

{Resuming Influenza and Respiratory Virus Surveillance for 2006-2007}

Surveillance activities for the 2006-07 respiratory virus season began the last week of September. The number of surveillance reporting sources has expanded from 18 sentinel providers to 30 healthcare practices distributed in 28 counties. These dedicated sentinel providers will regularly report the number and age distribution of patients with influenza-like illness (ILI) that present to their respective clinics. For surveillance purposes, ILI is defined as a fever (100°F [37.8°C], oral or equivalent: 101°F rectal and 99°F axillary) and cough with or without a sore throat in the absence of a known cause other than influenza. They will report this data via an online secure web-based site. Other collected data will include the number of patients hospitalized due to ILI and number of patients screening positive for influenza by rapid antigen/enzyme testing. To identify and characterize the circulating influenza and respiratory viruses, sentinel providers will also submit specimens to the Oklahoma State Department of Health (OSDH) Laboratory for viral culture. New plans for influenza surveillance in Oklahoma are to extend the ILI reporting from seasonal to year-round participation. Another important component of the state's respiratory virus surveillance program is sentinel laboratory reporting. Ten geographically distributed hospital laboratories will voluntarily report results of respiratory virus testing (virus culture, DFA, and/or rapid tests) on a weekly basis during the respiratory virus season. The location of Oklahoma's sentinel providers and laboratories are displayed on the map on page two.

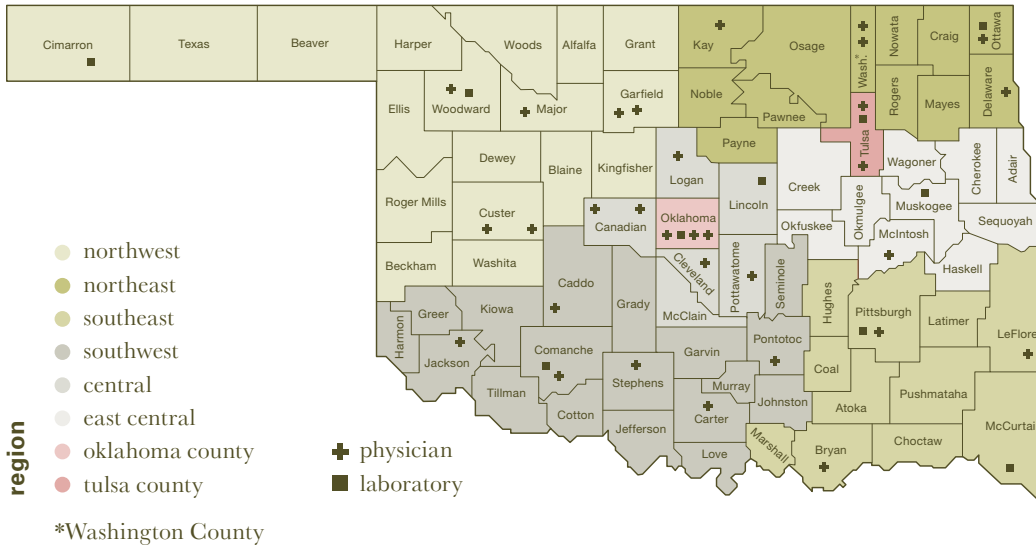
Healthcare providers, schools, and residential care facilities are encouraged to report case clusters or outbreaks of respiratory and febrile illness within the facility or community to the Communicable Disease Division (CDD). The CDD works in conjunction with communicable disease nurses in the county health departments to confirm the presence of respiratory outbreaks by collecting specimens for viral culture and to provide recommendations to stem the spread of disease.

