

Annual Outbreak Report

2013

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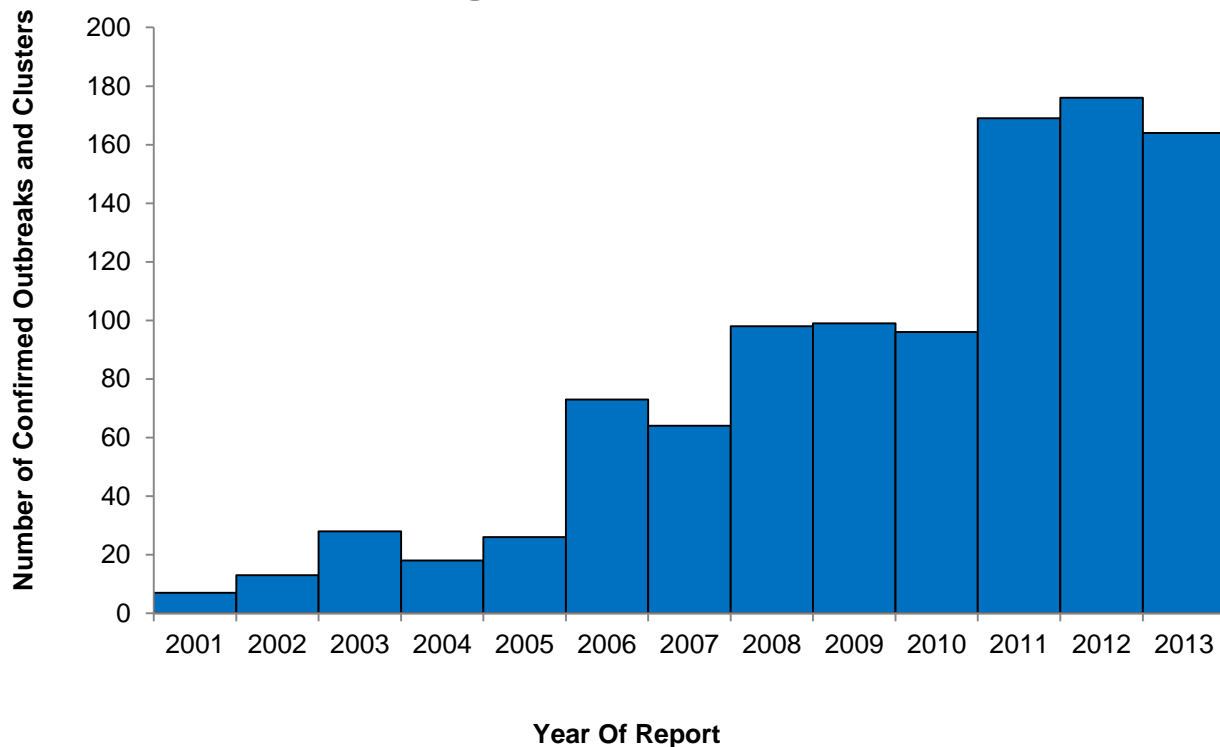
2013 Final Outbreak Report State of West Virginia (WV)

Introduction

In 2013, a total of 185 outbreaks were identified and reported to local health departments (LHDs). Of these reports, 164 (88.6%) were confirmed as outbreaks or clusters of disease (Appendix). LHDs investigate and report outbreaks with assistance from their regional epidemiologist and the Bureau for Public Health (BPH), Division of Infectious Disease Epidemiology (DIDE). Results of these investigations were compiled by DIDE and summarized in this report.

The total number of outbreaks reported in West Virginia has dramatically increased since 2001. In 2001, 7 confirmed outbreaks were reported. In 2013, 164 confirmed outbreaks were reported, representing a 24-fold increase (Figure 1).

**Figure 1. Confirmed Outbreaks or Clusters,
West Virginia, 2001 - 2013 (n=1031)**



Methods:

Data on outbreaks were compiled in Microsoft Excel 2010. Data collected includes information on outbreak type and setting, reporting county and region, time of reporting to LHDs and BPH, clinical diagnosis, laboratory information and specific pathogens, mode of transmission, completion of final report, and lead investigator. Data were analyzed in Epi Info (TM) 7.1.3.10.

Results:

Jurisdiction:

In 2013, 160 (98%) confirmed outbreaks were limited to West Virginia residents, and 4 (2%) outbreaks involved residents of other states. The Centers for Disease Control and Prevention (CDC) led the investigation in 3 multi-state outbreaks and West Virginia led the investigation in the remaining one.

Type of Outbreaks

The most common type of outbreaks involved respiratory illness, followed by enteric illness, and rash illness outbreaks. Multidrug-resistant organisms (MDROs) outbreaks represented only 4% of total confirmed outbreaks (Table 1).

Table 1. Confirmed Outbreaks by Type, West Virginia, 2013

Outbreak Type	Number of Outbreaks n=164	Percent
Respiratory	74	45
Enteric	52	32
Rash	25	15
MDROs	7	4
Other	6	3

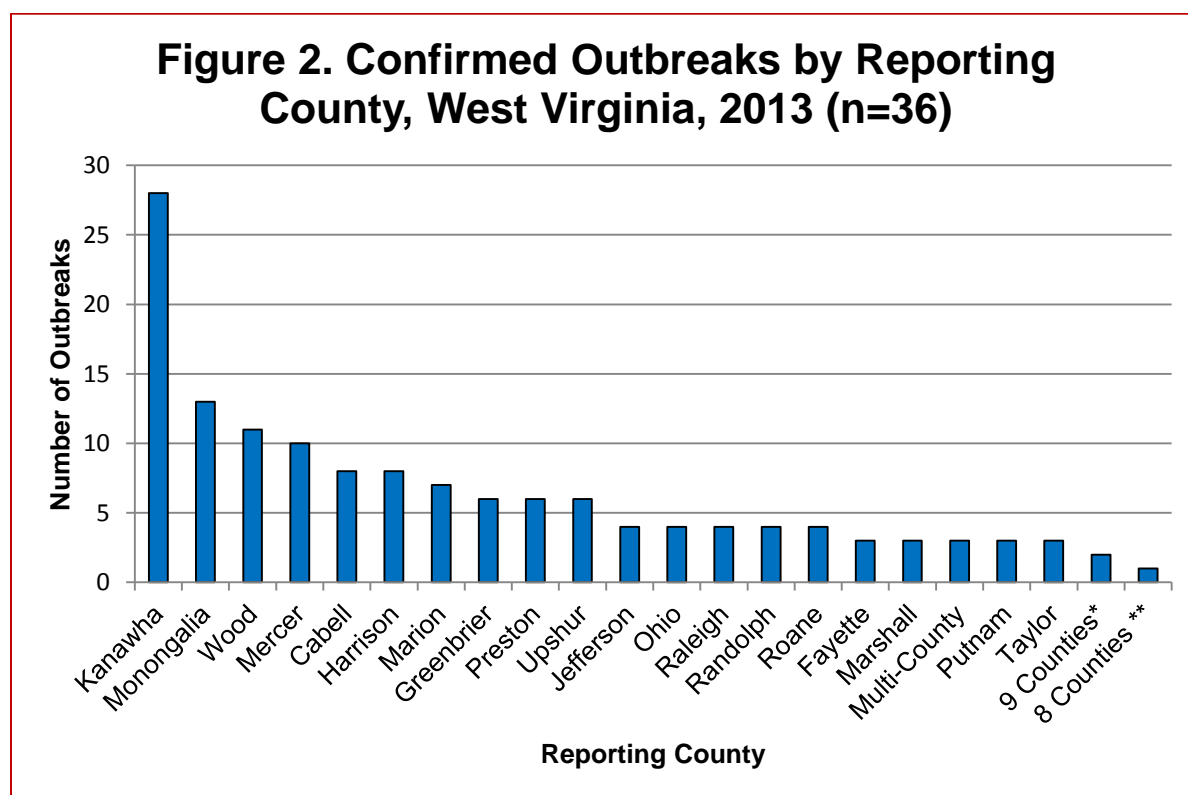
Outbreak Performance Measures

In order to improve outbreak response at the state, regional and local levels and to meet several grant requirements, DIDE has implemented performance measures. These measures include:

- Number of outbreaks reported by each county and region
- Proportion of outbreaks with complete and appropriate laboratory confirmation
- Timeliness of notification between LHDs and BPH/DIDE
- Number of final outbreak reports generated by each county

Outbreaks by Reporting Counties/Regions:

In 2013, 37 (65%) counties reported outbreaks (Table 2). Three outbreaks were multi-county outbreaks (Table 3). The highest number of outbreaks (28) was reported from Kanawha County followed by 13 from Monongalia County and 11 from Wood County (Figure 2). Individual outbreaks will be reported by surveillance region rather than by reporting county to maintain confidentiality of the reporting entity.



* 9 counties had 2 outbreaks ** 8 counties had 1 outbreak

Table 2. Confirmed Outbreaks by Reporting County, West Virginia, 2013 (n=164)

Counties with Cases	Number of Outbreaks
Barbour	1
Berkeley	2
Brooke	2
Cabell	8
Clay	2
Fayette	3
Greenbrier	6
Hancock	2
Hardy	2
Harrison	8
Jefferson	4
Kanawha	28
Logan	2
Marion	7
Marshall	3
Mason	1
Mercer	10
Mineral	1
Monongalia	13
Monroe	2
Morgan	2
Multi-Counties*	3
Nicholas	2
Ohio	4
Pocahontas	1
Preston	6
Putnam	3
Raleigh	4
Randolph	4
Ritchie	1
Roane	4
Taylor	3
Tyler	1
Upshur	6
Wayne	1
Wetzel	1
Wood	11
Total	164

*See Table 3 for details

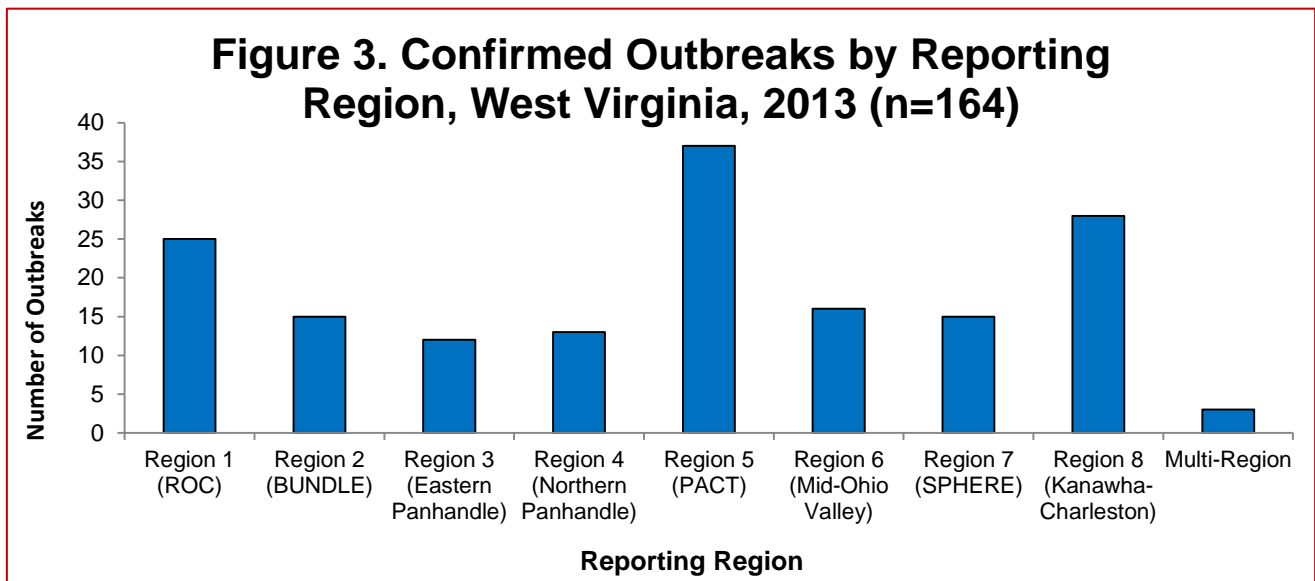
Table 3. Multi-County Outbreaks, West Virginia, 2013 (n=3)

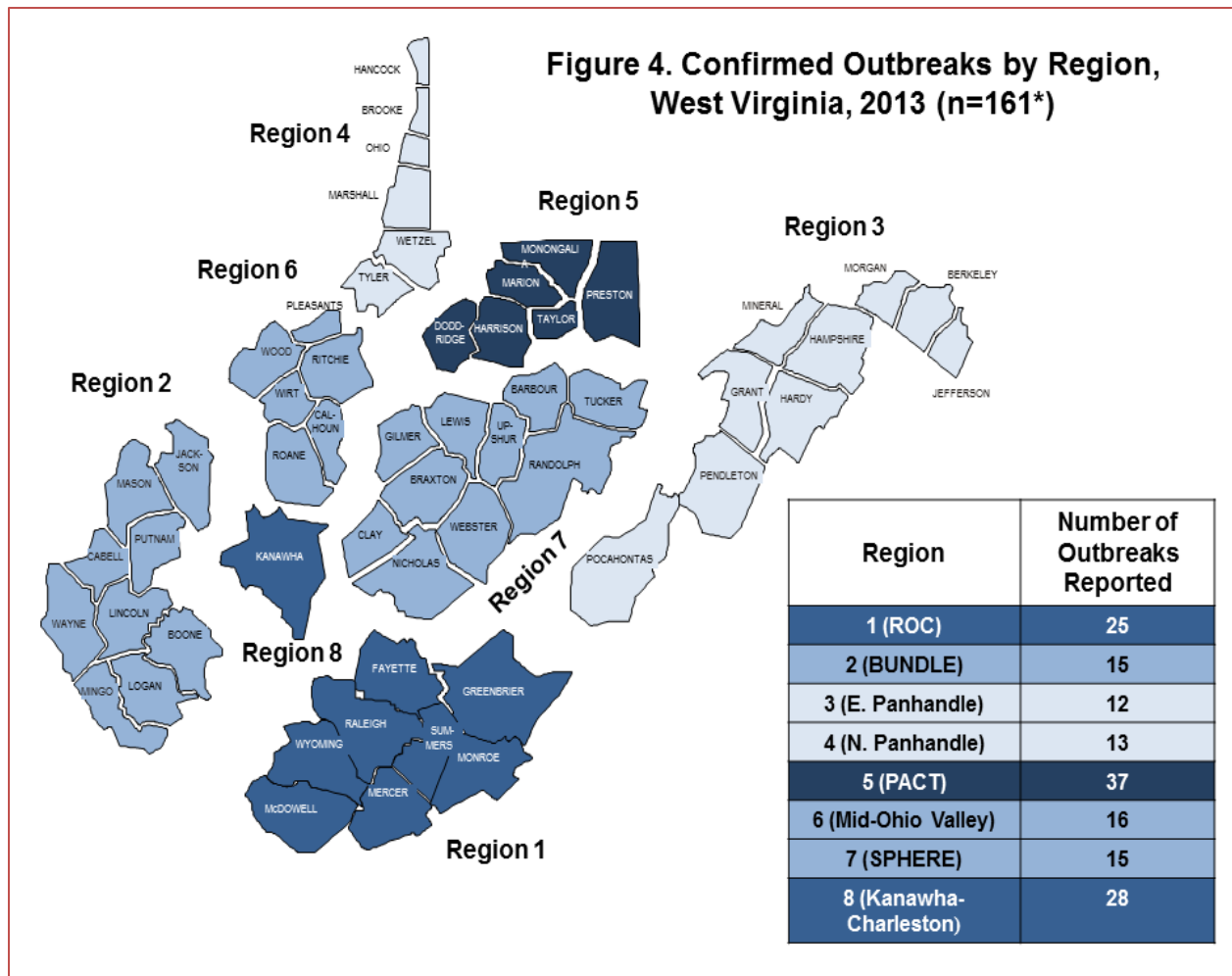
Region	Counties with Cases
Regions 1, 2, 3, 4, 6, and 7	Berkeley, Fayette, Hancock, Jackson, Mingo, McDowell, Pleasants, Raleigh, Randolph, Roane, Tucker, and Wayne
Regions 2 and 5	Putnam, Mingo, and Harrison
Regions 1, 2, 6	Cabell, Calhoun, Greenbrier, Roane, Ritchie, Wirt, and Wood

Surveillance Regions:

All surveillance regions in the State reported outbreaks in 2013 (Figure 3). See the map (Figure 4) on page 7. The following are the different surveillance regions and their counties:

- **Region 1 (ROC)** includes the following counties: Fayette, McDowell, Mercer, Monroe, Raleigh, Summers, Wyoming, and Greenbrier.
- **Region 2 (BUNDLE)** includes the following counties: Boone, Cabell, Jackson, Lincoln, Logan, Mason, Mingo, Putnam, and Wayne.
- **Region 3 (Eastern Panhandle)** includes the following counties: Berkeley, Grant, Hampshire, Hardy, Jefferson, Mineral, Morgan, Pendleton, and Pocahontas.
- **Region 4 (Northern Panhandle)** includes the following counties: Brooke, Hancock, Marshall, Ohio, Tyler, and Wetzel.
- **Region 5 (PACT)** includes the following counties: Doddridge, Harrison, Marion, Monongalia, Preston, and Taylor.
- **Region 6 (Mid-Ohio Valley)** includes the following counties: Calhoun, Pleasants, Ritchie, Roane, Wirt, and Wood.
- **Region 7 (SPHERE)** includes the following counties: Barbour, Braxton, Clay, Gilmer, Lewis, Nicholas, Randolph, Tucker, Upshur, and Webster.
- **Region 8 (Kanawha-Charleston)** includes only Kanawha county.





