

State of Alaska
Department of Environmental Conservation
Division of Environmental Health

From the Office of the State Veterinarian

Featured Articles

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Robert Gerlach, VMD, State Veterinarian
Jay Fuller, DVM, Assistant State Veterinarian
Minnie Keller, Admin Assistant
Howard Teas, Research Analyst
Cherie Lowry, Dairy Sanitarian
Chris Rivera, Lab Technician

A previous notice announced that currently accredited veterinarians may continue to perform accredited duties until further notice, even if they had not received a date for their first accreditation renewal, because logistical difficulties prevented APHIS from processing currently accredited veterinarians (over 50,000) who elected to participate. We are now close to reaching the goal of processing these elections and are specifying October 1 as the date by which veterinarians must elect to continue to participate in the NVAP. The accreditation of all currently accredited veterinarians who have not elected to participate in the program will expire, ending their authorization to perform accredited work.

For accredited veterinarians who have not yet elected to participate and would like to do so, a Web seminar on the revisions to the NVAP and how to elect to participate is available at <mms://ocbmtcwmp.usda.gov/content/aphis/aphis21.wmv>.

National Veterinary Accreditation Program (NVAP) - Web Modules Now Available The first four APHIS Approved Supplemental Training (AAST) modules are now available. "NVAP Modules" provides a brief description of these modules. Current plans are for six new modules to be offered in September, 2011, four new modules by March 2012, and four new modules by September 2012. Availability of these modules will be announced here. To comply with the new regulations, accredited veterinarians have been assigned initial accreditation renewal dates ranging from early 2013 to 2015. The AAST will need to be completed by the assigned renewal date. Accredited Veterinarians were also assigned a six digit National Accreditation Number (NAN) which will be needed to complete web-based training. For more information, please visit the following web site: <http://goo.gl/DU1Q8> or contact the USDA-APHIS-VS Office.

**User Fee Increase for USDA APHIS
Veterinary Services**

****Effective October 1, 2011****

If You are Not an Accredited Veterinarian You Cannot Issue Interstate or International Health Certificates

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) today announced to the public that veterinarians who are currently accredited in the National Veterinary Accreditation Program (NVAP) may continue to perform accredited duties and may elect to continue to participate in the NVAP until Oct. 1, 2011.

Animal Import/Export Movement

As a reminder when preparing health certificates, please be aware of the requirements needed for the various states. This will avoid receiving letters from our office for disapproved health certificates. Washington, Oregon and Montana especially scrutinize their health certificates. It is your responsibility as an accredited veterinarian to assure the proper information is provided. If you are unsure of the requirements call the state of destination or go to the following websites.

⇒ Listing of animal health regulations for U.S. states and territories

<http://www.aphis.usda.gov/vs/sregs/>

⇒ Contact information for each state veterinarian

<http://www.usaha.org/StateAnimalHealthOfficials.pdf>

⇒ International import/export of animals requirements

<http://www.aphis.usda.gov/vs/nice/>

Reminder Exports - Health Certificates

⇒ Alabama, Kansas & Kentucky require a rabies vaccine every 12 months for dogs.

⇒ Montana requires a permit number for dogs if there has been a change in ownership or dog is traveling without its owner.

⇒ Washington requires the statement for "Newcastle" disease for birds traveling there. "To the best of my knowledge, the birds listed on this certificate are not infected with exotic Newcastle disease, psittacosis, or avian influenza and have been free from clinical signs or known exposure to infectious or communicable disease during the past thirty days." also all birds must be individually identified with a numbered leg band or in a manner appropriate to the species."

⇒ Washington requires the physical as well as the mailing address to be listed on the CVI or health certificate.

⇒ Indiana requires each species written on its own CVI, several of the same species can be written on one CVI.

⇒ Health certificates must be sent to the State of destination within 14 days.

Unsure What's Needed for Animals Traveling Overseas?

Requirements to travel internationally change frequently, if unsure or need to verify the requirements contact the USDA Federal Veterinarian, Dr. Rosemarie Lombardi, she can provide the latest information and forms. You can also check on-line at:

<http://www.aphis.usda.gov/regulations/vs/iregs/animals/>,

or contact the various consulates. This is very important to prevent pets from being put in unnecessary quarantine, being required to return back to the USA, or worst yet being seized and euthanized.

Many times the veterinarian does not realize the pet is traveling to a country that has requirements for Rabies Titers or an Import Permit until the pets are seen in the

Exam room. Remember, all the preliminary steps need to be completed before the health certificate can be issued and endorsed. Owners also want to save trips to the veterinarian and get their vaccinations at the same time as the health certificate. This is not allowed. Most countries require vaccinations to have been given at least 21 days before travel. USDA APHIS Vet Services **cannot endorse health certificates that have the rabies vaccination given at the same time the health certificate exam is done.**

Pet Dogs, Cats & Ferrets Exports to Iceland

Effective **January 1, 2012**, for pet dogs, cats and ferrets exported to **Ireland, Sweden, Malta, Finland, and the United Kingdom**, the rabies requirements will be harmonized with the rabies requirements for other European Union (EU) Member States. The requirement for a rabies titer test 6 months prior to export will be eliminated as of January 1, 2012.

Pets entering Ireland, Sweden, Malta, Finland, and the United Kingdom before January 1, 2012 must continue to comply with the current certificate requirements posted on the IREGS.

CANADA: <http://inspection.gc.ca/english/imp/airse.shtml>

USDA APHIS

<http://www.aphis.usda.gov/regulations/vs/iregs/animals/>

<http://www.aphis.usda.gov/regulations/vs/iregs/animals/>

[downloads/ca_equ.pdf](http://www.aphis.usda.gov/regulations/vs/iregs/animals/downloads/ca_equ.pdf)

[http://www.aphis.usda.gov/regulations/vs/iregs/animals/](http://www.aphis.usda.gov/regulations/vs/iregs/animals/animal_canada2.shtml)

[animal_canada2.shtml](http://www.aphis.usda.gov/regulations/vs/iregs/animals/animal_canada2.shtml)

Canine Brucellosis

Canine brucellosis is a bacterial disease of dogs that causes abortions, most frequently in the last trimester of gestation, and infertility in both males and females. Once infected, animals normally remain infected for years or even life. Transmission can occur in nearly any way that fluids or tissue from an infected dog are introduced into a non-infected dog. It most commonly happens during breeding, but may just as easily occur when any semen, blood, vaginal discharge, placental or fetal material from an infected dog is ingested by another.

This means that dogs that should happen to step in or lay in infected material can become infected when they ingest the infected fluid while grooming, or even by licking the infected tissue from the clothing of owners or workers who handle them. Commonly, infected females may abort one or more times, only to later raise normal litters; thus giving people the false impression that they are free of disease. Females can still become pregnant from infected males, but likely will become infected as a result.

