



West Virginia

EPI-LOG

2010 mosquito-borne disease surveillance LaCrosse encephalitis still the most common

Mosquito-borne diseases are transmitted to humans from the bite of an infected mosquito. Most mosquito-borne diseases are viruses and are known as arboviruses, but parasites, such as malaria, can also be transmitted by mosquitoes. The primary mosquito-borne disease reported in West Virginia is the arbovirus, La Crosse encephalitis virus (LAC). Another arbovirus, West Nile virus (WNV), has previously caused human illness in West Virginia and has been identified in mosquitoes for the past several years. Other arbovirus activity in West Virginia includes past human cases of St. Louis encephalitis virus (SLE), primarily during the 1970's, and the detection of Eastern Equine Encephalitis virus (EEE) in two birds during 2002. Travel-associated cases of mosquito-borne diseases are also detected each year in West Virginia as persons traveling out of the country can be exposed to mosquito-borne diseases such as dengue fever and malaria.



Surveillance for arboviruses and other mosquito-borne diseases is important in understanding the public health impact of these diseases and monitoring for changes in disease activity. In West Virginia, surveillance efforts focus mainly on arboviruses and involve four components: mosquitoes, dead

(See *Mosquitos*, page 6)

Statewide Disease Facts & Comparisons

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Office of Epidemiology
& Prevention Services

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Office of Epidemiology & Prevention Services

AIDS Surveillance	(304) 558-2987
AIDS Prevention	(304) 558-2195
Cancer Epidemiology	(304) 558-6421
Infectious Disease Epidemiology	(304) 558-5358
Immunization Services	(304) 558-2188
Sexually Transmitted Diseases	(304) 558-2950
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Earl Ray Tomblin, Acting Governor
Michael J. Lewis, Secretary (DHHR)

Infectious Disease Outbreaks, January-March 2011

Outbreaks of infectious diseases are immediately reportable in West Virginia. Between January and March 2011, there were 95 outbreaks reported in West Virginia. This represents a three-fold increase over the first three months of 2009 and 2010. Of the 95 outbreaks reported during this period, 86 (91%) were confirmed as outbreaks or clusters of disease and 4 (4%) are still under investigation. Of the 86 confirmed outbreaks, 55 (64%) were reported from healthcare facilities. 85 outbreaks were reported from 31 counties. One outbreak was considered a multi-county outbreak and involved 11 counties. Of the 86 confirmed outbreaks, 42 (48%) were respiratory disease outbreaks, 25 (29%) were enteric disease outbreaks, 14 (16%) were rash illness outbreaks, and 5 (6%) outbreaks were categorized as "other".

Respiratory Diseases

Forty-two respiratory disease outbreaks were reported from 22 counties. Of the 42 respiratory disease outbreaks 27 (64%) were confirmed by laboratory testing. Influenza outbreaks were the most common, accounting for 33 respiratory disease outbreaks. Of the 33 influenza outbreaks, 19 (58%) were reported from long-term care facilities (LTCFs).

Respiratory Disease Outbreaks, West Virginia, January - March 2011 (N=42)

Type of Outbreak	Number of outbreaks	Reporting Source	Laboratory Testing
Influenza	33	Multiple Sources	See below
RSV	2	2 LTCFs	2 Lab Confirmed
Upper Respiratory Illness (URI) (Undetermined etiology)	6	2 Schools 2 LTCF 2 Daycare	4 No testing done 2 Negative or non-contributory lab results
Pertussis	1	Community	Lab confirmed

Influenza Outbreaks, West Virginia, January - March 2011 (N=33)

Type of Outbreak	Number of outbreaks	Reporting Source	Laboratory Testing
Influenza A	27	19 LTCFs 8 Schools	21 Lab confirmed 6 Rapid test positive
Influenza B	3	Schools	2 Rapid test positive 1 Lab confirmed
Influenza A and B	2	Schools	1 Lab confirmed 1 Rapid test positive
Influenza (no typing)	1	Sports team	Rapid test positive

Enteric Diseases

Twenty-five enteric disease outbreaks were reported from 15 counties. Of the 25 enteric disease outbreaks, 16 (62%) were confirmed by laboratory testing.

