

Poultry HEALTH REPORT

A National Institute for Animal Agriculture Publication

Winter 2004

Avian Influenza Hits the U.S.

Including the First High Pathogenic Strain in 20 Years

Since February 6 this year, four states have reported chickens on poultry farms testing positive for a Type A avian influenza (AI) virus, a.k.a. bird flu. In order of reporting dates, these states are Delaware, February 6, Pennsylvania, February 13, Texas, February 17, and Maryland, March 6.

Influenza A viruses can be divided into subtypes based on their surface proteins, hemagglutinin (H) and neuraminidase (N). There are 15 known H subtypes and nine known N subtypes. While all subtypes can be found in birds, only three subtypes of H, namely H1, H2 and H3, and two subtypes of N,

specifically N1 and N2, are known to have circulated widely in humans.

The recent AI cases in the U.S. were H2N2, H5N2 and H7N2. H5 and H7 strains can be either high pathogenic or low pathogenic. H2 is always low pathogenic.

In Delaware, only the low pathogenic form of the H7N2 subtype was isolated.

In Pennsylvania, only low path H2N2 was diagnosed. In Texas, it was the high path version of the H5N2 subtype.

In Maryland, the H7N2 subtype was isolated, but, at press time, the level of pathogenicity

has not yet been determined. Initial clinical signs and genetic sequencing suggest the Maryland virus is low pathogenic, according to Dr. Ron DeHaven, deputy administrator of USDA's Animal and Plant Health Inspection Service Veterinary Services (USDA, APHIS, VS), and the chief veterinary officer in the United States.

"Pathogenicity relates to the viral strain's ability to cause disease and mortality in birds," DeHaven explains. "Any time we find an H5 or an H7 further testing is done to classify them as either high pathogenic or low pathogenic."

The H5 and H7 viruses can

mutate to high pathogenic even if they start out as a low pathogenic form, DeHaven adds.

The potential for H5 and H7 strains to be high pathogenic creates an international trade issue, so USDA, APHIS, VS assists with control efforts in states which have birds test positive for those two strains.

The recent diagnosis of the high pathogenic strain in Texas marked the first time since 1983-1984 that a high pathogenic strain of avian influenza has been identified in the United States.

"There is no evidence to suggest any connection between the low pathogenic AI cases on the East Coast and the infected flock in Texas," DeHaven says.

Assessing pathogenicity

There are two ways to declare a particular virus as high pathogenic. One is by international standards based on genetic sequencing of the virus. The other is pathogenicity testing, which is determined by inoculating healthy chickens and monitoring their immune response and mortality over a ten-day period.

The National Veterinary Services Laboratories (NVSL) in Ames, Iowa have been testing samples submitted

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DHS Launches Protected Critical Infrastructure Information Program

The U.S. Department of Homeland Security has announced the launch of the Protected Critical Infrastructure Information (PCII) Program. The PCII Program enables the private sector to voluntarily submit infrastructure information to the federal government to assist the nation in reducing its vulnerability to terrorist attacks.

Critical infrastructure includes the assets and systems that, if disrupted, would threaten our national security, public health and safety, economy, and way of life.

Although these industries, services and systems may be found in both the public and private sectors, the Department of Homeland Security estimates that more than 85 percent falls within the private sector.

Under provisions of the Critical Infrastructure Information Act of 2002 (CII Act), information that is voluntarily submitted per those provisions will be protected from public disclosure until and unless a determination is made by the PCII Program Office that the information does not meet the requirements for PCII. If validated as PCII, the information will remain exempt from public disclosure. The rule establishing the pro-

cedures for PCII was published in the *Federal Register*.

Effective immediately, members of the public who wish to submit information may do so through the PCII Program Office. For more information about the PCII Program, or to access the PCII regulation, visit the PCII Program Office website on www.DHS.gov/pcii.

e-Health Certificates Receiving Good Reviews

Animal health officials in the six states participating in a pilot program testing web-based certificates of veterinary inspection (CVI) appear to be embracing the new technology.

