

# Center for Veterinary Public Health Newsletter



Department of Health and Mental Hygiene  
Community Health Administration  
Office of Epidemiology and Disease Control Programs

## *Avian Influenza : The Maryland Incident* Dr. Phyllis Cassano

Avian influenza is an airborne respiratory virus that spreads easily among birds through nasal and eye secretions as well as manure. It can spread rapidly from flock to flock and can be carried great distances by contaminated vehicles, equipment, clothing, and other means. The H7 strain has not been associated with serious human illness. Recent research and current events show that avian influenza represents a zoonotic disease with potential impact on both human and animal populations.

On Friday, March 5, 2004 at 5:03 p.m., the Maryland Department of Agriculture (MDA) received notice that samples from a commercial poultry flock in Worcester County had tested positive for avian influenza (AI). The discovery of this case came 29 days after an outbreak of AI (H7N2) in Delaware – one day shy of the lifting of all restrictions on the movement of poultry on the Delmarva Peninsula – and at a time when everyone on the poultry-dominated Eastern Shore was cautiously optimistic, hoping the incident might be over. Animal health professionals, government agencies, academic institutions, the poultry industry, agri-business interests, and the entire farm community again mobilized their resources across Delmarva to halt the possible spread of the virus. Leadership, or incident command, shifted from Delaware to Maryland.

The seriousness of even a single isolated avian influenza incident to the economy of the Delmarva Peninsula cannot be understated. To date, no connection has ever been made between the Mary-

land and Delaware cases. Restrictions on movement of poultry locally, between states, and internationally caused financial uncertainty within an industry that makes up \$500 million or 1/3 of Maryland's \$1.4 billion farm income and accounts for 15,000 jobs on Delmarva. Nearly every element of the economy on the Eastern Shore is in some way integrated with the poultry business. Maryland ranks seventh in the nation for broiler chicken production.

The MDA immediately quarantined one Maryland farm with 118,000 chickens, along with two other adjacent farms owned by the same farmer. The birds on the AI-positive farm were quickly culled. While another 220,000 chickens on the two farms nearby tested negative for avian influenza, the poultry company that contracted with the farmer complied with instruction from MDA to euthanize all of the birds. This decision resulted from strong epidemiological evidence of a potential for future infection. Although this step involved drastic and costly actions, it represented a necessary precaution to protect the poultry industry.

The MDA served as the lead agency to coordinate a quick and effective response to the incident among Delmarva Poultry Industry, Inc. and other state and local agencies (including West Virginia and Virginia). Multiple conference calls and swift on-the-ground actions demonstrated the capability of various agencies and organizations to coordinate and execute plans to protect the health of Maryland's poultry

industry and human populations.

From the moment that avian influenza was detected in Delaware, Maryland Governor Robert L. Ehrlich, Jr., made available any logistical resources that might be needed. A month later when Maryland's case was detected, all agencies were called to action as needed to stop any possible spread of the virus. The agencies involved included the Department of the Environment (disposal of depopulation materials), the Department of Health & Mental Hygiene (human health surveillance), the Maryland Emergency Management Association (coordination of state resources), the Maryland State Police (site security), the Department of Natural Resources (wildlife surveillance), the University of Maryland and Cooperative Extension (education, outreach, technical assistance) and the Worcester County Emergency Management Agency (mobile decontamination unit).

Maryland officials managing the incident identified and acted on several issues of concern, including: ongoing surveillance of the outbreak and the potential for further spread; the disposition of depopulated poultry; the health protection of personnel in the depopulation zone (protective gear and flu vaccination); management of public and media attention; restriction of the movement of poultry and poultry litter; the prohibition on the sale and "assembly" of live birds; achieving coopera-

tion between farmers to prevent cross contamination of poultry farms; and decreasing public gatherings and poultry-related meetings until the incident was over.

The entire MDA staff, along with local veterinarians and inspectors from Delaware, the universities of Maryland and Delaware, the poultry companies and other organizations worked tirelessly on the investigation and control of the outbreak. The

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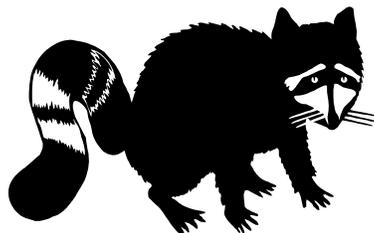
Robert L. Ehrlich, Jr., Governor  
Michael S. Steele, Lt. Governor  
S. Anthony McCann, Secretary

## ***The 2004 Update on Maryland's Oral Rabies Vaccine Program*** Dr. Joseph Horman

The raccoon strain of rabies continues to cycle in Maryland and throughout the entire East Coast reaching into Canada. In 2003, 371 cases of animal rabies were reported in Maryland. The majority of these cases are caused by the raccoon strain (72.5%). Raccoon rabies now accounts for approximately 37% of all animal rabies reported nationwide.

