

Public Health Brief

May 2011

Notifiable Diseases 2010: A Year in Review

This Public Health Brief includes short descriptions of many of the disease outbreaks and large communicable disease control efforts investigated in 2010 by Tri-County Health Department (TCHD) in Adams, Arapahoe and Douglas Counties. In addition, summary numbers of notifiable diseases reported in 2010 in the Tri-County region are presented in a table. A case report form is included at the end of this update, along with the web address for a list of notifiable diseases in Colorado.

Summary of 2010 Cases and Outbreak Investigations

TCHD investigated 844 cases of notifiable diseases in 2010. These numbers do not include sexually-transmitted diseases or seasonal influenza. Of the 844 case investigations, 291 were in **Adams County**, 381 were in **Arapahoe County** and 172 were in **Douglas County**. In 2010, TCHD also conducted a total of 47 outbreak investigations throughout our 3 counties. Of the 47 outbreaks, 13 were in **Adams County**, 22 in **Arapahoe County** and 12 in **Douglas County**. Furthermore, of the 47 outbreaks investigated in 2010, 28 were in long term care facilities, 10 were associated with restaurants, 4 were in child care centers, and 5 were in the “other” category. Below are brief descriptions of some of the more notable outbreak and case investigations that TCHD conducted in 2010.

Multi-State E. Coli 0157:H7 Outbreak associated with Cheese Sampling

In October 2010, TCHD learned of 10 residents of **Douglas** and **Arapahoe** counties that were infected with *E. coli* O157:H7. All had matching Pulse Field Gel Electrophoresis (PFGE) patterns. TCHD immediately launched an investigation to identify any common links between these cases. We soon learned that all had shopped at metro-area locations of a national membership warehouse chain, prior to developing illness. We also learned that many cases remembered sampling various cheeses during a special 4-day cheese-sampling event at store locations of the chain. Soon, we learned that cases with the same PFGE pattern were being reported in 4 other states. Most cases in these states also reported sampling cheese at locations of the same chain. A total of 41 persons were affected by this outbreak in Arizona, California, Colorado, Nevada, and New Mexico. TCHD played a major role in this outbreak investigation, by coordinating a multi-state case-control study to determine the source of illness, as well as by conducting environmental inspections and collecting cheese samples for laboratory testing.

Early on in the investigation, laboratory testing detected bacteria with matching PFGE patterns in one particular brand of Gouda cheese, made from raw (unpasteurized) milk. This finding was then corroborated through the case-control study, which indicated that sampling Gouda cheese at the national membership warehouse chain was significantly associated with illness. In addition, TCHD and one California health department conducted environmental inspections of store locations and noted a lack of hand sinks and temperature-regulated food storage near many food sampling stations. Cheese-handling practices during in-store sampling might therefore have contributed to the outbreak.



The manufacturer of the implicated Gouda was a small California company that exclusively used raw milk to make artisan cheeses. The Food and Drug Administration and the California Department of Agriculture performed several inspections of the company's manufacturing facilities. The company later agreed to change its practices to produce cheese only from pasteurized milk.

E. coli O157:H7 is a bacterium that can be found in raw meats (especially ground beef), unpasteurized milk, unpasteurized juice and contaminated water. Raw meats and raw meat juices can spread the bacteria if they touch ready-to-eat foods (salads, breads, cheeses, etc.), food preparation surfaces and utensils (cutting boards, plates, knives, etc.) or hands. Transmission is primarily person-to-person via the fecal-oral route and a food handler can contaminate food if they have the bacteria on their hands. Symptoms of infection include sudden onset of diarrhea (often bloody), severe stomach pains, fever and vomiting. Symptoms may begin 2-10 days after ingesting the bacteria. Some infected people may remain asymptomatic, but may still be able to shed the bacteria in their feces and spread the bacteria. Improper handwashing after restroom use or diaper changing, followed by handling of food or objects that people put in their mouths (e.g. toys) can facilitate transmission of the bacteria. Young children are at risk for developing hemolytic-uremic syndrome (HUS) and adults are at risk for developing post-diarrheal thrombocytopenic purpura (TTP). Both HUS and TTP can be fatal.

