November 2014 Newsletter
Admiral Perry Obedience Training Club

APOTC

www.apotcerie.org

Regular club meetings are the second Tuesday of the month at 7 pm at the Erie Kennel Club building located at 9457 Wattsburg Road, Erie, PA 16509

President: Lee-Ann Czytuck, Vice-President: Marilyn Flower, Treasurer: Ann Gehrlein, Recording Secretary: Kathy Croft, Corresponding Secretary: Janet Norman

Board of Directors: Melanie Shufran, Mary Alice Piotrowski, Betsy Olson, Jodie Casillo, Sue Eastman, Trish Clark

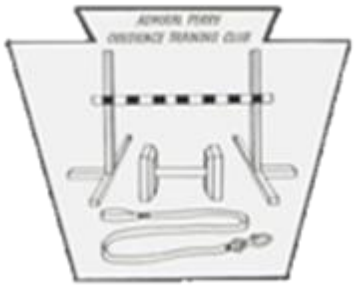
Club News and Activities

Babies and Dogs

The Babies and Dogs Program will be held at UPMC Hamot Women's Hospital on Tuesday, February 17, April 21, July 21, and October 20, 2015, from 6 – 8pm. The program focuses on ideas and safety issues on how to introduce the baby and plan ahead for all the changes that will occur with the family dog when bringing the baby home. Please contact Sandy Globa if you wish to participate.

Annual Awards Banquet

Save the date! The Annual Awards Banquet will be held on January 13, 2015 at the Erie Maennerchor Club. The evening will begin at 6 pm with dinner to start at 6:30 pm. More details to follow. Also, if you have earned any titles on your dogs in 2014 then please provide Mary Alice Piotrowski with the information she needs for the awards.



Upcoming Events

November 7-9

APOTC Agility Trials at Countryside Agility

January 13

APOTC Annual Awards Banquet at Erie Maennerchor Club

January 16-18

APOTC Agility Trials at Countryside Agility

Important Announcements

General Meetings will be held at the EKC building at 9457 Wattsburg Road, Erie, PA.

The Trial Committee meeting will be held at Ann Gehrlein's house on December 9, 2014 at 7 pm.

Club News and Activities continued

Back to School Time!

The winter APOTC obedience classes will start on January 15, 2015 and the spring classes will start on March 26, 2015 at the Erie Kennel Club building. Contact Janet Norman for registration and more information.

Kibbles and Bits

Ebola: Understanding Viral Transmission, Pathogenesis and Why the Dog is Part of the Conversation

10/16/2014

In the news recently there have been reports of three health care workers, one in Spain and two in the United States, who have been diagnosed with Ebola virus. Two of these women are also dog owners. The dog in Spain was euthanized in the interest of public health. The dog in the United States is currently quarantined.

To better understand why dogs are part of the conversation and why these two countries reacted differently, a better understanding of Ebola virus is necessary.

Viruses are ranked on a biosafety level (BSL) scale from 1 – 4, with 4 being the most severe. Ebola is a BSL4 pathogen, for which there are no approved therapeutics or vaccines. The virus is transmitted from one individual to another through the exchange of bodily fluids and enters the body through exposed cuts or mucous membranes, such as an individual's mouth or nose.

Public health officials are concerned about the role of dogs in Ebola virus transmission because there is scientific evidence that another mammal, the bat, is a reservoir for the disease. A reservoir host is one that carries the virus, is asymptomatic (displaying no symptoms of infectious virus), and that transmits the disease to humans or to other animals.

Based upon a research study in 2005 we know that feral dogs in African villages where there have been large scale epidemics seroconvert to Ebola. Seroconversion means the dogs have been exposed to virus and have produced antibodies specific for Ebola virus. Seroconversion does not imply production of infectious virus that can be transmitted to people or other animals. In other words, this

In the Community

Conneaut Lake Bark Park

Goods and Services Auction on November 16, 2014

study indicates that Ebola virus breached the dog's mucosal barrier, was recognized by the canine immune system as being foreign and the body responded by producing anti-Ebola antibodies. In this study, dogs were described as being asymptomatic, and there was no evidence that virus was transmitted between dogs or from dogs to any other host.

In summary, there is currently no evidence that exposed dogs become productively infected and shed Ebola virus. So while there have been documented cases in Africa where dogs are exposed and respond to this exposure by producing anti-Ebola antibodies, there has been no evidence that the dogs infect people or other animals. Because there are unknowns in the Ebola chain of transmission, public health officials in Spain erred on the side of caution and chose to humanely euthanize the dog. In the United States, public officials have quarantined the dog in order to monitor him and perhaps arrive at a better understanding of what role, if any, the dog may have in the chain of transmission.

Help make strides in canine immunology and infectious disease research by supporting the work of the AKC Canine Health Foundation. Your donation will help researchers find better treatments and more accurate diagnoses that not only impact our dogs, but impact humans as well.

Fact Sheet

What is Ebola?

Ebola is a lipid enveloped, filamentous, negative-sense virus with an RNA genome. The virus is transmitted from one individual to another through exchange of bodily fluids and enters through exposed cuts or mucous membranes (mouth, nose, etc.).