* Excludes multi-county outbreaks

Proportion of Outbreaks with Laboratory Testing:

The role of laboratory testing is crucial in outbreak management. Timely collection of specimens facilitates diagnosis and institution of control measures. Laboratory confirmation of outbreaks is one of the surveillance indicators and considered a performance measure for LHDs. LHDs, with assistance from their regional epidemiologist, try to collect appropriate samples in a timely manner. As shown in Figure 5, the percentage of outbreaks with laboratory testing varied by region from 53% to 83% with mean and median of 68% and 73% respectively.

Some outbreaks do not require laboratory testing, such as scabies and hand, foot and mouth disease. However, all respiratory outbreaks should have laboratory testing.

Figure 5. Confirmed Outbreaks and Outbreaks with Laboratory Testing by Region, West Virginia, 2013

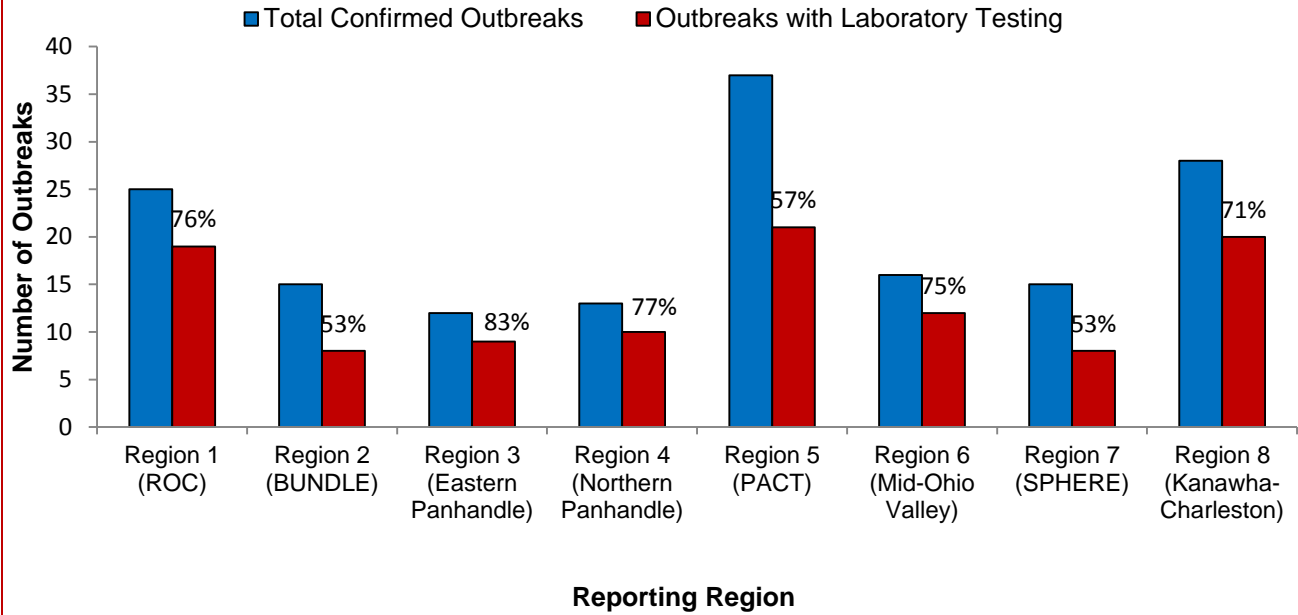


Figure 6 depicts laboratory confirmation of respiratory outbreaks by each surveillance region.

Figure 6. Laboratory Confirmation of Respiratory Outbreaks by Region, West Virginia, 2013 (n=74)

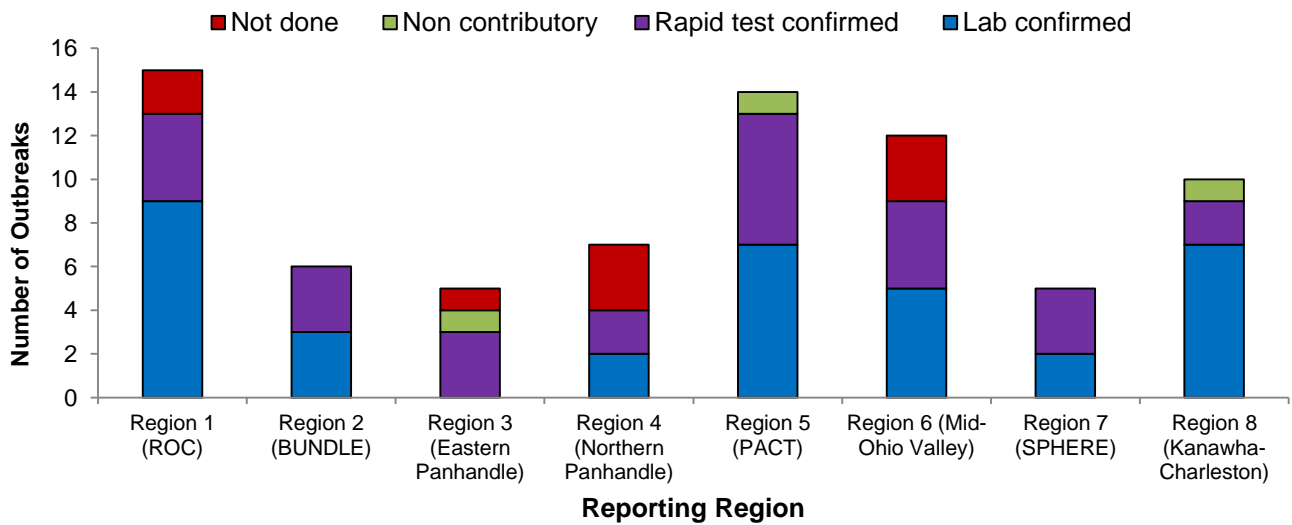
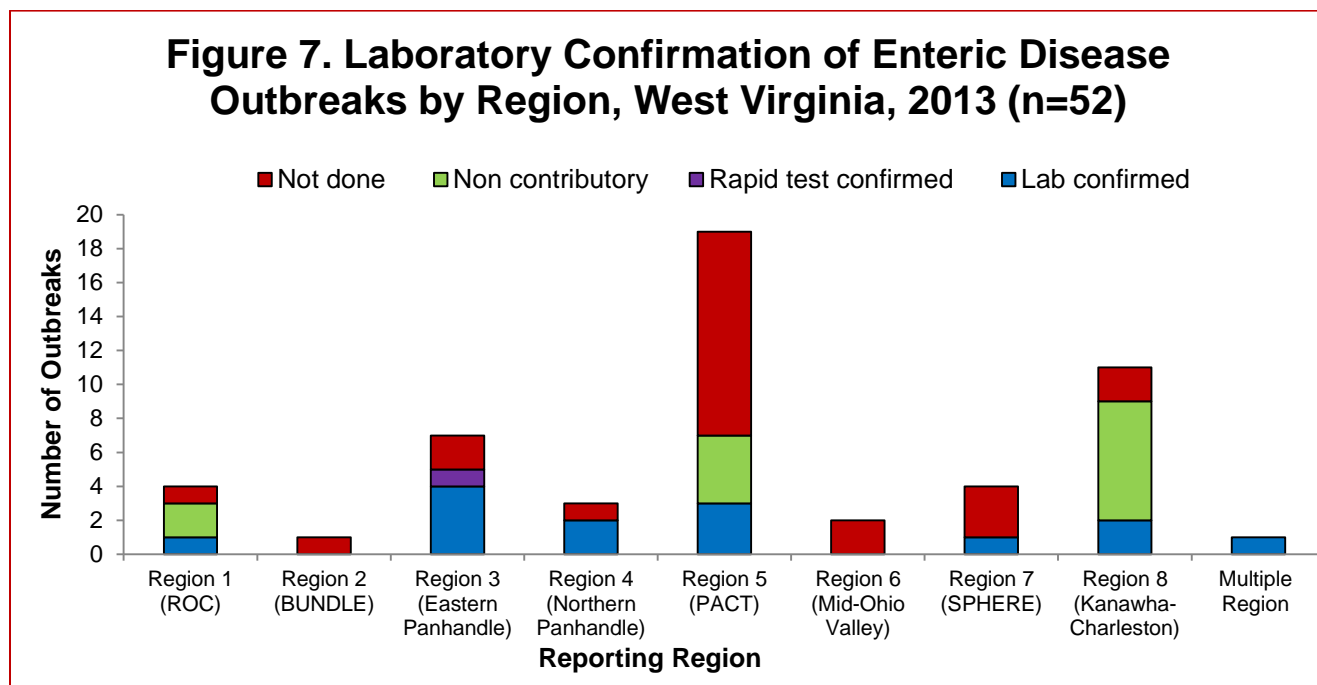


Figure 7 illustrates laboratory confirmation of enteric outbreaks by regions.



Outbreak Leadership:

As a requirement to receive Epidemiology and Laboratory Capacity and Public Health Emergency Response funds, the State and LHDs are required to verify outbreak investigation leadership, complete a final outbreak report that meets the CDC guidelines, and share this report with pertinent partners. In 2012, BPH began collecting information on whether outbreak investigation was led by LHDs, regional epidemiologists, BPH, or CDC/other states.

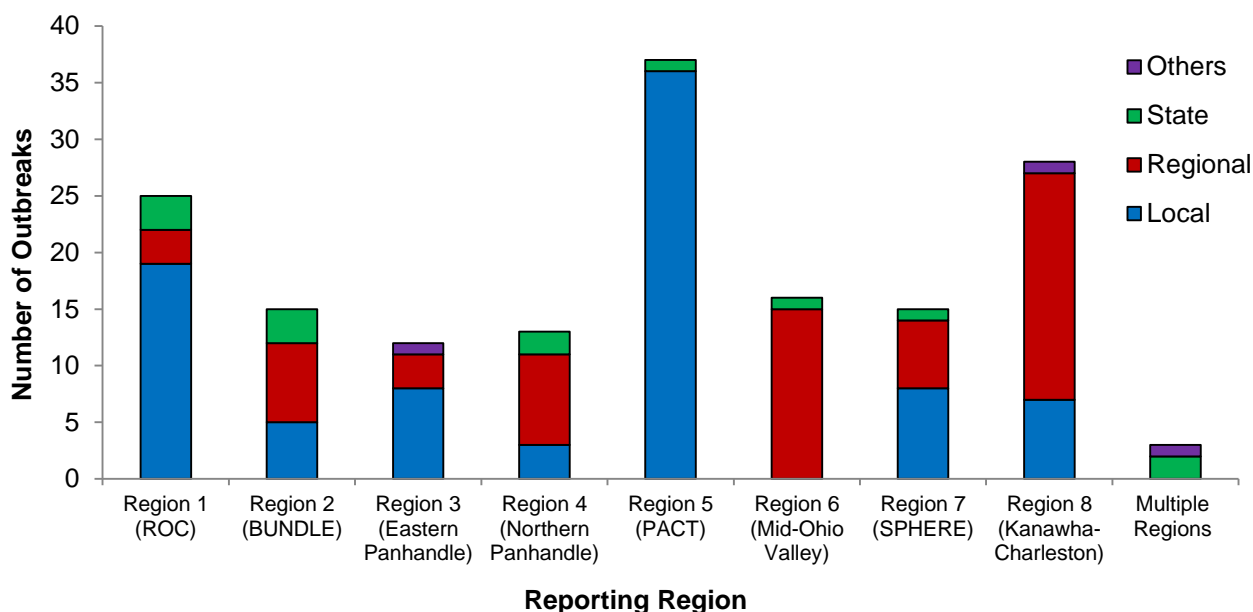
In 2013, LHDs led the investigation in 86 (52%) outbreaks followed by regional epidemiologists leading 62 (37.8%) and BPH/DIDE leading 13 (7.9%). CDC led the investigation in 3 multi-state outbreaks (Table 4).

Table 4. Confirmed Outbreaks by Primary Leadership, West Virginia, 2013

Primary Leadership	Number of Outbreaks (n=164)	Percent
Local Health Departments (LHDs)	86	52
Regional Epidemiologists	62	38
BPH/DIDE	13	8
Other (CDC)	3	2

Outbreak investigation primary leadership varies among different surveillance regions. In 6 of the 8 regions, primary leadership is collaboratively assigned between regional epidemiologists and the LHDs. In the remaining 2 regions, outbreak investigation is primarily led by the regional epidemiologist due to the structure of the region. One (1) region has only 1 county and the other is a regional health department that includes 6 counties. Figure 8 illustrates outbreak investigation leadership by region.

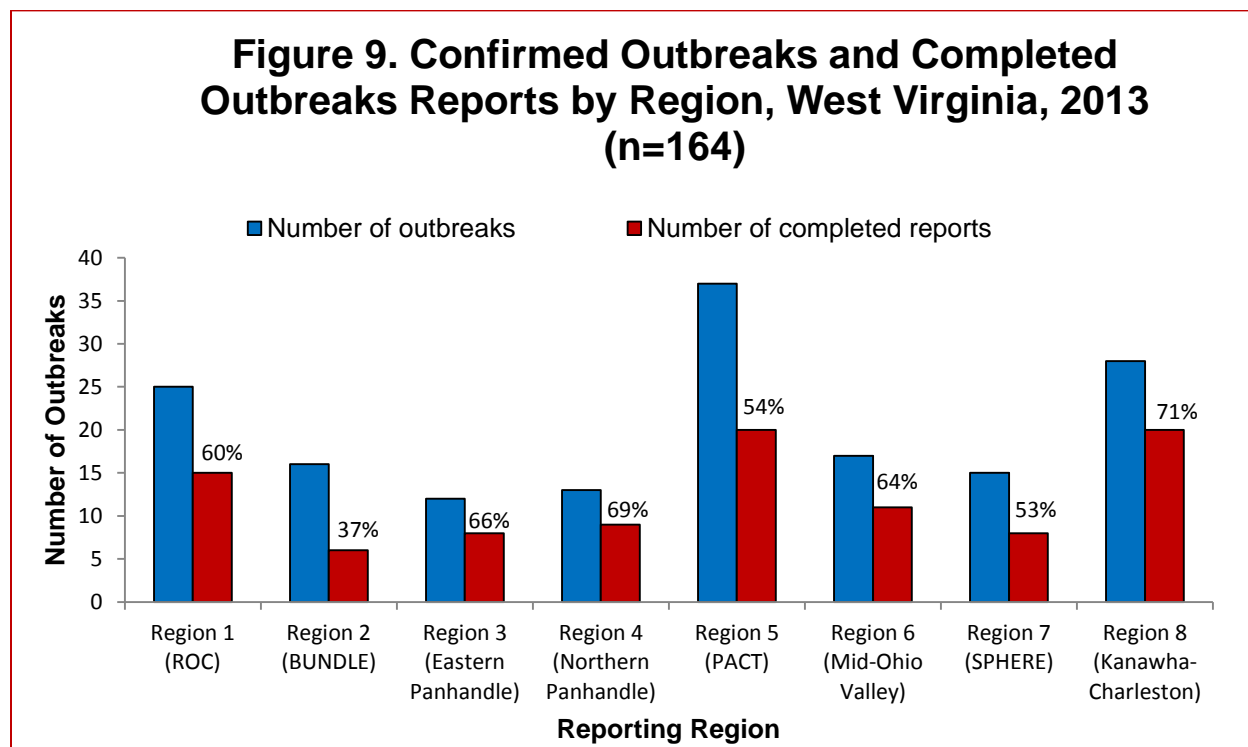
Figure 8. Outbreak Investigation Leadership by Region, West Virginia, 2013 (n=164)



Outbreak Investigation Reports:

In 2013, BPH began tracking the number of final outbreak reports that were generated by LHDs and shared with stakeholders as per grant requirements and CDC guidelines. DIDE posted outbreak report forms online for each type of outbreak in a fillable format to assist LHDs staff and regional epidemiologists completing the outbreak reports within 30 days of closing the outbreak.

As shown in Figure 9 the percentage of completed outbreak reports varied by region from 37% to 71% with mean and median of 59% and 62% respectively.



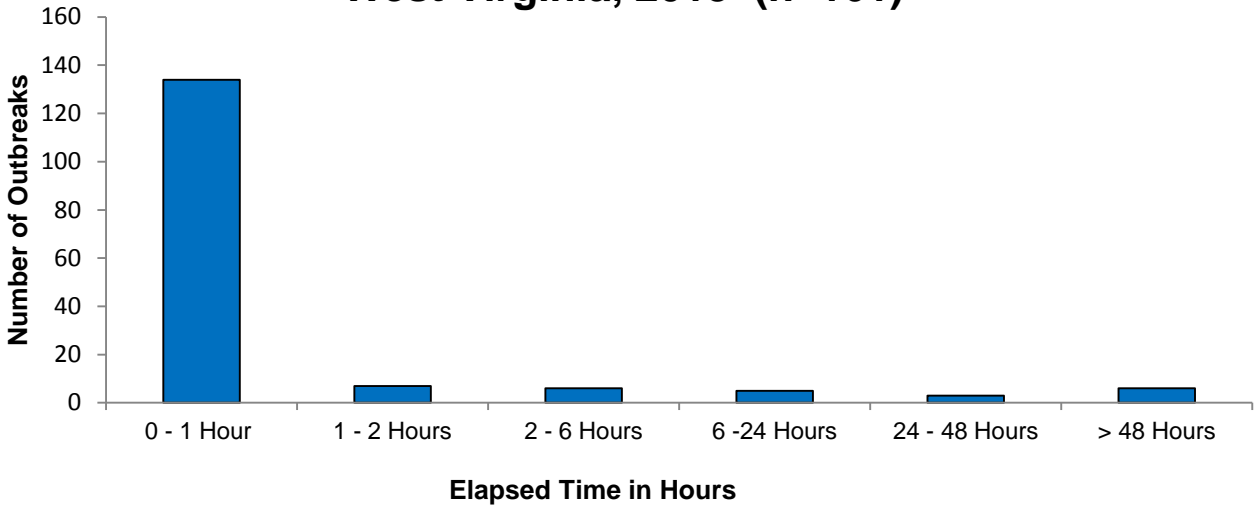
Outbreak Reporting Time:

In West Virginia, outbreaks are immediately reportable to the LHDs. In August 2013, a new Reportable Disease Rule was implemented that mandates immediate reporting of outbreaks or clusters of diseases to LHDs regardless of the settings. According to the Reportable Disease Rule and as a condition of receiving threat preparedness funding, LHDs are required to report suspected outbreaks or clusters to the BPH, DIDE within 60 minutes.

