



# WEST VIRGINIA ANNUAL OUTBREAK REPORT 2015

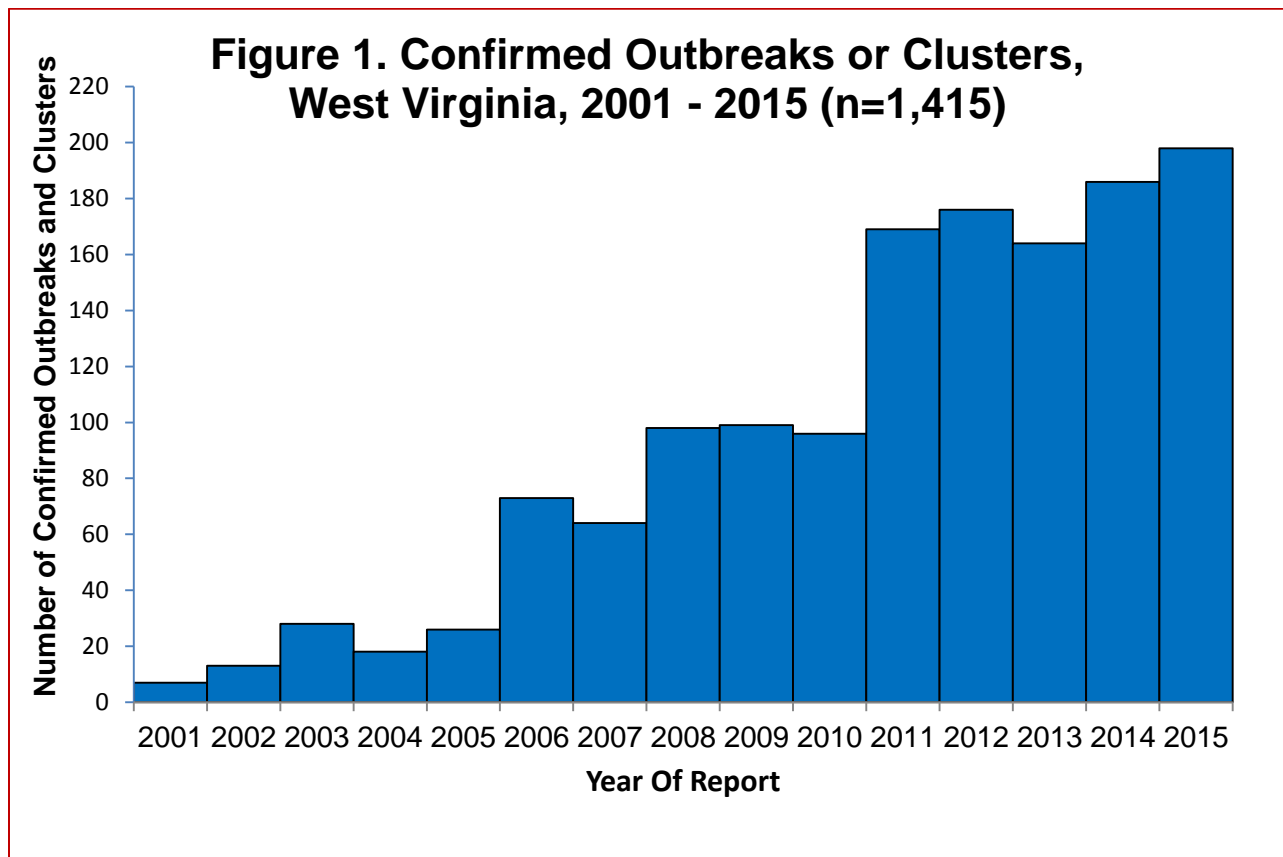
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## Introduction

In 2015, a total of 210 outbreaks were identified and reported to local health departments (LHDs). Of these reports, 198 (94%) were confirmed as outbreaks or clusters of disease (Appendix). LHDs investigate and report outbreaks with assistance from their regional epidemiologist and the West Virginia Department of Health and Human Resources, 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 increased dramatically over the last several years. In 2001, seven confirmed outbreaks were reported. By 2015, 198 confirmed outbreaks were reported, representing a 28-fold increase (Figure 1).



## **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 2015, 191 (96%) confirmed outbreaks were limited to West Virginia residents, and seven (4%) outbreaks involved residents of other states. The Centers for Disease Control and Prevention (CDC) led the investigation in five multi-state outbreaks, and West Virginia and one other state led the investigations in the remaining two multi-jurisdiction outbreaks.

### **Type of Outbreaks**

The most common type of outbreaks involved respiratory illness, followed by enteric illness, and rash illness. Multidrug-resistant organisms (MDROs) outbreaks represented only 1.5% of total confirmed outbreaks (Table 1).

Table 1. Confirmed Outbreaks by Type, West Virginia, 2015

<b>Outbreak Type</b>	<b>Number of Outbreaks n=198</b>	<b>Percent</b>
<b>Respiratory</b>	87	44
<b>Enteric</b>	72	36
<b>Rash</b>	29	15
<b>Other</b>	7	3.5
<b>MDROs</b>	3	1.5

## Outbreak Performance Measures

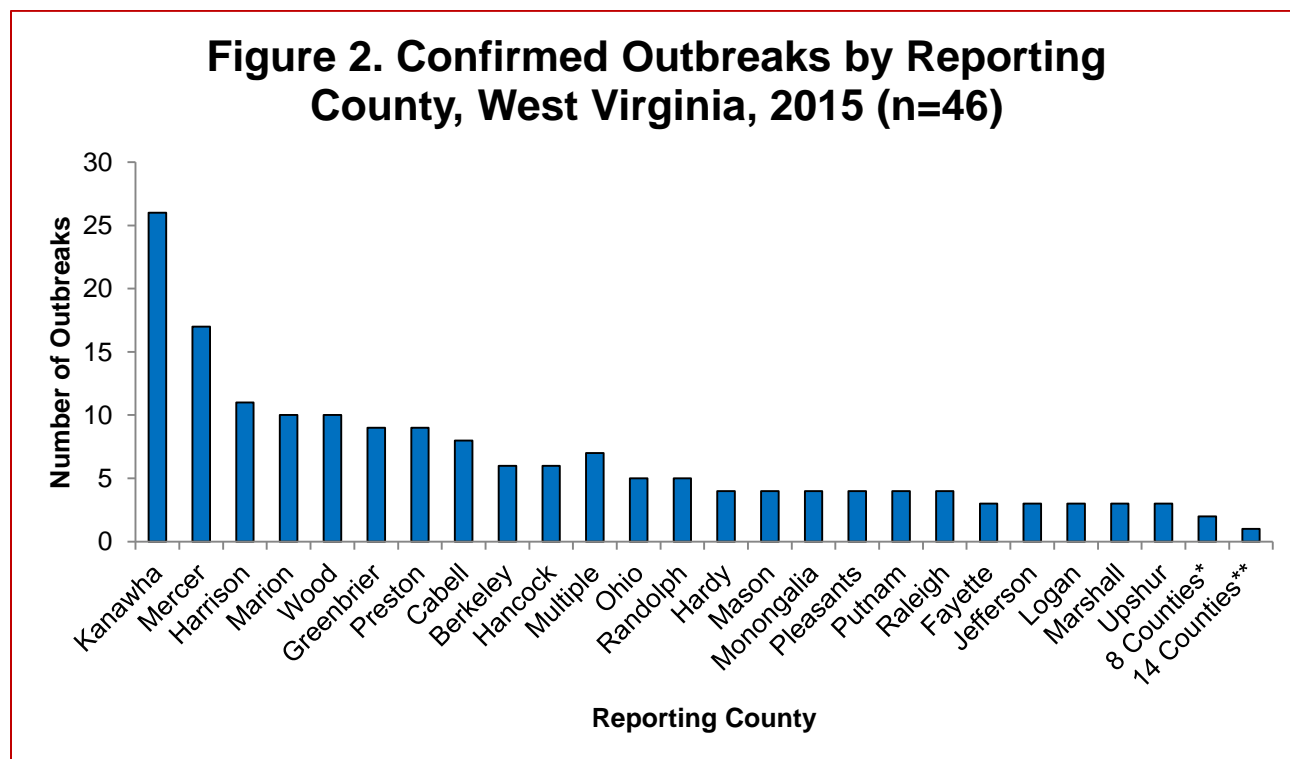
In order to improve outbreak response at the state, regional and local levels and to meet several grant requirements, DIDE has implemented outbreak performance measures. These measures include:

- 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 2015, 43 (84%) counties reported outbreaks (Table 2).

Seven outbreaks were multi-jurisdiction outbreaks (Table 3). The highest number of outbreaks (26) was reported from Kanawha County followed by 16 from Mercer County and 11 from Harrison County (Figure 2). Individual outbreaks will be reported by surveillance region rather than by reporting county to maintain confidentiality of the reporting entity.



\* 8 counties reported 2 outbreaks \*\* 15 counties reported 1 outbreak

Table 2. Confirmed Outbreaks by Reporting County, West Virginia, 2015 (n=198)

Reporting County	Number of Outbreaks
<b>Berkeley</b>	6
<b>Boone</b>	1
<b>Brooke</b>	2
<b>Cabell</b>	8
<b>Calhoun</b>	1
<b>Clay</b>	2
<b>Fayette</b>	3
<b>Gilmer</b>	1
<b>Grant</b>	1
<b>Greenbrier</b>	9
<b>Hampshire</b>	2
<b>Hancock</b>	6
<b>Hardy</b>	4
<b>Harrison</b>	11
<b>Jackson</b>	1
<b>Jefferson</b>	3
<b>Kanawha</b>	26
<b>Lincoln</b>	1
<b>Logan</b>	3
<b>Marion</b>	10
<b>Marshall</b>	3
<b>Mason</b>	4
<b>McDowell</b>	2
<b>Mercer</b>	17
<b>Mineral</b>	1
<b>Monongalia</b>	4
<b>Monroe</b>	2
<b>Multiple</b>	7
<b>Ohio</b>	5
<b>Pendleton</b>	1
<b>Pleasants</b>	4
<b>Pocahontas</b>	1
<b>Preston</b>	9
<b>Putnam</b>	4

<b>Raleigh</b>	4
<b>Randolph</b>	5
<b>Ritchie</b>	2
<b>Roane</b>	2
<b>Summers</b>	1
<b>Taylor</b>	1
<b>Tyler</b>	1
<b>Upshur</b>	3
<b>Wayne</b>	1
<b>Webster</b>	2
<b>Wetzel</b>	1
<b>Wood</b>	10

\*See Table 3 for details

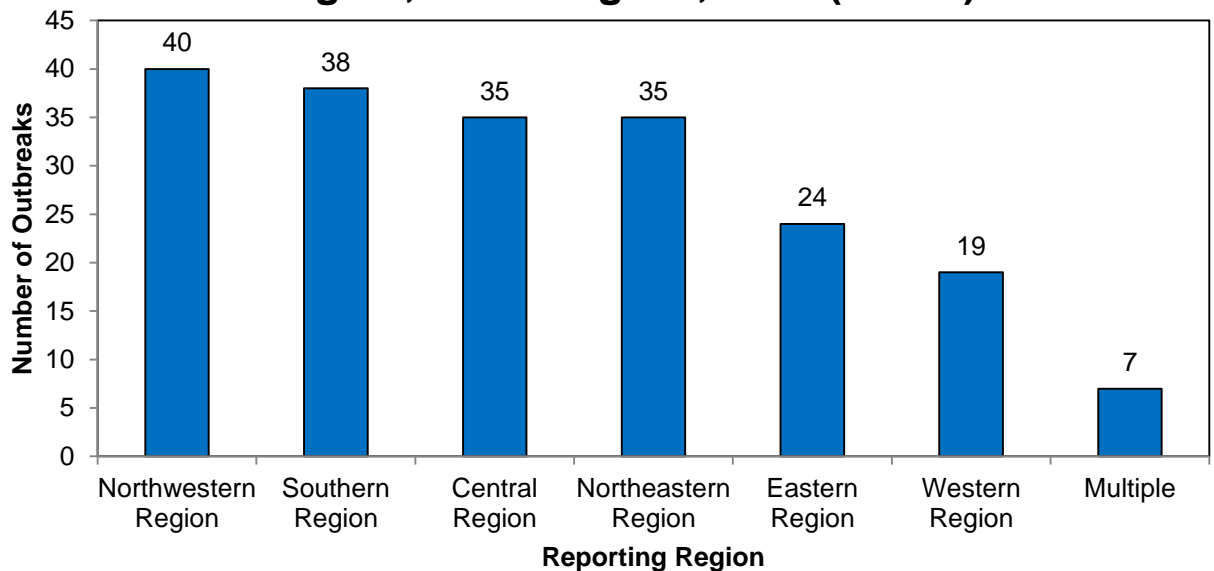
Table 3. Multi-Jurisdiction Outbreaks, West Virginia, 2015 (n=7)

<b>Jurisdiction</b>	<b>Investigation Lead</b>	<b>Region</b>	<b>Counties with Cases</b>
<b>Multi-state</b>	CDC	Central and Western	Upshur , Cabell, Kanawha
<b>Multi-state</b>	CDC	Southern	Raliegh and Greenbrier
<b>Multi-region</b>	West Virginia	Western and Northeastern	Cabell and Monongalia
<b>Multi-state</b>	CDC	Western and Eastern regions	Barbour, Logan, and Jefferson
<b>Multi-state</b>	Pennsylvania	Eastern Region	Berkeley
<b>Multi-state</b>	CDC	Eastern Region	Berkeley
<b>Multi-state</b>	CDC	Northwestern	Wood

### **Surveillance Regions:**

All surveillance regions in the State reported outbreaks in 2015 (Figure 3). See the map (Figure 4) on page 9. Table 4 depicts number of outbreaks from different surveillance regions including their counties, populations, number of schools and number of various healthcare facilities.

**Figure 3. Confirmed Outbreaks by Reporting Region, West Virginia, 2015 (n=198)**



**Figure 4. Confirmed Outbreaks by Region, West Virginia, 2015 (n=191\*)**

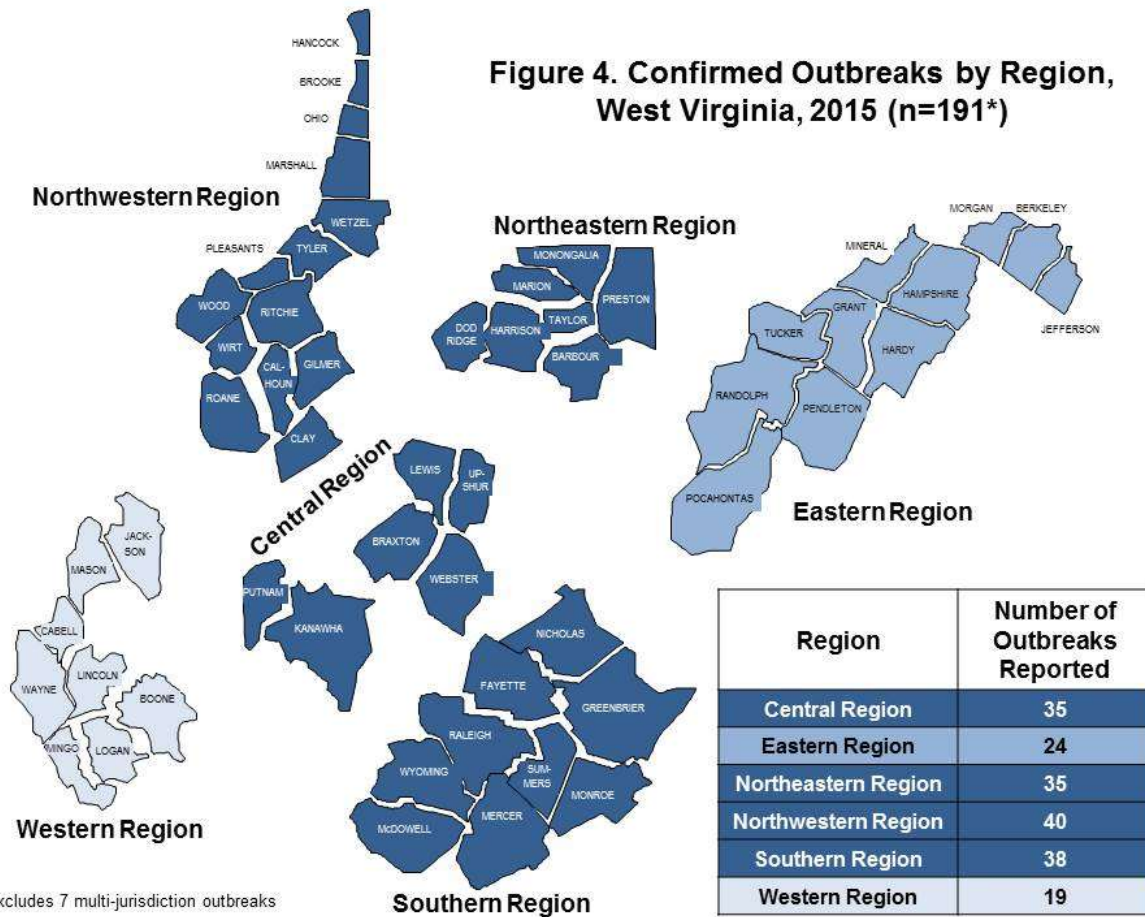




Table 4. Surveillance Regions by Counties, Population\*, Number of Schools, Healthcare Facilities, and Confirmed Outbreaks\*\*, West Virginia, 2015 (n=191)

Region	Counties	Number of Outbreaks	Populations	Schools	Acute Care Hospitals	Critical Access Hospital	Long-Term Care Facilities
Northwestern Region	Calhoun, Clay, Gilmore, Hancock, Marshall, Ohio, Pleasants, Ritchie, Roane, Tyler, Wetzell, Wirt, Wood	40	307,065	118	6	4	26
Southern Region	Fayette, Greenbrier, McDowell, Mercer, Monroe, Nicholas, Raleigh, Summers, Wyoming	38	321,261	129	7	3	26
Central Region	Braxton, Kanawha, Lewis, Putnam, Upshur, Webster	35	312,973	127	9	1	17
Northeastern Region	Barbour, Doddridge, Harrison, Marion, Monongalia, Preston, Taylor	35	301,645	91	4	3	22
Eastern Region	Grant, Hampshire, Hardy, Jefferson, Mineral, Morgan, Pendleton, Randolph, Tucker, Pocahontas	24	309,057	114	2	6	20
Western Region	Boone, Cabell, Jackson, Lincoln, Logan, Mason, Mingo, Wayne	19	303,412	119	5	2	17

\* Using 2012 Census projections \*\* Excludes multi-jurisdiction outbreaks

**Proportion of Outbreaks with Laboratory Testing:**

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 58% to 74% with mean and median of 65% and 67% respectively. Of the 198 confirmed outbreaks 138 (70%) had laboratory testing.

Some outbreaks do not require laboratory testing. Outbreaks like scabies and hand, foot and mouth disease are confirmed by clinical diagnosis and/or symptom presentation and lab testing is not necessary. However, all respiratory outbreaks should have laboratory testing.

