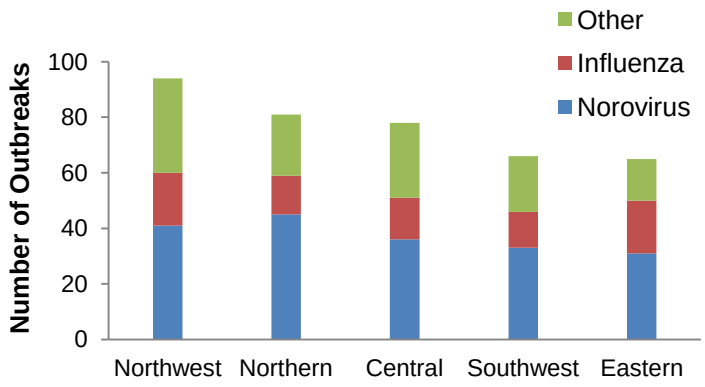
Outbreaks

Introduction

In 2013, a total of 396 outbreaks were reported to the Virginia Department of Health (VDH). Approximately two-thirds of the outbreaks (267, 67%) were suspected or confirmed to be caused by norovirus (187, 47%) or influenza (80, 20%). Other etiologic agents were suspected or confirmed to contribute to the remaining outbreaks (129, 33%).

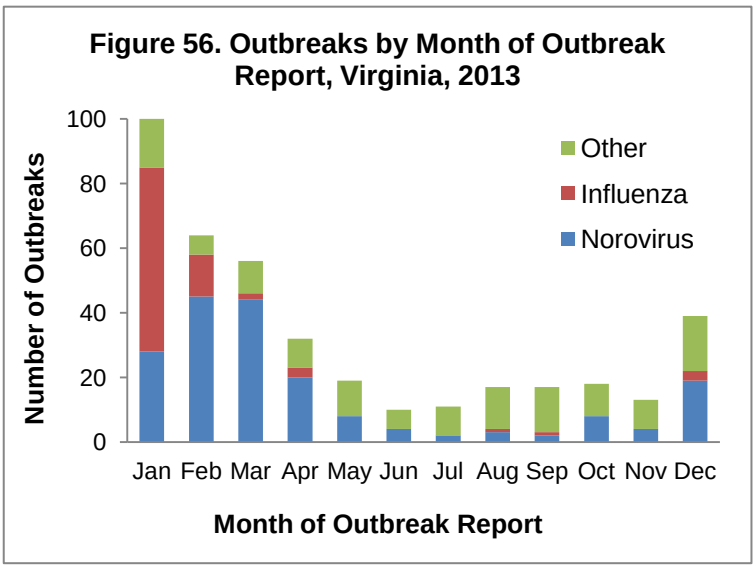
Geographically, 94 outbreaks (24%) were reported from the northwest health planning region, followed in frequency by the northern region (81 outbreaks, 20%), central region (78 outbreaks, 20%), southwest region (66 outbreaks, 17%), and eastern region (65 outbreaks, 16%) (Figure 55). In addition, the VDH Central Office led investigations in 10 multi-state or multi-jurisdictional outbreaks (3%) and other states led the investigation in two out-of-state outbreaks in which VDH provided assistance.

Figure 55. Outbreaks by Health Planning Region, Virginia, 2013



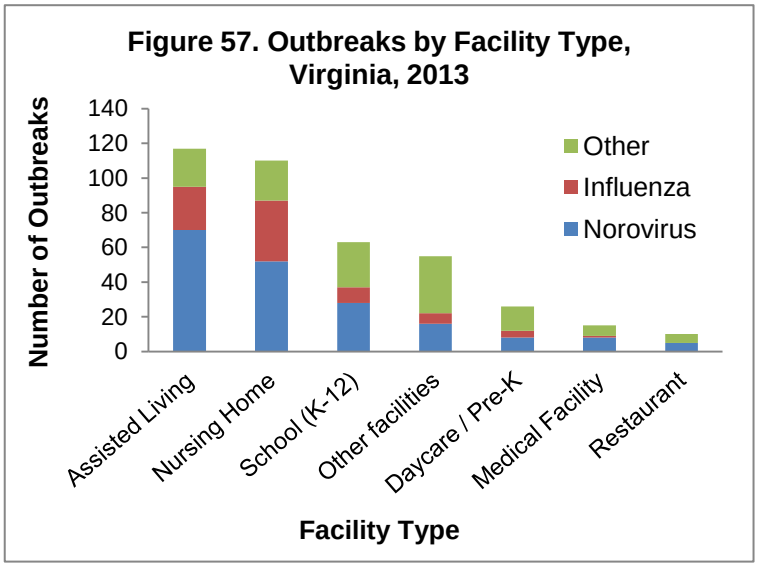
Outbreaks were reported throughout the year in 2013, but more outbreaks were reported in the colder months. Close to three-quarters of outbreaks occurred in January, February, March, April, or December of 2013 (291, 74%). A quarter of outbreaks occurred in January alone (100, 25%). Consistent with previous years, the majority of outbreaks during the colder months were confirmed or suspected to be caused by norovirus and influenza, reflecting the active circulation of these pathogens in colder months (Figure 56).

