

Norovirus Outbreak Associated with Buffalo Wild Wings— Johnson County, Kansas, 2016



Background

On January 29, 2016 at 10:00 AM, the Kansas Department of Agriculture (KDA) notified the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section at the Kansas Department of Health and Environment (KDHE) of a foodborne illness complaint. The complainant stated that 15 individuals of a party of 30 from more than two different households consumed food prepared at Buffalo Wild Wings (7030 W. 105th, Overland Park, KS) on January 27, 2015 around 6:00 PM and subsequently experienced gastrointestinal illness. KDHE notified the Johnson County Department of Health and Environment (JCDHE) and an outbreak investigation was initiated on January 29, 2016 at 10:15 AM to determine the cause, scope of illness and appropriate measures for control and prevention.

Methods

Epidemiologic Investigation

JCDHE contacted the original complainant who reported gastrointestinal illness and obtained the list of all persons that had eaten at Buffalo Wild Wings that evening. KDHE developed a questionnaire to obtain demographic information, clinical information, and food histories. Additional groups of persons that ate at Buffalo Wild Wings and subsequently became ill. All ill persons identified were interviewed by JCDHE or KDHE. An online survey of employees was distributed by sending each employee a text with the mobile-friendly link. This questionnaire inquired dates works, duties performed, and illness during study period.

A case was defined as diarrhea or vomiting in a person who ate at Buffalo Wild Wings between January 25 and February 15, 2016^h and developed symptoms within 50 hours.

Laboratory Analysis

Six stool specimens were collected from complainants who resided in different households and shipped to Kansas Health and Environmental Laboratories (KHEL). These specimens were submitted for norovirus testing via polymerase chain reaction (PCR).

Environmental Analysis

KDA inspected Buffalo Wild Wings on January 29, 2016 with follow up inspections performed on February 12, 2016 and February 17, 2016 in response to the additional foodborne illness complaints. KDA monitored staff hygiene practices, food holding temperatures and procedures for handling ready-to-eat fresh produce.

Results

Epidemiologic Investigation

Sixteen persons became ill after dining at Buffalo Wild Wings; individuals were interviewed by JCDHE and KDHE during this investigation. Individuals were residents of Johnson County, Wyandotte County and Missouri. Response rate was 36%, with no employees reporting illness. Sixteen people were ill and met the case definition. Ill persons ranged in age from 1 to 44 years old (median age, 18 years). 11 (69%) ill persons were male.

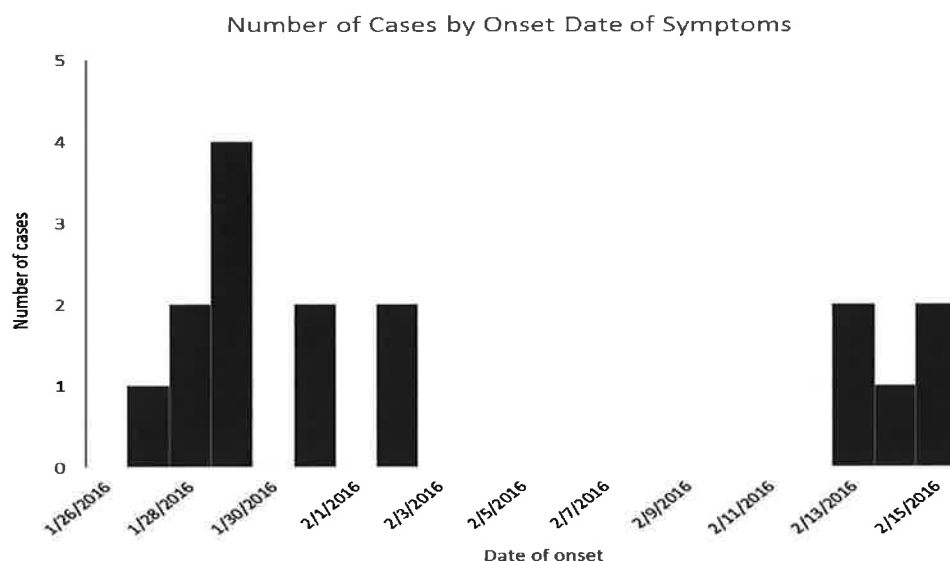
All cases experienced nausea and abdominal pain, with a majority also reporting diarrhea and vomiting (Table 1). No one reported seeking medical care from a physician or emergency department.

