Moderator: Hello and welcome to Public Health Live --Third Thursday Breakfast Broadcast. I'm Rachel Breidster and I'll be your moderator today. Before we get started, I would like to ask you fill out your online evaluation at the end of the webcast. Continuing education credits are available after you take our short post-test and your feedback is helpful in planning future programs. I also want to let you know the planners and presenters do not have any financial arrangements or affiliations with any commercial entities whose products, research or services may be discussed. No commercial funding has been accepted for this activity. As for today's program, we will be taking your questions throughout the hour by phone at 518-880-3516 or via e-mail at phlive.ny@gmail.com.

Today's program is Infectious Disease: Recognize and Report! Our guests are Dr. Roger G. Ellis, a field veterinarian at the New York State Department of Agriculture and Markets. and Ms. Jennifer Ryan, a nurse who manages the Infection Prevention and Control Program in The Patient Safety and Quality Improvement Section of Saint Peter's Hospital. Thank you for joining us.

Good morning. Thank you for joining us today.

Speakers: Thank you for having us. Great to be here.

Moderator: Excellent. To get us started, Jennifer, can you review for us what today's objectives are?

Jennifer Ryan: By the end of today, folks should be able to identify emerging risks in infectious disease in New York State, the provider should have an idea of their response for emerging and re-emerging infections. And we should be reviewing the requirements in New York State in regards to reporting.

Moderator: Excellent, thank you. Now let's start at the top for a very broad-based audience. Can you tell us, what do we mean when we say existing or emerging infectious disease threats?

Jennifer: The CDC is clear about the definition. The CDC suggests that if we have seen an increase in the past two decades or if we believe there is about to be an increase in the near future, this should include new infections that are resulting from known organisms, known organisms spreading to new locations or populations, new organisms being seen due to ecological changes and old infections that are now showing new resistance patterns or they're increasing due to failures in public health measures.

Moderator: Now, we say existing or emerging. What are some of these existing diseases that have been around for some time? Why do they persist?

Jennifer: So, many of these infections are well-known. Hepatitis C and syphilis, for example,
are infections that have been around for a long time, but we may see increases due to increases in risk behaviors, sexual behaviors, IV drug use. We're certainly identifying hepatitis C carriers more frequently now due to reporting requirements and testing requirements in New York State. We see changes with the time of year. So, for example, coming out of the summer, campylobacter, food-borne illness, think of mayonnaise out at the barbecue, that kind of thing. We may see increases in that, increases in tick-borne illness, anaplasia. So those are commonly reported communicable diseases.

**Moderator:** On the other hand, we have these emerging pathogens. Can you give us some examples of what we mean by that?

**Jennifer:** Sure, Certainly. We're all familiar with the sensationalism of both Ebola and Zika. Those are less known infections a few years ago that have now had an increase in their frequency and incidents across the world, so those would be two big ones. Another would be well-known Legionella, failures in our public health measures and particular down in the lower parts of New York State, we talk about that, because we're seeing increases in those infections.

**Moderator:** Can you speak specifically to some of the infections that have really captured the public's interest in recent years?

**Jennifer:** Certainly. Ebola for one, Zika as well. Ebola, we have a lot to take from the lessons that were learned in 2014. When we consider the urgent need that we were presented with to quickly educate providers at every entry point into the healthcare system, to be able to identify, travel history, how terribly important that was to Western Africa when it crossed over into the western world and any activities that would have put patients at an increased risk for exposure. This was a tremendous undertaking. So we could establish isolation protocols and a response plan across all healthcare systems, so a lot of lessons were learned from that. That can be carried over to new infections, something like Zika.

**Moderator:** And that is sort of what we're hearing so much about today is the Zika virus, so can you tell us what is the latest on Zika?

**Jennifer:** Sure. So Zika is a single stranded RNA flavivirus, not terribly unlike related, if you will, to Yellow Fever, Dengue fever, West Nile virus. It is not a new pathogen. It's been known to us. It was identified first in Uganda in 1947. There was an outbreak in the South Pacific. Certainly, we are hearing more about it with the South American and Caribbean outbreaks -- outbreak, I should say. It's transmitted via bites from infected *Aedes* mosquitos. It can be transmitted in utero. It can be transmitted sexually. And this is what really ups the ante with Zika is we believe that it can be carried in semen for up to ten weeks, which really makes transmission an ongoing concern, particularly for pregnant women. The last mode of transmission would be blood, so whether blood donors or even exposures to healthcare workers would be situations where that would be a concern. Our reservoirs are non-human and human primates. We have the concern for during outbreaks human to vector to human transmission.

**Moderator:** Now you mentioned sexual transmission or sexual activity as a mode of transmission. How did recognizing that as a potential threat change the strategy when we're looking at preventing transmission of the Zika virus?

