



## Book Review

Reviewed by Jens H. Kuhn

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### **Viral Haemorrhagic Fevers—Perspectives in Medical Virology (Volume 11)**

**By Colin R. Howard**

Amsterdam, The Netherlands: Elsevier (2005)

205 pp., \$130, hardcover

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Viral hemorrhagic fevers (VHFs) are severe clinical syndromes of humans, often resulting in extraordinarily high lethality. The diseases are characterized by initial influenza-like symptoms followed by varying degrees of capillaropathy, consumption of blood clotting factors with occasional hemorrhages from mucous membranes, and terminal multiorgan failure. VHF outbreaks are observed in distinct geographical locations consistent with the range of known animal hosts. Outbreaks occur after direct or indirect contact of humans with these animals, which are, in most cases, arthropods or rodents. All known VHF-causing agents can be classified into one of four families: *Arenaviridae*, *Bunyaviridae*, *Flaviviridae*, or *Filoviridae*. Some VHFs, such as the flaviviral diseases yellow fever or dengue fever, have or had tremendous relevance for public health because of tens of thousands of human cases per year. Other VHFs, such as that caused by the ebolaviruses or the arenaviral Lassa fever are of true interest for particular nations only, but have become known to many U.S. households because of Hollywood productions and popular science publications. At the same time, exotic VHFs such as Crimean-Congo hemorrhagic fever, Omsk hemorrhagic fever, Kyasanur forest disease, or Guanarito virus infections are largely unknown even in the scientific community despite their local importance. Depending on the presence or absence of specific antivirals or vaccines and the recorded severity, VHF agents are classified as pathogens requiring facilities certified at BSL-2 (Dengue viruses 1-4, Yellow fever virus), BSL-3 (hantaviruses), or BSL-4 (filoviruses, Crimean-Congo hemorrhagic fever virus, Lassa virus, Machupo virus, and Omsk hemorrhagic fever virus). All these viruses are considered potential agents for biological warfare and terrorism activities and hence are National Institute of Allergy and Infectious Disease Priority Pathogens ranging from Category A through C. The overall boost in research on Priority Pathogens and the increasing num-

ber of high-containment laboratories make hemorrhagic fever-causing viruses important for all biosafety and biosecurity professionals.

Colin R. Howard, a well-known scientist with practical experience in the VHF field, recently published *Viral Haemorrhagic Fevers*, a text “aimed at healthcare workers, clinicians, and microbiologists.” This handy book contains clearly and well-written self-contained chapters describing each of the four viral families to which VHF agents have been assigned. The different viruses and diseases are treated separately and in detail in the context of history, epidemiology, molecular biology, clinical presentation, diagnosis, treatment, and prevention. Hence, the book will definitely appeal to the intended target audiences.

However, reading this volume left me with mixed feelings. On the one hand, the introductory and commentary chapters at the beginning and end of the book are worthy reviews themselves, and are wonderfully written and scientifically sound. Furthermore, fascinating historical subchapters for most viruses are filled with anecdotes of research pioneers and ancient observations, all of which raised my curiosity. Especially the subchapters on yellow fever virus and dengue viruses 1-4 are recommended to the reader. The book is surprisingly current—even recently discovered exotic agents such as Alkhurma virus or Garissa virus are briefly mentioned. On the other hand, the epidemiological subchapters are sometimes incomplete or flawed. For instance, while one could not expect the very recent marburgvirus outbreak in Angola to be mentioned, Howard should have mentioned the successive outbreaks from 1998-2000. An ebolavirus fever outbreak in Sudan is mistakenly placed in 1996, when in fact it occurred in 2000; a marburgvirus fever outbreak that allegedly occurred in 1982 has never been proven; and ebolaviruses were discovered in 1976, not in 1972. Worse, the viral taxonomy used in the book is not current and Howard randomly switches between virus and disease names and italic or nonitalic typing. The author assigns “influenza” to the family “Myxoviridae” (should read *influenzavirus* and *Orthomyxoviridae*), discusses “Congo-Crimean haemorrhagic fever” (should read Crimean-Congo hemorrhagic fever virus), or states that the “various strains and isolates of LCM [lymphocytic choriomeningitis] are now considered to be a genus within the family *Arenaviridae*”—when in fact *Arenaviridae*

contains only one genus (*Arenavirus*), which in turn harbors many different species with LCMV being one of them.