In 1997, the USDA approved an oral rabies vaccine (Raboral V-RG) for use in raccoons. This new technology provided government agencies with another tool for controlling rabies. A number of States and localities have implemented oral rabies vaccination campaigns designed to reduce raccoon rabies in their jurisdictions. The USDA is working with New York, Pennsylvania, Ohio, West Virginia, Tennessee,

Georgia, and Alabama to create a 30-mile wide raccoon rabies-free barrier to prevent raccoon rabies from advancing westward. The barrier extends from Lake Erie to the Gulf of Mexico and includes part of Garrett County in Western Maryland.



*Raccoon rabies accounts for approximately 37% of all animal rabies reported nationwide.*

In 1998, the Anne Arundel County Department of Health conducted its first oral rabies vaccination campaign by placing almost 8,800 oral rabies vaccine baits on the Annapolis Peninsula (almost 36 sq. miles). This was repeated during the following years and based on its apparent success, Gibson Island and Broadneck Peninsula were added to the area baited in 2000 and 2001 respectively. In 2003, Wildlife Services, USDA joined the Anne Arundel County Department of Health in distributing oral rabies vaccine/bait throughout the entire County (417 sq. miles). The seventh campaign was conducted during August 2004 with more than

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*Oral Rabies Bait Program significantly reduces raccoon rabies in Anne Arundel county.*

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87,000 baits being distributed by one of three methods – airplane, helicopter and ground teams. Anne Arundel County has seen the number of rabid animals decrease from 97 identified in 1997 to 20 identified in 2003. Although many factors may influence the number of reported rabid animals, Anne Arundel County feels confident that the oral rabies vaccination campaign has significantly reduced the transmission of rabies in the County.

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## ***Severe Acute Respiratory Syndrome (SARS)*** Karon Damewood-Joeckel

Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV). Since its discovery in late 2002, it has had a global impact on the health of people the world over. Between November 2002 and July 2003, more than 8,000 people worldwide became ill with SARS that was accompanied by either pneumonia or respiratory distress syndrome, according to the World Health Organization (WHO). In Asia, SARS was first reported in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained.

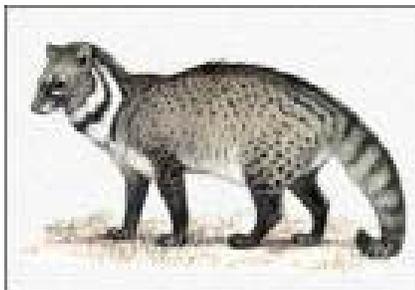
According to the WHO, a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak. Of these, 774 died. In the United States, eight people had laboratory evidence of SARS-CoV infection. All of these people had traveled to other countries experiencing SARS.

In general, SARS begins with a

high fever (temperature greater than 100.4 F [ $>38.0$  C]). Other symptoms may include headache, an overall feeling of discomfort, and body aches. Some people also have mild respiratory symptoms at the outset. About 10 to 20 percent of patients have diarrhea. After two to seven days, SARS patients may develop a dry cough. Most patients develop pneumonia. The case fatality rate among persons with illness is approximately ten percent.

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SARS seems to be transmitted by close person-to-person contact. The virus appears to be transmitted most readily by respiratory droplets produced when an infected person coughs or sneezes. The virus may survive from 24 hours up to three days on inanimate objects and surfaces. Therefore, touching surfaces or objects contaminated with the virus also spreads the disease. It is possible that the SARS virus might spread more broadly through the air or by other mechanisms not now known. At this time, there is no known effective treatment for

SARS. To date, scientists have not been able to confirm the origin of SARS in humans. Some public health officials hypothesize that SARS-CoV was transmitted from an animal to a human, thereby sparking the 2003 outbreak. Growing indirect evidence suggests that exposure to certain wild animals may be associated with infection, although there is no evidence that humans have become infected with the SARS coronavirus



*Courtesy of www.terrambiente.org*

from direct contact with certain wild animals.

According to published scientific articles, SARS-like virus has been isolated from civets

(Family: Viverridae) captured in areas of China where the 2002-2003 SARS outbreak originated. Shipments of civets were being imported into the United States and further distributed. In order to reduce transmission risk to the United States population, CDC banned the importation of all civets effective January 13, 2004 until further notice. Further information about the civet embargo may be found at the following Internet site: <http://www.cdc.gov/ncidod/sars/civetembargo.htm>

Currently, there is no known SARS transmission anywhere in the world. The most recent human cases of SARS-CoV infection were reported in China in April 2004 in an outbreak resulting from laboratory-acquired infections. CDC and its partners, including the World Health Organization, continue to monitor the SARS situation globally. Any new updates on disease transmission and SARS preparedness activities will be posted at <http://www.cdc.gov/ncidod/sars/situation.htm>

## Pets, Worms and People *Dr. Joseph Horman*

Most people, particularly those who have ever had a puppy or kitten, are aware that dogs and cats can have intestinal worms. Having their pet checked for worms and “wormed”, if needed, is part of caring for their new arrival. Yet, probably few realize that dog and cat roundworms and hookworms can also infect humans. These worms are passed from a mother dog or cat to her offspring. Pets can also become infected by ingesting infected eggs or larvae in their environment. Eggs or larvae are passed in the feces and contaminate the environment. Because dogs and cats defecate at various locations, large areas may be contaminated very quickly. These eggs and larvae are resistant and can survive for considerable time in yards, parks, playgrounds, and even inside homes.