If you think this will not happen to you, think again. Last year at least 8 kennels were found to have brucellosis infection. In such a situation, this disease can be difficult and costly to eliminate. It can be transmitted to humans

as well, although severe infection seldom occurs in people. Clinical signs in people include non-specific signs such as nausea, recurrent fever, abdominal pain and headaches. Some sensible precautions to prevent brucellosis introduction into your breeding dogs include: Know your source for breeding stock.

Test all incoming breeders (prior to entry) for brucellosis. Quarantine all negative animals a minimum of 30 days and retest negative before introducing them as breeders to your operation. Test all females that abort for canine brucellosis. Test all males that have become infertile for canine brucellosis.

Reference:

http://www.cfsph.iastate.edu/Factsheets/pdfs/brucellosis_canis.pdf

Pet Evacuations

In the six years since Hurricane Katrina, evacuating pets has become an important feature of hurricane readiness planning. The issue rose to national concern after an Associated Press story chronicled a boy being forced to give up his small dog Snowball before boarding a bus to evacuate the Superdome in New Orleans.

Congress responded by passing the Pets Evacuation and Transportation Standards Act in 2006. It calls for state and local emergency agencies to make plans to accommodate people with pets or service animals in a disaster. "Prior to the PETS act, it wasn't as understood, perhaps, that approximately 60 percent of the U.S. population has pets and we have to prepare for people to evacuate with their pets," said Heather Case, a veterinarian who is the coordinator of emergency response and preparedness for the American Veterinary Medical Association.

The law lines up with a long-term shift in thinking urging people to take pets with them when they evacuate, instead of trying to leave enough food and water for them. "If it's not safe for you to stay there, it's not safe for your pet to stay there," said Mindy Gilbert, Alabama State Director for the Humane Society of the United States.

Making room for the cat or the dog is also a way to ensure that the owners follow evacuation guidance as storms approach. After Katrina, a survey found that among people who had the ability to evacuate but chose not to, 44 percent cited their desire to stay with their pets. Only the desire to stay in the home was a more important factor. Also, the presence of left-behind pets may encourage owners to return home before its safe.

Case and others urge that owners develop an evacuation plan for their pets as well as themselves. "Think about where you're going to evacuate to and how you're going to do that," Case said. One key piece of advice: All parties will be much more comfortable at private homes or pet-friendly hotels than at public shelters. More than a dozen

National hotel chains are now generally pet-friendly. Also some hotels that normally don't accept pets will take them during hurricane evacuations, but may charge an extra fee. Public shelters do make arrangements to take care of pets. In Alabama, so far, each county has its own setup.

Gilbert said the ideal is for a shelter that can host people and pets in separate wings, with owners feeding and caring for their own animals. That reduces the chance of separation, and brings comfort in unfamiliar surroundings. Some other localities rely on their regular animal shelters to board pets during emergencies. That's the plan, for example, in Mississippi's Jackson County. Each state should develop a comprehensive plan and hold exercises to make sure it works. Dr Fuller is working with local authorities to develop an over all state plan.

USDA Veterinary Medicine Loan Repayment Program

The United States Department of Agriculture (USDA) announced that applications are now being processed for the USDA's Veterinary Medicine Loan Repayment Program (VMLRP.) The Office of the State Veterinarian facilitated an Alaskan stakeholder working group to identify areas in need of rural vet practitioners. Five areas in Alaska have been designated as VMLRP shortage situations. To view the designated shortage situation counties, visit:

http://www.csrees.usda.gov/nea/animals/in_focus/vmlrp_11/vmlrp_shortage_situation_alaska.html

Authorized by the National Veterinary Medical Services Act (NVMSA,) the program helps qualified veterinarians offset a significant portion of debt they incurred while pursuing their veterinary medicine degrees in return for their service in designated high-priority veterinary shortage situations for an allotted period of time. If a qualified veterinarian commits to at least three years in providing veterinary services in a designated veterinary shortage area, USDA's National Institute of Food & Agriculture (NIFA) may repay a large portion of their student loan debt per year.

Loan repayment benefits are limited to payments of the principal and interest on government and commercial loans received for the attendance at an accredited college of veterinary medicine resulting in a degree of Doctor of Veterinary Medicine or equivalent. All eligible veterinarians, including women, individuals from underrepresented groups, and persons with disabilities are encouraged to apply for the loan repayment program. The eligibility criteria can be found at

http://www.nifa.usda.gov/nea/animals/in_focus/an_health_if_vmlrp_education_eligibility.html.

A veterinarian may submit only one application per cycle. NIFA will host several webinar sessions for individuals who may be interested in applying this year.

USDA Proposes to Strengthen Health Requirements for Imported Dogs

Health Inspection Service (APHIS) is proposing to prohibit, with certain exceptions, the importation of dogs into the continental United States for purposes of resale, research and veterinary treatment, unless they are in good health, have received all necessary vaccinations and are at least six months old.

The proposal requires that live dogs imported into the continental United States or Hawaii for purposes of resale, research or veterinary treatment be accompanied by two certificates: An original health certificate and a valid rabies vaccination certificate. These certificates must bear the signature and the license number of the veterinarian issuing the certificate. Also, these dogs must come with an APHIS-issued import permit. In the health certificate, the veterinarian must specify the name and address of the person intending to import the dogs, identify each dog by breed, sex, age, color and markings, and certify that: 1) the dog is at least six months old; 2) the dog was vaccinated, not more than 12 months before arriving at the U.S. port, for distemper, hepatitis, leptospirosis, parvovirus and parainfluenza virus; and 3) the dog is in good health--free of any infectious disease or physical abnormality that would endanger the dog or other animals or endanger public health, including parasitic infection, emaciation, lesions of the skin, nervous system disturbances, jaundice or diarrhea.

In the rabies vaccination certificate, the veterinarian must specify the name and address of the person intending to import the dogs, identify each dog by breed, sex, age, color and markings, and certify that: 1) the date of the rabies vaccination is at least 30 days before the date of arrival of the dog at a U.S. port; and 2) the expiration date of the rabies vaccination is after the dog arrives at a U.S. port. If no date of expiration is specified, then the date of vaccination shall be no more than 12 months before the date of arrival at a U.S. port. Dog importers subject to the new provisions contained in APHIS' proposal must still abide by all other applicable regulations or statutory requirements. These importers must also adhere to the appropriate state statutes and regulations, including any applicable health, quarantine, agricultural or customs laws.