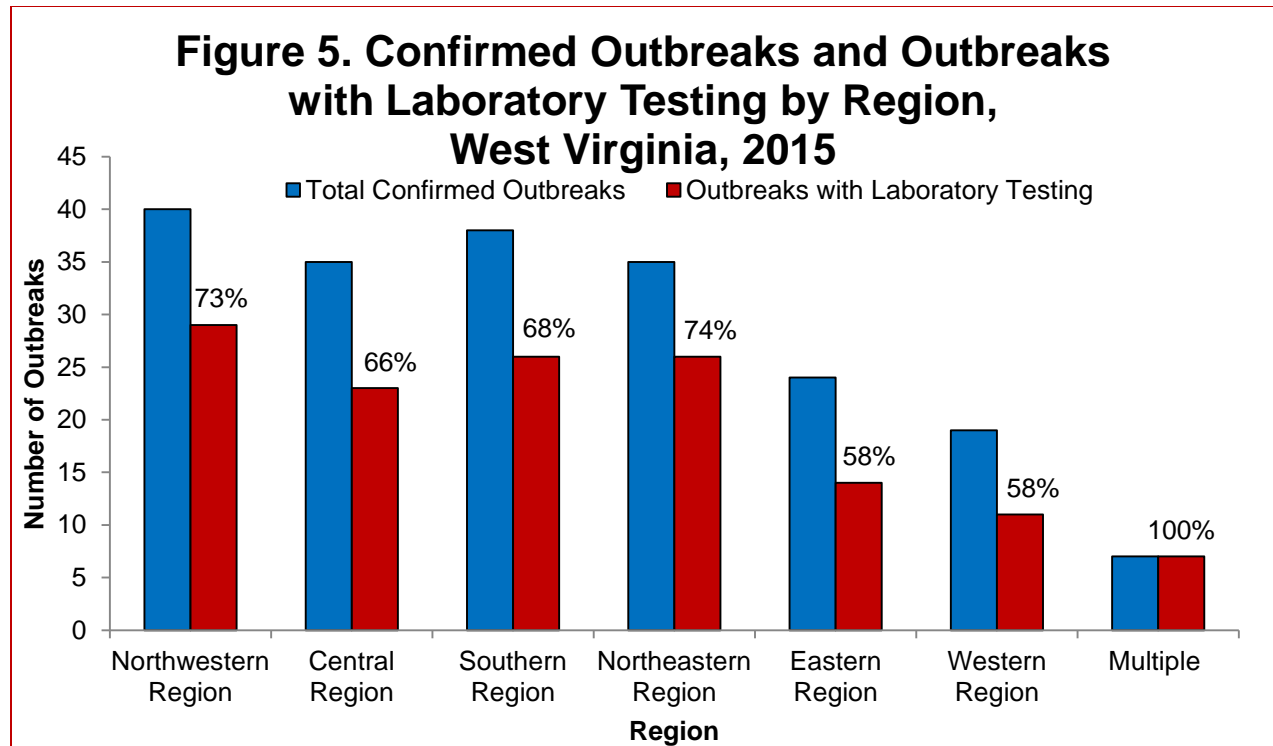


Figure 6 depicts laboratory confirmation of respiratory disease outbreaks by each surveillance region. Of the 86 confirmed respiratory outbreaks, 79 (92%) had laboratory testing done.

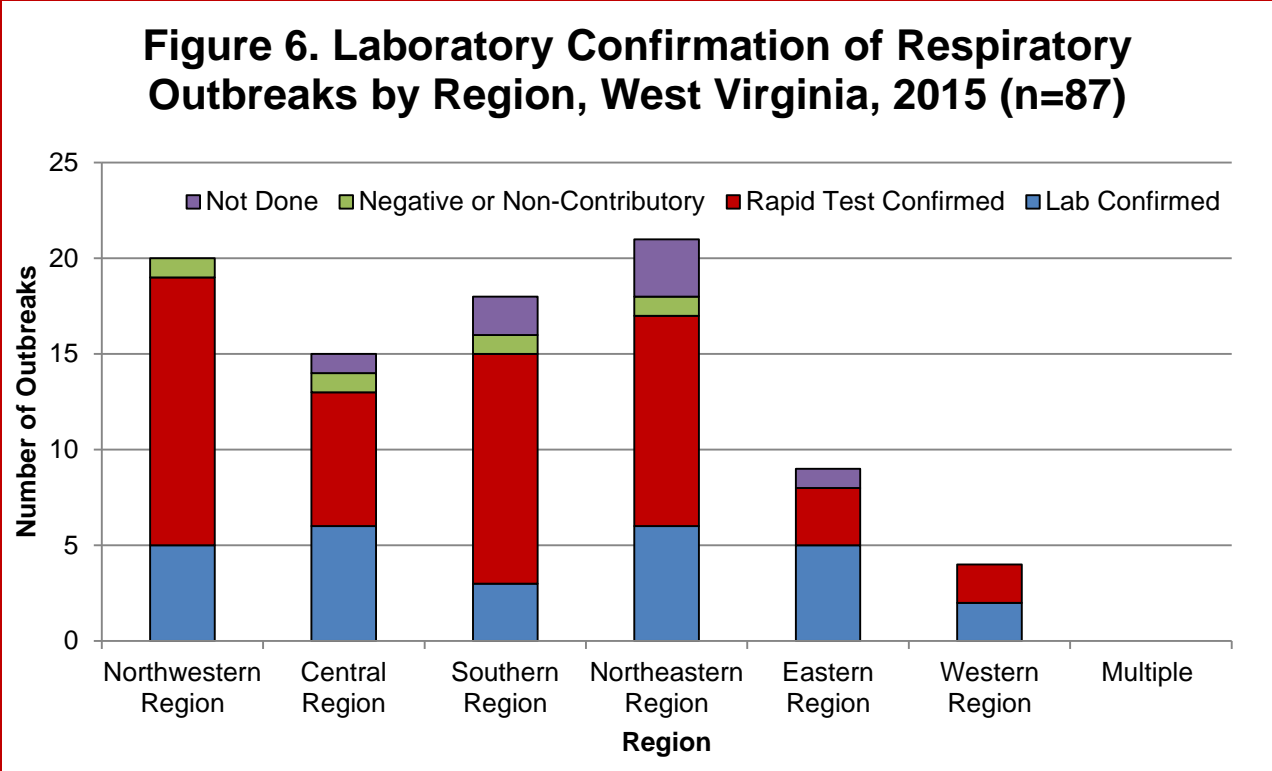
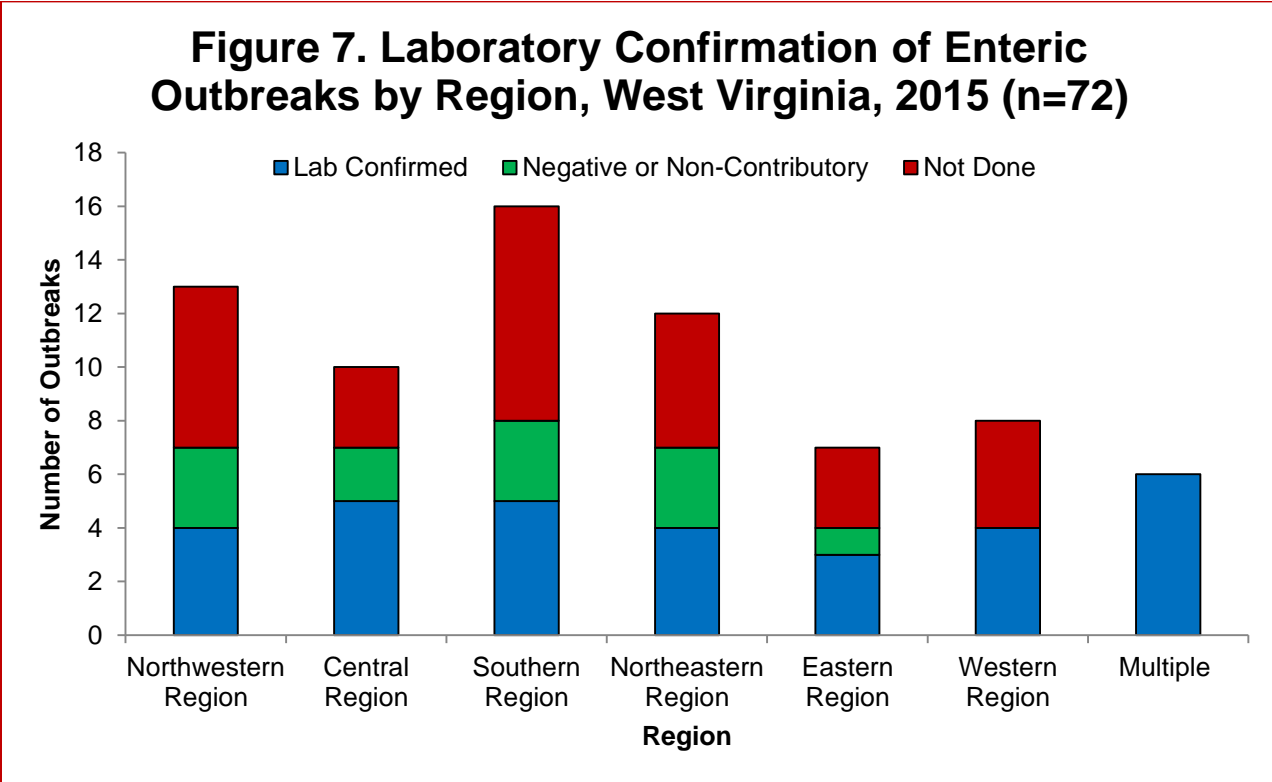


Figure 7 illustrates laboratory confirmation of enteric outbreaks by regions. Of the 72 confirmed enteric disease outbreaks, 43 (60%) had laboratory testing.



**Outbreak Leadership:**

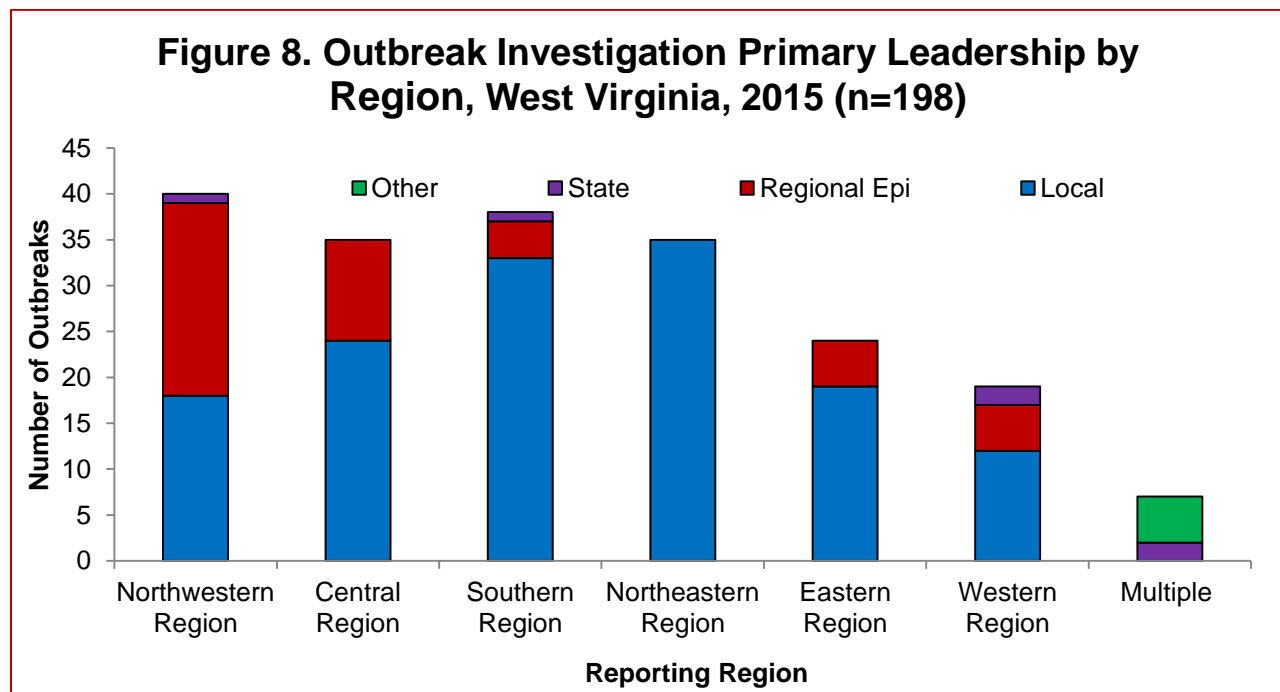
As a requirement to receive Epidemiology and Laboratory Capacity and/or Public Health Emergency Response funds, the State and LHDs are required to verify outbreak investigation leadership, complete a final outbreak report that meets the CDC guidelines, and share this report with pertinent partners. In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

In 2015, LHDs led the investigation in 141 (71%) outbreaks, followed by regional epidemiologists 46 (23%) and BPH/DIDE 5 (3%). CDC and other states the investigations in 6 multi-state outbreaks (Table 5).

Table 5. Confirmed Outbreaks by Primary Leadership, West Virginia, 2015

Primary Leadership	Number of Outbreaks (n=198)	Percent
Local Health Departments (LHDs)	141	71
Regional Epidemiologists	46	23
Other (CDC) or other states	6	3
BPH/DIDE	5	3

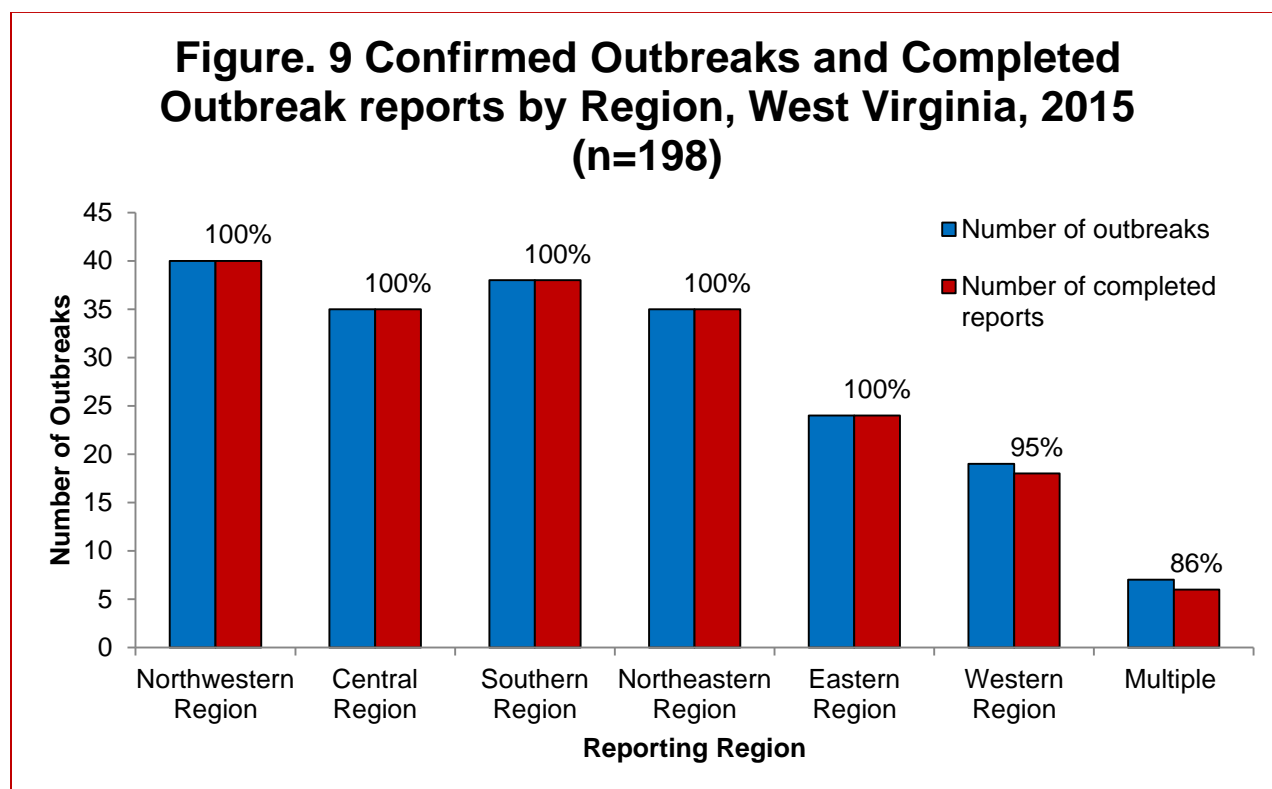
Outbreak investigation primary leadership varies among different surveillance regions. In most of the regions, primary leadership is collaboratively assigned between regional epidemiologists and the LHDs. Figure 8 illustrates outbreak investigation leadership by region.



## **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 most types of outbreaks in a fillable format to assist LHD staff and regional epidemiologists in completing the outbreak reports within 30 days of outbreak closure.

In 2015, a final outbreak report was completed in 196 (99%) outbreaks. As shown in Figure 9, five of the six regions completed reports for 100% of their outbreaks. The percentage of completed outbreak reports by region varied from 95% to 100% with mean and median of 99% and 100% respectively. In 2013, the mean and median of completed outbreak reports were 59% and 62% respectively which indicates marked improvement during 2015.

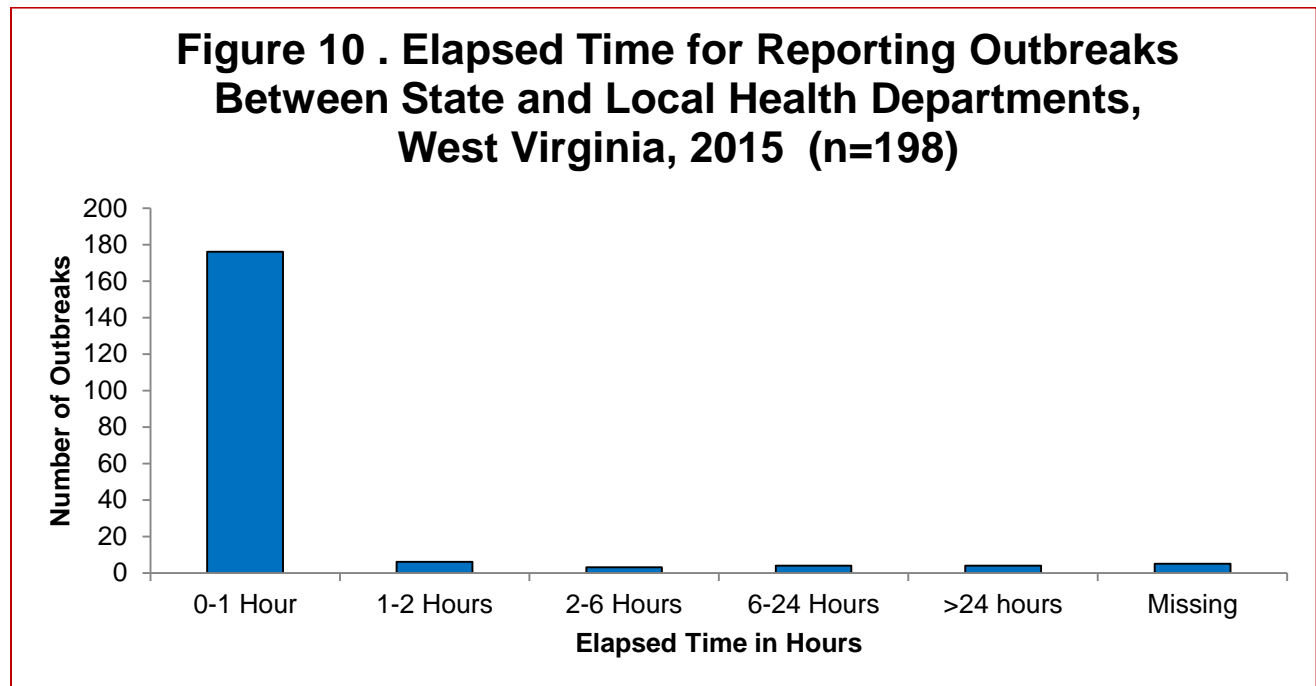


## **Outbreak Reporting Time:**

In West Virginia, outbreaks are immediately reportable to the LHDs. In 2013, the Reportable Disease Rule changed to mandate immediate reporting of outbreaks or clusters of diseases to LHDs regardless of the setting. 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 to DIDE are recorded on a standard intake form so that elapsed reporting time can be calculated.

In 2015, date and time of report to the LHDs and BPH were collected in 193 (97%) of confirmed outbreaks. The mean and median of time elapsed between reporting to the LHD and reporting to the BPH was 92 and 25 minutes respectively. The range of time between the time the outbreak was reported to the LHD and the time the outbreak was reported to the BPH was 0 to 2850 minutes. Of the 193 outbreaks where date of notification was known for the BPH and LHD, same-day notification occurred for 189 (98%) outbreaks and 176 (91%) were within 60 minutes (Figure 10).



**Summary of Outbreak Performance Measures by Region/County**  
**West Virginia, 2015**

Tables 6 through 13 summarize performance measures by county and region.