Recap of 2005-06 Influenza Surveillance

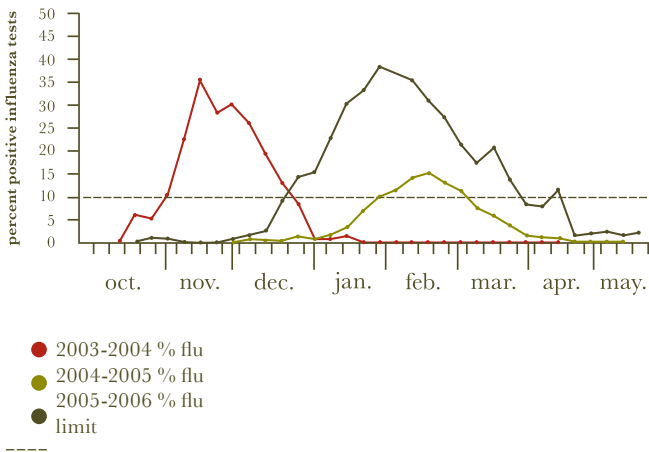
During the 2005-06 influenza season, influenza activity in Oklahoma remained at low levels from October through early January, increased during February, and then peaked in early March. Compared to the previous three seasons, peak activity was less intense but influenza spread persisted for a longer period of time—even until early May. The first culture-confirmed case of influenza detected by sentinel surveillance was reported during the week ending December 10, 2005. Testing of referred isolates and respiratory specimens at the OSDH Public Health Laboratory confirmed the predominant influenza strain as Type A (H3N2) California (66.7%, 26/39). Type B Shanghai-like influenza comprised 33.3% (13/39) of the positive influenza isolates. Typically, the state's influenza season begins in November and continues into the early spring. However, there can be a considerable amount of variation in the timing of occurrence and the intensity of influenza activity in Oklahoma [see graph on page two].

*prepared by Renee Powell, MPH, Epidemiologist, CDD

Participating Sentinel Physician and Laboratory Sites, 2006-2007



Weekly Percent Positivity of Total Influenza Tests at Sentinel Laboratories-Oklahoma; 2005-2006 and Previous Two Seasons



{Use of Rapid Influenza Tests}

Influenza can be difficult to diagnose based on clinical symptoms alone because the initial symptoms of influenza can resemble those caused by other infectious agents. Viral culture is considered the “gold standard” for influenza testing given its high specificity and sensitivity as well as the capabilities of performing strain typing and other characterization. However, viral culture involves the services of a trained laboratorian and takes 3 to 10 days before results are available. Thus, “rapid flu tests” are now becoming more common in the clinical setting. When used appropriately, they can allow for early treatment with antiviral medications, may reduce the unnecessary use of antibiotics, and provide an opportunity to prescribe prophylaxis to exposed individuals.

The FDA has approved 7 rapid antigen tests for influenza detection. These commercial kits vary in their ability to detect both influenza A and B as well as to distinguish between the two types, but all provide results within 30 minutes and can be done in a physician’s office. Proper sample collection is a major determinant for obtaining accurate results. Properly collected NP swabs or nasal washes are preferred over a throat swab. Specimens should be collected within 4 days of symptom onset. Rapid tests may have lower sensitivity for adults than children because children tend to shed virus more abundantly and for longer periods of time.

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When interpreting rapid test results, it is necessary to evaluate them in context with the prevalence of disease. When disease prevalence is very low—at the beginning and the end of influenza season—the predictive value positive of the test is lowest. This means one should anticipate an elevated number of false positive tests during this time and consider validation of results by viral culture. On the other hand, the predictive value positive is highest during peak influenza activity. Therefore, a positive result during mid or peak flu season is more reliable. During periods of high influenza activity, false negative tests will become more likely. Even when a positive rapid test result is consistent with true influenza virus infection, this does not rule out the possibility of other co-existing infections. Persons with influenza are at risk for secondary bacterial infections; so the patient must be evaluated further to determine the need for antibacterial therapy.

*prepared by Kristy Bradley, DVM, MPH, State Public Health Veterinarian & Deputy State Epidemiologist & Renee Powell, MPH, Epidemiologist, CDD

{Current “Bird Flu” Situation}

The avian influenza A (H5N1) epizootic (animal outbreak) in Asia has expanded to wild birds and/or poultry in parts of Europe, the Near East and Africa. Sporadic human infections with H5N1 continue to be reported in ten countries, including China, Egypt, Indonesia, Azerbaijan, Cambodia, and Djibouti. In addition, rare instances of probable human-to-human transmission associated with H5N1 viruses have occurred, most recently in a family cluster in Indonesia. So far, however, the spread of H5N1 virus from person to person has been rare, inefficient, and unsustainable. The total number of confirmed human cases of H5N1 reported as of August 23, 2006, has reached 241. The case fatality rate for these reported cases is greater than 50 percent.

Since no sustained human-to-human transmission of influenza H5N1 has been documented anywhere in the world, the current phase of alert, based on the World Health Organization (WHO) global influenza preparedness plan, remains at Phase 3 (Pandemic Alert). In addition, no evidence for genetic reassortment between human and avian influenza A virus genes has been found. Nevertheless, this expanding epizootic continues to be monitored by the global public health community. In the United States, surveillance and testing of domestic poultry and wild migratory waterfowl has markedly increased to enhance early detection of any introduction of the Asian H5N1 virus strain.