Foodborne Botulism Case

On May 17, 2010 a physician reported a suspect case of botulism in an **Arapahoe County** resident to the Colorado Department of Public Health and Environment (CDPHE). The 48 year old case had an initial onset of symptoms on the morning of May 14. The first symptom was diplopia followed by stomach discomfort and nausea. The case presented to an emergency room on the morning of May 15 with complaints of persistent diplopia, the feeling of a "thick" tongue and difficulty enunciating. After admission to the hospital, the case's condition continued to deteriorate with development of respiratory distress requiring mechanical ventilation and facial and body paralysis/weakness. The admitting physician initially suspected myasthenia gravis. Suspicion of botulism occurred after a second physician examined the case on May 16. Serum collected from the patient on May 16, 2010 was positive for botulism toxin type A. Botulinum anti-toxin was ordered from the Centers for Disease Control and Prevention (CDC) on May 20, 2010 and administered to the patient. The case was released from the hospital in August of 2010 and has since made a full recovery.

TCHD staff interviewed the case, his co-workers and sister to obtain food history. Additionally, TCHD staff visited the case's home taking detailed inventory of remaining food items as well as searching for any suspect food items for testing. Based on information obtained from the interviews the case had consumed coffee, jellied doughnuts, homemade vegetable soup (egg, onion, carrots, potatoes, cabbage, corn, green beans, celery) and part of a baked potato in the 48 hours prior to onset of symptoms. The case shared the homemade soup with two co-workers, neither of which reported any illness. The potato was baked in aluminum foil, allowed to cool at room temperature while still wrapped in foil and not reheated prior to consumption. The case reported that the baked potato tasted bad and that only one bite was taken. None of the above mentioned food items were available for testing. The case did not eat any canned food items or eat at any retail food establishments in the 48 hours prior to illness onset.

Based on information gathered during the interviews and home food inventory, the potato baked and cooled in aluminum foil was the most likely source of botulism toxin in this case. However, remains of the potato were not available for confirmatory testing. A large outbreak of botulism associated with consumption of potatoes baked in aluminum foil and held at room temperature prior to consumption has been previously reported (FJ Angelo. J Infect Disease. 1998;178:172-7). Botulism, which is often linked to canned foods, has also been associated with soup made with fresh ingredients, especially root vegetables (www.cdc.gov/mmwr/preview/mmwrhtml/00000507.htm).

Botulism is a rare but life-threatening paralytic disease caused by a toxin produced by the bacterium *Clostridium botulinum*. These bacteria are typically found in the soil. Foodborne botulism is caused by eating foods contaminated with botulinum toxin. Infant botulism is caused by consuming bacterial spores, which then grow in the intestines and release toxin. Wound botulism occurs when wounds are infected with toxin-secreting *C. botulinum*. Anti-toxin is available from CDC (www.bt.cdc.gov/agent/Botulism/clinicians/treatment.asp)

Increase in Pertussis

In recent years, since the end of the large pertussis outbreak of 2004-2006, TCHD has seen relatively few pertussis cases. However, that changed in October of 2010, when we began to see a steady increase in pertussis cases with a peak of 58 cases in the month of December, nearly a 19-fold increase from December 2009! Although the official confirmed case count ended up at 58 for December, TCHD disease intervention specialists and public health nurses actually investigated 90 cases of possible pertussis in the month of December alone. This meant that 32 or one-third of the cases for December did not meet the CDC's clinical case definition and were therefore deleted.

CDPHE was concerned about the large percentage of reported cases that failed to meet case definition, and began more closely monitoring the increase in cases throughout the metro area. The increase centered in Jefferson and **Arapahoe** Counties. With help from CDC, they began to look more closely at a few medical practices and clinical labs where most of the cases were being detected. The testing practices in these facilities were examined and suggestions were made for improvement. These suggestions were also sent out more widely through a CDPHE Health Alert Network (HAN) notice in December outlining testing guidelines for pertussis. These interventions, and possibly the holiday break from school, led to a gradual tapering off of cases into 2011.

Pertussis, or whooping cough, is a highly contagious respiratory illness, caused by the bacterium *Bordetella pertussis*. Pertussis-related symptoms can include prolonged, paroxysmal coughing, sometimes accompanied with post-tussive cyanosis and vomiting. Infants and young children have the highest incidence of complications, such as pneumonia, seizures, hypoxia, and encephalopathy. Although childhood vaccination has reduced reported pertussis cases, the incidence of the disease has increased over the past 20 years in previously-immunized adolescents and adults. Therefore, CDC recommends additional pertussis vaccination in adolescents and adults. Adolescents 11-18 years of age (preferably at age 11-12 years) and adults 19 through 64 years of age should receive a single dose of **Tdap** (tetanus, diphtheria, acellular pertussis). For adults 65 and older who have close contact with an infant and have not previously received Tdap, one dose should be received. In addition, CDC now recommends that children aged 7 through 10 years who are not fully vaccinated against pertussis and for whom no contraindication to pertussis vaccine exists should receive a single dose of Tdap. For more information on the latest CDC guidelines, visit www.cdc.gov/mmwr/preview/mmwrhtml/mm6001a4.htm.