Figure 56. Outbreaks by Month of Outbreak Report, Virginia, 2013



Assisted living facilities reported the most outbreaks (118, 30%) in 2013, followed by nursing homes (110, 28%), schools (K-12) (63, 16%), and daycare centers (26, 7%). The majority of outbreaks reported from these facilities were confirmed or suspected to be caused by influenza or norovirus. Outbreaks were also reported from medical facilities (15, 4%), restaurants (10, 3%), and other settings, including colleges (6, 2%), correctional facilities (6, 2%), independent living facilities (6, 2%), workplaces

(5, 1%), adult daycare centers (3, 1%), camps (3, 1%), convenience stores (2, 1%), hotels (2, 1%), private homes (2, 1%), and a military base (1, 0.3%) (Figure 57).



The following sections describe norovirus outbreaks that were transmitted through person-to-person contact, influenza outbreaks, outbreaks transmitted through foodborne, waterborne, or zoonotic mechanisms, vaccine-preventable disease outbreaks, outbreaks that occurred in healthcare facilities, and outbreaks related to other types of illnesses.

Person-to-person Norovirus Outbreaks

Norovirus was suspected or confirmed as the cause of nearly half of all outbreaks (187, 47%) that were reported in Virginia in 2013, down from 51% in 2012. Among these 187 outbreaks, 179 were transmitted through person-to-person contact, five through food and one through recreational water exposure. The mode of transmission could not be determined in two outbreaks.

Please see the Foodborne Outbreaks section below for a description of norovirus outbreaks that had a foodborne route of transmission.

The average number of persons who became ill in person-to-person norovirus outbreaks was 37, with a range of 1 to 213. The outbreak with only one ill Virginia resident was part of a larger multi-state investigation (only Virginia cases were counted in outbreaks led by CDC or another state).

Person-to-person norovirus outbreaks were reported from all regions in Virginia in 2013. Overall, the northern area of the state reported close to half of all person-to-person norovirus outbreaks, with 45 outbreaks (25%) reported in the northern region and 37 outbreaks (21%) reported in the northwest region. The central, southwest and eastern regions reported 33 (18%), 32 (18%), and 31 (17%) person-to-person norovirus outbreaks in 2013, respectively.

The most frequent settings for person-to-person norovirus outbreaks were assisted living facilities (68, 38%), nursing homes (52, 29%) and schools (K-12) (27, 15%). Outbreaks from these three settings accounted for the majority (147, 82%) of all person-to-person norovirus outbreaks in 2013. This distribution pattern was similar to that of 2012, in which 39%, 29%, and 17% of person-to-person norovirus outbreaks occurred at assisted living facilities, nursing homes, and schools (K-12), respectively. Person-to-person norovirus outbreaks also occurred in

other types of settings, including daycare facilities (8, 4%), medical facilities (8, 4%), restaurants (3, 2%), adult daycare centers (2, 1%), workplaces (2, 1%), correctional facilities (2, 1%), and independent living facilities (2, 1%). In addition, a college, military base, golf club, and community park each reported one person-to-person norovirus outbreak. One norovirus outbreak was associated with an out-of-state hotel.

Although person-to-person norovirus outbreaks occurred throughout the year in 2013, the majority of these outbreaks occurred in colder months of January (28, 16%), February (44, 25%), March (44, 25%), April (19, 11%), and December (16, 9%).

Norovirus was confirmed by laboratory testing in over half (109, 61%) of the 179 person-to-person norovirus outbreaks. Sequencing analysis was performed for 95 of the 109 confirmed outbreaks, which revealed that norovirus genotype *Sydney* (76, 80%) predominated among all norovirus with sequencing data in 2013. Other strains identified included *Shindlesham* (6, 6%), *Miami* (3, 3%), *Potsdam* (2, 2%), *Beijing* (2, 2%), *Otofuke* (1, 1%), *Ascension* (1, 1%), *VA173* (1, 1%), *Milwaukee* (1, 1%), *Minerva* (1, 1%), and *New Orleans* (1, 1%). Sequencing data were not available for 14 (13%) of the confirmed outbreaks.

In addition to the 179 person-to-person norovirus outbreaks, there were two norovirus outbreaks in 2013 for which the transmission route could not be determined. Both outbreaks occurred in the northwest region and one was associated with a restaurant and the other was associated with a workplace.

Influenza Outbreaks

After norovirus, influenza (80, 20%) was the most common suspected or confirmed etiologic agent responsible for causing outbreaks in Virginia in 2013. An average of 26 people became ill in each influenza outbreak, although the range was 3 to 200 people.

