

Public Health Update

May 2008

Notifiable Diseases 2007: A Year in Review

This Public Health Update includes brief descriptions of many of the disease outbreaks and large communicable disease control efforts investigated in 2007 by Tri-County Health Department (TCHD) in Adams, Arapahoe and Douglas Counties. In addition, summary numbers of notifiable diseases reported in 2007 in the Tri-County region are presented in a table. A list of notifiable diseases in Colorado and a case report form are included at the end of this update.

Summary of 2007 Cases and Outbreak Investigations

TCHD investigated 718 cases of notifiable diseases in 2007 (these numbers do not include sexually-transmitted diseases or influenza). Of the 718 case investigations, 209 were in **Adams County**, 330 were in **Arapahoe County** and 179 were in **Douglas County**. In 2007, TCHD also conducted a total of 46 outbreak investigations throughout our 3 counties. Of the 46 outbreaks, 10 were in **Adams County**, 21 in **Arapahoe County** and 15 in **Douglas County**. Furthermore, of the 46 outbreaks investigated in 2007, 18 were in child care centers, 17 were in long term care facilities, 9 were associated with restaurants and 2 were in the "other" category. Below are brief descriptions of some of the more notable outbreak and case investigations that TCHD conducted in 2007.

Increase in outbreaks of gastrointestinal illness in child care centers

In 2007 there were a total of 18 childcare facilities in the Tri-County region that reported outbreaks of gastrointestinal illness among the children and staff. This was an unusually high number of outbreaks compared to prior years; there were only two child care center outbreaks in 2005 and three in 2006. Most of the 2007 child care center outbreaks were consistent with viral gastroenteritis. Laboratory testing of stool samples from ill students and staff indicated norovirus as the causative agent in the majority of the outbreaks.

Noroviruses (also known as Norwalk-like viruses, caliciviruses, and small round structured viruses) cause acute gastroenteritis. Acute-onset vomiting, watery non-bloody diarrhea, abdominal cramping and nausea are the most common symptoms. The virus has a low infectious dose (< 100 viral particles), which allows for easy spread. Transmission is primarily person-to-person via the fecal-oral route and a food handler can contaminate food if they have the virus on their hands. Transmission through aerosolized vomitus, as well as fomite transmission, may also occur. Shedding of norovirus begins with onset of symptoms, and infected persons can be contagious for up to 72 hours **after** symptoms have stopped. Humans are the only known reservoir for these viruses. Norovirus may account for more than 90% of gastroenteritis outbreaks not caused by bacteria or toxins. Outbreaks of norovirus have occurred in many different settings, including restaurants, schools, camps, cruise ships, vacation settings, swimming pools, hospitals and long-term care facilities.

TCHD worked with each affected child care facility to improve sanitization and handwashing, exclude ill children and staff, and minimize the further spread of disease. TCHD also notified the healthcare provider community of the large increase in child care center outbreaks, and worked with providers to



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strengthen prevention messages, such as recommending that patients with gastroenteritis stay home until two days **after** the cessation of diarrhea and vomiting.

Restaurant Norovirus Outbreak Associated with Diced Tomatoes

In July 2007, TCHD received phone calls from two patrons who reported that several acquaintances who ate together (one lunch group and one dinner group) at a **Douglas County** restaurant became ill with gastrointestinal symptoms 24–48 hours after the meal. While conducting an investigation of the restaurant, TCHD observed several critical violations in their food preparation and learned that numerous wait staff had been recently ill. Interviews were conducted with 9 lunch patrons, 16 dinner patrons, 60 wait staff, and 15 kitchen staff to assess illness, symptoms, and food history, as well as work history among staff. TCHD determined that 15 (60%) of 25 patrons and 18 (30%) of 60 wait staff had experienced gastrointestinal illness. No kitchen staff reported illness. Three stool samples tested positive for norovirus, one each from the lunch group, dinner group, and wait staff. Genetic sequencing revealed that the three norovirus isolates were identical to each other indicating a common source. Epidemiologic analysis suggested that consumption of diced tomatoes increased the likelihood of illness among patrons and that working the same day the patrons ate at the restaurant increased the likelihood of illness among wait staff. TCHD concluded that infected wait staff and poor hand hygiene might have contributed to this outbreak, either through the contamination of food items or inanimate objects (i.e., surfaces, menus, and silverware). TCHD worked with the restaurant to correct all critical violations and improve hand hygiene among staff.

Breast milk switches in a child care center

In February 2007, TCHD received a complaint from the mother of an infant who was mistakenly fed expressed breast milk intended for a different infant while attending a child care center located in **Adams County**. These two infants were in the same classroom and had the same first name; expressed breast milk for both infants was kept in the same refrigerator. The bottles were labeled with the infants' first names and last initials. The incident occurred when a staff member accidentally fed the expressed breast milk intended for one infant to the other infant. The staff member stopped the feeding and reported the incident to the director as soon as she realized the mix up. The staff member was dismissed from employment soon after the incident.