Cats, Dogs, Guinea Pigs and Pigs are Susceptible to Hendra Virus and will be Included in the Surveillance for the Disease

Queensland horse owners who have had a Hendra outbreak on their property will have to submit any dogs, cats, guinea pigs and pigs for testing. Biosecurity Queensland has updated its policy on sampling pets other than horses for Hendra, in light of the case of Dusty the Kelpie. The first dog outside controlled laboratory experiments known to have contracted the bat-borne virus, Dusty, was euthanized in July 2011 due to complications with the infection. The disease is known to be carried by flying foxes and passed on

to horses, and through them to people. But never before has it been seen outside a laboratory infecting another species and the crossover of the virus to dogs raised many questions for biosecurity and health officials and researchers.

Queensland Chief Veterinary Officer Dr Rick Symons said Biosecurity Queensland had now updated its policy on testing animals on properties where Hendra has been confirmed in a horse. Now domesticated species other than horses that are known to be susceptible to Hendra virus in experimental studies, and that have been risk assessed as having had close contact with a Hendra virus positive horse, must be sampled and tested for Hendra virus infection. This includes dogs, cats, guinea pigs and pigs.

Staph Food Poisoning - Possible Pet Reservoir

When it comes to public health concerns about staphylococcal bacteria from pets, most of the attention gets paid to methicillin-resistant strains like MRSA. That's not surprising considering how important MRSA is in human medicine. However, staph that aren't methicillin-resistant can also be a problem since they can cause the same types of infections that resistant types can (they are just easier to treat). Another aspect that often gets overlooked is staphylococcal food poisoning.

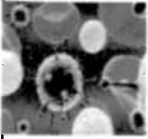
Staphylococcal food poisoning is one of the most common foodborne illnesses and results from growth of certain strains of staphylococci in poorly handled or stored foods. If staph get into food and the food is kept at improper temperatures, the bacteria can grow. If the strain of staph that's in the food is one that can produce enterotoxins, these toxins can accumulate in the food at high enough levels to cause food poisoning when eaten. In most cases, people are probably the origin of enterotoxin-producing staph that contaminate food, but pets are another possible source.

A recent study in Vector-borne and Zoonotic Diseases (Abdel-moein et al 2011) looked at enterotoxigenic staph in 70 dogs and 47 cats. Swabs were collected from the mouth, nose and wounds. Nasal swabs were also collected from 26 people. They isolated enterotoxigenic *Staphylococcus aureus* (strains of *S. aureus* that possessed genes encoding for enterotoxin production) from 10% cats, as well as 7.7% of people. Most of the positive samples from pets were oral samples. This study shows that dogs and cats can be potential sources of strains of *S. aureus* that cause food poisoning. Since the staph are often in the animals' mouths (and therefore presumably shed in saliva), animals should be considered possible sources of enterotoxigenic staph contamination of foods.

Prevention measures are pretty basic but should be considered, including:

- * Keeping pets off kitchen counters.

- * Discarding foods that pets have licked.
- * Washing hands after pet contact, before handling food.
- * Properly storing food, so that even if it gets contaminated with staph, the bacteria don't get the opportunity to grow and produce toxins.



Foodborne Illness Acquired in the United States-major pathogens

Estimates of foodborne illness can be used to direct food safety policy and interventions. We used data from active and passive surveillance and other sources to estimate that each year 31 major pathogens acquired in the United States caused 9.4 million episodes of foodborne illness (90% credible interval [CrI] 6.6-12.7 million), 55,961 hospitalizations (90% CrI 39,534-75,741), and 1,351 deaths (90% CrI 712-2,268). Most (58%) illnesses were caused by norovirus, followed by nontyphoidal Salmonella spp. (11%), Clostridium perfringens (10%), and Campylobacter spp. (9%). Leading causes of hospitalization were nontyphoidal Salmonella spp. (35%), norovirus (26%), Campylobacter spp. (15%), and Toxoplasma gondii (8%). Leading causes of death were nontyphoidal Salmonella spp. (28%), T. gondii (24%), Listeria monocytogenes (19%), and norovirus (11%).

These estimates cannot be compared with prior (1999) estimates to assess trends because different methods were used. Additional data and more refined methods can improve future estimates.

E. Coli: Alive and Well, Probably in a Streambed Near You

Escherichia coli is a survivor. It's at home in the gut of mammals and other vertebrates, but it can also live in soil and water and in biofilms that can form on some moist surfaces.

Even though most E. coli strains don't cause illness, it's an 'indicator organism'-one that water-quality managers use to measure fecal contamination," says Agricultural Research Service soil scientist Yakov Pachepsky. "When it's found in surface water, agriculture or urban runoff is usually implicated as the source. But it can also come from wildlife, leaking septic tanks, or even irrigation equipment, so we need to know more about the sources of E. coli in the environment."

Another spot where many strains of E. coli lurk is in streambed sediments. Pachepsky is conducting studies with microbiologist Daniel Shelton and other scientists at the ARS Environmental Microbial and Food Safety Laboratory in Beltsville, Maryland, to learn more about where the pathogens in streambeds come from, where they end up, and how long they can survive.

Working with University of Maryland Environmental Science and Technology professor Robert Hill and

honors student Amanda Garzio-Hadzick, Pachepsky collected streambed sediments and surface water from three sites along Beaverdam Creek in Beltsville. Then they added some dairy manure slurry to the samples, which increased nonpathogenic E. coli levels in the sediments and water.

Lab studies indicated that the bacteria survived much longer in the sediments than in the water and that they lived longer when levels of organic carbon and fine sediment particles were higher. They also found that when organic carbon levels were higher, water temperatures were less likely to affect survival rates-and they published the first evidence that E. coli can overwinter in the sediment.

US Origin Sheep and Goats May Now Transit Canada into Alaska

Under a joint arrangement made by USDA APHIS Veterinary Services (APHIS VS) and the Canadian Food Inspection Agency (CFIA), non-bovine ruminant animals of U.S. origin may directly transit Canada without stopping (except for feed, water, or rest purposes) while moving between points in the U.S. Such consignments must comply with APHIS' conditions for re-entry to the U.S.; with CFIA requirements and oversight for any applicable feed, water, and rest stops in Canada; and with CFIA's import health requirements for livestock entering Canada.

Click [Procedures for Shipments by Land of US Origin Non-Bovine Ruminant Animals from one point in the US to another point in the US Through Canada](#) for complete guidelines on this protocol.