Table 6. Outbreak Performance Measures by Region, West Virginia, 2015

<b>Region</b>	<b>Number of Outbreaks</b>	<b>Outbreaks with Completed Reports No (%)</b>	<b>Outbreaks with Laboratory Testing No (%)</b>	<b>Median Report Time in Minutes</b>
<b>Northwestern Region</b>	40	40 (100)	29 (73)	26
<b>Central Region</b>	35	35 (100)	23 (66)	50
<b>Southern Region</b>	38	38 (100)	26 (68)	25
<b>Northeastern Region</b>	35	35 (100)	26 (74)	20
<b>Eastern Region</b>	24	24 (100)	14 (58)	20
<b>Western Region</b>	19	18 (95)	11 (58)	30
<b>Multiple Regions</b>	7	6 (86)	7 (100)	5
<b>All Regions</b>	198	196 (99)	136 (67)	25

Table 7. Outbreak Performance Measures by County, Northwestern Region, West Virginia, 2015

<b>County</b>	<b>Number of Outbreaks</b>	<b>Outbreaks with Completed Reports No (%)</b>	<b>Outbreaks with Laboratory Testing No (%)</b>	<b>Median Report Time in Minutes</b>
<b>Brooke</b>	2	2 (100)	1 (50)	364
<b>Calhoun</b>	1	1 (100)	1 (100)	30
<b>Clay</b>	2	2 (100)	0 (0)	22
<b>Gilmer</b>	1	1 (100)	1 (100)	64
<b>Hancock</b>	6	6 (100)	4 (67)	24
<b>Marshall</b>	3	3 (100)	2 (67)	25
<b>Ohio</b>	5	5 (100)	4 (80)	30
<b>Pleasants</b>	4	4 (100)	4 (100)	16
<b>Richie</b>	2	2 (100)	1 (50)	43
<b>Roane</b>	2	2 (100)	2 (100)	30
<b>Tyler</b>	1	1 (100)	1 (100)	0
<b>Wetzel</b>	1	1 (100)	1 (100)	10
<b>Wirt</b>	0			
<b>Wood</b>	10	10 (100)	7 (70)	24
<b>Northwestern Region</b>	<b>40</b>	<b>40 (100)</b>	<b>29 (73)</b>	<b>26</b>

Table 8. Outbreak Performance Measures by County, Central Region, West Virginia, 2015

Central Region	Number of Outbreaks	Outbreaks with Completed Reports No (%)	Outbreaks with Laboratory Testing No (%)	Median Report Time in Minutes
Braxton	0			
Kanawha	26	26 (100)	18 (69)	20
Lewis	0			
Putnam	4	4 (100)	1 (25)	38
Upshur	3	3 (100)	2 (67)	10
Webster	2	2 (100)	2 (100)	19
<b>Central Region</b>	<b>35</b>	<b>35 (100)</b>	<b>23 (66)</b>	<b>50</b>

Table 9. Outbreak Performance Measures by County, Southern Region, West Virginia, 2015

County	Number of Outbreaks	Outbreaks with Completed Reports No (%)	Outbreaks with Laboratory Testing No (%)	Median Report Time in Minutes
Fayette	3	3 (100)	1 (33)	25
Greenbrier	9	9 (100)	5 (56)	30
McDowell	2	2 (100)	1 (50)	1448
Mercer	17	17 (100)	13 (76)	23
Monroe	2	2 (100)	1 (50)	33
Nicholas	0			
Raleigh	4	4 (100)	4 (100)	11
Summers	1	1 (100)	1 (100)	21
Wyoming	0			
<b>Southern Region</b>	<b>38</b>	<b>38 (100)</b>	<b>26 (68)</b>	<b>25</b>

Table 10. Outbreak Performance Measures by County, Northeastern Region, West Virginia, 2015

County	Number of Outbreaks	Outbreaks with Completed Reports No (%)	Outbreaks with Laboratory Testing No (%)	Median Report Time in Minutes
Barbour	0			
Doddridge	0			
Harrison	11	11 (100)	10 (91)	16
Marion	10	10 (100)	8 (80)	20
Monongalia	4	4 (100)	3 (75)	23
Preston	9	9 (100)	4(44)	20
Taylor	1	1 (100)	1 (100)	60
<b>Northeastern Region</b>	<b>35</b>	<b>35 (100)</b>	<b>26 (74)</b>	<b>20</b>



Table 11. Outbreak Performance Measures by County, Eastern Region, West Virginia, 2015

County	Number of Outbreaks	Outbreaks with Completed Reports No (%)	Outbreaks with Laboratory Testing No (%)	Median Report Time in Minutes
Berkeley	6	6 (100)	4 (67)	75
Grant	1	1 (100)	1 (100)	1050
Hampshire	2	2 (100)	2 (100)	39
Hardy	4	4 (100)	2 (50)	13
Jefferson	3	3 (100)	2 (67)	15
Mineral	1	1 (100)	0 (0)	29
Morgan	0			
Pendleton	1	1 (100)	1 (100)	15
Pocahontas	1	1 (100)	0 (0)	15
Randolph	5	5 (100)	2 (40)	10
Tucker	0			
<b>Eastern Region</b>	<b>24</b>	<b>24 (100)</b>	<b>14 (58)</b>	<b>20</b>

Table 12. Outbreak Performance Measures by County, Western Region, West Virginia, 2015

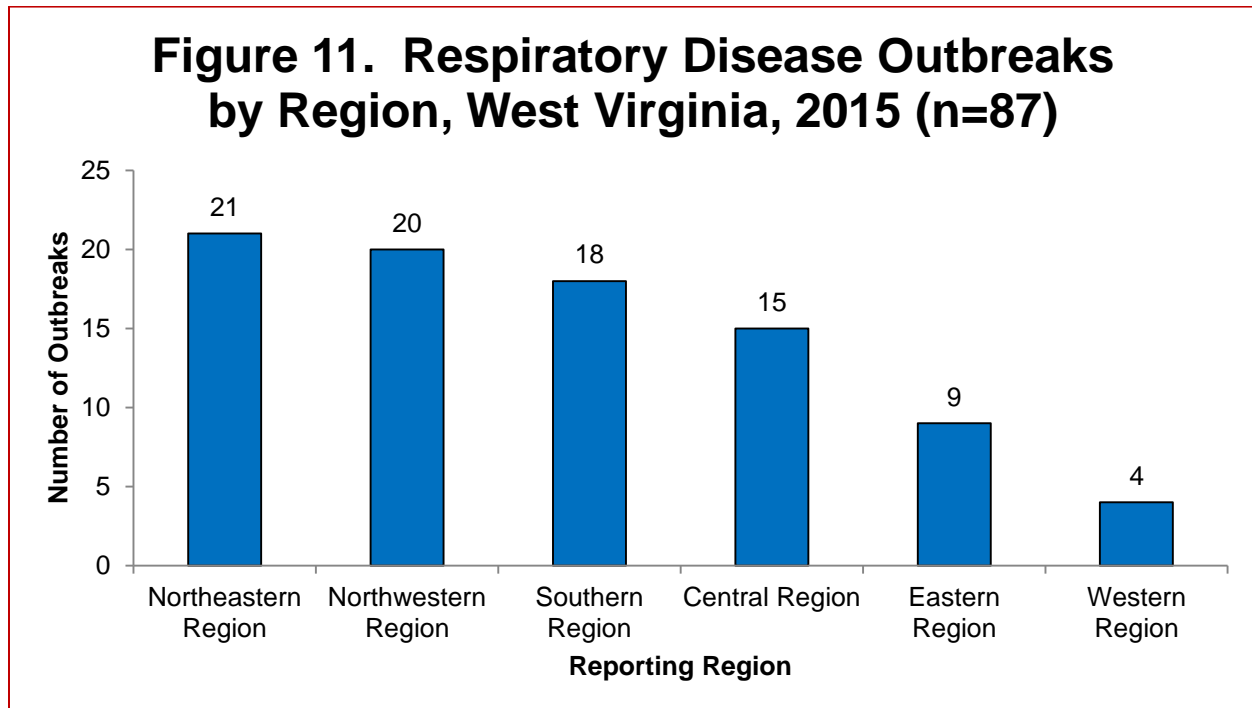
County	Number of Outbreaks	Outbreaks with Completed Reports No (%)	Outbreaks with Laboratory Testing No (%)	Median Report Time in Minutes
Boone	1	1 (100)	0 (0)	15
Cabell	8	7 (88)	4 (50)	28
Jackson	1	1 (100)	0 (0)	30
Lincoln	1	1 (100)	1 (100)	1040
Logan	3	3 (100)	3 (100)	20
Mason	4	4 (100)	2 (50)	29
Mingo	0			
Wayne	1	1 (100)	1 (100)	52
<b>Western Region</b>	<b>19</b>	<b>18 (95)</b>	<b>11 (58)</b>	<b>30</b>

Table 13. Outbreak Performance Measures, Outbreaks Reported in Multiple Counties/Regions, West Virginia, 2015

Multiple Counties or Regions	Number of Outbreaks	Outbreaks with Completed Reports No (%)	Outbreaks with Laboratory Testing No (%)	Median Report Time in Minutes
<b>Multiple Regions</b>	<b>7</b>	<b>6 (86)</b>	<b>7 (100)</b>	<b>5</b>

## Respiratory Disease Outbreaks, West Virginia, 2015 (n=87)

Outbreaks of respiratory illness were the most common type of disease outbreak in 2015, accounting for 87 (44%) confirmed outbreaks. (Refer to Table 1 on page 4.) Respiratory illness outbreaks were reported by 35 (64%) counties from the six surveillance regions (Figure 11).



Confirmed influenza outbreaks accounted for the majority of respiratory disease outbreaks followed by acute respiratory illness (ARI), and influenza-like illness (ILI) (Table 14).

An outbreak of influenza in a long-term care facility (LTCF) is defined as three or more cases of ILI occurring within 72 hours in residents, **OR** a sudden increase in ILI, **OR** one case of influenza confirmed by any laboratory testing method in the presence of other reported ILI cases. 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 F° or higher, plus three or more of the following; chills, cough, headache or eye pain, malaise or loss of appetite, myalgia, and sore throat.

An outbreak of ARI 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 14. Respiratory Disease Outbreaks by Clinical Syndrome, West Virginia, 2015

Clinical Diagnosis (Syndrome)	Number of Outbreaks (n=87)	Percent
Influenza	62	71
Acute Respiratory Illness (ARI)	17	20
Pertussis	5	6
Influenza Like Illness	2	2
<i>Streptococcus pharyngitis</i>	1	1

Of all respiratory outbreaks, 76 (87%) were laboratory confirmed, 4 (5%) had laboratory testing that was negative or noncontributory, and in 7 (8%) 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 2015 was consistent with that of ILI reported by sentinel providers. Table 15 lists respiratory outbreaks by etiologic agents including other pathogens.

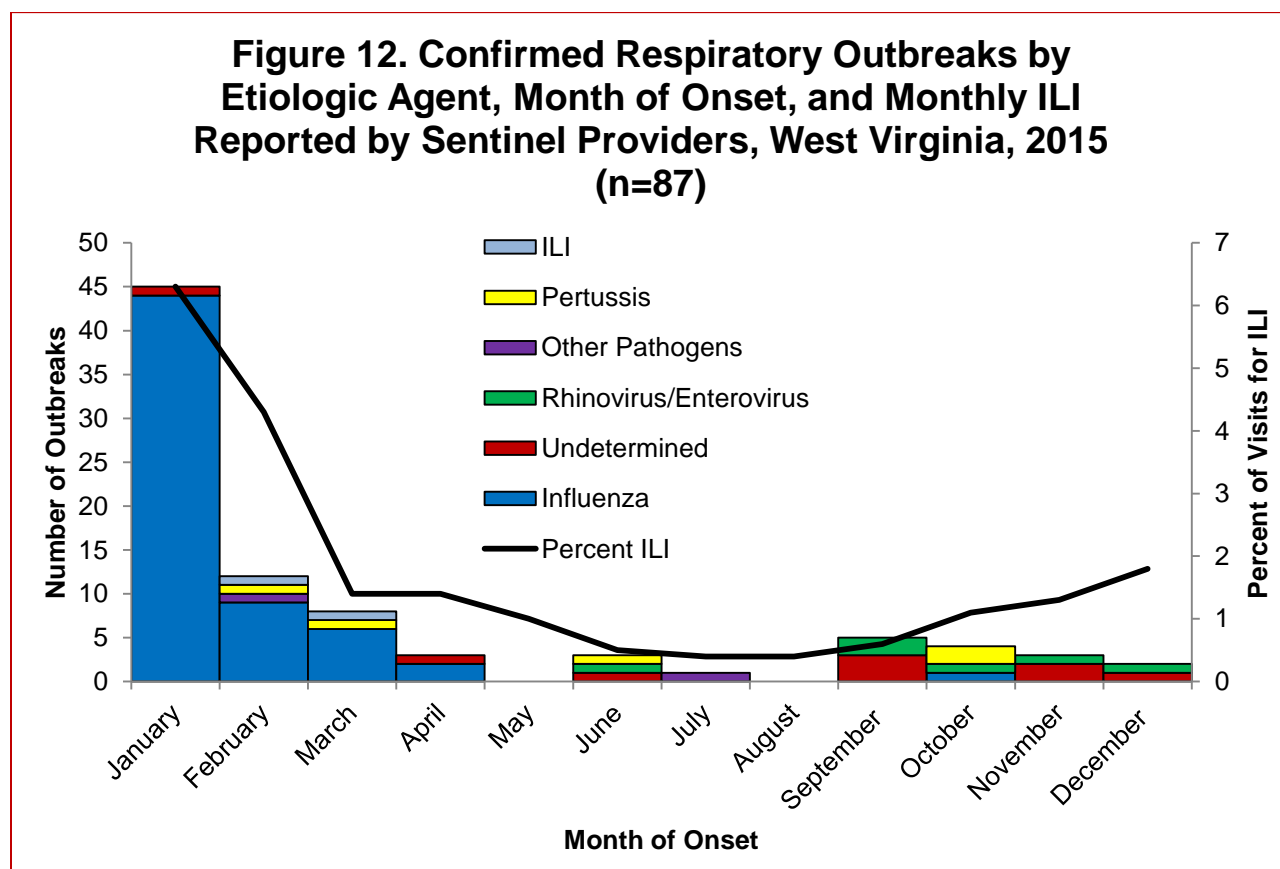


Table 15. Respiratory Disease Outbreaks by Etiologic Agent, West Virginia, 2015

<b>Etiologic Agents</b>	<b>Number of Outbreaks (n=87)</b>	<b>Percent</b>
<b>Influenza A</b>	28	32
<b>Influenza (not typed)</b>	14	16
<b>Influenza A H3</b>	12	14
<b>Undetermined</b>	11	13
<b>Rhinovirus/Enterovirus</b>	6	7
<b>Influenza A and B</b>	5	6
<b>Bordetella pertussis</b>	5	6
<b>Influenza B</b>	2	2
<b>Influenza A H3 and RSV</b>	1	1
<b>Parainfluenza virus</b>	1	1
<b>Respiratory syncytial virus (RSV)</b>	1	1
<b><i>Streptococcus pharyngitis</i></b>	1	1

The majority of respiratory disease outbreaks were reported in LTCFs followed by schools and Assisted Living Facilities (ALFs) (Table 16).

Table 16. Respiratory Disease Outbreaks by Transmission Setting, West Virginia, 2015

<b>Transmission Setting</b>	<b>Number of Outbreaks (n=87)</b>	<b>Percent</b>
<b>LTCFs</b>	61	70
<b>Schools</b>	8	9
<b>ALFs</b>	5	6
<b>Communities</b>	4	5
<b>Daycares</b>	4	5
<b>Other</b>	3	4
<b>Hospital</b>	1	1
<b>Correctional Facilities</b>	1	1

### **Influenza Outbreaks:**

In 2015, there were 62 laboratory confirmed influenza outbreaks, accounting for 71% of all respiratory outbreaks. Fourteen (14) (23%) influenza outbreaks were confirmed by Polymerase Chain Reaction (PCR) and 48 (77%) were confirmed by rapid influenza diagnostic test (RIDT). Table 17 depicts influenza outbreaks by type of influenza virus.

Of the 13 influenza outbreaks with available typing, 13 (100%) were Influenza A H3. In one outbreak, RSV was also detected in addition to influenza A H3.

LTCFs reported the majority (76%) of influenza outbreaks (Table 18). Influenza outbreaks are not uncommon among residents of LTCFs and institutionalized populations and are associated with increased morbidity and mortality.

Five influenza outbreaks were reported in schools and confirmed by RIDT. Influenza A was detected in three school outbreaks and influenza (no typing) in the remaining two outbreaks. Influenza outbreaks in schools are managed by following the daily absentee rate. The average absentee rate in the five outbreaks was 18% with a range of 14% to 23%.

In 2015, two outbreaks of influenza B were reported, one in a LTCF and one in a daycare. Both outbreaks were confirmed by RIDT. There were also five outbreaks, all in LTCFs, for which both influenza A and B were detected by RIDT.

There were two ILI outbreaks reported, one in a LTCF and one in a correctional facility. In both, outbreaks patients met the ILI case definition. However, there was no laboratory testing done.

Table 17. Influenza Outbreaks by Type of Influenza Virus, West Virginia, 2015

<b>Etiologic Agent</b>	<b>Number of Outbreaks (n=62)</b>	<b>Percent</b>
<b>Influenza A</b>	28	45
<b>Influenza (no typing)</b>	14	23
<b>Influenza A H3</b>	12	19
<b>Influenza A and B</b>	5	8
<b>Influenza B</b>	2	2
<b>Influenza A H3 and RSV</b>	1	2

Table 18. Influenza Outbreaks by Transmission Setting, West Virginia, 2015

<b>Transmission Setting</b>	<b>Number of Outbreaks (n=62)</b>	<b>Percent</b>
<b>LTCFs</b>	47	76
<b>ALFs</b>	5	8
<b>Schools</b>	5	8
<b>Other</b>	3	5
<b>Daycare</b>	2	3

## **Non-Influenza Respiratory Viruses Outbreaks:**

Over the last few 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 OLS. 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 illness of undetermined etiology.

## **Rhinovirus/enterovirus Respiratory Outbreaks:**

In 2015, six respiratory outbreaks were caused by rhinovirus/enterovirus (RV/EV). OLS FilmArray PCR does not differentiate between rhinovirus and enterovirus due to close genetic similarity. In one of the six outbreaks, additional testing at CDC laboratory confirmed that rhinovirus was the causative agent.

Four RV/EV outbreaks were reported in LTCFs and confirmed by PCR. In LTCFs, rhinovirus caused a wide variety of illnesses 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. The mean and median attack rate among residents was 22% and 22.5% respectively with a range from 14% to 29%. The attack rates among staff ranged between 0% to 15% with a mean and median of 6% and 4% respectively.

One outbreak of rhino/enterovirus was reported in an acute care specialty unit. The attack rate was reported to be 50%. The high attack rate was due to the small number of the total population in this unit. The facility was able to control the outbreak in a short time by enforcing infection control practices, such as hand hygiene, respiratory etiquette, droplet and contact precautions and enhanced environmental cleaning. Additionally, they cohorted the cases, limited visitation to the unit and provided staff and visitor education.

In December 2015, a local hospital Infection Preventionist noticed an increase in the number of cases of community acquired pneumonia seen by the emergency room and outpatient clinics. Investigation revealed 46 cases of physician diagnosed respiratory illness between September 26 and December 25, 2015. The mean and median of age among 44 patients were 33.7 and 30 years respectively. Of the 42 patients with available clinical data, 33 (78%) were physician-diagnosed pneumonia. Only 10 (24%) patients were hospitalized. The mean and median age of hospitalized patients were 66.9 and 66.5 years respectively. The most common symptoms were cough, wheezing, dyspnea, fever and headache. Six out of eight specimens tested at OLS were positive for rhinovirus/enterovirus. Of the 12 specimens that were sent to CDC laboratory for confirmation (including those tested at OLS) 11 (92%) were positive for rhinovirus. This outbreak indicates that rhinovirus may cause community outbreaks of respiratory illness with a wide range of severity. Severe illness and hospitalization disproportionately

affected the elder population. The availability of PCR testing at commercial or State laboratories is crucial in detecting such outbreaks. Diagnosis of viral causes of respiratory illness can be helpful in avoiding the unnecessary use of antimicrobials in the community.

### **Other Non-Influenza Respiratory Virus Outbreaks:**

#### *Parainfluenza Virus (PIV) Outbreaks:*

In 2015, one outbreak of PIV was reported from a LTCF during the month of July. The attack rate was 31% among residents and no reported ill staff. The illness ranged from mild upper respiratory tract infection to pneumonia. Three cases were hospitalized. One out of four specimens tested at OLS by PCR was positive for PIV.

#### *Respiratory syncytial virus (RSV):*

Two outbreaks of RSV were reported in 2015. The first one was reported from a small daycare. Three out of six daycare attendees had respiratory symptoms. Laboratory confirmation of this outbreak was done through a healthcare provider.

The second outbreak of RSV was reported from a LTCF. Influenza AH 3 was also identified in this outbreak. The attack rate among residents was 23%. No ill staff were reported. Two patients were hospitalized. The facility implemented control measures and influenza chemoprophylaxis for all residents. Five out of 10 specimens were tested positive for influenza by RIDT through the facility. OLS received eight specimens; two were positive for influenza AH3, two were positive for RSV and 4 were negative.