**Jennifer:** I would argue it's almost three patients providers are concerned with. You are
concerned about a pregnant woman, her spouse or sexual partner and her unborn fetus are really all impacted potentially by Zika. So certainly, in many ways more than we ever have before, you are really screening those sexual partners as well to find out what their travel history is, what their risk of exposure may have been. It's incredibly important due to the prolonged period of transmission risk. Pregnancy we find is at risk across all three trimesters but the first the most concerning. In pregnancy, we’re really doing a lot of prevention education with both the patient and the sexual partner. Including condom use and abstinence are actually being educated based on CDC recommendations.

**Moderator:** Thank you. Considering Zika is transmitted through mosquitoes. What approaches are there -- are there approaches that can help decrease the incidents of bites from these particular mosquitoes?

**Jennifer:** Certainly. Bug repellent with DEET is one. Trying to avoid the mosquitoes in general. They are daytime aggressive biters. Although, it can happen into the evening hours. You need to be cognizant of standing water indoors and outdoors. They breed in domestic water holding containers. Unfortunately, we have seen links particularly to urban areas, so being mindful, covering up, which is kind of contradictory in these more tropical areas or coming out of the summertime. But all of those things will help try to prevent the bites of the mosquitoes.

**Moderator:** Now, what is the risk -- what does the risk look like specifically for people residing in New York state?

**Jennifer:** So in New York State, we know that there are two vectors or mosquitoes, if you will, that transmit Zika. *Aedes aegypti* is the optimal here, the primary vector and that travels up to just about the very lowest parts of New York State, if you can appreciate that map there on the left. The less optimal mosquito, secondary if you will, *Aedes albopictus*, does travel far into New York, but to date, we have not observed mosquitos carrying the Zika virus in New York State. So while the potential is certainly there, to date, we have not had that concern thus far.

**Moderator:** That's great news. Now, it seems based on what we hear in the media and based on some of what you have shared this morning that those who are most severely impacted are pregnant women, their babies, their unborn fetuses. You can discuss the role of the provider in identifying, treating and reporting the Zika virus?

**Jennifer:** Certainly. Consider one out of every five folks exposed or even infected with the Zika virus are actually symptomatic. The most important piece at this point is, did someone travel to an area that's endemic for Zika? How do you know that? You can look up on the CDC website and see the most current areas that are faced with Zika transmission. Of those areas, if someone had traveled to that area, you want to consider are they symptomatic? Fever, arthralgia, myalgia, conjunctivitis. Some folks have a headache. A maculopapular rash. These are the symptoms for Zika. Once we have identified that that's the case, the illness is usually very short lived, not requiring hospitalization with symptomatic support. The patients in which this is devastating is potentially for pregnant women and their fetuses. We know that there are clusters of microcephaly related to Zika exposure or virus in addition to other neurological deficits such as blindness.

**Moderator:** Now, what has been the impact across healthcare partners in identifying Zika and hopefully preventing it?
Jennifer: I just cannot stress communication enough. There's several different buckets, if you will, that folks are traveling through and it's so vitally important, because we're all interconnected. So, for example, a pregnant woman may present to an obstetrician saying, my partner traveled to the Caribbean. That partner may present to the emergency department with a rash, may be referred to a primary care physician. We're all talking with public health, so it's incredibly important that communication piece. Right now in New York State at the end of September, we know that we had a significant incidents thus far of Zika exposure and over 30 women that have been pregnant have carried it. It's important for us to stay abreast and make sure we're communicating what we're seeing.

Moderator: Absolutely. Now despite the fact that the total cases reported in U.S. territories is significant, the number of reported birth defects and even losses of birth is quite low. Can you explain or talk about some of that?

Jennifer: Sure. Again, that role of the provider in identifying and reporting concerns is vital. Think about the U.S. territories and the availability of such providers. When you look at these statistics, for example, in the continental U.S. with there being 16 as of the end of August babies that have been identified being born with birth defects and only one in the U.S. territories with, gosh, six times the incidents in the U.S. territories, they're just not identifying them yet or haven't reported them. There may be a delay, but this is another reason why the grass-roots provider is so vitally important.

Moderator: Thank you so much for starting us off and laying the groundwork. I'm going to talk to you, Dr. Ellis. You are a veterinarian and work in the Department of Agriculture and Markets, but we're talking about infectious disease here. Can you start by talking about what is your role specifically in addressing infectious disease?

Dr. Roger Ellis: My role is to work with infectious disease in animals and many of them are zoonotic diseases. That means it's a disease that affects multiple species, including humans, so we are involved in this on a day-to-day basis of monitoring these diseases for the protection of the animals and people and it's kind of something that has come to a new term talking about one health. Meaning that we need all of our healthcare providers, whether they be for humans, whether they be for women or men as Jennifer has talked about or for animals in the case of veterinarians and all that to all be involved to make sure these diseases are reported in a timely manner and we can go ahead and address preventing them and protecting people.