Please remember that all animals imported into Alaska are required to meet State import requirements as well. All animals need a Certificate of Veterinary Inspection (CVI) or Health Certificate and livestock require an import permit. Other specific requirements can be found at the State Veterinarian web page, under: [Animal Import Regulations](#)

For any additional information please contact:
 Rosemarie T.G. Lombardi V.M.D.
 Veterinary Medical Officer (VMO)- Alaska
 USDA APHIS VS
 P.O. Box 670590
 Chugiak, AK 99567
 PHONE: (907) 688-1229 or (907) 745-3253
 FAX: (907) 688-1239 or (907) 745-6050
 CELL: (907) 529-7784
rosemarie.t.lombardi@aphis.usda.gov

The Office of the State Veterinarian
 5251 Dr. MLK Jr. Ave.
 Anchorage, AK 99507
 (907) 375-8215
bob.gerlach@alaska.gov or jay.fuller@alaska.gov

ASI Raises Concerns Over APHIS Reorganization

The American Sheep Industry Association in conjunction with the National Pork Producers Council and the National Milk Producers Federation submitted a letter to Secretary of Agriculture Tom Vilsack to raise concerns about the proposed reorganization of the Animal and Plant Health Inspection Service. The animal industry has not been consulted on the proposals being discussed, so it has been left to react to the issues that have come to its attention.

"The animal industry has become aware of a number of proposals under consideration that would have an adverse impact on U.S. animal agriculture. Among those, of immediate concern is the proposal to combine Veterinary Services, Wildlife Services and Animal Care into a single unit. We believe this is an ill-conceived idea that will lead to confusion and will not provide the service delivery required under the authorizing legislation for these programs. It is difficult to comprehend what significant cost savings would be achieved under this proposal," the letter stated.

The animal industry recognizes that there are areas where streamlining of priorities and preserving resources can be achieved through these efficiencies to the benefit of APHIS. There is no doubt about the need to examine agency functions in light of the budget constraints it is facing. However, there is sufficient concern about the various proposals being discussed that the letter requests APHIS consult with the animal agriculture industry before any reorganization proposals are formalized.

"It is our view that once a formal reorganization proposal is developed, we will not have the same opportunity for input that we would have as the proposal is being developed. We urge that no decisions be made on this proposed reorganization until the specific proposals can be discussed with the affected industries. It is not sufficient to have the impact of these changes only assessed by those inside the agency. The affected industries must also have that opportunity," the letter concluded.

Eradication of Scrapie in the U.S. Goat Population

Since 2001, the USDA Animal and Plant Health Inspection Service (APHIS) has coordinated an accelerated National Scrapie Eradication Program to eliminate the disease from U.S. sheep and goats. Efforts to eliminate scrapie in sheep in the United States are succeeding. To ensure complete and successful eradication of this fatal degenerative brain disease, its occurrence in the goat population must also be addressed. Disease transmission routes, progression and genetic underpinnings of Scrapie in goats are poorly understood.

Low occurrence rates, underreporting and the inconvenience and cost of tissue testing for scrapie make this eradication challenging.

All states implemented efforts in 2003 to eradicate classical scrapie by adopting regulations requiring official identification of sheep and goats and implementing slaughter surveillance. Subsequently, the percentages of black-face sheep and white or mottled-face sheep found scrapie-positive at slaughter decreased by 81 and 66 percent respectively between 2003 and 2009. The estimated national prevalence rate in sheep was 0.05% in 2009. A USDA caprine slaughter prevalence study in 2007-08 showed 0 positive / 3,032 goats sampled. This degree of sampling would have detected scrapie at a prevalence of 0.1%. There have been cases of classical scrapie in goats, however, the study concluded that the prevalence is less than 0.1%. Educational information about scrapie and the prevalence in U.S. sheep and goats is available from the National Scrapie Education Initiative. An informative presentation with two goat scrapie case reports and a review of the National Scrapie Identification Program protocols is available at www.eradicatescrapie.org

Farm Animal Disease to Increase with Climate Change

Researchers looked at changes in the behaviour of bluetongue - a viral disease of cattle and sheep - from the 1960s to the present day, as well as what could happen to the transmission of the virus 40 years into the future. They found, for the first time, that an outbreak of a disease could be explained by changes to the climate.

In Europe, more than 80,000 outbreaks of bluetongue were reported to the World Animal Health Organisation between 1998 and 2010, and millions of animals died as a result of the disease. Bluetongue was previously restricted to Africa and Asia, but its emergence in Europe is thought to be linked to increased temperatures, which allows the insects that carry the virus to spread to new regions and transmit the virus more effectively.

Researchers produced a mathematical model that explains how the risk of an outbreak of bluetongue virus in Europe changes under different climate conditions. The team examined the effect of past climate on the risk of the virus over the past 50 years to understand the specific triggers for disease outbreak over time and throughout geographical regions. This model was then driven forwards in time, using predictive climate models, to the year 2050, to show how the disease may react to future climate change.

Using these future projections, researchers found that in northern Europe there could be a 17% increase in incidence of the bluetongue virus, compared to 7% in southern regions, where it is already much warmer.

Professor Matthew Baylis, from the University's Institute of Infection and Global Health, said: "Previous study suggests that climate change will alter global disease distribution, and although we have significant knowledge of the climate triggers for particular diseases, more research is needed to identify what we think might really happen in the future.

Can Johne's Disease be Eliminated from a Herd?

The natural reaction of many to the presence of a transmissible disease, such as Johne's Disease (JD), within the herd is to want to eliminate it completely. Many have done exactly that with mastitic diseases such as Staph. aureus or Strep. ag. Not only is there the positive feeling of accomplishment and thrill of victory, but there is a real benefit to eliminating a disease and not having to deal with it.

But can JD be eliminated? Here are the problems that we know of in that battle.

- A. The limits of current testing methods for JD mean that more than half of the infected animals may go undetected in a single test.
- B. Because of that, culling alone will never eliminate the disease.
- C. While we can reduce the likelihood of disease transmission to calves by management practices, it is difficult to completely eliminate this risk. Plus, there is still a risk of in utero transmission from an infected dam.
- D. Since JD control requires long-term commitment, inconsistency in efforts to reduce the risk of transmission can occur and this can allow calves to become infected.

The experience of herds in the Michigan JD Control Demonstration Project (MJDCDP) is that elimination is very difficult. One farm involved in this project has taken very aggressive steps to eliminate the disease including rapid removal of calves from dams, isolation of calves from older animals and culling of test-positive cows. Their experience, mirrored somewhat by several other herds in the project, was that on some annual herd tests no JD was detected by one of the two methods (fecal culture or serum ELISA), but that the other test done at the same time and subsequent tests in following years showed positive animals. The take home point is that getting to zero infected animals is difficult.

AKVMA Annual Meeting
October 14-16, 2011

Disease Detected in Wood Bison Outside Wood Buffalo National Park

For years it has been suspected that brucellosis and bovine tuberculosis, introduced diseases that are common in wood bison in Wood Buffalo National Park, also occur in bison immediately west of the park. Evidence of brucellosis exposure has now been detected in two bison about 20 km west of Wood Buffalo National Park. Hunters, ranchers, Métis Settlements and First Nations in the area will continue to be informed on risks of disease and future bison management.