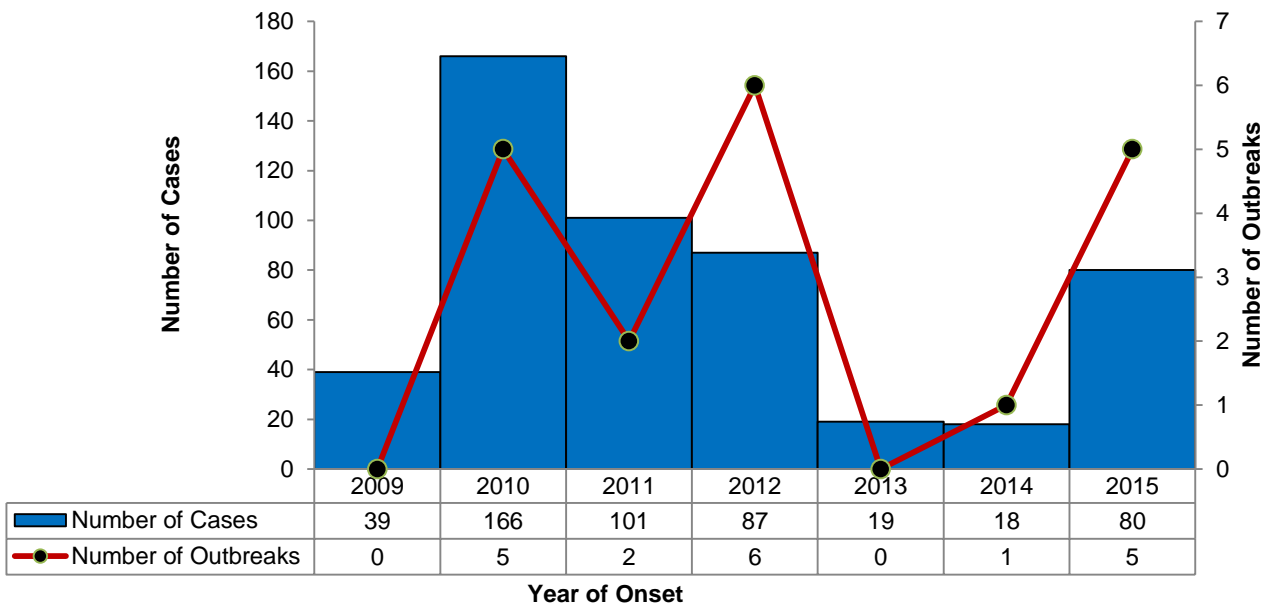
### **Other Respiratory Outbreaks:**

#### **Pertussis Outbreak:**

During 2015, there were five confirmed outbreaks of pertussis. For the purpose of this report, a pertussis outbreak is defined as two or more cases involving two or more households clustered in time and space where transmission is suspected to have occurred. One or more cases in an outbreak should be confirmed by positive culture and/or PCR results. Three pertussis outbreaks were reported in schools in February, March and October. In the first school outbreak, four confirmed cases were identified. In the second school, outbreak three confirmed and two probable cases were identified. The third school outbreak extended beyond school students and affected household contacts and other individuals in the community. Nine confirmed and four probable cases were identified. In all three outbreaks, LHDs worked with the schools and healthcare providers to provide chemoprophylaxis to contacts as per the pertussis protocol. Two additional pertussis outbreaks were reported in communities and involved 14 confirmed and four probable cases. All pertussis outbreaks were laboratory confirmed by culture and/or PCR.

Pertussis displays a cyclical pattern and causes periodic outbreaks every three to five years. In West Virginia, the incidence of sporadic cases of pertussis is directly proportional to the number of confirmed outbreaks for the reporting year (Figure 13).

**Figure 13. Pertussis Outbreaks and Sporadic Cases of Pertussis, West Virginia, 2009-2015**



Pertussis outbreaks can be difficult to identify and manage. It is imperative to note that PCR tests to detect *Bordetella pertussis* vary in specificity; therefore, culture remains the gold standard for diagnosis. Vaccination is the best defense against this disease. However, since the vaccine is not 100% effective, pertussis outbreaks can still occur even in highly vaccinated populations.

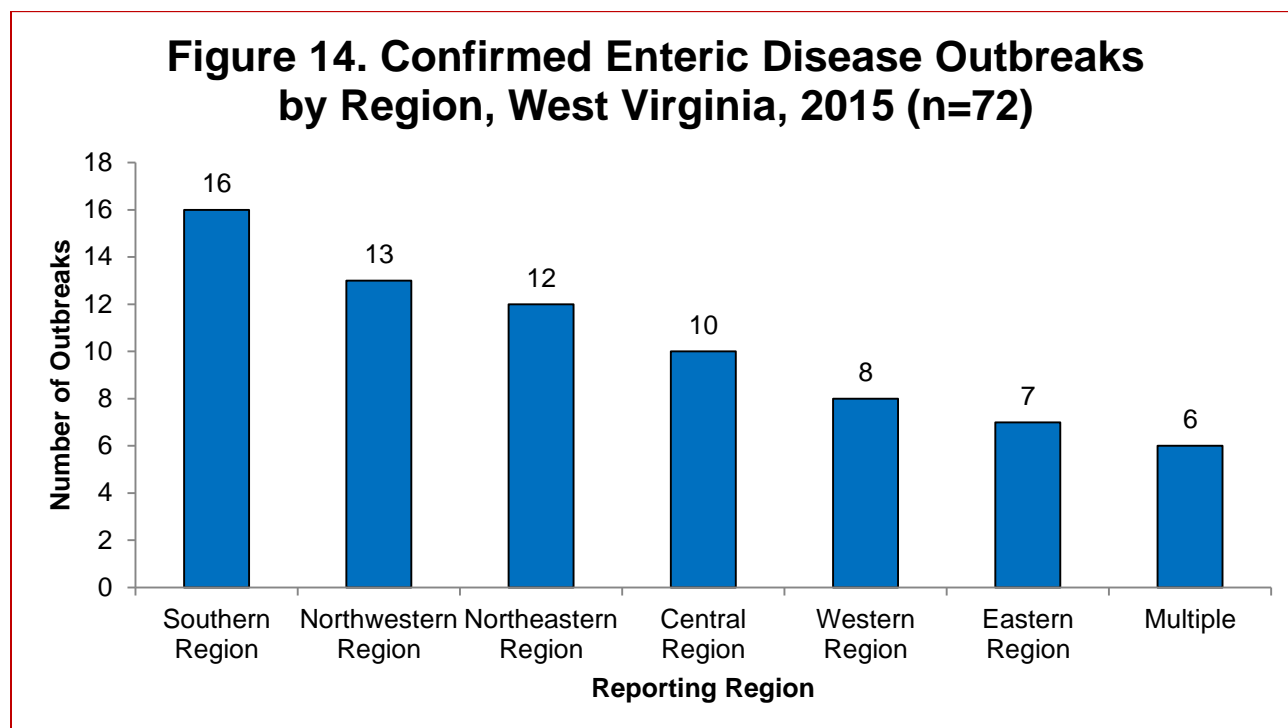
***Streptococcus pharyngitis***

There was one outbreak of *Streptococcus pharyngitis* reported in 2015 from a daycare. The attack rate among daycare attendee was 50%. *Streptococcus pharyngitis* is caused by group A *Streptococcus* (GAS) and presents clinically with fever, pharyngitis and sore throat. Hand washing, respiratory etiquette and exclusion of case-patients for at least one day after starting effective antibiotics are crucial steps to control these outbreaks.



### **Enteric Disease Outbreaks, West Virginia, 2015 (n=72)**

Outbreaks of enteric illness were the second most common type of disease outbreak in 2015, accounting for 38% of all outbreaks (Table 1). A total of 72 enteric disease outbreaks were reported by 30 (55%) counties. All six surveillance regions reported enteric disease outbreaks (Figure 14). Six 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.



Forty-eight (67%) enteric disease outbreaks were reported from healthcare facilities including 46 from LTCFs, one from an assisted-living facility (ALF), and one from a hospital (Table 19).

Outbreaks of acute gastroenteritis were the most common type of enteric disease outbreaks, accounting for 41 (57%) outbreaks, followed by outbreaks of norovirus gastroenteritis, accounting for 18 (25%) outbreaks (Table 20). Acute gastroenteritis outbreaks were defined as outbreaks of illness with short duration (three days or less) characterized by acute onset of vomiting and/or diarrhea without laboratory confirmation. An outbreak of norovirus gastroenteritis is defined as an outbreak of gastroenteritis with laboratory confirmation.

Table 19. Enteric Disease Outbreaks by Transmission Setting, West Virginia, 2015

<b>Transmission Setting</b>	<b>Number of Outbreaks (n=72)</b>	<b>Percent</b>
<b>LTCFs</b>	46	64
<b>Communities</b>	10	14
<b>Schools</b>	9	13
<b>Other</b>	4	6
<b>Hospital</b>	1	1.4
<b>ALF</b>	1	1.4
<b>Correctional Facility</b>	1	1.4

All norovirus outbreaks were confirmed by Polymerase Chain Reaction (PCR) testing. While norovirus genotype II accounted for the majority of norovirus outbreaks (13), genotype I accounted for one outbreak, one norovirus outbreak was caused by norovirus genotype I and II, and three norovirus outbreaks were not subtyped.

*Clostridium difficile* infection (CDI) outbreaks are listed with the MDRO outbreaks.

Table 20. Outbreaks of Enteric Disease by Clinical Syndrome/Etiologic Agent, West Virginia, 2015

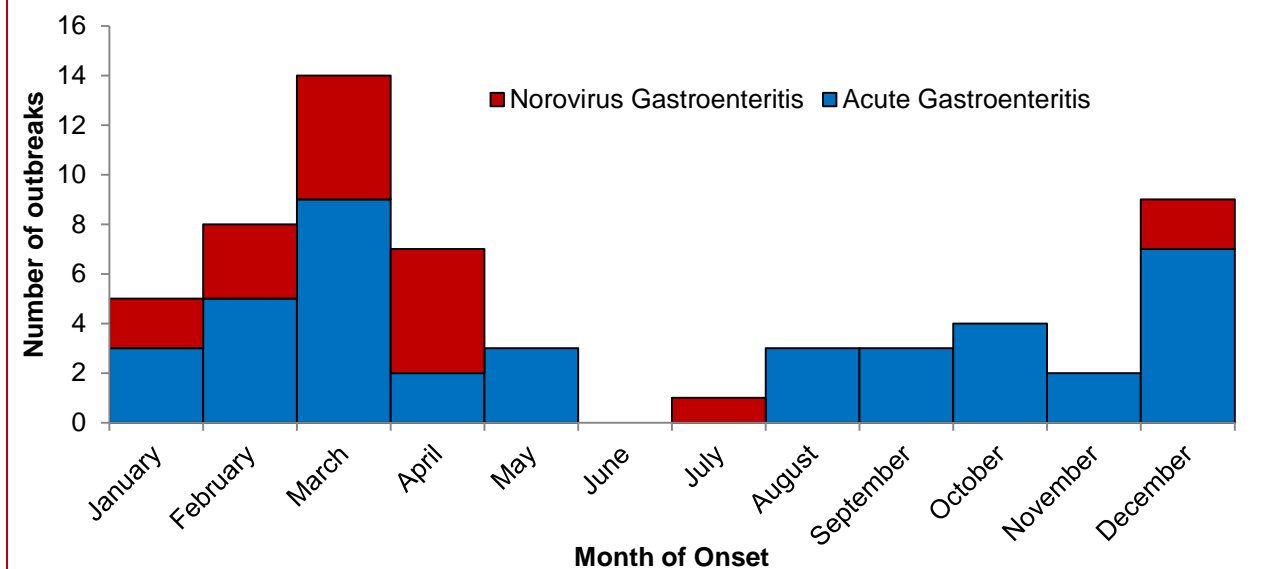
<b>Clinical Syndrome/Etiologic Agent</b>	<b>Number of Outbreaks (n=72)</b>	<b>Percent</b>
<b>Acute Gastroenteritis</b>	41	57
<b>Norovirus Gastroenteritis</b>	18	25
<b>Salmonellosis</b>	7	10
<b>Rotavirus Gastroenteritis</b>	2	3
<b>Campylobacteriosis</b>	1	1.4
<b><i>Staphylococcal</i> Food Poisoning</b>	1	1.4
<b><i>Clostridium perfringens</i> Gastroenteritis</b>	1	1.4
<b>STEC Gastroenteritis</b>	1	1.4

Among the 41 outbreaks characterized as acute gastroenteritis, laboratory tests were negative or noncontributory in 12 and not done in 29 outbreaks.

The majority of enteric disease outbreaks (57, 79%) were due to person-to-person transmission followed by point source outbreaks (8, 11%). The source of illness could not be determined in seven (10%) enteric disease outbreaks.

The outbreaks of acute gastroenteritis followed a pattern of transmission and seasonality similar to norovirus gastroenteritis outbreaks, suggesting that many of these outbreaks were likely caused by norovirus (Figure 15).

**Figure 15. Outbreaks of Acute and Norovirus Gastroenteritis by Month of Report, West Virginia, 2015 (n=59)**



An outbreak of campylobacteriosis was reported in August 2015. A cluster of five cases of campylobacter gastroenteritis were identified. The source of this cluster was undetermined.

In October 2015, a cluster of Shiga-toxin producing *E. coli* was reported in a residential facility. Four cases, two attendees and two staff, were identified. All symptomatic staff were tested negative twice before being allowed to work. No additional cases were identified. The source of this cluster remains undetermined.

#### Foodborne Outbreaks:

In 2015, there were four foodborne disease outbreaks reported. The first was reported in August 2015 after the LHD was notified of a cluster of salmonellosis in the community. Laboratory investigation identified four cases of *Salmonella panama*. Further laboratory testing confirmed that the four salmonella isolates had the same Pulse Field Gel Electrophoresis (PFGE) pattern, suggesting a common source of exposure. Epidemiologic investigation revealed that three of the four cases consumed prepackaged containers of salad and watermelon purchased from the same grocery store. No food items were available for testing at the time of the investigation. The LHD reviewed the process of preparing these prepacked containers with the establishment. No additional cases were identified.

The second outbreak was also reported in August 2015 when DIDE was notified of several attendees at a church potluck dinner who developed enteric illness. Reported

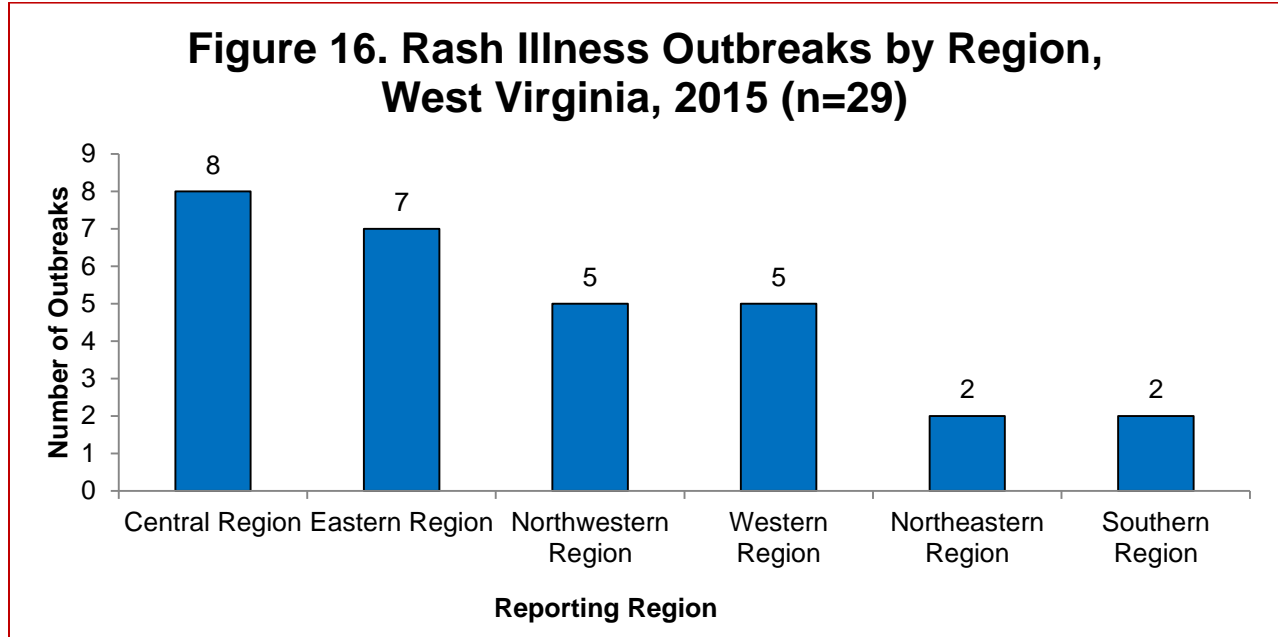
symptoms included nausea, vomiting, abdominal cramps, and diarrhea within a few hours of the meal. Most ill persons recovered within a day after illness onset. One patient was hospitalized. A cohort study was conducted and revealed that ham served at the dinner was strongly associated with illness, suggesting the ham as the likely source of the outbreak. Clinical findings were most consistent with *Staphylococcus* toxin. Laboratory testing of the food item at CDC was positive for *Staphylococcus* toxin, confirming the epidemiologic findings. The outbreak was most likely caused by contamination and temperature abuse of the ham served at the meal. Recommendations were shared with the church by the LHD to assure appropriate preparation, transportation, handling and serving of food to prevent such outbreaks in the future.

The third outbreak was reported in the month of November when the LHD received a report of a cluster of 15 people who developed enteric symptoms after attending Thanksgiving dinner in a local church. Two ill attendees were hospitalized. The LHD tried to interview the attendees with a standardized questionnaire but they refused to be interviewed, which limited the epidemiologic investigation. Laboratory testing was negative for the hospitalized patients. Due to lack of cooperation of the attendees, negative laboratory testing results and absences of ongoing risk to the public, the LHD decided to close the investigation of this suspect foodborne outbreak.

The fourth outbreak was reported in December 2015 when the LHD received a report from a correctional facility indicating that 121 inmates, and 21 staff and volunteers developed enteric illness after consuming a holiday dinner. Illness symptoms were mainly diarrhea and cramping. The illness started after a short incubation period of 10 hours and lasted for average 9.8 hours. Nineteen stool specimens tested positive for *Clostridium perfringens*. The LHD continues to provide training and education to food service operators. Many foodborne outbreaks can be prevented by adherence to basic food safety principles. The LHD was encouraged to maintain a strong partnership with the community providers to facilitate immediate and complete investigation of such outbreaks, as well as unusual public health events.

**Rash Illness Outbreaks, West Virginia, 2015 (n=29)**

Rash illness outbreaks were the third most common outbreak type in 2015, accounting for 29 (15%) of confirmed outbreaks (Table 1). Nineteen (51%) counties from all six surveillance regions reported rash illness outbreaks (Figure 16).



The most common type of rash illness outbreaks reported was scabies (16), followed by hand, foot, and mouth disease (HFMD) (6), undifferentiated rash illness (3), fifth disease (1), folliculitis (1), impetigo (1), and varicella (1) as shown in Table 21.

Table 21. Outbreaks of Rash Illness by Clinical Syndrome/Etiologic Agent, West Virginia, 2015

Clinical Diagnosis	Number of Outbreaks (n=29)	Percent
<b>Scabies</b>	16	55
<b>Hand Foot &amp; Mouth Disease</b>	6	21
<b>Rash Illness (Undifferentiated)</b>	3	10
<b>Fifths Disease</b>	1	3
<b>Folliculitis</b>	1	3
<b>Impetigo</b>	1	3
<b>Varicella</b>	1	3

There were 16 scabies outbreaks reported in 2015 from all six surveillance regions. Two were laboratory confirmed and 14 clinically diagnosed. Eight of the scabies outbreaks

were reported from LTCFs. Three were reported from correctional facilities, two from schools, one from a hospital, one from a daycare, and one from a community (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 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. It 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, 2015

<b>Transmission Settings</b>	<b>Number of Outbreaks (n=16)</b>	<b>Percent</b>
<b>LTCFs</b>	8	50
<b>Correctional Facilities</b>	3	19
<b>Schools</b>	2	13
<b>Daycare</b>	1	6
<b>Hospital</b>	1	6
<b>Community</b>	1	6

The second most common rash illness outbreak was HFMD. All reported HFMD outbreaks in 2015 were clinically confirmed without laboratory testing. Four were reported from daycares and two from schools. 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 an infected person and disinfecting dirty surfaces and soiled items such as toys.

One outbreak of fifth disease was reported from a school. Fifth disease is a mild rash illness caused by parvovirus B19. It is more common in children than adults. The virus spreads from person to person through respiratory secretions such as saliva, sputum, or nasal mucus. Prevention includes frequent hand hygiene and appropriate respiratory etiquette, including covering coughs and sneezes.

