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Press Briefing Transcript

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- [Audio recording \(t0912_westnile.mp3\)](#)  (MP3, 9.1 MB)

OPERATOR: Welcome and thank you for standing by. At this time, all participants are in a listen only mode until the question and answer session of today's conference. At that time, you may press star one to ask a question. I would like to inform all participants that today's conference is being recorded. If you have any objections, you may disconnect at this time. I would now like to turn the conference over to Lola Russell. You may begin.

LOLA RUSSELL: Good afternoon. We'd like to welcome you today to our West Nile virus telebriefing. Our speakers today will be Dr. Lyle Petersen, who is Director of the Division of Vector-Borne Diseases and in the CDC's National Center for Emerging and Zoonotic Infectious Diseases as well as Roger Nasci, who will be answering questions related to West Nile virus, who is Chief of the Arboviral Diseases Branch in the same division at CDC and for spelling Roger is spelled R-O-G-E-R, and Nasci is spelled N-A-S-C-I. We will continue with our weekly updates of West Nile numbers after this telebriefing concludes today, on a weekly basis, on Wednesday, but at this point, we do not have any additional plans for telebriefings unless the situation changes regarding the number of disease cases. So let's begin with comments by Dr. Petersen, which will be followed by Q&A session where each reporter will have an opportunity to ask one question and one follow-up. Dr. Petersen.

LYLE PETERSEN: Yeah, Good afternoon. Thank you for joining us for this teleconference, which is our fourth weekly national media update about the current West Nile virus outbreak in the United States. I'd like to begin first by thanking the media for its work to inform the public about the epidemic and the precautions people should take to protect themselves from mosquito bites. As we've reported in the last few weeks, the number of people who have become ill with West Nile virus disease continues to go up, and we expect the numbers will be high at least and through until October. People are understandably worried about this outbreak, and we're working closely with state and local public health departments to control it. One good piece of news is that based on historical that we've turned the corner on the epidemic. Experience has shown us that West Nile outbreaks in the United States tend to peak in mid- to late August. However, people should continue to take preventive measures, which I'll describe later, but we're hopeful that the worst of the outbreak is behind us.

The new numbers I'm sharing with you today were compiled from local and state public health reports sent to us through our national ArboNET surveillance system, which is a tool that's vital to helping us monitor West Nile virus activity across the country. The numbers were just posted this morning on CDC's West Nile virus website that's www.cdc.gov/westnile (<https://web.archive.org/web/20120916013550/http://www.cdc.gov/westnile>), that's one word. As of September 11, 2012, 48 states have reported West Nile virus infections in mosquitos, birds, and people. Only Alaska and Hawaii reported no West Nile virus activity. A total of 2,636 cases of West Nile virus disease in people, including 118 deaths, have been reported to CDC, which is an overall increase of about 35 percent over last week's numbers. Of the 2,636 cases, 1,405 (53 percent) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 1,231 (47 percent) were classified as non-neuroinvasive disease. For comparison, the numbers reported as of September 4 were 1,993 cases total, with 1,069 cases of neuroinvasive disease, and 87 deaths.

The 1,405 cases of West Nile virus neuroinvasive disease is the highest number of such cases reported to CDC through the second week of September since West Nile virus was introduced into the United States in 1999. We consider the number of neuroinvasive disease to be the best indicator of the size of a West Nile epidemic. And if we look at the total number of West Nile virus cases, the 2,636 year-to-date cases is the highest number we've seen through the second week in September since 2003. Now I would like to clarify what these numbers mean right now. First as I mentioned, the number of neuroinvasive disease cases is the highest to-date. We consider neuroinvasive disease the best indicator of the scope of the epidemic, since these cases are most consistently reported, and thus we still continue to believe that this year's outbreak is the most serious outbreak to-date, since West Nile virus was discovered in the United States. Now the numbers of total cases are the second highest that are reported to-date and this is due to a reporting artifact that occurred in 2003.

