



## Public Health Update

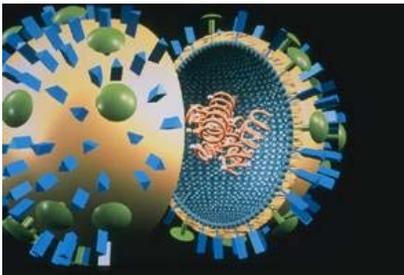
Tuesday, December 07, 2004

### Influenza: Common Sense Protection

The following information is from the Centers for Disease Control and Prevention. With vaccine in short supply, we thought these simple tips might be helpful. These basic control measures can be helpful for all diseases that are passed from person to person.

#### How Germs Spread

Illnesses like the flu (influenza) and colds are caused by viruses that infect the nose, throat, and lungs. The flu and colds usually spread from person to person when an infected person coughs or sneezes.



Artist Rendering of a Flu Virus, Opened to Show the Genetic Material Inside

#### How to Help Stop the Spread of Germs

Take care to:

- Cover your mouth and nose when you sneeze or cough
- Clean your hands often
- Avoid touching your eyes, nose or mouth
- Stay home when you are sick and check with a health care provider when needed
- Practice other good health habits.

Cover your mouth and nose when you

sneeze or cough

Cough or sneeze into a tissue and then throw it away. Cover your cough or sneeze if you do not have a tissue. Then, clean your hands, and do so every time you cough or sneeze.

Clean your hands often

When available, wash your hands -- with soap and warm water -- then rub your hands vigorously together and scrub all surfaces. Wash for 15 to 20 seconds. It is the soap combined with the scrubbing action that helps dislodge and remove germs.

When soap and water are not available, alcohol-based disposable hand wipes or gel sanitizers may be used. You can find them in most supermarkets and drugstores. If using a gel, rub the gel in your hands until they are dry. The gel doesn't need water to work; the alcohol in the gel kills germs that cause colds and the flu.\*

Avoid touching your eyes, nose, or mouth

Germs are often spread when a person touches something that is contaminated with germs and then touches their eyes, nose, or mouth. Germs can live for a long time (some can live for 2 hours or more) on surfaces like doorknobs, desks, and tables.

Stay home when you are sick and check with a health care provider when needed

When you are sick or have flu symptoms, stay home, get plenty of rest, and check with a health care provider as needed. Your employer may need a doctor's note for an excused absence. Remember: Keeping your distance from others may protect them from getting sick. Common symptoms of the flu include:

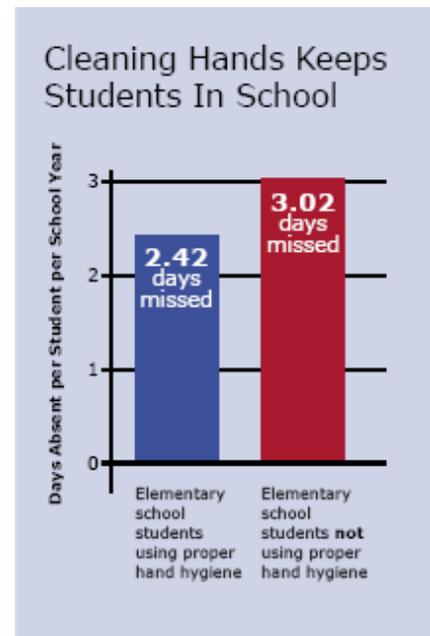
- fever (usually high)
- headache
- extreme tiredness
- cough

- sore throat
- runny or stuffy nose
- muscle aches, and
- nausea, vomiting, and diarrhea, (much more common among children than adults).

Practice other good health habits

Get plenty of sleep, be physically active, manage your stress, drink plenty of fluids, and eat nutritious food. Practicing healthy habits will help you stay healthy during flu season and all year long.

Don't underestimate simple but proper hand washing, it can be effective.



Source: Am J Infect Control 2000;28:340-6

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## Chronic Wasting Disease (CWD)



Chronic Wasting Disease is a transmissible spongiform encephalopathy (TSE) that causes central nervous system symptoms in three cervid species, mule deer, white-tailed deer, and Rocky Mountain Elk. Another TSE that was recently infamous is BSE or Bovine Spongiform Encephalopathy, the so-called “mad cow” disease. This disease was raised to public consciousness when BSE began to cause a human variation of the disease.

TSE's get their name because they leave the brains of their victims with lesions that result in a spongelike appearance. Symptoms are manifested in the loss of coordination and movement and an emaciated appearance. This condition is ultimately fatal.

It is thought that this is an odd disease indeed, with the “agent” not a virus or bacteria, but rather a misshapen protein called a prion. Proteins derive their functions in the body from their shape and for some reason in TSE's normal proteins begin to transform, over time, into a shape that prevents them from functioning properly. These dysfunctional proteins also seem to have the ability to transform other properly shaped proteins into copies of the bad ones. So... this ability to make copies slowly causes the malfunction of and nervous system symptoms seen in TSE's, including CWD.

