Pennsylvania Epi Notes

January 2011

Bureau of Epidemiology
Pennsylvania Department of Health

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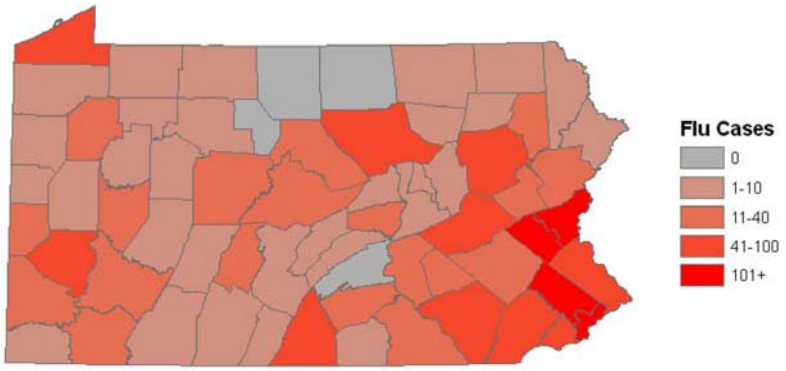
Influenza Update *

* All 2010-2011 data are provisional and subject to change. Figures based on most current data as of 01/15/2011.

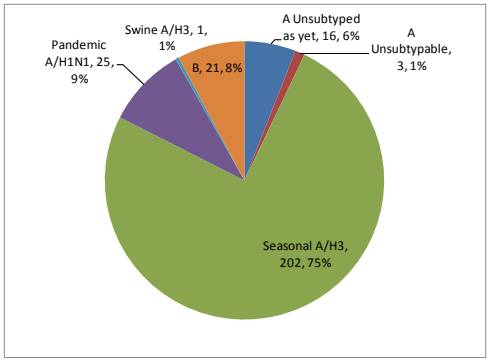
Geographic Distribution of 2010-2011 Influenza Cases



Influenza has arrived in Pennsylvania. From October 3 through January 15, the PA Department of Health has received reports of 1,781 cases of influenza. This represents just a fraction of total influenza in PA, as most cases are never tested or reported. Of 268 cases that have been subtyped by the state public health laboratory, 75% are the A/H3 subtype. A/H3 tends to affect the elderly and cause more severe disease than other common subtypes of influenza. We are also still seeing cases of pandemic 2009 A/H1N1, as well as influenza B. According to the US Centers for Disease Control and Prevention, the current flu vaccine is a good match to this season's circulating strains. Flu vaccination, now recommended for everyone 6 months of age and older, is one of the best ways to prevent the flu. It is not too late to be vaccinated.

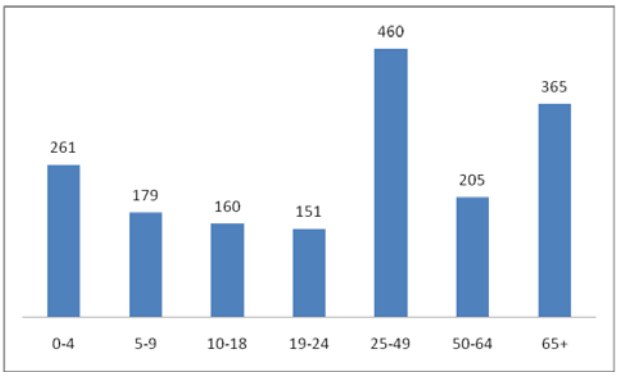
For more information on influenza and how you can get vaccinated, please visit the Pennsylvania Department of Health's influenza website.