The Centers for Disease Control and Prevention (CDC) has not recommended that the general public avoid travel to any of the countries affected by H5N1. However, CDC does recommend that travelers to these countries avoid poultry farms and bird markets or other places where live poultry are raised or kept.

*prepared by Kristy Bradley, DVM, MPH, State Public Health Veterinarian & Deputy State Epidemiologist

{Pandemic Influenza}

Pandemic influenza is a contagious respiratory illness caused by a novel influenza virus that results in illness in a large number of people around the world. In the past century there have been three influenza pandemics. The severe “Spanish flu” pandemic of 1918 resulted in more than 20 million deaths worldwide. Recent concern about avian virus infections in poultry in other parts of the world has brought this health risk to the forefront.

In preparation for a possible pandemic, Terry Cline, Ph.D., Oklahoma Secretary of Health, and federal officials from the U.S. Department of Health and Human Services signed an agreement in March to assist in coordinating efforts between the federal government and Oklahoma. In May, over 400 state and federal leaders convened at The Governor’s Pandemic Influenza Summit. The meeting addressed the overall readiness in Oklahoma for a pandemic as outlined in the newly revised Oklahoma Pandemic Influenza Management Plan released at the meeting. The plan was developed to guide a coordinated state-wide, multi-sector response to pandemic influenza, and is posted on the Web at <<www.health.state.ok.us/program/cdd/flu/panflu.html>>.

After the Governor’s Summit, the Oklahoma State Department of Health and county health departments conducted regional Pandemic Summits across the state with more than 850 local and regional partners from civic groups, businesses, healthcare, and schools attending. The Summit attendees were given information on pandemic influenza and tools to address preparedness in their local area.

*prepared by Vonnie Meritt, RN, MPH, Clinical Services Coordinator, TPRS

{Death of an 18-Year-Old Female Probably Due to CA-MRSA Skin Infection}

A previously healthy 18-year-old female died due to methicillin-resistant *Staphylococcus aureus* (MRSA) pneumonia, which was later confirmed to be USA strain 300, one of the strains responsible for community-associated infections. Three weeks prior to her death she had presented to a local emergency department with the complaint of a 3x4 cm. indurated axillary “sore” with a dark center, which was treated with ceftriaxone and amoxicillin/clavulanate.

Community-associated MRSA (CA-MRSA) accounts for over 50% of skin infections, often with the “spider bite” appearance described above, although it may occur as almost any type of skin infection. The recommended treatment is incision and drainage, along with culture and sensitivity and vigilant wound care.¹ Non-beta-lactam antibiotics such as high-dose trimethoprim sulfamethoxazole (TMP/SMX) are recommended in certain circumstances. Rifampin should never be used as monotherapy but may be added to the regimen. The necrotizing toxin has become systemic in a small percent of cases, resulting in fatal pneumonia or sepsis. Appropriate treatment to prevent this progression is critical, as this case proves.

Severe and fatal pneumonias caused by MRSA and methicillin-sensitive *S. aureus* have been described in association with influenza infection. As influenza season approaches, a high suspicion of MRSA is recommended when treating community-associated pneumonia.²

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OSDH Web site

The Oklahoma State Department of Health influenza Web site has a new and improved look with easy navigation. Some of the features include:

-Seven different pages with information regarding:

- 1 Seasonal Influenza Information for the General Public,
- 2 Seasonal Influenza Information for Health Professionals,
- 3 Surveillance,
- 4 Educational Materials,
- 5 Pandemic Influenza,
- 6 Avian Influenza, and
- 7 Flu Clinic Locator.

-The surveillance page will be updated every Wednesday with a summary of sentinel surveillance information including the current activity level, percent of positive influenza tests from sentinel laboratories, and weekly percent of influenza-like illness based on total sentinel physician patient visits in Oklahoma.

-The seasonal influenza information for health professionals page contains infection control guidelines, novel influenza strain testing protocols, and other useful healthcare information.

-The educational materials page has 20 different printable fact sheets, 8 1/2” by 11” posters, and children’s activity books with several of these materials available in Spanish. The OSDH influenza Web site is located at: <<www.health.state.ok.us/program/cdd/flu/index.html>>.