During the month of September, four students at a school developed skin rashes and were clinically diagnosed as having impetigo. No laboratory confirmation was performed and no additional cases were identified. Impetigo is a common, superficial bacterial infection, primarily caused by *Staphylococcus aureus*. Although most infections are mild, outbreaks may have a considerable negative impact because infected students may not be allowed to attend schools and daycares. Physicians are strongly encouraged to perform appropriate laboratory testing in similar situations as the results can influence the treatment and management of such outbreaks.

In February 2015, a cluster of rash illness among hotel guests who used a hotel hot tub was reported. Seven out of eight people in two families who used the tub that day developed skin lesions. No lab testing was performed and all cases were physician diagnosed as folliculitis. As per CDC, hot tub rash, or dermatitis, is an infection of the skin that is often caused by *Pseudomonas aeruginosa*. Symptoms include itching and bumpy red rash in the areas of skin covered by a swimsuit. Hot tub rash can affect people of all ages.

In March 2015, a varicella (chickenpox) outbreak was reported in a high school. Seventeen students were clinically diagnosed with varicella. Two patients were tested and the results were negative for varicella. Currently DIDE defines a varicella outbreak as three epidemiologically linked cases of varicella from any given school, daycare, or LTCF.

Three outbreaks were diagnosed as undifferentiated rash illness. The first was reported among the staff of a LTCF. Five staff members developed rash that was originally diagnosed as suspected varicella (chickenpox). Varicella was ruled out after negative laboratory results were received. No alternative diagnosis was made and the symptoms resolved for all five staff. No additional cases were identified.

The second outbreak was reported from a daycare when seven daycare attendees developed rash. All cases were clinically diagnosed: two diagnosed with HFMD, two with viral illness and two with eczema. Rash was described as red dots in several locations of the body. No illness was reported among staff.

The third cluster was identified in an elementary school, when four students developed fingers discoloration followed by peeling associated with small bumps without blistering. None of the cases had laboratory testing. All cases were treated with antibiotics. No additional cases were identified.

### **Community Acquired Multidrug-Resistant Organism (MDRO) Outbreaks (n=1)**

There was one confirmed MDRO outbreaks that was not associated with a healthcare setting. An outbreak of methicillin-resistant *Staphylococcus aureus* (MRSA) was reported among a high school football team. Six cases were identified. Five cases were laboratory confirmed. The school enhanced hand hygiene, environmental cleaning and provided education materials to coaches and players. No additional cases were identified.

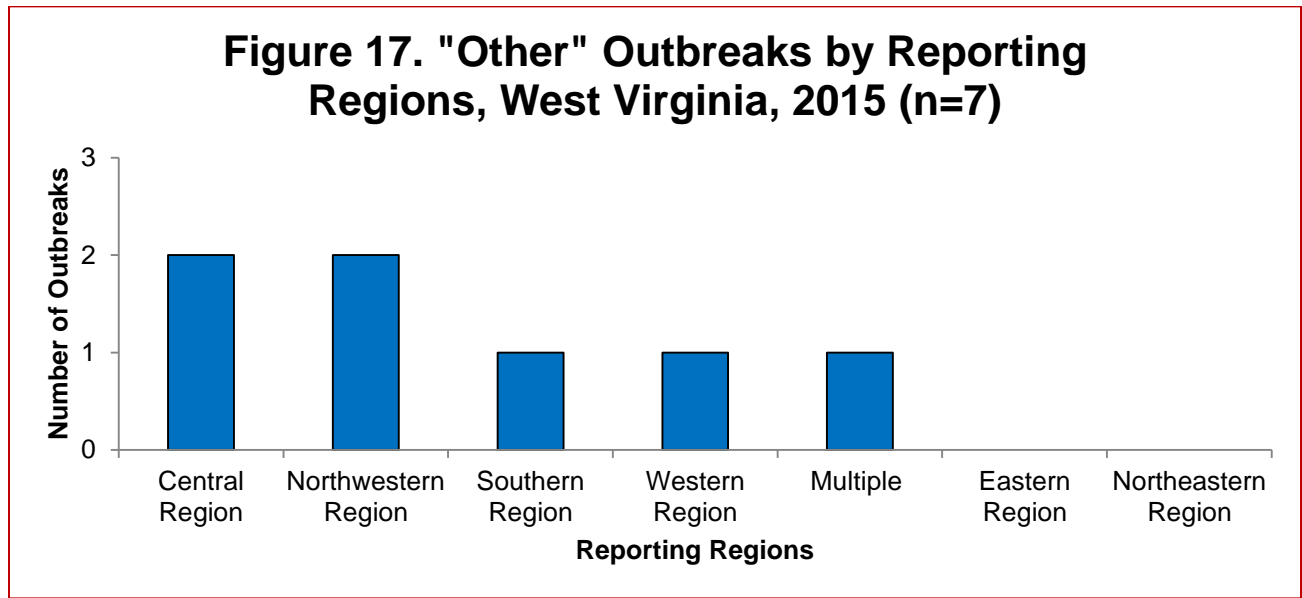
According to CDC, community acquired MRSA (CA-MRSA) is the major cause of skin disease in the United States. CA-MRSA skin infections are usually transmitted from person to person by direct contact with a draining lesion or by contact with an asymptomatic carrier. Transmission also can occur indirectly through contact with contaminated items or environmental surfaces. CDC recommends excluding athletes who have wounds that cannot be properly covered during participation. Additionally, a healthcare provider might exclude an athlete if the activity poses a risk to the health of the infected athlete, even though the infection can be properly covered. Athletes with active infections or open wounds should not use whirlpools or therapy pools not cleaned between athletes or other common-use water facilities like swimming pools until infections and wounds are completely healed.

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



**“Other” Outbreaks, West Virginia, 2014 (n=6)**

In 2015, there were seven (3.5%) outbreaks categorized as “Other” reported by five counties in four surveillance regions; one outbreak involved multiple regions (figure 17).



Outbreaks categorized as “Other” outbreaks included four outbreaks of conjunctivitis, one outbreak of waterborne illness, one suspected outbreak of Hepatitis C, and one syphilis outbreak (Table 23).

Table 23. Outbreaks Categorized as “Other” by Clinical Syndrome/Etiologic Agent, West Virginia, 2015

Clinical Diagnosis/Etiologic Agent	Number of Outbreaks (n=7)	Percent
<b>Conjunctivitis</b>	4	57
<b>Hepatitis C</b>	1	14
<b>Water Borne Illness</b>	1	14
<b>Syphilis</b>	1	14

Four outbreaks of conjunctivitis were reported in 2015. In May 2015, a few cases of physician-diagnosed conjunctivitis were identified in an elementary school. The school enhanced environmental cleaning practices and encouraged increased hand hygiene. A total of 20 cases were identified with an attack rate of 6%. No laboratory testing was done. Conjunctivitis outbreaks in schools are not uncommon and can be caused by viral or bacterial infection. CDC recommends that infected children be allowed in school

if effective treatment is implemented, as long as the child does not have systemic signs of illness. However, infected students should be excluded from school if their behavior is such that close contact with other students cannot be avoided.

The remaining three conjunctivitis outbreaks were reported from healthcare facilities and are discussed in the healthcare associated infections section.

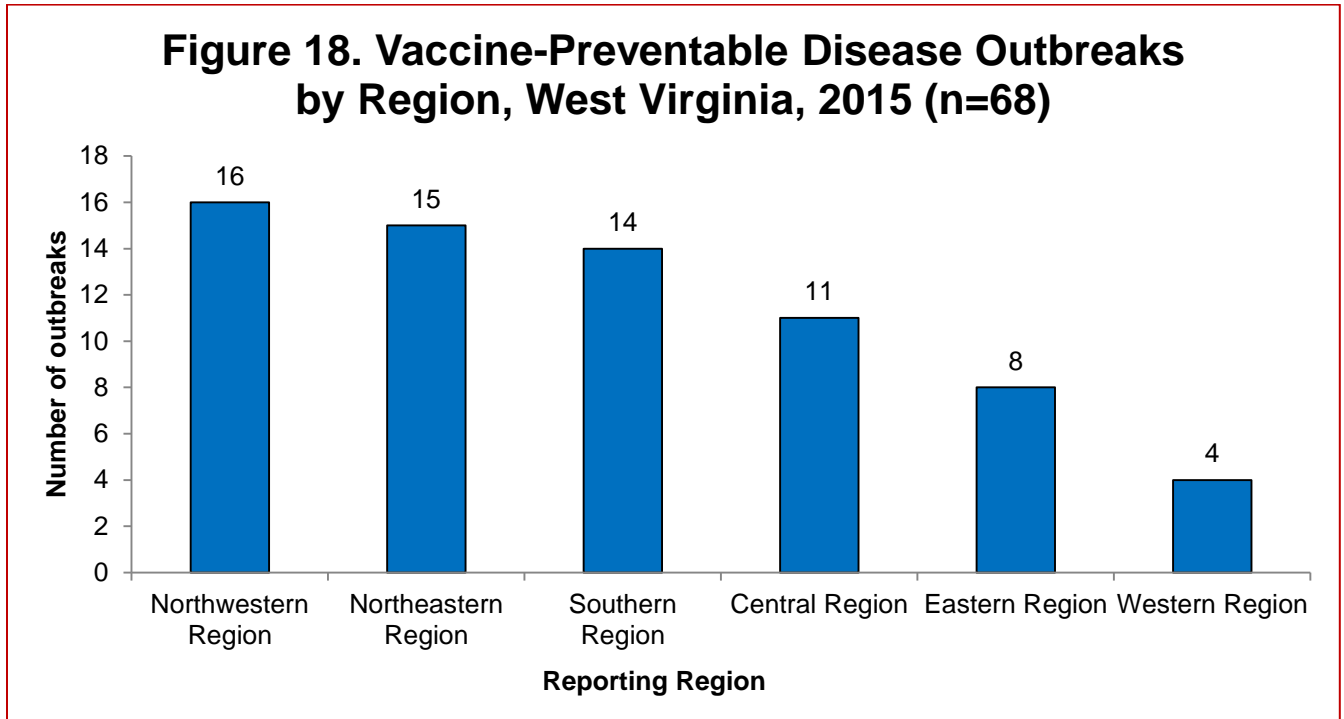
A water borne outbreak was reported in January 2015 when DIDE received a report of rash illness among members of a sports team after swimming in a hotel pool. Investigation revealed that six out of 10 swimmers developed various symptoms after swimming in the pool. Symptoms included rash, chest tightness, eye irritation, and nausea. Environmental investigation revealed that the pool had higher chlorine level than the acceptable threshold due to a malfunction of the chlorine pump (feeder). The pool was closed to the public until completion of the mitigation process.

In June 2015, DIDE was consulted by the Division of STD, HIV, Hepatitis (DSHH) on an ongoing outbreak of syphilis in two regions of the state. DIDE provided epidemiologic support to the ongoing investigation. Epidemiologic analysis of the data provided by DSHH revealed that there was an increase in the number of newly diagnosed cases of syphilis in both regions. However, the demographic and risk factors were different in each region. In one region, 66% of cases were males and 34% were females. Among males the majority of cases were 20-29 years of age, while among females the majority of cases were 30-39 years of age. The risk factors were mainly having unprotected sex, having sex while intoxicated and having anonymous sex. In the other region, 100% of cases were diagnosed among males. The majority of cases were 20-29 years of age. The risk factors were mainly having unprotected sex, men having sex with men (MSM) and having anonymous sex. DIDE provided the following recommendations to DSHH: provide local health alert to increase awareness among healthcare providers, share surveillance data with partners, continue to work closely with CDC, communicate findings with educational institutes, and consider specific prevention intervention such as internet-based intervention and banner advertisement.

A suspect outbreak of hepatitis C was investigated in a healthcare facility (See details in healthcare associated outbreak section).

### Vaccine-Preventable Disease Outbreaks (VPDOs)

In 2015, 68 (34%) vaccine-preventable disease outbreaks were reported from 32 counties (58%) in all surveillance regions (Figure 17).



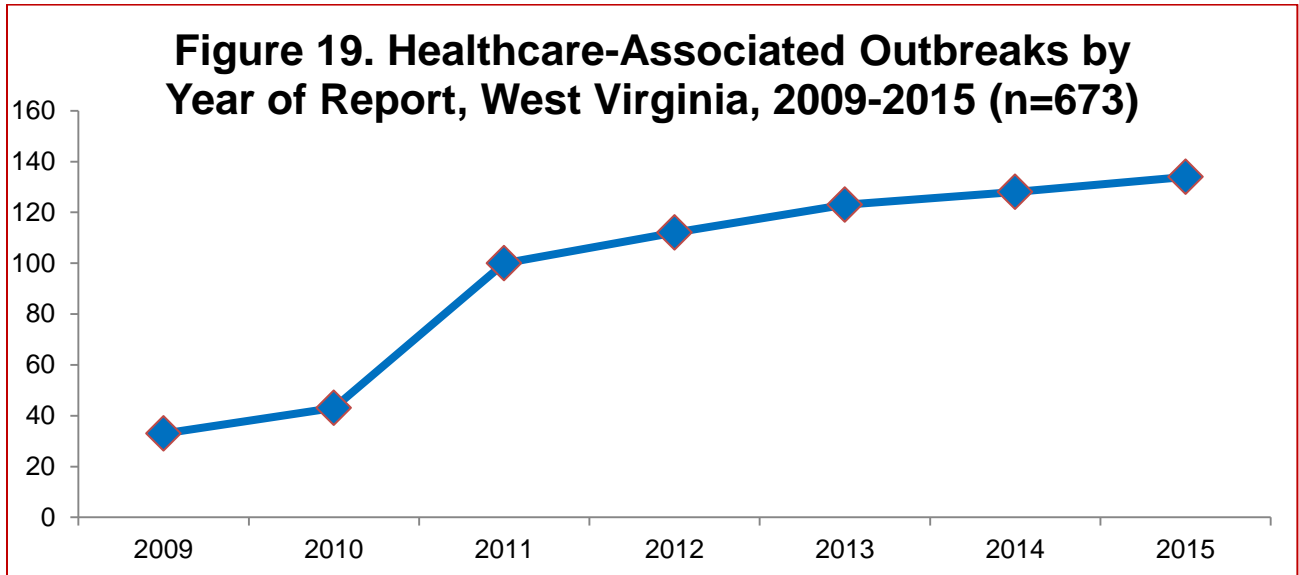
Influenza outbreaks were the most common VPDOs (91%) followed by pertussis and varicella (Table 24).

Table 24. Vaccine-Preventable Disease Outbreaks by Etiologic Agent/Clinical Syndrome, West Virginia, 2015

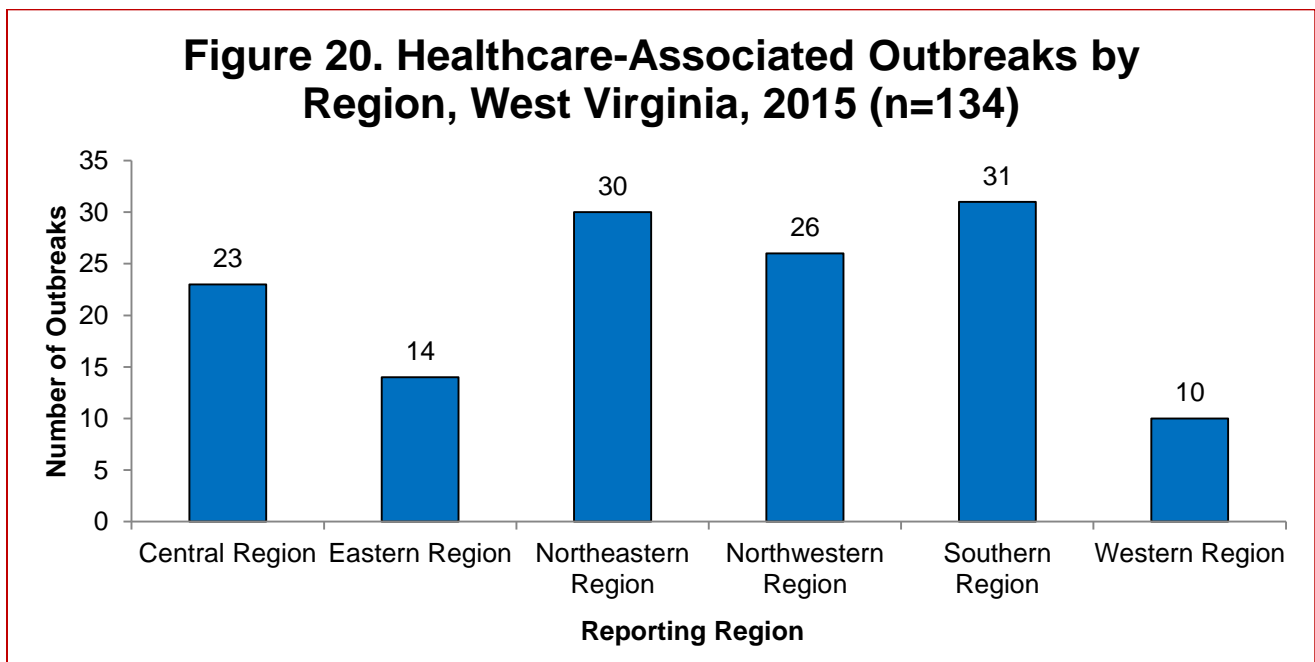
Clinical Syndrome/Etiologic Agent	Number of Outbreaks n=68	Percent
<b>Influenza</b>	62	91
<b>Pertussis</b>	5	7
<b>Varicella</b>	1	1

## Healthcare-Associated Outbreaks (HAOs)

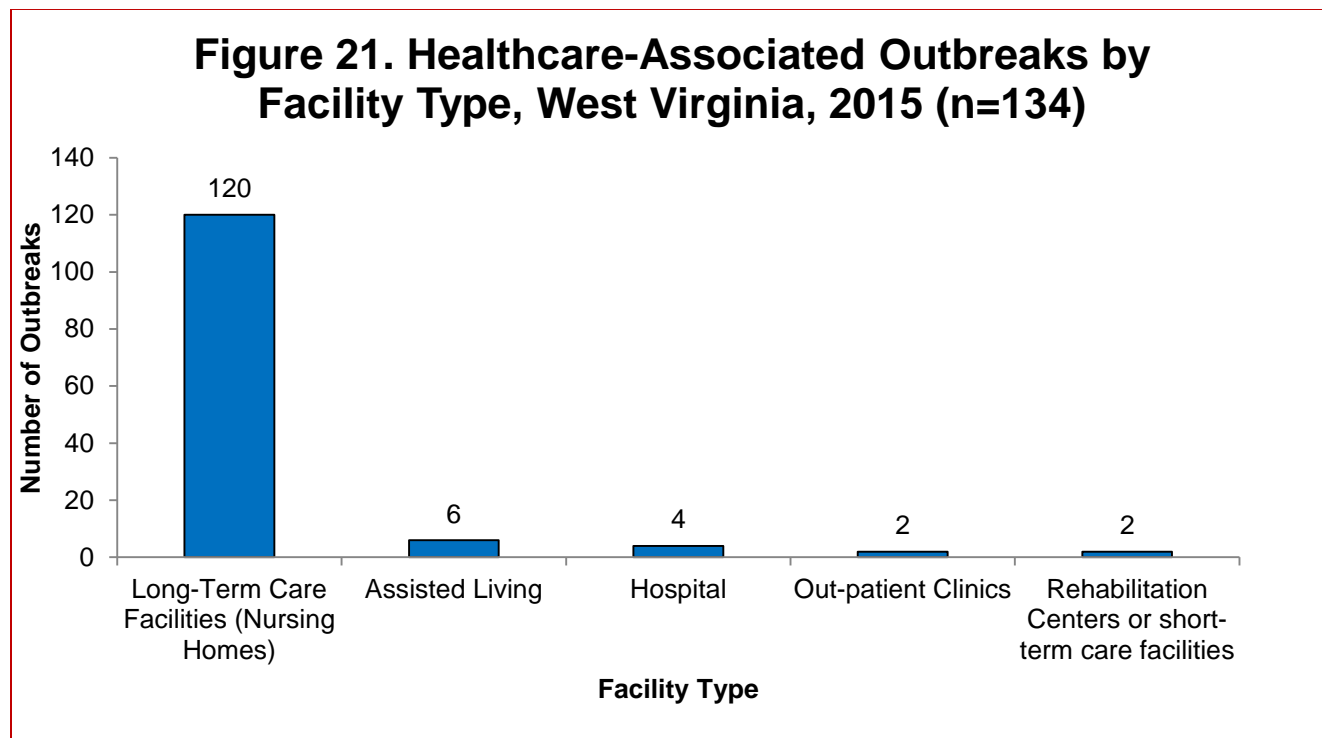
The number of HAOs reported in West Virginia has increased almost four-fold since 2009 (Figure 19). HAOs are defined as “hospital-acquired or healthcare facility-acquired infections among patients or staff clustered temporally and/or geographically and represent an increase in the incidence over expected background rates.”