People usually become infected by accidental ingestion of contaminated soil or plant life. Children are especially prone to this route of infection because of their play habits, such as putting dirty objects in their mouth. Some children experiment with dirt eating, a practice known as “pica”. Hookworm larvae may also penetrate the skin of a person.

**Human Roundworm Infection**  
Dog and cat roundworms (*Toxocara canis* and *T. cati* respectively) cause visceral and ocular Larva migrans (LM) in

humans. Infective eggs are ingested and pass into the person’s intestine where they hatch. The larvae penetrate the intestinal wall and migrate through various tissues and organs. During this migratory phase, larvae may cause tissue damage and sometimes affect the nerves and eye. These infections are usually not serious but in some cases the eye and neurologic damage may be severe enough to cause permanent damage, even blindness. The Centers for Disease Control and Prevention (CDC) estimates that 700 people infected with *Toxocara* experience permanent vision loss each year. Almost all serious cases occur in children between 18 months and 3 years of age, probably reflecting their unsanitary behavior. The larvae do not mature in the human; consequently, humans do not pass eggs in their feces.



Eggs of *Toxocara canis*

**Human Hookworm Infection**  
Hookworm larvae (*Ancylostoma caninum* and *A. braziliense*) prefer damp, sandy soil. Larvae usually penetrate the skin of a person and migrate within the layers of the skin, a condition known as cutaneous LM. One type of hookworm may penetrate into

deeper tissues and cause more serious damage to the intestines and other organs. The movement of the larvae within the skin causes progressive and pruritic linear eruptive lesions, known as creeping eruption. The condition is self-limiting and usually resolves within several weeks or months. Cutaneous LM is most prevalent in the Southeast.

**Important Control Measures**  
The Centers for Disease Control and Prevention has the following recommendations:

Have your veterinarian treat dogs and cats, especially young

animals, regularly for worms.

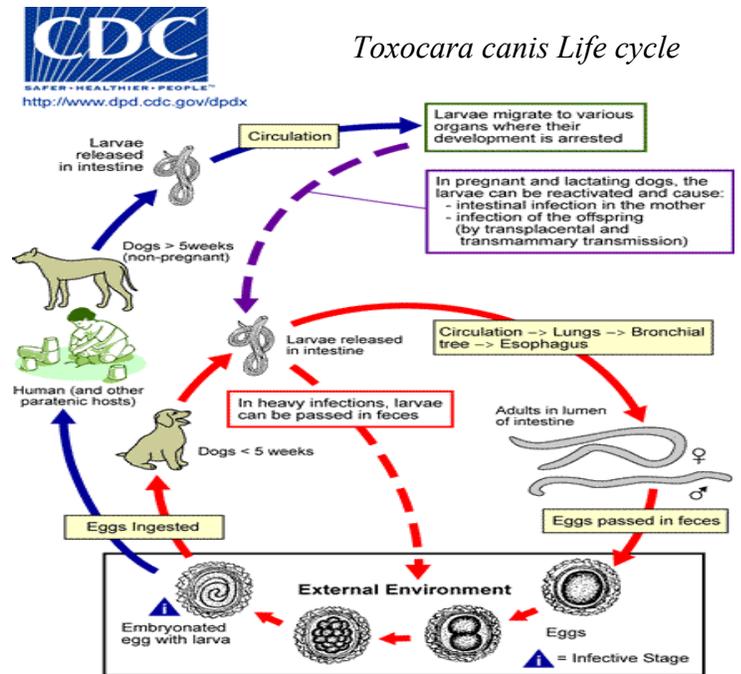
Do not allow children to play in areas that are soiled with pet or other animal stool.

Clean your pet’s living area at least once a week. Feces should be either buried or bagged and disposed of in the trash.

Teach children that it is dangerous to eat dirt or soil.

Wash your hands well with soap and warm water after playing with your pets and after outdoor activities, especially before you eat.

Teach children to always wash their hands after playing with dogs and cats and after playing outdoors.



## Avian Influenza

(Continued from page 1)

Lasher Laboratory in Delaware and MDA’s Salisbury Animal Health Laboratory served as the primary facilities for poultry sampling and testing. Samples from poultry in 5322 houses on 2181 farms were collected from both states during the course of the Delaware and Maryland incidents (February and March 2004). Officials identified positive samples at two locations in Delaware and one in Maryland. MDA lifted all restrictions on the movement of poultry and poultry



litter and also removed the prohibition on the sale and “assembly” of live birds on April 5, after all samples taken from Maryland farms were AI-negative for 30 days. While restrictions have been lifted, a new awareness of and adherence to vigilant biosecurity practices are now in place on farms across Delmarva to prevent any such incidents in the future.

MDA is taking additional steps to protect this segment of agriculture. These include:

- ◆ Reviewing the regional avian influenza response.

- ◆ Reviewing current state regulations and if necessary, developing and implementing new regulations that will better protect the poultry industry.

- ◆ Identifying all bird producers, no matter how large or small, and training them on preventative animal health and biosecurity practices.