Health Alert Network Update

Oklahoma’s Health Alert Network, previously called RHINO (Reportable Health Information and Notification in Oklahoma) will now be OK-HAN. The OK-HAN system is in the process of redesign and with it, a new name. The purpose of the name change is to comply with PHIN (Public Health Information Network) requirements as well as clarify the purpose of the system. Please contact Kim Mitchell, HAN Coordinator with any questions or concerns at 405.271.4060 or email kimberm@health.ok.gov

*prepared by Kim Mitchell, BS, HAN Coordinator, CDD

Correction Note

Correction to “Emergence of New, More Virulent Strain of *Clostridium Difficile*-Associated Diarrhea in Low Risk Populations” published in the Summer 2006 Epidemiology Bulletin.

The summer 2006 issue of the Epidemiology Bulletin contained an error in the *Clostridium difficile* article. The statement “Intravenous or intracolonic vancomycin should be considered for severe disease.” is incorrect as noted by Dr. Thomas Coniglione of Oklahoma City. The appropriate statement is “Intracolonic vancomycin with or without intravenous metronidazole is recommended for those with severe disease.”¹

¹ Sunenshine RH and McDonald LC. *Clostridium difficile*-associated disease: New challenges from an established pathogen, Cleveland Clinic Journal of Medicine Vol. 73, No. 2., February 2006, page 187-197 http://www.ccm.org/PDFFILES/Sunenshine2_06.pdf

Strategies for Management of Skin and Soft Tissue Infections (SSTIs)¹


-Keep MRSA in the differential diagnosis of SSTIs such as skin abscesses, especially if described as a “spider bite.” Consider MRSA in the differential diagnosis of other syndromes such as sepsis syndrome or severe pneumonia particularly following influenza-like illnesses

-Obtain specimens for culture and susceptibility testing from all patients with abscesses or purulent skin lesions. Nasal cultures are not needed on all patients presenting with possible MRSA infection.

-Incision and drainage (I&D) of furuncles, other abscesses, and septic joints, should be performed routinely. For small furuncles not amenable to incision and drainage or collection of material for culture, apply moist heat to promote drainage.

-Factors influencing the decision to involve empiric antimicrobial therapy include:

- severity and rapidity of progression of the SSTI or associated cellulitis (in one study, sites of >5 cm. improved with inclusion of antimicrobial therapy),
- signs and symptoms of systemic illness,
- co-morbidities such as diabetes mellitus or immunocompromised status,
- 4 extremes of age,
- abscesses in locations difficult to drain completely or near major vessels (e.g., central face), and
- lack of response to initial treatment with I&D alone. Use local susceptibility data to guide choice of empiric antimicrobial therapy for an SSTI compatible with *S. aureus* infection.

 **-Suggested alternatives to beta-lactams** for antimicrobial agents for outpatient treatment of

SSTIs include clindamycin, tetracyclines (including doxycycline and minocycline), TMP-SMX, rifampin (used only in combination with other agents), and linezolid. Consultation with an infectious disease specialist is recommended for management of complicated cases, particularly regarding the complexities of antibiotic treatment.

-Judicious antibiotic use is advised, as severe cases of *Clostridium difficile*-associated disease (CDAD) associated with many antimicrobial agents have been reported in otherwise healthy adults and children in the community.

-Intravenous antimicrobial agents are appropriate for patients with severe staphylococcal infections. Vancomycin remains the choice for severe invasive infections likely caused by MRSA. Other intravenous agents or combinations may be appropriate, however consultation with an infectious disease specialist is recommended.

-Patient education is a critical component of SSTI case management. Educate patients and household members on methods to limit further spread of infection to their close contacts. Persons that cannot maintain adequate hygiene and keep wounds covered with clean, dry bandages should be excluded from activities where close contact with others occurs until their wounds are healed.

-Clinicians should query patients about similar cases of SSTI in household members and other close contacts. **If a potential outbreak** in a defined cohort outside of a single household (e.g., school, athletic team) is identified, notify the local public health department.

-Use standard infection control precautions for all patients in outpatient and inpatient healthcare settings. Exam room surfaces should be cleaned with an EPA-registered hospital detergent/disinfectant, in accordance with label instructions, or a 1:100 solution of diluted bleach (1 tbsp. bleach in 1 quart water).

-Patients with SSTIs treated on an outpatient basis should be clearly instructed to return promptly if they develop worsening or systemic symptoms or if their symptoms do not improve within 48 hours.

