text, Infectious Diseases, and the thirteenth edition of the highly useful Sanford Guide to Antimicrobial Therapy. The first two are massive and comprehensive works. Because they have been published almost simultaneously, a comparison of these two outstanding books is not complicated by the rapid changes occurring in clinical infectious diseases and microbiology.

The two books have many more features in common than differences. Both list >300 contributors. The vast majority of contributors to Principles and Practice of Infectious Diseases are from the United States, whereas Infectious Diseases includes a large number from the United Kingdom and other European countries. Most of each book is devoted to the traditional topics covered in comprehensive texts on infectious diseases: infectious syndromes by organ system, clinical microbiology, and antifungal therapy. Both include equally comprehensive sections on infections in immunocompromised patients and on HIV infection and feature brief reviews of emerging infections. The difference lies in the relative emphasis that they place on various other areas and on the manner in which material is presented. The most striking difference in content is that Principles and Practice of Infectious Diseases places great emphasis on nosocomial infections but has relatively little material on infections in travelers, whereas Infectious Diseases presents a large amount of material on travel-related infections but places relatively little emphasis on nosocomial infections.

Infectious Diseases employs a variety of innovations in the way that material is presented, all of which increase its readability. These innovations include extensive use of charts and graphs; color-coding of the major sections; and the incorporation of numerous color plates directly into the text, instead of placing them in a section of their own. The utility of these illustrations and graphic features is enhanced by the inclusion of a CD from which illustrations can be downloaded and printed. Another innovation is the inclusion of “Practice Points,” which are brief discussions of common, often controversial clinical scenarios faced in practice.

Principles and Practice of Infectious Diseases is again, as expected, a remarkably comprehensive and up-to-date book. It includes new chapters on emerging infections, antibiotic control, and several other vital areas of interest, as well as a completely rewritten section on HIV infection. The writing is consistently clear, precise and authoritative. The lack of color illustrations, so useful in the discussion of many disease entities, is the only deficiency of this book.

In comparing the two books, I found that Principles and Practice of Infectious Diseases consistently provided more detail in discussions of a wide range of topics, including, for example, the management of tuberculosis and the diagnosis and management of chronic sinusitis, bacterial meningitis, and neurocysticercosis. The Practice Points discussions in Infectious Diseases often provided a valuable synthesis of information not provided in the main text of either book, but these discussions were uneven in depth, were not always supported by adequate evidence, and, in several instances, contradicted the main text. The format and illustrations of Infectious Diseases are genuinely unique, and greatly enhance the usefulness of the book and make it quite enjoyable to read. Infectious diseases consultants would find either book to be more than adequate as the primary comprehensive text in their library; however, the books complement each other in many ways and can be used together very effectively as well.

The Sanford Guide to Antimicrobial Therapy 2000, a compact and useful guide to antimicrobial therapy was published this year in its thirteenth edition. As before, it contains a wealth of practical information on drug selection and dosing, in addition to a surprisingly large amount of other information useful to the practicing specialist or generalist. Lacking, of course, because the book is so condensed, are illustrations, discussions, and narratives. The intent of this guide, however, is to provide convenience at the expense of comprehensiveness. Nonetheless, a great deal of detail, and referenced comments, are provided. In a succinct but effective way, these comments, which are in-
Virulence Mechanisms of Bacterial Pathogens


More than 100 years ago, Robert Koch published a series of reports on the bacterial etiology of tuberculosis that generated a paradigmatic shift in the study of infectious diseases. Koch’s work was the crowning achievement of the germ theory of disease. It showed that disease could be produced by microorganisms, that the protein manifestations of tuberculosis were due to a unique cause, and that the material sites of disease were the cells. Koch’s work was the result of his masterful use and improvement of new microbiological techniques and methods, including photographic microscopy, the use of the condenser, the development of solid media and stains, the critical use of new sterilization procedures, and the application of animal models to model human disease.

One outcome of his work was the formulation of Koch’s postulates. These are a set of rules used to establish a causal relationship between microorganisms and disease. Koch and his collaborators amply proved the usefulness of Koch’s postulates for establishing the etiology of disease by determining the bacterial etiology of a large number of important infectious diseases, including cholera and typhoid. The usefulness of Koch’s approach in the study of disease causation is illustrated by the recent determination of the bacterial etiology of the peptic ulcer and Whipple disease. Most of the reviews in Virulence Mechanisms of Bacterial Pathogens describe experimental work that is sustained by the theoretical and experimental framework of Koch’s postulates in their molecular genetic reincarnation (as stated by Stanley Falkow [1]), which illustrates their continued effectiveness and brilliant rationality.

The brief reviews in this volume are adapted from presentations made at an International Symposium on Virulence Mechanisms of Bacterial Pathogens, held in Ames, Iowa, in September 1999. The reviews are, in general, well written by experts in the field. They cover a range of topics, including bacterial invasion, colonization, and survival; bacterial evasion of host defenses; bacterial effects on host cell function; and identification, transfer, and regulation of virulence genes. One might have a few reservations about some of the information presented in them. For example, the review of antibiotic resistance and survival in the host does not state that the relationship between virulence and antibiotic resistance was established some time ago by a series of reports that indicated that R plasmids contain genes for adhesion, enterotoxins, iron uptake, and complement and phagocytosis resistance. However, overall they present useful, reliable, and up-to-date information. Especially informative, relevant, current, and focused are the reviews that describe bacterial adherence, colonization, and invasion of mucosal surfaces; the mechanisms of resistance to nitric oxide-related antibacterial activity; the role of bacterial toxins in disease production; the type III secretion pathways; and the role of horizontal gene transfer in the evolution of Salmonella pathogenesis. The volume concludes with a review by Harry Smith that concisely, instructively, and incisively summarizes the contents of this volume and the progress that has been made in this field.

Two reviews in the volume, one of which deals with the role of quorum sensing in Pseudomonas pathogenesis and the other of which deals with the regulation of virulence gene expression in vivo, show that a beneficial paradigm shift is occurring in the study of bacterial virulence, from the rather static, classical molecular tenets of Koch’s postulates to a more dynamic, interactive, and population-based approach. When the principles developed by the Pasteur and Koch schools were introduced and applied to the study of infectious diseases, it signaled the triumph of the germ theory over the miasmatic explanations for the genesis of infectious diseases, which were supported at the end of the nineteenth century by R. Virchow, E. Chadwick, and M. von Pettenkofer, among others. The downfall of the miasmatic hypothesis turned the study of the etiology of infectious diseases toward microorganisms and their hosts, but the new approach did not consider the environmental and social factors responsible for the creation of “miasmatic” situations.

This volume clearly demonstrates the power and productivity of this approach. However, once again, it is becoming increasingly clear that the “germ”-oriented approach has only a limited ability to explain the emergence of infectious diseases and their biology. This approach leaves unexplored the study of the interactions between infectious microorganisms, their hosts, and the ecological and social determinants that impinge on the evolution of infections. For example, it would appear that, to fully explain the outbreak of cholera that occurred in the Americas a few years ago, we need a synthesis that relates events at the molecular level in the microorganism (e.g., lysogenic con-