Moderator: Excellent. Now, can you review for us some of the diseases -- some that are well-known, maybe that aren't, that we're going to be talking about?

Dr. Ellis: Certainly. We're talking about cases of -- we talked about emerging diseases. We have to remember that we have a lot of the diseases as you pointed out that are very common that are actually what we call an endemic disease, meaning we have them here but they don't show up all the time. So we have diseases that are viral diseases. One of the ones that immediately comes to mind that affects animals and humans is rabies. Then there's influenza which is a triad between pigs, avian species, and humans. And then Q Fever. There are the parasitic diseases like toxoplasmosis and cryptosporidiosis. Bacterial diseases. Some of the golden oldies, tuberculosis and brucellosis, but something that is all the time on our plate, campylobacter, e-coli, salmonella. We have new diseases which are prion diseases which also
can affect both animals and humans.

**Moderator:** Can you explain for us the type and the impact of some of those viral diseases?

**Dr. Ellis:** Certainly. We will try to address them based on them being caused by virus or bacteria and so forth. I have chosen here rabies and influenza as ones to look at. We have to remember, there's a wildlife component, rabies, bats, and skunks. We need to be aware of the behavior of wildlife that can expose people, if we see wildlife doing something they don't normally do, that's a warning sign that everybody should be aware of. In the case of influenza, we have ducks and geese. Situations where wild birds can bring in the virus from actually up in Alaska and places where they go in the summer months and then bring it back down into our country and even into Siberia and places on the other sides of the world. We have these classical things. And we have domestic animals, so we have our dogs and our cats and our horses and they can be a direct exposure, because they're very close to us as humans. And so we need to make sure that we prevent them from getting it as best we can with a good vaccination program, which is administered through the vet -- your veterinarian. In the case of influenza, we have got swine and we've got birds and we have to remember that these diseases can mutate, so we are also in there. We're in this triad, so we need to make sure that we as humans get our flu shots so that we are protected from the common ones that are affecting humans and then we need to make sure we're aware and watching for any sign of it in poultry and in swine, for instance swine are -- try to keep poultry from getting in there. With some of the things that people are enjoying of having backyard poultry and all of this and wanting to raise their own eggs and that, it's very difficult to keep, say, the goose that is flying through that may have been exposed up in Alaska or somewhere up there from drinking out of the same pond or something that the chickens may drink out of it. We need to always be aware of this that this could bring in a challenge. And then we get immediately into humans, rabies. We need to report any sort of exposure type thing to the health department. That's where it's very important that we coordinate and make sure that if there's been a bat in the room, the health department is taking care of it. If there's a bite situation, that is reported by the human healthcare person, whether it be the practitioner or the emergency room to the health department, so a decision can be made in a timely manner as to whether the human may need prophylactic treatment. It routinely needs to be done fairly soon after the bite. Also, get your flu shot. Make sure you are protected, so you are not in a situation where actually the virus, the avian virus, could mutate in your body and become a more virulent form affecting humans. And then wildlife, we want to try to prevent that exposure. We get into vaccination programs by oral vaccination and rabies, control of wildlife if there are too many of them in a certain area and wildlife in terms of the avian influenza, good biosecurity, trying to keep the wild animals separate from your flock of poultry, whether it be ten birds or 1,000 birds along those lines.

**Moderator:** Certainly. Very complex picture we're looking at here. That's just talking about the viral diseases. Can you talk about some of the bacterial diseases you mentioned as well?

**Dr. Ellis:** Right. Well, along with that we need to talk about tuberculosis and brucellosis. These are diseases that don't come to our minds in this country anywhere near as much, but they are very prevalent in the rest of the world. Part of the reason they don't come to our mind as much is because there's been a real strong activity during the '30s and '40s to eliminate these diseases in cattle, in other species, so that they're not there to be exposing people. So we need to make sure we control that in the population. We do have one challenge in that is emerged in the state of Michigan. They're still dealing with it. It got into the wild deer population. Of course, the deer
and cows are out at pasture together. So there's a possibility of tuberculosis being spread and that. So we always need to be aware of trying to control these in different areas and preventing them as much as we can. Then we get into tuberculosis, especially where there's issues with us in certain environments, airplanes, they are constantly looking at that, a 15-hour flight like I took to Hong Kong last year. We're mixed together with people that someone could be carrying that. We have to be looking at that. The treatment for both of these diseases is impractical in animals because there's too much of a long time therapy and so forth. So we need to go ahead and prevent it as best we can, by constantly monitoring. In humans, it's very difficult and very costly and we have just experienced some challenges in New York State with a disease that we did not think we have in there that fits into these two diseases. But we're working very hard to control it in the animal population, monitoring humans with the health department working right along with us to control and monitor the situation. And unfortunately, in some cases, something that I don't like to do as a veterinarian, no one would like to do, we have to eliminate some animal populations. We have to humanely depopulate them if necessary because there's no way of getting rid of the disease in our area. And that is, of course, what we don't like to do. It's only the last resort.