*prepared by Becky Coffman MPH, RN, CIC, Epidemiologist, CDD

¹ Gorwitz RJ, Jernigan DB, Powers JH, Jernigan JA, and Participants in the CDC Convened Experts' Meeting on Management of MRSA in the Community. Strategies for clinical management of MRSA in the community: Summary of an experts' meeting convened by the Centers for Disease Control and Prevention. 2006. Available at http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca.html.

² Hageman JC, et al. Severe community-acquired pneumonia due to *Staphylococcus aureus*, 2003–04 influenza season. Emerg Infect Dis. 2006 Jun [17 August 2006]. Available from www.cdc.gov/ncidod/EID/vol12no06/05-1141.htm

Updated Interim Guidance for Laboratory Testing of Persons with Suspected Infection with Avian Influenza A (H5N1) Virus in the United States

The Centers for Disease Control and Prevention (CDC) recommends maintaining the enhanced surveillance efforts practiced currently by state and local health departments, hospitals, and clinicians to identify patients at increased risk for avian influenza A (H5N1), namely travelers to countries with documented H5N1 activity or laboratorians conducting research with the virus.

Testing for avian influenza A (H5N1) virus infection is recommended for the following:

A patient who has an illness that:

- requires hospitalization or is fatal; and
- has or had a documented temperature of $\geq 38^{\circ}\text{C}$ ($\geq 100.4^{\circ}\text{F}$); and
- has radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternate diagnosis has not been established; and
- has at least one of the following potential exposures within 10 days of symptom onset:

A. History of travel to a country with influenza H5N1 documented in poultry, wild birds, and/or humans,[†] and had at least one of the following potential exposures during travel:

- direct contact with (e.g., touching) sick or dead domestic poultry;
- direct contact with surfaces contaminated with poultry feces;
- consumption of raw or incompletely cooked poultry or poultry products;
- direct contact with sick or dead wild birds suspected or confirmed to have influenza H5N1;
- close contact (approach within 1 meter [approx. 3 feet]) of a person who was hospitalized or died due to a severe unexplained respiratory illness;

B. Close contact (approach within 1 meter [approx. 3 feet]) of an ill patient who was confirmed or suspected to have H5N1;

C. Worked with live influenza H5N1 virus in a laboratory.

Note

Clinicians should contact the Oklahoma State Department of Health Communicable Disease Division at 405.271.4060 or 1.800.234.5963 to arrange specimen collection and testing on patients meeting the above criteria. Testing for avian influenza A (H5N1) virus infection can also be considered on a case-by-case basis for a patient with mild or atypical disease who has one of the exposures listed to the left (criteria A, B, or C). Initial screening by PCR can be performed at the State Public Health Laboratory. Appropriate specimens from patients who screen positive for H5 or H7 influenza types will be forwarded to the CDC for confirmation.

[†] For a listing of influenza H5N1 affected countries, visit the CDC Web site at <<www.cdc.gov/flu/avian/outbreaks/current.htm>> or the OIE Web site at <<www.oie.int/eng/en_index.htm>>

{Foodborne Botulism}

Foodborne botulism is caused by ingestion of the preformed toxin produced by the bacteria *Clostridium botulinum*. Botulism is a notifiable disease in Oklahoma. When a suspected case is reported to the Communicable Disease Division (CDD), an epidemiologist will assist in requesting antitoxin, laboratory confirmation through the Centers for Disease Control and Prevention (CDC), and identify potential sources and other cases. This report summarizes a confirmed case of foodborne botulism, the first case in Oklahoma since 1994.

On Thursday, July 14, 2005, the Oklahoma State Department of Health (OSDH), CDD was notified about a suspected case of botulism in a 14-year-old female. On Monday, July 11, she began experiencing symptoms of nausea, vomiting, trouble speaking, and was taken to a local hospital. Additional symptoms included constipation, abnormal deep tendon reflexes, and descending bilateral paralysis. The case had no fever, which is common for disease caused by *C. botulinum* intoxication. She was transferred to a hospital in Oklahoma City on July 12, where she was placed on a ventilator. Foodborne botulism was suspected when it was learned that the case had recently consumed home-canned venison stew. Based on the clinical presentation and consumption history of a home-canned product, CDD contacted the CDC to coordinate botulinum antitoxin delivery and laboratory testing to confirm botulism.