In 2003, the number of cases of non-neuroinvasive diseases or West Nile fever, went up markedly at this time of year because one state, really tried to identify every single West Nile virus—West Nile fever case in that state at that point and thus huge numbers of West Nile virus fever cases were artificially reported in that year. Thus, this year were the second highest in total cases but first highest in neuroinvasive disease cases. So, it's a little confusing and I'll be happy to clarify this further in the question and answer period if necessary. Nevertheless, as I mentioned we still believe that this year's outbreak, because of the number of neuroinvasive disease cases is the most serious outbreak reported to-date. Two-thirds of all cases have reported from six states (Texas, Louisiana, South Dakota, Mississippi, Michigan, and Oklahoma), and 40 percent have been reported from Texas.

In the aftermath of Hurricane Isaac and associated flooding, CDC has been in consultation with officials at FEMA and the states of Louisiana and Mississippi about the need for mosquito control. We do not expect an increase in West Nile virus activity because of the hurricane and related flooding. Such events typically disrupt the complicated West Nile virus transmission cycle involving birds and mosquitos, and so we don't anticipate large increases in the number of human cases as a result of the hurricane. However, mosquito populations will probably increase dramatically in these areas and become a potentially harmful nuisance to residents and those helping with recovery efforts. We will continue to consult with state health departments in Louisiana and Mississippi to assist in evaluating the need for insecticide spraying and other options for mosquito control.

Although we are past the historical peak of West Nile virus activity, it is important that people continue to take steps to avoid mosquito bites. The West Nile virus season will last several more weeks, probably into October. Therefore, I want to remind people about actions they can take to protect themselves from mosquito bites. We encourage everyone to:

- Use repellents when you go outdoors.

- Empty standing water from items outside your home such as gutters, flowerpots, buckets, kiddie pools, and birdbaths.
- Wear long sleeves and pants during dawn and dusk.
- Install or repair screens on windows and doors.
- Use air conditioning, if possible.
- Support your local community mosquito control programs.

As I mentioned before, we think the worst part of the epidemic is behind us. Therefore, barring any unexpected developments, this will be our final national telebriefing of the 2012 West Nile season. We will continue to post new West Nile virus case numbers and other related information each week on Wednesday mornings on our website at www.cdc.gov/westnile (<https://web.archive.org/web/20120916013550/http://www.cdc.gov/westnile>). I want to again express my appreciation to the media for its strong interest in West Nile and for communicating important prevention messages to the American public. The 2012 epidemic has raised a number of challenging questions. In the weeks and months ahead, we'll be working to try to answer some of those questions, and we'll produce a full report for release in the spring of next year.

I'd like to close by thanking our partners at the state and local health department throughout the country, especially in the hardest hit areas, such as Texas. These are the individuals who are on the frontlines of public health collecting information and reporting it up the line to CDC so that all of us, collectively, can have an understanding about what is happening with West Nile virus and other human pathogens.

Thank you very much and Dr. Nasci and I are happy to answer any questions you may have about the West Nile virus epidemic.

OPERATOR: Thank you, at this time we're ready to begin the question and answer session. If you would like to ask a question please press star one and record your name clearly. Again, press star one to ask a question, to remove your question you may press star two. Our first question comes from John Serrie with Fox News. You may ask your question.

JOHN SERRIE: Yeah, good afternoon, thanks for taking my question. I want to make sure that I understand the nuances between the number of cases reported and the severity of the outbreak. Would it be accurate to say that the figures are the highest that they've been through the second week of September for any year since 2003 in terms of total cases reported, but the most serious outbreak in terms of severe illness since West Nile was first detected in the U.S. in 1999?