Enteric Disease Outbreaks, West Virginia, January - March 2011 (N=25)

Type of Outbreak	Number of Outbreaks	Reporting Source	Laboratory Testing
Norovirus	15	1 Rehabilitation facility 1 Hospital 12 LTCFs	Lab Confirmed
Norovirus/Rota virus	1	1 Hospital	Lab confirmed
Acute Gastroenteritis	9	LTCFs	5 No testing done 4 Negative or non-contributory lab results

Rash Illnesses

Fourteen rash illness outbreaks were reported from 23 counties, including multi-county outbreaks. Of the 14 rash illness outbreaks, 6 (43%) were confirmed by laboratory testing.

Rash Illness Outbreaks, West Virginia, January - March 2011 (N=14)

Type of Outbreak	Number of Outbreaks	Reporting Source	Laboratory Testing
Scabies	4	2 Hospitals 2 LTCF	No Lab done / clinical diagnosis
Ringworm	1	School	No lab done / clinical diagnosis
Varicella	7	Schools	3 Lab confirmed 4 No testing done
Herpes Gladiatorum	1	Sports teams	Lab confirmed
Fifth's Disease	1	School	No lab done / clinical diagnosis

Other Outbreaks

Of the 5 confirmed outbreaks characterized as "other", 4 were caused by multi-drug resistant organisms (MDROs) and one outbreak was clinically diagnosed as conjunctivitis.

MDROs Outbreaks, West Virginia, January - March 2011 (N=4)

Type of Outbreak	Number of Outbreaks	Reporting Source	Laboratory Testing
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	2	1 Hospital 1 Day care	Lab confirmed
<i>Acinetobacter baumannii</i>	1	Hospital	Lab confirmed
Carbapenem-Resistant <i>Klebsiella pneumoniae</i> (CRKP)	1	Hospital & LTCF	Lab confirmed

Healthcare-Associated Outbreaks

Fifty-five of the 86 confirmed outbreaks were reported from healthcare facilities and were classified as healthcare-associated outbreaks. Of these 55, 49 (89%) were reported from long-term care facilities and 6 (11%) from hospitals.

Healthcare-Associated Outbreaks, West Virginia, January - March 2011

Type of Outbreak	Number of outbreaks	Percent
Enteric	25	45.5%
Respiratory	23	42.0%
Rash	4	7.0%
MDROs	3	5.5%
Total	55	100%

(See **Outbreaks**, page 7)

Enjoy the water and stay healthy!

2011 Recreational Water Illness and Injury (RWII) Prevention Week

The week before Memorial Day (May 23–29, 2011) is Recreational Water Illness and Injury (RWII) Prevention Week. The goal of this observance is to raise awareness about healthy and safe swimming behaviors, including ways to prevent recreational water illnesses (RWIs) and injuries. RWIs are caused by germs spread by swallowing, breathing in mists or aerosols of, or having contact with contaminated water in swimming pools, hot tubs, water parks, water play areas, interactive fountains, lakes, rivers, or oceans. RWIs can also be caused by chemicals in the water or chemicals that evaporate from the water and cause indoor air quality problems.

“Prevent Swimmer’s Ear” is the theme for this year’s RWII Prevention Week. Swimmer’s ear (also known as otitis externa) is an infection of the outer ear canal that can cause pain and discomfort for swimmers of all ages. Swimmer’s ear affects millions of Americans every year and results in hundreds of millions of dollars in hospitalization costs. The good news is that swimmer’s ear is preventable. This year, to help ensure a healthy and pain-free swimming experience, the Centers for Disease Control and Prevention (CDC) is encouraging swimmers to follow the Swimmer’s Ear Prevention Guidelines below.

Swimmer’s Ear Prevention Guidelines

DO keep your ears as dry as possible.

- Use a bathing cap, ear plugs, or custom-fitted swim molds when swimming.

DO dry your ears thoroughly after swimming or showering.

- Use a towel to dry your ears well.
- Tilt your head to hold each ear facing down to allow water to escape the ear canal.
- Pull your earlobe in different directions while the ear is faced down to help water drain out.
- If there is still water left in ears, consider using a hair dryer to move air through the ear canal.
- Put the dryer on the *lowest* heat and speed/fan setting; hold it several inches from the ear.