Circulating Influenza Viruses †

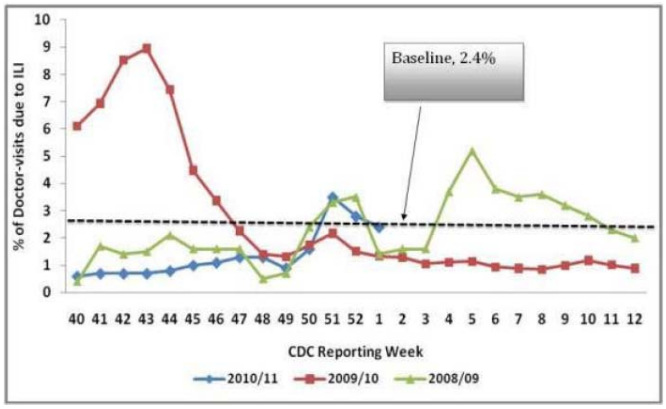


† Figure based on 268 isolates subtyped by state public health laboratory between 10/03/2010 and 01/15/2011.

Age Distribution of 2010-2011 Influenza Cases



Percent of Doctor Visits due to Influenza-like Illness (ILI) in Current and Past Influenza Seasons By Week



Pertussis

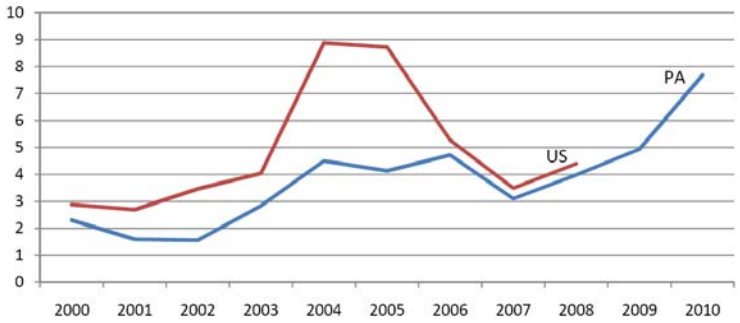
Cause: Pertussis is caused by the bacterium *Bordetella pertussis*. The bacteria attach to the cilia that line part of the upper respiratory system and release toxins, thereby damaging the cilia and causing inflammation.

Transmission: Pertussis is usually spread by coughing or sneezing in close contact with others who then breathe in the pertussis bacteria. Symptoms of pertussis usually develop within 7-10 days after exposure.

Symptoms: Early symptoms can last for 1-2 weeks and usually include runny nose, low-grade fever, mild cough, and apnea (in infants). As the disease progresses, the traditional symptoms of pertussis appear and include paroxysms (fits) of many, rapid coughs followed by a high-pitched "whoop," and vomiting and exhaustion after coughing fits.

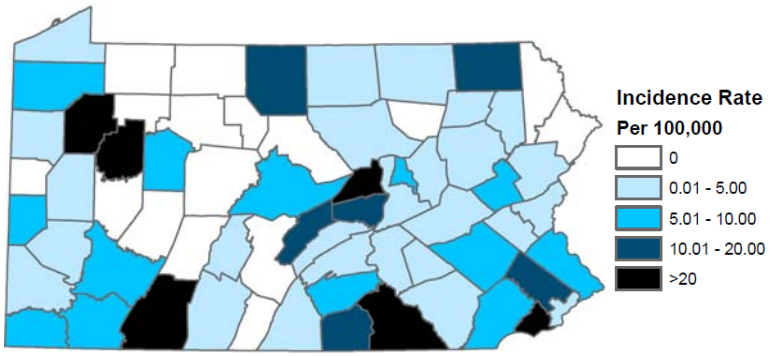
Reported cases of whooping cough vary from year to year and tend to be cyclical in nature, peaking every 3-5 years. This pattern is not completely understood, and it is too early to know if 2010 will be a peak year nationally. In 2010, Pennsylvania has seen a notable increase in cases with localized outbreaks in several counties.

Pertussis Incidence Rates (per 100,000) - US & PA, 2000-2010



PA: 2010 rates are provisional and subject to change.
US: Centers for Disease Control and Prevention. MMWR: Summary of Notifiable Diseases, US, 2008-2000.

Pennsylvania Pertussis Incidence Rates by County, 2010 *



* 2010 rates are provisional and subject to change.