LYLE PETERSEN: That is correct. You've got it straight, but remember that neuroinvasive disease cases, excuse me, we suggest that all of them are tested, of course, because they have severe -- serious disease, and so the neuroinvasive disease cases are the ones that are most consistently reported from year to year, and of course, they're the ones that we're most concerned about, because they have the most severe disease. Now, the non-neuroinvasive disease cases are the West Nile fever cases. We estimate that only about 2 to 3 percent of those cases are actually reported. The reasons for that are that we don't recommend routine testing for West Nile fever cases. Many of these people may not go to the doctor or if they do go to the doctor, the doctor just may say you have West Nile fever and since there's no treatment and we don't recommend routine testing, that they're never tested and reported into our system. So what happened in 2003 was that one state really tried to test as many West Nile fever cases as they could identify. Thus the number of cases of West Nile fever that were reported to us was, went way up in 2003 at this time of year. This is just simply an artifact of testing and reporting, but is not a measure of what was actually consistently happening in that epidemic in that year. So given that artifact in 2003, and the fact that we have more neuroinvasive disease cases than we've ever had at this time of year, we still believe that this year's outbreak is the largest to date, and certainly the most serious.

OPERATOR: Thank you, our next question comes from Manny Fernandez with New York Times, you may ask your question.

MANNY FERNANDEZ: Hello, thanks for taking my question. I have two questions about the Dallas County situation. First, if you could put the Dallas County's 15 deaths into context, in previous West Nile outbreaks in the U.S., have there been other counties that have had as many deaths? And then also five of the counties, 15 deaths were in a 16-square mile area of two zip codes that are sort of catty corner to each other in North Dallas, and I'm just wondering if you guys have any sort of guesstimates or have determined why so many deaths happened in such a small geographic area.

LYLE PETERSEN: Well, I do not have the data in front of me of numbers of deaths per county, but what I can tell you is the number of deaths is likely to go up, simply because the number of deaths is kind of a lagging indicator of what happened, because simply it takes somebody who gets severe disease, they may die a week, a month, or even six months later, after the initial illness. So we will expect even if transmission stopped tomorrow, which is not going to be the case, but even if it did stop tomorrow, we would expect the number of deaths to rise across the country, and including Dallas county and surrounding counties. Now, the number of deaths in those counties reflects the high number of neuroinvasive disease cases that have occurred in Dallas and surrounding counties. There's been a tremendous number of cases of severe disease in that area, and we expect based on historical data that somewhere about 8 to 10 percent of the people who do develop neuroinvasive disease will eventually succumb to the infection, and we have no reason to believe that this year's data are going to be any different than previous years. Did that answer your question?

MANNY FERNANDEZ: It does, yes, thank you. And how about that second part on that small geographic area?

LYLE PETERSEN: So if I understand the question correctly, it's why there are so many deaths in that small geographic area which is related to the number of neuroinvasive disease cases in that area, which is related to the intensity of the outbreak in that area, and the reason is why the outbreak has been so intense in the Dallas area is still a matter of speculation. We know that West Nile Virus fever outbreak or West Nile virus outbreaks are highly focal. It depends on a number of ecological factors which are hard to measure, and which are influenced by weather. We know that in many parts of the country, it's been abnormally hot this summer, and West Nile virus outbreaks are commonly but not always associated with heat waves but many places as we've noted this year, with heat waves, don't have outbreaks, so we believe it's related to temperature and other ecological factors, which are hard to measure, such as the number of birds, susceptible birds in an area or conditions that may have caused more mosquitos or change the interaction of mosquitos and birds, and all of this, is something that we're going to try and sort out in the upcoming weeks and months, as we start to look at the data in any more detail.

LOLA RUSSELL: Next question, please.

OPERATOR: Thank you the next question comes from Mike Stobbe with the Associated Press. You may ask your question.

MIKE STOBBE: Hi, thank you all for taking the question. First, Dr. Petersen, you talked about the number of neuroinvasive cases up to this point of the year, and how we have more at this point than we have at this point in other years, but what's the record for the 12-month period of an entire year? Have we broken that record? Also, I wanted to ask if you could put in perspective, you said there was a 35 percent increase since the last weekly report. Does that mean its accelerating or decelerating? And bonus question, can you comment on reports of a shortage of test kits?