DON’T put objects in the ear canal (including cotton-tip swabs, pencils, paperclips, or fingers).

DON’T try to remove ear wax. Ear wax helps protect your ear canal from infection.

- If you think that the ear canal is blocked by ear wax, consult your healthcare provider.

CONSULT your healthcare provider about using ear drops after swimming.

- Eardrops should *not* be used by people with ear tubes, damaged ear drums, outer ear infections, or ear drainage (pus or liquid coming from the ear).

CONSULT your healthcare provider if you have ear pain, discomfort, or drainage from your ears.

For more information on RWI prevention, visit www.cdc.gov/healthywater/swimming/rwi/rwi-prevent.html.

For more information on drowning prevention, visit www.cdc.gov/SafeChild/Drowning/index.html.

For more information about healthy swimming, visit CDC’s Healthy Swimming website at www.cdc.gov/healthyswimming. ☒



Links to CDC Healthy Swimming Information and Resources

CDC's Healthy Swimming Site (All Audiences)	www.cdc.gov/healthywater/swimming
EPA's Beaches Site (All Audiences)	www.epa.gov/beaches/
General info on Oceans, Lakes, and Rivers (All Audiences)	www.cdc.gov/healthywater/swimming/oceans/
Water-Related Injury Links (All Audiences)	www.cdc.gov/HomeandRecreationalSafety/Water-Safety/index.html www.cdc.gov/healthywater/swimming/injury/
Overview of RWIs (All Audiences)	www.cdc.gov/healthywater/swimming/rwi/
Healthy Swimming Data/Statistics and Reports on Recent RWI Outbreaks (All Audiences)	www.cdc.gov/healthywater/swimming/data/
FAQs (All Audiences)	www.cdc.gov/healthywater/swimming/faq/index.html
Healthy Swimming Brochures (All Audiences)	www.cdc.gov/healthywater/swimming/resources/brochures.html
Healthy Swimming Posters (All Audiences)	www.cdc.gov/healthywater/swimming/resources/posters.html
Illnesses and Germs Spread at Rec Water Facilities (includes 5 fact sheets on most common RWIs) (All Audiences)	www.cdc.gov/healthywater/swimming/resources/fact-sheets/#illnesses
Facts about Swimmer's Ear (All Audiences)	www.cdc.gov/healthywater/swimming/rwi/illnesses/swimmers-ear.html
Swimmer's Ear Prevention Tips (All Audiences)	www.cdc.gov/healthywater/swimming/rwi/illnesses/swimmers-ear-prevention-guidelines.html
Triple A's of Healthy Swimming (All Audiences)	www.cdc.gov/healthywater/swimming/pools/triple-a-healthy-swimming.html
Podcasts on Rec Water and Healthy Swimming (All Audiences)	www.cdc.gov/healthywater/swimming/resources/podcasts.html
Swim Diapers (All Audiences)	www.cdc.gov/healthywater/swimming/pools/swim-diapers-swim-pants.html
Healthy Swimming Video Contest (All Audiences)	www.cdc.gov/healthywater/swimming/rwi/video-contest.html *Page available in mid-May
Information about Chlorine and pH (All Audiences)	www.cdc.gov/healthywater/swimming/pools/disinfection-team-chlorine-ph.html
Press and Matte releases from years past and a sample "evergreen" press release on RWIs (Media)	www.cdc.gov/healthywater/swimming/newsroom/press-releases/#sample
Online Environmental Public Health Training: Swimming Pools and Recreational Facilities (for CEU credits) (For Pool Inspectors)	www.cdc.gov/nceh/ehs/Workforce_Development/EPHOC.html#Started
Aquatics Staff Resources (Aquatic Facility Operators)	www.cdc.gov/healthywater/swimming/audience-aquatics-staff.html
Avoiding Pool Chemical Injuries (Aquatic Facility Operators and Public Health Professionals)	www.cdc.gov/healthywater/swimming/pools/preventing-pool-chemical-injuries.html
Responding to Fecal Incidents (Aquatic Facility Operators and Public Health Professionals)	www.cdc.gov/healthywater/pdf/swimming/pools/fecal-incident-response-recommendations.pdf
Hyperchlorination Guidelines (Aquatic Facility Operators and Public Health Professionals)	www.cdc.gov/healthywater/pdf/swimming/pools/hyperchlorination-to-kill-cryptosporidium.pdf
Article on Need for Pediatricians to Talk to Parents about RWIs (Healthcare Professionals)	www.cdc.gov/healthywater/pdf/swimming/pools/safe-swimming-talk-to-parents-rwi.pdf

