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This book assembles in one place a comprehensive discussion of the tick-borne diseases that affect humans. Most sources that consider tick-borne diseases focus on either the vectors or the diseases, one usually being addressed at the expense of the other. We aim in the present work to address both perspectives, including state-of-the-art information on disease epidemiology, transmission, and ecology; clinical and laboratory findings; diagnosis; and treatment and prevention. Each contributor has specialized knowledge, and many have pioneered the discovery and understanding of these diseases, including their causative agents and the ticks that spread them. The reader can reap the benefits of hearing directly from experts who are not simply reviewing the literature but sharing their perspectives on continuing stories of discovery in which they themselves are engaged, often on clinical, laboratory, and population levels.

Almost everyone would agree that humans would be better off without ticks. Yet ticks and humans are increasingly in contact as people both spread into new environments and travel more for work or for pleasure. This contact has resulted in a striking increase in the incidence and subsequent awareness of a broad array of tick-borne diseases, with resultant medical, social, public health, and economic impacts. Some important tick-borne infections and their causative agents, such as Lyme borreliosis, have been recognized only recently, while others are being discovered at an increasing pace, and surveillance, diagnosis, treatment, prevention, and control of such infections have become high priorities. Most tick-borne infections of humans afflict domestic and wild animals also and thus can be important in agriculture and veterinary medicine. It is therefore not surprising that many tick-borne diseases were initially described in animals and that human medicine has benefited greatly from the contributions of our veterinary colleagues (and their patients).

Tick-borne illnesses are extremely diverse, both biologically and clinically. They can be due to toxic and allergic processes or to infectious agents, including viruses, bacteria (gram-positive, gram-negative, and spirochetal forms), and protozoa. They cause diseases that can be of acute onset and rapidly fatal (such as Rocky Mountain spotted fever), recurrent (relapsing fever), or multisystemic and chronic (Lyme borreliosis). Symptoms are often nonspecific, making recognition and appropriate treatment challenging, yet critical, in preventing adverse outcomes. For these reasons, especially in an age of widespread travel and migration, clinicians must be familiar with the major disease syndromes and their diagnosis, even for diseases that occur mostly outside their areas of practice.

There are three major sections in this book—and each one can be useful alone or in concert with the others. Section I synthesizes cross-cutting and diverse information that is relevant to the full spectrum of tick-borne diseases, most of which has not been presented previously in an integrated manner. It provides an overview of the ticks themselves, including their biology and identification, the distribution of the diseases that they transmit, and strategies for their control. Studies in recent years have shown that the tick-pathogen interaction is finely tuned and that pathogens may switch their gene expression and behavior as they cycle from tick to zoonotic host or human and vice versa. Understanding of both the general themes and the complexities of these interactions is critical for better, science-based, treatment and prevention of disease and is reviewed, as is the reaction to tick bites, which can range from local inflammation to paralysis. This section also provides a comprehensive review of the clinical approach to a patient with a possible tick-borne illness that includes the clinical history, geographic considerations, differential diagnosis based on clinical and laboratory findings, and guidelines for
treatment of acutely ill patients. Section II includes a series of chapters that each comprehensively considers a specific disease, including history, biology, epidemiology, ecology, transmission, clinical manifestations, diagnosis, and treatment and prevention. Section III introduces original color illustrations, including maps of vector and disease distribution and an atlas of clinical and pathologic images with clear examples of diagnostically important skin lesions, blood smears, and other useful material, referenced in the text. Look for the color section in the body of the book.

Who should use this book, and how should it be used?

- Practitioners, trainees, and students of human and veterinary medicine should find especially useful the general chapters on clinical and epidemiologic aspects of tick-borne diseases, including the color section as well as the chapters dealing with specific diseases and with tick identification. Those interested in learning more about the biology of the organisms and about the ticks themselves will find this information readily accessible.
- Public health practitioners, scientists, and students—including epidemiologists, ecologists, and medical entomologists—can use this book as both an introduction to the field and a ready reference source for complementing their specific areas of expertise, for example, with clinical information and with information about diseases occurring in other geographic areas.
- Microbiologists and other laboratory scientists who work on specific tick-borne pathogens or related organisms can learn more about ticks and about pathogen biology and disease pathogenesis, including interactions with tick, animal, and human hosts, and a broad array of infectious agents.
- Although much of this book is technical, the informed patient and the general public will find much of it accessible, including information about disease transmission, clinical and laboratory diagnosis and treatment, and the history of the infections of interest.

To all, welcome to what we trust will be an interesting and useful book! We look forward to your comments.

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ACKNOWLEDGMENTS

We thank our families, our mentors, and our colleagues for their inspiration and support. We thank Greg Payne of ASM Press, who first brought up the idea of a book, for his encouragement and patience.

We thank all of the contributors and all of those involved in the production of this book.
IMPORTANT NOTICE

Medicine is a constantly changing science, and every patient is an individual with unique characteristics that must be taken into account in diagnosis, treatment, and, in particular, the choice and doses of drugs for treatment. Many of the drugs mentioned have not necessarily been approved by the Food and Drug Administration for the specific indications or regimens that are recommended. While typical doses of drugs and interpretations of diagnostic test results are provided by the authors, all decisions regarding clinical practice must be made by the treating physician, taking into account the individual patient and including such factors as past medical history, concurrent diseases, possible drug allergies and interactions, age, weight, organ function, and response to treatment. It is recommended that the most current and up-to-date manufacturer’s prescribing information, such as dose and drug interactions, be consulted for all drug therapies employed and that, if needed, appropriate specialists be consulted. The publisher, Editors, and authors do not assume any responsibility for any injury or damages resulting from improper treatment.
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