Influenza outbreaks were reported from all regions in Virginia in 2013. The northwest region and the eastern region each had 19 (24%) influenza outbreaks, followed by the central (15, 19%), northern (14, 18%), and southwest (13, 16%) regions. Of note, the northwest region consistently reported more influenza outbreaks than most other regions in both 2012 (28, 28%) and 2013 (19, 24%).

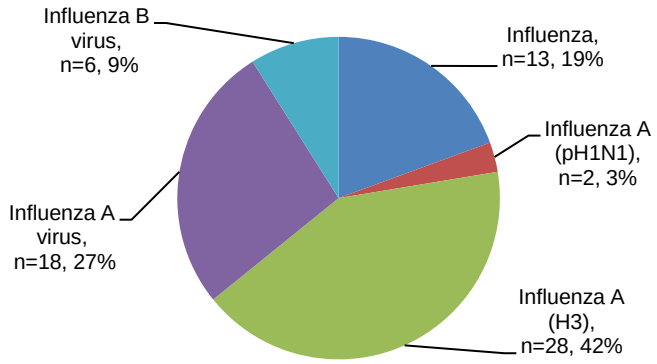
More than three-quarters of influenza outbreaks were reported from nursing home (35, 44%) and assisted living facility (26, 33%) settings in 2013. Schools (K-12) reported 9 (11%) influenza outbreaks in 2013, which was very different from 2012, during which schools (K-12) reported over half of all influenza outbreaks (59, 58%). Influenza outbreaks were also occasionally reported by other facilities, including daycare centers (4, 5%), correctional facilities (2, 3%), independent living facilities (2, 3%), an adult daycare center (1, 1%), and a medical facility (1, 1%).

Close to three-quarters of influenza outbreaks (57, 71%) were reported in January 2013, which was followed by a sharp drop in February (13, 16%). After February, scattered influenza outbreaks were reported in March (2, 3%), April (3, 4%), August (1, 1%), September (1, 1%),

and December (3, 4%). The high number of influenza outbreaks reported in January, 2013 was likely a continuation of active circulation of influenza from December 2012, the month when an abrupt, substantial increase in influenza activity was observed in both outbreaks and sporadic cases. In December 2012 alone, 80 influenza outbreaks were reported, which equals the total number of influenza outbreaks reported in the entire 2013 calendar year.

Among the 80 influenza outbreaks occurring in 2013, 67 (84%) were confirmed by laboratory testing. Influenza A virus predominated (48, 72%). Specifically, among laboratory-confirmed influenza outbreaks, influenza A(H3) was identified in 28 (42%) outbreaks, influenza A (not further specified) was identified in 18 (27%) outbreaks, influenza A (pH1N1) was identified in 2 (3%) outbreaks, and influenza B was identified in 6 (9%) outbreaks. Influenza was identified by rapid test in another 13 (19%) outbreaks but information on the virus subtype was not available (Figure 58).

Figure 58. Strain of Influenza Virus in Confirmed Influenza Outbreaks, Virginia, 2013



For information on influenza outbreaks that occurred in the 2013-2014 influenza season (rather than calendar year 2013, as described above), please see the "Outbreaks" section of the "Influenza" chapter of the annual report.

Foodborne Outbreaks

During 2013, 20 foodborne outbreaks were reported in Virginia. This represents a 38% reduction from the 32 outbreaks reported in 2012, and is similar to the 19 outbreaks reported in 2011 (Table 8). The average number of ill persons per outbreak was 18 and ranged from one to 115 Virginians affected.

The foodborne outbreaks occurred throughout the year, although 9 (45%) had illness onset between April and June. Geographically, five (25%) outbreaks occurred in the central health planning region, followed by four (20%) in the northwest, two (10%) in the northern, one in the eastern (5%), and one (5%) in the southwest regions. The other seven (35%) outbreaks were multi-state outbreaks that involved cases from Virginia and other states.

Thirteen (65%) of the suspected or confirmed etiologic agents were bacterial, five (25%) were viral, and two (10%) were related to other types of agents (one parasite, one chemical). Etiologic agents were confirmed by laboratory testing in 16 of the 20 outbreaks. These confirmed etiologic agents include *Salmonella* (6), norovirus (4), *Escherichia coli (E. coli)* (2), *Campylobacter jejuni* (1), *Staphylococcus aureus* (1), *Vibrio parahaemolyticus* (1), and

Cyclospora (1). In the remaining four outbreaks without laboratory confirmation, *Clostridium perfringens, Bacillus cereus*, norovirus, and histamine (scombroid) were each suspected in one outbreak. Seven outbreaks were multistate (similar to the eight reported in 2012), of which three were attributed to *Salmonella*, two were attributed to *E. coli*, and single outbreaks were attributed to *Cyclospora* and *Vibrio parahaemolyticus*. Most foodborne outbreaks occurred in restaurant (9, 45%) or private home (5, 25%) settings. The remaining outbreak settings included two assisted living facilities, two convenience stores, a college, a school (K-12), and a group residential setting. Contributing factors were identified in eight (40%) of these outbreaks, including cross-contamination of ingredients, glove-hand contact by an infected food handler, foods contaminated by a non-food handler who was suspected to be infectious, storage in a contaminated environment, failure to control food temperature or the length of time food was out of temperature control, improper cold holding or hot holding due to improper procedure or protocol, improper/slow cooling, and insufficient time and/or temperature control during initial cooking/heat processing or during reheating.