- ◆ Reaching out to nearby states to establish common understandings and protocols regarding prevention and response to avian influenza and other animal health issues.

- ◆ Conducting an emergency response exercise on a poultry

health incident.

- ◆ Distributing a new educational biosecurity brochure for small livestock and poultry producers.

- ◆ Working with the University of Maryland to develop a series of seminars for small flock owners.

State and local health officials learned valuable lessons from this outbreak. The experience demonstrated that communication is critical, cooperation with surrounding agencies remains essential, and most of all, that a quick eradication and response are vital to the success of any disease containment effort.

## Chronic Wasting Disease *Dr. Cindy Driscoll*

Chronic Wasting Disease (CWD) is a fatal disease that attacks the brain and spinal cord of deer and elk, specifically white-tailed deer, mule deer, and Rocky Mountain elk. While the exact cause is not known, it is believed to be a prion disease. A prion is an altered protein that causes other normal proteins to change and form sponge-like holes in the brain. The origin of these prions is currently unknown.

CWD is related to, but different from, scrapie in sheep and Bovine Spongiform Encephalopathy (BSE or Mad Cow Disease) in cattle and Creutzfeldt-Jacob Disease (CJD) in humans. These diseases also attack the brain and cause deterioration and eventual death.

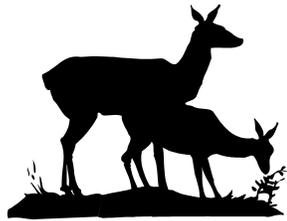
CWD was first identified in the 1960s in a Colorado research facility and since that time it has been found in several western states, Canada and Korea. It is unknown whether sika deer are susceptible to CWD. CWD has not been found in sika deer or white-tailed deer in Maryland.

Although CWD has not been found in Maryland, it appears to be a disease of North America. It was first identified in a captive herd of mule deer in Colorado in 1967, and later found in captive deer and elk in Colorado, Wyoming, South Dakota, Montana, Nebraska, Kansas, Oklahoma, Canada and Korea (translocated captive animals). It has also recently been identified in wild deer or elk in Canada, Colorado, Wyoming, Nebraska, New Mexico, South Dakota, Wisconsin, Minnesota and Illinois. Utah reported its first case in 2003. Because the signs of CWD are similar to those of other infectious diseases, and because only limited testing has been conducted, the true range and prevalence of the disease within captive and wild herds has not yet been determined.

Deer and elk affected with CWD show weight loss over time, generally accompanied by behavioral changes. In later stages of the disease, affected animals may show emaciation, excessive drooling, increased drinking and urination, listlessness, stumbling, trembling, loss of fear of humans, and nerv-

ousness. Not all of the above signs occur in all cases, and many of them are often signs of other diseases common to deer and elk. Signs may also vary with the stage of the disease, and the period of time from when signs first appear to the disease's fatal outcome may take months to years.

CWD appears to be passed between animals via saliva, feces or urine. Maternal transmission between females and their fetuses does not seem to be a factor although indirect transfer (e.g., contaminated soil), may occur. CWD may be transmitted more readily within overpopulated herds and at deer or elk feeding stations where direct physical contact among individuals is more likely. Prion diseases, like CWD, do not move easily between species. There is no scientific evidence that CWD has been transmitted to animals other than deer and elk.



Research has not demonstrated transmission of CWD between deer or elk and humans. Scrapie, a similar prion disease in sheep has been studied for centuries and has not been shown to be transmissible to humans. However, in Great Britain, BSE, or Mad Cow Disease, was found to be transmissible to humans through the consumption of contaminated meat. The human form of this disorder is known as New Variant Creutzfeldt-Jacob Disease (vCJD). As a precaution, people who handle deer and elk from areas where CWD is known to occur are being instructed to take special measures to avoid possible infection. As a general precaution it is recommended that people avoid all wild animals that appear sick.

Unfortunately, no known cure, treatment or preventative vaccine exists for CWD. Culling infected

animals from the herd may help prevent the spread of disease in a population. Prevention in captive herds is accomplished by good herd management practices, import-export restrictions, culling and routine testing of animals. In the wild, selective herd reduction is currently being conducted in some states to slow the spread of the disease. The United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) has established a CWD eradication program in the U.S. to reduce the disease and prevent its spread. The program provides funding for the depopulation and disposal of infected, captive deer and elk, as well as the establishment of surveillance and certification programs, public education, outreach and training.

The Maryland Department of Natural Resources (DNR) has been conducting active and targeted surveillance for CWD since 1999 and will continue to expand monitoring efforts. All samples have been sent to the Southeastern Cooperative Wildlife Disease Study at the University of Georgia for processing. To date, all Maryland and East Coast samples have been negative. The Maryland Department of Agriculture (MDA), the Maryland Department of Health and Mental Hygiene (DHMH) and the USDA are integral partners in all surveillance plans to assist in monitoring wild deer populations, and to protect domestic animals and public health.