Increase in Animal Rabies Activity

Bats have historically been the most prominent wildlife reservoirs for rabies in Colorado; however, skunk variant rabies has been emerging among wildlife in rural, eastern Colorado since 2007 and has been moving westward. In 2010, rabies was detected in 14 skunks in TCHD's jurisdiction, including seven in Parker, in **Douglas County**. Skunk variant rabies was also detected in a horse in east-central **Arapahoe County** in April 2010, resulting in post-exposure prophylaxis (PEP) administration for eight people. A rabid skunk was detected for the first time in **Adams County** in Fort Morgan in May 2010.

In Colorado, during 2010, rabies was confirmed in 136 animals, including 61 bats and 63 skunks. Rabies was also confirmed in seven foxes, one coyote, one mule deer, one muskrat, one horse, and one cat; most of these animals are confirmed or presumed to have acquired their infections from skunks. A total of 45 people and 165 domestic animals were known or strongly suspected to have been exposed to these rabid animals.

The increased occurrence of rabies in skunks, the detection of rabid skunks in new areas, the proximity of rabid skunks to metropolitan areas, and the occurrence of skunk variant rabies in a domestic animal all indicated that the risk of human and animal exposure to skunk variant rabies was elevated in 2010. Preliminary surveillance data suggest that this risk will continue to be elevated in 2011, with the heaviest activity expected in March, April, and May. As of April 1, rabies has been detected in five skunks in Colorado in 2011, including one in Parker.

Rabies is a highly fatal, viral disease that affects mammals, including humans. The rabies virus infects the central nervous system, and is most often transmitted through the bite of an infected animal. The time between the bite and the appearance of symptoms can last for weeks to months. Early symptoms in humans include fever, headache, and general malaise. As the disease progresses, more specific symptoms appear and may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation, difficulty swallowing, and hydrophobia (fear of water). Death usually occurs within days of the onset of these symptoms. Vaccination can help prevent the spread of the rabies. For the latest guidelines on rabies vaccination, visit www.cdc.gov/rabies/resources/acip_recommendations.html

TCHD is available for consultation on the management of patients who have been bitten by wild or domestic animals. Please call 303-220-9200 and ask to speak with a Disease Intervention Specialist. After hours, you may call our pager at 303-461-2342.

Outbreaks of Shiga toxin-producing E. coli O26:H11 in childcare centers

On June 28 and 29, 2010, two cases of a Shiga toxin-producing *Escherichia coli* (STEC) O26:H11, a non-O157 serogroup, were reported to TCHD. The cases were identified by healthcare providers and their routine reports of notifiable diseases. Both were in children <24 months old who attended the same child care center in **Adams** county. Preliminary investigation indicated that a diarrheal illness had been circulating at the center since late May 2010 and that there were symptomatic children in all three infant rooms, both toddler rooms, and the three-year-old room. The center had failed to report this information to TCHD despite a state requirement for outbreak reporting.

TCHD's investigation soon identified 18 laboratory confirmed cases of STEC O26:H11 and 27 suspect cases with diarrheal illness; many of the confirmed cases were asymptomatic but still shedding bacteria. Younger classrooms were more affected by illness. There were no hospitalizations or deaths associated with this outbreak. TCHD implemented control measures, and the outbreak ended in August 2010. It was the largest reported O26:H11 outbreak in the United States and the largest non-O157 STEC outbreak in a US child care center.

In August/September 2010, TCHD investigated a second outbreak of *E. coli* O26:H11 in a **Douglas** county child care center. In this outbreak there were a total of 10 confirmed *E. coli* O26:H11 cases and 8 probable cases. As with the previous outbreak, the younger classrooms experienced a higher attack rate. TCHD implemented disease control measures, and the last positive child cleared on November 2010.

The non-O157 Shiga toxin-producing *Escherichia coli* (STEC) serogroups cause an estimated 169,000 cases of illness in the United States annually, and reporting of these cases is likely to increase as more laboratories adopt Shiga toxin testing. The virulence characteristics of non-O157 STECs are heterogenous and not completely described. STEC O26 is one non-O157 serogroup that has been associated with hemolytic uremic syndrome (HUS), the triad of acute renal failure, hemolytic anemia, and thrombocytopenia that is the major cause of acute renal failure in children.