Surveillance and Prevention Activities in Pennsylvania

The state, county, and municipal health departments have responded to the increase in cases in a variety of ways, including the following:

- Increased surveillance activities utilizing Pennsylvania's National Electronic Disease Surveillance System (PA-NEDSS)
- Dissemination of PA HAN (Health Alert Network) alerts to healthcare providers
- Broadcast of a pertussis specific webinar geared towards schools and physicians
- Establishment of free vaccination clinics in counties with increased cases of pertussis
- Development and dissemination of pertussis guidelines and recommendations for Pennsylvania schools

Vaccine Recommendations

Primary series:

- DTaP given at ages 2 months, 4 months, 6 months, 15-18 months, and 4-6 years.

Boosters:

- Tdap given at 7-9 years of age to children who have not completed their primary DTaP series.
- Tdap given at 11-18 years of age.
- Tdap given once at 19-64 years of age in place of a single Td booster.
- Pregnant women should ideally receive Tdap before pregnancy. Otherwise, it is recommended that Tdap be given after delivery, before leaving the hospital or birthing center.
- Adults 65 years and older do not currently have a pertussis booster vaccine licensed for their age group. However, the Centers for Disease Control and Prevention's (CDC's) Advisory Committee in Immunization Practices (ACIP) has recommended allowing the use of Tdap in this age group, especially for those who have close contact with infants under 12 months of age. Once the recommendation is approved by Health and Human Services, it will be published by CDC and ACIP.

Photo courtesy of CDC's Public Health Image Library and James Gathany

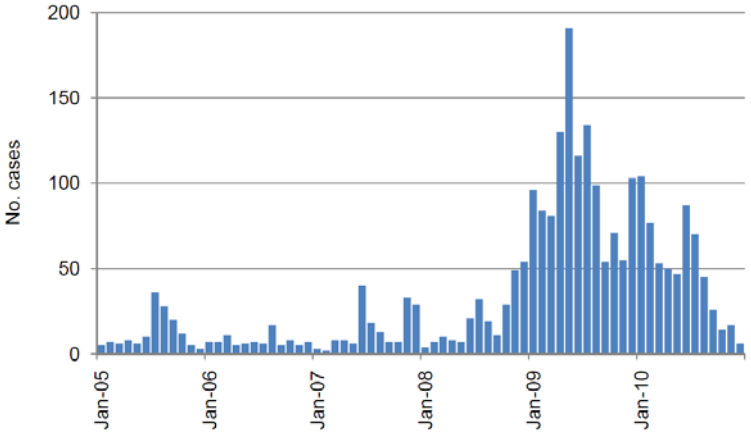
For more information, see CDC's information on pertussis vaccination.

Shigellosis

Shigellosis is an intestinal disease caused by bacteria from the genus *Shigella*. The main symptom of *Shigella* infection is diarrhea, which is often bloody. Other symptoms include abdominal cramps and fever. The illness is self-limiting and usually lasts 4-7 days. The majority of cases are due to direct or indirect fecal-oral transmission from a symptomatic person or an asymptomatic carrier. Other shigellosis cases may be the result of eating contaminated food, or drinking or swimming in contaminated water. Child care settings are at high risk for transmission of illness due to toddlers who are not fully toilet trained and have imperfect hand hygiene. The bacteria is generally shed in the stool for 1-2 weeks after symptoms subside and can be transmitted to others during that time unless treated with appropriate antimicrobial therapy.

Historically, Pennsylvania has had cyclic summer peaks of shigellosis cases. The latest increase in cases began in late 2008 and has sustained a two-year surge which may be tapering off. The shape of the epidemiologic curve indicates that many of the 2009-2010 cases were due to person-to-person contact.