Moderator: Now, I think there are some bacteria that we tend to be more familiar with, particularly intestinal bacteria. Can you talk to us a little bit about some of those?

Dr. Ellis: Immediately, ecoli and salmonella come to mind. These are diseases that go right along with campylobacter especially during this wonderful time when we have picnics and all this and we're mixing up chicken and mayonnaise and all these things. They're very important. Again, wildlife, we have to remember that they can be carriers of ecoli and salmonella. Many times they don't get sick with it, so they don't particularly cause or are not ill. Sometimes they do. Humans can still get the disease, so there's exposure that can happen. It can happen at our petting zoos, our wonderful fairs. Why we have all these stations up, wash your hands after you have been looking or petting this wonderful animal that we want to have that interaction with and going ahead and controlling it, so those can be the reservoirs. As I said, animals, we many times don't really have to treat because they're doing -- they are carrying it, sometimes as they have one that is going to go ahead and infect them, they do get sick and we treat them. Humans it can be devastating and light threatening. Ecoli, as we have experienced at different situations, can take a young child and put them in a situation where they have to have kidney transplant. They will never be the same. That's why prevention is so important to minimize the amount of it that's in our animal population, but then to add the added things like pasteurization and proper cooking to prevent people from being exposed because this can be a situation. For instance, of raw milk, a wonderful product, but there's that possibility of something in there that we can't see or we even have a hard time detecting that causes the problems.

Moderator: Now that we have talked about these new and emerging infectious disease threats and you have both provided quite a bit of information, can you, Dr. Ellis, talk to us about how do we know what trends are occurring? Can you review some of the basics of what epidemiology is?

Dr. Ellis: Right. That big word is essentially summarizes the things that we need to be doing. It includes early detection. We never know who is going to detect that. It could be the human world or it could be the animal world. The key thing is, we both know that we have detected something. And then go ahead and reporting that very quickly because if we can go ahead and get it when there's only a few individuals, animal or human affected, it's much easier to control.
There's much less -- because things tend to increase as we get one that infects three or four people and then it grows because they -- exponentially. Then sharing it. Making sure everybody knows, sometimes we're surprised. In this recent things, this item actually emerged from the human detection. It wasn't supposed to be here, but it was, so we needed to go ahead. Sometimes it comes and happens in animals. What is the distribution of the disease? Is it in all of New York State? Is it in all of the country? Or is it localized? It's important to grasp that. In the recent case, it's been pretty much limited to a certain geographic region. So we put our monitoring out all around to make sure it's not spreading and then control it in that area and then we treat or prevent in whatever way we can do, preventative measures, and then eradicate if necessary. Unfortunately, sometimes that has to be done. It has been done, but we really think at this juncture we have control on that situation. So this is the broad thing of epidemiology.

**Moderator:** I think a key part of epidemiology is the role of surveillance. Can you talk to us about active and passive surveillance and what that means?

**Dr. Ellis:** Exactly. Passive is what we do every day. We do it at Jennifer's facility, the hospital. Every healthcare provider, whether a human physician or a veterinarian or so forth, they go ahead and take tests. They go to laboratories. We go ahead and we monitor this if something is going to pop up. In actuality, it actually came along because of passive surveillance that someone was not responding, so they went ahead and did additional tests. All of a sudden, they were positive, so that is a very important thing. It relies on every player, everything from the nurse to the P.A. To the nurse practitioner, the M.D., veterinarian, even the dentist or something. Something emerging that is -- needs to be reported. And then we have the more aggressive or the active thing. When there is a warning light or something goes off and says, we have evidence this disease is around. This is where it's very, very time consuming and so forth. We have people from public health. We have people also from animal health that go out. We do surveys and fill out questionnaires to get all the information, see if there's a relationship. We do tracing of the disease from farm to farm. We do trace backs from where it started to move back in that way.

**Moderator:** Now, can you tell us exactly, what surveillance is and what surveillance is not?

**Dr. Ellis:** Well, surveillance is going ahead and being aware of something emerging. We go ahead and want to best estimate the magnitude of the problem. We want to detect an epidemic and define it as a problem and kind of go along from there. Evaluate the control measures. We always are looking to see, is this vaccine working? Perfect example, avian influenza. I just got my flu shot. I got the four-way one, which experts estimate and projected are going to be the problem this year, so we're constantly more or less tweaking our approach. People have to understand that this is not an exact science. We go ahead and we work and we use all our tools along those things. We need to -- is there a change in healthcare practices, things have changed over the years a great deal? Also, being aware of the facilities we're using, both on farm, in your backyard thing. How do we go ahead and isolate these things all the way to how do we go at a medical center, how do we control infection with so many different things coming into the situation?