Table 1: Symptoms reported among cases (n=16)

<i>Clinical Information</i>	<i># Cases with Symptom</i>	<i># of Cases Reporting</i>	<i>% of Cases with Symptom</i>
Abdominal Pain	16	16	100
Nausea	16	16	100
Diarrhea	12	15	80
Vomiting	11	13	85

Onset of illness ranged from January 25 to February 15 (Figure 1). Illness incubation times ranged from 6 to 50 hours with an average of 26 hours. The median incubation period was 28 hours. Exposure time was not available for one case, therefore, the incubation period could not be calculated. Duration of illness ranged from 23 hours to 92 hours with an average of 55 hours (median 47 hours). Eleven cases (69%) had not recovered at time of interview.

Figure 1: Ill Persons by Date: Outbreak Associated with Buffalo Wild Wings – Johnson County, January – February 2016 (n=16)



Laboratory Analysis

Five of the six stool specimens received tested positive for norovirus genogroup II at KHEL. One specimen was negative for norovirus. Three of the positive specimens were sent to Wisconsin Department of Health Services for genetic sequencing and tested positive for norovirus genogroup II.2.

Environmental Results

KDA inspection of Buffalo Wild Wings on January 29, 2016 revealed multiple violations and noted that four employees were ill. KDA's findings included poor employee hand hygiene, insect contamination of liquor bottles, and improper storage of equipment. The follow up inspection on February 12, 2016 revealed no violations. The third inspection on February 17, 2016 revealed improper hot holding temperatures and one instance of adulterated limes that were voluntarily discarded on-site.

Conclusions/Discussion

Sixteen individuals became ill with gastroenteritis after consuming food and drink at Buffalo Wild Wings between January 21 and February 15, 2016. Norovirus was confirmed as the causative agent of this outbreak and five ill persons who provided stool specimens tested positive. Additionally, all sixteen ill individuals had clinical presentation of symptoms consistent with norovirus infection. Although the restaurant was associated with illness, the vehicle of transmission could not be confirmed; there were reports of four ill employees.

Norovirus is a highly contagious pathogen and the most common cause of gastroenteritis in the United States with an estimated 19-21 million illnesses each year¹. Most norovirus outbreaks in the United States occur between November and April. Transmission is commonly via fecal-oral route, through direct contact with an ill person or fecally-contaminated food, water or surfaces. The leading cause of illness and outbreaks is food contaminated by infected food workers¹. Norovirus incubation is typically 12-48 hours and with symptoms lasting one to three days². Clinical presentation of norovirus includes nausea, vomiting and diarrhea. Infected children tend to experience more vomiting than adults³. Infected persons can transmit the virus through feces or vomit from prior to the onset of symptoms up to two weeks after recovery⁴.

This investigation encountered several limitations. With no way to contact additional ill and non-ill patrons, a case-control study could not be conducted to determine statistical association, if any, between food menu items and gastrointestinal illness. The low sample size of sixteen individuals limits the ability to draw general conclusions about the scope of illness and exposure. Response rate was 36%, with no employees reporting illness. Intervention by KDA may have prevented additional foodborne illness by correcting hand hygiene issues and chemical storage after inspection. Additional education provided by KDHE, KDA and JCDHE concerning norovirus symptoms, transmission, and importance of hand washing and work exclusion while ill may have helped prevent further transmission.

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¹ Norovirus. (2013, July 26). Retrieved January 21, 2016, from <http://www.cdc.gov/norovirus/about/overview.htm>

² Los Angeles County Public Health. (2005, March). Norovirus Fact Sheet. Retrieved January 21, 2016, from http://www.lapublichealth.org/acd/docs/NorovirusFactSheet_06.pdf

³ FoodSafety.gov. (n.d.). Norovirus (Norwalk Virus). Retrieved January 21, 2016, from <http://www.foodsafety.gov/poisoning/causes/bacteriaviruses/norovirus/>

⁴ South Australia Health. (2015, November 30). Norovirus infection - including symptoms, treatment and prevention. Retrieved January 21, 2016, from Norovirus infection - including symptoms, treatment and prevention