

## Georgia Infectious Disease Outbreaks – Annual Summary 2009

### 2009 Georgia Outbreaks

Outbreaks or clusters of illnesses are dynamic events that may involve a variety of etiologies, settings, and populations. In 2009, 238 events were investigated by Division of Public Health epidemiologists. Of these, 121 (51%) were considered confirmed Georgia outbreaks defined as epidemiologically-linked cases with a known Georgia exposure. One hundred seven (88%) of confirmed outbreaks were laboratory-confirmed.

The most common etiology of confirmed Georgia outbreaks was influenza with 62 (51%) reported outbreaks, followed by Norovirus with 36 (30%) (Figure 1). The majority of outbreaks (88 outbreaks, 73%) were transmitted person-to-person. These outbreaks were largely due to influenza (70%) and norovirus (23%). Because this year was dominated by the 2009 pandemic influenza H1N1 virus, these data are expected.

Food was the probable vehicle in 11 (9%) outbreaks; 11 (100%) of the foodborne outbreaks were laboratory-confirmed (Figure 2). Thirty-three (14%) of the 238 reported events were defined as cluster investigations (laboratory or disease-linked cases without a known epidemiologic association). Eight (24%) of the 33 cluster investigations were confirmed Georgia outbreaks. Twenty-seven (82%) of these clusters were detected through laboratory data with 22 (81%) clusters identified by CDC's PulseNet.

The national clusters in 2009 differed from those in previous years by the contaminated items associated with illness. Unlike the jalapeno and peanut butter-associated outbreaks in the past, 2009 clusters implicated more non-traditional items, like aquatic frogs and crushed red pepper. Clusters are detected, reported, and investigated using the same steps as outbreak investigations, but require diligent communication and collaboration because of possible federal, state, and local jurisdiction involvement. As our population becomes more fluid and our food supply more global, relationships among food safety agencies and Public Health will be vital to preventing and minimizing foodborne disease outbreaks.

### Outbreaks and Clusters

An outbreak of disease is more cases of disease in a time and place than expected. Outbreaks are often reported by healthcare providers, including primary care physicians, hospital infection control practitioners, school nurses, and nursing home administrators or the general public. In an outbreak, common exposures within a certain group of people are often known, for example, being in the same restaurant at the same time, but we may not know the etiology of their symptoms, the causative factor, or the mode of transmission.

A cluster is a group of cases in a certain place and time *suspected* to be greater than expected. Often, the clusters investigated in Georgia are detected by laboratory testing. Because of this, the etiological agent is often known at the start of the investigation, but the commonalities between cases and their exposures are unknown. Clusters are often reported by laboratories, including hospital labs, the state public health lab, or the national public health lab system, PulseNet.

Laboratory data such as etiology, serotype, and pulse field gel electrophoresis (PFGE) patterns are available to Public Health epidemiologists through the Georgia Public Health Laboratory (GPHL) and notifiable disease reporting. GPHL performs PFGE testing on Salmonella, Shigella, Listeria, and E.coli isolates tested and uploads those patterns to a shared national database called PulseNet. All 50 state public health departments participate in PulseNet as well as the US Department of Agriculture (USDA) and the Food and Drug Administration (FDA). PulseNet is a surveillance network made up of state and local public health Laboratories and federal food regulatory agency laboratories that performs DNA fingerprinting on bacteria.

### **How was 2009 different for outbreaks?**

In 2009, the public health world was dominated by one thing: the 2009 influenza H1N1 pandemic. Georgia reported its first case of 2009 H1N1 influenza in April and its first outbreak shortly after in May. Case counts and public concern seemed to only increase from there. Georgia outbreaks of 2009 H1N1 occurred in a variety of venues, but were predominantly reported in schools and summer camps. Nineteen outbreaks of 2009 H1N1 were reported in summer camps in Georgia in 2009. In contrast, there were 0 influenza outbreaks reported in summer camps from all historical Georgia outbreak data from 2001 through 2008.

Norovirus also changed somewhat in 2009. A new strain of norovirus increased in prevalence in outbreaks across the country (Lembke and Cartwright 2010), possibly increasing the number of outbreaks due to norovirus in many states. In Georgia, we did not experience an increase in norovirus-associated outbreaks in the 2009-2010 season (Figure 2).

### **Multi-State Clusters – Salami and Pepper**

In December 2009, PulseNet and CDC epidemiologists notified Georgia Division of Public Health Epidemiologists of a cluster of Salmonella Montevideo infections that were concentrated mostly in the Western US. At the time, Georgia had one case that matched the cluster PFGE pattern. Montevideo is one of the top ten most common serotypes of Salmonella across the country and in Georgia. Over the last 3 years, Salmonella Montevideo has made up over 4% of reported Salmonella infections in Georgia, ranking about 5<sup>th</sup> or 6<sup>th</sup> in our reported Salmonella cases annually. The PFGE pattern associated with this cluster was the most common Montevideo pattern across the country, although in Georgia it is not as common and makes up, on average, close to 3% of Montevideo isolates annually.