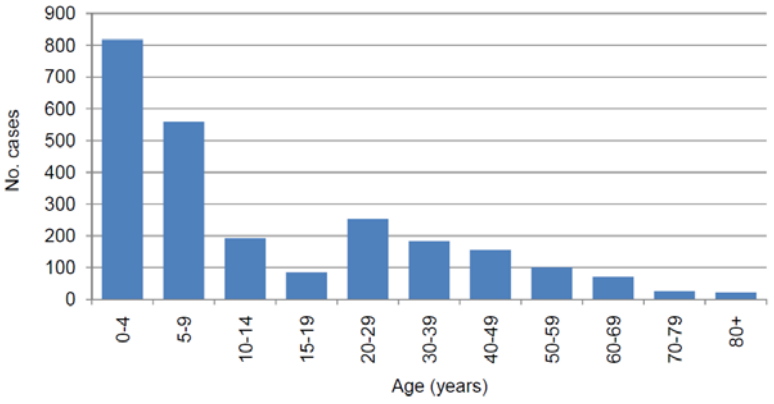
Epidemiologic Curve of Pennsylvania Shigellosis Cases, 2005-2010 *



* 2010 counts are provisional and subject to change.

The Centers for Disease Control and Prevention (CDC) estimate that as few as 5% of *Shigella* infections are diagnosed and/or reported. The actual number of *Shigella* cases may be up to 20 times greater than that shown in the figure.

Age Distribution of Pennsylvania Shigellosis Cases, 2005-2010

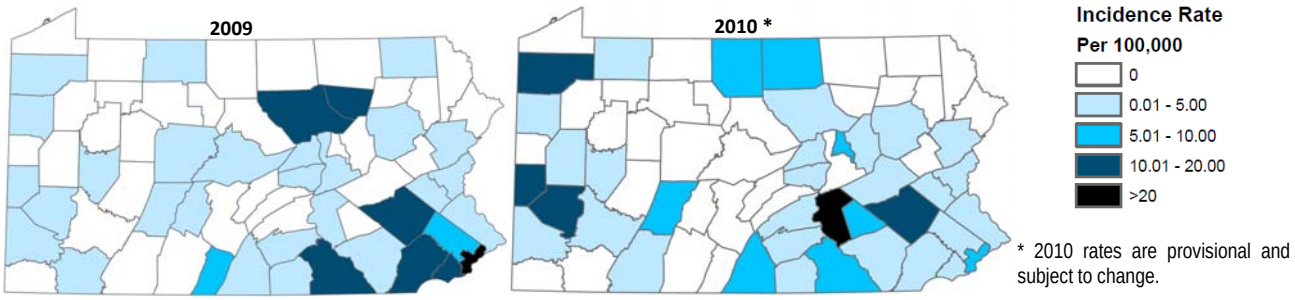


Preventing Transmission

In Pennsylvania, public health interventions were utilized to curb the spread of *Shigella* in child care settings. Child care settings are subject to local and state communicable disease control regulations. The Pennsylvania Department of Health released a Health Advisory on April 8, 2010. This communication summarized the standard regulations and additional public health recommendations to control the transmission of *Shigella*.

- No child or staff with an acute onset of diarrhea should attend group settings, regardless of the cause.
- Healthcare practitioners should obtain stool specimens from persons who attend child care programs with diarrhea irrespective of whether there is a recognized cause of a GI outbreak.
- When *Shigella* is identified in a child care attendee or staff, stool samples from other symptomatic attendees and close contacts should be collected and tested.
- Children and staff members with *Shigella* must have two negative stool cultures, obtained at least 48 hours after the last dose of antibiotic and at least 24 hours apart prior to returning to the child care facility.
- Asymptomatic persons who continue to shed *Shigella* in the stool are considered carriers and must be excluded from child care or employment in healthcare or food handling until they have two negative stool cultures.

Pennsylvania *Shigella* Incidence Rates by County, 2009 and 2010



* 2010 rates are provisional and subject to change.

Public Health Surveillance at the Rainbow Family Annual Gathering — Pennsylvania, 2010

Parvathy Pillai, Aimee Palumbo, Jennifer Quammen, Dennis P. Fapore, Perrianne Lurie, Atmaram Nambiar, Judi Sedivy, Virginia Dato, Enzo Campagnolo, Andre Weltman, Maria Moll

On June 14, 2010, The Pennsylvania Department of Health (PADOH) was notified that in two weeks the Rainbow Family of Living Light's ("Rainbow Family's") annual gathering was going to be held in the Allegheny National Forest during the approximate dates of July 1–7, 2010.