Table 8. Foodborne Outbreaks Reported in Virginia, 2013

Onset Date	Health District	Number of Cases	Etiologic Agent	Vehicle	Place Where Outbreak Occurred
12/15/2012	Multi-state	1 VA 14 US	*Salmonella* ser. Javiana	Unknown	Convenience Store
2/11/2013	Multi-state	1 VA 35 US	*Escherichia coli*	Frozen food products	Private Home
2/20/2013	Henrico	115	Norovirus GII.4 Sydney	Unknown	Assisted Living
2/22/2013	Multi-state	3 VA 84 US	*Salmonella* ser. Saintpaul	Cucumbers	Private Home
3/26/2013	Fairfax	15	*Campylobacter*	Crispy roasted chicken, fried rice	Restaurant
4/17/2013	Multi-state	4 VA 574 US*	*Salmonella* ser. Heidelberg	Chicken	Restaurant/ Private Home
4/21/2013	Fairfax	18	*Salmonella*	Unknown	Restaurant
4/26/2013	Multi-state	1 VA 14 US	*Escherichia coli* O157:H7	Prepackaged leafy greens	Private Home
5/10/2013	Chesterfield	6	*Clostridium perfringens* suspected	Unknown	Restaurant
5/13/2013	Lord Fairfax	4	*Staphylococcus aureus*	Pulled pork	Convenience Store
5/14/2013	New River	68	Norovirus GII.4 Sydney	Unknown	Restaurant
5/16/2013	Henrico	35	Norovirus GII.4 Sydney	Sandwiches, feta salad	School (K-12)
6/16/2013	Multi-state	2 VA 30 US	*Vibrio parahaemolyticus*	Raw shellfish	Restaurant
6/30/2013	Multi-state	4 VA 631 US	*Cyclospora*	Fresh produce	Private Home

Table 8. Foodborne Outbreaks Reported in Virginia, 2013 (cont.)

Onset Date	Health District	Number of Cases	Etiologic Agent	Vehicle	Place Where Outbreak Occurred
8/7/2013	Western Tidewater	9	*Salmonella* ser. Newport	Blue crab, gazpacho soup with crab	Restaurant
9/19/2013	Henrico	7	*Bacillus cereus* suspected	Curry chicken, spinach with cheese/cream sauce, rice	Other
11/10/2013	Thomas Jefferson	7	*Salmonella* ser. Typhimurium	Unknown	College / University
11/19/2013	Rappahannock	17	Norovirus suspected	Turkey, stuffing, mashed potatoes	Other
12/6/2013	Henrico	30	Norovirus	Unknown; Food handler implicated	Assisted Living
12/9/2013	Thomas Jefferson	3	Histamine (scombroid) suspected	Tuna melt sandwich	Restaurant

***This investigation is ongoing; new cases continue to be added. Count is current as of 5/27/2014.**

Outbreak spotlight: Vibrio parahaemolyticus

In 2013, two outbreaks caused by *Vibrio parahaemolyticus* were reported to VDH. One involved two Virginia cases and the other involved only out-of-state cases (it was not counted as a Virginia outbreak). The outbreak with two Virginia cases affected a total of five states including Virginia. Oyster consumption was believed to be the contributing factor for this outbreak because it was the common exposure among the cases. The genetic pattern of the *Vibrio parahaemolyticus* identified in this outbreak appeared to be the same as the one seen in a 2012 *Vibrio* outbreak in the country.

In the other outbreak that did not involve Virginia cases, illness caused by *Vibrio parahaemolyticus* was identified in four out-of-state residents. This outbreak involved raw shellfish that came from a growing site located in Virginia and as a result, the site was closed for several months. In this outbreak, VDH was involved in assessing conditions of the site such as changes in temperatures, and recommended vibriosis control measures, which included harvest restrictions (i.e., harvesting could only occur during a certain time of the day) and temperature control for harvested oysters (i.e., stored at less than 55 degrees within 5 hours of harvesting).

Healthcare-Associated Outbreaks

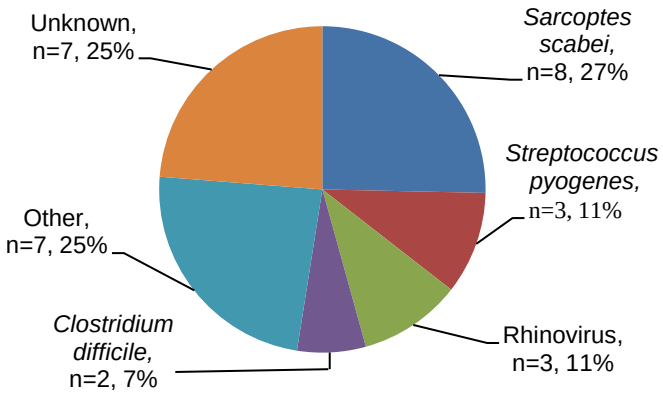
A healthcare-associated outbreak is a group of illnesses with a common etiology among patients, residents, or staff in a healthcare setting (e.g., hospital, medical center, nursing home, physician's office, dialysis center, or other healthcare facility), where the illness is associated with that

setting. Note that prior to 2008, only outbreaks that occurred in hospitals and nursing homes (facilities meeting the definition of a medical care facility in 12VAC5-90-10) were included in these statistics.