State and CDC epidemiologists continued to investigate this cluster through December and into January developing very few potential food items of interest. In mid January, Washington State began compiling receipts from cases who all shopped at Costco using the cases' Costco membership numbers with their consent. They found a particular variety pack of gourmet salami products in common among many of their cases. Shortly after, CDC lead an epidemiologic case-control study comparing what ill and well people ate in the week before the ill got sick. That study showed ill people were significantly more likely than well to report eating salami before becoming ill – 58% of ill versus 16% of well.

After that case-control study, Daniele International Inc., the company that made the salami variety pack sold at Costco, recalled many of their salami items. These recalls included items that were made with black pepper, which was added after the lethality step in the production

process. The Rhode Island Department of Public Health performed testing on black and red pepper samples from the Daniele plant finding the outbreak strain of Salmonella Montevideo in each of them.

After the testing by Rhode Island, FDA began a traceback of the black and red pepper used at Daniele. They found two companies had supplied those peppers to Daniele and each of those companies, Wholesome Spice and Mincing Overseas Spice Company, issued recalls in late February and early March, respectively. Recalls of products associated with these three companies, Daniele, Wholesome, and Mincing, continued on through the end of March.

This outbreak was difficult for all epidemiologists involved for several reasons:

- The prevalence of this Salmonella Montevideo pattern created an outbreak where a sizable percent of PFGE matches were not outbreak-associated, but instead expected cases with this pattern at this time. This high background prevalence of disease made it difficult to tease out outbreak-associated exposures among cases.
- Even though salami was implicated in the end, many cases did not report eating salami in hypothesis-generating questionnaires.
- Costco membership card numbers were an essential part of this investigation, without which the investigation may not have moved forward as quickly as it did. Comparing purchased items among cases provided an invaluable tool, especially for this particular food item.
- Two regulatory agencies were involved in this investigation: USDA-FSIS and FDA. USDA-FSIS regulated meat found in the salami and FDA regulated spices, which regulates black and red pepper.

The outbreak concluded with 272 cases (3 GA) in 44 states and the District of Columbia. In the end, this investigation was successful because all federal, state, and local epidemiologists worked together to continue hypothesis-generation even when it seemed futile. The work with Costco also proved invaluable and our regulatory partners, USDA-FSIS and FDA, worked quickly with the companies to present information required to remove product from the marketplace. Going forward, FDA has promised increased surveillance on international spices, such as pepper, coming into the US marketplace.

#### Reference

Lembke B, Cartwright C. 2010, "Increasing Prevalence of Norovirus GII.12 in the United States, 2009-10", *Clinical Virology Symposium*, Daytona Beach, Florida, Session III, Session ID: T55.