To measure adherence to this requirement, date and time of report to the LHD and date and time of report to DIDE are recorded on a standard intake form so that elapsed reporting time can be calculated.

In 2013, date and time of report to the LHDs and State Health Department were collected in 161 (98.2%) outbreaks. The mean and median of hours elapsed between the time the outbreak was reported to the LHD and the time the outbreak was reported to the State Health Department was 7.8 hours and 0 hours respectively. The range of hours between the time the outbreak was reported to the LHD and the time the outbreak was reported to the State Health Department was 0 to 406 hours. Of the 161 outbreaks where date of notification was known for the State and LHD, same-day notification occurred for 152 (94.4%) outbreaks (Figure 10).

Figure 10. Elapsed Time for Reporting Outbreaks Between State and Local Health Departments, West Virginia, 2013 (n=161)



Summary of Outbreak Performance Measures by Region/County

Tables 5 through 12 summarize performance measures by county and region.

Table 5. Outbreak Performance Measure by County, Region 1, West Virginia, 2013

County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Fayette	3	3(100%)	2(66%)	7180
Greenbrier	6	4(67%)	5(83%)	10
McDowell	0			
Mercer	10	5(50%)	8(80%)	25
Monroe	2	2(100%)	2(100%)	20
Raleigh	4	4(100%)	2(50%)	50
Summers	0			
Wyoming	0			
Totals	25	18(72%)	19(76%)	25

Table 6. Outbreak Performance Measure by County, Region 2, West Virginia, 2013

County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Boone	0			
Cabell	8	3(38%)	5(62%)	17
Jackson	0			
Lincoln	0			
Logan	2	2(100%)	1(50%)	82
Mason	1	0(0%)	0(0%)	30
Mingo	0			
Putnam	3	0(0%)	2(66%)	45
Wayne	1	1(100%)	0(0%)	25
Total	15	6(40%)	8(53%)	25

Table 7. Outbreak Performance Measure by County, Region 3, West Virginia, 2013

County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Berkeley	2	2(100%)	1(50%)	1571
Grant	0			
Hampshire	0			
Hardy	2	2(100%)	2(100%)	40
Jefferson	4	2(50%)	3(75%)	30
Mineral	1	1(100%)	1(100%)	55
Morgan	2	1(50%)	2(100%)	45
Pendleton	0			
Pocahontas	1	0(0%)	1(100%)	24360
Total	12	8(67%)	10(83%)	42.5

Table 8. Outbreak Performance Measure by County, Region 4, West Virginia, 2013

County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Brooke	2	1(50%)	2(100%)	23
Hancock	2	2(100%)	1(50%)	167
Marshall	3	3(100%)	1(33%)	27
Ohio	4	1(25%)	4(100%)	29
Tyler	1	1(100%)	1(100%)	1365
Wetzel	1	1(100%)	1(100%)	5
Total	13	9(69%)	10(77%)	29

Table 9. Outbreak Performance Measure by County, Region 5, West Virginia, 2013

County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Doddridge	0			
Harrison	8	1(13%)	3(38%)	41
Marion	7	6(86%)	5(71%)	45
Monongalia	13	8(62%)	8(62%)	15
Preston	6	5(83%)	3(50%)	23
Taylor	3	0(0%)	2(66%)	50
Total	37	20(54%)	21(57%)	25

Table 10. Outbreak Performance Measure by County, Region 6, West Virginia, 2013

County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Calhoun	0			
Pleasants	0			
Ritchie	1	1(100%)	1(100%)	15
Roane	4	3(75%)	2(50%)	27
Wirt	0			
Wood	11	7(64%)	9(82%)	20
Totals	16	11(69%)	12(75%)	18.5

Table 11. Outbreak Performance Measure by County, Region 7, West Virginia, 2013

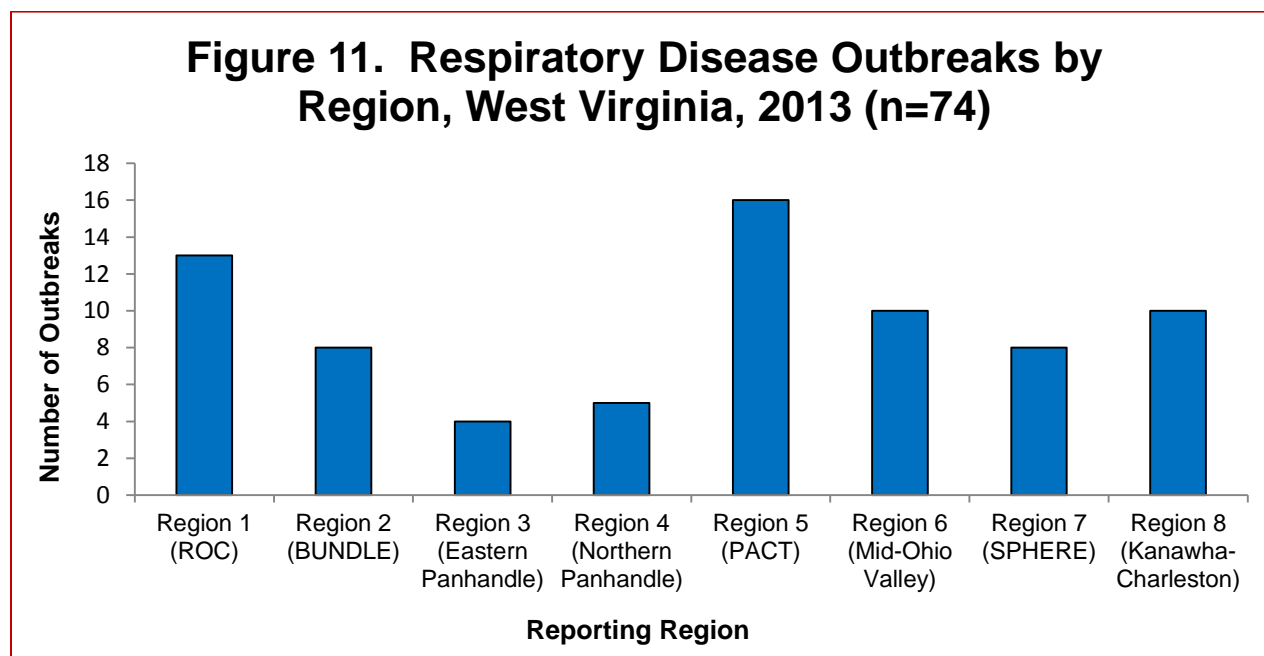
County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Barbour	1	1(100%)	1(100%)	20
Braxton	0			
Clay	2	1(50%)	0(0%)	45
Gilmer	0			
Lewis	0			
Nicholas	2	0(0%)	0(0%)	15
Randolph	4	1(25%)	3(75%)	5760
Tucker	0			
Upshur	6	5(83%)	4(67%)	60
Webster	0			
Totals	15	8(53%)	8(53%)	52

Table 12. Outbreak Performance Measure by County, Region 8, West Virginia, 2013

County	Number of Outbreaks	Reports Completed	Outbreaks with Laboratory Testing	Median Reporting Time in Minutes
Kanawha	28	20(71%)	20(71%)	30

Respiratory Disease Outbreaks, West Virginia, 2013 (n=74)

Outbreaks of respiratory illness were the most common type of disease outbreak in 2013, accounting for 74 (45%) confirmed outbreaks. (Refer to Table 1 on page 4.) Respiratory illness outbreaks were reported by 30 (55%) counties from 8 surveillance regions (Figure 11).



Confirmed influenza outbreaks accounted for the majority of respiratory disease outbreaks followed by acute respiratory syndrome (ARS), and influenza-like illness (ILI) (Table 13). A case of influenza is defined as a case that meets ILI case definition with laboratory confirmation. ILI is defined as a fever of a 100 degrees Fahrenheit or higher, plus cough, and/or sore throat in the absence of a known cause. An outbreak of ARS is defined as acute onset of symptoms of upper and/or lower respiratory illness in excess of what is expected in a specific time and location with known or unknown etiologic agents.

Table 13. Respiratory Disease Outbreaks by Clinical Syndrome, West Virginia, 2013

Clinical Syndrome	Number of Outbreaks (n=74)	Percent
Influenza	47	64
Acute Respiratory Syndrome (ARS)	19	26
Influenza-Like Illness (ILI)	5	7
Pneumonia	2	4
Streptococcal pharyngitis	1	1

Of respiratory outbreaks, 62 (84%) were laboratory confirmed, 3 (4%) had laboratory testing that was negative or noncontributory, and in 9 (12.6%) outbreaks laboratory testing was not done.

Figure 12 illustrates respiratory disease outbreaks by etiologic agent and month of onset. The trend of influenza outbreaks in 2013 was consistent with that of ILI reported by sentinel providers and LHDs. Table 14 lists all respiratory outbreaks by etiologic agents including other pathogens.

Figure 12. Confirmed Respiratory Outbreaks by Etiologic Agent, Month of Onset, West Virginia, 2013 (n=74)

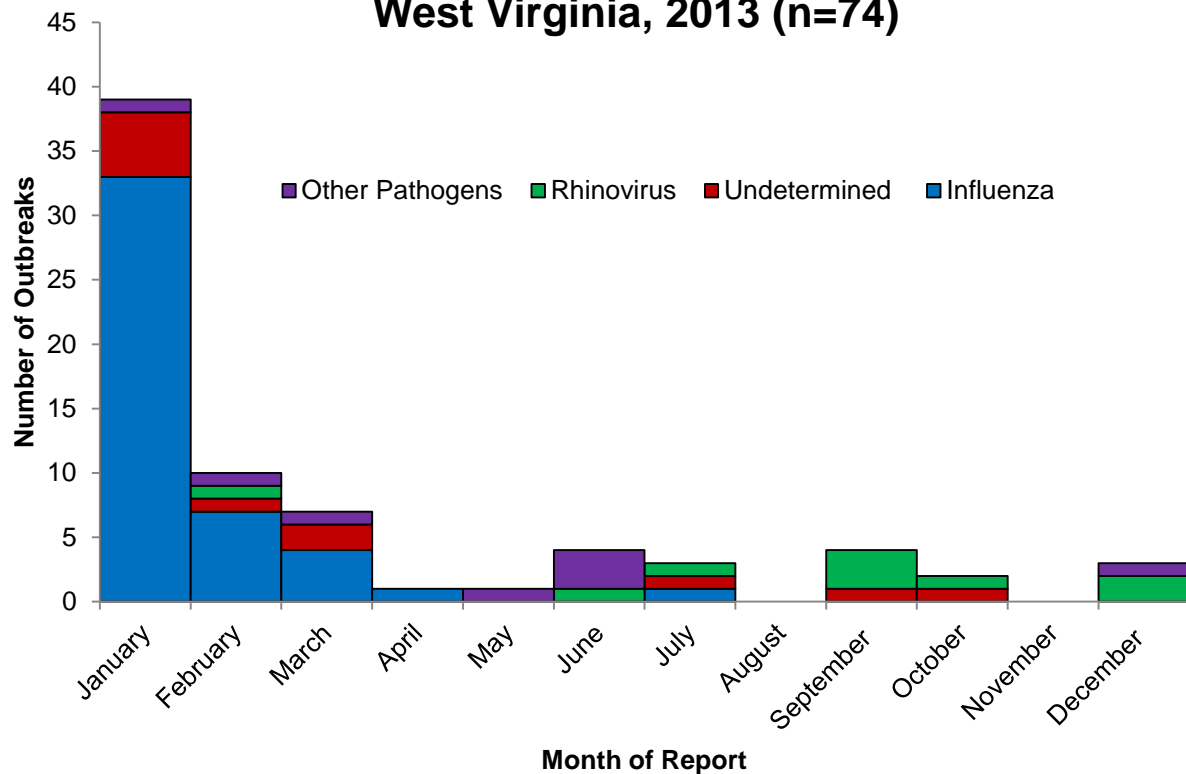


Table 14. Respiratory Disease Outbreaks by Etiologic Agent, West Virginia, 2013

Etiologic Agents	Number of Outbreaks (n=74)	Percent
Influenza	46	62
Undetermined	11	15
Rhinovirus	9	12
<i>Enterobacter cloacae</i>	1	1
Group A Streptococcus (GAS)	1	1
Human Metapneumovirus	1	1
Influenza A & Streptococcus Pharyngitis	1	1
Influenza A and B and RSV*	1	1
Parainfluenza 3 Virus (PIV3)	1	1
Rhinovirus/RSV	1	1
Rhinovirus/Coronavirus	1	1

* RSV: Respiratory Syncytial Virus

The majority of respiratory disease outbreaks were reported in long-term care facilities (LTCFs) followed by schools and assisted living facilities (ALFs) (Table 15).

Table 15. Respiratory Disease Outbreaks by Transmission Setting, West Virginia, 2013

Transmission Setting	Number of Outbreaks (n=74)	Percent
Long-Term Care Facilities (LTCFs)	57	77
Schools	10	14
Assisted Living Facilities (ALFs)	3	4
Hospitals	2	3
Mass Gathering	1	1
Correctional Facility	1	1

Influenza Outbreaks:

In 2013, there were 46 laboratory confirmed influenza outbreaks accounting for 62% of all respiratory outbreaks. Twenty (44%) influenza outbreaks were confirmed by Polymerase Chain Reaction (PCR) and 26 (56%) were confirmed by rapid influenza diagnostic test (RIDT).

Seasonal influenza A H3 caused 14 (30%) of influenza outbreaks (Table 16). There were no confirmed influenza outbreaks caused by the 2009 influenza A H1N1 during 2013. LTCFs reported the majority (80%) of influenza outbreaks (Table 17). Influenza

outbreaks are not uncommon among residents of LTCFs and institutionalized populations and are associated with increased morbidity and mortality. Four (4) influenza outbreaks were reported from schools, 1 from a camp and 1 from a correctional facility.

Seven (7) outbreaks of influenza B were reported in 2013. Six (6) were reported in LTCFs and 1 in a school.

There were 5 ILI outbreaks; 4 were reported from schools and 1 from a LTCF.

Table 16. Influenza Outbreaks by Etiologic Agent, West Virginia, 2013

Etiologic Agent	Number of Outbreaks (n=46)	Percent
Influenza A	16	35
Influenza A H3	14	30
Influenza (no typing)	8	18
Influenza B	7	15
Influenza A and B	1	2

Table 17. Influenza Outbreaks by Transmission Setting, West Virginia, 2013

Transmission Setting	Number of Outbreaks (n=46)	Percent
LTCFs	37	80
Schools	4	8.7
ALFs	3	6.5
Mass Gathering	1	2.2
Correctional Facility	1	2.2
Total	46	100

Non-Influenza Respiratory Viruses Outbreaks:

Over the last two years, an increasing number of non-influenza respiratory virus outbreaks have been diagnosed after the West Virginia Office of Laboratory Services (OLS) implemented the use of FilmArray PCR multiplex technology expanding the testing capacity of the state lab. This testing technique allows testing for more than 20 respiratory viruses and bacteria in a short time. Prior to using this testing technique, non-influenza respiratory virus outbreaks were classified as outbreaks of acute respiratory syndrome of undetermined etiology. At this time, this testing methodology is solely used for the purpose of outbreak investigation.

Rhinovirus Respiratory Outbreaks:

In 2013, 9 respiratory outbreaks were caused by rhinovirus. Eight (8) were reported in LTCFs and 1 in a hospital specialty care unit. In LTCFs, rhinovirus caused a wide variety of symptoms among residents ranging from mild upper respiratory tract infection (URTI) to severe lower respiratory tract infection (LRTI), and pneumonia. Occasional hospitalizations and deaths were reported. Data was available to calculate attack rates on 7 out of 8 outbreaks. The attack rates ranged between 8% to 29% with a mean and median of 17% and 12% respectively. The remaining rhinovirus outbreak was reported in a hospital specialty unit. An attack rate of 55% was reported.

Other Non-Influenza Respiratory Virus Outbreaks:

One outbreak of mild URTI was reported in February 2013. The attack rate was 20% among residents. No hospitalizations or deaths were reported. Of 5 specimens submitted to OLS, 1 was positive for respiratory syncytial virus (RSV), 1 was positive for rhinovirus and 3 were negative.

During March 2013, another respiratory outbreak was reported from a LTCF. An attack rate of 34% among residents was calculated. Illness ranged from ILI to LRTI, and pneumonias. Of 4 specimens tested at OLS, 2 were positive for RSV, 1 for influenza A and 1 for influenza B. While RSV is known as the most common cause of LRTI among young children, it can also cause respiratory outbreaks among institutionalized populations especially residents of LTCFs. RSV may exhibit seasonality patterns similar to that of influenza which may explain the RSV and influenza co-infection in this outbreak.

There was 1 outbreak of human metapneumovirus (HMPV) in a LTCF reported in June 2013. The attack rate was 25% among residents. Illness ranged from mild respiratory illness to severe pneumonia that required hospitalizations. One (1) patient died because of severe underlying medical conditions. Of 2 specimens submitted to OLS, 1 tested positive for HMPV and 1 was negative.

Another respiratory outbreak was reported in the month of June in a LTCF that was caused by parainfluenza 3 virus (PIV3). The attack rate was 13% among residents and 1% among staff. Almost 50% of ill residents had chest X-ray (CXR) confirmed pneumonia. Two (2) hospitalizations and no deaths were reported. Of 4 specimens submitted to OLS, 3 were tested positive for PIV3.