CWD seems first to have been noticed in the 1960's in captive mule deer and was initially thought to be associated with the stress of captivity. Later, a researcher, Dr. Elizabeth Williams, in Wyoming, recognized the disease as a spongiform encephalopathy. In the 1990's, the disease was found in free-ranging mule deer, white

tail deer, and elk in Colorado and Wyoming. By 2000, CWD had been found in both free ranging and farmed animals in Colorado, Wisconsin, Minnesota, New Mexico, and Utah, as well as parts of Canada.

Exactly how this agent is transmitted from one animal to another is still largely a mystery, but from what is known, it's thought that the agent is present in feces and saliva and that these may enable possible transmission from animal to animal or through contamination of the environment.

Other non-domestic ruminants that are known to have been in contact with infected deer but have not shown any sign of disease include; moose, pronghorn antelope, Rocky Mountain bighorn sheep, mouflon, mountain goats and blackbuck.



Cattle in a Wyoming study that were inoculated orally with the agent, have not shown any signs of the disease after more than five years.

Surveillance efforts to search for possible transmission to humans have not indicated any links to date. Because the possibility of human transmission cannot be ruled out at this time, public health and wildlife management agencies recommend caution and certain precautions for hunters or others who might consume meat from deer or elk from affected areas. FDA has begun efforts to keep animals from CWD areas from being rendered and used for animal feed.



Some national park units are located in CWD affected areas and have elk and/or deer. Because this issue may affect park natural resource decisions, Dr. Margaret Wild, the NPS Veterinarian, has been involved in helping to advise parks about CWD. In the event that any unit allows hunting or culling of some of these affected animals, Dr. Wild has asked the NPS Public Health Program to develop a CWD guidance document on this subject. That document, which is being developed with input from FDA, CDC, and subject area researchers, should be available to parks shortly.

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## Zoonotic Diseases

It has been speculated that the majority of civilization's infectious diseases were transferred to the human populations from animals. The human experience with disease spans at least a half million years, and it has been suggested that nearly all of mankind's advancements have come with a price – increased morbidity and mortality due to infection by bacteria, parasites, and viruses. Adding to the increasing infection rates is a constantly changing balance between pathogen and host, which the host – humankind – is largely responsible for unbalancing.

The diseases that are transmittable between animals and humans are known as zoonoses, and as many as 900 of the approximately 1,400 known human pathogens are of zoonotic origin according to a study published in 2001. While some of these pathogens are transmitted directly from wildlife to humans, such as Hantavirus, rabies, and tularemia, many other viruses and bacteria, which are the causative agents of illnesses like West Nile virus, Lyme disease, and plague, are transmitted by insect vectors such as mosquitoes, ticks, and fleas. Historically, evolution has been slow enough that host and pathogen developed together; a change in one was compensated by a change in the other, thus keeping the “tightly woven” relationship constant. However, as human civilization progressed, each advance shifted the balance of infection, which led

to increased incidence of disease. As mankind expanded its realm there came opportunity for exposure to new disease organisms. These pathogens were not new in the sense of emerging, but rather new in terms of human exposure. Many agents that infected the animals of the grasslands were now primed to expand their infection with the arrival of man.



*A victim of plague with the characteristic enlarged lymph node,, or "bubo," that gave this form of plague the name - bubonic.*

As exploration, trade, and warfare spread across the continents so did disease. The proliferation became much more pronounced as the sailing vessel gave way to steamship and the oceans were no longer the barriers they had once been. The basic interactions among host, agent, environment, and other factors such as human population growth and movement, ecologic changes, and changes in human behavior act synergistically in the occurrence of disease. The barriers that existed in the not- too- distant past, such as mountains and oceans, no longer matter much in the transmission of zoonotic disease due to the ease and speed of global travel and commerce.

The National Park Service has operating units in nearly every classification of ecosystem and each may have its own risks associated with an animal reservoir or insect vector that calls the park habitat home. Many of the activities associated with park visitation have the potential to put visitors at risk of exposure to various pathogens. Hiking and camping can bring visitors into contact with ticks, mosquitoes, rabid animals, or rodents infected with Hantavirus. Zoonotic diseases make up the majority of our current experience with disease, and domestically, Lyme disease is the most prevalent with more than 20,000 cases reported each year. West Nile virus

emerged in New York City in 1999 and has spread across the national in just five years affecting many parks in that time. With the past experience and future potential of zoonotic disease in parks it is critical that an active surveillance system of disease is established and maintained.

Inter- program collaboration within the NPS and partnerships with federal, state, and local agencies are in place and continue to be developed in order to protect public health using a risk-based approach of education, surveillance, and control. The efforts of several NPS programs resulted in the formation of the Zoonotic and Environmentally Transmitted Diseases (ZED) Committee in January 2003. Since its inception the committee has focused on providing multidisciplinary guidance to parks on disease issues such as West Nile, Hantavirus, and rabies. Collaboration with various public health agencies has increased surveillance efforts, which adds to the biologic inventory knowledge at the park level and allows for control efforts to be implemented using an integrated pest management approach. The multidisciplinary approach to zoonotic disease is necessary in the continual ebb and flow of human activity and potential infection.



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In Partnership for nearly 100 years, the National Park Service and the United States Public Health Service have worked together to protect the health of visitors in Americas Parks!