Slit trench latrines

Rainbow Family annual gathering

- PADOH notified of 2010 gathering site in mid-June
- Typically held around July 4th holiday

Public health issues at previous gatherings

- Shigellosis
- Injuries
- Meningococcal disease

Potential public health issues at 2010 gathering

- Injuries
- Heat-related illness
- Infectious disease outbreaks

Objectives

- Establish short-term surveillance to identify diseases of public health concern
- Provide outbreak response, if needed

The Rainbow Family is an unstructured communal group with no formal leadership whose members ("Rainbows") hold an annual summertime gathering in different national forests around the July 4th holiday (1). Different public health problems have occurred during past gatherings, including a shigellosis outbreak, injuries, and meningococcal disease (1–4). To recognize promptly any public health concerns related to the gathering and to provide outbreak response, if needed, PADOH quickly assembled an onsite surveillance team and invited members of a Centers for Disease Control and Prevention (CDC) epidemic-assistance investigation (Epi-Aid) team onto the PADOH team to assist with surveillance efforts. The team implemented a short-term surveillance system for the gathering during June 25–July 10 that used multiple methods, described as follows:

- **Enhanced Emergency Department (ED) Surveillance.** During June 27-July 10, a standardized data collection form was used at five EDs identified by the United States Forest Service (USFS) as the area hospitals closest to the gathering to collect information regarding Rainbow-related ED visits, including demographic data, chief-complaint category, final diagnosis, and final disposition.
- **PA Real-Time Outbreak and Disease Surveillance System (RODS).** RODS is a state-based electronic ED surveillance system that captures free-text chief complaint, age, sex, home zip code, and facility name for every visit to PA EDs. During June 27-July 10, RODS was used to identify Rainbow-related ED visits, because the ED closest to the gathering site had been requested by the PADOH team to add the text "RB" to either the beginning or end of the chief complaint field.
- **Emergency Medical Service (EMS) Surveillance**. EMS surveillance was conducted through the PA Knowledge Center system, which contains an electronic database of EMS dispatches, and was searched for EMS dispatches affiliated with the Rainbow gathering during June 26-July 6.
- **Rainbow Gathering Site Visits.** During the gathering, a two- to three-person PADOH team made five site visits around or into the gathering, seeking to have regular interaction with staff of the primary medical unit within the

(Continued)

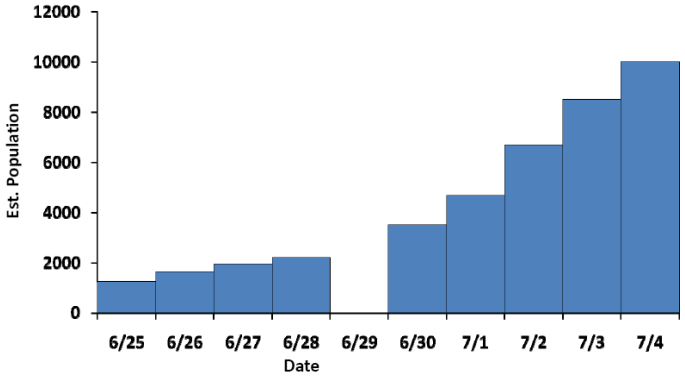
gathering, the Center for Alternative Living Medicine (CALM). CALM maintained no written medical records and was staffed by persons with varying backgrounds and education with respect to traditional and alternative medicine. Animal health surveillance was also conducted during site visits through direct observation of animals within the gathering and communication with pet owners.

Sign outside CALM site

- **USFS Briefings.** USFS briefings were conducted twice daily and attended by members of the PA-DOH team during June 25–July 6. These briefings provided regular health and safety reports and often contained information on both human and animal conditions; USFS provided daily gathering attendance estimates calculated on the basis of the number of vehicles parked by gathering entrances and by using an estimate of four persons per parked car and eight persons per parked bus.
- **Veterinary Clinic Surveillance.** Animal health surveillance was further implemented by use of a standardized data collection form at the local animal shelter and three area veterinary clinics identified by USFS; for all Rainbow-related animal visits during approximately June 30–July 10, information was collected regarding animal demographics, vaccination status, chief-complaint category, final diagnosis, disposition, and whether the provider was reimbursed.