Tickborne Diseases in West Virginia, 2000–2010

Tickborne diseases (TBDs) are diseases transmitted by the bite from an infected tick vector and include such diseases as Lyme disease and Rocky Mountain spotted fever (RMSF). The location of human TBD cases depends on the geographic distribution of the tick species responsible for transmitting each type of TBD. The primary tick vectors responsible for transmission of at least 6 TBD conditions have been found in West Virginia.

Certain TBDs are reportable to public health authorities in West Virginia from healthcare providers and laboratories and passive surveillance is conducted to identify these cases. The diagnosis of TBDs, however, can be challenging as some of these infections can initially

produce similar, non-specific clinical symptoms (as in tickborne rickettsial diseases) while other TBDs produce highly variable symptoms (as in Lyme disease). Early recognition and treatment of TBDs by healthcare providers are important to

prevent complications from these disease and decrease morbidity and mortality.

Recently, the zoonotic disease program reviewed all TBD cases reported to the state between 2000–2010. The cases were analyzed to determine number of cases for each TBD, demographic characteristics for TBD cases, and geographic distribution of TBD cases. Highlights from this surveillance summary are presented here. To view the entire report, please go to <http://www.wvdep.org/Portals/31/PDFs/idep/Tick/2010%20WV%20TBD%20Summary.pdf>

The 6 TBD conditions associated with tick species that have been identified in West Virginia are listed in the following table. The number of cases for each TBD reported in West Virginia for the study period are also listed in the table. Four types of TBDs were reported in West Virginia from 2000 through 2010 — tularemia, ehrlichiosis, RMSF, and Lyme disease. The most commonly reported TBD was Lyme disease with 772 cases; this accounts for 92.9% of all TBDs reported during this time. No cases of Powassan encephalitis or anaplasmosis were identified during these years.

For all TBDs, most cases occurred during late spring and early summer. Children aged 5 to 9 years had the highest incidence of Lyme disease, while males aged 20–39 years had the highest incidence of RMSF. Among ehrlichiosis cases, the cumulative disease incidence was highest among persons >60 years of age. While the cases of tularemia, ehrlichiosis, and RMSF were scattered throughout West Virginia, the majority (83.7%) of Lyme disease cases were reported by 3 counties in the Eastern

panhandle: Morgan, Berkeley and Jefferson.

The TBD cases identified in this analysis are consistent with the known distribution of tick vectors in West Virginia. Based on the analysis results, Lyme disease appears to be the primary TBD causing human

illness in this state. However, it is worth noting that although not detected during the study period, the primary tick vectors for Powassan encephalitis (*I. cookei*) and anaplasmosis (*I. scapularis*) do exist in West Virginia. Additionally, a newly reportable tickborne disease in 2011, babesiosis (also transmitted by *I. scapularis*), also may occur in West Virginia. Continued surveillance efforts are important to better understand the distribution of TBDs, to monitor changes in TBDs, and to identify emerging TBDs in West Virginia. ☒

Tickborne Disease ^a	Organism(s)	Tick Vector(s) Present in WV	Number of Cases in WV
Tularemia	<i>Francisella tularensis</i>	Dog tick (<i>Dermacentor variabilis</i>) Lone star tick (<i>Amblyomma americanum</i>)	2
Anaplasmosis	<i>Anaplasma phagocytophilum</i>	Black-legged tick (<i>Ixodes scapularis</i>) ^b	0
Ehrlichiosis	<i>Ehrlichia chaffeensis</i> , <i>E. ewingii</i>	Lone star tick (<i>Amblyomma americanum</i>)	8
Lyme disease	<i>Borrelia burgdorferi</i>	Black-legged tick (<i>Ixodes scapularis</i>)	772
Powassan encephalitis	Powassan virus	Groundhog tick (<i>Ixodes cookei</i>) ^c Black-legged tick (<i>Ixodes scapularis</i>)	0
Rocky Mountain spotted fever and other spotted fever rickettsiosis	<i>Rickettsia rickettsii</i> (and other spotted fever group <i>Rickettsia</i>)	Dog tick (<i>Dermacentor variabilis</i>) Brown dog tick (<i>Rhipicephalus sanguineus</i>)	49

^aOther tickborne diseases, including but not limited to Colorado tick fever, tickborne encephalitis, and Crimean-Congo hemorrhagic fever, may result from travel to regions where these illnesses are endemic.