One (1) outbreak of pneumonia was also reported in June. Twenty-two (22) residents were diagnosed with pneumonia. Ten (10) hospitalizations and 1 death were reported. The attack rate was 25%. Of 8 nasopharyngeal swabs submitted to OLS, 1 was positive for rhinovirus, 1 was positive for coronavirus and 6 were negative. Table 18 summarizes other non-influenza viruses respiratory outbreaks.

Table 18. Summary of Other Non-Influenza Respiratory Virus Outbreaks (n=5)

Month of Onset	Setting	Illness Description	Attack Rate***	Number of Specimens Tested	Results
February	LTCF	Mild URTI*	20%	5	1 RSV 1 Rhinovirus 3 negative
March	LTCF	ILI, LRTI** Pneumonia	34%	4	2 RSV 1 Influenza A 1 Influenza B
June	LTCF	URTI, LRTI, Pneumonias	25%	2	1 HMPV 1 negative
June	LTCF	URTI, LRTI, Pneumonia	13%	4	3 PIV3 1 negative
June	LTCF	Pneumonia	25%	8	1 Rhinovirus 1 Coronavirus 6 negative

* URTI: Upper Respiratory Tract Infection ** LRTI: Lower Respiratory Tract Infection *** Attack rates are calculated among residents.

Other Respiratory Outbreaks:

Ventilator-Associated Pneumonia (VAP):

During the course of investigating an MDRO outbreak in an acute care facility, the facility reported a cluster of ventilator associated pneumonia (VAP) in a specialty unit. *Enterobacter cloacae* was isolated from respiratory specimens from the 3 patients. All isolates were sensitive to most antimicrobial agents. All case-patients had RSV infection upon admission. Only 2 cases met the National Healthcare Safety Network (NHSN) case definition for VAP. There were no additional cases reported after the hospital heightened infection control practices.

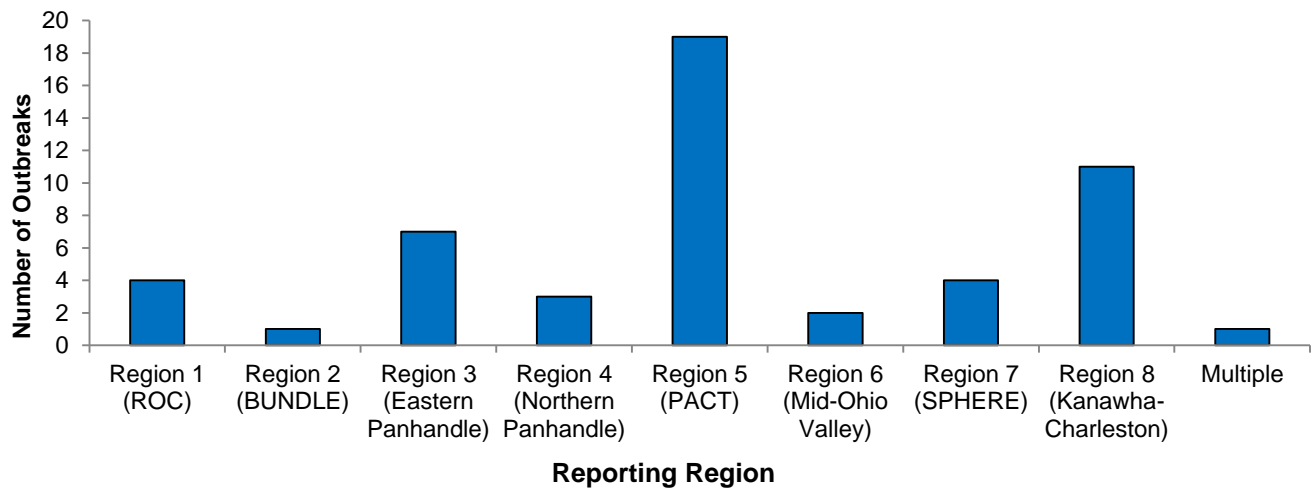
Streptococcus Pharyngitis Outbreaks:

There were 2 outbreaks of *Streptococcus* pharyngitis reported in 2013. *Streptococcus* pharyngitis is caused by group A *Streptococcus* (GAS) and presents clinically with fever, pharyngitis and sore throat. Both outbreaks were reported from schools. In 1 outbreak a cluster of GAS occurred simultaneously with a cluster of influenza A. Both clusters were confirmed with rapid testing methodology.

Enteric Disease Outbreaks, West Virginia, 2013 (n=52)

Outbreaks of enteric illness were the second most common type of disease outbreak in 2013, accounting for 32% of all outbreaks. (Refer to Table 1 on page 4.) A total of 52 enteric disease outbreaks were reported by 21 (38%) counties. All 8 surveillance regions reported enteric disease outbreaks (Figure 13). Three (3) enteric illness outbreaks were reported in West Virginia as part of multi-state outbreaks. CDC and other states were the lead investigators for the multi-state outbreaks.

Figure 13. Confirmed Enteric Disease Outbreaks by Region, West Virginia, 2013 (n=52)



Forty (77%) enteric disease outbreaks were reported from healthcare facilities including 37 from LTCFs, 1 from an ALF, 1 from a hospital and 1 from a rehabilitation center (Table 19).

Outbreaks of acute gastroenteritis were the most common type of enteric disease outbreaks, accounting for 37 (71%) outbreaks, followed by norovirus gastroenteritis outbreaks accounting for 11 (21%) outbreaks (Table 20). Acute gastroenteritis outbreaks were defined as outbreaks of illness with short duration (3 days or less) characterized by acute onset of vomiting and/or diarrhea and no laboratory confirmation.

Table 19. Enteric Disease Outbreaks by Transmission Setting, West Virginia, 2013

Transmission Setting	Number of Outbreaks (n=52)	Percent
LTCFs	37	71
Schools	6	12
Communities	3	6
ALFs	1	2
Hospital	1	2
Mass Gathering	1	2
Rehabilitation Center	1	2
Workplace	1	2
Workplace- Restaurant Related	1	2

All norovirus outbreaks were confirmed by Polymerase Chain Reaction (PCR) testing. Norovirus genotype II accounted for the majority of norovirus outbreaks (8); 1 norovirus outbreak was caused by norovirus genotype I and II. Two (2) norovirus outbreaks were not subtyped.

Clostridium difficile infection (CDI) outbreaks are counted with MDRO Organism Outbreaks.

Table 20. Outbreaks of Enteric Disease by Clinical Syndrome/Etiologic Agent, West Virginia, 2013 (n=52)

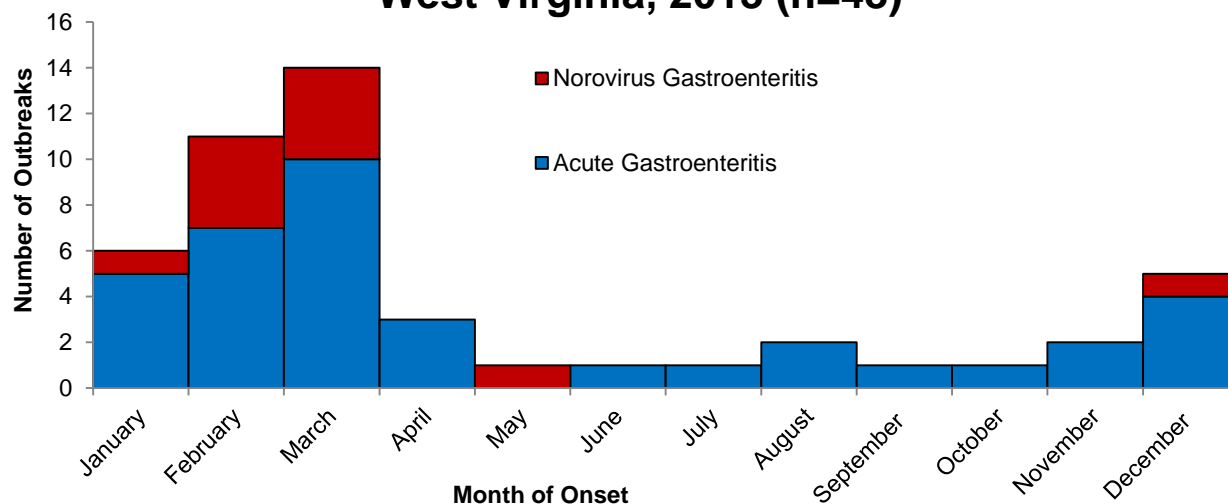
Clinical Syndrome/Etiologic Agent	Number of Outbreaks (n=52)	Percent
Acute Gastroenteritis	37	71
Norovirus Gastroenteritis	11	21
Campylobacteriosis	1	2
Listeriosis	1	2
Salmonellosis	1	2
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	1	2

Among the 37 outbreaks characterized as acute gastroenteritis, laboratory tests were negative or noncontributory in 13 and not done in 24 outbreaks.

The majority of enteric disease outbreaks 45 (87%) were due to person-to-person transmission.

Outbreaks of acute gastroenteritis and norovirus exhibited similar seasonality. Outbreaks of acute gastroenteritis followed a pattern of transmission similar to norovirus gastroenteritis outbreaks suggesting that some of these outbreaks may have been caused by norovirus (Figure 14).

Figure 14. Outbreaks of Acute and Norovirus Gastroenteritis by Month of Report, West Virginia, 2013 (n=48)



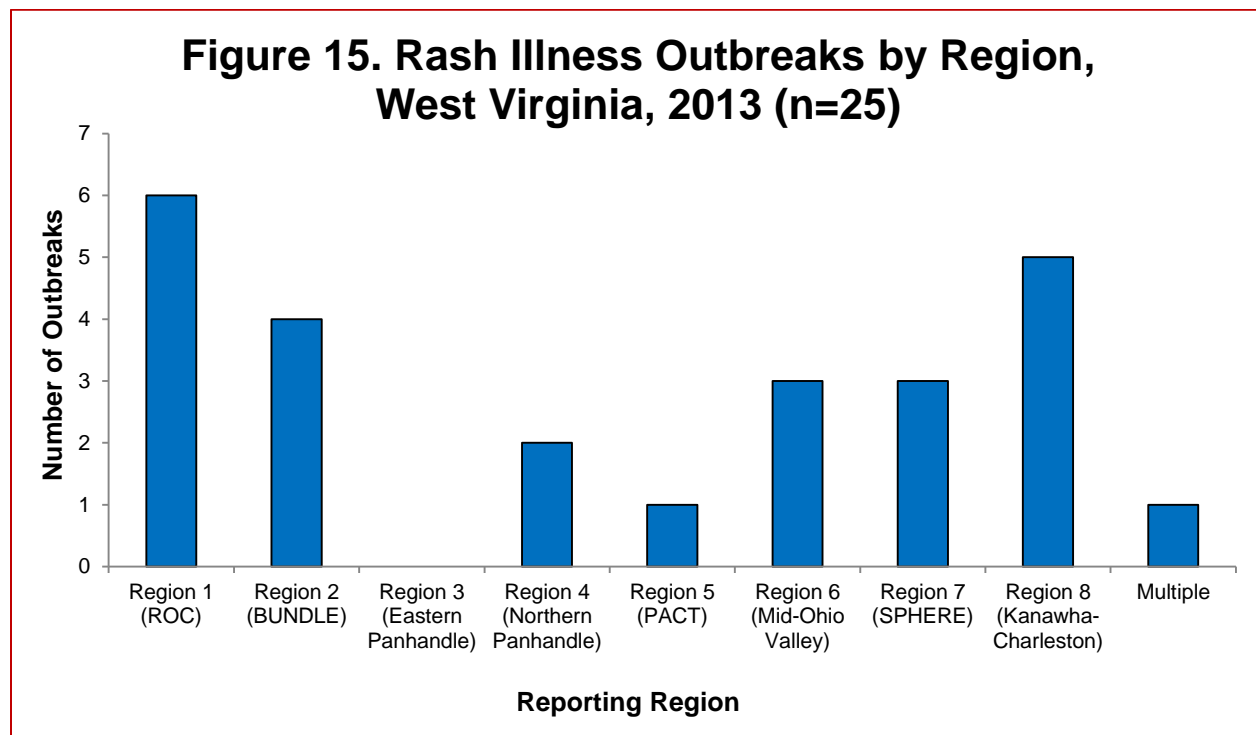
There was 1 enteric outbreak caused by several *Salmonella* species. This outbreak was reported in April 2013 as a part of multi-state outbreak of salmonellosis due to close contact with live baby poultry (chicks and ducks). A traceback investigation by CDC linked the outbreak to a single mail order hatchery in the state of Ohio. The same hatchery was also linked to a multi-state outbreak of salmonellosis in 2012. A total of 158 individuals from 30 states were infected with the outbreak strains. West Virginia had a total of 20 cases from multiple regions. CDC recommends thorough hand washing after touching live poultry or their environment to prevent *Salmonella* infection.

In May 2013, CDC detected a cluster of *Listeria monocytogenes* with similar Pulse Field gel Electrophoresis (PFGE) pattern. Only 3 cases were identified in this cluster, 1 from West Virginia and 2 from two other states. None of the cases were pregnant and 1 death was reported. Cases ranged in age from 38–83 years (median 56) and 67% (2/3) were female. There was a matching food isolate from herring in oil; this food product was recalled. Additionally, the recall notice states that the herring was not distributed outside of New York.

In May 2013, there was also a multi-state outbreak of Shiga toxin-producing *E. coli* (STEC 026) that affected 1 individual from West Virginia. A total of 28 confirmed cases from 13 states were identified including a West Virginia resident. According to CDC investigation, 5 cases were hospitalized and no deaths were reported in this outbreak. The leading hypothesis is that the outbreak was caused by contaminated lettuce. However, no single source, farm, or field, was able to be determined. FDA conducted traceback from the records obtained by several states; however, no single source was able to be implicated.

Rash Illness Outbreaks, West Virginia, 2013 (n=25)

Rash illness outbreaks were the third most common outbreak type in 2013, accounting for 25 (15%) outbreaks and reported by 12 (22%) counties from 7 surveillance regions (Figure 15). One (1) outbreak was reported in several regions.



The most common type of rash illness outbreaks reported was scabies (17) followed by hand, foot, and mouth disease (HFMD) (4), skin rashes (3), and varicella (chicken pox) (1) as shown in (Table 21).

Table 21. Outbreaks of Rash Illness by Clinical Syndrome/Etiologic Agent, West Virginia, 2013

Clinical Diagnosis	Number of Outbreaks 25	Percent
Scabies	17	68
Hand, Foot, and Mouth Disease (HFMD)	4	16
Varicella (Chicken Pox)	1	4
Herpes Gladiatorum	1	4
Community-Acquired Methicillin-Resistant <i>Staphylococcus aureus</i> (CA-MRSA)	1	4
Dermatitis (undetermined etiology)	1	4

There were 17 outbreaks of scabies reported in 2013 from 6 surveillance regions. Among scabies outbreaks, 1 was laboratory confirmed, and 16 did not have laboratory testing but were clinically confirmed. The majority of scabies outbreaks (9) were reported from healthcare facilities. Seven (7) outbreaks were reported from LTCFs, 1 from a hospital and 1 from a psychiatric facility. Correctional facilities reported 4 scabies outbreaks (Table 22). Human scabies is caused by an infestation of the skin by the human itch mite *Sarcoptes scabiei*. The most common symptoms of scabies are intense itching and a pimple-like skin rash. Scabies is transmitted from person-to-person by direct, prolonged, skin-to-skin contact. Scabies is a common condition that affects people of all races and social classes. Scabies can spread easily under crowded conditions where close body and skin contact is common. Scabies outbreaks are common among institutionalized populations such as LTCFs and correctional facilities.

Table 22. Outbreaks of Scabies by Transmission Setting, West Virginia, 2013

Transmission Settings	Number of outbreaks (n=17)	Percent
LTCFs	7	41
Correctional Facilities	4	24
Community	1	6
Hospital	1	6
Preschool	1	6
Psychiatric Facility	1	6
Shelter	1	6
Sports Team	1	6

There were 4 outbreaks of HFMD that were reported from daycares. All 4 outbreaks were confirmed by clinical presentation/physician diagnosis. The 4 outbreaks were reported in one region. This region reported 11 outbreaks of HFMD during 2012. In this region, the LHD and the regional epidemiologist provided region-wide training on outbreak reporting and management to daycares that increased awareness among daycare staff regarding reporting of outbreaks. HFMD is a common viral illness of infants and children and usually causes fever and blister-like eruptions in the mouth and/or a skin rash. There is no vaccine to protect against the viruses that cause HFMD. Prevention strategies include hand washing, avoiding close contact with infected person, and disinfecting dirty surfaces and soiled items such as toys.

In 2013, there was 1 outbreak of varicella that affected several schools in 1 county. A total of 16 cases were identified. Laboratory confirmation of this outbreak was done at CDC. A varicella outbreak is defined as 5 epidemiologically linked cases of varicella from any given school, daycare, or LTCF.

Two (2) outbreaks of skin rashes were reported in sports teams. One (1) was an outbreak of herpes gladiatorum that was initially identified among players of a high school wrestling team. Further investigation identified several other wrestling teams in several regions of the State. An estimated 22 cases were identified. The outbreak was laboratory confirmed. Preventive measures included early identification and isolation of cases and environmental cleaning.

The second rash illness outbreak was also reported among a high school sports team. Investigation revealed that the skin infection was caused by community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA). A total of 5 cases were identified among the team. CA-MRSA is a common cause of skin and soft tissue infections among healthy individuals in the community without exposure to healthcare settings. Infections may appear as pustules or boils which often are red, swollen, painful, or have pus or other drainage and commonly occur at sites of visible skin trauma, such as cuts and abrasions, and areas of the body covered by hair.

Rash illness outbreaks in sports teams are not uncommon and it is difficult to manage if there is no laboratory confirmation. Management of these outbreaks changes considerably based on the causative organism identified by laboratory testing. LHDs are encouraged to work closely with their school nurses and coaches to get a laboratory confirmation once they suspect a rash illness outbreak in a sports team.