**Hunters are advised not to consume meat from animals with known CWD infection. Boning out meat is also recommended. Additionally, hunters may take simple precautions such as:**

- Wearing latex gloves when field dressing carcasses
- Minimizing the handling of brain and spinal tissue
- Washing hands and instruments thoroughly after field dressing is completed
- Avoiding the consumption of brain, spinal cord, eyes, spleen,

tonsils, and lymph nodes (often found in fatty tissues) of harvested animals

If the meat is to be commercially processed, hunters should request that animals be processed individually, and the meat from one deer not be added to meat from another (e.g. to make deer bologna, sausage, hot dogs, etc.).

During hunting seasons, biologists may ask hunters for permission to collect brain tissue samples from harvested deer at check-in stations.

Experimental intracerebral inoculations of CWD infected brain material into several species (cattle, etc.) have produced CWD lesions. Long-term studies of transmission via normal routes (ingestion) have not successfully transferred disease in animals. In other recent studies, synthetic "purified" prions were created and injected into mouse brains resulting in prion replication. Additionally, epidemiological retrospective studies have not revealed increased incidence of CJD type cases in people living in the endemic areas of Colorado and Wyoming.

**You can help DNR assess the health of Maryland's deer population by reporting any deer that appear emaciated, unhealthy or act abnormally to the DNR toll free number 1-877-620-8367 (ext. 8540), between 8:30 AM – 5:00 PM; or to the DNR 24 / 7 toll-free line at 1-800-628-9944.**

### CWD Web resources:

[www.aphis.usda.gov](http://www.aphis.usda.gov)

[www.scwds.org](http://www.scwds.org)

[www.dnr.state.md.us](http://www.dnr.state.md.us)

[www.nwhc.usgs.gov](http://www.nwhc.usgs.gov)

# National Pet Wellness Month *Kimberly C. Mitchell*

In October 2004, two organizations—the American Veterinary Medical Association (AVMA) and Fort Dodge Animal Health—collaborated to launch the first national health promotion campaign to promote lifelong wellness for pets: National Pet Wellness Month (NPWM). This campaign took the form of a clinic-centered educational program to inform consumers about the impor-

tance of preserving wellness and overall good health in companion animals. The program provides detailed information about the pet aging process and stresses the value of twice yearly wellness exams. Featured activities included TV and radio spot promotions by the official NPWM spokesman, In-Clinic Education events at local vet clinics, pet wellness case stories and other publications. Pet own-

ers were encouraged to consult with their local veterinarians about pet wellness issues such as behavior, nutrition, and dental health. More than 7,000 veterinary clinics were reported to have participated in this inaugural year of the program. For more information about the program, visit the official National Pet Wellness Month (NPWM) Web site at <http://www.npwm.com/home.htm>.



## BIRD BIOSECURITY

Protect your birds from disease! This is the mantra of Biosecurity for the Birds, a nationwide educational campaign sponsored by the United States Department of Agriculture (USDA) and designed to promote avian health through biosecurity measures. USDA officials are collaborating with State Departments of Agriculture and private veterinarians to accomplish this goal. The program is directed at non-commercial poultry and bird owners, and urges them to monitor their bird populations for illness, report any sick birds to a veterinary professional, and take precautionary biosecurity steps. Although reporting of bird illnesses is not mandated for non-commercial poultry and bird owners in Maryland, it is strongly encouraged to help prevent the spread of potentially lethal pathogens in the avian industry.

In the wake of severe outbreaks of Exotic Newcastle Disease (END) and Highly Pathogenic Avian Influenza in the Western and Central regions of the United States, it was felt that national avian biosecurity efforts needed to be strengthened to prevent the continued spread of such diseases, and that this could be partly addressed at the individual and community levels. Bird owners/enthusiasts are now encouraged to follow the three-step guidelines of LOOK-REPORT-PRACTICE: look for signs of illness or unexpected deaths in their birds, report any sick birds to the USDA Veterinary Services hotline at 1-866-536-7593, and practice “backyard biosecurity” by restricting access to flocks and cleaning and disinfecting the area. For more information about the program, please visit the Web site at <http://www.aphis.usda.gov/vs/birdbiosecurity/index.html>.

## MORE NEWS

Some key federal agencies that are involved in veterinary public health and medical practice conducted newsworthy events in 2004. The USDA released Proposed Rules on Animal Welfare: Regulations and Standards for birds, rats, and mice. Other USDA recommendations addressed such areas as Facilities and Operations, Transportation, and Animal Health and Husbandry for each of those populations. These recommendations are being incorporated into a set of standards for use by the pet trade industry.

In addition, the Food and Drug Administration released a draft guidance document on use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) in animals. The document, entitled Development of Target Animal Safety and Effectiveness Data to Support Approval of NSAIDs for Use in Animals, can be downloaded from the FDA Center for Veterinary Medicine (CVM) Web site at <http://www.fda.gov/cvm/default.html>. Likewise, FDA scientists have recently published results of a study to evaluate test kits for detection of animal proteins in animal feed. Two commercial test kits were evaluated and a press release entitled Expanded Mad Cow Safeguards Announced to Strengthen Existing Firewalls Against BSE Transmission was released in January 2004.