^b*I. scapularis* is also widely referred to as the deer tick.

(*Mosquitos*, continued from page 1)

birds, horses (equines), and humans. The 2010 Mosquito-Borne Disease Surveillance Report has recently been completed and can be found at <http://www.wvdeh.org/Portals/31/PDFs/idep/Mosquito/2010%20Mosquito-borne%20report.pdf>. The report summarizes mosquito-borne disease surveillance efforts for 2010, with primary focus on arboviral surveillance, and details the number of cases identified among mosquitoes, birds, equines, and humans. Highlights from the 2010 report are presented here.

Mosquito trapping was conducted during 2010 from May to August in 3 counties. A total of 36,731 mosquitoes were collected from 459 mosquito pools. Twenty-six (5.7%) of the 459 pools tested positive for WNV. Positive WNV pools were found in all 3 counties where trapping was conducted. No mosquito pools tested positive for SLE, EEE, or LAC. Nine dead bird specimens from 8 counties were submitted to the Office of Laboratory Services for arbovirus testing; all 9 specimens tested negative. Three equine specimens from 2 counties were submitted for arbovirus testing; all specimens tested negative. The 2010 report also highlights a decrease in the number of submitted specimens for both dead birds and equines.

Eight human cases of LAC were reported in West Virginia from 5 counties during 2010. These counties included Fayette, Kanawha, Mercer, Mingo, and Nicholas. The incidence of LAC during 2010 was 0.4 cases per 100,000 population. The 8 cases had illness onsets ranging from June to October; 50% of cases had illness onset in July. Median age of cases was 7.5 years (range 4 to 18 years) and 50% of cases were female. All cases were hospitalized; no deaths were reported. No human cases of SLE, EEE, or WNV were identified during 2010.

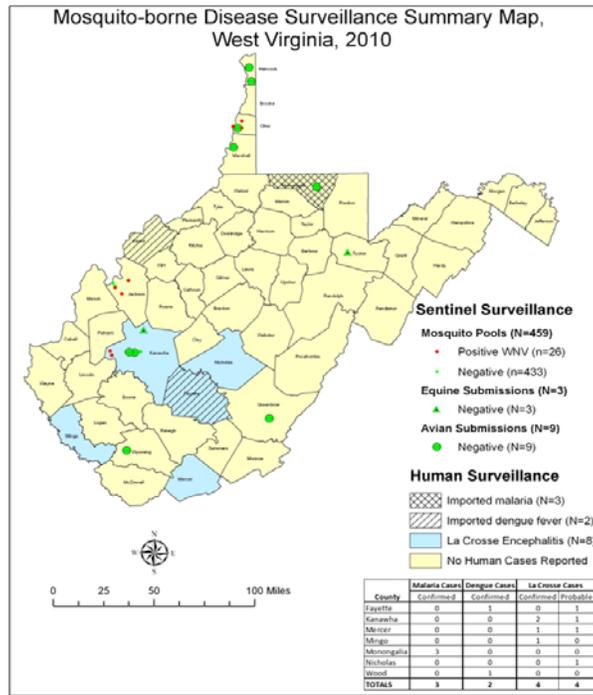
Two cases of travel-associated dengue fever were reported in West Virginia during 2010. The cases had travel histories to Phillipines and Honduras. Both cases were hospitalized; no deaths were reported. Three cases of travel-