Multidrug-Resistant organism (MDRO) Outbreaks:

MDRO outbreaks will be discussed under the healthcare-associated outbreaks section.

“Other” Outbreaks, West Virginia, 2013 (n=6)

There were 6 (3.7%) confirmed outbreaks in 2013 that were categorized as “other” (Table 23). “Other” outbreaks were reported by 6 counties from 4 surveillance regions. One (1) outbreak involved multiple counties.

Table 23. Outbreaks Categorized as “Other” by Clinical Syndrome/Etiologic Agent, West Virginia, 2013

Clinical Syndrome/Etiologic Agent	Number of Outbreaks (n=6)	Percent
Hepatitis B	2	33
<i>Citrobacter freundii</i>	1	17
Enterovirus	1	17
Meningitis (<i>Streptococcus intermedius</i>)	1	17
Acute Conjunctivitis	1	17

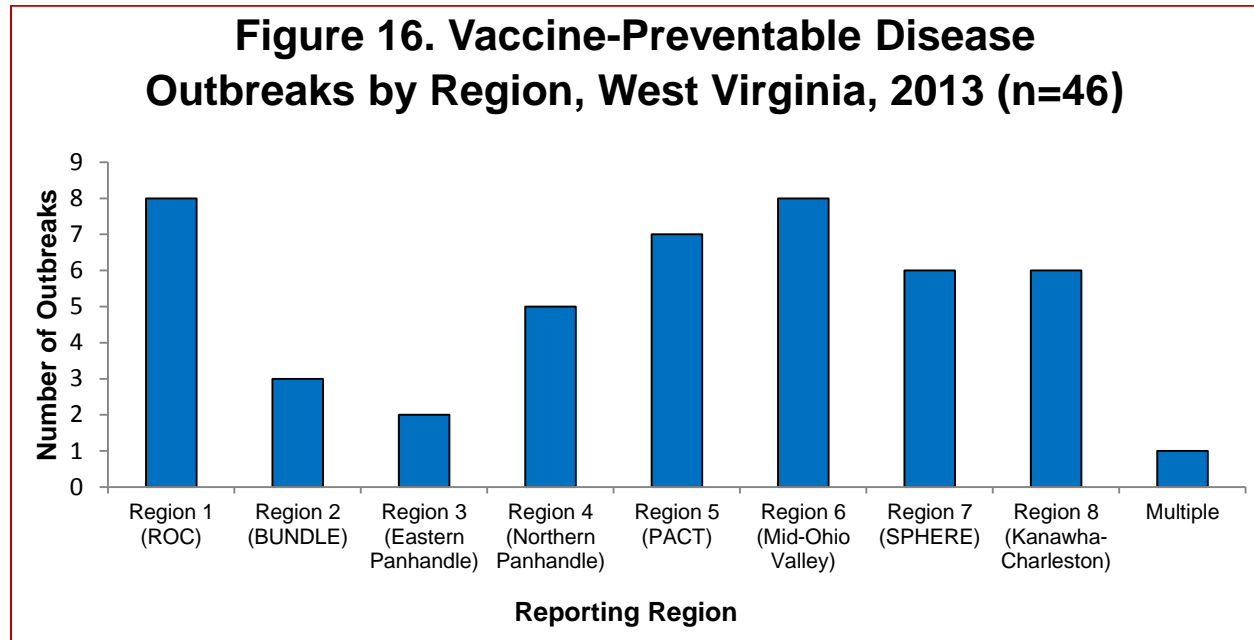
In this section, only 2 non-healthcare associated outbreaks classified as “other” are discussed. The other 4 will be discussed under the healthcare associated outbreaks section.

The first outbreak was a cluster of community associated acute hepatitis B cases. Further investigation revealed multiple clusters in several regions of the State. The major risk factor for acute hepatitis B was identified as injection drug use. The Office of Epidemiology and Prevention Services (OEPS) is engaged in a project to facilitate hepatitis B vaccination among high-risk populations in multiple counties.

The second outbreak was an enterovirus infection causing severe systemic illness among neonates. A total of 5 cases were reported from a hospital. However, investigation revealed that there was no evidence of transmission in the hospital and the cases were most likely due to community acquired infection. Enteroviruses are frequent cause of infection among infants and children and may present with a wide variety of clinical presentations that range from asymptomatic to severe systemic infections, such as sepsis and meningitis.

Vaccine-Preventable Disease Outbreaks (VPDOs)

In 2013, 46 (28%) vaccine-preventable disease outbreaks were reported from 23 counties (42%) in 7 surveillance regions. (Figure 16)



Influenza outbreaks were the most common VPDOs (43) followed by hepatitis B (2) and varicella (chicken pox) (1) (Table 24). The number of influenza outbreaks increased from 26 in 2012 to 43 in 2013.

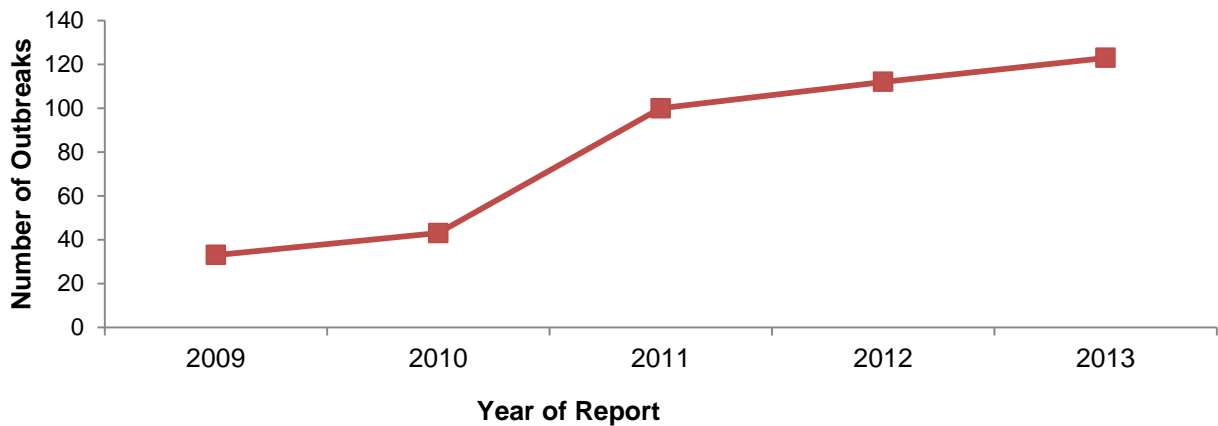
Table 24. Vaccine-Preventable Disease Outbreaks by Etiologic Agent/Clinical Syndrome, West Virginia, 2013

Clinical Syndrome/Etiologic Agent	Number of Outbreaks	Percent
	46	
Influenza	43	94
Hepatitis B	2	4
Varicella	1	2

Healthcare-Associated Outbreaks (HAOs)

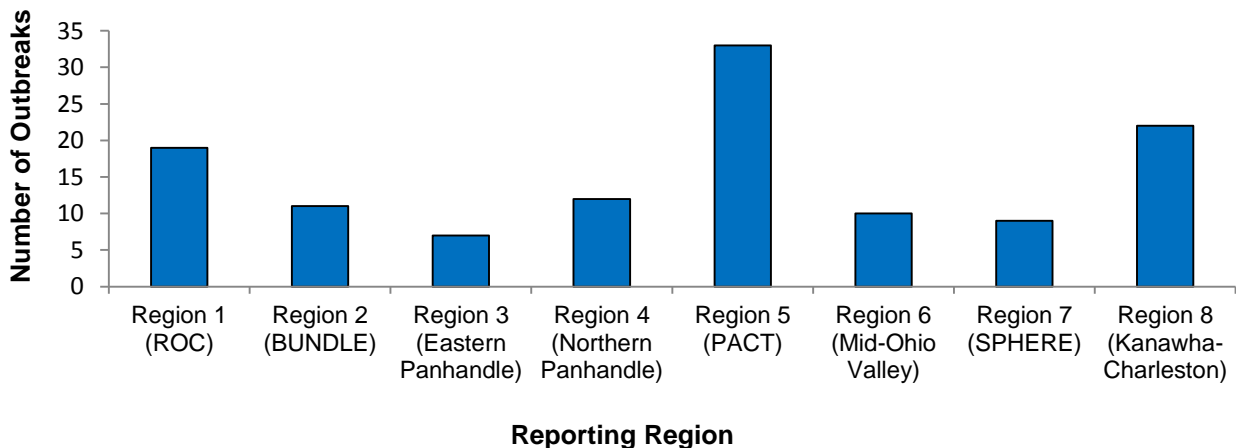
The number of HAOs reported in West Virginia has increased almost 4-fold since 2009 (Figure 17). HAOs are defined as “hospital-acquired or healthcare facility-acquired infections among patients or staff clustered temporally and/or geographically and represent an increase in the incidence over expected background rates.”

Figure 17. Healthcare-Associated Outbreaks by Year of Report, West Virginia, 2009-2013 (n=411)

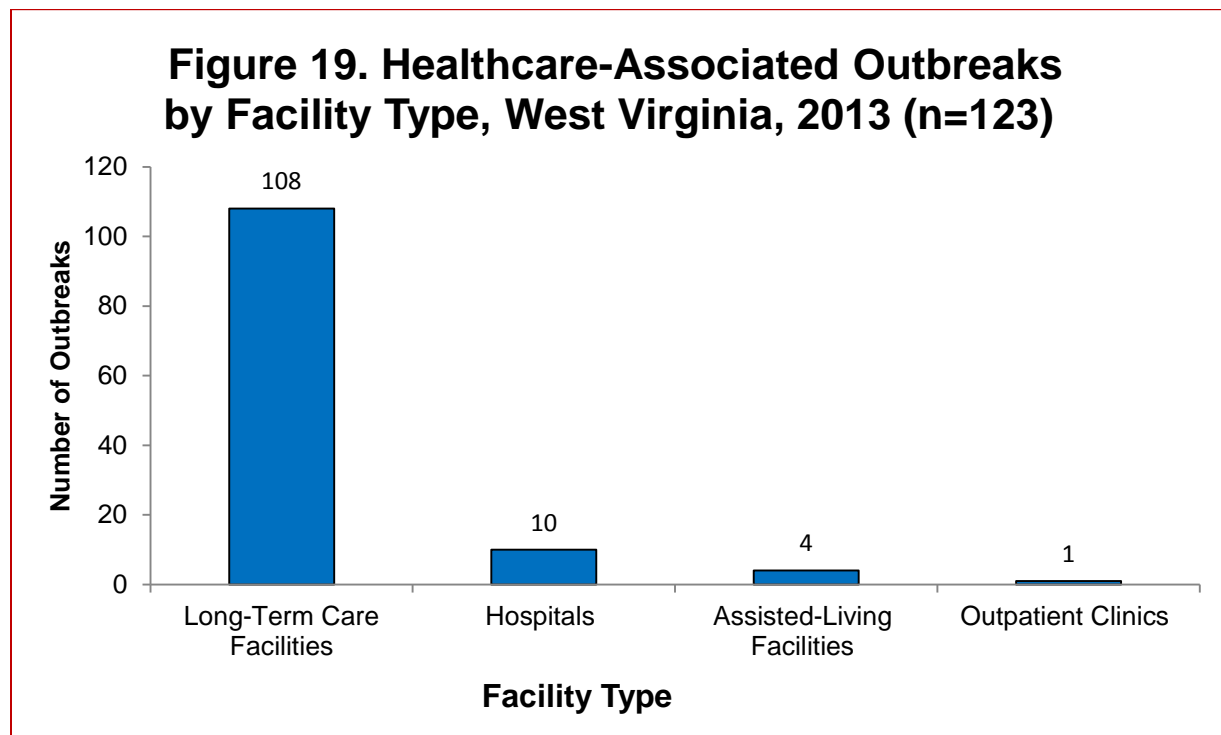


In 2013, 123 HAOs were reported from 32 (58%) counties in all surveillance regions (Figure 18). HAOs accounted for 75% of all confirmed outbreaks in West Virginia.

Figure 18. Healthcare-Associated Outbreaks by Region, West Virginia, 2013 (n=123)



The majority of HAOs were reported in LTCFs (108, 88%), followed by hospitals (10, 8%), ALFs (4, 3%), and outpatient clinics (1, 1%) (Figure 19).



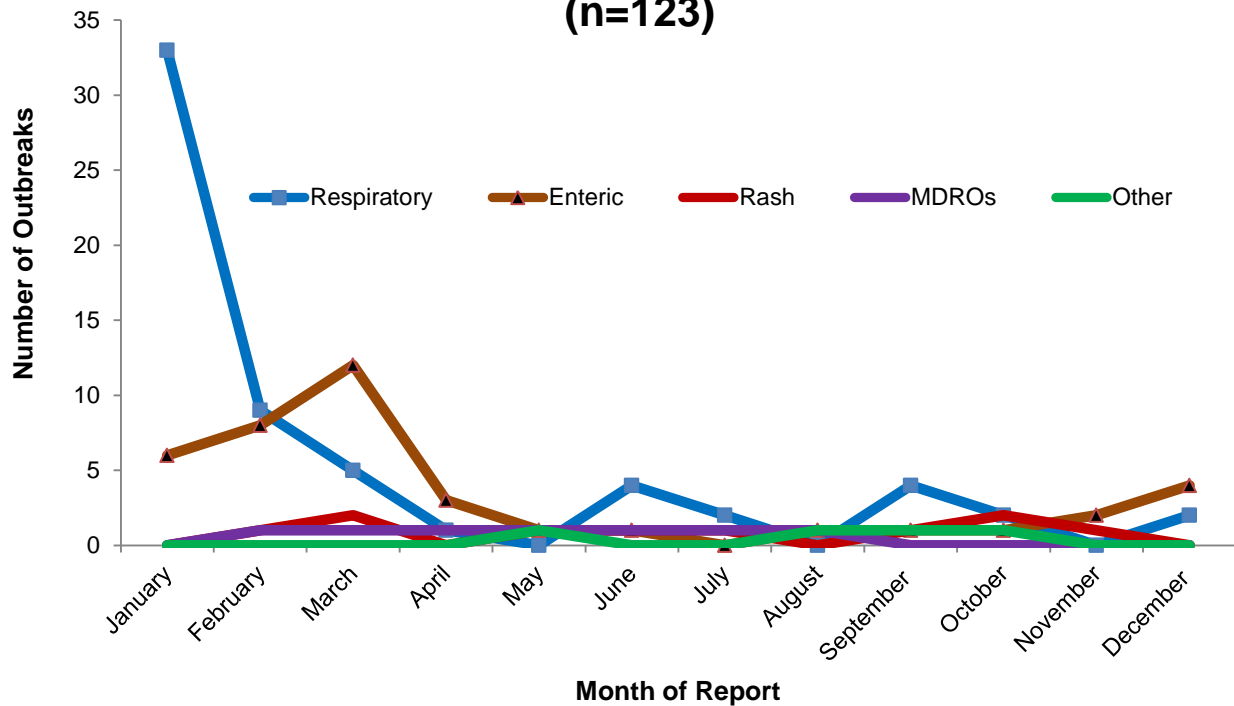
Respiratory disease outbreaks accounted for the majority of HAOs (62, 50%) followed by enteric disease outbreaks (40, 33%), rash illness outbreaks (10, 8%), MDRO outbreaks (7, 6%), and other outbreaks (6, 3%) (Table 25).

Table 25. Healthcare-Associated Outbreaks by Type of Outbreak, West Virginia, 2013

Outbreak Type	Number of Outbreaks (n=123)	Percent
Respiratory	62	50
Enteric	40	33
Rash	10	8
MDROs	7	6
Other	4	3

As observed in previous years, a seasonal trend was observed in 2013 showing an increase in HAOs during the colder months of the year. This can be attributed to increased circulation of the influenza virus and norovirus during this time of the year (Figure 20).

Figure 20. Healthcare-Associated Outbreaks by Type and Month of Report, West Virginia, 2013 (n=123)



Healthcare-Associated Respiratory Diseases Outbreaks:

Respiratory disease outbreaks (62) were the most common outbreak type reported in healthcare facilities. The majority of healthcare-associated respiratory outbreaks were Influenza outbreaks (Table 26). Fifty-seven (57) respiratory outbreaks (91.9%) were reported in LTCFs, 3 (4.8%) were reported in ALFs and 2 (3.2%) were reported in acute care facilities. Details on healthcare associated respiratory outbreaks are discussed in the Respiratory Outbreak Section.

Table 26. Healthcare-Associated Respiratory Disease Outbreaks by Clinical Syndrome/Etiologic Agent, West Virginia, 2013

Clinical Syndrome/Etiologic Agent	Number of Outbreaks (n=62)	Percent
Influenza A (no subtyping)	14	23
Influenza AH3	12	19
Rhinovirus	9	15
Influenza (no typing)	8	13
Influenza B	6	10
Acute Respiratory Syndrome	6	10
Influenza-Like Illness	1	2
<i>Enterobacter cloacae</i>	1	2
Human Metapneumovirus	1	2
Influenza A, B and RSV	1	2
Parainfluenza 3 Virus	1	2
Rhinovirus/RSV	1	2
Rhinovirus/Coronavirus	1	2

Healthcare-Associated Enteric Diseases Outbreaks:

Enteric disease outbreaks (40) were the second most common outbreak type reported in healthcare facilities in 2013. The majority of healthcare-associated enteric disease outbreaks were acute gastroenteritis followed by norovirus gastroenteritis (Table 27).

Most enteric disease outbreaks were reported in LTCFs (37) followed by an ALF (1), and a rehabilitation center (1), and a hospital (1). Ten (10) healthcare-associated enteric disease outbreaks were laboratory confirmed, 17 did not have laboratory testing done and 13 had negative or non-contributory laboratory testing. All the laboratory-confirmed enteric disease outbreaks were caused by norovirus.