During 2013, 30 healthcare-associated outbreaks with suspected or confirmed etiologic agents other than norovirus or influenza were reported in Virginia. This is similar to the 28 non-norovirus, non-influenza outbreaks reported from healthcare facilities in 2012. The average number of ill persons per healthcare-associated outbreak in 2013 was 16, and ranged from two to 76. The majority of healthcare-associated outbreaks occurred in nursing homes (24, 80%) and the remaining events (6, 20%) occurred in medical facilities, including hospitals and physicians' offices. The majority of the healthcare-associated outbreaks (27, 90%) were attributed to person-to-person transmission. Route of transmission could not be determined in three outbreaks (10%)

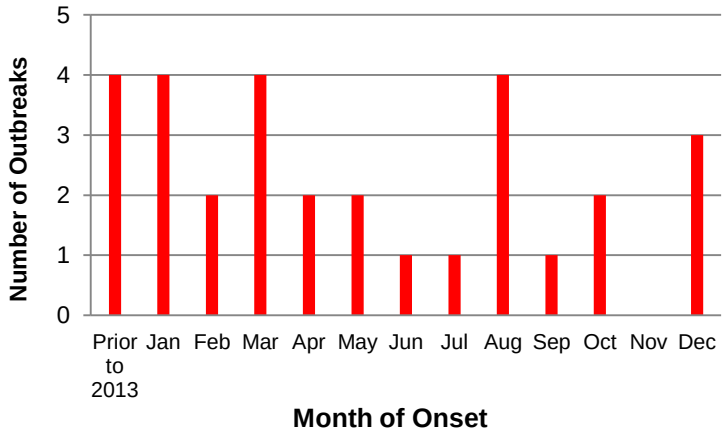
Etiologic agents were confirmed in half of the outbreaks (15), suspected in 27% (8) and unknown in 23% (7). *Sarcoptes scabei* (scabies) (8, 27%), *Streptococcus pyogenes* (3, 10%), rhinovirus (3, 10%), and *Clostridium difficile* (2, 7%) were each suspected or confirmed in multiple outbreaks. *Aeromonas hydrophila,* metapneumovirus, *Mycoplasma pneumoniae*, respiratory syncytial virus, rotavirus, sapovirus, and methicillin-resistant *Staphylococcus aureus* were each responsible for one outbreak (Figure 59). The eight scabies outbreaks reported from healthcare facilities is an increase from the three reported in 2012. The three outbreaks associated with *Streptococcus pyogenes* involved invasive disease. Two outbreaks occurred in nursing homes and one occurred in a medical facility

Figure 59. Healthcare-Associated Outbreaks: Etiologic Agent Confirmed or Suspected, Virginia, 2013



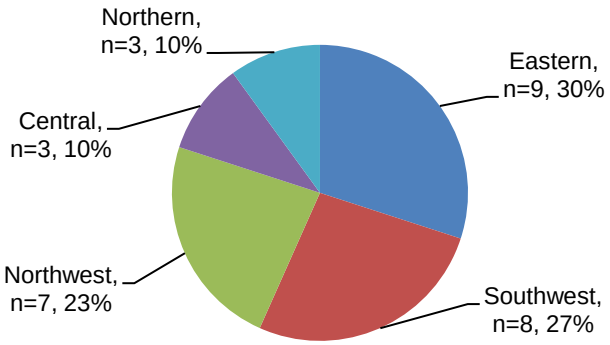
Although healthcare-associated outbreaks were reported throughout the year, 43% (13) of the outbreaks had onsets during the colder months of December, January, February, and March. Four (13%) healthcare-associated outbreaks had illness onset in the month of August (Figure 60).

Figure 60. Healthcare-Associated Outbreaks: Month of Onset, Virginia, 2013



In 2013, healthcare-associated outbreaks were reported most frequently from the eastern (9, 30%), southwest (8, 27%), and northwest (7, 23%) health planning regions. The central and northern regions each reported three outbreaks (10%) (Figure 61). This geographical distribution varied from 2012, when the central region reported 13 outbreaks and only three outbreaks were reported from the northwest region.