## EDUCATIONAL PRODUCTS

Several resources are available from government and private or non-profit organizations pertaining to animal health and safety. The Pet Industry Joint Advisory Council (PIJAC) regularly publishes a series of reference manuals on the care and management of a variety of different animal species including avian, canine, reptile, and small mammals. These manuals can be ordered through the PIJAC Web site at <http://www.pijac.org/i4a/pages/index.cfm?pageid=101>. In addition, the American Veterinary Medical Association (AVMA) also offers a series of Biosecurity Updates and general fact sheets on such diseases as BSE, monkeypox, and SARS. **These resources can be accessed online at:**

<http://www.avma.org/pubhlth/default.asp>

## ADDENDUM to Chronic Wasting Disease (page 4)

Husband and wife researchers, Drs. Beth Williams and Tom Thorne died in a car accident December 31, 2004. They were international experts on Chronic Wasting Disease (CWD) and instant friends to everyone they met. Dr. Williams was from Maryland, and received her B.S. from the University of Maryland College Park. She was the pathologist at University of Wyoming who diagnosed Chronic Wasting Disease as a transmissible spongiform encephalopathy in the 1970's. She received her veterinary degree from Purdue University and her PhD in pathology from Colorado State University. She was on the faculty at the University of Wyoming and head of the Veterinary Diagnostic Laboratory in Laramie, Wyoming. Dr. Thorne was with Wyoming Game & Fish, and the University of Wyoming. They were the heart and soul of the Wildlife Disease Association and the American Association of Wildlife Veterinarians. Their loss will be felt by all of us in the wildlife community.

## **Brucellosis** Karon Damewood-Joeckel

Brucellosis is not very common among most animal populations in the United States. Nationwide, each year about 100 to 200 cases occur. Brucellosis is an infectious disease caused by the bacteria of the genus *Brucella*. These bacteria are primarily passed among animals, and they cause disease in many different vertebrates. Various *Brucella* species affect sheep, goats, cattle, deer, elk, pigs, dogs, and several other animals. Humans become infected by coming in contact with animals or animal products that are contaminated with these bacteria.

In humans, brucellosis can cause a range of symptoms that are similar to the flu and may include fever, sweats, headaches, back pains, and physical weakness. Severe infections of the central nervous systems or lining of the heart may occur.

Brucellosis can also cause long-lasting or chronic symptoms that include recurrent fevers, joint pain, and fatigue.

Human infection with *Brucella canis* (*B. canis*) is especially rare. In August 2004 one Maryland County reported a female of childbearing age who was diagnosed with *Brucella canis* (*B. canis*). The patient's reported clinical symptoms included fever, sweating, severe body and headaches, decreased appetite accompanied by weight loss, malaise and fatigue. Onset was reported as beginning in May 2004. Respiratory symptoms prompted the hospitalization of this patient for intravenous antibiotic treatment. At the time of the diagnosis, she was in the first trimester of pregnancy.

The source of the human infection remains unknown. The patient's travel history indicated only United States interstate travel to North Carolina. History of ingestion of unpasteurized foods was negative. The patient reported recent ownership of a male dog received from another Maryland county. However, upon further investigation, it was determined that the patient's dog and three of its associates were originally imported from Brazil, South America. Testing for *B. canis* antibodies yielded negative results on all the identified dogs. Direct person-to-person spread of brucellosis is extremely rare. Mothers who are breast-feeding may transmit the infection to their infants. Sexual transmission has also been reported. For both

sexual and breast-feeding transmission, if the infant or person at risk is treated for brucellosis, their risk of becoming infected will probably be eliminated within 3 days. Although uncommon, transmission may also occur via contaminated tissue transplantation.

Although brucellosis can be found worldwide, it is more common in countries that do not have good standardized and effective public health and domestic animal health programs. Areas currently listed as high risk are the Mediterranean Basin (Portugal, Spain, Southern France, Italy, Greece, Turkey, North Africa), South and Central America, Eastern Europe, Asia, Africa, the Caribbean, and the Middle East.

## **Avian Influenza: The Human Experience**

Karon Damewood-Joeckel

Though uncommon, avian influenza viruses can and do infect humans. Several instances of human infections and outbreaks of avian influenza have been reported since 1997. As of April 4, 2005, avian influenza H5N1 has caused illness in 79 humans in Thailand, Viet Nam, and Cambodia killing 49 of them, as well as causing the slaughter, or death from illness, of more than 100 million birds, but it has not moved beyond 8 countries in South East Asia. This viral infection is another example of a virus appearing first in animals before

causing a human disease. In 2003, influenza A (H7N7) infections occurred among persons who handled affected poultry and their families in the Netherlands during an outbreak of avian flu among poultry. More than 80 cases of H7N7 illness were reported (the symptoms were mostly confined to eye infections, with some respiratory symptoms), and one patient died (a veterinarian who had visited an H7N7 flu-affected farm). Although there was evidence of limited person-to-person spread

of infection, sustained human-to-human transmission did not occur in this or other outbreaks of avian influenza.

On February 4, 2004, the Centers for Disease Control and Prevention (CDC) issued an order immediately banning the import of all birds (Class: Aves) from specified Southeast Asian countries, subject to limited exemptions for pet birds and certain bird-derived products. CDC took this step because birds from these countries potentially can infect humans with avian influenza

(Influenza A (H5N1).

