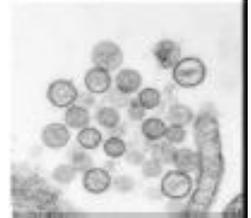


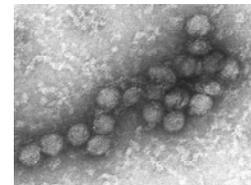
Recent Examples of Emerging Zoonotic Diseases

Diseases that are transmitted from animals to humans are called zoonotic diseases, or zoonoses. It is estimated that 60% of human diseases and 80% of potential bioterrorism agents are zoonotic in nature.ⁱ Zoonotic diseases can be transmitted through food or drink, insect bites, skin wounds, mucous membranes and inhalation. Oftentimes, animals infected with zoonotic disease organisms often do not show obvious signs of illness. Instances of zoonotic diseases are increasing worldwide. Recent examples include:

Hantavirus Pulmonary Syndrome (HPS), 1993-present. HPS was first recognized in 1993 in the Four Corners region of Arizona, Colorado, New Mexico, and Utah when a number of previously healthy young adults suddenly developed acute respiratory symptoms; and about half soon died. HPS is a deadly disease from rodents; 35% of cases have resulted in death. Although rare with only 465 domestic cases as of March 2007, the disease has since been identified in half of the states in the U.S. Humans can contract the disease when they come into contact with infected rodents or their urine and droppings. Rodent control in and around the home remains the primary strategy for preventing hantavirus infection.ⁱⁱ



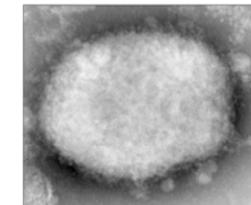
West Nile Virus (WNV), 1999-present. WNV was identified in the U.S. in 1999 in New York City and has subsequently spread across the U.S. and Canada via mosquitoes, as the disease transmitters, and birds, as the viral carriers. Prevention and control activities are costly. For example, in 2002, the outbreak cost Louisiana \$10.9 million for direct medical care and \$9.2 million for the public health response. For more information on WNV, access ASTHO's mosquito report at www.astho.org/pubs/FinalReportPDF.pdf.



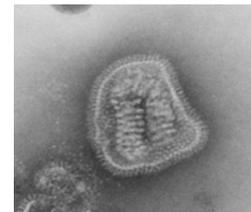
SARS, 2003. This worldwide outbreak resulted in 8,098 reported human cases and 774 deaths, and showed the ease by which disease can spread through international travel.ⁱⁱⁱ SARS spread to five countries within 24 hours and more than 30 countries within six months.^{iv} The exact animal reservoir is unclear, but the virus is thought to be transmitted from bats and palm civets to humans; and is capable of human to human transmission. The Institute of Medicine estimates the global cost for containment and lost economic activity at \$40 to \$54 billion.^v



Monkeypox, 2003. Monkeypox emerged in six states and caused 72 cases of a pox-like disease in humans. Monkeypox is in the same group of viruses as smallpox, but is less contagious and less lethal. The disease was imported in a shipment of imported African rodents and was transmitted to prairie dogs and then to humans when the prairie dogs were purchased as household pets. The Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) have the power to regulate the importation of exotic animals, and other federal agencies are responsible for the enforcement of import regulations.



Avian Influenza H5N1, 2003-present. Since mid-2005, more than 140 million birds died or were destroyed. The World Bank estimates losses to the poultry industry to be in excess of \$10 billion worldwide. As of July 2007, there have been 318 human cases, of which 192 have died, reported as a result of exposure to infected birds. According to the U.S. Congressional Budget Office, mutation of avian influenza has the potential to become the next pandemic, and could cause 100,000 to two million deaths in the U.S. and a loss of five percent of the Gross Domestic Product.^{vi}



ⁱ King, L. Presentation at the University of Michigan's Pandemic Influenza Symposium. The Convergence of Human and Animal Health. 24 Jan 2006. Retrieved from <http://hosted.mediasite.com/hosted/viewer/?cid=9dd48895-0718-4704-8d90-eb4cc13564a7> on 10 March 2006.

ⁱⁱ CDC NCID Special Pathogens Branch. All about Hantaviruses. Available at www.cdc.gov/ncidod/diseases/hanta/hps/. Accessed 09-06-07.

ⁱⁱⁱ Fukuda, K. "SARS and the New World of Emerging Infectious Disease Threats." 2004. Available at www.med.osaka-cu.ac.jp/kouei/2004flufukuda/2004%20pp%20fukuda.pdf. Accessed 05-04-07.

^{iv} Ibid.

^v Knobler S, Mahmoud A, Lemon S, Mack A, Sivitz L, Oberholtzer K. Learning from SARS: Preparing for the Next Disease Outbreak, IOM Workshop Summary. The National Academies Press. Washington, DC: 2004.

^{vi} Holz-Eakin, Douglas. "A Potential Influenza Pandemic: Possible Macroeconomic Effects and Policy Issues." *Congressional Budget Office*. 2005. Available at www.cbo.gov/ftpdocs/69xx/doc6946/12-08-BirdFlu.pdf. Accessed 05-04-07.