"Most veterinarians and technicians are happy with the system," said Dr. Carol Woodlief, a



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Veneman Appoints Members to Foreign Animal and Poultry Diseases Advisory Committee

Agriculture Secretary Ann M. Veneman has appointed 17 members to the Secretary's Advisory Committee on Foreign Animal and Poultry Diseases.

Appointed were: Mr. John B. Adams, National Milk Producers Federation; Dr. Richard E. Breitmeyer, California Department of Food and Agriculture; Dr. Corrie C. Brown, University of Georgia; Commissioner Gus R. Douglass, West Virginia Department of Agriculture; Dr. Don A. Franco, National Renderers Association; Dr. Saul T. Wilson, Tuskegee University; Mr. Tobin Armstrong, Texas and Southwestern Cattle Raisers Association; Mr. Richard

L. Crawford, McDonald's Corporation; Dr. Robert J. Eckroade, University of Pennsylvania; Dr. Niall B. Finnegan, United States Army Veterinary Corps; Mr. James M. Niewold, pork producer; Mrs. June M. Reed, American Sheep Industry Association; Dr. Jeremiah T. Saliki, Oklahoma State University; Dr. Charles R. Sherron, National Cattlemen's Beef Association; Dr. Wesley H. Towers, Delaware state veterinarian; Mr. Fred Small; Indian Stockgrowers Association; and Dr. Carol A. Ecker, Clayview Animal Clinic.

Appointments are for a two-year term.

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veterinarian with the North Carolina Department of Agriculture and Consumer Services. "There is no software to buy and users can log in from any computer with Internet access and a printer."

Wisconsin state veterinarian Dr. Robert Ehlenfeldt says it cuts down on the time veterinarians spend ordering forms and mailing them and it saves the state the time and money now spent mailing blank certificates out to veterinarians.

"This system could move us light-years ahead of where we are today in tracing animal movements," said Ehlenfeldt. "It still depends on good and accurate record-keeping by veterinarians, and there will be a learning curve. We won't eliminate paper CVIs."

North Carolina State Veterinarian Dr. David Marshall said that under the current paper system, an animal or herd could be in the state for several days or even a week or more before his office receives the paperwork. "With this new database, the electronic health certificates are received just moments after they are submitted.

Both Marshall and Ehlenfeldt agree that the biggest advantage is having the information stored in a searchable database, allowing the tracing of animals involved in a disease outbreak easier and faster.

"That may not matter so much with tuberculosis or other slow-moving diseases," said Ehlenfeldt. "But with foot-and-mouth disease, which just gallops through herds, it could mean the difference between a livestock industry left with its legs cut out from under it and one that's limping but will recover."

The pilot program is a cooperative effort between the U.S. Department of Agriculture and the states. USDA has been working with Communications Resource, Inc. and GlobalVetLink, LC, to develop the software. The other states involved in the pilot project are Florida, Texas, California and Colorado.

APHIS Issues Final Rule on Blood and Tissue Collection

USDA's Animal and Plant Health Inspection Service (APHIS) has issued a final rule amending the regulations governing interstate transportation of animals to establish requirements for the collection of blood and tissue samples from livestock and poultry at slaughtering and rendering establishments when it is necessary for disease surveillance.

The new rule will require slaughtering and rendering establishments to provide space and facilities to collect blood and tissue samples for disease testing.

The change is intended to improve surveillance programs for animal diseases, contribute to the eventual control or eradication of such diseases, and to assist in certifying the status of the United States or its regions with regard to freedom from specific animal diseases.

The rule was published in the *Federal Register* on March 4.

USDA, CSREES Providing Grants for Producer Education on Ag Protection

The USDA Cooperative State Research, Education, and

Extension Service (CSREES) is seeking applications by June 15 for the fiscal year 2004 Animal and Plant Biosecurity Competitive Grants Program.

The purpose of this program is to help agricultural producers and professionals implement strategies to better safeguard American agriculture from animal and plant diseases and pest losses.

General information, as well as instructions for applying for a grant, is available on the Internet at www.reeusda.gov/1700/funding/04/pdf/rfa_AnPltBiosecurity_04.htm.