As of 29 Nov 2004 a World Health Organization official warned that, if avian flu gains the genetic ability to move easily from person to person, it could cause up to 100 million deaths around the world.

For more information about Interim Guidance for Protection of Persons Involved in U.S. Avian Influenza Outbreak Disease Control and Eradication, visit <http://www.cdc.gov/flu/avian/professional/protect-guid.htm>

### **Rabies Infection in Organ donor and Transplant Recipients, 2004**

On July 1, 2004, the Centers for Disease Control and Prevention (CDC) announced rabies in three recipients of transplanted organs (one liver and two kidneys) and in their common donor, subsequently found to have serologic evidence of rabies infection. A fourth case of rabies associated with organ transplantation was confirmed in the recipient of an iliac artery segment from the infected donor. Full details about these

cases can be found in the Morbidity and Mortality Weekly Report (MMWR) July 1, 2004 Dispatch at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm53d701a1.htm>

Transmission of rabies has occurred previously among eight recipients of transplanted corneas in five countries.

Rabies virus has been confirmed in a teenager bitten by a bat at a church service in September.

### **Trichinosis**



Trichinosis is a parasitic infection caused by tissue-dwelling *Trichinella* roundworms and is associated traditionally with ingestion of pork from infected domestic swine. As a result of improvements in swine production, trichinosis has declined steadily in the United States. However, infection also can result from eating the meat of wild animals. From 1997-2001, a total of 72 cases of trichinosis (median: 12 cases annually; range: 11-23 cases) were reported to the Centers for Disease Control and Prevention (CDC). The majority of these infections were associated with eating wild game, predominantly bear.

In 2004 Maryland officials launched the first bear hunt in 51 years. The Department of Natural Resources (DNR), with

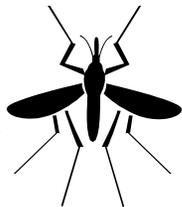
the assistance of the United States Department of Agriculture in Beltsville, tested 19 bears for evidence of trichinosis. All tests were negative.

To prevent trichinosis, persons should cook meat, particularly wild game, to an internal temperature of 160 degrees F (71 degrees C). Should any individual provider become aware of any illness associated with eating bear meat, s/he should report the disease to the appropriate local health department in Maryland.

A recent article about this topic can be found in: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5327a2.htm>

# Maryland Arbovirus Surveillance Summary, 2004 *Kimberly Mitchell*

As the Maryland DHMH prepares to commence the 2005 arbovirus surveillance season, it is helpful to review the surveillance results for 2004. Nationally, human WNV activity has been reported in 41 states and has reached a current total of 2470 human cases with 88 fatalities (as of January 11, 2005). The Maryland Departments of Health & Mental Hygiene (DHMH), Agriculture (MDA), and Natural Resources (DNR) again conducted active surveillance to monitor West Nile virus and other arboviruses of public health significance in humans, mosquitoes, avians, equines, and other mammals for the period June 1 through October 31, 2004. The Department of Defense (DoD) and the Maryland Zoo in Baltimore also contributed results.



As of January 2005, surveillance findings for WNV and other arboviruses detected in Maryland in 2004 are as follows.

## West Nile Virus (WNV) Results:

Human: 16 human WNV cases (12 confirmed, 4 probable) were identified in 7 jurisdictions: 2 Anne Arundel Co., 4 Baltimore City, 3 Baltimore Co., 1 Caroline Co., 2 Dorchester Co., 1 Montgomery Co., 3 Prince George's Co.

### No fatalities reported.

Median age: 55 years (age range: 22 to 85 years). Onset dates of cases ranged from July 11 to October 20th (July: 3, August: 8, September: 3, October: 2) Clinical description: encephalitis/meningoencephalitis—0; meningitis—9; other acute flaccid paralysis—0; fever—6; unspecified illness—1 (follow-up ongoing)

### Avian:

The Maryland DHMH did not conduct surveillance for dead birds in 2004. Other state and federal agencies and local organizations coordinated collection of avian specimens for arboviral testing. Those results are described below.

*Department of Defense (DoD):* Out of 8 dead birds tested in 5 jurisdictions (Anne Arundel, Frederick, Harford, Montgomery, PG), none tested positive for WNV.

*Department of Natural Resources (DNR):* Over 800 wildlife samples collected during an opportunistic survey were submitted to the National Wildlife Health Center and/or USDA for arboviral testing. Of the 118 samples collected in 2004, 93 tested positive for WNV: 24 birds, 29 deer, and 40 raccoons. In addition, 7 birds (2 virus positive, 5 antibody positive) were reported with WNV infection from Delaware Tri-State Bird Research and Rescue

*Baltimore Zoo:* 2 confirmed WNV avian cases (both fatal) in an African Yellow-Billed Duck and a Snowy Owl; 11 birds out of 22 tested (50%) were WNV antibody positive.

Positive avian species included the Bald Eagle, Red-Tailed Hawk, Great Horned Owl, African Spoonbill, Black-footed penguin, American Eider, and Whistling Swan.

It is unclear whether the positive serology results in certain zoo birds resulted from recent WNV vaccination, WNV disease, or other disease processes.