If you or your patients become aware of a potential outbreak in a childcare center, school, restaurant, or other setting, please call TCHD at 303-220-9200 and ask to speak with a Disease Intervention Specialist. After hours, you may call our pager at 303-461-2342. TCHD can then begin an investigation and implement control measures to prevent further spread of illness.

Hantavirus investigation at an auto repair store

In February 2010, TCHD was notified by CDPHE that an **Arapahoe** county resident was suspected of having Hantavirus Pulmonary Syndrome (HPS). TCHD immediately conducted a patient interview and learned that the patient was an employee at an automobile repair chain store, where there was reportedly a long-term rodent problem. The store had done a deep cleaning (walls, floors, and equipment) with a steam cleaner during the week of January 11th, one week prior to the patient's onset. While waiting for confirmatory labs on this patient, TCHD educated the company on symptoms and prevention recommendations associated with HPS. The store decided to close the store for the weekend and hired a pest control specialist to evaluate the severity of the rodent situation, using TCHD-recommended proper personal protective equipment. In the end, the case did not confirm. However, it allowed TCHD to use the investigative and education skills needed when encountering a HPS case. The ill person fully recovered and TCHD recommended that the facility continue to work with pest control to eliminate any future problems.

HPS is a rare but serious illness transmitted by rodents. Humans can contract the disease when they come into contact with infected rodents or their urine or droppings. The deer mouse (*Peromyscus maniculatus*) is the main carrier of hantavirus in the western United States. HPS begins one to six weeks after exposure to the virus. The disease begins with 2-6 days of "flu-like" illness including fever, muscle aches, and fatigue, and sometimes vomiting or headaches. After 4-10 days, patients typically experience cough and shortness of breath due to fluid filled lungs and hospitalization is usually required. Most patients develop some degree of hypotension and progressive pulmonary edema, usually requiring mechanical ventilation; fatality rates can be high. Rodent control remains the primary strategy for preventing hantavirus infection.

2010 Notifiable Disease Summary

Summary numbers for notifiable diseases in 2010 are presented in the table on the following page. A case report form is included at the end of this update. You can visit 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, a 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 outbreaks due to 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

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Reported cases of Notifiable Diseases in Adams, Arapahoe and Douglas Counties, 2010

Diagnosis	ADAMS	ARAPAHOE	DOUGLAS	Row Total
ANIMAL BITES	11	15	8	34
AIDS	47	39	4	90
BOTULISM, FOODBORNE	.	1	.	1
BOTULISM, INFANT	.	.	1	1
CAMPYLOBACTER	54	71	36	161
CHLAMYDIA	1658	2610	288	4556
CRYPTOSPORIDIOSIS	4	8	4	16
ENCEPHALITIS OTHER	.	3	.	3
GIARDIASIS	68	119	29	216
GONORRHEA	191	526	27	744
GROUP A STREP INVASIVE	30	36	11	77
GROUP B STREP INVASIVE	25	47	18	90
HAEMOPHILUS INFLUENZAE	9	8	3	20
HEMOLYTIC UREMIC SYNDRM	1	2	.	3
HEPATITIS A	4	4	3	11
HEPATITIS B, ACUTE	5	6	1	12
HEPATITIS B, CHRONIC	62	83	31	176
HEPATITIS C, ACUTE	.	4	.	4
HEPATITIS C, CHRONIC	193	223	50	466
HIV	45	40	2	87
INFLUENZA-hospitalized	22	21	12	55
INFLUENZA-pediatric death	.	2	.	2
KAWASAKI SYNDROME	9	14	.	23
LEGIONELLOSIS	5	7	1	13
LEPROSY (HANSEN DIS)	1	.	.	1
LISTERIOSIS	1	1	.	2
LYME DISEASE	.	1	.	1
MENINGITIS ASEPTIC/VIRAL	32	43	16	91
MENINGOCOCCAL DISEASE	.	1	1	2
MUMPS	2	.	1	3
PERTUSSIS	56	64	23	143
ROCKY MTN SPOTTED FVR	.	.	1	1
SALMONELLOSIS	43	65	39	147
SHIGELLOSIS	11	7	1	19
STEC (shiga toxin producing E.coli)	28	13	27	68
SYPHILIS	27	24	2	53
STREP PNEUMO INVASIVE	56	64	18	138
TOXIC SHOCK-OTHER	1	.	1	2
TUBERCULOSIS	6	17	1	24
TULAREMIA	.	1	.	1
TYPHOID FEVER	.	1	.	1
VARICELLA(CHICKEN POX)	47	36	17	100
VIBRIOSIS	1	.	1	2
WEST NILE VIRUS	3	7	1	11
Column Totals	2758	4234	679	7671



**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 _____