LYLE PETERSEN: Okay, first is as far as the total number of neuroinvasive disease cases, in 2002, there were 2,946.

MIKE STOBBE: Okay.

LYLE PETERSEN: And in 2003, there were 2,866.

MIKE STOBBE: Okay.

LYLE PETERSEN: So right now, we have, let me look, we have 1,405. So we have about half that number reported so far this year. But based on historical data, we should either catch up or surpass these previous numbers, as cases continue to roll in.

MIKE STOBBE: Okay.

LYLE PETERSEN: Now the 35 percent increase in cases is reflective of a few things. One is that that's a pretty big increase, considering that we're well into the transmission season so 35 percent increase over a big number is a big number, so we're still seeing many, many cases continue to come in, partially that is the fact that West Nile cases is a lagging indicator, one might say, because it takes a while for somebody to get infected, to get sick, to go to the doctor, to get tested and the test results reported to the state health departments and then to us, so we're still largely monitoring cases that occurred several weeks ago, and that was the peak of the epidemic, so we still expect large numbers of cases to be coming in, even for the next several weeks, even though the epidemic itself or the number of infections may be going down at this point. Now, as far as the test kits, I will turn that over to Dr. Nasci, who has been participating on phone calls regarding this issue.

ROBERT NASCI: Thanks, Lyle. Early last week we started to hear indications from state health departments that there was a shortage of the test kits developing, and that several of the commercial laboratories, that their jurisdictions relied on for testing were running out of test kits for West Nile virus and were starting to stockpile the human serum samples for testing when they received their kits. We quickly contacted the Association of Public Health Laboratories (APHL), who is a liaison, a professional group that is a network coordinator of all the state public health laboratories, to determine what extent of the problem was. We also contacted the company that provide those test kits, and what we found was that there was, indeed, a short term shortage that was being addressed by the suppliers. The Monday and Tuesday of last week, the primary suppliers were in the process of packing and shipping the back orders that they had received, and by Tuesday and Wednesday of last week, those orders had been shipped and we have heard from the state health laboratories that the short term shortage of tests was resolved. We subsequently worked with APHL to hold a conference call to network with all of the state health laboratories to determine if they were still experiencing any problems, to make sure that the communication network was in place, and to come up with contingency plans, should this happen again. However, we hear reports from the laboratories and from the providers of those tests that they anticipate that they should be able to meet the need for the remainder of the season.

OPERATOR: Thank you, our next questions from Elizabeth Weiss with USA Today.

ELIZABETH WEISS: Hi, thanks so much for taking my call. Actually, I had the same question Mike had but I wanted you to address it in terms of not neuroinvasive disease but in terms of deaths. So, what were our highest death years and where do we stand in terms of that and do you expect we will meet or exceed the numbers in 2002 and 2003, and my bonus question is, where was the epicenter of those outbreaks in 2002, 2003, and is it different this year?

LYLE PETERSEN: Okay, okay. I do not have the numbers of deaths that were reported in 2002 and 2003.

ROBERT NASCI: Actually, we do.

LYLE PETERSEN: Actually, I do have it. Hang on. I'm pulling out some papers here.

ROBERT NASCI: There we go. Final column on the right.

LYLE PETERSEN: So the number of deaths recorded in 2002 was 284, and the total number of deaths in 2003 was 264. And;--

ROBERT NASCI: Current year is 118.

LYLE PETERSEN: -- the current year is 118 and remember deaths is the most lagging of all indicators, since deaths are often reported weeks or months after the initial onset of cases, so these numbers of deaths will be updated throughout the year, and even into next year, as state and local health departments follow up on cases. Now so basically, if this year turns out that we'll have the most number of neuroinvasive disease cases of any year, which is what we're on track of, we would expect that this year would have the largest number of deaths as any year. Now, the outbreaks in 2002 and 2003, the outbreaks in 2002 and 2003 occurred as West Nile virus is marching across the United States from New York city to the pacific coast, and in 2002, the outbreaks largely occurred in the central part of the United States, roughly from about Louisiana up through Chicago, and in 2003, the outbreak occurred further west in kind of the western plains states and some of the mountain states, like Colorado, but if you look on our website, we have, there's a link of historical archives I believe it's called, and if you click on that, you will see maps of where these outbreaks occurred every single year to date. Did that answer your question? Multiple questions?