**Moderator:** Thank you very much for all of that information. Now, to put all of this in context as we begin to talk about the healthcare provider role, we spoke with Dr. Alan Sanders, who is the Chief of Infectious Disease Medicine in the Department of Medicine at Saint Peter's Hospital.
Let's take a look.

Roll-in Speaker

Dr. Alan Sanders: Our role in the world of reporting and identifying infectious disease is pretty important. We have to work intimately with our infection prevention practitioners in our hospital setting. We have to work with our county health department, public health nurses and often times with the state health department if there are situations where we need to report diseases and recommend treatment options. We have a back and forth banter with the public health department about where we’re going with the patients in terms of their treatment protocol. It's our job to work with our knowledge base to identify the infection. We work close with the laboratory in our hospital to identify bacteria or other things like fungi, TB, and our job is to get back in touch with the infection control practitioners to let them know what we're doing and what we think is a clinched diagnosis or we don't think it may be a diagnosis and go back and forth with obviously the folks who are here in the hospital and they will respond to the folks in the health department. We have to use our clinical minds to make these diagnoses. We're asked by our colleagues here in the hospital to come in on a consultative basis to figure out the puzzle. We then have to make sure we got it right, work with the laboratory to identify the organisms. Our infection control practitioners along with the health departments locally up to the state need to coalesce and clinch the diagnosis and how we're going to treat somebody. We're pretty integral to it just as private practice practitioners in the hospital. Folks in the community who may be treating some patients on the outside may not appreciate the fact that some of these diseases are actually reportable. So they may treat people sometimes we call it empirically, the best guess this is what I think is going on and may not send off laboratory testing to prove that diagnosis, so the county and state may actually not be able to harvest all the types of infections that are reportable. Treating them effectively is important. You want to make sure the patient gets better. Having an opportunity for your county health department and state health department to have an accurate count of these people, they are only going to know about them through accurate laboratory investigations and testing. So I think empirical treatment is great, but it's important for practitioners on the outside to know their best guesses probably is going to be good or better, but they should have, I think, for purposes of identifying people a definitive test.

Moderator: So with that grounding, Jennifer, let me turn to you and say with so many different emerging diseases, what is necessary for us to develop a meaningful differential diagnosis?

Jennifer: Education is so important. There’s a huge scope of different communicable diseases. Certainly, being aware of the most common and any emerging pathogens in the area become familiar and that's really -- that's really an effort on behalf of the provider. Accessing your partners in infection prevention, in infectious disease, in the health department, reaching out to those folks to be able to become better able to identify the risks associated with particular infections. Dr. Ellis spoke quite a bit about influenza and I would mirror that. You know, when we're getting into the flu season, respiratory illness, be aware that respiratory illness and a fever, this is the time of year that we should really have a high level of concern for influenza and then that communication piece. Reaching out to those partners I mentioned, reaching out to the patients. The patient, find out were there ill contacts? What has your travel history been like? What kind of activities do you do? Taking those extra steps to get deeper into the patient's story. When there are concerns and you have reached out to public health, then it's time to move into that control piece. You know, what can we do to try to limit exposure? So your droplet precautions, hand washing, staying home when ill in regards to influenza in particular and then
we can move on to prevention tactics to protect the rest of the population. Things like vaccination. So it's so important to hit upon each of those pieces when developing the differential.

**Moderator:** Now, why is the provider's diagnosis considered pivotal in the identification of an outbreak?

**Jennifer:** It's so incredibly important for a provider to understand that the first piece in reporting -- in identifying and outbreak is them. So one case individual at the grass-roots level linked with other folks that are identifying concerns, linked together make an outbreak. So when you consider things like the Zika outbreak in Miami Beach or you consider even Hepatitis C increases related to drug diversion activities, I mean, the providers at the grass-roots level were the folks that asked enough questions and communicated concerns, so public health could become aware of a threat.

**Moderator:** Excellent. Thank you. Now, to learn more about the infectious or communicable diseases on which New York State requires providers to report as well as the state and local resources that are available to assist local providers with this reporting, we spoke with Dr. Andie Newman, the Director of Regional Epidemiology and Investigations Program in the Bureau of Communicable Disease Control at the New York State Department of Health.

