

June 22, 2007

Prepared by Laura H. Kahn, MD, MPH, MPP - Bruce Kaplan, DVM - Thomas P. Monath, MD

“ONE HEALTH” ... in Action! [#3]

By Jerry P. Jaax, DVM, ACLAM

A detailed account of the known history and emergence of the deadly hemorrhagic fever viruses, Marburg and Ebola, was presented in Richard Preston's book, "The Hot Zone." The core principles of the "One Health" initiative were at the heart of the story: mysterious, exotic new diseases with extraordinary grisly clinical signs and exceptionally high mortality in animals and man; historic outbreaks in Germany, Zaire and the Sudan that suddenly appeared, and just as rapidly subsided; and unknown reservoirs and natural history for the etiologic agents. ***Moreover, there was intense and close collaboration between veterinarians, physicians and other allied health professionals and scientists to manage a potentially catastrophic disease outbreak in 1989.***

Noted researchers had identified and characterized the lethal etiologic agents of Marburg and Ebola fever, bizarrely shaped viruses unlike anything ever seen before (see "ONE HEALTH in Action series #1). But the more complex answers to their secrets continued to elude medical science.

Without warning, a cohort of nonhuman primates in a civilian quarantine facility in Reston VA broke with a lethal, undiagnosed hemorrhagic fever syndrome. Researchers at the U.S. Army Medical Research Institute of Infectious Disease (USAMRIID) discovered that the monkeys were infected with Ebola virus (by electron microscopist Tom Geisbert, PhD and Peter Jahrling, PhD). Never before seen outside of Africa or in any species of animal, the discovery of a lethal virus (90% mortality in the Zaire outbreak) in the densely populated metropolitan area of the U.S. National Capitol launched an unprecedented multi-agency, multi-disciplinary response. The Department of Defense (DoD) and USAMRIID became the lead agency for the response with the Centers for Disease Control and Prevention (CDC), World Health Organization (WHO) and state health departments in strong support.

COL C.J. Peters, MD, an internationally known tropical disease physician and researcher was the overall on-site leader of the subsequently named Reston Ebola emergency response effort. Key members of the team included veterinarian pathologists LTC Nancy K. Jaax, DVM, ACVP (who had extensive research experience with Ebola Zaire and Sudan), LTC Ronald (Ron) Trotter, DVM, ACVP, and MAJ Martha (Marty) Hanes, DVM, ACVP, DACLAM. Laboratory animal medicine veterinarians LTC Jerry P. Jaax, MAJ Mark C. Haines, DVM, DACLAM, MAJ Nathaniel (Nate) Powell, DVM, DACLAM, and MAJ Stephen (Steve) Denny, DVM, MS, DACLAM, deployed to the Ebola-contaminated quarantine facility with other critical members of the USAMRIID Veterinary Medicine Division to manage and contain the outbreak. Other key personnel included veterinarian microbiologist LTC Thomas G. Ksiazek, DVM, PhD, Pierre Roland, MD, a French infectious disease physician, and Joseph B. McCormick, MD and Margaret "Peg" A. Tipple, MD, physicians from the CDC.

Senior leadership for the management of Reston Ebola outbreak was provided by a pair of unique and distinguished soldier / scientists – Physician BG Phillip Russell, MD and Veterinarian COL David L. Huxsoll, DVM, PhD, Commanders of the Medical Research & Development Command and of USAMRIID respectively. Both possessed international reputations in tropical medicine and infectious disease research. Without their leadership which embodied the principles of "One Health", the ultimate resolution of the Reston Ebola outbreak might have been very different.

Subsequently, the CDC set new guidelines for the (now routine) quarantine of nonhuman primates imported into the United States, and concerted efforts were made by veterinarian, Dr. Ksiazek (now the Chief of the Special Pathogens Branch at CDC) to track down the origin of Ebola Reston virus in monkeys imported from Asia. Thus, the premier public health agency responsible for safeguarding human health played a key role in the prevention and control of a disease principally affecting animals.

The Reston Ebola incident demonstrated what strong leadership and interdisciplinary collaboration can accomplish. Paul R. Epstein, MD, MPH of the Harvard Medical School has recently said that "never has the divide between animal and man been so porous -- or the threat to public health more urgent." Proper implementation of "One Health" will be an essential strategic step toward improving our ability to deal with the stark realities of global health threats.