Under provincial legislation, wood bison east of Highway 35 and west of Wood Buffalo National Park can be hunted without a license, except in Caribou Mountains Wildland Provincial Park. Some hunters participate in disease surveillance by providing samples for testing. An outfitter, provided with information and sample kits by Sustainable Resource Development, harvested two adult female bison in February and March that tested positive for exposure to brucellosis. The Canadian Food Inspection Agency verified the results on July 22.

The risk of disease transmission to humans remains very low and those who continue to harvest bison west of Wood Buffalo National Park are encouraged to contact the local Fish and Wildlife office for information on the risks associated with brucellosis and tuberculosis. As a precaution:

- * any bison harvested should be handled carefully with gloves and examined for signs of disease, obvious lesions or other unusual features; and
- * if the meat is to be eaten, it must be cooked thoroughly-smoking the meat is not sufficient to kill the bacteria that cause these diseases.

Combined Therapy Can Cut Clinical Mastitis Load

Using a dry cow tube alongside antibiotics as part of a dry cow therapy (DCT) program can reduce cases of clinical mastitis by more than a third, according to the results of a recent survey. It follows a study, supported by Pfizer Animal Health, which investigated the use of dry cow teat sealant alongside antibiotics to cure infections and keep mastitis out in the dry period. It concluded a combination of the two not only reduced clinical cases of the disease but also cut labor costs in half per cow during the first six weeks of lactation when only an antibiotic is used.

It also found using a combination of the two treatments cut antibiotic use in dealing with mastitis from 0.8 doses per cow on an antibiotic-only treatment course to 0.5 doses per cow when used in combination. Dr Herman Barkema from Calgary University, Canada, said increased political pressure on reducing antibiotics meant it was vital dairy farmers looked at other treatment

methods.

In recent years, we have seen pressure to reduce antibiotic use as well as increasingly stringent parameters on milk quality. We should keep using antibiotics to treat mastitis for as long as it is allowed, but I think every farm should also be using internal teat sealants in their strategy because we will come under more and more pressure from consumers and Governments to reduce antibiotics.

Francis Serieys, from French animal health advisers Filière Blanche, said it was vital to farm profitability to keep a lid on clinical mastitis. He said the disease accounted for some 40 per cent of a dairy farm's costs, with French farmers forking out \$112/cow per year on the disease. The major part of that cost, he said, were the losses associated with mastitis rather than the cost of control, making a combination therapy the most cost effective solution as the reduced number of clinical cases would outweigh the cost of treatment.

Strategies using a teat sealant alongside antibiotics resulted in lower somatic cell counts and less clinical mastitis. For farms where the risk of new infections is relatively low, he said the optimum strategy would be selective use of a teat sealant alongside selective use of antibiotics. But for farms with a medium to high risk of new infections, he advised systematic use of a teat sealant and selective antibiotics to achieve the most cost-effective results.



What to Do When the Handler Suffers an Accidental Injection

Each year, livestock producers give thousands of injections to calves and cows. The vast majority of those injections go off without a problem. However, there are times when producers may accidentally inject the vaccines or antibiotics into themselves or other helpers.

So what happens when a product, meant for a 1,000-pound cow, winds up inside a 200-pound human? The results can be deadly. "Some of these vaccines are toxic to humans. When people show up at their doctor there may be little that can be done," said Dr. Donald O'Toole, with the University of Wyoming veterinary sciences department. "There are also alarming reports of people having to have surgery done or get fingers amputated," he continued. He related the account of a Wyoming veterinarian who accidentally injected himself with an anti-brucellosis vaccine and has "major problems" dealing with it ever since.

When accidental injections occur, producers should always seek medical advice immediately and show the package insert, data sheet, or vaccine label to the physician so they can take necessary steps to avert negative

side effects. "Actually take the vaccine box and data sheet with you," said O'Toole. "Physicians are great but they don't know about veterinary vaccines." If a data sheet is not available, the physician can find the information on the manufacturer's Web site. Always contact a physician right away. Don't wait. And take all the information with you. At the very least, with any accidental injection, the producer may need a tetanus booster to guard against the introduction of a contaminant. For that reason, producers should also wash the site but avoid squeezing the injection site. That may actually force the vaccine deeper into the tissues.

A big problem with accidental injections is the adjuvant used in the vaccine. There are adjuvants in human vaccines as well as animal vaccines. An adjuvant is a foreign toxin that is intentionally included in the vaccine to stimulate the immune system. If a vaccine has an adjuvant in it, it may cause a lump or bump at the injection site. Many of the adjuvants in cattle vaccines are oil-based. Bovine, oil-based vaccines are most often used when treating bacterial problems, such as E. coli. In cattle, oil-based adjuvant vaccines are given in the neck area because the adjuvant can damage the muscle tissue and reduces the quality of the meat at the injection site.

Some vaccines are classified as modified live virus vaccines (MLVs). This means they carry a small amount of the living disease agents that have been modified so that disease is not produced in vaccinated livestock. Most of these live agents will not produce the disease in humans if an accidental injection occurs. That is because the disease is not zoonotic, meaning it will not produce disease in humans. However some live agents used in livestock may produce disease in humans if they are accidentally injected into the human body. As a result, a person could become very ill with the very disease they are trying to prevent in their livestock.

Still, there are veterinary products that can be dangerous to humans in other ways. Death from cardiotoxic effects can occur in people who accidentally inject themselves with an antibiotic called tilmicosin. This is a common antibiotic used to treat "shipping fever." Tilmicosin can cause severe damage to the human heart.

Different vaccines are potentially harmful to certain groups of people. Some products should not be handled by women or by people with poor immune systems. Other vaccines can cause allergic reactions in handlers who have allergies to compounds used in the vaccines. Some vaccines can cause anaphylactic shock in people who are allergy-prone. Since not all the compounds used in a vaccine will be listed on the box, it can be risky for anyone with chemical sensitivities to handle a vaccine.

Accidental self-injections can occur anywhere on the body, although fingers and hands are the most common

sites. In the case of accidental injection or exposure, some reactions may appear fairly rapidly while others may take a few days to develop. For that reason, producers should always contact their physician, even if nothing appears to be happening. Reactions may include redness, swelling and stiffness at the site of the accidental injection. Nausea, dizziness, anxiety, headache, an abnormal taste in the mouth, lightheadedness, chest pain, difficulty breathing, or increased heart rates are considered medical emergencies and should be dealt with immediately.

Do not wait until the last few cattle are run through the chute. Even if they have given thousands of injections without a problem, handlers should always use caution to guard against accidental self-injection. Vaccines change and so do their effects. Never become complacent when administering vaccines and be sure to have proper training. Because toxins can enter the human system through needlesticks, existing cuts or abrasions, puncture wounds, direct skin contact, and even through the nose, eyes or mouth, handlers should guard against exposure by wearing needle-puncture-resistant gloves and safety glasses. Handlers of vaccines should never hold syringes in their mouths.