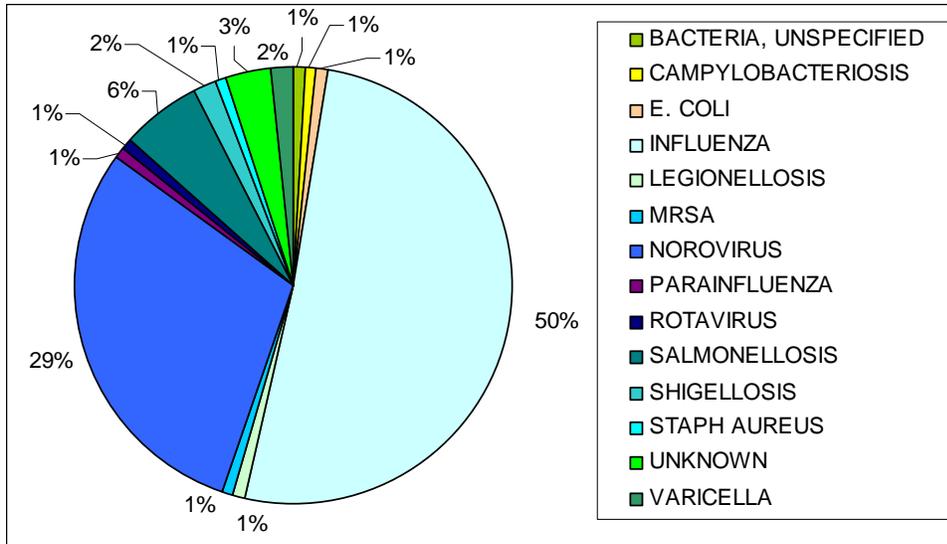


Figure 1. Etiologies of Confirmed Georgia Outbreaks, 2009, Georgia

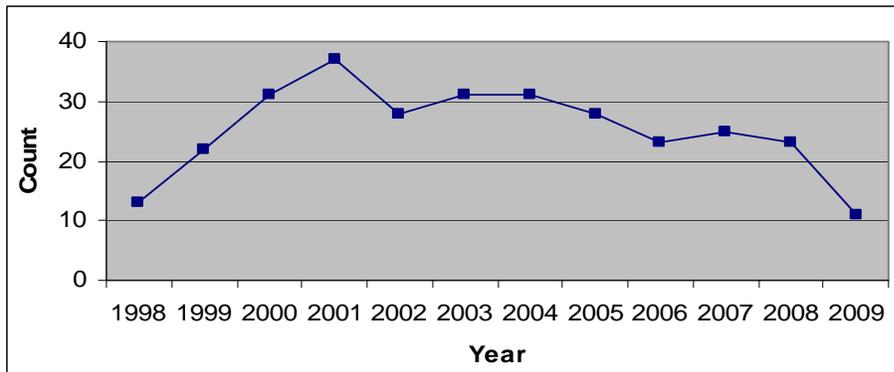


Figure 2. Confirmed Foodborne Outbreaks, 1998-2009, Georgia

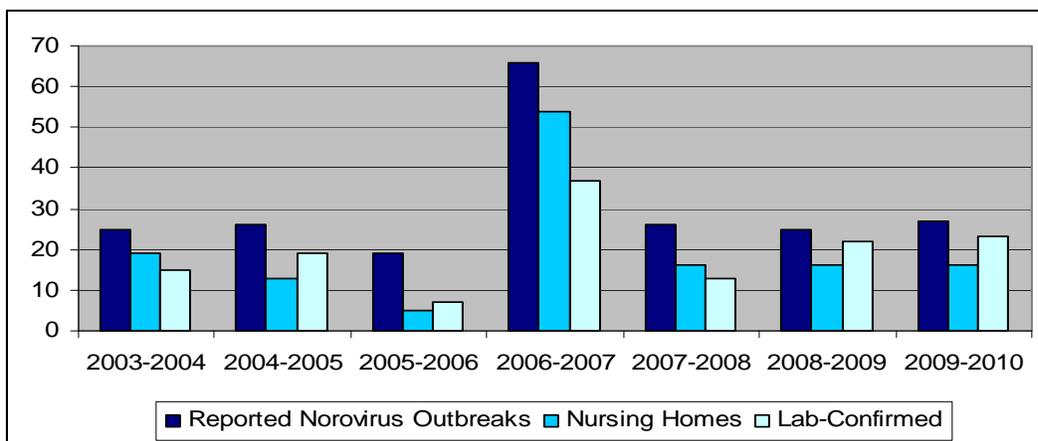


Figure 3. Reported Norovirus Outbreaks by Season, November – February, 2003-2010, Georgia

	Confirmed Outbreaks		Lab Confirmed		Foodborne		Norovirus	
	2008	2009	2008	2009	2008	2009	2008	2009
<b>Albany (8-2)</b>	8	8	5	8	1	1	4	5
<b>Athens (10-0)</b>	2	2	2	2	1	0	2	2
<b>Atlanta (3-2)</b>	11	10	5	5	4	0	8	5
<b>Columbus (7-0)</b>	10	37	7	31	0	0	6	3
<b>Dalton (1-2)</b>	6	1	3	1	1	0	3	0
<b>Decatur (3-5)</b>	13	3	6	3	3	0	7	1
<b>Dublin (5-1)</b>	4	2	3	2	0	0	1	1
<b>Forest Park (3-3)</b>	0	1	0	1	0	1	0	0
<b>Gainesville (2-0)</b>	2	8	0	8	0	0	1	0
<b>La Grange (4-0)</b>	3	5	2	4	0	1	1	2
<b>Lawrenceville (3-4)</b>	10	8	10	8	7	2	6	8
<b>Macon (5-2)</b>	6	2	5	2	0	0	6	1
<b>Marietta (3-1)</b>	5	5	4	5	1	0	1	2
<b>Rome (1-1)</b>	23	7	17	5	2	1	6	4
<b>Savannah (9-1)</b>	3	4	3	4	2	1	2	1
<b>Valdosta (8-1)</b>	1	5	0	5	0	0	1	0
<b>Waycross (9-2)</b>	2	7	2	7	0	0	1	1
<b>Multi-State</b>	5	5	5	5	1	4	0	0
<b>Unknown</b>	0	1	0	1	0	0	0	0
<b>Grand Total</b>	<b>109</b>	<b>121</b>	<b>74</b>	<b>107</b>	<b>23</b>	<b>11</b>	<b>56</b>	<b>36</b>

Chart 1. Confirmed Outbreaks by District, Georgia, 2008-2009

# Rates of Outbreaks by Health District, Georgia, 2009