**Roll-in Speaker**

**Dr. Andie Newman:** In regards to infection disease reporting in New York State, our bureau, the Bureau of Communicable Disease Control, receives reports of approximately 65 or so reportable diseases in New York State. We deal with everything except tuberculosis, sexually transmitted diseases, including HIV, and vaccine preventable diseases. We do surveillance on these diseases on a state wide basis, excluding New York City and our primary volume of diseases comes from GI outbreaks, rabies outbreaks. We deal with hepatitis A, B and C and we also deal with meningococcal disease and some other diseases of public health importance. There's a list that is published. It's available on the web. People that are -- the primary reporting responsibility lies with physicians, school nurses, state agencies, institution or day care. Anybody that provides healthcare services is a mandated reporter. Laboratories have a duty to report certain notifiable diseases as well. These days the majority of our reports come in through laboratories via what we call ECLRS. But we still rely on physicians or others, sometimes members of the general public, school nurses, to pick up the phone when they suspect certain high priority diseases or if they suspect maybe they're recognizing an outbreak or something unusual going. In that case, we don't wait for a laboratory report. We hope that and expect that physicians pick up the phone and give us a call first. The local health department has the primary responsibility to follow up on reporting of communicable diseases. Those reports should be going there first. They receive both electronic lab reports daily and also physicians or other members of the public who may be picking up the phone should be making those reports to the local health department first. The role of the local health department is to follow up and investigate those reports. For most diseases, there's a questionnaire that they want to go out and interview the patient with that questionnaire may include information about signs, symptoms, how the disease was diagnosed or why it was suspected, if there's no laboratory confirmation and then depending on the disease, there's also questions about potential exposures to that agent. We also have our platform, a communicable electronic surveillance system, which allows the local health departments to enter data both demographic, clinical, laboratory and exposure data about the diseases
they’re investigating into a system where we can collate that data and look at it here at the state. Again, this helps us look at disease trends, if we’re looking at potential multi-jurisdictional outbreak. We can look for some initial commonalities between cases, but we help them do their job by providing the questionnaires and giving them a platform where they can enter that data to us. We also have the electronic communicable laboratory reporting system, ECLRS, which allows laboratories to send their reports to one place and those disease reports, those laboratory confirmations, end up getting sent to the county where the patient resides. In regards to multi-jurisdictional outbreaks, providers don't necessarily have a huge role in those investigations. Every single case report that a provider makes may help us recognize a multi-jurisdictional outbreak sooner. They on a local level may not think there’s something going on, but sometimes it's those sporadic reports that come into us that help us piece together a larger outbreak that may be occurring in the state or sometimes as part of a multi-state outbreak, such as if we have a food commodity that is distributed to multiple states. We may have a few cases in New York and they may be widely disbursed, but they may have links to cases in other states where we as a state can work with other states to help solve some of the outbreaks and those outbreaks can be anything from hepatitis spread via, say, green onions or salmonella associated with reptiles or baby poultry. Reporting is important especially when it comes to emerging disease threats. We are looking at Zika virus as people know, it's an epidemic that has spread across multiple countries and is impacting U.S. citizens, including some local transmission in Florida. It's an emerging disease. There’s not a lot is known about it. We're learning more about it every day, so reporting by physicians and cooperation by physicians and the patients definitely will help us gain a better understanding of that emerging disease threat.

Moderator: Jennifer, can you tell us about some of the resources that are available to providers when they’re considering emerging pathogens?

Jennifer: Sure. There's a broad spectrum of resources available. Providers are thankfully not working within a bubble alone. I know in my environment, infection preventionists help support the work of the providers in reporting publically and identifying infections. Those are great resources if you have available to you. Infection -- infectious disease specialists such as the good Dr. Sanders are just a volume of information. So when in doubt, always consult your partners in infectious disease. The healthcare systems, good example is, for example, Saint Peter's Hospital belongs to Trinity Health, that's a nationwide healthcare system. We have a tremendous amount of resources available to us. Infectious disease experts that actually sit on CDC work groups and enable us to have the most up to date information. Our partners in public health, of course, the Centers for Disease Control and Prevention. Lots of information by telephone, online. And then, of course, the patients are really your partners. Being able to obtain a history as well as being able to implement some control measures and prevention techniques as well.

Moderator: Thank you. As someone who is at the hospital level and responsible for coordinating reporting, what are some of the things that either facilitate or present barriers in doing this reporting?

Jennifer: The first thing I think -- it serves both as a barrier and facilitator. Electronic systems, ECLRS, I believe we mentioned earlier, is the electronic lab system that reports the required communicable diseases in New York State. Sometimes ECLRS may report diseases which are invasive or it may report a disease whether we don't have the rest of the information yet. From
an interview perspective, it's a little challenging sometimes to have those automated processes, so it facilitates notifying the health department, but it's not the whole picture. Now we have computerized documentation systems in the hospital. Many of us have hybrid programs where there's paper as well as the computer navigating those pieces can sometimes be a barrier. I would have to say sometimes the patients, believe it or not, can be a barrier, whether we're talking about an intubated patient in the ICU that can't communicate at this point or they're reluctant to participate in the interview process or they're difficult to locate. We have this sometimes with our patients with substance abuse, they leave the hospital. We end up with positive hepatitis C or syphilis results. How do we locate that patient at that time? Those are all, I would say, concerns and things to consider when reporting.