Caps should be kept on needles until they are ready to be used. Furthermore, all vials and needles used in the vaccination process should be placed into an approved sharps box so they don't have to be gathered up later. Picking up used needles or syringes from the ground later increases the risk of handlers being stuck or exposed during the cleanup process, and stepping or kneeling on a needle. All vials, needles and leftover vaccines should be disposed of by an approved method.

All animals should be properly restrained before administering the injection. Even then, the jostling of animals can cause accidental human injections. For that reason, handlers should always take a visual on the location of their co-workers. They should also pay attention to where their own fingers are. It does not take much for a needle to pass through a fold of skin and pierce the handler or an assistant. Always read the insert directions and follow them exactly. Any medicine that is not administered in the recommended way can have unwanted consequences. As an added measure of safety, persons with known allergies or women who are pregnant should not be giving injections to livestock or handling the vaccines and syringes.

Personal Biosecurity for Livestock Farm Visits: Returning from the Fair or Allowing Visitors on Your Farm

Recent animal health problems in Asia and elsewhere keep pointing to the need to reconsider our defense

against emerging animal diseases. In the last decade, biosecurity has often been talked about in agriculture, but practiced haphazardly. Animal biosecurity covers a variety of management strategies aimed at preventing viruses, pathogenic bacteria, parasites and toxins from coming in contact with livestock. Done right, producers practicing biosecurity are using an all hazards approach, meaning their efforts help reduce the risk of a number of potential risks, including security risks.

In reality, animal health issues impacted by biosecurity are very important. For example, consider the impact of hairy heel warts on the dairy industry. Hairy heel warts are infectious foot lesions that cause lameness in cattle. The infectious agent that causes heel warts is transferred from farm to farm by the movement of infected animals or equipment and people in contact with an infected farm. Preventing the spread of heel warts is a matter of biosecurity. The 1996 NAHMS dairy study suggested that more than 17% of the dairy cattle in the U.S. were infected with heel warts. At the same time, it has been estimated that each case of heel warts costs \$88 to treat and each lame animal loses 2.4 pounds of milk production for each day of lameness. Do the math and it becomes apparent that there are millions of dollars lost annually because of inadequate biosecurity practices. How would things have turned out differently if we had been using more stringent biosecurity practices since the 1970's when heel warts first emerged in the U.S.? While the fight against heel warts goes on, the next emerging disease in the U.S. may cost even more in the long run if we cannot bring biosecurity issues under control. Developing biosecurity habits to reduce the risk from many animal disease problems are habits worth creating.

Good biosecurity programs focus on a number of management controls for visitors to the farm representing a major biosecurity risk for all livestock operations. The difficulty with addressing potential risks from visitors is that biosecurity tends to be subject to personal interpretation by both farm visitors and farm management. In the end, human nature usually wins out, and in most cases each party tacitly decides that unless one side or the other makes a point of it, everyone can agree biosecurity wasn't that important that day. It is as important for farm owners to expect visitors to the farm to abide by the biosecurity protocols put in place by the farm, as it is for farm visitors to plan for biosecurity protocols on every farm they may visit. Expectations for visitors can be tactfully and specifically spelled out in a visitor policy.

Beefing Up Production and Meat Quality

To help satisfy consumers' growing appetite for beef, Agricultural Research Service (ARS) scientists are looking at innovative ways to make cattle production more efficient and to provide better beef products.

New strategies to reduce the cost of production include more efficient nutrient use by the animals and improvements in their lifetime production efficiency. Instead of feeding more to pregnant and lactating cows that need additional nutrients during this period, scientists are trying to make the cows more efficient so they'll need less feed.

Cutting Feed and Reproduction Costs

Beef producers spend a large portion of their budget on feed, which represents 50 to 55 percent of the total costs of developing replacement heifers. A major part of a heifer's diet is often cereal grains, which are becoming more expensive due to increasing human consumption and ethanol production.

Animal scientist Andrew Roberts, geneticist Michael MacNeil and their colleagues at the ARS Fort Keogh Livestock and Range Research Laboratory (LARRL) in Miles City, Mont., have found that reducing the amount of feed given to heifers can result in more efficient use of nutrients for growth and reproduction. Researchers studied two lifetime treatment groups composed of hybrid heifers that were 50 percent Red Angus, 25 percent Charolais and 25 percent Tarentaise. A control group was fed according to traditional industry recommendations, and a restricted group was fed 80 percent of feed consumed by their counterparts (calculated on a common body weight basis) for 140 days.

Heifers receiving less feed also gained weight more efficiently throughout the postweaning period and the following grazing season. The actual amount of feed provided to restricted heifers over the entire feeding period, which ended when animals were 1 year old, was about 73 percent of that given to the control group. Using this strategy to provide less feed might reduce costs of producing each pregnant replacement heifer by more than \$31, Roberts says. The practice could also extend the animal's life, with important implications for lifetime efficiency and profitability. In the experiment, restricted heifers had a final pregnancy rate of 87 percent and the control heifers had a 91 percent pregnancy rate, MacNeil says. "Our results indicate that restricting feed is a matter of economics for farmers," he says. "We have also found that other strategies, such as crossbreeding and providing early calving assistance, can increase rebreeding performance of young cows."

Increasing Efficiency through Feed-Restricted Diets

Heifers were managed as one group from breeding through late fall, and pregnant animals were again separated into two groups—restricted feed and control—each winter. During winter months, restricted cows were fed 20 percent less supplemental feed than the control group.

Eventually, less-efficient heifers failed to reproduce and were culled if they were on a restricted diet. Increasing their feed would keep the cows in production but cost more for the producer, Roberts says. Inefficient breeders could be eliminated early to be harvested for high-quality meat. Researchers found that restricting feed of heifers might improve their efficiency throughout their lives. They also noticed interesting traits in second and third generations produced from cows in the restricted feed study, which began in 2001.

The feed restriction seems to have made the second generation of calves able to withstand restriction with greater efficiency." While third-generation feed-restricted calves were lighter at birth and at weaning than calves from cows fed at the industry standard, feed-restricted animals themselves were slightly fatter and heavier at the calves weaning.

Physiologically, the second-generation restricted cow is conserving some of the nutrients taken in for body reserves, which may result in more efficient reproduction and better survivability in the herd. This is important because it potentially positions the heifers to withstand subsequent periods of nutrient deprivation due to naturally occurring phenomena such as drought.

