Revenge of the Microbes: How Bacterial Resistance Is Undermining the Antibiotic Miracle

Abigail A. Salyers and Dixie D. Whitt

American Society for Microbiology Press, Washington, DC, 2005
ISBN 1-55581-298-8
Pages: 186, Price: US $29.95

Professional journals these days brim with new developments in the field of antimicrobial resistance, and scarcely a week goes by without a flurry of new reports on "super bugs" in popular media. Given the unrelenting blitz of information, that 2 self-proclaimed "fusty old pedants" could produce a fresh perspective in the ongoing arms race between man and microbe is all the more noteworthy.

Although their traditional milieu is microbiology textbooks, Salyers and Whitt have provided a concise yet readable history of the rise of resistant organisms, as well as the social and economic effect of "these indomitable little critters." The history, from the first hints of penicillin resistance to the recent rise of vancomycin resistance, is as insightful as it is entertaining.

Lay readers will get a digestible dose of the basic science often missing from the mass media. And professionals will find the kind of incisive analysis—and even a touch of humor—that is often missing from scientific journals. Both audiences will find eminently compact descriptions of the major mechanisms that enable bacteria to develop and pass on resistant traits, the hurdles that pharmaceutical companies face in developing new antimicrobial drugs, the dilemmas doctors and patients face in finding better ways to use drugs, and a thoughtful appraisal of possible future trends.

In contrast to prophecies of an approaching "post-antibiotic era," the authors' own "realistic vision of the future" is far from apocalyptic. Still, they worry that increasing numbers of treatment failures like those occurring in hospitals and community settings will erode confidence in the health-care system. Some diseases, they believe, will remain treatable, some new drugs will emerge, and bacteria, with 3 billion years of evolution on their side, will continue to adapt. So perhaps, they suggest, "the best we can hope for is détente, a running standoff between science and the bugs' remarkable ability to adapt to their changing environment."

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The Microbe-Host Interface in Respiratory Tract Infections

Jan L.L. Kimpen and Octavio Ramilo, editors

Horizon Biosciences, Norfolk, UK, 2005
ISBN 0-8493-3646-5
Pages: 323, Price US $139.05

How thoroughly can 1 book address 2 complex aspects of the host-agent-environment triad, especially for a topic as broad as respiratory tract infections? Every author of an infectious disease topic assumes this task, at least implicitly. For example, the clinical aspects of adenovirus infection are hard to discuss without also highlighting the host factors that lead to greater susceptibility. The value of a book dedicated to the host-pathogen interaction depends on the book's ability to focus explicitly and narrowly on this relationship as the main topic.

Common to all 13 chapters of this first edition is the subject matter expertise of the authors. In addition to their thorough treatment of each subject, extensive referencing shows clearly the authors' command of current and past literature (in some instances, more space is devoted to references than to text). Beyond these common features, different chapters address particular facets of the host-agent relationship. Several chapters treat the host itself as the key subject, for example, the chapter on genetic background. Others place greater emphasis on the features of the microbes themselves, such as their pathogenicity and mechanisms for evading the host immune system. Still other chapters dissect and analyze every aspect of the complex relationship between host and agent, successfully making this interaction the central topic. The chapter on the pathogenesis of bacterial respiratory tract infections is a particularly strong example. Finally, some chapters look at the host-microbe interface over a period longer than the time of acute infection. For example, the chapter on atypical bacteria summarizes the evidence for a causal relationship between infection with *Mycoplasma pneumoniae* and the subsequent development of asthma.

If the authors' expertise is the primary strength of the book, the lack of organization and focus is its principal weakness. Most infectious disease textbooks adopt a pyramidal structure,

beginning with foundational concepts, such as clinical syndromes, followed by specifics, such as the clinical presentation and treatment of individual pathogens. No such analogous structure is apparent in this book. Although the book begins with a discussion of genetics and the hygiene hypothesis, it quickly digresses into issues less relevant to the main point of the book, such as new diagnostic tests. A clear structure would also help ensure that all major topics are included. For example, many respiratory tract infections have a bimodal age distribution with the greatest incidence in the very young and the very old. However, this book largely omits any discussion of host-microbe interactions among the elderly. Similarly absent is a description of how pandemic influenza viruses emerge and evade the host immune system. Simply put, structure would unify what could otherwise be considered a series of well-done monographs.