What does all this scientific jargon mean?

"Lipid enveloped":

Lipid enveloped viruses contain a lipid bilayer coat (outer membrane of a cell) that protects their genome and helps them enter (infect) cells. The lipid bilayer of Ebola is composed of the same lipids as human cells and scientists believe this lipid coat may be extracted from lipid rafts of human cells as new virions "bud" or leave cells after intracellular expansion of the virus. Contained within the lipid bilayer of Ebola are virus proteins that help the virus infect new cells and contribute to its replication. All together, the lipid bilayer performs three functions, 1) to cloak the virus from the immune system because it closely resembles normal host cells, 2) to facilitate binding of virus to cells and entry in lipid-to-lipid interactions, and 3) to facilitate viral replication.

"Negative-sense RNA":

Mammalian genetic code is DNA to RNA to protein. There are multiple forms of RNA synthesized by mammalian cells, and it is the messenger form of RNA, abbreviated as mRNA, that is translated into protein. Unlike mammals, some viruses (such as Ebola) use RNA rather than DNA as their genetic code. RNA viruses are further classified according to the "sense" or polarity of their RNA. Positive-sense viral RNA is similar to mammalian mRNA and as a result can be immediately translated by the host cell after infection into viral protein. Negative-sense viral RNA is the mirror image of mRNA, consequently it must be converted to positive-sense RNA by an enzyme called RNA polymerase before translation into protein. As such purified RNA of a negative-sense virus is not infectious by itself

and needs to be transcribed into positive-sense RNA to make viral protein that can be assembled into new, infectious virus particles. The Ebola genome encodes seven proteins named nucleoprotein, VP24, VP30, VP35, L protein, transmembrane glycoprotein and the matrix protein VP40.

Viral Replication and Infectivity:

Viruses are unique pathogens in that they use host cell machinery to make their viral proteins and assemble new virus particles, or virions. In other words, they carry their genetic blueprint with them but have the cell they infect do all production and assembly of new virions. Conceptually, they hijack cellular factories in order to replicate. In order for Ebola to infect and replicate it must be able to accomplish two things: it must enter a host cell and it must utilize host cell machinery to produce new virions that can then go on to infect the next individual. This is termed "productive infection." In the absence of those two things Ebola infection does not spread and would be considered "abortive infection," meaning the process ends because replication cannot occur. We do not know if canine cells can be invaded by Ebola virus and we do not know if Ebola can hijack the cellular machinery of canine cells to make new virus particles.

Pathogenesis of Ebola:

The cause, or pathogenesis of disease is not completely understood. In humans the virus targets and replicates within cells of the immune system, including monocytes, macrophages and dendritic cells. Using these cells for transport, the virus disseminates to lymph nodes, liver and spleen. From there the virus expands to other cell types including endothelial cells (cells that line the blood vessels), fibroblasts, hepatocytes (liver cells) and adrenal cells. Ebola virus subverts immune system function and disables the primary anti-viral machinery of immune cells by inhibiting the type I interferon response system. In contrast, the virus strongly activates the inflammatory response, inducing excessive release of proinflammatory mediators (known as cytokines) that contribute to dysregulation of coagulation (blood clotting), endothelial barrier integrity, systemic inflammation, and ultimately multiorgan failure and death. It is this excessive inflammation that causes the symptoms of disease: gastrointestinal symptoms, rash, hemorrhage from mucous membranes, fever, neurologic dysfunction and shock.

Are dogs part of the chain of transmission of virus?

Infectious virus must be produced in a sufficient quantity and be provided a method of transport in order to be spread from host to host. Based on other better established viral transmission models, we know that viral amplification in an intermediate host is a prerequisite for transmission. As mentioned above, we do not know if the dog's intracellular machinery can support viral replication, packaging and formation of infectious viral particles, nor do we know how the dog might shed virus for transmission to another host if it is asymptomatic. Extensive research is necessary to answer this question. The American Veterinary Medical Association (AVMA) is currently working on recommendations for handling, testing and treatment of companion animals associated with human cases, and that information will be forthcoming.

References:

1) Clinical features and pathobiology of Ebolavirus infection. Ansari, AA. J Autoimmun. 2014 Sep 23. epub ahead of print.

2) Membrane binding and bending in Ebola VP40 assembly and egress. Stahelin, RV. Front Microbiol. 2014 Jun 18;5:300.

3) Ebola virus antibody prevalence in dogs and human risk.. Allela L, Boury O, Pouillot R, Délicat A, Yaba P, Kumulungui B, Rouquet P, Gonzalez JP, Leroy EM. Emerg Infect Dis. 2005 Mar;11(3):385-90.

Related Articles

- Dogs + Ebola: What Every Owner Needs to Know From the American Kennel Club and the AKC Canine Health Foundation (10/14/2014)
- The AKC Canine Health Foundation and the Orthopedic Foundation for Animals Fund Research to Reduce the Risk of Infectious Disease Transmission Among Dogs (06/18/2014)
- Investigating Influenza (02/10/2014)