2013 National FFA Veterinary Science CDE – Scenarios Question & Answers

In an effort to help students prepare for the scenario portion of the national event below is one of the 2013 scenario questions and three corresponding answers. The judges are looking primarily at content but it is imperative for the answer to have good flow, complete thoughts and correct grammar structure.

1. Zoonotic, vector-borne diseases in the United States continue to increase, which has drawn tremendous attention to the news media to publish the reported outbreaks of these diseases in human and animal populations.

   West Nile encephalitis is a viral disease of wild birds, such as blue jays, crows, and hawks, and is transmitted to people and animals by bites of mosquitoes. With the recent rise in morbidity and mortality in people and horses, the frequency of neurologic illnesses and deaths related to this disease is of most concern.

   Lyme disease is bacterial disease of wild rodents, like mice and squirrels, and is transmitted to people and animals by the bites of the deer tick. This disease has been of concern for several years, because it affects people and dogs and may result in a chronic debilitating disease.

   Discuss the roles of the county health department and private veterinarians in preventing these two diseases in the susceptible hosts and in controlling the reservoir hosts and arthropod vectors.

   Example #1

   Zoonotic, vector borne diseases are of major concern in the United States because of their ability to kill and severely harm hosts, particularly humans and livestock. Because of this looming threat, both county health departments and private veterinarians are attempting to control these infections, vector borne diseases, in their areas through a number of preventative plans and treatments.

   West Nile Virus (WNV) is transmitted to humans and livestock via the mosquito which is the primary vector for the disease. Avians are the primary host mosquitoes feed on to transmit this disease. Clinical signs include fever, weakness, nausea, diarrhea and lymphadenophathy for the most common strain of the virus. Though this virus infects and often kills thousands of animals and humans each year no viable treatments have been developed. WNV instead has to be prevented at the source. Simple forms of prevention include avoiding mosquito dense areas, applying repellants, and covering exposed skin and hide. However, county health departments can approve and initialize adulticide and larvicidal programs, which are very effective in controlling the vector populations. Local bird populations should also be monitored by health and agricultural agencies by looking for death or signs of illness in their populations, particularly corvids. WNV testing may be necessary for multiple individuals of the population and it should be ensured that they are handled with care. Local veterinarians can also aid in the prevention of

this disease through careful handling of potential WNV infected animals. They can also establish WNV vaccination programs with susceptible animals, particularly horses. All of these means of prevention can prove very efficient t in the control of West Nile Virus.

Lyme disease is another vector-borne disease that infects animals and humans alike. This disease is caused by the Borrelia Burgdorferi complex and causes symptoms such as erythema migrans (skin lesions), fatigue, swollen lymph nodes and fever. This disease is initially treated with antibiotics, as well as parenteral treatments. To prevent this disease many steps can be taken by county health departments and veterinarians alike. Health departments may initiate acaricide programs and habitat modifications to control tick populations in localized areas. Veterinarians on the other hand, may utilize a topical parasiticide program for susceptible animals, as well as a careful monitoring for ticks anywhere on the animal. Using these preventative methods and strategies both zoonotic vector-borne diseases can remain in control in the United States.

Example #2

Zoonotic diseases have been prevalent throughout history due to vectors such as rodents, fleas, ticks and mosquitoes. In the past, the plague was the most tragic, but recently West Nile Virus and Lyme disease have had numerous outbreaks. Epidemiologists help control spread over national, state and county borders, but once the county has been penetrated, it is the job of the county health department and private veterinarians to curb current outbreaks and prevent future outbreaks.

West Nile encephalitis originated in Africa but has now spread to Asia, Europe and the Mediterranean region, the Middle East, Australia and the Americas. The vector for this virus is mosquitoes but the primary reservoir hosts are birds. The virus can be flu-like, neurological or even asymptomatic. It is the job of the county health department to bring awareness to this virus and ways of prevention. Some ideas are simply mosquito repellent, wearing long clothing outdoors and avoiding standing water. The veterinarian should advise and educate clients on how to keep their pets safe and what clinical signs to look for. Without proper caution mortality may be in the future.

Another vector borne disease is Lyme disease. This is very common in the Midwest, or in any areas with large amounts of deer or wild rodents. For example, parts of Ohio's health department are now controlling the deer population because the ticks that use them as hosts can carry Lyme disease, causing more outbreaks. If caught early, Lyme disease can be cured with simple antibiotics but if the symptoms are ignored chronic ailments will occur. First the tick must attach to the host for at least 24-48 hours. Within a couple of weeks flu-like symptoms are expected. With no treatment chronic joint pain, lethargy and achiness will occur. It is important for private veterinarians to let clients know to avoid tick or deer infested area and that there is a

vaccination available. If a tick does attach remove it properly, record the date and watch for any unusual behavior in the animal or any signs in yourself.

All in all, vector borne diseases are a serious matter for all veterinarians, health departments, citizens and animals. The zoonotic diseases, Lyme and West Nile, both have life-long effects. Veterinarians need to focus on educating their clients about these diseases to prevent more cases through easy prevention. Also, the county health department needs to make more efforts in controlling the spread of the diseases over their county lines.

Example #3

West Nile Virus and Lyme disease can both cause very severe consequences when not treated properly. Prevention of these diseases is of utmost importance for the safety of people and animals alike.

West Nile encephalitis is a viral disease most commonly transmitted through the bite of a mosquito. A mosquito will pick up the virus from a reservoir host, most commonly birds, and then transmit it to the species such as humans and horses. Thankfully this disease is preventable. By controlling the mosquito population, you can control the risks of this disease. Mosquito larvae develop in standing water, so it is essential to make sure that all standing water containers are emptied. Controlling mosquito population will in return control the spread amongst reservoir hosts, but it is necessary that any animal that may be sick or dead be immediately reported to the county health department. Private veterinarians must ensure that any animal that may have been infected is properly treated or disposed of. There are also vaccines available for this disease in horses, so veterinarians should encourage this among all horse owners.

Lyme disease is a bacterial disease that is spread through the bite of an infected deer tick. Like West Nile Virus, this disease can be controlled and prevented by the control and prevention of the vector, in this case, the tick. In America ticks can be a problem due to the environment. To control the tick population, it is important to keep brush and loose leaves or debris clear, eliminating their habitat. Monthly flea and tick prevention, such as Frontline, is great for use on dogs and cats and should be recommended by the veterinarian. The county health department should be monitoring any potential outbreaks among the reservoir hosts, such as deer or small mammals.