OPERATOR: We'll go on to the next question. One moment, please. Our next question comes from Richard Knox with National Public Radio. You may ask your question.

RICHARD KNOX: Hi, thanks for the chance. Two things, one is you started to answer this earlier I think, but what questions do you expect to explore that are hanging out there about this year's outbreak, and could you give us a bit of a feel for how you're going to have to address those questions, and secondly, by your rule of thumb, you mentioned in earlier teleconferences it sounds to me as though at the moment you might think that there might be around 400,000 West Nile infections or West Nile fever cases, I'm not sure which, based upon the 150 cases for every neuroinvasive case reported. I wonder if you could verify that and tell me whether we're talking about 400,000 infections or 400,000 cases of fever.

LYLE PETERSEN: Okay, so first of all, to answer your question about what questions we are going to be looking at, first, the question that everybody's been asking is, what happened this year? What factors seemed to precipitate this outbreak, particularly in the Dallas area, and -- so that's one question we're going to be looking at, and we'll be looking at weather, data, and other kinds of factors that may have precipitated such an outbreak, and that's a complicated process, because it's just not maybe the monthly rainfall that may be important. It may be just a freak rainstorm in one week, you know? We don't really know, so we're going to be looking at all the ecological factors that started happening at the beginning of this year, and try and sort it out, what may have precipitated this outbreak.

The second question is what was the effect of the control operations done in Dallas? As you know, part of the area was subjected to aerial spraying with insecticides to reduce the number of vector mosquitos and in fact in areas where we have good data it showed the number of vector mosquitos went down by 93 percent. So the question is, is when all of the human data eventually comes in, what was the impact on human cases, and that's another factor we're going to be looking at. Another factor that we might be looking at, you know, looking at all the years, is to continue to see if we can identify general patterns of West Nile virus infection in the United States, and continue to look at what are the high risk areas and what are the factors that may make certain areas high risk.

Lastly, we're going to be looking at clinical cases, and not necessarily in Dallas, but we have a number of ongoing studies where we're trying to figure out what the long-term impacts of West Nile virus are. We're still gathering data. The infection's only been here for 13 years, and so we really want to know what the long-term public health impacts and impacts on people are, so those are kind of some of the main questions we're going to be looking at.

Now as far as the numbers go, as you pointed out, the number of infections to neuroinvasive disease cases, that ratio is somewhere about 1:150 to 1:250, somewhere in that range, and so one might surmise that if there's 3,000 cases of neuroinvasive disease, that could translate into roughly 450,000 infections. Now, we know that about 20 to 25 percent of people who do get infected do develop some disease, and so if you multiply that 450,000 by 20 to 25 percent, you're going to get a number somewhere in the 100 to 150,000 range of the number of infections that actually occurred.

LOLA RUSSELL: Jennifer, we'll take the next question.

OPERATOR: Thank you, next question comes from Lena Sun with the Washington Post. You may ask your question.

LENA SUN: Hi Dr. Petersen, I assume that in --the things you're going to be looking into as well on the clinical side is why there has been this increasing severity in neuroinvasive cases, right, you don't really know why?

LYLE PETERSEN: We have no evidence that there is any increase in severity of neuroinvasive disease cases since the virus came into the United States, but that is actually another important point that I forgot to mention in the last question. One of the things we're going to be looking at is the genetic characteristics of the virus that circulated this year and see if there's any change in this virus that may have altered the course of the epidemic. We do not believe that is the case, but we just want to make sure, and make sure that the virus, let's say, is not more virulent than it used to be. But, there's no reason to believe that's the case at this point in time.