Moderator: Thank you. Now, Dr. Ellis, let me ask you from your perspective, what are some of the barriers and facilitators of this reporting process? How do you work with local providers to assist them in their efforts?

Dr. Ellis: It's interesting to hear the challenges Jennifer talked about in human medicine. The same thing happens in veterinary medicine. Producers, anyone is always reluctant to share their problems. They would like to think that there's none, but again, education to make them aware of how important it is to have early detection of something to share it. Then working who the next person is the healthcare provider called the veterinarian. The private veterinarian is -- knows them, knows the situation and can encourage the producers to get information to report and in some cases the accredited veterinarian is required to report that and the laboratories are. So there is that there and then the department of agriculture, people like myself, come in, too, and we're ready 24/7 to become involved working with the private veterinarian, the herd or producer veterinarian. Working with the producer, doing it in a controlled manner so we know what is happening and get answers in a very quick way and then immediately this is where if we have a disease that has human impact, we need to make sure that we're communicating this over to the health department. It actually can come out to be very interesting things. It might even be a disease that doesn't affect people, but might be affecting these producers' operations, families and everything. We get into the mental health aspect of this that can be very devastating. The outbreak of foot and mouth in the UK. This was something that hasn't been publicized, but there were families whose generations of animals had to be destroyed. This is just monumental. So again, we need to have that partnership coming in to work on that.

Moderator: It seems like partnership and communication are something you both emphasized quite a bit. Dr. Ellis, can you also remind our audience of the specific location of some of the resources that both Andie and Dr. Sanders mentioned on the clips we showed?

Dr. Ellis: Of course, there is an abundant amount of information involved from the health department, communications there, communicable disease reporting. Jennifer mentioned the CDC where you can get information not only about diseases current things happening here, but in all other parts of the world. There's an active thing of going to, again, detect something coming along and Zika is an example of this. It began to emerge in Brazil, so we have been able to talk about that, so there's there. It's many times in our pocket, in our computers we carry in our pockets called cell phones and everything else. Of course, at the agricultural and market site there's a tremendous amount of information about current things and also background information that veterinarians can access, the public and also there are situations where people -- there will be announcements as far as the disease is going or new emerging and alerts.
Moderator: Thank you. Jennifer, can you tell us a bit about the CDC online resources and assistance that can be useful to all practitioners addressing, reporting, trying to prevent infectious disease?

Jennifer: Certainly. As Dr. Ellis alluded to, the CDC website is just a tremendous resource. Whether you want to know about a particular disease, they have links. If you -- let's pick one. Let's say Lyme disease, so you can go into that disease. You can see particularly for healthcare providers what you need to know. You can read about control measures, prevention measures, that kind of thing. There's maps for travel, so if you are an obstetrician and you have a pregnant patient that comes to you and says I travelled to Thailand, is that a risk for me, you can actually click on the map and it will tell you what sort of communicable diseases are a concern for that area. You can also look at it based on the disease. If Zika is a concern, where is it endemic? A broad range of resources available through the CDC.

Moderator: Excellent. Thank you both so much. We have a little bit of time left. We have some questions that have come in from our audience. I will turn to those now. The first one is, why do you think that emerging diseases like Ebola and Zika have gotten more press than re-emerging diseases?

Jennifer: It's new. It's exciting. There's a lot to be said. That is new information. I'm not entirely certain beyond that. It's actually an infection control and disease -- it's kind of disappointing, frankly. Because the impact of something like influenza on our population is far graver. You have many more people dying annually from influenza, at least in this country, than Ebola. When you think about the financial resources stuck behind each, there's a vast difference. So to some degree, it's concerning, I would say.

Dr. Ellis: Exactly. I would agree. Something like we have kind of they say the disease of the year, the season or whatever, that happens. I think we need to work in things like we're doing today are so important to remember, well, rabies is always with us and it's important and it can happen in your own backyard totally unexpected. A sick wildlife raccoon or something comes in that your heart just goes out to, but if you need to be very aware that you should not touch that. You should get somebody who can handle it and so forth and not have a situation where your pets, your animals are exposed and you are exposed. Again, we need to be constantly remembering the -- as I call them -- it is called the endemic diseases that are here every day and how do we prevent them. Be aware of it.

Moderator: Thank you. Our next question, I just wanted to point out the CDC Aedes mosquito maps are partially based on theoretical models. New York State Department of Health conducts active mosquito surveillance and they have not found Aedes aegypti in New York State. Albopectus is just found in the metropolitan region. I think it's important to clarify that as it may lead to confusion about the actual risk.