Tracking Marbling Traits for High-Quality Beef

To improve the quality of beef, LARRL scientists are taking a closer look at the streaks of fat in lean meat, known as marbling—a longtime indicator of palatability and basis for determining the price of beef. Marbling, which is measured either at slaughter or by ultrasound of live animals, is an inherited trait and thus amenable to genetic improvement, MacNeil says. "Cattle breeders would benefit greatly from having genetic indicators of superb marbling and other sought-after traits," he says.

Geneticist Lee Alexander and his colleagues are studying these genetic traits. They used a panel of molecular genetic markers to locate specific locations in the genome of a Wagyu-Limousin cross population that contain genes that influence traits such as marbling and fatty acid composition. Those breeds were specifically chosen because Wagyu is a heavily marbled beef, and Limousin is leaner.

"Genetic markers successfully identified a region of the genome associated with the amount of marbling and relative quantities of saturated and monounsaturated fats," Alexander says. Scientists believe these findings may lead to healthier and better-tasting products for consumers through breeding methods that result in an improved fat profile in beef.

Two Salmonella Outbreaks Traced to Baby Chicks, Ducklings

Chicks and ducklings from a mail-order hatchery in Ohio are linked to two salmonella outbreaks in the United States, says the U.S. Centers for Disease Control and Prevention.

Salmonella Altona has sickened 65 people in 20 states and Salmonella Johannesburg has sickened 27 people in 15 states.

Interviews with 54 of the people infected with the Altona strain found that 41 (76 percent) had contact with live poultry (chicks, chickens, ducklings, ducks, geese and turkeys) before they became ill, the CDC said.

Interviews with 24 of the people infected with the Johannesburg variant revealed that 17 (71 percent) of them had contact with live poultry before they got sick.

Federal, state and local public health and agriculture officials investigating the outbreaks traced both back to chicks and ducklings from a single mail-order hatchery in Ohio.

First Oral Vaccine for Fish Developed

Probeltebio company researchers, in collaboration with the Department of Cell Biology, University of Murcia (UMU) and the Murcia Oceanographic Institute - dependent on the Spanish Institute of Oceanography (IEO) - have said the first highly effective oral vaccine for use in aquaculture has been developed. This is the Fimoral-V vaccine, which can be given to farmed fish through food via a system of microencapsulation in yeast.

Scientists have assured they were able to demonstrate the efficacy of this vaccine. They have explained that by isolating the fish own protein it can be used in the main fish species used in the Spanish commercial aquaculture: sea bass, sea bream, turbot, plaice and trout.

As reported by the University of Murcia, this new oral vaccine can help reduce medium-term economic losses caused by various infectious diseases and by handling stress affecting aquatic resources.



VEE Outbreak in Mexico

VEE is a foreign animal disease, reportable to both the Office of the State Veterinarian and the Department of State Health Services due to the potential for human illness. Vaccination may interfere with testing for the disease, so veterinarians need to weigh the potential risks and benefits of vaccinating an individual horse that might be tested for export.

Due to recent cases of Venezuelan equine encephalitis (VEE) in Southern Mexico, horse owners and veteri-

narians in the southern US are encouraged to be alert to any clinical signs of illness that could indicate VEE. Venezuelan equine encephalitis (VEE) is a non-contagious viral infection of horses and other equids that can cause a severe and often fatal encephalitis/encephalomyelitis, which is defined as an inflammation of the brain and spinal cord.

VEE is typically found in Central and South America, but due to the recent case of a horse that died of VEE in Southern Mexico, the United States Department of Agriculture (USDA) issued an import alert for 4 states in Mexico. Effective immediately, and until further notice, horses and other equids from the states of Tamaulipas, Veracruz, Tabasco, and Chiapas or that have transited through these states are required to undergo a 7-day quarantine and observation for VEE in a vector-proof (double-screened) quarantine facility, rather than the standard 3-day quarantine prior to entry into the U.S. The particular VEE virus being reported by Mexico is considered an endemic strain, which doesn't normally cause disease in equids. The import alert issued by USDA is a precautionary measure due to the one horse in the State of Tabasco that has died from the virus. The severe outbreak that occurred in Texas in 1971 was caused by a different, more virulent strain of the virus.

Clinical signs of VEE include moderate to high fever, depression, lack of appetite, cranial nerve deficits (facial paralysis, tongue weakness, difficulty swallowing), behavioral changes (aggression, self-mutilation, or drowsiness), gait abnormalities, or severe central nervous system signs, such as head-pressing, circling, blindness, and seizures. VEE is usually transmitted by mosquitoes, and infrequently by other bloodsucking insects. People may also be infected by mosquitoes, but horse-to-horse and horse-to-human transmission is uncommon. VEE is highly pathogenic in horses. It can also cause illness in humans.

For more information about VEE visit

⇒ http://www.cfsph.iastate.edu/Factsheets/pdfs/easter_wester_venezuelan_equine_encephalomyelitis.pdf.

For the American Association of Equine Practitioner VEE vaccination guidelines, visit

⇒ http://www.aep.org/eee_wee.htm.

For import requirements, go to the USDA Center for Import/Export:

⇒ http://www.aphis.usda.gov/import_export/animals/animal_import/equine/equine_import_quarantine.shtml

New Control Strategies for Equine Infectious Anemia

These days the main thing many U.S. horse owners think about the Coggins test is that it's something they

have to have done before taking horses to a show, sale, or another state. Its often overlooked purpose of identifying horses carrying equine infectious anemia (EIA, often called swamp fever) is critical to controlling the disease. Yet EIA researchers are now recommending that we test many horses less frequently and focus more effort on finding untested carriers. There are still a significant number of infected horses that act as a reservoir for the disease, these are back yard horses that are not participating in equine events and are not getting tested on a regular basis.

Equine infectious anemia is an often fatal blood-borne disease of horses, donkeys, and mules caused by a lentivirus that's closely related to the human immunodeficiency virus (HIV). Although some infected horses won't become ill, others will display fever, anemia (low red blood cell count), jaundice, depression, edema (fluid swelling), and chronic weight loss. The virus is transmitted by blood-feeding insects and sharing of blood-contaminated equipment such as needles between infected and healthy horses.

There is no treatment or vaccine for EIA, and infection is life-long. Owners of infected horses in many U.S. states have two unappealing choices: Quarantine the horse at least 200 yards away from all other horses for the rest of his life, or euthanize him. Many opt for the latter.

EIA By the Numbers

The good news is that extensive testing and euthanasia of infected horses over the last 40 years have made the outbreaks of the past just that: Past. In the United States, only 84 positive equids were reported during the last 2 years (2009-2010). The majority appear to be horses tested for EIA for the first time, often as a result of a required test for transfer of ownership.

Today in the U.S., nearly 2 million horses are tested annually for EIA. Is this surveillance for EIA adequate, excessive, or effective? This strategy has led to the detection of more than 100,000 EIA-positive equids since 1972, and the number of positives found each year has decreased from more than 10,000 per year to less than 50--a tremendous success story. The surveillance strategy needs to be re-evaluated for the current prevalence of the disease.