Most readers who want to understand the host-agent interplay in respiratory infections might find that a general infectious disease text meets their needs. However, others who need more depth in selected topics should search the table of contents before adding this book to their library.

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Infections of Leisure, 3rd ed.

David Schlossberg, editor

ASM Press, Washington, DC, 2004
ISBN: 1-55581-299-6
Pages: 444; Price: US $59.95

If you have ever thought about spending more time away from work, here is a book that could help change your mind. Infections of Leisure provides a detailed survey of the infective hazards associated with a wide range of human leisure activities and pursuits, from lazing on a beach to relaxing in a spa, dining out, or simply staying home and doing the gardening.

Now in its third edition, this book covers infections linked to salt and freshwater activities, camping and the outdoors, gardening, contact with animals, eating, foreign travel, sports, sexually transmitted diseases, body piercing, tattooing, and trekking to high altitude. The menu of topics is somewhat eclectic, and the balance between them is sometimes uneven, e.g., 30 pages on diseases associated with "Man's Worst Friend" (the rat), but only 20 pages on overseas travel. The result is nonetheless fascinatingly readable, even for the armchair practitioner.

On the subject of rats, I was intrigued to discover that 40,000 human rat bites are reported annually, and that *Rattenbisskrankheit*, or rat-bite fever in its various forms, has been noted clinically for >2,000 years. Bacterial zoonoses from domestic pets include salmonellosis from illegally kept turtles (i.e., those measuring <4 inches long). Both of these conditions have been the subject of recent case reports in the MMWR (1,2), confirming the continuing topicality of the book's contents.

There is much to whet the appetite of any connoisseur of bizarrely named syndromes, from "toxic sock" syndrome (pitted keratolysis caused by *Corynebacterium* in athletes) to "hot-foot" syndrome (plantar *Pseudomonas* folliculitis associated with abrasive swimming pool floors). But anyone looking for up-to-date information about more common conditions, from leptospirosis to Lyme disease, will find plenty of clear, concise, well-referenced material, contributed by experts in each field.

Leisure is a precious commodity, and this book remains a useful resource for anyone interested in knowing more about the pathogens that conspire against our pursuit of it, from the mundane to the truly outlandish.

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References

1. Centers for Disease Control and Prevention. Fatal rat-bite fever—Florida and Wisconsin, 2003. MMWR Morb Mortal Wkly Rep. 2005;53:1198–202.
2. Centers for Disease Control and Prevention. Salmonellosis associated with pet turtles—Wisconsin and Wyoming, 2004. MMWR Morb Mortal Wkly Rep. 2005;54:223–6.

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Fungal infections of the mouth, digestive tract and vagina can also occur with antibiotics because they destroy the protective 'good' bacteria in the body (which help prevent overgrowth of any one organism), as well as the 'bad' ones, responsible for the infection being treated. Rare, but more serious side effects, include the formation of kidney stones with the sulphonamides, abnormal blood clotting with some of the cephalosporins, increased sensitivity to the sun with the tetracyclines, blood disorders with trimethoprim, and deafness with erythromycin and the aminoglycosides.Â Absorption, Distribution, and Excretion. Streptomycin is poorly absorbed from the gastrointestinal tract, and most of the drug administered orally is excreted in. 32. the feces. Respiratory tract infections (RTIs) are infectious diseases involving the respiratory tract. An infection of this type usually is further classified as an upper respiratory tract infection (URI or URTI) or a lower respiratory tract infection (LRI or LRTI). Lower respiratory infections, such as pneumonia, tend to be far more severe than upper respiratory infections, such as the common cold. The molecular pathogenesis of microbial agents responsible for respiratory tract infections (RTIs) has been the focus of much research in recent years. The emphasis has been on developing new treatments such as novel antimicrobials and more effective vaccines. Significant attention has also been paid to improving molecular diagnostic methods to identify RTI-causing microbes, as well as understanding the host response to them. The Microbe-Host Interface in Respiratory Tract Infections presents an overview of the current knowledge in this area. It provides us with the first coherent picture of emerging strategies for controlling the microbes responsible for RTIs.