Jennifer: Fair enough.

Dr. Ellis: Yep. Also, it's something to say about how important it is to have this surveillance going on. When we were talking about looking at being aware that it is actually there. When it shows up or it does not.
Moderator: The next question, what is the likelihood Zika will become more prevalent in New York State? Can you talk about the land bridge between New York State and Puerto Rico, people traveling back and forth regularly and how might this impact Zika’s trajectory in New York State?

Jennifer: Well, certainly we know there are transmission issues in relation to mosquitos in Puerto Rico. It’s a common destination for vacation, even family members throughout New York State, which increases the risk and brings it closer, that land bridge because you are only a plane away worldwide nowadays. So there's always that concern. It's impossible to truly know what the real potential and trajectory will be in New York State. The best attack on Zika, if you will, are the prevention measures that we have discussed. Again, keeping in mind that the patients that are most at risk are pregnant women and their fetuses. Understanding the rest of the population is going to have a mild viral illness, although occasionally there is some Guillain-Barré related to Zika infection. By and large, it's devastating for pregnant women. Remembering condom use, abstaining, if you have -- if a partner has been traveling. Otherwise, it's the mosquito prevention decrease, decreasing exposure of our skin, using mosquito repellent.

Moderator: Okay. I am a medical provider in a rural part of the state. How can I cultivate relationships with local veterinarians and others working on zoonotic threats to make sure my practice is ahead of illnesses that might be impacting our patients?

Dr. Ellis: I think the answer to that is to get to know your fellow health providers. Make sure that you introduce yourself to your veterinarian and that the veterinarian -- if you are a veterinarian or a nurse, that you become aware of that. You discuss those things in cooperation. I actually had the experience of being in I guess it's now the smallest city in Vermont, a veterinarian in Vergennes. There I was the animal control health person and the one doctor in town was the human health control person that worked with. We got to know each other. It was very helpful, because we could call up and I could say to the doctor, you know, are you seeing anything like this? He could call me and we could make decisions and go ahead with that. In one case, bringing in even the state on a larger issue from both the animal and health and human health aspect. So the thing is just get to know, understand what they do. Find out places you can cooperate and then just work together, so that you know each other and you can informally just want to let you know that I saw something like this today or something. Have you seen anything? I also do that in my own -- in Grandville where we are, I go to where there’s multiple ones. We discuss things. In fact, they kind of gather around what's going on and so forth.

Moderator: Thank you. Can you talk some more about the one health framework and where do you see this going in terms of collaborative approaches to addressing disease outbreaks?

Dr. Ellis: You want to take this? I think it is coming along a tremendous way a bit in the last ten to 15 years. It has been an awareness that we can -- we all work together for the good of the health of all species. It kind of emerged after the West Nile Virus where there was original diagnosis was kind of made at the Bronx Zoo and then we found out we had it in Queens, New York, in the human population and so forth and they said, we need to communicate more. Also one thing to remember is that, a lot of communities have small zoos and all that. They're many times related with bigger zoos that have actual pathology departments because they have very small exhibits. If you lose one animal out of a five-animal exhibit or a five-bird exhibit, you have a problem. So this -- because of zoonotic diseases, you may very well detect something in animals and it could be something that is spilling out into the community. Plus, we humans go to
see the animals. We might bring something there that might manifest that we might be carrying and not know we are. I think it's so encouraging and it's interesting -- I understand that the head of the AMA, American Medical Association and the President of the American Veterinary Association happen to know each other. And this was awhile back, a few years ago, they again started talking about this. This is where there's been even more merging together and an awareness that we're all in this together. As I say, team work is always better working together is -- makes us so much stronger and more effective in what we do every day.

**Moderator:** Excellent. Thank you so much for what I think is a great response to that question. A great note to end the show on talking about the importance of collaboration and team work. If everybody is communicating well, hopefully, we can work to take these strategies and prevent and treat some of these diseases. Thank you both so much for being here today.

**Jennifer:** Thank you.

**Dr. Ellis:** Thank you for having us.

**Moderator:** Sure. Thank you very much for joining us today. Please remember to fill out your evaluations online. Your feedback is always helpful to the development of our program and continuing education credits are available for today's program. To obtain nurse continuing education hours, learners must visit [www.phlive.org](http://www.phlive.org) and complete an evaluation and post-test for today's offering. This webcast will be available on demand on our website within two weeks of today's show. Please join us on October 20 for the next program, Falls and Their Prevention, a Geriatric and Pharmacologic Imperative. Additional information on upcoming webcasts and relevant public health topics can also be found on our Facebook page. Don't forget to like us on Facebook to stay up to date. Now, you can also let us know how you use public health live by taking a brief survey at [www.phlive.org](http://www.phlive.org). Thanks for joining us on Public Health Live.