There is no question that active surveillance should be continued and expanded, but the strategy could be modified to permit less frequent testing of equids not at risk for EIA and an increase of testing focused on finding the remaining untested reservoir population (horses that are infected but haven't been tested/identified). This philosophy is highlighted in a new EIA video released by the USDA and available online.

The recommended reduction in testing relies in large part on regionalization, or grouping of states into regions with similar risks of EIA infection based on historical testing results. Thus, with this approach you wouldn't need a new test just to move from state to state; you'd only need to test on your state's recommended testing schedule if you stay in your region, and test again if you move from region to region. This should result in a significant savings for the horse owner.

Today that means adopting a three-tiered testing strategy that most effectively uses the strengths of the available laboratory tests for EIA. These tests include the most accurate test, the agar gel immunodiffusion (AGID or Coggins) test, and the more sensitive ELISA-based tests in combination, by using the sensitive ELISA-based tests first instead of the Coggins (the first tier), and using the more specific Coggins to confirm positive ELISA results (the second tier). This strategy was endorsed by the U.S. Animal Health Association in Resolution 26 in 2008 from the Committee on Infectious Diseases of Horses.

Contagious Equine Metritis Still a Disease of Concern For the Equine Industry

The Arizona Department of Agriculture has quarantined 5 horses to a Maricopa County premises after a stallion tested positive for Contagious Equine Metritis (CEM), a sexually transmitted disease. CEM can cause spontaneous abortion and infertility in mares.

"This disease can be carried by stallions and mares and transmitted even through modern breeding practices of artificial insemination and embryo transfer," said Dr. John Hunt, ADA Associate Director for Animal Services. "Because many animals don't show symptoms, CEM can be difficult to detect and control."

The state is working with federal partners to trace mares that were bred to the positive stallion this breeding season. Farm records indicate that semen was shipped to three states. The four-year-old Arabian was tested as part of a protocol to allow international shipment of semen. All semen collection has been suspended from the quarantined stallions and all frozen semen has been quarantined.

The disease can be spread among stallions if strict cleanliness standards are not maintained during the collection of semen. The disease can be treated with antibiotics. There is no evidence that CEM affects people.

Infected and exposed equine animals are being held under movement restrictions by state animal health authorities, until they complete veterinary treatment and are certified as CEM-negative.

Surveillance Program for Important Equine Infectious Respiratory Pathogens in the US

The prevalence and epidemiology of important viral (equine influenza virus [EIV], equine herpesvirus type 1 [EHV-1] and EHV-4) and bacterial (*Streptococcus equi* subspecies *equi*) respiratory pathogens shed by horses presented to equine veterinarians with upper respiratory tract signs and/or acute febrile neurological disease were studied.

Veterinarians from throughout the U.S. were enrolled in a surveillance program and were asked to collect blood and nasal secretions from equine cases with acute infectious upper respiratory tract disease and/or acute onset of neurological disease. A questionnaire was used to collect information pertaining to each case and its clinical signs. Samples were tested by real-time PCR for the presence of EHV-1, EHV-4, EIV and *S. equi* subspecies *equi*. A total of 761 horses, mules and donkeys were enrolled in the surveillance program over a 24-month study period.

In total, 201 (26.4 per cent) index cases tested PCR-positive for one or more of the four pathogens. The highest detection rate was for EHV-4 (82 cases), followed by EIV (60 cases), *S. equi* subspecies *equi* (49 cases) and EHV-1 (23 cases). There were 15 horses with double infections and one horse with a triple infection. The detection rate by PCR for the different pathogens varied with season and with the age, breed, sex and use of the animal.

Pigeon Fever in Horses: Manifestations and Complications

Though it has many aliases—including pigeon fever, dryland distemper, and false strangles—and can look gruesome on the surface, a normal *Corynebacterium pseudotuberculosis* infection is relatively easy to treat. Treating an infection that's developed complications, however, is a more challenging task for veterinarians.

Traditionally pigeon fever has been most common in the western United States, but has slowly spread east over the years. An affected horse generally forms external abscesses, particularly in the pectoral area (hence, the name pigeon fever), around the head, and in the udder or sheath areas. Pigeon fever is typically contracted through skin abrasions or contact with contaminated soil. Insect vectors—such as horn or stable flies—are also common means of passing infection.

Veterinarians when diagnosing *C. pseudotuberculosis* infections, first try to localize the location of the abscess (if not visible on the horse's body) using a variety of procedures including rectal exam, abdominal tap, auscultation (listening with a stethoscope) of heart

and lungs, abdominal or thoracic (chest) ultrasound and/or radiology, needle aspirate with culture and cytology, blood cultures, and specific laboratory and titer testing. Additionally, it's important to rule out other diseases that pose a similar clinical picture and blood profiles, such as *Streptococcus equi*, equine infectious anemia, lymphoma, or even a foreign body abscess.

In the majority of pigeon fever cases (about 90%), abscesses form externally and fill with a purulent (pus) material. Treatment is relatively easy: Lance and drain the abscess, and practice good hygiene to avoid further infection. Use of antimicrobials in the external abscess cases is discouraged, although veterinarians sometimes administer low doses of the non-steroidal anti-inflammatory drugs phenylbutazone (Bute) or flunixin meglumine (Banamine) if the patient appears to be in severe pain.

As with most equine ailments, complications aren't unheard of in horses with *C. pseudotuberculosis* infections, occurring about 10% of the time; common complications veterinarians encounter include internal abscesses, ulcerative lymphangitis (sometimes referred to as elephant leg), weight loss, poor appetite, fever, and ill thrift. A physical exam and blood work will often reveal typical signs of chronic active inflammation, including anemia, elevated fibrinogen levels, increased total protein attributable to elevated globulin, and high white blood cell counts (all of which point to chronic inflammation or infection). Although the liver generally isn't directly affected, it's not uncommon to see moderate elevated liver enzymes with this disease.

Researchers have reported that horses with internal abscesses and ulcerative lymphangitis—which are commonly treated in the same manner as external abscesses—don't typically respond as well to treatment as these infections are often chronic in nature.

In complicated cases veterinarians use antimicrobials to treat internal abscesses. The intracellular presence of this bacteria and thick abscess walls limit antibiotic penetration, so their usefulness is often a point of contention. When possible, veterinarians often turn to drainage or surgical removal of an internal abscess to improve antibiotic effect.

There are several drugs proven effective in treating *C. pseudotuberculosis* infection including doxycycline combined with rifampin. These medications are generally administered until achieving a normal complete blood and fibrinogen count, or until complete resolution of the illness; however, each veterinarian will determine the best course of action for each individual case of pigeon fever.