Figure 61. Healthcare-Associated Outbreaks: Region of Occurrence, Virginia, 2013



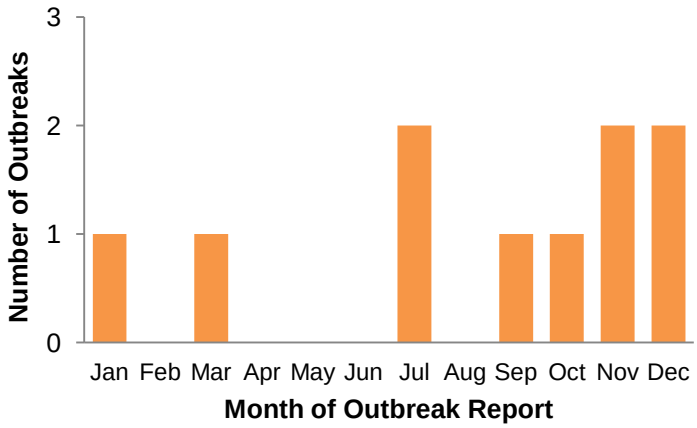
Vaccine-Preventable Disease Outbreaks

During 2013, a total of 14 vaccine-preventable disease outbreaks were reported. This is fewer than occurred in 2012, when 22 outbreaks were reported. Of these 14 outbreaks, 10 were related to pertussis, two related to mumps, and another two related to varicella (chickenpox).

All 10 of the pertussis outbreaks reported in 2013 were confirmed by laboratory testing. The average number of ill persons per outbreak was five, with a range from two to 13. Nine of the 10 pertussis outbreaks (90%) occurred in schools and the remaining one (10%) was associated with a church.

Pertussis outbreaks were reported during seven months in 2013 and the majority of these outbreaks were reported in the second half of the year (8, 80%) (Figure 62). The temporal trend of pertussis outbreaks in 2013 was different from that of 2012. In 2012, April and May each had four pertussis outbreaks reported, which represented nearly half of all pertussis outbreaks (8, 47%) that year.

Figure 62. Pertussis Outbreaks: Month of Onset, Virginia, 2013



The northern area of the state had substantially more pertussis outbreaks (8, 80%) than the other areas in 2013. The northern health planning region and the northwest region each had four pertussis outbreaks. The central region and the southwest region each had one pertussis outbreak, while the eastern region had no pertussis outbreaks in 2013.

Two chickenpox outbreaks were reported in 2013. One occurred in a school in May in the southwest region and was confirmed by laboratory testing. The other occurred in a daycare center in November in the northwest region and was not confirmed. Eighteen students were affected in the school outbreak and seven children were affected in the daycare outbreak.

Lack of compliance with the recommended immunization schedule contributed to these outbreaks. For the 10 pertussis outbreaks, up-to-date immunizations were reported among all case-patients in only half of the outbreaks. The other five outbreaks affected persons who were either unvaccinated or had not received all recommended doses of vaccine. No other outbreaks caused by vaccine-preventable diseases such as measles, rubella, or *Haemophilus influenzae* type B were reported in 2013.

Outbreak spotlight: mumps outbreaks

Two mumps outbreaks were reported in 2013, compared to none in 2012. Both outbreaks occurred in college settings between March and May 2013 but they were not epidemiologically linked. The first outbreak occurred in a college in the central region. The index case-patient was likely a student who developed signs and symptoms consistent with mumps after traveling abroad and was later confirmed by laboratory testing. Additional cases of mumps were identified afterward, resulting in a campus-wide outbreak. Clustering of mumps cases was identified in one fraternity and one athletic team. At the end of the outbreak, a total of 45 confirmed, 23 probable and 16 suspect mumps cases were identified. For this outbreak, a mass vaccination clinic was set up and vaccinations were provided to 441 college students and employees. In addition to mass vaccination, the college established isolation units on campus with meal service for symptomatic students.

Concurrently, another mumps outbreak occurred in a college in the northwest region. In this outbreak, 12 confirmed and 7 suspected cases were identified. The investigation indicated that the infections primarily occurred among attendees of events or parties sponsored by campus sorority and fraternity organizations. Shared drinks and close proximity to others were possible ways that the virus was transmitted. Similar to the central region mumps outbreak, post-exposure vaccination was provided and isolation was recommended for symptomatic students.

Waterborne Outbreaks

Three waterborne outbreaks were reported in 2013 (Table 9), compared to two outbreaks reported in 2012. All of the outbreaks occurred between May and August and were thought to be caused by ingesting contaminated water. Two outbreaks occurred in the northwest region and the other occurred in the central region. Parasitic, bacterial, and viral agents were each implicated in an outbreak.

One of the waterborne outbreaks was suspected to be caused by norovirus and affected seven individuals who were thought to have ingested water while swimming in a quarry. The other two waterborne outbreaks both occurred in camp settings. In one of the camp outbreaks, *E. coli* was confirmed in five campers who were exposed to an untreated recreational water source. In the other waterborne outbreak at a camp, improper filtration/purification of drinking water was likely responsible for causing four cases of gastrointestinal illness due to *Giardia lamblia*.