### Mosquito:

31 mosquito pools out of >4000 pools tested were positive for WNV in 11 jurisdictions:

MDA: 16 mosquito pools tested positive for WNV in 8 jurisdictions (Baltimore City, Baltimore, Cecil, Dorchester, Harford, Kent, Prince George's, and Somerset Counties).

### Department of Defense:

15 mosquito pools tested positive in five jurisdictions. Positive mosquito species included *Culex pipiens*, *Culex salinarius*, and *Culex species*.

### Equine:

West Nile virus (WNV) activity in Maryland horses decreased dramatically, from 234 cases in 2003 to only one equine case detected in 2004. A 3-yr old

mare in Cecil County was confirmed with WNV infection via IgM ELISA at the Delaware Public Health Laboratory. Onset date: September 26, 2004. Clinical signs included fever, listlessness, and droopy lip. No vaccination history was reported. The horse survived infection and continues to recover.

## Eastern Equine Encephalitis (EEE) Results:

Four (4) mosquito pools tested positive for EEE in Prince George's County. Species included *Coquilletidia perturbans*, *Culex salinarius*, and *Culex species*.

One ratite (emu) tested positive for EEE in Wicomico County. No horses tested positive for EEE.

### Other Mammals:

No other arboviral infections were detected in any other mammals in Maryland in 2004. One alpaca and three squirrels were also tested for arboviruses at DHMH Laboratories Administration (all negative).

No other arboviruses of public health significance were detected in any avian, mosquito, equine, or human specimens in Maryland in 2004. This includes the viruses that cause LaCrosse encephalitis.

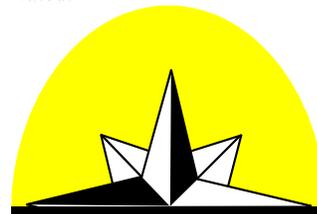
## Future Plans

Results of the 2004 surveillance season revealed a marked decrease in arboviral activity among both human and non-human populations in Maryland. This trend was certainly not limited to Maryland; the entire northeast region of the U.S. reported significantly lowered WNV activity.

Because WNV has been established as both enzootic and endemic in Maryland for a few years now and many state health departments are shifting their focus to other, newly emerging pathogens, it is anticipated that WNV surveillance efforts may be scaled back in the coming years. In 2005, Maryland health officials will make decisions to determine how best to monitor WNV and other arboviruses and

whether such surveillance should be limited in favor of other communicable diseases. Greater emphasis will be placed on public education and prevention and control methods.

Equine surveillance efforts will continue to require vigilant practice in 2005. Most active equine infections may be diagnosed through clinical observation and a single laboratory test. Horse owners and equine veterinarians are encouraged to ensure that horses under their care receive a complete WNV vaccination series, followed by annual booster doses. Veterinarians now have two options for WNV vaccination of equids: the Fort Dodge West Nile Virus vaccine (Innovator™), and RECOM-BITEK®, a West Nile Virus equine vaccine that was developed using recombinant DNA technology from Merial Incorporated.



NEW! The Centers for Disease Control and Prevention (CDC) now offers several new WNV educational materials for the public. These include two WNV prevention posters, a fact sheet on mosquito repellents, and a community education video entitled Protecting Yourself and Your Community from West Nile Virus. These items contain important information about the epidemiology, prevention, treatment and management of WNV in human and animal populations. They are available for download from the CDC Web site at: <http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>.



# DHMH

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## Best Wishes

Best Wishes to Karon Damewood-Joeckel, former Acting Chief of CVPH and Chief of Zoonotic Diseases.

Karon retired from State government on March 31, 2005 after nearly 34 years of service.

We are grateful for Karon's innumerable contributions towards the health and welfare of the citizens and animals of Maryland. Her dedication to the betterment of public health will be missed.

## Announcement

The Center for Veterinary Public Health is pleased to announce the appointment of Guy Stephen Hohenhaus, D.V.M., M.P.H. as the State Public Health Veterinarian and Chief of Rabies and Vector-Borne Diseases, effective January 19, 2005.

Dr. Hohenhaus is a graduate of the University of Minnesota College of Veterinary Medicine and also holds B.S. degrees in Veterinary Science from the University of Minnesota and in Animal Sciences and Agriculture from the University of Maryland. He has a Masters in Public Health from the Uniformed Services University of the Health Sciences (USUHS). He received board certification from the American College of Veterinary Preventive Medicine in 1999.

Please join us in welcoming Dr. Hohenhaus to EDCP. He may be reached at 410-767-6703 or by e-mail at [ghohenhaus@dnhm.state.md.us](mailto:ghohenhaus@dnhm.state.md.us).

The services and facilities of the Maryland Department of Health and Mental Hygiene (DHMH) are operated on a non-discriminatory basis. This policy prohibits discrimination on the basis of race, color, sex, or national origin and applies to the provisions of employment and granting of advantages, privileges and accommodations.

The Department, in compliance with the Americans with Disabilities Act, ensures that qualified individuals with disabilities are given an opportunity to participate in and benefit from DHMH services, programs, benefits, and employment opportunities.