New Database Helps Monitor Food Pathogens

The world's largest online database of information on how pathogenic bacteria respond to different environmental conditions in food has been established by scientists with the Agricultural Research Service and the United Kingdom's Institute of Food Research.

The database, called ComBase, is designed to help make risk assessments and model development easier. ComBase software facilitates research cooperation among scientists studying predictive microbiology. This growing field estimates the behavior of microorganisms in response to environmental conditions, including food production and processing operations from the farm to the table.

Using the database, scientists can enter data such as the temperature, acidity and available water, and then retrieve all records that match the search criteria. The database already contains about 25,000 growth and survival data records.

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(Continued from page 1)

from Delaware, Pennsylvania, Texas and Maryland. Official confirmation of avian influenza diagnoses, identification of H and N subtypes and pathogenicity comes from NVSL.

Relative to the difference in mortality between a low path and high path strain, there is no hard and fast definition, DeHaven points out. "Typically, mortality could be expected to run 10% to 20% in a normal low path avian influenza scenario," he says. "However, we've observed anything from no increase in mortality to mortality as high as 50% in low path situations."

Avian influenza does not usually make wild birds sick. For domestic birds, it's another story. Avian influenza can make the latter very sick and it can kill them.

Avian influenza does not usually infect humans. However, several instances of human infections and outbreaks have been reported since 1997. That year, a H5N1 strain was isolated in Hong Kong. It was high

pathogenic for chickens and caused a limited outbreak in 18 people.

Since December 12, 2003, an increasing number of Asian countries have reported an H5N1 high pathogenic virus in chickens and ducks. Unfortunately, as of March 9, 2004, 22 people have died in Asia (seven in Thailand and 15 in Vietnam), according to the World Health Organization, as a result of being infected with this high path strain of the H5N1 subtype.

On February 4, 2004, the Centers for Disease Control and Prevention (CDC) issued a ban on the import of all birds from Cambodia, Indonesia, Japan, Laos, People's Republic of China, Hong Kong Special Administrative Region (Hong Kong), South Korea, Thailand and Vietnam. The ban includes live and dead birds, eggs and poultry products.

The CDC lifted this ban from Hong Kong only, effective March 10, 2004.

No human infections in the U.S.

"None of the strains that have been diagnosed in the United States this year are H5N1 and there is no epidemiological link with the situation in Asia," DeHaven emphasizes.

"We are most concerned about the suspension of exports to five major trading partners, Hong Kong, China, Mexico, South Korea and Japan. However, we are hoping that when the bans are lifted, we'll be able to recoup much of those sales."

RICHARD LOBB, SPOKESPERSON
NATIONAL CHICKEN COUNCIL

There are no known human infections with H5N2 viruses, either high path or low path. Nor are there any known human infections with H2N2 and H7N2.

H2, H5 and H7 have the propensity to be highly contagious among birds and all three can be easily spread by the movement of poultry and equipment from one farm to another.

Any avian influenza virus spreads primarily through bird-to-bird contact. AI viruses can also be spread by manure, equipment, vehicles, egg flats, egg crates and people whose hands, clothing or shoes may have come in contact with the virus.

According to the USA Poultry & Egg Export Council, some 53 countries have banned imports of some or all U.S. poultry products, including live birds, eggs and meat products.

The lifting of the bans will

Avian Influenza 101

According to the Centers for Disease Control and Prevention, Type A influenza viruses can infect several animal species, including birds, pigs, horses, seals and whales. Birds are an especially important species because all known subtypes of influenza A viruses circulate among wild birds, which are considered the natural hosts for influenza A viruses.

The virus was first isolated from birds (terns) in South Africa in 1961.

Infected birds shed virus in saliva, nasal secretions and feces.

Most influenza viruses cause no symptoms, or only mild ones, in wild birds. However, the range of symptoms in birds varies greatly depending on the strain of the virus and the type of bird.

Infection with certain avian influenza A viruses, such as the H5 and H7 strains, can cause widespread disease and death among some species of wild birds, and domestic birds like chickens and turkeys.

Avian influenza viruses do not usually directly infect humans or circulate among humans.

Linda L. Leake

depend on each country's individual discretion, DeHaven notes.