The gathering increased in size slowly during June 25–29, with the population increasing from approximately 1,200 to 2,200; during June 30–July 4, the size of the gathering increased by 1,000–2,000 persons every day, and reached its peak population of 10,000 on July 4. As expected, the majority of the gathering disbanded quickly after the holiday, and no population estimates were made after July 4.

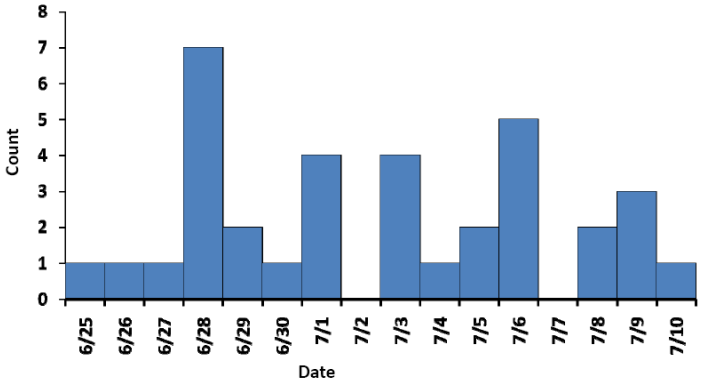
Estimated Daily Population at 2010 Rainbow Family Annual Gathering



* No population estimate was collected on 6/29

Overall, the majority of the observed health events at the 2010 gathering were related to injuries, respiratory and urinary infections, and animal bites. Apparently, the majority of Rainbows sought health care within the gathering. A total of 40 Rainbow-related ED visits were captured by combining all of the surveillance methods. However, at least five visits appear to have been captured by more than one system, yielding 35 unique visits, but additional unrecognized overlap might have occurred. Of the 35 visits, at least 24 (69%) occurred at the ED closest to the gathering. Two Rainbow-related visits were by nonparticipants (i.e., USFS personnel or state police). No substantial outbreaks of human illness were detected by any of the surveillance methods; illnesses rarely required hospitalization; and no human fatalities were identified.

Unique ED Visits Identified by Combined Surveillance Methods Over Time



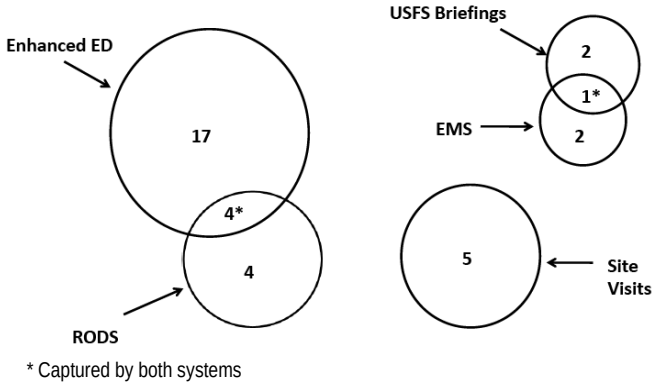
* ED visits reported through site visits listed as date of report and may not reflect date of ED visit

Both reports and observations indicated the presence of a considerable dog population at the 2010 gathering. USFS staff provided an estimate of one dog for every four persons attending the gathering. On the basis of observation, approximately 40% of the dogs were aged <8 months. Traumatic injuries and multiple communicable diseases were identified or suspected among the dogs, including parvovirus, which can cause substantial morbidity and mortality among dogs, and intestinal worms, which can be transmitted to humans. Seven dogs were brought to vet-

(Continued)

erinary clinics, and one death of a dog with parvovirus infection was noted through veterinary clinic surveillance.