associated malaria were reported in West Virginia during 2010. The cases had travel histories to India and Nigeria. Neither case had taken chemoprophylaxis for malaria before traveling to these endemic areas. One hospitalization occurred; no deaths were reported. The 2010 surveillance data indicates that LAC continues to be the major mosquito-borne disease of concern for human illness in West Virginia. The number of cases reported in 2010 represents a continued decrease in cases since 2005. Although no human cases of WNV, SLE, or EEE were detected in 2010, five travel-associated cases of other mosquito-borne diseases were identified (2 dengue fever and 3 malaria cases). WNV was the only arbovirus detected in mosquito pools collected during 2010. This data represents the seventh consecutive year arboviruses have

been detected in mosquito pools and the fifth consecutive year WNV has been detected in mosquito pools. Therefore, WNV has likely become established in WV mosquito populations, although few human cases have been reported. No positive cases of arboviral infection were identified among dead bird or equine specimens.

Arboviruses and other mosquito-borne diseases are unpredictable and surveillance efforts should continue to monitor for changes in disease activity and to identify emerging mosquito-borne diseases in West Virginia. In addition, education and outreach efforts should continue to inform the

public about appropriate prevention measures, including measures to take during travel. Enhanced passive surveillance efforts through outreach to local health departments and healthcare providers will continue in 2011. The decline in the number of specimens for arboviral testing indicates a likely need to evaluate current surveillance methods and determine ways to potentially expand mosquito surveillance to areas of the state where it has not historically been conducted. Outreach to veterinarians may also be important for increasing the number of dead bird and equine specimen submissions. ☒

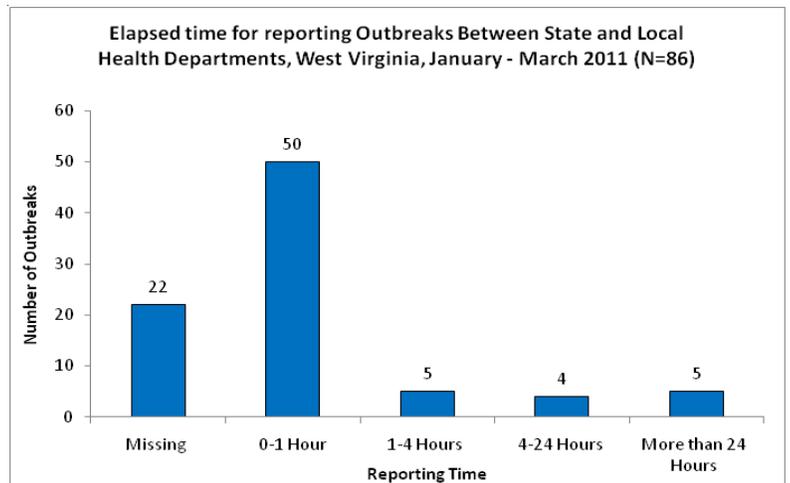


(Outbreaks, continued from page 2)

In West Virginia, infectious disease outbreaks should be reported immediately to the local health departments (LHDs). According to infectious disease rules and regulations, LHDs should report outbreaks within 60 minutes to the Bureau for Public Health (BPH). There has been marked improvement in outbreak recognition and reporting during this reporting period. Of 86 confirmed outbreaks, 50 (58%) were reported to BPH within one hour; however the data was missing in 22 (25.5%) outbreaks.

The graph to the right illustrates the time elapsed for reporting outbreaks between the state and local health departments.

Outbreak toolkits to assist in investigating the most commonly encountered outbreaks can be found at <http://www.wvdeop.org/AZIndexofInfectiousDiseases/OutbreaksorClustersofAnyIllness/tabid/1535/Default.aspx>. ☒



7th Annual HIV in West Virginia Conference



The 7th Annual HIV in West Virginia Conference was held April 8th at Lakeview Resort and Conference Center near Morgantown.



LEFT: Hazel Jones-Parker, a Nurse Educator for AIDS Education and Training Center at the University of Maryland, talks about primary care for HIV-positive patients



ABOVE: Dr. Janaki Kuruppu, Assistant Professor of Medicine at the University of Maryland's Institute of Human Virology, spoke on HIV pathogenesis.

RIGHT: Dr. Arif Sarwari, Medical Director of the WVU Positive Health Clinic, covers the latest research into pre-exposure prophylaxis for HIV.



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**West Virginia Department of Health and Human Resources -
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