"USDA is providing information worldwide about control and mitigation efforts underway in order to encourage countries to lift prohibitions on U.S. poultry," he says.

It's difficult to know what the bans' total economic impact on the U.S. poultry industry will be, according to Richard Lobb, a spokesperson for the National Chicken Council.

"Millions of dollars in exports are currently on hold," Lobb says. "We are most concerned about the suspension of exports to five major trading partners, Hong Kong, China, Mexico, South Korea and Japan. However, we are hoping that when the bans are lifted, we'll be able to recoup much of those sales."

Despite these bans, when prepared safely and correctly, U.S. poultry meat and eggs are among the highest quality in the world, DeHaven points out. "AI does not affect the quality of the meat for human consumption," he emphasizes.

Sound advice

"We urge everyone who has poultry to practice good biosecurity measures and report any sick birds or death losses to either your state animal health organization or the USDA," DeHaven advises.

"It's important for people to understand that it's normal for avian influenza to occur during the winter months," he adds. "And it's common for cases of low path-

ogenic avian influenza to go undetected and unreported."

"Fortunately, the outbreak in Texas was caught quickly and contained," DeHaven says. "Aggressive control and surveillance measures are ongoing in Texas and the Delmarva Peninsula."

For more information, visit the APHIS website at www.aphis.usda.gov. Click on "Hot Issues", then click on "Avian Influenza." Access additional information at the Centers for Disease Control and Prevention website: www.cdc.gov.

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Poultry Health Extra

Read *Avian Influenza 2004: The State of the Reporting States*, available on the Internet at www.animalagriculture.org.

Researchers Keep Up Fight Against Marek's Disease

Marek's disease is a naturally occurring, cancer-like disease that can lead to death or production losses in chickens. It is generated by a herpesvirus that suppresses the immune system and causes abnormal cell growth in nerves and tumors in the major internal organs.

Fortunately, scientists at USDA's Agricultural Research Service (ARS) are at the forefront of efforts to wipe out this costly disease of commercial layers and broilers.

Retired ARS scientist Richard Witter and his colleagues at the ARS Avian Disease and Oncology Laboratory (ADOL) in East Lansing, MI, first discovered in the 1960s the herpesvirus that causes Marek's disease, and were the first to develop a vaccine in 1970.

Although there are now several vaccines that have substantially reduced losses, they are not 100 percent effective. New and more pathogenic viral strains are continually emerging.

Once a chicken is infected

with Marek's disease, it will most likely die. Young chickens are most susceptible, but older, unvaccinated birds develop the disease, too. Hens do not pass the disease to their offspring through their eggs. The virus is shed from feather follicles. Chickens become infected when they inhale the virus through dander in their environment. Economic losses are estimated to be about \$160 million a year in the United States.

In 2000, ARS scientist Lucy Lee and her colleagues at ADOL sequenced the genetic code of the virus that causes the disease. With this genetic code, they are now studying the molecular mechanisms by which it causes the disease and hope to create new vaccines. Another ARS team in New York sequenced another strain, as well as a harmless variant in turkeys that is used to vaccinate chickens.

ARS researchers have different approaches in several disciplines to

combine their strengths and gain a better understanding of how the virus interacts with its host. They are inoculating test chickens with genetically altered viruses to see if they will either cause disease symptoms or stimulate a response in the immune system. Armed with this information, they are designing recombinant vaccines that protect against very virulent strains.

Besides new vaccines, breeders must also follow proper management and hygiene procedures and have resistant stocks to prevent Marek's disease. That's why ADOL researchers are developing inbred chicken lines with disease-resistant traits linked to one or more genes, which helps them isolate and identify genes with disease resistance. They want to identify genes, proteins and biological pathways associated with immune responses. They've identified several Marek's-disease-resistant genes and immunological responses that confer resistance.

Secretary Announces Administration Proposal for Full Funding of Ames Animal Health Complex at Construction Launch Ceremony

Agriculture Secretary Ann M. Veneman has announced that President Bush will include \$178 million in the FY 2005 budget to complete the renovation of the U.S. Department of Agriculture's new National Centers for Animal Health.