In October 2007, TCHD received a call from the same **Adams County** child care center reporting another breast milk switch incident. The child care center reported that an infant who was on formula had been mistakenly fed expressed breast milk intended for another infant. In this situation, the two bottles looked similar in color and the staff member mistakenly grabbed the incorrect bottle. Both bottles were labeled with the name of the infant. The staff member realized the mistake half way through the feeding and notified the director of the facility. The staff member was dismissed from employment soon after the incident.

For both incidents, TCHD staff conducted an on-site inspection of the facility and educated the center's staff on proper labeling and storage of expressed breast milk and formula. TCHD recommended that the center label bottles with the infants' full name and date received. Transmission of human immunodeficiency virus (HIV) from a single breast milk exposure has never been documented; however, the Centers for Disease Control (CDC) still recommend testing for HIV in breast milk switch situations. Therefore, TCHD had the mistakenly-fed infants tested for HIV-specific antibodies. TCHD also had the infants tested for hepatitis B virus (HBV) surface antigen, HBV-specific core IgM and hepatitis C virus (HCV)-specific antibodies, and hepatitis A virus (HAV) total antibody and HAV-specific IgM. Testing for HIV, HAV, HBV, and HCV was also conducted on mothers who expressed the breast milk that was

mistakenly fed to the wrong infant. Baseline and six-month follow-up test results for the mistakenly-fed infants were provided to TCHD in both situations. Laboratory results for both incidents indicated that neither mother was infected with HIV or hepatitis and that no transmission of these viruses to the infants occurred as a result of being fed the incorrect breast milk.

Suspected Toxin-Mediated Outbreaks

In August 2007, TCHD was notified that a party of seventeen individuals had dined at a restaurant in **Arapahoe County** and three of those individuals became ill with diarrhea, nausea, vomiting, and abdominal cramping early the next morning. The median incubation period was 6 hours. Interviews were conducted with the attendees to assess illness, symptoms, and food history. Due to the small numbers of ill individuals, no significant associations between illness and food items were identified. However, the only common event among ill persons was the party at this restaurant, suggesting that the source of illness was a contaminated food item served there.

A few months later in October, TCHD was notified that a party of thirteen persons had dined at the same **Arapahoe County** restaurant and eight had become ill with diarrhea, nausea, vomiting, and abdominal pain a few hours after eating their meals. The median incubation period was 2 hours. Interviews were conducted with the attendees to assess illness, symptoms and food history. Again, due to the small number of individuals in the party, no significant associations between food items and illness were identified. However, as in the previous outbreak, the only common event among ill persons was the party at this restaurant, suggesting the restaurant as the source of illness.

The symptoms and relatively short incubation period of illness in both of these outbreaks strongly suggested a bacterial toxin as the contaminating agent. Based on symptoms, the most likely candidates were *Bacillus cereus*, *Clostridium perfringens*, or *Staphylococcus aureus*. These toxin-producing organisms generally cause symptoms of abdominal cramps and diarrhea, and typically cause illness within a few hours of ingestion. Unfortunately, no food samples could be tested for either outbreak because there were no food items left from the exposure period. TCHD was also unable to collect bulk stool specimens for toxin testing for either outbreak because the outbreaks were reported more than 48 hours after the cessation of symptoms among ill individuals; toxin testing requires that specimens be collected within 48 hours.

Outbreaks caused by toxin-producing organisms are typically associated with food kept at ambient temperatures after cooking or foods that have been improperly cooled or reheated. During the restaurant inspection, several temperature violations were noted that could have contributed to the growth of toxin-producing bacteria. After conducting onsite investigations, TCHD concluded that both outbreaks were likely toxin-related and may have been due to improper food temperatures. TCHD worked with the restaurant to correct these temperature violations and provided food safety training for employees.

Bovine TB

In February 2007, TCHD was notified by the Colorado Department of Public Health and Environment (CDPHE) that a **Douglas County** resident had a bull that had tested positive for *mycobacterium bovis* or bovine tuberculosis (TB). The bull had been sold to a meat plant in Texas and had tested positive at that facility. The Department of Agriculture was notified and quarantined the approximately 120 other cattle at the ranch, and planned to test the entire herd.

TCHD was notified to help test the owners and ranch hands who had worked with the TB-positive bull, since the literature indicated that bovine TB can cause human TB under certain circumstances. TCHD went to the ranch and conducted TB screening among the ranch owners and workers who had close contact with the positive bull. No human disease was detected. Other cattle on this ranch were also tested for TB, and none were positive.