Table 27. Healthcare-Associated Enteric Disease Outbreaks by Clinical Syndrome/Etiologic Agent, West Virginia, 2013

Clinical Syndrome/Etiologic Agent	Number of Outbreaks (n=40)	Percent
Acute Gastroenteritis	30	75
Norovirus Gastroenteritis	10	25

Healthcare-Associated Rash Illness Outbreaks:

There were 10 rash illness outbreaks reported from healthcare facilities in 2013. Nine (9) outbreaks were due to scabies and reported in LTCFs (7), a hospital (1) and a psychiatric facility (1). The remaining outbreak was unexplained dermatitis clinically diagnosed among residents of a LTCF.

Other Healthcare-Associated Outbreaks:

Four (4) HAOs, categorized as “Other,” were reported in 2013 (Table 28).

Table 28. Other HAOs by Clinical Syndrome/Etiological Agent and Facility Type, West Virginia, 2013 (n=4)

Clinical Syndrome/Etiological Agent	Facility Type
Hepatitis B	Hospital
<i>Citrobacter freundii</i>	Hospital
Acute Conjunctivitis	LTCF
Meningitis (<i>Streptococcus intermedius</i>)	Outpatient Clinic

In the first outbreak, routine hepatitis surveillance performed by the LHD and DIDE identified an acute hepatitis B patient with no risk factors for hepatitis B other than a procedure in a healthcare facility within the incubation period. Further investigation was unable to identify any evidence of transmission in the facility. No other cases were identified at the facility. Recommendations were given to the facility to provide facility-wide training and education on injection safety practices. The facility was also asked to follow CDC recommendations regarding hepatitis B vaccination of healthcare providers and keep an up-to-date record of hepatitis B vaccination for all healthcare providers particularly those who have privileges to work in, but not employed by, the facility.

The second outbreak was an outbreak of *Citrobacter freundii* reported from a specialty care unit in an acute care facility. Three (3) cases were identified in this unit. Each patient’s bacterial isolate had a unique antimicrobial sensitivity pattern. The facility immediately heightened the infection control measures and as a result, no additional cases were identified. The small number of cases, variation in the antimicrobial resistance patterns of the isolates, and relatively high background of *Citrobacter freundii* infection rate in the whole facility made it difficult to determine if this cluster was a true or pseudo-outbreak.

The third outbreak was an outbreak of acute conjunctivitis in a LTCF that affected 6 residents and 4 staff. The attack rate among residents was 6%. Epidemic conjunctivitis is not uncommon in LTCF settings and may spread rapidly. Transmission may occur through contaminated hands or eye drops. According to 2008 Society for Healthcare Epidemiology of America and Association for Professionals in Infection Control and Epidemiology (SHEA/APIC) recommendations, gloves should be worn for contact with

eyes or ocular secretions, with hand hygiene performed immediately after removing gloves.

The fourth outbreak was an outbreak of meningitis in an outpatient clinic. A single patient was diagnosed with bacterial meningitis caused by *Streptococcus intermedius*, one day after having an invasive procedure. *Streptococcus intermedius* is a common bacterial flora of the mouth. Investigation of the facility identified several infection control breaches including, but not limited to, unsafe injection practices and not using masks routinely during invasive spinal procedures. Recommendations were given to the facility and were immediately implemented to correct the identified infection control breaches. No additional cases of either meningitis or procedure-related infections were identified retrospectively or prospectively. However, because of the unsafe injection practices notification of patients with recommendations to be tested for blood borne pathogens is warranted. The investigation is ongoing.

Multidrug-Resistant Organism (MDRO) Outbreaks

MDROs are defined as microorganisms, predominantly bacteria, that are resistant to one or more classes of antimicrobial agents. MDRO outbreaks are defined as an increase in the number of MDRO cases above and beyond the endemic level (baseline level) in certain facility/unit in a specific time period. MDROs represent a major public health threat in the U.S. and in West Virginia. These bacteria can spread rapidly and are associated with high morbidity and mortality rates due to limited options for treatment.

In 2013, there were 7 MDRO outbreaks reported by 7 counties in 6 surveillance regions (Figure 21). Five (5) outbreaks were reported from LTCFs and 2 from acute care facilities. Table 29 depicts MDRO outbreak by etiologic agent.

Figure 21. Multi-Drug Resistant Organism Outbreaks by Reporting Region, West Virginia, 2013 (n=7)

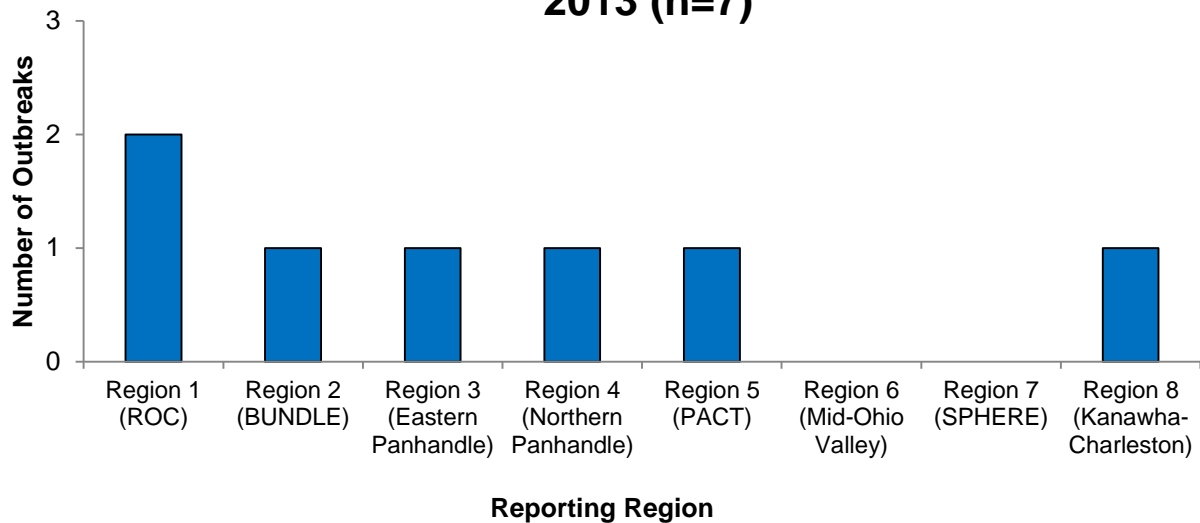


Table 29. Healthcare-Associated MDRO Outbreaks by Etiologic Agent, West Virginia, 2013

Etiologic Agent	Number of Outbreaks (n=7)	Percent
Carbapenem-Resistant <i>Enterobacteriaceae</i> (CRE)	3	44
<i>Clostridium difficile</i> Infection (CDI)	2	22
MDR-<i>Acinetobacter baumannii</i>	1	11
Extended-Spectrum Beta-Lactamase-producing <i>Escherichia coli</i>	1	11

Carbapenem-Resistant *Enterobacteriaceae* (CRE):

In 2013, three (3) outbreaks of CRE were reported. The first was a small cluster of carbapenem-resistant *Enterobacter cloacae* (CREC) in an acute care specialty unit. Three (3) cases were identified. The LHD worked with the facility to investigate this outbreak. Infection control practices were reviewed and intensified. No additional clinical cases were identified and point prevalence surveillance culture revealed no additional cases.

The second outbreak was reported in a LTCF. Ten (10) residents from the facility were diagnosed with CRE over an 18 month period. Five (5) (50%) had a positive culture for

carbapenem-resistant *Klebsiella pneumoniae* (CRKP), 4 (40%) had a positive culture for CREC, and 1 patient (10%) had positive cultures for both organisms on separate dates. Investigation suggested evidence of transmission in the facility for 6 residents. DIDE and LHD worked closely with the facility to implement the CDC's recommendations to control the outbreak.

The remaining outbreak was a small cluster CRE in a LTCF. Two (2) residents were diagnosed with CRKP. No additional cases were identified after implementing infection control measures and following CDC's guidelines to control such outbreaks.

Clostridium difficile Infection (CDI):

Two (2) outbreaks of CDI were reported in 2013. The first was reported in an acute care facility specialty unit. A total of 6 epidemiologically linked cases were identified over a 10 day period. The acute care facility responded immediately to the outbreak, reviewed and intensified infection control efforts including increasing compliance with hand hygiene and contact precautions and enhancing environmental cleaning. No additional cases were identified.

The second CDI outbreak was reported in a LTCF. Six (6) cases were diagnosed with CDI. The facility in collaboration with the LHD and regional epidemiologist addressed the needs to intensify infection control efforts to stop the outbreak. After implementing the recommendations given by the LHD, no additional cases were identified.

MDR-Acinetobacter baumannii:

A small cluster of 2 patients diagnosed with multi-drug resistant *Acinetobacter baumannii* (MDR-Ab) was detected in a LTCF. Local health department and regional epidemiology visited the facility and assisted them in implementing appropriate infection control measures, such as cohorting, hand hygiene, environmental cleaning, and improving communications with other healthcare facilities when transferring such patients. No additional cases were reported,

Extended-Spectrum Beta-Lactamase-producing Escherichia coli:

One (1) outbreak of Extended-Spectrum Beta-Lactamase-producing *Escherichia coli* (ESBL E coli) was reported in a LTCF. Five (5) cases were identified. Recommendations were given to the facility to intensify infection control measures and revise their usage of urinary catheters by implementing the CDC/SHEA recommendations to prevent catheter-associated urinary tract infection. No additional cases were identified

DIDE Recommendations:

There has been remarkable improvement in recognition and reporting of outbreaks in West Virginia over the last decade. This improvement can be attributable to strengthened public health infrastructure, increased awareness among healthcare providers and public health staff, and training and education. Despite this marked progress, there are still opportunities for improvements. The following summarizes the findings and provides recommendations.

Findings and Recommendations for LHDs

1. According to the new West Virginia Reportable Disease Rules implemented in August 2013, outbreaks are immediately reportable in West Virginia to LHDs regardless of outbreak setting. LHDs should report outbreaks to the BPH, DIDE within 60 minutes of being notified. Immediate reporting improves the outbreak response by facilitating laboratory testing for diagnosis, implementing control measures in a timely manner, and preventing further illnesses or deaths. It also facilitates communication with CDC and other partners on critical health issues.
2. The role of laboratory testing is crucial in outbreak management. OLS continues to add advanced testing technology to assist in early detection and investigation of outbreaks. Timely collection of specimens facilitates diagnosis and institution of control measures.
3. Strengthen relationships and maintain an open dialogue with acute and LTCFs' Infection Preventionists (IPs) and school nurses.
4. Consult with the regional epidemiologist in outbreak investigations. Regional epidemiologist's participation in outbreak investigations is considered a performance measure by several funding sources.
5. DIDE recommends using outbreak specific toolkits. DIDE has developed several outbreak toolkits for the most commonly encountered outbreaks. Toolkits can be accessed online at <http://www.dhhr.wv.gov/oeps/disease/ob/Pages/OutbreakToolkits.aspx>
6. Respiratory outbreaks in LTCFs may be severe and occasionally associated with high morbidity and mortality among residents. Consider communicating and educating LTCFs IPs during the pre-influenza season on:
 - Identifying and managing respiratory outbreaks.
 - Collecting appropriate specimens.
 - Maintaining standing orders for influenza testing and chemoprophylaxis.
 - Implementing appropriate infection control measures.
7. Be prepared for influenza outbreaks in schools consider the following recommendations:
 - Recruit and maintain a functional sentinel provider.
 - Identify a healthcare provider/facility to assist in collecting specimens from schools in outbreak situations.
 - Influenza vaccination is the best preventive measure. Keep 5 influenza testing kits in the health department throughout the year. Make sure to maintain supplies and expiration dates are up-to-date.

- School closing should not be considered a first option in managing influenza outbreaks or any other school outbreaks. The decision to close a school in an outbreak situation should be made on a case by case basis after consulting with DIDE and other pertinent partners.
8. Make sure to share with partners, in a timely manner, DIDE's weekly influenza activity report and monthly outbreak report.
 9. As a requirement for threat preparedness funding, the LHDs are required to complete a final outbreak report for each outbreak. Consider using outbreak specific templates provided by DIDE. Templates can be accessed at: <http://www.dhhr.wv.gov/oeps/disease/ob/pages/outbreakfinalreports.aspx>
Outbreak reports are due to be shared with DIDE and other stakeholders within 30 days of closing the outbreak.

Findings and recommendations for LTCFs:

1. LTCFs continue to account for the majority of HAOs reported in the State. These outbreaks are occasionally severe and associated with high morbidity and mortality rates.
2. For Influenza and other respiratory outbreaks, use the outbreak specific toolkits available online at <http://www.dhhr.wv.gov/oeps/disease/ob/Pages/OutbreakToolkits.aspx>
3. In MDRO outbreaks, LTCFs' residents may act as reservoirs for MDROs and facilitate transmission of these infections across the spectrum of healthcare. Additionally, some LTCFs contract either out-of-state or in-state laboratories that do not test or test and do not report MDRO status to these facilities. This represents a major challenge for these facilities to identify and manage MDRO outbreaks. DIDE recommendations to manage MDRO outbreaks can be found at <http://www.dhhr.wv.gov/oeps/disease/ob/pages/mdro-outbreaks-ltcf.aspx>
4. In the event of any outbreak, communicate patients' status upon transfer to other healthcare facilities.

Findings and recommendations for acute care hospitals and outpatient clinics:

1. Outbreaks should be reported immediately to LHDs according to the new West Virginia Reportable Disease Rule that became effective August 2013.
2. DIDE can provide assistance, expertise and laboratory support, if needed, to investigate outbreaks in acute care facilities. DIDE also works closely with the CDC in investigating the more complicated HAOs.
3. Review DIDE healthcare-associated outbreak protocol on the website at <http://www.dhhr.wv.gov/oeps/disease/hai/documents/hai-protocol.pdf>
4. Follow CDC recommendations regarding healthcare workers' hepatitis B vaccination. Maintain an up-to-date vaccination record of all healthcare workers who are not employed by but have privileges in the facility.
5. Provide facility-wide education on safe injection practices and antimicrobial resistance and appropriate use at least once a year.

6. OLS can provide molecular analysis of certain bacterial isolates for the purpose of MDRO outbreak investigation.
7. MDRO outbreaks affect all healthcare facilities in a geographical area or a region. CDC recommends regional approach to MDRO outbreaks as the most effective way to prevent the emergence and further spread of these infections.

DIDE's Objectives:

The following are objectives completed in 2013, ongoing objectives, and new objectives in 2014 and beyond:

1. DIDE continues to improve feedback of information on outbreaks and outbreak investigations. In addition to the yearly outbreak report, DIDE continues to release a monthly outbreak report. The monthly reports are also posted on the website at: <http://www.dhhr.wv.gov/oeps/disease/ob/Pages/default.aspx>
2. DIDE will continue to participate in electronic reporting of all enteric outbreaks in the National Outbreak Reporting System (NORS).
3. DIDE will collaborate with the Office of Environmental Health Services and other stakeholders to update the foodborne disease outbreak manual in 2014.
4. In 2014, OLS will implement the use of FilmArray Gastrointestinal panel in foodborne disease outbreaks. This testing methodology uses PCR to test for several enteric viruses, bacteria, and parasites in a short time.
5. DIDE is committed to providing regular trainings on outbreak management to the state, regional and local public health personnel.
6. DIDE provided several webinars for stakeholders. Webinars can be accessed at <http://www.dhhr.wv.gov/oeps/disease/Training/Pages/default.aspx>
7. Collaborated with the West Virginia Medical Institute to provide a training webinar regarding management of respiratory illness outbreaks in LTCFs.
8. In response to the surveillance evaluation of respiratory outbreaks in LTCFs conducted by the CDC/Council of State and Territorial Epidemiologists (CSTE) Fellow, DIDE implemented the following recommendations:
 - Updated the respiratory illness outbreak toolkit including creating an easy-to-use case ascertainment form.
 - Standardized case definition.
 - Mailed recommendations and respiratory outbreak toolkits to LTCFs' medical directors.
9. In 2014, DIDE will provide regional trainings to school nurses on identification and management of outbreaks in schools.
10. Healthcare-Associated Outbreaks:
 - The Reportable Disease Rule was revised to clarify immediate reporting of healthcare-associated outbreaks to LHDs.
 - DIDE is working with the Healthcare Authority to get an access to the HAI data routinely collected from hospitals by the Healthcare Authority. DIDE will use this data to investigate outbreaks or clusters in healthcare facilities and monitor antimicrobial resistance for specific HAIs.

- In response to several outbreaks in West Virginia over the last few years that were related to unsafe injection practices, DIDE is collaborating with the CDC to provide education and training on safe injection practices targeting Ambulatory Care Centers and Outpatient Clinics statewide.
- According to the CDC, West Virginia continues to be among the states with the highest antibiotics prescribing rates. DIDE has been and will continue to work with the CDC to provide education and training materials on antimicrobial resistance and appropriate use.
- OLS has the ability to provide molecular typing of MDROs during outbreaks.
- The findings from this report will be presented to the HAI Advisory Group as well as WV APIC section as a part of annual needs assessment.
- DIDE continues to make resources available for state and regional epidemiologists to attend national trainings and conferences in HAIs and HAOs.
- DIDE hosted a CSTE HAI fellow epidemiologist for a two-year training. The fellow's assignments and projects aim to assist DIDE in implementing 2013 and 2014 HAI plans and improve detection and management of HAO. These projects include, but are not limited to:
 - Evaluation of surveillance of respiratory outbreaks in LTCFs.
 - Baseline prevention practices for CDI and CRE in acute and LTCFs.
 - Evaluation of laboratory practices in West Virginia regarding CRE testing and reporting.
- DIDE developed an HAI outbreak protocol to assist stakeholders in investigating HAOs. The protocol can be accessed on the web at <http://www.dhhr.wv.gov/oeps/disease/hai/documents/hai-protocol.pdf>
- DIDE will host a summer intern to assist with drafting CRE surveillance reports and regional outbreak reports.