"When completed, the center will become the most modern and best-equipped animal disease research facility in the world," Veneman said during remarks at the official groundbreaking ceremony for the complex on Jan. 13. "The work that is done here is a crucial link to the overall effort to protect animal agriculture."

The Ames complex is USDA's "flagship laboratory" for large animal research and diagnosis. It includes the National Animal Disease Center, operated by USDA's Agricultural Research Service (ARS), and the National Veterinary Services Laboratory and the Center for Veterinary Biologics, both operated by USDA's Animal and Plant Health Inspection Service. (APHIS).

"The request of \$178 million by the President would represent the final installment of the \$460 million needed to fully renovate these facilities," Veneman said. "If approved by Congress, these funds will permit us to fully complete this project by the end of 2007. We intend to use accelerated contract procedures and construction techniques to meet this schedule."

Veneman said the facility is more important than ever before in the context of recent animal disease threats. For instance, the National Veterinary Services Laboratory conducted the initial tests to confirm the case of bovine spongiform encephalopathy, BSE, from a single cow in Washington state.

"Even though the ultimate confirmation was made in England, we had the confidence in our own experts at the National Veterinary Services Laboratory in order to make

an immediate announcement and respond quickly," Veneman said.

National Institute for Animal Agriculture Chairman of the Board Kenneth E. Olson represented industry stakeholders at the groundbreaking ceremony. "It is truly a great day for animal agriculture and I offer our congratulations to USDA for reaching this milestone," he said in his remarks.

Olson said industry stakeholders have long been impressed with the work being done by USDA laboratory personnel at Ames, but held concerns about the conditions of the facilities there. He said the Secretary's announcement that proposed full funding to accelerate construction was "great news."

"It has been a long time coming, but we are very pleased to be at the stage of groundbreaking for this facility," said Olson, noting the importance of protecting the health of U.S. livestock. "We appreciate the way that USDA, through ARS and APHIS in particular, has worked with industry to make this a reality."

When completed, Veneman said the National Centers for Animal Health would include almost one million square feet of thoroughly modern facilities that will be biosafe, energy-efficient and will provide state-of-the-art capabilities for research and diagnosis. It will house in a single location a critical mass of scientists who are at the top of their fields with programs across animal disease research, diagnostics and biologics making USDA better able to respond to foreign animal diseases and bioterrorism.

Olson took the opportunity in his remarks, with Veneman, Harkin and other officials listening on, to say that more needs to be done in the U.S. to improve the nation's animal disease diagnostic capabilities, beyond the Ames Center. "We look forward to continuing to partner with you to see the construction here completed and also to move forward other needed parts of the system including the national laboratory network and needed upgrades at the Plum Island Animal Disease Center."



Officials break ground at new National Centers for Animal Health in Ames, Iowa on Jan. 13. Pictured left to right: Dr. Kenneth Olson, Chairman of the Board of the National Institute for Animal Agriculture, U.S. Senator Tom Harkin, Agriculture Secretary Ann M. Veneman, U.S. Congressman Tom Latham, and Dr. Joseph Jen, USDA Undersecretary for Research, Education and Economics. Photo courtesy of USDA.

NIAA Supports Veneman's Call for Immediate Implementation of National Animal ID System

The National Institute for Animal Agriculture (NIAA), a long-time advocate of a coordinated, national system for animal identification in the United States, is urging congressional leaders to support Agriculture Secretary Ann M. Veneman's call for immediate implementation of a national tracking system for animals.

On Dec. 30, 2003, Secretary Veneman announced that USDA would begin immediate implementation of a national animal identification system. "USDA has worked with partners at the federal and state levels and in industry for the past year and a half on the adoption of standards for a verifiable nationwide animal identification system to help enhance the speed and accuracy of our response to disease outbreaks across many different animal species," Veneman said. "I have asked USDA's Chief Information Officer to expedite the development of the technology architecture to implement this system a top priority."

The Secretary's comments on animal ID prefaced her announcement of additional safeguards to bolster the U.S. protection systems against bovine spongiform encephalopathy (BSE).