Summary numbers for notifiable diseases in 2007 are presented in Table 1. A list of notifiable diseases in Colorado and a case report form are included at the end of this update. You can also visit <http://www.cdphe.state.co.us/dc/Medlist.pdf> for a list of notifiable diseases in Colorado. Please note that upon receiving a report of any of these diseases, the public health department is likely to contact your patient to assess exposure and put appropriate control measures into place. If for some reason you would not like us to contact your patients, please let us know.

Also, please remember that all outbreaks from any cause are notifiable conditions and should be reported to the local or state health department within 24 hours of identification. The health department can facilitate testing for pathogens, and can provide guidance/assistance for outbreak investigation and infection control measures. Thank you!

If you have questions please contact your state or local health department:

Colorado Department of Public Health and Environment:
(303) 692-2700 / (303) 370-9395 (after hours)
Fax: (303) 782-0338

Tri-County Health Department:
(303) 220-9200 / (303) 461-2342 (after hours)
Fax: (303) 846-6295

Infectious disease control staff at Tri-County Health Department includes:
Tista Ghosh, MD, MPH, Medical Epidemiologist
Anita Watkins, MPH, Disease Intervention Coordinator
Tiffany White, PhD, Disease Intervention Specialist
Taylor Jones, Disease Intervention Specialist
Nereida Corral, Disease Intervention Specialist
Tegan Boehmer, PhD, MPH, CDC Epidemic Intelligence Service Officer

Table 1. Reported Cases of Notifiable Disease in Adams, Arapahoe and Douglas Counties, 2007.

Diagnosis	Adams	Arapahoe	Douglas	Total
AIDS	34	44	2	80
Botulism, Infant	0	1	0	1
Brucellosis	2	0	0	2
Campylobacter	42	87	39	168
Chlamydia	1629	2132	278	4039
Cryptosporidiosis	11	16	17	44
Encephalitis Other	3	1	2	6
Giardiasis	24	68	46	138
Gonorrhea	242	507	50	799
Group A Strep Invasive	34	30	9	73
Group B Strep Invasive	20	26	14	60
Haemophilus influenzae	5	6	1	12
Hantavirus Pulmonary Syndrome	0	1	0	1
Hepatitis A	3	4	2	9
Hepatitis B, Acute	5	7	2	14
Hepatitis B, Chronic	47	119	24	190
Hepatitis C, Acute	1	0	0	1
Hepatitis C, Chronic	218	257	51	526
HIV	26	41	2	69
Influenza, hospitalized	65	39	14	118
Kawasaki Syndrome	2	4	4	10
Legionnaires Disease	5	5	0	10
Leprosy	1	0	0	1
Listeriosis	2	1	0	3
Malaria	0	5	3	8
Meningitis Aseptic/Viral	30	33	17	80
Meningococcal Disease	1	1	1	3
Mumps	1	2	1	4
Pertussis Syndrome	13	34	12	59
Psittacosis	2	0	0	2
Rocky Mountain Spotted Fever	1	1	0	2
Salmonellosis	41	66	32	139
Shigellosis	12	8	9	29
STEC	7	8	11	26
Strep, Pneumo Invasive	49	50	17	116
Syphilis	8	3	1	12
Toxic Shock	0	1	0	1
Tuberculosis	14	17	2	33
Typhoid Fever	1	1	0	2
Varicella	104	123	72	299
Vibriosis	1	0	0	1
West Nile Virus Infection	32	18	8	58
Yersiniosis	0	1	0	1

Total	2738	3,768	743	7249
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**TRI-COUNTY HEALTH DEPARTMENT
REPORTABLE DISEASE NOTIFICATION FORM
FOR PHYSICIANS AND OTHER HEALTH CARE PROVIDERS**

Case Information

Case's Name: _____ **Parent's Name:** _____

Age: _____ **Date of Birth:** _____ **Sex:** () Male () Female **Race:** _____

Home Phone(s): _____ **Work Phone(s):** _____

Address: _____ **City:** _____ **Zip:** _____

County of Residence: () Adams () Arapahoe () Douglas

If another county, please specify: _____ **School/Employer:** _____

Medical Information

Disease: _____ **Onset Date:** _____ **Specimen:** _____

Specimen Collect Date: _____ **Lab Tests Performed:** _____

Lab Confirmed: () Yes () No **Name of Lab Used:** _____

Other Relevant Medical/Rx/Immunization Info: _____

Doctor's Information

Doctor's Name: _____ **Doctor's Phone:** _____

Doctor's Address: _____ **City:** _____ **Zip:** _____

Report Submitted By: _____ **Phone:** _____

Organization: _____ **Date Reported:** _____

For your convenience, you may report diseases by phone Monday through Friday, 8:00 A.M. to 5:00 P.M. at (303) 220-9200 or you may complete this form and fax it 24 hours a day to (303) 220-9208.

For after hour and weekend emergencies:

Contact the Tri-County Health Department at (303) 461-2342

or the Colorado Department of Public Health and Environment at (303) 370-9395

For Internal Use:

Date Report Received: _____ **Received By** _____