LENA SUN: Thank you.

LYLE PETERSEN: We believe that just as other ecological factors that just promoted the transmission of this virus in nature, which then translated into a human epidemic.

LOLA RUSSELL: Jennifer, next question please.

OPERATOR: Thank you. Next, question comes from Shannon Pettypiece with Bloomberg News. You may ask your question.

SHANNON PETTYPIECE: Hi, I think I understand with what you're saying this having peaked because historically you see a peak in August but I was wondering with the weather continuing to be warm through at least early September in so many places, is there a possibility that this hasn't peaked because we are seeing so much warm weather, and then my follow-up, I just wanted to make sure I was understanding one of the previous questions correctly. Would it be fair to say that this is now on track to be the deadliest outbreak of West Nile on record? Thanks.

LYLE PETERSEN: As far as the warm weather goes, yes. The longer the weather stays warm, the more transmission that's going to occur, and so it's certainly possible that in some areas of the country the outbreak may not have peaked yet. We will only know that when all is said and done in the end, but based on historical data that we believe in most areas of the country, the epidemic probably peaked around the end of August. But certainly there is as you point out a lot of transmission that still could be occurring in many parts of the country. The other thing that happens around this time of year is the days get shorter and the mosquitos actually change their behavior, and start to go into kind of a hibernation phase, and stop biting people, so that's another factor, but we know from previous years that at least in the southern United States, that cases can occur all year round, and even in some areas in the north during some hot periods, you can find infections occurring even in November and December, as we saw in Boston one year. So we're not out of the woods yet, but any stretch of the imagination. What was the second part of your question?

OPERATOR: One moment, please.

LOLA RUSSELL: Deadliest outbreak.

SHANNON PETTYPIECE: Sorry, is my line open now? I was wondering, if I was understanding correctly would it be fair to say that this outbreak is on track to become the deadliest on record, given the number of cases and the number of deaths you've already seen?

LYLE PETERSEN: Yes.

SHANNON PETTYPIECE: Okay.

LOLA RUSSELL: Jennifer, next question please.

OPERATOR: Thank you. The next question comes from Robert Lowes with Medscape Medical News, you may ask your question.

ROBERT LOWES: Yes, thank you for taking my call, Dr. Petersen. I have a question as related to the issues of the past shortage of diagnostic kits. Apparently there's also been reports of staffing crunches in labs, not enough lab workers to handle the volume of tests. Can you talk about that? Apparently that's resulted in delayed diagnoses. Has that altered the reporting and what's been your take on the issue of lab staffing and then the issue of delayed diagnoses when you add in the past shortage of the diagnostic kits.

LYLE PETERSEN: We do not keep data on what is happening as far as staffing goes in state laboratories, and I think a better person or better group to answer your question would be the Association of Public Health Laboratories or APHL, and we can get you the contact number for those people off line later.

ROBERT LOWES: Okay.

OPERATOR: Thank you and our next question comes from Dena Bunis with CQ HealthBeat. You may ask your question.

DENA BUNIS: Actually my question's been answered, thank you.

OPERATOR: We'll go on to the next question from Ninoska Marcano with Kids Health at about.com.

NINOSKA MARCANO: Thank you for taking my question. I would like if you could comment about pediatric cases in general, since there's been such an increase in relation to other years, if you could comment on deaths in neuroinvasive diseases, if that has actually increased this time around.

LYLE PETERSEN: I do not have that data in front of me right now but undoubtedly, those numbers have gone up, simply because we know that mosquitos tend to bite people of all ages, and equally, mosquitos are equal opportunity biters in terms of age. And so certainly more kids have been exposed to this infection, just because of the large size of the outbreak, and thus I would expect that the number of pediatric cases like every other age group has gone up this year. I just don't have the numbers in front of me right now. We can get those numbers for you later, but I think the two important points are, one is that kids are actually less of a risk of developing severe disease than adults. That's the good part. The bad part is that we know that severe disease can occur in any age. We've seen severe disease in children as young as a couple weeks old to adults over 100 years of age. So anybody is at risk, just children are lucky in that they're less likely to get severe disease, but they still are at risk, and people do need to take precautions.