Table 9. Waterborne Outbreaks Reported in Virginia, 2013

Onset Date	Health District	Number of Cases	Etiologic Agent	Suspected Vehicle	Place Where Outbreak Occurred
5/23/2013	Thomas Jefferson	7	Norovirus suspected	Water not intended for drinking	Quarry
6/21/2013	Thomas Jefferson	5	*E. coli* O157:H7	Recreational water - untreated	Camp
8/3/2013	Chesterfield	4	*Giardia lamblia*	Water intended for drinking	Out-of-state camp

Outbreak spotlight: *Cryptosporidium at a Virginia ranch affecting out-of-state residents*

In 2013, a waterborne outbreak caused by *Cryptosporidium* occurred at a Virginia ranch and affected 19 out-of-state residents who were camping on the property. Because Virginia residents were not affected, the outbreak was not included in the statistics presented in this report. Multiple exposure sources were identified, including drinking water, untreated recreational water sources, and other types of water, but the exact cause of illness could not be determined. The investigation indicated that a well water supply with apparent fecal contamination, lack of appropriate hand hygiene, and potentially hazardous food preparation and handling likely contributed to this outbreak.

Zoonotic Outbreaks

In 2013, four zoonotic outbreaks were reported that involved residents of Virginia. All occurred in private home settings. Three of the four outbreaks involved live poultry and were caused by *Salmonella*. Two of these live poultry-related outbreaks involved multiple states. The other outbreak was due to *Streptococcus equi* and was associated with exposure to guinea pigs. The number of Virginia cases in these outbreaks ranged from two to seven (Table 10).

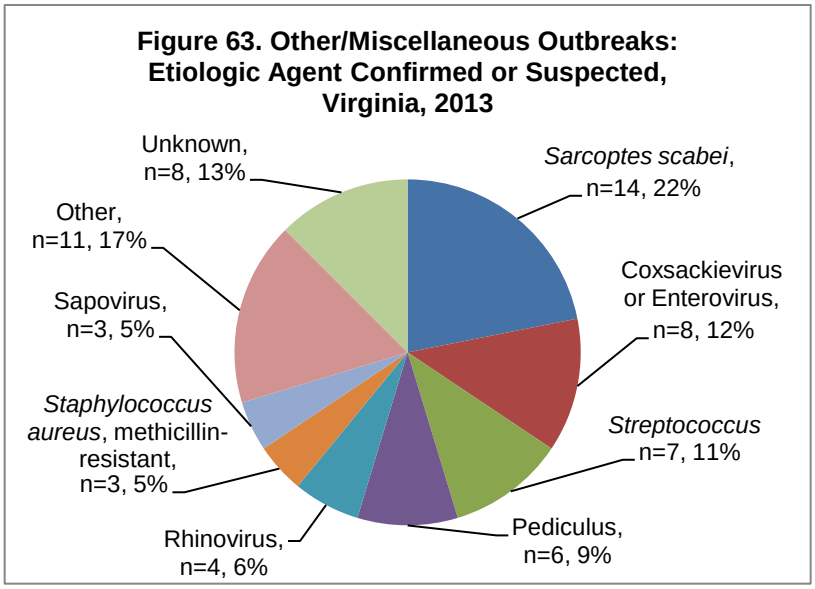
Table 10. Zoonotic Outbreaks Reported in Virginia, 2013

Onset Date	Health District	Number of Cases	Etiologic Agent	Vehicle	Place Where Outbreak Occurred
1/29/2013	Multi-state	5 VA 514 US*	*Salmonella*	Live Poultry	Private Home
2/15/2013	Multi-state	7 VA 53 US	*Salmonella* ser. Braenderup	Live Poultry	Private Home
2/19/2013	Multi-jurisdiction	2	*Streptococcus equi*	Guinea Pigs	Private Home
3/22/2013	Multi-jurisdiction	3	*Salmonella* ser. Braenderup	Live Poultry	Private Home

**Salmonella* serotypes that were part of this outbreak nationally included Infantis, Lille, Mbandaka, Newport, and Typhimurium