Antitoxin was air delivered from CDC in Atlanta, and administered the following day. Further investigation into the source of intoxication identified improperly home-canned venison and potato stew as the most likely vehicle. Serum and stool specimens as well as the remaining amount of home-canned stew (seven quart jars) obtained from the case's residence were collected and sent to CDC's National Botulism Surveillance and Reference Laboratory. Unfortunately, no stew was available from the same quart jar from which the patient had eaten. *C. botulinum* toxin type A was detected in the serum; no botulinum toxin or *C. botulinum* organisms were found in the food samples or stool. The case required mechanical ventilation for over two months and suffered recurrent pneumonia. She was discharged during September 2005; however, the prolonged paralysis associated with botulism required several months of rehabilitation.

C. botulinum is ubiquitous in the environment and rarely causes disease when ingested by healthy adults. Ingestion of preformed toxin is the cause of foodborne botulism, a relatively rare condition. In the United States, there were an average of 27 cases of this form of botulism per year between 1988 and 2003.¹ Foods which are conducive to the reproduction of *C. botulinum* and synthesis of botulism toxin are those stored in anaerobic conditions, not exposed to prolonged heat, and having low acid content. Examples of foods causing botulism intoxication in recent years include home-canned foods, foil-wrapped baked potatoes, and commercially prepared chili.²

Prior to 2005, Oklahoma's last case of foodborne botulism was in 1994. The case reported in 1994 was also epidemiologically linked to consumption of stew. In this instance, the stew was not canned, but left unrefrigerated for three days before being eaten without reheating. The lid of the pot or the gravy of the stew was thought to have provided an anaerobic environment for toxin production.³ Botulinum toxin type A was detected in the patient's stool and in the stew.

Most cases of foodborne botulism in the U.S. result from eating improperly home-canned foods. The time needed to destroy *C. botulinum* during canning varies by the acidity of the food, size of the jars, pressure, and altitude. Information on safe home canning is available at <<www.uga.edu/nchfp/how/general.html>>.

Suspected cases should be reported immediately to CDD at 405.271.4060. Clinicians should consider botulism in patients who present with symmetric cranial nerve palsies (ptosis, diplopia, dysarthria, and dysphagia) and bilateral flaccid paralysis.

*prepared by Carmen Clarke, MPH, Epidemiologist, CDD

¹ Reported Cases of Notifiable Diseases—United States, 1996-2003. MMWR 2005;52:1-85.

² Soble, J, Tucker N., Sulka A., McLaughlin J, Maslanka, S. Foodborne Botulism in the United States, 1990-2000. Emer Inf Dis. 2004;10:1606-1611.

³ Foodborne Botulism—Oklahoma, 1994. MMWR. 1995;44:200-202.

Summary of Selected Notifiable Disease Reports in Oklahoma

diseases/conditions	fall quarter ¹	year to date ²	5 year average ³
AIDS	17	79	144
Campylobacteriosis	93	259	360
Chlamydial infections	1834	8161	8352
Cryptosporidiosis	8	29	19
<i>E.coli</i> O157:H7	7	14	23
Ehrlichiosis	1	6	41
Giardiasis	38	93	89
Gonorrhea	627	2946	3521
<i>H. influenzae</i> (all types)	4	37	43
<i>H. influenzae</i> , type B (kids < 5)	0	0	0
Hepatitis A	1	5	37
Hepatitis B (acute)	6	32	66
Hepatitis C (acute)	0	4	9
HIV infections	53	154	123
Meningococcal invasive	0	8	16
Rabies, animal	17	54	475
Rocky Mountain spotted fever	3	35	133
Salmonellosis	181	368	382
Shigellosis	43	95	537
<i>Streptococcus</i> invasive group A	15	80	95
<i>Streptococcus pneumoniae</i> , invasive	44	304	286
Syphilis (primary)	3	25	17
Syphilis (secondary)	7	21	22
Syphilis (early latent)	44	108	73
Tuberculosis	23	105	114

diseases/conditions	year to date ²	5 year average ³
Brucellosis	0	0
Hemolytic Uremic Syndrome (HUS)	0	3
Legionellosis	1	10
Listeriosis	1	3
Lyme disease	0	0
Malaria	7	7
PAM	0	1
Psittacosis	0	0
Tularemia	1	11
Typhoid fever	0	0
Vibriosis	0	1
Yersiniosis (<i>Yersinia enterocolitica</i>)	1	2

number of animal rabies cases by animal type	year to date ²	percent
Bat	3	5
Cat	4	7
Cow	4	7
Dog	1	2
Goat	0	0
Horse	4	7
Skunk	39	71
Total	55	100

¹ 07.01.06 through 09.30.06

² 01.01.06 through 09.30.06

³ Five year average of year to date data for 2001 through 2005.

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