NINOSKA MARCANO: And following up with your response, could you comment, if there has been any pediatric deaths in this opportunity?

LYLE PETERSEN: I do -- I frankly don't have the numbers in front of me.

NINOSKA MARCANO: Okay.

LYLE PETERSEN: But we can get you those numbers, just call in to our press office afterwards.

NINOSKA MARCANO: Okay. Thank you.

LOLA RUSSELL: Jennifer, we'll take our last question.

OPERATOR: Thank you Carol Pearson with Voice of America. You may ask your question.

CAROL PEARSON: Hi, Dr. Petersen, I just wanted to get your opinion, has West Nile become endemic in North America, number one, and you mentioned that you've, that it doesn't always follow hot weather. And you don't think that it's going to be a result of a change in the virus. So how can you tease out what happens, you know, if it doesn't always follow hot weather, and if you don't think it's the change in the structure of the virus or the type of the virus? How can you tease out what's actually going on?

LYLE PETERSEN: Okay, first, as far as West Nile virus endemic throughout the United States, and the answer is yes. In almost every area of the United States, the virus is endemic and circulates every year, certain exceptions may be at the top of the rocky mountains or someplace that are totally inhospitable to the virus, but pretty much it is in 98 percent of the United States, and any given year it's just a matter of how much, but it is basically everywhere. Surveillance, if you look on our website, if you look at our surveillance maps you'll see that we can detect West Nile virus in birds or mosquitos or in people or other animals throughout much of the United States, every single year.

The other question was, well, how are we going to tease out the effects of weather? First of all, we know that weather is very important. Temperature effect and rainfall affect a lot of factors related to these outbreaks such as the number of mosquitos, the number of birds, how these birds interact with mosquitos, the lifespan of the mosquito, the speed at which the virus replicates in the mosquito and becomes more transmissible from a mosquito. Mosquitos become infectious faster so there's a very complicated relationship of temperature and rainfall to all of these factors that are involved in West Nile virus transmission. Now, we will look at the data very carefully to, when all the data from the National Weather Service and everything is in, and try and make mathematical models to see if they're predictive of whether a West Nile virus outbreak will occur in any given location. Now the models that we've made to date and have not been very successful, just because it's very, very, very complicated, as I've just explained, and it may just take a number of years of even more years of observation, to kind of tease all of this out, so I'm not too optimistic that we'll eventually be able to say yeah, this was the absolute cause of this year's outbreak, but hopefully as we gather more data, we'll be able to get some better idea about what are the precipitating factors.

Now, as I mentioned before, West Nile virus outbreaks often occur during heat waves, but not always, but if you look, one thing for certain is when the temperature is abnormally cold, outbreaks do not occur, so temperature is very important. All of the major outbreaks in the United States to date, the big

ones that we've had have occurred when the temperature was abnormally warm. In 2002 and 2003, they occurred during periods when the temperature was above normal, as occurred this year, and in fact, when the virus was discovered in 1999 in New York City, during that initial outbreak, they also had one of the hottest summers on record. But if you look in other parts of the world some of the outbreaks have been related to heat waves and others haven't. So we're still, this is a factor that we're still trying to tease out.

LOLA RUSSELL: Thank you so much. This concludes our call for today, on West Nile virus, update of our surveillance numbers, as well as an explanation of what's going on currently in this country. If you have additional questions please call the CDC press office at 404-639-3286, that's 404-639-3286. We will have an audio version available within a few hours, followed by a transcript following the briefing and you can find those at www.CDC.gov/media. Again, thank you so much for calling in.

OPERATOR: Thank you for joining today's conference. This has concluded the call. You may disconnect your lines at this time.

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