Appendix Summary Confirmed Outbreak Table, 2013, West Virginia (n=164)

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
1	1/2/2013 9:35	1/2/2013 10:15	40	Region 8 (KCHD)	WV	Influenza	Influenza	Residents 5/30 (AR 17%), Staff 18/120 (AR 15%)	Lab Confirmed	LTCF	Person to Person
2	1/2/2013 13:00	1/2/2013 13:45	45	Region 1 (ROC)	WV	Influenza	Influenza AH3	Residents 20, Staff 4	Lab Confirmed	LTCF	Person to Person
3	1/2/2013 13:30	1/2/2013 14:20	50	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 33	Lab test not done	LTCF	Person to Person
4	1/2/2013 14:00	1/2/2013 14:30	30	Region 1 (ROC)	WV	Influenza	Influenza AH3	Residents 26/54 (AR 48%), Staff 2/70 (AR 3%)	Lab Confirmed	LTCF	Person to Person
5	1/2/2013 13:30	1/2/2013 14:30	60	Region 5 (PACT)	WV	Influenza	Influenza A	Residents 31/101, (AR 31%), Staff 5	Lab Confirmed	LTCF	Person to Person
6	1/2/2013 14:15	1/2/2013 14:30	15	Region 1 (ROC)	WV	Acute Gastroenteritis	Undetermined	Residents 25, Staff 2	Lab test negative or noncontributory	LTCF	Person to Person
7	1/3/2013 15:13	1/3/2013 15:49	36	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 42	Lab test not done	LTCF	Person to Person
8	1/4/2013 9:30	1/4/2013 9:45	15	Multiple	WV	Skin Rash	Herpes Gladiatorum	Cases 22	Lab Confirmed	Sports Team	Person to Person
9	1/2/2013 13:30	1/2/2013 14:30	60	Region 3 (Eastern Panhandle)	WV	Influenza	Influenza A	Residents: 17/86 (AR 20%)	Rapid test positive but not culture confirmed	LTCF	Person to Person
10	1/7/2013 10:00	1/7/2013 13:45	225	Region 6 (MOVHD)	WV	Influenza	Influenza B	Residents 29/56 (AR 52%)	Lab Confirmed	LTCF	Person to Person
11	1/7/2013 11:20	1/7/2013 11:45	25	Region 5 (PACT)	WV	Influenza	Influenza A	Residents 18/87 (AR 21%), Staff 8	Rapid test positive but not culture confirmed	LTCF	Person to Person
12	1/7/2013 9:30	1/7/2013 10:00	30	Region 8 (KCHD)	WV	Influenza	Influenza AH3	Residents 19/124 (AR 15%), Staff 53/140 (AR 38%)	Lab Confirmed	LTCF	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
14	1/7/2013 15:50	1/7/2013 15:53	3	Region 6 (MOVHD)	WV	Acute Gastroenteritis	Undetermined	Residents 12/60 (AR 20%), Staff 8/80 (AR 10%)	Lab test not done	LTCF	Person to Person
15	1/8/2013 9:45	1/8/2013 9:55	10	Region 6 (MOVHD)	WV	Influenza	Influenza AH3	Residents 7/123 (AR 6%), Staff 4	Lab Confirmed	LTCF	Person to Person
16	1/8/2013 13:05	1/8/2013 13:25	20	Region 5 (PACT)	WV	Influenza	Influenza	Residents 24/103 (AR23%)	Rapid test positive but not culture confirmed	LTCF	Person to Person
17	1/8/2013 10:45	1/8/2013 11:25	40	Region 8 (KCHD)	WV	Influenza	Influenza AH3	Residents 8/87 (AR 9%), Staff 3/110 (AR 3%)	Lab Confirmed	LTCF	Person to Person
18	1/9/2013 16:15	1/9/2013 16:20	5	Region 1 (ROC)	WV	Influenza	Influenza A	Residents 14/89 (AR 16%), Staff 11/110 (AR 7%)	Rapid test positive but not culture confirmed	LTCF	Person to Person
19	1/10/2013 9:45	1/10/2013 10:00	15	Region 6 (MOVHD)	WV	Influenza	Influenza AH3	Residents 13/50 (AR 26%), Staff 1/70 (AR 1%)	Lab Confirmed	LTCF	Person to Person
20	1/9/2013 17:00	1/10/2013 10:10	1030	Region 6 (MOVHD)	WV	Influenza	Influenza	Undetermined	Rapid test positive	LTCF	Person to Person
21	1/10/2013 12:00	1/10/2013 12:45	45	Region 4 (Northern Panhandle)	WV	Influenza-Like Illness	Undetermined	Residents 45/150 (AR 30%), Staff 18	Lab test not done	LTCF	Person to Person
22	1/9/2013 15:00	1/10/2013 13:45	1365	Region 4 (Northern Panhandle)	WV	Influenza	Influenza AH3	Residents 15/54 (AR 28%)	Lab Confirmed	LTCF	Person to Person
23	1/9/2013 17:00	1/10/2013 11:00	1080	Region 2 (BUNDLE)	WV	Ventilator-Associated Pneumonia	Enterobacter cloacae	Patients 3/12 (AR 25%)	Lab Confirmed	Hospital	Person to Person
24	1/14/2013 12:25	1/14/2013 13:40	15	Region 5 (PACT)	WV	Acute Respiratory Syndrome	Undetermined	Residents 6/91 (AR 7%)	Lab test not done	LTCF	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
25	1/14/2013 8:30	1/14/2013 13:47	317	Region 5 (PACT)	WV	Influenza	Influenza	Residents 16/57 (AR 28%), Staff 5	Rapid test positive	LTCF	Person to Person
26	1/14/2013 8:50	1/14/2013 13:47	297	Region 5 (PACT)	WV	Influenza	Influenza AH3	Residents 49/120 (AR 41%), Staff 27	Lab Confirmed	LTCF	Person to Person
27	1/14/2013 14:10	1/14/2013 14:18	8	Region 5 (PACT)	WV	Influenza	Influenza A	Residents 27/104 (AR 26%), Staff 3	Rapid test positive	LTCF	Person to Person
28	1/9/2013 14:00	1/14/2013 13:40	7180	Region 1 (ROC)	WV	Influenza	Influenza A	Residents 6/59 (AR 10%), Staff 7/79 (AR 9%)	Rapid test positive	LTCF	Person to Person
29	1/15/2013 13:45	1/15/2013 13:58	13	Region 6 (MOVHD)	WV	Influenza-Like Illness	Undetermined	Highest Absentee Rate 9%	Lab test negative or noncontributory	School	Person to Person
30	1/11/2013 16:00	1/15/2013 17:00	5760	Region 7 (SPHERE)	WV	Influenza	Influenza A	Highest Absentee Rate 26%	Rapid test positive but not culture confirmed	School	Person to Person
31	1/11/2013	1/15/2013 17:00	5760	Region 7 (SPHERE)	WV	Influenza	Influenza A	Highest Absentee Rate 25%	Rapid test positive but not culture confirmed	School	Person to Person
32	1/11/2013 0:00	1/15/2013 17:00	6780	Region 7 (SPHERE)	WV	Influenza	Influenza AH3	Inmates 168/1200 (AR 14%)	Lab Confirmed	Correct. Facility	Person to Person
33	1/15/2013 17:05	1/15/2013 17:25	20	Region 8 (KCHD)	WV	Acute Respiratory Syndrome	Undetermined	Residents 6/92 (AR 7%), Staff 1	Lab test negative or noncontributory	LTCF	Person to Person
34	1/11/2013 12:30	1/11/2013 12:40	10	Region 8 (KCHD)	WV	Influenza	Influenza A	Residents 4/114 (AR 4%), Staff 16/115 (AR 14%)	Rapid test positive	LTCF	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
35	1/16/2013 12:45	1/16/2013 13:00	15	Region 6 (MOVHD)	WV	Influenza	Influenza	Residents 8/54 (AR 15%), Staff 4	Rapid test positive but not culture confirmed	LTCF	Person to Person
36	1/16/2013 11:10	1/16/2013 12:10	60	Region 7 (SPHERE)	WV	Influenza-Like Illness	Undetermined	Highest Absentee Rate 27%	Lab test not done	Schools	Person to Person
37	1/16/2013 14:00	1/16/2013 14:45	45	Region 2 (BUNDLE)	WV	Influenza	Influenza A	Residents 40	Rapid test positive but not culture confirmed	LTCF	Person to Person
38	1/17/2013 10:45	1/17/2013 11:05	20	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 67/116 (AR 58%)	Lab test negative or noncontributory	LTCF	Person to Person
39	1/17/2013 15:00	1/17/2013 16:05	65	Region 2 (BUNDLE)	WV	Influenza	Influenza A	Residents 30/66 (AR 45%), Staff 4	Rapid test positive but not culture confirmed	LTCF	Person to Person
40	1/18/2013 10:00	1/18/2013 10:45	45	Region 7 (SPHERE)	WV	Influenza	Influenza B	Residents 34/102 (AR 33%)	Rapid test positive but not culture confirmed	LTCF	Person to Person
41	1/18/2013 13:45	1/18/2013 13:50	5	Region 4 (Northern Panhandle)	WV	Influenza	Influenza AH3	Residents 29/89 (AR 33%), Staff 5/130 (AR 4%)	Lab Confirmed	LTCF	Person to Person
43	1/18/2013 14:30	1/18/2013 14:45	15	Region 6 (MOVHD)	WV	Influenza	Influenza B	Highest Absentee Rate 14%	Lab Confirmed	School	Person to Person
44	1/23/2013 11:20	1/23/2013 11:50	30	Region 3 (Eastern Panhandle)	WV	Norovirus Gastroenteritis	Norovirus	Residents: 49/104 (AR 47%), Staff 22/48 (AR 44%)	Lab Confirmed	LTCF	Person to Person
46	1/25/2013 9:00	1/25/2013 9:25	25	Region 5 (PACT)	WV	Influenza	Influenza A	Residents 8/38 (AR 21%)	Rapid test positive	Assisted Living	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
47	1/30/2013 9:00	1/30/2013 9:30	30	Region 7 (SPHERE)	WV	Influenza	Influenza A	Residents 4/23 (AR 17%)	Rapid test positive	Assisted Living	Person to Person
48	1/30/2013 17:05	1/30/2013 17:45	40	Region 8 (KCHD)	WV	Influenza	Influenza AH3	Residents 11/70 (AR 16%), Staff 3/80 (AR 4%)	Lab Confirmed	LTCF	Person to Person
49	1/14/2013 15:00	1/31/2013 13:00	24360	Region 3 (Eastern Panhandle)	WV	Influenza	Influenza	Residents 32, Staff 18	Rapid test positive but not culture confirmed	LTCF	Person to Person
50	2/1/2013 11:00	2/1/2013 12:15	75	Region 7 (SPHERE)	WV	Varicella	Varicella Zoster Virus	Cases 16	Lab Confirmed	Schools	Person to Person
51	2/4/2013 10:00	2/4/2013 10:10	10	Region 1 (ROC)	WV	Influenza	Influenza AH3	Residents 4	Lab Confirmed	LTCF	Person to Person
53	2/6/2013 11:35	2/6/2013 13:00	85	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 8/114 (AR 7%), Staff 9/134 (AR 7%)	Lab test negative or noncontributory	LTCF	Person to Person
54	2/7/2013 8:30	2/7/2013 9:30	60	Region 5 (PACT)	WV	Influenza	Influenza	Residents 13	Rapid test positive but not culture confirmed	LTCF	Person to Person
55	2/7/2013 12:39	2/7/2013 13:00	21	Region 2 (BUNDLE)	WV	Scabies	Undetermined	Inmates 22, Staff 11	Lab test not done	Correct. Facility	Person to Person
56	2/7/2013 10:15	2/7/2013 10:45	30	Region 3 (Eastern Panhandle)	WV	Norovirus Gastroenteritis	Norovirus GI and GII	Students 80/274 (AR 30%), Staff 3/36 (8%)	Lab Confirmed	School	Person to Person
57	2/8/2013 8:40	2/8/2013 9:13	33	Region 6 (MOVHD)	WV	Scabies	Undetermined	Residents 10	Lab test not done	Psych. Facility	Person to Person
58	2/11/2013 9:10	2/11/2013 9:28	18	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents 25/88 (AR 28%), Staff 6/100 (6%)	Lab test negative or noncontributory	LTCF	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
59	2/11/2013 9:10	2/11/2013 16:21	29	Region 4 (Northern Panhandle)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 8, Staff 5	Lab Confirmed	LTCF	Person to Person
60	2/7/2013 11:00	2/12/2013 10:30	7170	Region 5 (PACT)	WV	Influenza	Influenza AH3	Residents 26	Lab Confirmed	LTCF	Person to Person
61	2/12/2013 12:40	2/12/2013 13:17	37	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 32/80 (AR 40%), Staff 23	Lab test not done	LTCF	Person to Person
62	2/13/2013 11:15	2/13/2013 11:50	35	Region 8 (KCHD)	WV	Influenza	Influenza B	Residents 9	Lab Confirmed	LTCF	Person to Person
63	2/14/2013 12:30	2/14/2013 15:40	190	Region 4 (Northern Panhandle)	WV	Influenza	Influenza A	Residents 8/36 (AR 22%)	Rapid test positive	LTCF	Person to Person
64	2/16/2013 16:30	2/16/2013 18:18	108	Region 2 (BUNDLE)	WV	Influenza	Influenza	Residents 8/52 (AR 15%)	Rapid test positive	LTCF	Person to Person
65	2/20/2013 14:45	2/20/2013 16:00	15	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 22/70 (AR 31%), Staff 5/325 (AR1.5%)	Lab test not done	LTCF	Person to Person
66	2/21/2013 10:15	2/21/2013 11:15	60	Region 2 (BUNDLE)	WV	Influenza-Like Illness	Undetermined	Absentee Rate 17%	Lab test not done	School	Person to Person
67	2/21/2013 14:04	2/21/2013 12:09	5	Region 4 (Northern Panhandle)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 42/184 (AR 23%), Staff 14/239 (6%)	Lab Confirmed	LTCF	Person to Person
68	2/21/2013 12:15	2/21/2013 12:19	4	Region 1 (ROC)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 7/57 (AR 12%)	Lab Confirmed	LTCF	Person to Person
69	2/22/2013 17:15	2/22/2013 17:45	30	Region 4 (Northern Panhandle)	WV	Influenza	Influenza A	Residents 3/163 (AR 2%), Staff 3/207 (AR 1%)	Rapid test positive	LTCF	Person to Person
70	2/25/2013 8:30	2/25/2013 8:55	25	Region 1 (ROC)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents 17/120 (AR 14%), Staff 10/120 (AR 8%)	Lab Confirmed	LTCF	Person to Person
72	2/26/2013 10:15	2/26/2013 10:30	15	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 41/100 (AR 41%), Staff 8/90 (AR 9%)	Lab test not done	LTCF	Person to Person