In a letter mailed to Congressional leaders from NIAA Chairman of the Board Dr. Kenneth E. Olson and NIAA President and Chief Executive Officer Glenn N. Slack, it was stated that NIAA:

- Believes a national system for animal identification will enhance protection of our nation's agriculture industry and its contribution to the U.S. economy against the ever-present threat of agroterrorism as well as unintentional foreign animal disease incursions.
- Endorses the U.S. Animal Identifi-

fication Plan (www.usaip.info) as the foundation for USDA and Congress to work with the animal agriculture industry in development and implementation.

Olson said USAIP was developed in 2003 by a USDA-led National Identification Development Team consisting of industry representatives and state and federal government officials. "The plan is built around the objective of being able to trace the origin of any animal within 48 hours," he said.

“. . . the Secretary's call for immediacy could help remove bureaucratic hurdles and barriers that typically exist when implementing a new program."

- Supports Agriculture Secretary Ann M. Veneman's call for immediate implementation of a national animal identification and tracking system in the United States.

Slack said USAIP already sets an aggressive timetable for implementation – some components of the plan would be implemented beginning in July of this year – "but, the Secretary's call for immediacy could help remove bureaucratic hurdles and barriers that typically exist when implementing a new program."

- Recommends public financing by the federal government to subsidize a national animal ID and tracking system that will work to protect public health and allow the U.S. to remain competitive in international markets.

"How to fund a national system for animal identification in the United States is a question that has not been fully resolved," said Slack.

"The federal government currently requires identification for a number of regulatory programs. The coordination and consolidation of these programs may provide some funding that is already budgeted." However, Slack says some estimates have suggested that the USAIP will require approximately \$100 million annually to maintain.

"Clearly, the need for traceability of food animals has been punctuated by the recent diagnosis of BSE in the United States," said Slack. "The Secretary's call for immediate implementation is out of concern for consumer protection. NIAA believes that public financing is appropriate to provide tracking of animals and animal products."

"The lack of adequate federal funding will likely continue to impede implementation," he said. "Adequate funding, on the other hand, would allow acceleration of the USAIP timeline."

- Urges Congress to take action to maintain producer confidentiality and render the information collected through a national tracking system FOIA exempt.

"It is imperative to achieve full cooperation of animal owners," said Olson, "and that will require that USDA or Congress address producer concerns that USAIP or any other animal tracking system ensure a degree of confidentiality of production records and exemption from the Freedom of Information Act (FOIA).

Olson and Slack hope that Congress will embrace USAIP, but acknowledge that certain lawmakers have introduced – with others likely to do so in the coming days – a barrage of legislation concerning animal tracking in the wake of the BSE diagnosis that occurred over the Congressional holiday recess.

Animal Identification to be Highlighted During National Conference and Trade Show

The National Institute for Animal Agriculture (NIAA) has announced ID/INFO EXPO 2004, a conference and trade show devoted to the subject of animal identification and information systems.

ID/INFO EXPO 2004 is scheduled for May 18-20, 2004, in Chicago, Ill. This event follows a similar national gathering facilitated by NIAA in 2002 and will focus largely on the U.S. Animal Identification Plan that has been proposed by a team of industry representatives and government officials working on a national system for animal identification in the U.S.

Agriculture Secretary Ann M. Veneman's recent call for immediate implementation of a national

animal tracking system (prompted by the diagnosis of bovine spongiform encephalopathy, or BSE, in Washington state) provides further

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impetus for this event, which was already being planned by NIAA officials prior to her remarks on Dec. 30, 2003.

The preliminary schedule of events has a pre-conference seminar scheduled for May 18 for newcomers to the topic and a technology seminar also on that day. General sessions, seminars, and breakout dis-

cussion groups are scheduled for May 19 and 20. The trade show, showcasing a variety of animal identification manufacturers and information systems service providers, will open the evening of May 18 and run through the morning of May 20.

Topics will include premises identification, group/lot ID, ID distribution, ID devices/methods, governance, security, confidentiality, and many more.

Program and registration information will be published in late March. Individuals wanting to be sure they are included on the mailing list are encouraged to go to www.animalagriculture.org, click on the ID/INFO EXPO logo and fill out an online information request form.

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