Other Outbreaks

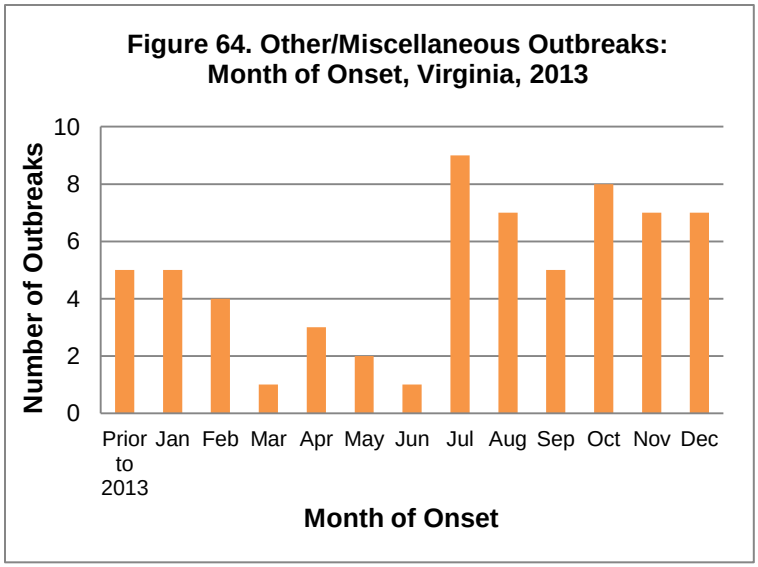
In addition to the norovirus, influenza, foodborne, healthcare-associated, vaccine-preventable, waterborne, and zoonotic disease outbreaks discussed above, 64 other outbreaks were reported in Virginia in 2013, which was a 14% increase compared to the 56 outbreaks reported in 2012. The average number of ill persons per outbreak was 14, and ranged from two to 95. As in previous years, the majority of these outbreaks (60, 94%) were attributed to person-to-person transmission. Three outbreaks (5%) were attributed to unknown transmission routes and the remaining outbreak (2%) had an environmental route of transmission.



The most frequent causes of outbreaks reported from other settings were confirmed or suspected to be *Sarcoptes scabei* (14 outbreaks, 22%) or the Enterovirus group of viruses, including coxsackievirus (8 outbreaks, 12%). The remaining 42 outbreaks were suspected or confirmed to be caused by a variety of etiologic agents (Figure 63). Seven were caused by *Streptococcus* (confirmed in four and suspected in three). One of the seven *Streptococcus* outbreaks caused both invasive and non-invasive *Streptococcus pyogenes* (Group A) illness among residents in an assisted living facility. The remaining six *Streptococcus* outbreaks caused non-invasive respiratory or rash illnesses in school, daycare or private home settings. Six outbreaks were suspected to be caused by pediculus (head lice), four were respiratory illnesses confirmed to be rhinovirus, three were non-invasive rash illnesses confirmed to be methicillin-resistant *Staphylococcus aureus,* and three were gastrointestinal illnesses confirmed to be sapovirus. Other outbreaks included two clusters of viral conjunctivitis, two rash illnesses suspected to be human parvovirus B19, and two respiratory illnesses with one suspected and one confirmed to be respiratory syncytial virus. In addition, single outbreaks were confirmed to be rash caused by bed bugs, respiratory illness caused by metapneumovirus, gastrointestinal illness caused by rotavirus, and gastrointestinal illness caused by *Salmonella* ser. Typhimurium. One remaining outbreak was suspected to be *Tinea corporis* (ringworm). The etiologic agent was unknown in four respiratory illness outbreaks, three gastrointestinal illness outbreaks, and one conjunctivitis outbreak.

Overall, the most common settings for these 64 outbreaks were assisted living facilities (21, 33%), schools (K-12) (16, 25%), and daycare/pre-K facilities (13, 20%). In addition, two (3%) outbreaks occurred in each of the following settings: colleges, correctional facilities, independent living facilities, and private homes. Outbreaks were also reported from a workplace, campground, convenience store, hotel, farm, and group residential facility.

Although these outbreaks occurred throughout the year, two-thirds (43) of the outbreaks had illness onset in the second half of the year, between July and December (Figure 64).



Regionally, outbreaks occurred throughout the state, with the largest proportions in the central (19, 30%) and southwest (14, 22%) health planning regions, followed by the northern (13, 20%), northwest (13, 20%), and eastern (5, 8%) regions.

Outbreak spotlight: Scabies

Scabies is a disease of the skin caused by the *Sarcoptes scabei* mite. Scabies mites burrow into the skin, producing pimple-like irritations or burrows. This is called an "infestation". The mites are usually spread from one person to another by direct skin-to-skin contact. Items in the environment such as clothing or bedding may also contribute to the spread of the mites if those items have been contaminated by an infested person immediately before use by another person. In 2013, fourteen (22%) of the 64 outbreaks in other settings were suspected or confirmed to be due to scabies. This was a 133% increase from the 6 outbreaks reported in 2012. The scabies outbreaks from 2013 occurred in a variety of settings including assisted living facilities (9, 64%) and correctional facilities (2, 14%). Individual outbreaks also occurred in a college, a daycare center and a group residential facility.

Outbreak spotlight: Hand, foot, and mouth disease

In 2013, seven (11%) of the 64 other outbreaks were outbreaks of hand, foot, and mouth (HFM) disease, a viral illness that can cause fever, blister-like sores in the mouth, and a skin rash. This is a 41% decrease from the 17 HFM outbreaks reported in 2012. HFM disease usually affects infants and children younger than 5 years of age, but can sometimes occur in adults. HFM disease is caused by the Enterovirus group of viruses, which includes polioviruses, coxsackieviruses, echoviruses, and enteroviruses. None of the seven HFM outbreaks in 2013 was confirmed by laboratory testing. Almost all of the HFM disease outbreaks occurred in daycare facilities (6, 86%), and the other occurred in a school (K-12).