

Infectious Disease

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Jerome Goddard

Infectious Diseases and Arthropods

Third Edition

 Humana Press

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For Rosella, my inspiration

Preface

Infectious diseases aren't conquered. In fact, a good argument can be made that they are gaining ground in their long struggle with humankind. The ability of microbes to adapt to host immune responses and intense pressure from antibiotic use, combined with societal changes, has contributed to a resurgence of many infectious diseases. In addition, there are several "new" or emerging diseases, including Lyme disease, some forms of ehrlichiosis, Heartland and Powassan tick viruses, SARS, MERS, bird flu, Zika virus, Chikungunya, and Ebola hemorrhagic fever. In just the last 30 years or so we have seen the appearance of a virulent strain of avian influenza that attacks humans, a human variant of "mad cow" disease, and all manner of multiple drug-resistant bacteria such as *Staphylococcus aureus*. These new or emerging infectious diseases have raised considerable concern about the possibility of widespread and possibly devastating disease epidemics among human populations.

Many infectious diseases are vector-borne, i.e., carried from one host or place to another by an arthropod vector. It could be argued that at least some of the recent increase in vector-borne disease is the result of increased recognition and reporting. Specific disease and vector recognition is certainly made easier by newer technologies such as the polymerase chain reaction (PCR) and barcoding technologies. However, societal changes such as population increases, international travel, ecological and environmental changes, and especially suburbanization (building homes in tracts of forested lands) are contributing to an increase in the incidence of many of these vector-borne diseases.

In light of this vector-borne disease increase, information about these arthropod entities – their distributions, hosts, reservoirs, and vectors – is much needed. Thus, this third edition of *Infectious Diseases and Arthropods* is intended to provide physicians, as well as entomologists and other interested parties, with a reference on the biological and entomological aspects of infectious diseases. The primary approach has been to present readily accessible information on the major vector-borne diseases, with an emphasis on the relevant biology and ecology of each one. Since I am writing as an entomologist, the text obviously leans heavily to the organismal side of each disease, with, in some cases, less emphasis on clinical aspects. No effort has been made to present an in-depth review of each disease; instead, there is a middle-

of-the road consensus of current thought on each subject. It is the author's hope that *Infectious Diseases and Arthropods*, Third Edition, will prove a useful adjunct to the larger clinical texts employed by infectious disease specialists, public health and travel medicine physicians, epidemiologists, and others with duties encompassing vector-borne diseases. Treatments are mentioned (but without specific dosages) for the various diseases, but are only intended as general guidelines. They are in no way intended to be the sole, specific treatment for any particular patient. Physicians should consult clinical texts or drug package inserts for the most current recommendations.

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