ANTIBIOTIC BASICS FOR CLINICIANS

THE ABCs OF CHOOSING THE RIGHT ANTIBACTERIAL AGENT

Second Edition

Alan R. Hauser

Wolters Kluwer Health | Lippincott Williams & Wilkins

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Alan R. Hauser, MD, PhD

Departments of Microbiology/Immunology and Medicine
Northwestern University, Chicago, Illinois

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Dedicated to Anne, Grace, and John

PREFACE

Which is more difficult: learning a large body of information or applying the newly learned information? Although the answer is debatable, it is clear that health care professionals must do both. Most health care training programs consist of an initial phase of classroom lectures and small group sessions in which the intricacies of cranial nerves, the Krebs cycle, and renal physiology are mastered. Following this phase, trainees suddenly are immersed in the real world of patients who present with complaints of a cough, a painful lower back, or a fever. As an infectious disease subspecialist, I have often seen this culture shock expressed as the blank look of a medical student when asked, "So, what antibiotic should we start this patient on?" Obviously, a basic understanding of the principles of pharmacology and microbiology is insufficient for most trainees when suddenly faced with the complexities of an infected patient.

This book is meant to be a guide to antibiotics not only for students studying to be physicians, nurse practitioners, physician assistants, pharmacologists, or medical technologists, but will also prove useful for residents, fellows, and practicing clinicians. It is designed to serve as a bridge between the book knowledge acquired during the initial phase of training and the reflexive prescribing habits of experienced practitioners. Just as the initial bewildering complexities of electrocardiograms and chest radiographs disappear when the first principles underlying these tests are appreciated and understood, so too do the difficulties of antibiotic selection. By supplying the rationale behind antibiotic selection for many common bacterial pathogens and infectious disease presentations, much of the memorization (and magic and mystery) that usually accompanies proper prescribing of antibiotics is eliminated. Where memorization is unavoidable, learning aids are presented that will make the process as painless as possible.

This book can be easily read and comprehended in 1 or 2 weeks by a busy student or practitioner. As a result, it is not a comprehensive guide to the antibiotic metropolis but merely an outline of the major thoroughfares of antibiotic therapy so that readers can more easily fill in the residential streets and alleys as they gain experience. In terms of the war analogy used throughout the book, the emphasis is on strategy, not tactics. Thus, only commonly used antibiotics are mentioned, and some oversimplification and omissions are unavoidable. It is hoped that the reader will be able to master the major concepts and rules so that with subsequent clinical exposure and practice, the nuances and exceptions to these rules may be assimilated.

The scope of this volume is limited to antibacterial agents, arguably the most complex and frequently encountered antibiotics that must be mastered by health care practitioners. Future volumes will address antiviral, antifungal, and antiparasitic agents.

The second edition of this book has been updated and expanded to include newer antibiotics that have become available during the past 3 years. In addition, several older antibiotics that have enjoyed renewed popularity (e.g., colistin and nitrofurantoin) are now also discussed. Emerging resistant organisms such as community-acquired methicillin-resistant *Staphylococcus aureus* and *Klebsiella pneumoniae* carbapenemase-producing bacteria have been incorporated. Likewise, sections have been updated to reflect recent changes in treatment guidelines, such as those pertaining to *Clostridium difficile* colitis and urinary tract infections.

After completing this book, it is hoped that the reader will view antibiotics as valuable friends in the fight against infectious diseases and not as incomprehensible foes blocking his or her progress toward clinical competency. In addition, the reader will obtain a foundation that can be built upon throughout his or her career, as new antibiotics become available.

I am indebted to many people who have contributed in large and small ways to this book but would especially like to acknowledge a few individuals. Many thanks to Mike Postelnick, Kristin Darin, and Marc Scheetz for advice and for reviewing portions of this book; Andy Rabin for providing quotes from the medieval literature; and Joe Welch for invaluable advice. Thank you to Kathleen Scogna, Michael Brown, and Steve Boehm at Lippincott Williams & Wilkins for their assistance, patience, and advice throughout the process of putting together the second edition of this book. I am grateful to the intelligent and inquisitive medical students at Northwestern University who asked the many questions that inspired this book. And finally, I wish to thank my wife, Anne, who made this whole project possible.

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