In 2015, 134 HAOs were reported from 38 (69%) counties in all surveillance regions (Figure 20). HAOs accounted for 68% of all confirmed outbreaks in West Virginia.



The majority of HAOs were reported in LTCFs (120, 90%), followed by ALFs (6, 4%) hospitals (4, 3%), rehabilitation facilities (2, 1.5%) and an outpatient clinic (2, 1.5%) (Figure 21).



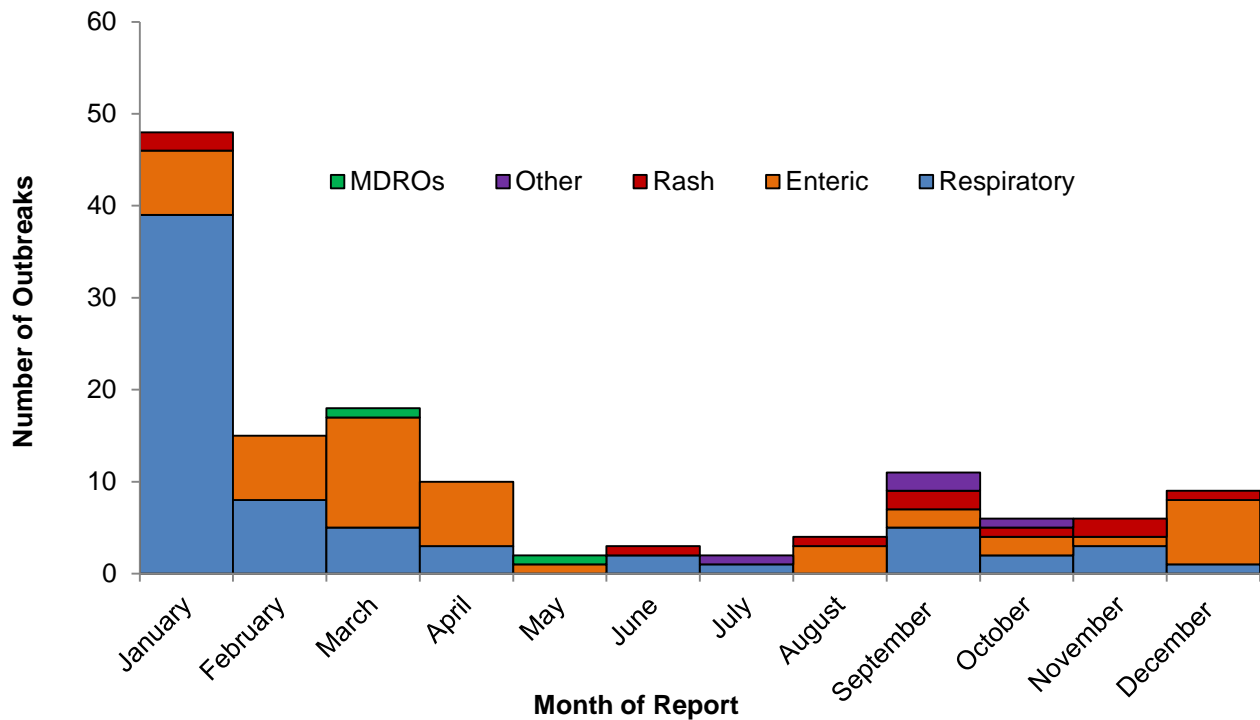
Respiratory disease outbreaks accounted for the majority of HAOs (69, 52%) followed by enteric disease outbreaks (49, 37%), rash illness outbreaks (10, 7%), other outbreaks (4, 3%), and MDRO outbreaks (2, 1%) (Table 25).

Table 25. Healthcare-Associated Outbreaks by Type of Outbreak, West Virginia, 2015

Outbreak Type	Number of Outbreaks (n=134)	Percent
<b>Respiratory</b>	69	51
<b>Enteric</b>	49	37
<b>Rash</b>	10	7
<b>Other</b>	4	3
<b>MDROs</b>	2	1

As observed in previous years, a seasonal trend was observed in 2015 showing an increase in HAOs during the colder months of the year. This can be attributed to increased circulation of influenza virus and norovirus during this time of the year (Figure 22).

**Figure 22. Healthcare-Associated Outbreaks by Type and Month of Report, West Virginia, 2015 (n=134)**



**Healthcare-Associated Respiratory Disease Outbreaks:**

Respiratory disease outbreaks (69, 51%) were the most common disease outbreak type reported in healthcare facilities. The majority of healthcare-associated respiratory disease outbreaks were caused by influenza viruses (54, 78%) followed by outbreaks of acute respiratory illness with no identified pathogen (9, 13%) and outbreaks caused by non-influenza respiratory viruses (6, 9%). Table 26 depicts healthcare-associated respiratory illness outbreaks by etiological agents and/or clinical syndrome.

The majority of healthcare-associated respiratory outbreaks were reported in LTCFs (61, 88%), followed by ALFs (5, 7%) (Table 27). Details on healthcare-associated respiratory disease outbreaks are discussed in the Respiratory Disease Outbreaks Section.

Table 26. Healthcare-Associated Respiratory Disease Outbreaks by Clinical Syndrome/Etiologic Agent, West Virginia, 2015

Clinical Syndrome/Etiologic Agent	Number of Outbreaks (n=69)	Percent
Influenza A	24	35
Influenza A H3	12	17
Influenza	11	16
Undetermined	9	13
Influenza A and B	5	7
Rhinovirus/Enterovirus	5	7
Influenza A H3 and RSV	1	1
Influenza B	1	1
Parainfluenza virus	1	1

Table 27. Healthcare-Associated Respiratory Disease Outbreaks by Transmission Setting, West Virginia, 2015

Transmission Setting	Number of Outbreaks (n=69)	Percent
LTCFs	61	88
ALFs	5	7
Other	2	3
Hospital	1	1

### **Healthcare-Associated Enteric Disease Outbreaks:**

Enteric disease outbreaks (49, 37%) were the second most common disease outbreak type reported in healthcare facilities in 2015. The majority of healthcare-associated enteric disease outbreaks were acute gastroenteritis followed by norovirus gastroenteritis (Table 28).

Table 28. Healthcare-Associated Enteric Disease Outbreaks by Clinical Syndrome/Etiologic Agent, West Virginia, 2015

Clinical Diagnosis/Etiologic Agent	Number of Outbreaks (n=49)	Percent
Acute Gastroenteritis	29	59
Norovirus G II	17	27
Rotavirus	2	4
Salmonella Poona	1	2

Most enteric disease outbreaks were reported in LTCFs (46) followed by ALFs (2), and hospitals (1) (Table 29). Twenty healthcare-associated enteric disease outbreaks were laboratory confirmed, 18 did not have laboratory testing done and 11 had negative or non-contributory laboratory testing.

Table 29. Healthcare-Associated Enteric Disease Outbreaks by Transmission Settings, West Virginia, 2016

Transmission Settings	Number of Outbreaks (n=49)	Percent
LTCFs	46	94
ALFs	2	4
Hospital	1	2

Acute gastroenteritis and norovirus outbreaks are described in detail under the enteric disease outbreak section.

Two rotavirus outbreaks were reported from LTCFs during the month of January, 2015. The attack rate ranged between 10% and 36% among residents. Rotavirus is known as a major cause of severe gastroenteritis in young children. However, rotavirus also can cause gastroenteritis in adults. According to CDC, the extent to which rotavirus outbreaks occur among elderly adults in residential facilities in the United States is unknown because of lack of rotavirus testing. Additionally, rotavirus is not notifiable either nationally or in West Virginia. CDC recommends considering rotavirus as a possible cause of acute diarrheal illness in residential facilities especially during the months of rotavirus circulation (January to June). During rotavirus outbreaks in LTCFs, facilities should reinforce good hygiene among residents and staff, environmental cleaning and appropriate transmission based precautions

A cluster of three cases of *Salmonella poona* was reported in a hospital specialty unit between January 15 and March 15, 2015. Epidemiologic investigation suggested transmission from the index case to a second patient who was in the same room. A third case was identified in an adjacent room. Laboratory results indicated that isolates from the three patients were identical by Pulse Field Gel Electrophoresis (PFGE). No additional cases were identified after the facility enhanced hand washing among visitors and staff, environmental cleaning, and implemented appropriate transmission-based precautions for patients with diarrheal illness.

**Healthcare-Associated Rash Illness Outbreaks:**

There were 10 (7%) rash illness outbreaks reported from healthcare facilities in 2015. Nine (90%) rash illness outbreaks were due to scabies. Eight scabies outbreaks were reported in LTCFs and the remaining one was reported from a hospital. Only two scabies outbreaks were laboratory confirmed and the remaining seven were confirmed by clinical diagnosis. One outbreak of undifferentiated rash illness was reported among staff from a LTCF. This outbreak was described in the Rash Illness outbreaks section.



## **Other Healthcare-Associated Outbreaks:**

In 2015, among HAOs categorized as “Other,” three outbreaks of healthcare-associated conjunctivitis were reported. The first one was reported in a LTCF when a cluster of three residents were diagnosed with conjunctivitis. Bacterial culture from the three patients was positive for *Haemophilus influenzae*. No additional cases were identified after the facility provided education to staff on hand hygiene. The facility also instructed staff to avoid sharing ophthalmic medications among residents.

The second cluster was also reported from a LTCF when a cluster of three residents were diagnosed with conjunctivitis. This outbreak was confirmed by clinical diagnosis and did not have laboratory confirmation.

The third outbreak of conjunctivitis was reported from an outpatient clinic. Initial reports indicated that several patients were diagnosed with epidemic keratoconjunctivitis (EKC) during the previous three weeks. EKC is an eye infection characterized by severe inflammation of the conjunctiva and cornea, and can result in vision loss. Pathogens commonly detected in EKC outbreaks are human adenovirus (HAdV) serotypes 8, 19, and 37, which are spread person-to-person or by fomites; no vaccines or effective antiviral treatments are available. The LHD, in collaboration with DIDE, conducted an investigation to determine the source, identify additional cases, and implement control measures. Details about this outbreak investigation were published in Morbidity and Mortality Weekly (MMWR) reports and can be accessed at <http://www.cdc.gov/mmwr/volumes/65/wr/mm6514a5.htm>

DIDE investigated one case of possible healthcare associated hepatitis C in an outpatient facility. Epidemiologic and laboratory investigation did not identify any links to associate the patient’s seroconversion to receiving treatment at the facility. Additionally, screening all patients receiving medical service at the facility did not identify any additional hepatitis C positive cases. The facility is following DIDE and CDC infection control procedures and guidelines.

## **Healthcare-Associated 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 United States and West Virginia. These bacteria can spread rapidly and are associated with high morbidity and mortality rates due to limited options for treatment.

In 2015, there were two outbreaks of *Clostridium difficile* Infection (CDI). One was reported from a LTCF and the second from an acute care facility.

In the first outbreak, a total of six case-patients were identified between February 15, 2015 and April 15, 2015 with an attack rate of 9%. All cases were LTCF-associated as per National Healthcare Safety Network (NHSN) definition. A site visit to the facility was completed by the LHD to review infection control practices and provide recommendations to the facility. No additional cases were identified.

The second outbreak of CDI was reported in an acute care setting after the LHD received a complaint through their anonymous online system. The complaint stated that patients at this facility are having CDI. The LHD conducted an investigation to determine the extent of the outbreak, and to provide recommendations to prevent additional cases. A total of six patients were identified in the facility during March and April 2015. All cases were facility-acquired according to NHSN case definition. The facility provided education to staff on hand hygiene, enhanced environmental cleaning and isolation precautions.

## **DIDE Recommendations:**

In 2015, there was a continuation of the trend seen over the last decade of improvement in recognition and reporting of outbreaks in West Virginia. 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 improvement. The following summarizes the findings of this report and provides recommendations.

## **Findings and Recommendations for LHDs:**

1. According to the West Virginia Reportable Disease Rules implemented in August 2013, outbreaks are immediately reportable in West Virginia to LHDs regardless of outbreak setting.
2. In 2015, of the 55 West Virginia counties, 43 (84%) reported outbreaks. This represents improvement over the previous years. DIDE encourages LHDs to continue to strengthen relationships and maintain an open dialogue with acute care facilities and LTCFs' Infection Preventionists (IPs) and school nurses.
3. The range of the number of outbreaks reported among different surveillance regions was 19 to 40 outbreaks, despite the fact that there is similar distribution of healthcare facilities and schools in each surveillance region. DIDE encourages LHDs, with assistance from regional epidemiologists, to provide regular trainings on outbreak identification and reporting, including healthcare-associated outbreaks, to stakeholders.
4. In 2015, 176 (89%) outbreaks were reported to DIDE within one hour, which represents an improvement over the previous year. LHDs are required to report 100% of outbreaks to DIDE within one hour. 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.
5. LHDs should consult with the regional epidemiologists in outbreak investigations. Regional epidemiologists can be tremendous resources to LHDs.
6. DIDE recommends using disease-specific outbreak 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>
7. 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>

8. Outbreak reports should be shared with DIDE and other stakeholders within 30 days of closing the outbreak.
9. In 2015, there were 62 influenza outbreaks representing 71% of the total (87) confirmed respiratory outbreaks. LHDs should be prepared for influenza outbreaks in schools and LTCFs. 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 five unexpired influenza testing kits in the health department throughout the year.
  - Consider communicating with and educating school nurses and LTCFs IPs about influenza during the pre-influenza season.
10. LHDs and regional epidemiologists should share DIDE's weekly influenza activity report and monthly outbreak report with partners in a timely manner.
11. The role of laboratory testing is crucial in outbreak management. Timely collection of specimens facilitates diagnosis and institution of control measures. One of the outbreak performance measures for LHDs is to attempt to collect appropriate specimens during at least 90% of reported respiratory disease outbreaks and 100% of reported foodborne outbreaks.
12. In 2016 through 2018, DIDE is conducting healthcare facility infection control assessments as a part of the Infection Control Assessment and Response (ICAR) project. LHD staff are highly encouraged to participate in the project by accompanying DIDE ICAR Field Nurses on assessment visits.

### **Findings and Recommendations for LTCFs:**

1. Outbreaks should be reported immediately to LHDs according to the West Virginia Reportable Disease Rule that became effective August 2013.
2. LTCFs continue to account for the majority of outbreaks (60%) reported in the State. These outbreaks are occasionally severe and associated with high morbidity and mortality rates. LTCFs should dedicate, train, and maintain a designated IP in the facility at all times.
3. LTCFs should maintain an open dialogue with their LHD and regional epidemiologist. Consider contacting your LHD after hiring a new IP for orientation on reportable diseases and outbreaks.
4. Provide facility-wide education on hand hygiene and transmission based precaution. Routinely monitor for compliance. Useful resources can be found at: <http://www.dhhr.wv.gov/oeps/disease/HAI/Pages/default.aspx>

5. Provide facility-wide education on antimicrobial resistance and appropriate use at least once a year.
6. For influenza and other respiratory outbreaks:
  - a. Use the disease specific outbreak toolkits available online at: <http://www.dhhr.wv.gov/oeps/disease/ob/Pages/OutbreakToolkits.aspx>
  - b. Maintain standing orders for influenza vaccination, testing, and prophylaxis.
  - c. Laboratory testing is crucial for management of respiratory outbreaks. OLS can provide testing at no charge during outbreaks.
7. In 2016 through 2018, DIDE is conducting healthcare facility infection control assessments as a part of the Infection Control Assessment and Response (ICAR) project. DIDE recommends working closely with ICAR Field Nurses and use the feedback information to enhance infection control programs in the facility.

### **Findings and Recommendations for Acute Care Hospitals and Outpatient Clinics:**

1. Outbreaks should be reported immediately to LHDs according to the West Virginia Reportable Disease Rule that became effective August 2013.
2. Maintain an open dialogue with their LHD and regional epidemiologist.
3. 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 complicated HAOs.
4. Refer to DIDE's healthcare-associated outbreak protocol on the website at: <http://www.dhhr.wv.gov/oeps/disease/hai/documents/hai-protocol.pdf>
5. Develop a multidisciplinary approach for outbreak investigations.
6. Maintain an up-to-date vaccination record, including influenza, of all healthcare workers, including those who are not employed by, but have privileges in, the facility.
7. Provide routine education on appropriate infection control practices, including hand hygiene and transmission-based precautions and monitor for compliance.
8. Provide facility-wide education on safe injection practices and antimicrobial resistance and appropriate use at least once a year.
9. Acute care hospital laboratories should review their practices and follow the updated Clinical and Laboratory Standards Institute (CLSI) guidelines.
10. Make sure your laboratory is following the most updated guidelines for MDRO detection.

11. OLS can provide molecular analysis of certain bacterial isolates for the purpose of MDRO outbreak investigation.
12. In 2016 through 2018, DIDE is conducting healthcare facility infection control assessments as a part of the Infection Control Assessment and Response (ICAR) project. DIDE recommends working closely with ICAR Field Nurses and using the feedback information to enhance infection control programs in the facility.

### **DIDE's Objectives:**

The following are objectives completed in 2015, ongoing objectives, and new objectives in 2016 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. OLS implemented 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. Criteria for testing will be included in the updated foodborne disease outbreak manual.
4. DIDE will provide the annual "Best Outbreak" training to the state, regional and local public health personnel and IPs.
5. DIDE will work closely with the regional epidemiologists to assist underreporting regions and counties to identify their training needs and provide training as necessary.
6. DIDE will conduct evaluation of the foodborne outbreak response and management at the state level including epidemiology, environmental and laboratory programs using the Council to Improve Foodborne Outbreak Response (CIFOR) guidelines.
7. In order to protect the health of DIDE staff during field investigation, DIDE is establishing an occupational health program that includes all staff working in the field.
8. Healthcare-associated Outbreaks:
  - According to the CDC, West Virginia continues to be among the states with the highest antibiotic 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 continues to provide molecular typing of MDROs during outbreaks.
- The findings from this report will be presented to the Healthcare Associated Infections (HAI) Multidisciplinary Advisory Group as well as WV Association for Professionals in Infection Control and Epidemiology (APIC) state chapter as a part of an 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 will continue to provide annual carbapenem-resistant *Enterobacteriaceae* (CRE) surveillance reports.
- In 2016 through 2018, DIDE is conducting infection control assessments in all acute care and critical access hospitals, all dialysis and ambulatory surgery centers and most LTCFs in the state as a part of the Infection Control Assessment and Response (ICAR) project.