The book is also poorly edited. Among the harmless typographical or grammatical mistakes are countless examples of wrongly spelled scientific vocabulary: “*Dunacentor*” ticks (*Dermacentor*), “Thottopalyan virus” (Thottopalayam virus), “haemophagic fevers” (hemorrhagic fevers), “Guillaume-Barre syndrome” (Guillain-Barré syndrome), “aenavirus” (arenavirus), or “fucin” protease (furin) are just some examples. The described diseases are most often referred to in a “colloquial” manner—mentioning the latest WHO International Classification of Diseases (ICD-10) designations would have been helpful. Tables in the book are sometimes difficult to read or incomplete, and they are randomly placed; one reference to a table forced me to go back 16 pages to find it.

*Viral Haemorrhagic Fevers* contains too few references for the specialist or the interested outsider, and the bibli-

ography is heavily biased towards literature written in English and published in Western journals. This is not a trivial point. Omsk hemorrhagic fever, for example, gets cursory treatment with little or no reference to several hundred Soviet/Russian references on the subject.

It is also unclear why the author included hantavirus pulmonary syndrome in the book—a disease that is not characterized by hemorrhages. Likewise, lymphocytic choriomeningitis is described but there is no mention that hemorrhagic manifestations have actually been recorded in rare cases. Furthermore, the text occasionally contradicts itself. While tables list Whitewater Arroyo virus as not being associated with human disease, the accompanying text states that several severe cases of VHF caused by this agent have been recorded.

*Viral Haemorrhagic Fevers* has the potential to be a wonderful and educational textbook for students and professionals alike. However, a new, carefully edited, and better-referenced version should be prepared before the book could be truly recommended to a wider audience.

## Ask the Experts

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Do you have a biosafety question and you’re not sure who to ask? Send your questions to the “Ask the Experts” column and I’ll get them answered for you. Drawing from my own experience or that of other experts in the field, we’ll try to compile a thorough and comprehensive answer to your question. Please e-mail your questions to [jkeene@biohaztec.com](mailto:jkeene@biohaztec.com) or to Co-Editor Barbara Johnson at [barbara\\_johnson@verizon.net](mailto:barbara_johnson@verizon.net) or Co-Editor Karen B. Byers at [karen\\_byers@dfci.harvard.edu](mailto:karen_byers@dfci.harvard.edu).

### Non-Compliant Biocontainment Facilities and Associated Liability

It is a fact that a large number of biocontainment laboratories in universities, corporations, and other institutions are not up to current standards as stated in the 4th edition of the CDC/NIH *Biosafety in Microbiological and Biomedical Laboratories* (BMBL) and that a significant number of new biocontainment laboratories are being built. Because of the public perception with regard to the safety of these facilities, a number of institutions and biosafety professionals are concerned when, for one reason or another, the institution does not follow the guidelines for insuring containment. Several questions have been

raised concerning liability for failure to follow the guidelines.

For an expert answer to these questions, I asked R. Leonard Vance, JD, PhD, PE, CIH, Associate Professor, Department of Epidemiology & Community Health, Medical College of Virginia, Virginia Commonwealth University to respond. Dr. Vance is the former Director of Health Standards for Federal OSHA under the Reagan Administration. His answers follow:

### What is the potential liability, in the event of an injury, for an institution that does not follow the BMBL or the NIH Guidelines for the Design and Construction of Laboratories (NIH-DCL)?

Assuming:

1. The BMBL is the “standard of the industry” when it comes to how biocontainment laboratories/facilities should be operated;
2. The BMBL states that biocontainment laboratories should be validated with regard to design construction and procedure prior to initiating work; and