Agent: Ebola Virus

Ebola virus is a filovirus associated with sporadic outbreaks of hemorrhagic fever in humans since 1976 in Africa. In these outbreaks, the case fatality rate ranged from 50-90% and over 500 total people have died.

The ecology, natural history and mode of transmission of Ebola virus in nature is unknown. The incubation period is believed to be 5-9 days, but ranges from 2-21 days. The disease is rapid in onset and usually is characterized in the early stages by severe fatigue, headache, high fever, muscle and joint pain, and sore throat. Some patients also have conjunctivitis, jaundice, diarrhea, abdominal pain, vomiting and skin rash. Platelets, which are important for normal blood clotting, may be reduced to such low levels that pinpoint hemorrhages and frank bleeding may occur. Death usually occurs as a consequence of shock from loss of fluid and blood volume.

The only known episode of transmission of a filovirus directly from monkeys to humans in research occurred from direct handling, with protective measures such as gloves, or blood and tissues from monkeys infected with Marburg virus. Some humans exposed to less virulent filoviruses harbored by monkeys have developed antibodies, but no clinical disease.

Potential Hazard: Virus may be harbored in the blood, urine, respiratory and throat secretions, semen and tissues from nonhuman primates of African origin including chimpanzees. Inhalation or mucous membrane exposure via aerosol droplets or accidental inoculation, such as via a needlestick, are the primary hazards to animal care and research personnel. In humans, transmission has been generally associated with needle stick or other injury, or through mucous membranes or other superficial wounds. In Africa, human-to-human transmission has largely occurred through the reuse of contaminated needles or close physical contact with infected persons. There is no evidence of human-to-human aerosol transmission.

Recommended Precautions: Good quarantine practices at the point of entry to the country, including specific testing for evidence of infection, and similarly good quarantine and management practices at research institutions are effective in preventing human filovirus exposure. Adherence to standard precautions for bloodborne diseases in the management of primates reduces risk and protects humans against infection. Animal biosafety level 2 practices, containment and facilities are recommended for activities with newly imported primates. Vaccines and specific therapy for filoviruses are not available and treatment is supportive.

References:
CDC. Update: filovirus infection in animal handlers. MMWR 1990;39:221.