Appendix: Summary of Confirmed Outbreaks, 2015, West Virginia (n=198)

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
1	1/2/2015 11:00	1/2/2015 11:21	21	Southern Region	WV	Influenza	Influenza A	Residents 19/57 (AR 33%) Staff 3/80 (27%)	Rapid test positive	LTCF	Person to Person
2	1/2/2015 12:00	1/2/2015 12:18	18	Central Region	WV	Rotavirus Gastroenteritis	Rotavirus	Residents 33/91 (AR 36%)	Lab Confirmed	LTCF	Person to Person
3	1/2/2015 12:00	1/2/2015 12:18	18	Central Region	WV	Acute Respiratory Illness	Undetermined	Residents 7/91 (AR 8%) Staff 2/108 (AR 2%)	Lab test negative or noncontributory	LTCF	Person to Person
4	1/2/2015 12:15	1/2/2015 12:41	26	Southern Region	WV	Influenza	Influenza A H3	Residents 12/116 (AR 10%) Staff 11/120 (AR 9%)	Lab Confirmed	LTCF	Person to Person
5	1/2/2015 13:35	1/2/2015 13:45	10	Northwest Region	WV	Influenza	Influenza A H3	Residents 28/89 (AR 31%) Staff 3/132 (AR 2%)	Lab Confirmed	LTCF	Person to Person
6	1/5/2015 9:45	1/5/2015 9:45	0	Southern Region	WV	Influenza	Influenza A	Residents 3/42 (AR 7%)	Rapid test positive	LTCF	Person to Person
7	1/5/2015 10:30	1/5/2015 11:00	30	Southern Region	WV	Influenza	Influenza A H3	Residents 18/75 (AR 24%) Staff 13/89 (AR 15%)	Lab Confirmed	LTCF	Person to Person
8	1/5/2015 10:30	1/5/2015 11:00	30	Southern Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 23/72 (AR 32%) Staff 14/89 (AR 16%)	Lab Confirmed	LTCF	Person to Person
9	1/5/2015 11:45	1/5/2015 12:05	20	Southern Region	WV	Influenza	Influenza A H3	Residents 10/47 (AR 21%) Staff 2/28 (AR 7%)	Lab Confirmed	ALF	Person to Person
10	1/5/2015 14:05	1/5/2015 14:15	10	Northeast Region	WV	Influenza	Influenza A H3	Residents 29/94 (AR 31%) Staff 2/102 (AR 2%)	Lab Confirmed	LTCF	Person to Person



Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
11	1/6/2015 8:30	1/6/2015 8:40	10	Southern Region	WV	Influenza	Influenza	Residents 40/110 (36% AR) Staff 10/145 (7% AR)	Rapid test positive	LTCF	Person to Person
12	1/6/2015 8:15	1/6/2015 8:45	30	Northwest Region	WV	Influenza	Influenza A	Residents 18/28 (AR 64%)	Rapid test positive	ALF	Person to Person
13	1/5/2015 16:00	1/6/2015 9:20	10-40	Western Region	WV	Influenza	Influenza A	Residents 2/54 (4%) Staff 3/78 (AR 4%)	Rapid test positive	LTCF	Person to Person
14	1/7/2015 12:50	1/7/2015 13:20	30	Northeast Region	WV	Influenza	Influenza A	Residents 28/58 (AR 48%) Staff 4/85 (AR 5%)	Rapid test positive	LTCF	Person to Person
15	1/7/2015 14:00	1/7/2015 14:30	30	Northeast Region	WV	Influenza	Influenza A H3	Residents 25/110 (AR 23%) Staff 2/103 (AR 2%)	Lab Confirmed	LTCF	Person to Person
16	1/8/2015 8:50	1/8/2015 9:20	30	Central Region	WV	Influenza	Influenza A	Residents 32/111 (AR 29%) Staff 18/125 (AR 14%)	Rapid test positive	LTCF	Person to Person
17	1/7/2015 16:00	1/8/2015 9:30	10-50	Eastern Region	WV	Influenza	Influenza A H3	Residents 34/112 (AR 30%) Staff 22/178 (AR 12%)	Lab Confirmed	LTCF	Person to Person
19	1/8/2015 10:50	1/8/2015 11:00	10	Eastern Region	WV	Influenza	Influenza A H3	Residents 17/58 (AR 29%) Staff 23/78 (AR 29%)	Lab Confirmed	LTCF	Person to Person
20	1/8/2015 14:50	1/8/2015 14:40	10	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Residents 9/105 (AR 9%)	Lab test negative or noncontributory	LTCF	Person to Person
21	1/8/2015 15:15	1/8/2015 15:45	30	Northwest Region	WV	Influenza	Influenza A	Residents 16/59 (27% AR) Staff 11/80 (AR 14%)	Rapid test positive	LTCF	Person to Person
22	1/9/2015 15:00	1/9/2015 15:45	45	Northeast Region	WV	Influenza	Influenza A H3	Residents 5/103 (AR 5%) Staff 8/178 (AR 4%)	Lab Confirmed	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
24	1/12/2015 10:40	1/12/2015 11:00	20	Southern Region	WV	Influenza	Influenza A	Residents 7/57 (AR 12%) Staff 8/92 (AR 9%)	Rapid test positive	LTCF	Person to Person
25	1/12/2015 11:00	1/12/2015 11:20	20	Northeast Region	WV	Influenza	Influenza A	Residents 4/119 (AR 3%) Staff 4/142 (AR 3%)	Rapid test positive	LTCF	Person to Person
26	1/12/2015 10:00	1/12/2015 10:29	29	Northeast Region	WV	Scabies	Sarcoptes scabiei	Residents 1/34 (AR 3%) Staff 2/26 (AR 8%)	Lab Confirmed	LTCF	Person to Person
27	1/13/2015 11:00	1/13/2015 11:28	28	Western Region	WV	Influenza	Influenza A H3	Residents 20/90 (AR 22%) Staff 8/160 (AR 5%)	Lab Confirmed	LTCF	Person to Person
28	1/13/2015 10:30	1/13/2015 11:00	30	Central Region	WV	Rotavirus Gastroenteritis	Rotavirus	Residents 4/40 (AR 10%) Staff 9/25 (AR 36%)	Lab Confirmed	ALF	Person to Person
29	1/13/2015 11:00	1/13/2015 11:30	30	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Residents 6/80 (AR 8%)	Lab test not done	LTCF	Person to Person
30	1/14/2015 11:00	1/13/2015 11:28	1412	Northeast Region	WV	Influenza	Influenza A	Residents 5/80 (AR 6%) Staff 7/120 (AR 6%)	Rapid test positive	LTCF	Person to Person
31	1/13/2015 11:55	1/13/2015 0:05	710	Central Region	WV	Influenza	Influenza B	Attendees 6/84 (AR 7%)	Rapid test positive	Daycare	Person to Person
32	1/12/2015 8:10	1/13/2015 11:31	1641	Northwest Region	WV	Water Borne Illness	Undetermined	Cases 15	Lab test not done	Other	Point Source
33	1/14/2015 10:30	1/14/2015 10:50	20	Central Region	WV	Influenza	Influenza	Attendees 3/27 (AR 11%) Staff 1	Rapid test positive	Daycare	Person to Person
34	1/14/2015 11:00	1/14/2015 11:45	45	Southern Region	WV	Influenza	influenza	Residents 12/117 (AR 12%) Staff 3/107 (AR 3%)	Rapid test positive	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
35	1/14/2015 11:30	1/14/2015 12:00	30	Central Region	WV	Influenza	Influenza	Highest Absentee Rate 14%	Rapid test positive	School	Person to Person
36	1/14/2015 12:20	1/14/2015 12:50	30	Eastern Region	WV	Influenza	Influenza	Residents 6/62 (AR 10%) Staff 2/89 (AR 2%)	Rapid test positive	LTCF	Person to Person
37	1/14/2015 14:00	1/14/2015 14:20	20	Northwest Region	WV	Influenza	Influenza A and B	Residents 12/66 (AR 18%) Staff 1/85 (1%)	Rapid test positive	LTCF	Person to Person
38	1/14/2015 14:20	1/14/2015 14:45	25	Northwest Region	WV	Scabies	Undetermined	Residents 12/25 (AR 50%)	Lab test not done	LTCF	Person to Person
39	1/14/2015 14:45	1/14/2015 15:00	15	Central Region	WV	Influenza	Influenza	Residents 6/70 (AR 9%) Staff 6/80 (AR 8%)	Rapid test positive	LTCF	Person to Person
40	1/15/2015 8:30	1/15/2015 8:45	15	Northwest Region	WV	Influenza	Influenza A	Residents 5/25 (AR 20%)	Rapid test positive	LTCF	Person to Person
41	1/15/2015 8:45	1/15/2015 13:00	255	Northwest Region	WV	Influenza	Influenza A	Residents 19/145 (AR 13%) Staff 24/203 (AR 12%)	Rapid test positive	LTCF	Person to Person
42	1/15/2015 9:05	1/15/2015 9:20	15	Southern Region	WV	Influenza	Influenza A	Residents 3/78 (AR 4%) Staff 4/120 (AR 3%)	Rapid test positive	LTCF	Person to Person
43	1/20/2015 8:30	1/20/2015 8:47	17	Central Region	WV	Influenza	Influenza A H3	Residents 16/91 (AR 18%) Staff 5/108 (AR 5%)	Lab Confirmed	LTCF	Person to Person
44	1/20/2015 10:00	1/20/2015 10:08	8	Central Region	WV	Influenza	Influenza	Highest Absentee Rate 24%	Rapid test positive	School	Person to Person
45	1/20/2015 10:25	1/20/2015 10:30	5	Southern Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 10/63 (AR 16%) Staff 3/144 (AR 2%)	Lab Confirmed	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
46	1/20/2015 11:35	1/20/2015 10:40	55	Southern Region	WV	Influenza	Influenza	Residents 5/49 (AR 10%) Staff 1/48 (AR 2%)	Rapid test positive	Assisted Living	Person to Person
47	1/20/2015 11:44	1/20/2015 12:04	20	Western Region	WV	Influenza	Influenza	Residents 12/65 (AR 18%) Staff 1/80 (AR 1%)	Rapid test positive	LTCF	Person to Person
49	1/21/2015 10:20	1/21/2015 10:35	15	Eastern Region	WV	Influenza	Influenza A	Residents 26/93 (AR 28%) Staff 5/127 (AR 4%)	Rapid test positive	LTCF	Person to Person
50	1/23/2015 8:10	1/23/2015 7:10	60	Northeast Region	WV	Influenza	Influenza	Residents 4/60 (AR 7%)	Rapid test positive	LTCF	Person to Person
51	1/23/2015 11:00	1/23/2015 11:15	15	Central Region	WV	Acute Gastroenteritis	Undetermined	Residents 7/118 (AR 6%) Staff 3/103 (AR 3%)	Lab test negative or noncontributory	LTCF	Person to Person
52	1/26/2015 11:45	1/26/2015 11:54	9	Northwest Region	WV	Influenza	Influenza A	Highest Absentee Rate 17%	Rapid test positive	School	Person to Person
53	1/27/2015 10:15	1/27/2015 10:30	15	Central Region	WV	Influenza	Influenza A H3 and RSV	Residents 14/60 (AR 23%)	Lab Confirmed	LTCF	Person to Person
54	1/27/2015 10:00	1/27/2015 12:00	120	Northwest Region	WV	Influenza	Influenza A	Highest Absentee Rate 14%	Rapid test positive	School	Person to Person
55	1/28/2015 13:00	1/28/2015 13:15	15	Northwest Region	WV	Influenza	Influenza A	Residents 79/182 (AR 4%) Staff 1/242 (AR <1%)	Rapid test positive	LTCF	Person to Person
56	1/29/2015 12:40	1/29/2015 13:00	20	Central Region	WV	Influenza	Influenza A	Residents 14/125 (AR 11%) Staff 2/80 (AR 3%)	Rapid test positive	LTCF	Person to Person
57	1/29/2015 14:30	1/29/2015 14:45	15	Northeast Region	WV	Influenza	Influenza A	Residents 24/91 (26% AR) Staff 13/132 (10% AR)	Rapid test positive	LTCF	Person to Person
58	1/30/2015 14:08	1/30/2015 14:32	24	Northwest Region	WV	Influenza	Influenza A	Residents 14/64 (AR 22%)	Rapid test positive	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
59	2/2/2015 9:30	2/2/2015 11:00	90	Eastern Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 29/50 (AR 59%) Staff 11/47 (AR 23%)	Lab Confirmed	LTCF	Person to Person
60	2/2/2015 16:11	2/2/2015 16:20	9	Northeast Region	WV	Influenza	Influenza	Residents 14/105 (AR 14 %)	Rapid test positive	LTCF	Person to Person
61	2/3/2015 9:30	2/3/2015 10:00	30	Northwest Region	WV	Influenza	Influenza A	Highest Absentee Rate 23%	Rapid test positive	School	Person to Person
62	2/3/2015 10:20	2/3/2015 10:30	10	Central Region	WV	Acute Respiratory Illness	Respiratory syncytial virus (RSV)	Attendees 3/6 (AR 50%)	Rapid test positive	Daycare	Person to Person
63	2/4/2015 15:45	2/4/2015 16:00	15	Southern Region	WV	Influenza	Influenza	Residents 12/160 (AR 8%)	Rapid test positive	LTCF	Person to Person
64	2/6/2015 12:30	2/5/2015 13:20	##	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 5/12 (AR 42%) Staff 2/11 (AR 18%)	Lab test not done	ALF	Person to Person
65	2/5/2015 15:45	2/5/2015 16:00	15	Southern Region	WV	Influenza	Influenza A	Patients 2/35 (AR 6%) Staff 9/119 (AR 8%)	Rapid test positive	Other	Person to Person
66	2/6/2015 10:06	2/6/2015 10:35	29	Eastern Region	WV	Acute Gastroenteritis	Undetermined	Highest Absentee Rate 31%	Lab test not done	School	Person to Person
67	2/2/2015 16:11	2/2/2015 16:20	9	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Residents 5/110 (AR 5%)	Lab test not done	LTCF	Person to Person
68	2/10/2015 15:30	2/10/2015 15:44	14	Northwest Region	WV	Influenza	Influenza A	Residents 11/61 (AR 18%) Staff 1/84 (AR 1%)	Rapid test positive	LTCF	Person to Person
69	2/12/2015 13:00	2/12/2015 13:25	25	Northeast Region	WV	Influenza	Influenza A	Residents 9/58 (AR 16%) Staff 6/70 (AR 9%)	Rapid test positive	LTCF	Person to Person
70	2/13/2015 11:20	2/13/2015 11:43	23	Southern Region	WV	Norovirus Gastroenteritis	Norovirus G I & G II	Residents 57/115 (AR 49%) Staff 39/140 (AR 28%)	Lab Confirmed	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
71	2/18/2015 10:45	2/18/2015 11:00	15	Central Region	WV	Influenza	Influenza A	Residents 8/41 (AR 20%) Staff 1/90 (AR 1%)	Lab Confirmed	LTCF	Person to Person
72	2/18/2015 10:00	2/18/2015 11:30	90	Central Region	WV	Acute Gastroenteritis	Undetermined	Residents 17/94 (AR 18%)	Lab test not done	LTCF	Person to Person
73	2/18/2015 11:45	2/18/2015 12:00	15	Northwest Region	WV	Influenza	Influenza A and B	Residents 39/130 (AR 30%) Staff 3/170 (AR 2%)	Rapid test positive	LTCF	Person to Person
74	2/18/2015 12:30	2/18/2015 13:20	50	Western Region	WV	Folliculitis	Undetermined	Cases 7	Lab test not done	Other	Point Source
75	2/18/2015 15:00	2/18/2015 15:30	30	Northwest Region	WV	Influenza	Influenza A and B	Residents 9/35 (AR 26%) Staff 3/30 (10%)	Rapid test positive	LTCF	Person to Person
76	2/23/2015 10:30	2/23/2015 11:00	30	Western Region	WV	Salmonellosis	<i>Salmonella Poona</i>	Cases 3	Lab Confirmed	Hospital	Person to Person
77	2/25/2015 10:00	2/25/2015 10:30	30	Eastern Region	WV	Pertussis	<i>Bordetella pertussis</i>	Confirmed Cases 4	Lab Confirmed	School	Person to Person
78	2/25/2015 11:30	2/25/2015 11:50	20	Eastern Region	WV	Acute Gastroenteritis	Undetermined	Members 6/16 (AR 38%) Staff Undetermined	Lab test not done	Other	Point Source
79	2/24/2015 16:19	2/24/2015 16:24	5	Eastern Region	WV	Influenza Like Illness	Undetermined	Inmates 16/1184 (AR 1%) Staff 5/32 (AR 17%)	Lab test not done	Correctional Facility	Person to Person
80	2/26/2015 4:05	2/26/2015 4:25	20	Eastern Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 38/71 (AR 53%) Staff 29	Lab Confirmed	LTCF	Person to Person
81	3/2/2015 14:15	3/2/2015 14:45	30	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Residents 46/83 (AR 55%)	Lab test negative or noncontributory	LTCF	Person to Person
82	3/2/2015 14:15	3/2/2015 14:55	40	Northeast Region	WV	Norovirus Gastroenteritis	Norovirus	Residents 38/101 (AR 38%) Staff 32/120 (AR 27%)	Lab Confirmed	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
83	3/3/2015 14:45	3/3/2015 15:45	60	Central Region	WV	Acute Gastroenteritis	Undetermined	Residents 13/116 (AR 11%) Staff 15/104 (AR 14%)	Lab test not done	LTCF	Person to Person
84	3/5/2015 13:30	3/5/2015 14:06	36	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Residents 53/109 (AR 49%) Staff 26/101 (AR 26%)	Lab test not done	LTCF	Person to Person
85	3/10/2015 14:00	3/10/2015 14:11	11	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 20/114 (AR 18%) Staff 10/140 (AR 7%)	Lab test negative or noncontributory	LTCF	Person to Person
86	3/11/2015 11:00	3/11/2015 11:47	47	Eastern Region	WV	Pertussis	<i>Bordetella pertussis</i>	Confirmed Cases 3 Probable Cases 2	Lab Confirmed	School	Person to Person
87	3/11/2015 13:30	3/11/2015 13:51	21	Southern Region	WV	Influenza	Influenza A and B	Residents 42/109 (AR 39%) Staff 4/140 (AR 3%)	Rapid test positive	LTCF	Person to Person
88	3/12/2015 10:30	3/12/2015 14:26	236	Eastern Region	WV	Clostridium difficile infection	<i>Clostridium difficile</i>	Residents 6/68 (AR 9%)	Lab Confirmed	LTCF	Person to Person
89	3/13/2015 13:00	3/13/2015 13:12	12	Northeast Region	WV	Influenza	Influenza A	Patients 2/16 (AR 13%)	Rapid test positive	Other	Person to Person
90	3/16/2015 8:30	3/16/2015 8:45	15	Southern Region	WV	Influenza	Influenza	Residents 13/99 (AR 13%)	Rapid test positive	ALF	Person to Person
91	3/16/2015 12:45	3/16/2015 13:30	45	Northeast Region	WV	Influenza	Influenza A	Cases 4	Rapid test positive	Other	Person to Person
92	3/16/2015 13:15	3/16/2015 13:31	16	Northeast Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 39/59 (AR 66%) Staff 29/70 (AR 41%)	Lab Confirmed	LTCF	Person to Person
93	3/17/2015 8:25	3/17/2015 8:55	30	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 19/53 (AR 36%) Staff 4/60 (AR 7%)	Lab test not done	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
94	3/17/2015 13:50	3/17/2015 14:05	15	Eastern Region	WV	Acute Gastroenteritis	Undetermined	Students 45/514 (AR 9%) Staff 3/78 (AR 4%)	Lab test not done	School	Person to Person
95	3/17/2015 14:30	3/17/2015 14:55	25	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 39/115 (AR 34%) Staff 8/90 (AR 9%)	Lab test not done	LTCF	Person to Person
96	3/18/2015 10:00	3/18/2015 10:30	30	Northeast Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 25/54 (AR 46%) Staff 8/81 (AR 10%)	Lab Confirmed	LTCF	Person to Person
97	3/19/2015 11:13	3/19/2015 11:15	2	Eastern Region	WV	Acute Gastroenteritis	Undetermined	Residents 19/56 (AR 34%) Staff 21/74 (AR 28%)	Lab test negative or noncontributory	LTCF	Person to Person
99	3/20/2015 19:00	3/20/2015 19:15	15	Eastern Region	WV	Influenza	Influenza A	Residents 3/90 (AR 3%)	Rapid test positive	LTCF	Person to Person
100	3/23/2015 12:30	3/23/2015 12:32	2	Southern Region	WV	Acute Gastroenteritis	Undetermined	Highest Absentee Rate 17%	Lab test not done	School	Person to Person
101	3/23/2015 14:25	3/23/2015 15:15	50	Central Region	WV	Norovirus Gastroenteritis	Norovirus	Residents 23/71 (AR 32%) Staff 31/81 (AR 38%)	Lab Confirmed	LTCF	Person to Person
102	3/23/2015 15:00	3/23/2015 15:30	30	Western Region	WV	Varicella	Varicella	Cases 17	Lab test negative or noncontributory	School	Person to Person
103	3/25/2015 9:30	3/25/2015 9:50	20	Northeast Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 8	Lab Confirmed	LTCF	Person to Person
104	3/26/2015 10:30	3/26/2015 11:00	30	Southern Region	WV	Influenza Like Illness	Undetermined	Highest Absentee Rate 19%	Lab test not done	School	Person to Person
105	3/31/2015 8:30	3/31/2015 8:40	10	Northwest Region	WV	Influenza	Influenza A and B	Residents 16/70 (AR 24%)	Rapid test positive	LTCF	Person to Person
107	4/1/2015 13:20	4/1/2015 13:50	30	Central Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 32/83 (AR 39%) Staff 32/100 (AR 32%)	Lab Confirmed	LTCF	Person to Person



Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
108	4/1/2015 14:20	4/1/2015 15:12	52	Western Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 25/60 (AR 42%)	Lab Confirmed	LTCF	Person to Person
109	4/7/2015 12:05	4/7/2015 12:00	5	Multiple	CDC	Salmonellosis	<i>Salmonella Enteritidis</i>	Cases 44 nationwide including 3 WV residents	Lab Confirmed	Community	Point Source
110	4/14/2015 12:40	4/14/2015 13:00	20	Eastern Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 19/64 (AR 30%) Staff 1/100 (AR 1%)	Lab Confirmed	LTCF	Person to Person
111	4/15/2015 14:25	4/15/2015 14:35	10	Northeast Region	WV	Influenza	Influenza B	Residents 8/33 (AR 24%) Staff 2/50 (AR 4%)	Rapid test positive	LTCF	Person to Person
112	4/16/2015 9:30	4/16/2015 10:00	30	Western Region	WV	Scabies	Undetermined	Inmates 5/15 (AR 33%) Staff 3/32 (AR 9%)	Lab test not done	Correctional Facility	Person to Person
113	4/16/2015 13:30	4/16/2015 14:30	60	Southern Region	WV	Acute Respiratory Illness	Undetermined	Residents 7/53 (AR 13%)	Lab test not done	LTCF	Person to Person
114	4/14/2015 12:00	4/14/2015 12:00	0	Eastern Region	WV	Influenza	Influenza A H3	Residents 10/80 (AR 13%) Staff 2	Lab Confirmed	ALF	Person to Person
115	4/21/2015 14:30	4/21/2015 15:34	64	Northwest Region	WV	Norovirus Gastroenteritis	Norovirus G I	Residents 33/65 (AR 51%) Staff 10/58 (AR 17%)	Lab Confirmed	LTCF	Person to Person
116	4/22/2015 15:05	4/22/2015 15:11	6	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Residents 9/53 (AR 17%) Staff 9/60 (AR 15%)	Lab test not done	LTCF	Person to Person
117	4/27/2015 9:30	4/27/2015 10:05	35	Southern Region	WV	<i>Streptococcus pharyngitis</i>	Group A <i>Streptococcus</i>	Attendees 25/50 (AR 50%)	Rapid test positive	Daycare	Person to Person
118	4/27/2015 10:30	4/27/2015 11:05	35	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 5/60 (AR 8%)	Lab test negative or noncontributory	LTCF	Person to Person
119	4/28/2015 15:40	4/28/2015 15:50	10	Eastern Region	WV	Rash Illness	Undetermined	Students 4/24 (AR 17%)	Lab test not done	School	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
120	4/29/2015 11:10	4/29/2015 11:15	5	Western Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 7/49 (AR 14%) Staff 3/60 (AR 5%)	Lab Confirmed	LTCF	Person to Person
121	5/1/2015 9:30	5/1/2015 10:00	30	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Students 122/415 (AR 29%) Staff 12/60 (20%)	Lab test not done	School	Undetermined
122	5/4/2015 14:29	5/4/2015 14:45	16	Western Region	WV	Clostridium difficile infection	<i>Clostridium difficile</i>	Cases 8	Lab Confirmed	Acute Care	Person to Person
124	5/5/2015 10:30	5/5/2015 11:10	40	Northwest Region	WV	Conjunctivitis	Undetermined	Students 20/320 (AR 6%)	Lab test not done	School	Other
125	5/6/2015 13:55	5/6/2015 14:20	25	Central Region	WV	Scabies	Undetermined	Cases 5	Lab test not done	School	Person to Person
126	5/8/2015 12:00	5/8/2015 12:30	30	Western Region	WV	Fifths Disease	Undetermined	Attendees 23/214 (AR 11%)	Lab test not done	School	Person to Person
127	5/8/2015 13:30	5/8/2015 13:55	25	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Highest Absentee Rate 18%	Lab test not done	School	Person to Person
128	5/13/2015 9:15	5/13/2015 9:30	15	Eastern Region	WV	Scabies	Undetermined	Cases 33	Lab test not done	Community	Person to Person
129	5/25/2015 11:00	5/26/2015 8:45	1305	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Residents 8/112 (AR 7%) Staff 2/130 (AR 2%)	Lab test negative or noncontributory	LTCF	Person to Person
130	6/3/2015 10:30	6/3/2015 10:30	0	Multiple	WV	Syphilis	<i>Treponema pallidum</i>	Undetermined	Lab Confirmed	Community	Person to Person
131	Missing	Missing		Multiple	CDC	Salmonellosis	<i>Salmonella Paratyphi B</i>	Cases 25 nationwide including 3 WV	Lab Confirmed	Community	Point Source
132	6/10/2015 12:45	6/10/2015 13:30	45	Northeast Region	WV	Acute Respiratory Illness	Undetermined	Residents 15/55 (AR 27%)	Lab test not done	LTCF	Person to Person
133	6/12/2015 9:00	6/12/2015 10:00	60	Eastern Region	WV	Scabies	Undetermined	Residents 1/107 (AR 1%) Staff 6/145 (AR 4%)	Lab test not done	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
134	6/16/2015 9:40	6/16/2015 10:00	20	Northeast Region	WV	Rhinovirus Respiratory Illness	Rhinovirus/Enterovirus	Residents 23/110 (AR 21%)	Lab Confirmed	LTCF	Person to Person
135	6/25/2015 14:00	6/25/2015 14:07	7	Central Region	WV	Pertussis	<i>Bordetella pertussis</i>	Confirmed Cases 8	Lab Confirmed	Community	Person to Person
137	7/8/2015 15:30	7/8/2015 15:40	10	Northwest Region	WV	Parainfluenza Respiratory Illness	Parainfluenza virus	Residents 41/132 (AR 31%)	Lab Confirmed	LTCF	Person to Person
138	Missing	Missing		Multiple	CDC	Salmonellosis	<i>Salmonella</i>	Cases 218 nationwide including 3 WV residents	Lab Confirmed	Community	Point Source
139	7/16/2015 8:15	7/16/2015 8:45	30	Western Region	WV	Conjunctivitis	<i>Haemophilus influenzae</i>	Residents 3/100 (AR 3%)	Lab Confirmed	Hospital	Person to Person
141	7/21/2015 11:00	7/21/2015 11:00	0	Multiple	PA	Norovirus Gastroenteritis	Norovirus	7 WV Cases	Lab Confirmed	Community	Point Source
142	7/23/2015 14:00	7/23/2015 14:55	55	Central Region	WV	Scabies	Undetermined	Attendees 6/88 (AR 7%) Staff 4/17 (AR 24%)	Lab test not done	Daycare	Person to Person
143	8/3/2015 14:35	8/3/2015 15:00	25	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Residents 11/103 (AR 11%) Staff 3/150 (AR 2%)	Lab test negative or noncontributory	LTCF	Person to Person
144	8/5/2015 8:30	8/5/2015 9:04	34	Central Region	WV	Salmonellosis	<i>Salmonella Panama</i>	Cases 4	Lab Confirmed	Community	Undetermined
145	8/5/2015 16:11	8/5/2015 17:05	54	Northwest Region	WV	Hand Foot & Mouth Disease	Undetermined	Attendees 5/12 (AR 42%)	Lab test not done	Daycare	Person to Person
146	8/18/2015 10:00	8/18/2015 10:10	10	Western Region	WV	Gastroenteritis	<i>Staphylococcus Aureus</i> Toxins	Church Attendees 26/85 (AR 31%)	Lab Confirmed	Other	Point Source
147	8/21/2015 14:15	8/21/2015 15:15	60	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 8/80 (AR 10%) Staff 1/125 (AR 1%)	Lab test not done	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
148	8/25/2015 8:40	8/25/2015 9:10	30	Southern Region	WV	Campylobacteriosis	Campylobacter	Cases 5	Lab Confirmed	Community	Undetermined
149	8/25/2015 14:05	8/25/2015 14:30	25	Central Region	WV	Acute Gastroenteritis	Undetermined	Residents 7/70 (AR 10%)	Lab test not done	LTCF	Person to Person
150	8/27/2015 9:20	8/27/2015 10:39	79	Eastern Region	WV	Scabies	Undetermined	Residents 7/58 (AR 12%) Staff 12/72 (AR 17%)	Lab test not done	LTCF	Person to Person
151	9/1/2015 14:00	9/1/2015 14:12	12	Central Region	WV	Conjunctivitis	Undetermined	Residents 3/91 (AR 3%)	Lab test not done	LTCF	Person to Person
152	9/2/2015 14:15	9/2/2015 14:53	38	Northwest Region	WV	Impetigo	Undetermined	Students 4/110 (AR 4%)	Lab test negative or noncontributory	School	Person to Person
153	9/2/2015 14:06	9/2/2015 14:56	50	Central Region	WV	Hand Foot & Mouth Disease	Undetermined	Attendees 6/20 (AR 30%)	Lab test not done	Daycare	Person to Person
154	9/3/2015 9:45	9/3/2015 10:10	25	Western Region	WV	Acute Respiratory Illness	Rhinovirus/Enterovirus	Patients 6/12 (AR 50%)	Lab Confirmed	Hospital	Person to Person
155	9/3/2015 14:30	9/3/2015 14:45	15	Central Region	WV	Rhinovirus Respiratory Illness	Rhinovirus/Enterovirus	Residents 27/93 (AR 29%) Staff 6/109 (AR 6%)	Lab Confirmed	LTCF	Person to Person
156	9/4/2015 17:30	9/4/2015 15:50	100	Central Region	WV	Conjunctivitis (EKC)	Human Adenovirus	Total 55 cases including two staff	Lab Confirmed	Other	Person to Person
158	9/11/2015 14:30	9/11/2015 15:00	30	Southern Region	WV	Skin Infection	Methicillin-resistant Staphylococcus aureus (MRSA)	Cases 6	Lab Confirmed	Sports team	Person to Person
159	9/14/2015 10:55	9/14/2015 11:03	8	Northeast Region	WV	Acute Respiratory Illness	Undetermined	Residents 12/118 (AR 10%)	Lab test not done	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
160	9/15/2015 13:54	9/15/2015 13:57	3	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Students 30/480 (AR 6%)	Lab test not done	School	Person to Person
161	9/16/2015 8:30	9/16/2015 9:00	30	Central Region	WV	Acute Gastroenteritis	Undetermined	Residents 4/92 (AR 4%)	Lab test negative or noncontributory	LTCF	Person to Person
162	9/21/2015 9:30	9/21/2015 10:30	60	Northwest Region	WV	Rash Illness	Undetermined	Staff 5	Lab test negative or noncontributory	LTCF	Undetermined
163	9/21/2015 10:30	9/21/2015 10:45	15	Northeast Region	WV	Acute Respiratory Illness	Undetermined	Residents 9/40 (AR 23%)	Lab test not done	LTCF	Person to Person
164	9/21/2015 10:43	9/21/2015 11:05	22	Central Region	WV	Acute Respiratory Illness	Undetermined	Residents 10/82 (AR 12%) Staff 4/100 (AR 4%)	Lab test not done	LTCF	Person to Person
165	8/11/2015 12:50	8/11/2015 13:40	50	Central Region	WV	Scabies	Undetermined	Residents 2/88 (AR 2%) Staff 2/20 (AR 1%)	Lab test not done	LTCF	Person to Person
166	9/26/2015 11:15	9/26/2015 11:35	20	Eastern Region	WV	Scabies	Undetermined	Inmates 62/1187 (AR 5%)	Lab test negative or noncontributory	Correctional Facility	Person to Person
167	9/28/2015 8:35	9/28/2015 9:00	25	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 13/54 (AR 24%) Staff 12/80 (AR 15%)	Lab test negative or noncontributory	LTCF	Person to Person
168	9/30/2015 11:08	9/30/2015 11:19	11	Western Region	WV	Hand Foot & Mouth Disease	Undetermined	Students 15/396 (AR 4%)	Lab test not done	School	Person to Person
169	10/1/2015 10:00	10/1/2015 10:15	15	Western Region	WV	Acute Gastroenteritis	Undetermined	~ Students 125/430 (AR 29%) Staff 10/59 (AR 17%)	Lab test not done	School	Undetermined
170	10/5/2015 8:47	10/5/2015 9:35	48	Western Region	WV	Acute Gastroenteritis and Influenza - Like Illness (ILI)	Undetermined	Students: Acute Gastroenteritis 15/420 (AR 4%) ILI: 10/420 (AR 2%)	Lab test not done	School	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
171	10/5/2015 14:50	10/5/2015 14:50	0	Northeast Region	WV	Pertussis	<i>Bordetella pertussis</i>	Confirmed Cases 5	Lab Confirmed	Community	Person to Person
172	10/6/2015 12:15	10/6/2015 12:18	3	Central Region	WV	Rash illness	Undetermined	Attendees 7/12 (AR 58%)	Lab test not done	Daycare	Undetermined
173	10/7/2015 15:30	10/7/2015 15:54	24	Northwest Region	WV	Pertussis	<i>Bordetella pertussis</i>	Confirmed Cases 9 Probable Cases 4	Lab Confirmed	Community	Person to Person
175	10/15/2015 15:15	10/15/2015 15:25	10	Northeast Region	WV	Influenza	Influenza	Residents 17/107 (AR 16%) Staff 2/115 (AR 2%)	Rapid test positive	LTCF	Person to Person
176	10/5/15 11:00 AM	10/2/15 3:45 PM	4035	Southern Region	WV	Hepatitis C	Hepatitis C	One	Confirmed	Outpatient	Undetermined
177	10/22/2015 10:00	10/22/2015 10:21	21	Northwest Region	WV	Shiga Toxin-producing <i>Escherichia coli</i> Gastroenteritis	Shiga Toxin-producing <i>Escherichia coli</i> (STEC)	Attendees 2/31 (AR 6%) Staff 2/40 (AR 5%)	Lab Confirmed	Other	Person to Person
178	10/23/2015 14:15	10/23/2015 14:40	25	Northeast Region	WV	Rhinovirus Respiratory Illness	Rhinovirus/Enterovirus	Residents 12/87 (AR 14%) Staff 12/80 (AR 15%)	Lab Confirmed	LTCF	Person to Person
179	10/21/2015 0:00	10/20/2015 0:00	1440	Multiple	CDC	Salmonellosis	<i>Salmonella Javiana</i>	Cases 56 nationwide including 1 in West Virginia	Lab Confirmed	Community	Undetermined
180	Missing	Missing		Multiple	CDC	Salmonellosis	<i>Salmonella Javiana</i>	Cases 67 nationwide including 4 in West Virginia	Lab Confirmed	Community	Undetermined
181	10/27/2015 11:00	10/27/2015 11:25	25	Western Region	WV	Acute Gastroenteritis	Undetermined	Residents 19/160 (AR 12%) Staff 27	Lab test not done	LTCF	Person to Person
182	10/29/2015 9:53	10/29/2015 10:20	27	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Residents 33/134 (AR 25%) Staff 39/175 (AR 22%)	Lab test negative or noncontributory	LTCF	Person to Person
183	10/30/2015 8:30	10/30/2015 1:00	450	Northwest Region	WV	Scabies	<i>Sarcoptes scabiei</i>	Residents 14/109 (AR 14%) Staff 18/140 (AR 13%)	Lab Confirmed	LTCF	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
184	11/6/2015 10:30	11/6/2015 10:45	15	Northwest Region	WV	Rhinovirus Respiratory Illness	Rhinovirus/Enterovirus	Resident 24/98 (AR 24%) Staff 3/182 (AR 2%)	Lab Confirmed	LTCF	Person to Person
185	11/6/2015 16:00	11/6/2015 16:08	8	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 18/61 (AR 29%) Staff 2/96 (AR 2%)	Lab test not done	LTCF	Person to Person
186	11/10/2015 11:12	11/10/2015 11:40	28	Northwest Region	WV	Acute Respiratory Illness	Undetermined	Residents 13/61 (AR 21%)	Lab test negative or noncontributory	LTCF	Person to Person
187	11/10/2015 14:40	11/10/2015 4 14:48	5255-92	Southern Region	WV	Hand Foot & Mouth Disease	Undetermined	Students 7/180 (AR 4%)	Lab test not done	School	Person to Person
188	11/17/2015 9:00	11/17/2015 9:17	17	Central Region	WV	Hand Foot & Mouth Disease	Undetermined	Attendees 6/125 (AR 5%)	Lab test not done	Daycare	Person to Person
189	11/18/2015 9:15	11/18/2015 9:35	20	Central Region	WV	Scabies	Undetermined	Residents 20/72 (AR 28%) Staff 8/84 (AR 10%)	Lab test negative or noncontributory	LTCF	Person to Person
190	11/18/2015 11:45	11/18/2015 12:00	15	Northeast Region	WV	Acute Respiratory Illness	Undetermined	Residents 5/29 (AR 17%)	Lab test negative or noncontributory	LTCF	Person to Person
191	11/18/2015 15:15	11/18/2015 14:30	45	Northeast Region	WV	Hand Foot & Mouth Disease	Undetermined	Attendees 7/16 (AR 44%)	Lab test not done	Daycare	Person to Person
192	11/16/2015 16:00	11/18/2015 15:30	2850	Southern Region	WV	Scabies	Undetermined	Inmates 13/437 (AR 3%)	Lab test not done	Correctional Facility	Person to Person
193	11/19/2015 11:00	11/19/2015 11:15	15	Eastern Region	WV	Scabies	Undetermined	Students 4/406 (AR 1%)	Lab test not done	School	Person to Person
194	11/23/2015 9:00	11/23/2015 9:40	40	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Church Attendees 7	Lab test negative or noncontributory	Community	Point Source
195	11/23/2015 15:30	11/23/2015 15:55	25	Central Region	WV	Scabies	Undetermined	Patients 3/32 (AR 9%) Staff 3/120 (AR 3%)	Lab test not done	Hospital	Person to Person

Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
196	12/2/2015 10:30	12/2/2015 11:15	45	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 1/56 (AR 2%) Staff 11/98 (AR 11%)	Lab test not done	LTCF	Person to Person
198	12/4/2015 15:00	12/4/2015 15:00	0	Northwest Region	WV	Acute Respiratory Illness	Rhinovirus	Cases 46	Lab Confirmed	Community	Person to Person
199	12/9/2015 15:50	12/9/2015 16:00	10	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Residents 31/83 (AR 37%) Staff 23/80 (AR 29%)	Lab test not done	LTCF	Person to Person
200	12/14/201 5 9:00	12/15/201 5 9:15	1455	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Students 33/319 (AR 10%) Staff 10/30 (AR 33%)	Lab test not done	School	Person to Person
201	12/15/201 5 12:00	12/16/201 5 16:00	1680	Northwest Region	WV	Acute Gastroenteritis	Undetermined	Residents 15/109 (AR 14%) Staff 17/140 (AR 12%)	Lab test not done	LTCF	Person to Person
202	12/18/201 5 9:10	12/18/201 5 9:20	10	Northwest Region	WV	<i>Clostridium perfringens</i> Gastroenteritis	<i>Clostridium perfringens</i>	~150	Lab Confirmed	Correctional Facility	Point Source
203	12/21/201 5 14:30	12/21/201 5 14:53	23	Southern Region	WV	Acute Gastroenteritis	Undetermined	Residents 18/51 (AR 35%) Staff 12/80 (AR 15%)	Lab test not done	LTCF	Person to Person
204	12/23/201 5 12:00	12/24/201 5 9:35	1295	Eastern Region	WV	Scabies	Undetermined	Residents 1/68 (1%) Staff 1/86 (1%)	Lab test not done	LTCF	Person to Person
205	12/28/201 5 10:00	12/28/201 5 10:15	15	Northeast Region	WV	Acute Gastroenteritis	Undetermined	Residents 11/34 (AR 32%) Staff 5/28 (AR 18%)	Lab test not done	LTCF	Person to Person
206	12/28/201 5 10:00	12/28/201 5 9:20	40	Western Region	WV	Acute gastroenteritis	Undetermined	Cases 7	Lab test not done	Community	Undetermined
207	12/29/201 5 9:43	12/29/201 5 10:00	17	Northwest Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 41/67 (AR 61%) Staff 26/86 (AR 27%)	Lab Confirmed	LTCF	Person to Person



Outbreak Number	Date & Time Reported to LHD	Date & Time Reported to State	Elapsed Time in Minutes	Region	Jurisdiction	Clinical Diagnosis	Etiologic	Final Case Count	Labs	Transmission	Modes of Transmission or Source of Illness
208	12/29/2015 14:15	12/29/2015 14:45	30	Southern Region	WV	Norovirus Gastroenteritis	Norovirus G II	Residents 12/24 (AR 50%) Staff 6/36 (AR 17%)	Lab Confirmed	LTCF	Person to Person
210	12/30/2015 8:30	12/30/2015 8:45	15	Southern Region	WV	Acute Respiratory Illness	Undetermined	Residents 4/51 (AR 8%)	Lab test negative or noncontributory	LTCF	Person to Person