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73	2/27/13 13:10	2/27/2013 13:35	25	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Absentee Rate 18.8%	Lab test not done	School	Person to Person
74	2/27/2013 12:00	2/27/2013 12:30	30	Region 8 (KCHD)	WV	Acute Respiratory Syndrome	Rhinovirus / RSV	Residents 11/56 (20%), 8 Staff	Lab Confirmed	LTCF	Person to Person
75	2/27/2013 15:45	2/27/2013 16:00	15	Region 8 (KCHD)	WV	Multiple Diagnoses	CRE	Cases 3/26 (AR 12%)	Lab Confirmed	Hospital	Person to Person
76	2/28/2013 12:00	2/28/2013 12:10	10	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Highest Absentee Rate 16%	Lab test not done	School	Person to Person
77	3/1/2013 10:50	3/1/2013 10:55	5	Region 6 (MOVHD)	WV	Scabies	Undetermined	Residents 12/62 (AR 19%)	Lab test not done	LTCF	Person to Person
78	3/1/2013 11:15	3/1/2013 11:20	5	Region 7 (SPHERE)	WV	Acute Gastroenteritis	Undetermined	Residents 23/99 (AR 23%), Staff 7/149 (AR 4.7%)	Lab test not done	LTCF	Person to Person
79	3/1/2013 13:10	3/1/2013 13:25	15	Region 5 (PACT)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 16/39 (AR 41%), Staff 9/50 (AR 18%)	Lab Confirmed	LTCF	Person to Person
80	3/4/2013 9:10	3/4/2013 9:30	20	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 29/55 (AR 53%), Staff 15/40 (AR 37.5%)	Lab test negative or noncontributory	Rehab. Center	Person to Person
81	3/4/2013 12:00	3/4/2013 12:30	30	Region 2 (BUNDLE)	WV	Influenza-Like Illness	Undetermined	Highest Absentee Rate 25 %	Lab test not done	School	Person to Person
82	3/5/2013 9:00	3/5/2013 9:17	17	Region 5 (PACT)	WV	Acute Respiratory Syndrome	Undetermined	Residents 12	Lab test not done	LTCF	Person to Person
83	3/6/2013 14:30	3/6/2013 16:09	99	Region 2 (BUNDLE)	WV	Scabies	Undetermined	Residents 4/66 (AR 6%), Staff 1	Lab test not done	LTCF	Person to Person
84	3/8/2013 10:30	3/8/2013 10:50	20	Region 6 (MOVHD)	WV	Influenza	Influenza B	Residents 22/65 (AR 34%)	Rapid test positive	LTCF	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
85	3/8/2013 12:20	3/8/2013 12:35	15	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 58/90 (AR 64%), Staff 4/60 (AR 6%).	Lab test not done	LTCF	Person to Person
86	3/8/2013 14:20	3/8/2013 15:00	40	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents 34/117 (AR 29%), Staff 32/136 (AR 28%)	Lab test not done	LTCF	Person to Person
87	3/12/2013 14:40	3/12/2013 15:00	20	Region 6 (MOVHD)	WV	Influenza	Influenza A and B	Highest Absentee Rate 10%	Rapid test positive	School	Person to Person
88	3/12/2013 14:30	3/12/2013 15:30	60	Region 1 (ROC)	WV	Acute Gastroenteritis	Undetermined	Residents 16/120 (AR 13%)	Lab test negative or noncontributory	LTCF	Person to Person
89	3/12/2013 16:00	3/12/2013 16:15	15	Region 2 (BUNDLE)	WV	Acute Gastroenteritis	Undetermined	Residents 28, Staff 15	Lab test not done	LTCF	Person to Person
90	3/14/2013 13:18	3/15/2013 8:50	1172	Region 7 (SPHERE)	WV	Acute Gastroenteritis	Undetermined	Residents 26/102 (AR 25%), Staff 16/144 (AR 11%)	Lab test not done	LTCF	Person to Person
91	3/19/2013 9:52	3/19/2013 10:06	14	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Highest Absentee Rate 15%	Lab test not done	School	Person to Person
93	3/22/2013 11:00	3/22/2013 11:08	8	Region 3 (Eastern Panhandle)	WV	Acute Gastroenteritis	Undetermined	Highest absentee Rate 14%	Lab test not done	School	Person to Person
94	3/25/2013 9:45	3/25/2013 10:40	55	Region 3 (Eastern Panhandle)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 32/58 (AR 55%), Staff 31/82 (AR 38%)	Lab Confirmed	LTCF	Person to Person
96	3/23/2013 13:20	3/25/2013 13:58	38	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents 16/124 (AR 13%)	Lab test negative or noncontributory	LTCF	Person to Person
97	3/25/2013 11:00	3/25/2013 11:00	0	Region 1 (ROC)	WV	Multiple Diagnoses	CRE	Cases 10/132 (AR 8%)	Lab Confirmed	LTCF	Person to Person
98	3/26/2013 12:45	3/26/2013 13:10	25	Region 1 (ROC)	WV	Influenza	Influenza B	Residents 32/105 (AR 31%), Staff 3/125 (AR 2%)	Lab Confirmed	LTCF	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
100	3/26/2013 15:00	3/26/2013 15:30	30	Region 5 (PACT)	WV	Influenza & RSV	Influenza A & B and RSV	Residents 33/98 (AR 34%)	Lab Confirmed	LTCF	Person to Person
101	3/27/2013 14:40	3/27/2013 15:00	20	Region 7 (SPHERE)	WV	Norovirus Gastroenteritis	Norovirus	Residents 33/58 (57%), Staff 31/65 (AR 48%)	Lab Confirmed	LTCF	Person to Person
102	3/27/2013 16:00	3/27/2013 16:36	36	Region 8 (KCHD)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 7, Staff 4	Lab Confirmed	LTCF	Person to Person
103	3/29/2013 11:45	3/29/2013 12:10	25	Region 8 (KCHD)	WV	Influenza	Influenza A	Residents 11/38 (AR 29%), Staff 4/24 (AR 17%)	Rapid test positive	Assisted Living	Person to Person
104	4/4/2013 14:45	4/4/2013 15:00	15	Region 1 (ROC)	WV	Influenza	Influenza B	Residents 2/56 (AR 4%)	Rapid test positive	LTCF	Person to Person
105	4/10/2013 11:05	4/10/2013 11:30	25	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 14/30 (AR 47%)	Lab test not done	LTCF	Person to Person
106	4/9/2013 15:00	4/11/2013 14:41	2861	Region 3 (Eastern Panhandle)	WV	Acute Gastroenteritis	Undetermined	Residents 24/55 (AR 44%)	Lab test not done	Assisted Living	Person to Person
107	4/15/2013 12:45	4/15/2013 13:30	45	Region 5 (PACT)	WV	Multiple Clinical Diagnoses	MDR- <i>Acinetobacter baumannii</i>	Residents 2	Lab Confirmed	LTCF	Undet.
108	4/17/2013 16:00	4/17/2013 12:00	240	Multiple	CDC	Salmonellosis	<i>Salmonella infantis</i>	WV residents 25, Nationwide 125	Lab Confirmed	Community	Point Source
109	4/19/2013 12:00	4/19/2013 14:24	144	Region 4 (Northern Panhandle)	WV	Acute Gastroenteritis	Undetermined	Residents 5/26 (19%), Staff 2/28 (AR 7%)	Lab test not done	LTCF	Person to Person
110	4/30/2013 9:30	4/30/2013 9:55	25	Region 2 (BUNDLE)	WV	Scabies	Undetermined	Cases 2	Lab test not done	Pre-School	Person to Person
111	5/3/2013 17:00	5/3/2013 18:00	60	Region 8 (KCHD)	CDC	STEC Gastroenteritis	Shiga Toxin-Producing <i>Escherichia coli</i>	WV residents 1, Nationwide 26	Lab Confirmed	Community	Point Source

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
112	5/6/2013 9:10	5/6/2013 9:55	45	Region 5 (PACT)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 24/120 (AR 20%), Staff 10/100 (10%)	Lab Confirmed	LTCF	Person to Person
113	5/7/2013 11:20	5/7/2013 11:38	18	Region 2 (BUNDLE)	WV	<i>Clostridium difficile</i> infection (CDI)	<i>Clostridium difficile</i>	Patients 6	Lab Confirmed	Hospital	Person to Person
114	5/7/2013 16:28	5/7/2013 16:28	0	Region 2 (BUNDLE)	WV	Multiple Diagnoses	<i>Citrobacter freundii</i>	Patients 3	Lab Confirmed	Hospital	Undet.
115	5/9/2013 10:00	5/9/2013 10:30	30	Region 3 (Eastern Panhandle)	WV	Streptococcal pharyngitis	Group A <i>Streptococcus</i> (GAS)	Students 12/504 (AR 2%), Staff 2	Rapid test positive	School	Person to Person
116	5/20/2013 11:00	5/20/2013 15:40	280	Region 3 (Eastern Panhandle)	CDC	Listeriosis	Listeria	WV Residents 1, Nationwide 3	Lab Confirmed	Community	Point Source
118	5/29/2013 10:00	5/29/2013 10:27	27	Region 4 (Northern Panhandle)	WV	Scabies	Undetermined	Staff 35/160 (AR 22%)	Lab test not done	LTCF	Person to Person
119	6/3/2013 8:30	6/3/2013 8:47	17	Region 6 (MOVHD)	WV	Skin Rash	MRSA	Cases 5	Lab Confirmed	Sports Team	Person to Person
120	6/3/2013 11:00	6/3/2013 11:15	15	Region 4 (Northern Panhandle)	WV	Multiple Clinical Diagnoses	CRE	Residents 3	Lab Confirmed	LTCF	Undet.
122	6/9/2013 13:50	6/9/2013 14:00	10	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Patients 8/11 (AR 73%), Staff 5	Lab test negative or noncontributory	Hospital	Person to Person
123	6/10/2013 15:35	6/10/2013 15:40	5	Region 1 (ROC)	WV	Pneumonia	Rhinovirus & Coronavirus	Residents 22/88 (AR 25%)	Lab Confirmed	LTCF	Person to Person
124	6/14/2013 8:30	6/14/2013 10:30	120	Region 5 (PACT)	WV	Dermatitis	Undetermined	Residents 31/38 (AR 81%)	Lab test not done	LTCF	Undet.
125	6/14/2013 14:20	6/14/2013 15:00	40	Region 1 (ROC)	WV	Scabies	Undetermined	Inmates 2	Lab test not done	Correct. Facility	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
127	6/21/2013 13:00	6/21/2013 13:00	0	Region 1 (ROC)	WV	Acute Respiratory Syndrome	Human Metapneumovirus	Residents 15/59 (AR 25%)	Lab Confirmed	LTCF	Person to Person
128	6/24/2013 16:10	6/24/2013 16:15	5	Region 5 (PACT)	WV	Acute Respiratory Syndrome	Parainfluenza 3 Virus	Residents 13/97 (AR 13%), Staff 1/80 (AR 1%)	Lab Confirmed	LTCF	Person to Person
129	6/25/2013 15:55	6/25/2013 16:15	20	Region 6 (MOVHD)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents 36/123 (29%)	Lab Confirmed	LTCF	Person to Person
131	7/2/2013 10:30	7/2/2013 10:00	30	Region 3 (Eastern Panhandle)	WV	Urinary Tract and Wound Infection	ESBL- <i>Escherichia coli</i>	Residents 6	Lab Confirmed	LTCF	Undet.
132	7/9/2013 9:30	7/9/2013 9:37	7	Region 2 (BUNDLE)	WV	Scabies	Undetermined	Patients 5/110 (AR 5%)	Lab test not done	Hospital	Person to Person
133	7/15/2013 15:50	7/15/2013 16:15	25	Region 3 (Eastern Panhandle)	WV	Acute Respiratory Syndrome	Undetermined	Residents 13/56 (AR 23%)	Lab test negative or noncontributory	LTCF	Person to Person
134	7/16/2013 9:20	7/16/2013 10:15	55	Region 3 (Eastern Panhandle)	WV	Campylobacteriosis	Campylobacter	Staff 6/8 (AR 75%)	Rapid test positive	Workplace	Undet.
135	7/21/2013 16:15	7/21/2013 16:30	15	Region 8 (KCHD)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents 24, Staff 2	Lab Confirmed	LTCF	Person to Person
136	Missing	7/19/2013 9:28	Miss.	Region 1 (ROC)	WV	Influenza	Influenza AH3	Campers 10/40 (AR 25%)	Lab Confirmed	Camp	Person to Person
137	Missing	7/22/2013 6:55	Miss.	Region 1 (ROC)	WV	Acute Gastroenteritis	Undetermined	Attendees 27/320 (AR 8%)	Lab test not done	Mass-Gathering	Person to Person
140	8/20/2013 11:45	8/20/2013 12:00	15	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents 23/55 (AR 42%), Staff 3	Lab test negative or noncontributory	LTCF	Person to Person
141	8/20/2013 16:00	8/20/2013 16:15	15	Multiple	WV	Hepatitis B	Hepatitis B	Undetermined	Lab Confirmed	Community	Undet.

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
142	8/23/13 13:15	8/23/13 13:40	25	Region 6 (MOVHD)	WV	Acute Gastroenteritis	Undetermined	Cases 2	Lab test not done	Workplace- Restaurant - related	Probable Point Source
143	8/27/13 17:00	8/27/13 17:00	0	Region 4 (Northern Panhandle)	WV	Hepatitis B	Hepatitis B	Cases 1	Lab Confirmed	Hospital	Undet.
144	8/29/13 13:15	8/29/13 13:20	5	Region 1 (ROC)	WV	CDI	<i>Clostridium difficile</i>	Residents 6	Lab Confirmed	LTCF	Person to Person
145	9/4/13 16:45	9/4/2013 17:00	15	Region 2 (BUNDLE)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents 11/113 (AR 10%)	Lab Confirmed	LTCF	Person to Person
146	9/3/13 16:00	9/5/13 13:30	2730	Region 4 (Northern Panhandle)	WV	Scabies	Undetermined	Inmates 5/27 (AR 19%)	Lab test not done	Correct. Facility	Person to Person
147	9/9/13 10:45	9/9/13 10:55	10	Region 1 (ROC)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents 24/88 (AR 28%)	Lab Confirmed	LTCF	Person to Person
148	9/9/13 11:45	9/9/13 12:15	30	Region 8 (KCHD)	WV	Conjunctivitis	Undetermined	Residents 6/94 (AR 6%), Staff 4	Lab test not done	LTCF	Person to Person
149	9/10/13 9:30	9/11/13 12:50	1640	Region 1 (ROC)	WV	Scabies	Undetermined	Inmates 5/560 (AR 1%)	Lab test not done	Correct. Facility	Person to Person
150	9/16/13 10:00	9/16/13 11:00	60	Region 7 (SPHERE)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents 11/95 (AR 12%)	Lab Confirmed	LTCF	Person to Person
152	9/23/13 9:35	9/23/13 11:15	100	Region 1 (ROC)	WV	Scabies	Sarcoptes Scabii	Residents 24/86 (AR 28%), Staff 10/100 (AR 10 %)	Lab Confirmed	LTCF	Person to Person
153	9/27/13 16:00	9/27/13 16:40	40	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents 25/87 (AR 29%) Staff 20/110 (AR 18%)	Lab test not done	LTCF	Person to Person
154	9/26/13 15:45	9/26/13 16:55	70	Region 8 (KCHD)	WV	HFMD	Undetermined	Attendees 7/69 (AR 10%)	Lab test not done	Daycare	Person to Person

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
155	9/30/13 15:25	9/30/13 15:45	20	Region 5 (PACT)	WV	Acute Respiratory Syndrome	Undetermined	Residents 6/70 (AR 9%)	Lab test not done	LTCF	Person to Person
156	10/7/13 19:30	10/8/13 13:30	1080	Region 6 (MOVHD)	WV	Multiple Diagnoses	Enterovirus	Cases 4	Lab Confirmed	Community	Undet.
158	10/11/13 10:27	10/11/13 10:35	8	Region 5 (PACT)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents 9/95 (AR 9%)	Lab Confirmed	LTCF	Person to Person
159	10/11/13 11:45	10/11/13 13:05	80	Region 1 (ROC)	WV	Scabies	Undetermined	Residents 2/65 (AR 3%), Staff 1/165 (AR 1%)	Lab test not done	LTCF	Person to Person
161	10/23/13 12:30	10/23/13 13:00	30	Region 8 (KCHD)	WV	Scabies	Undetermined	Residents 2/8 (AR 25%)	Lab test not done	Shelter	Person to Person
162	10/23/13 14:45	10/23/13 15:00	15	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents: 34/53 (AR 64%), Staff 9/80 (AR 11%)	Lab test negative or noncontributory	LTCF	Person to Person
163	10/24/13 10:30	10/24/13 10:43	13	Region 4 (Northern Panhandle)	WV*	Meningitis	<i>Streptococcus intermedius</i>	One case	Lab Confirmed	Outpatient Clinic	Missing
165	10/30/13 11:00	10/30/13 11:45	45	Region 1 (ROC)	WV	Scabies	Undetermined	Residents 5/22 (AR 23%)	Lab test not done	LTCF	Person to Person
167	10/31/13 12:45	10/31/13 13:00	15	Region 7 (SPHERE)	WV	Acute Respiratory Syndrome	Undetermined	Residents 19/90 (12%)	Lab test not done	LTCF	Person to Person
168	11/1/13 11:20	11/1/13 12:15	55	Region 1 (ROC)	WV	Scabies	Undetermined	Team Members 2	Lab test not done	Sports Team	Person to Person
169	11/6/13 11:45	11/6/13 12:30	45	Region 8 (KCHD)	WV	HFMD	Undetermined	Attendees 7/27 (AR 27%)	Lab test not done	Daycare	Person to Person
170	Missing	11/15/13 14:00	Miss.	Region 7 (SPHERE)	WV	Scabies	Undetermined	Residents 3, Staff 13	Lab test not done	LTCF	Person to Person
171	11/19/13 8:45	11/19/13 9:10	25	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Resident 2/85 (2%)	Lab test negative or noncontributory	LTCF	Undet.

Outbreak Number	Date and Time Reported to LHD	Date and Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic Agent	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
172	11/19/13 9:00	11/19/13 9:15	15	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Residents 8/190 (AR 4%)	Lab test not done	LTCF	Person to Person
173	11/19/13 15:00	11/19/13 15:30	30	Region 7 (SPHERE)	WV	Scabies	Undetermined	Cases 22	Lab test not done	Community	Person to Person
175	11/21/13 10:15	11/21/13 11:30	75	Region 8 (KCHD)	WV	HFMD	Undetermined	Attendees 9/72 (AR 13%)	Lab test not done	Daycare	Person to Person
176	12/2/13 11:15	12/2/13 11:30	15	Region 2 (BUNDLE)	WV	Acute Respiratory Syndrome	Rhinovirus	Patients 10/18 (AR 55%)	Lab Confirmed	Hospital	Person to Person
177	12/2/13 12:00	12/2/13 12:45	45	Region 5 (PACT)	WV	Acute Respiratory Syndrome	Rhinovirus	Residents, 31 Staff 11	Lab Confirmed	LTCF	Person to Person
178	12/5/13 11:30	12/5/13 12:09	39	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents 15/68 (AR 22%), Staff 9/109 (8%)	Lab test negative or noncontributory	LTCF	Person to Person
179	12/13/13 9:00	12/13/13 9:25	25	Region 5 (PACT)	WV	Acute Gastroenteritis	Undetermined	Students 48/147 (AR 33%), Staff 4/24 (AR 17%)	Lab test not done	School	Undet.
180	12/16/13 14:00	12/16/13 14:25	25	Region 1 (ROC)	WV	Acute Respiratory Syndrome	Influenza A & Streptococcus Pharyngitis	Students 12/950 (AR 1%)	Rapid test positive	Schools	Person to Person
182	12/19/13 14:40	12/19/13 15:15	35	Region 8 (KCHD)	WV	Hand, Foot, and Mouth Disease	Undetermined	Attendees 4/40 (AR 10%), Staff 1/38 (AR 26%)	Lab test not done	Daycare	Person to Person
183	12/26/13 11:18	12/26/13 11:25	7	Region 8 (KCHD)	WV	Acute Gastroenteritis	Undetermined	Residents 33/88 (38%), Staff 13/110 (12%)	Lab test negative or noncontributory	LTCF	Person to Person
184	12/27/13 10:40	12/27/13 10:46	6	Region 5 (PACT)	WV	Norovirus Gastroenteritis	Norovirus GII	Residents 25/41 (AR 61%), Staff 15/28 (AR 54%)	Lab Confirmed	LTCF	Person to Person
185	12/31/13 11:30	12/31/13 12:45	15	Region 7 (SPHERE)	WV	Acute Gastroenteritis	Undetermined	Residents 25, Staff 29	Lab test not done	LTCF	Person to Person

*Multi-state Including West Virginia; WV= lead investigator