Number of ED Visits Identified by Each Surveillance Method



Multiple public health surveillance methods were used during the 2010 annual Rainbow gathering. Interestingly, the results from each surveillance system varied, with no single surveillance system capturing the majority of the health events; thus, the multiple surveillance methods complemented each other, and combining all methods offered the most comprehensive surveillance. With the exception of site visits, the surveillance methods used during the 2010 Rainbow Family annual gathering were minimally time-consuming or labor-intensive, and each surveillance method had the potential to capture events missed by other methods. We are unaware of animal surveillance at previous Rainbow gatherings. The multidisciplinary nature of the PADOH team, which included veterinarians in addition to epidemiologists and physicians, facilitated establishment of complementary surveillance methods, including animal health surveillance.

The location of the gathering, with one ED serving as the primary referral point for all gathering-affiliated persons, helped focus the enhanced ED- and RODS-based surveillance systems. The PADOH team was able to make daily visits to the primary ED to collect the data collection forms, whereas the other four EDs were contacted periodically by telephone. These daily visits allowed for regular interactions with the ED staff, which helped emphasize the role of EDs in surveillance efforts and allowed for direct communication to troubleshoot problems with surveillance efforts. Furthermore, the RODS- and EMS-based surveillance systems existed before the Rainbow gathering. However, using the RODS system for the Rainbow gathering required that an "RB" code be included in the chief-complaint field, and analysis of the RODS data required that chief complaints be viewed by hospital location rather than by home location to include out-of-state residents.

Establishing an optimal working relationship with USFS was crucial. Local PADOH staff developed rapport with USFS staff and attended USFS briefings from the start of the gathering. As additional PADOH team members arrived, they were integrated into the process. Introductions by USFS safety officers during the gathering site visits allowed the PADOH team to more rapidly establish contact with key members of the CALM staff and foster trust among the Rainbows. Emphasizing that the PADOH team was not working in a regulatory role was also key in establishing trust among Rainbows. Therefore, the PADOH team making site visits was kept to no more than three persons so as not to appear overwhelming. Additionally, although surveys had been conducted at previous gatherings, Rainbows voiced mistrust of these surveys; therefore, the team decided not to collect data through formal surveys.

The PADOH team experienced certain challenges in implementing surveillance efforts. Both the late notice of exact gathering location within Pennsylvania and difficulties in the Epi-Aid team's arrival delayed the initiation of focused surveillance efforts. The majority of surveillance components were implemented only after hundreds of Rainbows already had arrived at the gathering; thus, time was insufficient to identify and resolve all problems with surveillance before the start of the main gathering. Second, the timing of the event around a holiday weekend meant that animal health surveillance efforts were limited because veterinary offices were closed. Additionally, the holiday weekend might have contributed to an increase in ED staff rotation, and not all staff might have been familiar with surveillance efforts. Therefore, concern existed that not all ED staff were using the enhanced ED surveillance forms or using the RB code with the chief complaint.

Key points

- Used multiple surveillance systems
  - Different events captured by each system
  - Animal surveillance included
- Established partnerships
  - US Forest Service
  - Local EDs and veterinary clinics/animal shelter
- Emphasized trying to foster trust of PADOH team among Rainbows
  - Small site visit teams
  - No surveys

(Continued)

In conclusion, PADOH successfully worked with USFS, CDC, and medical and veterinary providers to implement multiple methods of short-term public health surveillance surrounding the 2010 Rainbow Family annual gathering. PADOH's experience highlights the importance of timely initiation of multiple methods of public health surveillance (including animal health when appropriate) for mass-gathering events and effective collaboration with public health partners so that surveillance goals are agreed upon and achieved.

References

1. Bossarte RM, Sullivent EE, Sinclair J, et al. Injury, violence, and risk among participants at a mass gathering of the Rainbow Family of Living Light. J Health Care Poor Underserved 2007;19(1):588-95.
2. Wharton M, Spiegel RA, Horan JM, et al. A large outbreak of antibiotic-resistant shigellosis at a mass gathering. J Infect Dis 1990;162:1324–8.
3. Centers for Disease Control and Prevention. Public health aspects of the Rainbow Family of Living Light annual gathering—Allegheny National Forest, Pennsylvania, 1999. MMWR Morb Mortal Wkly Rep 2000;49:324–6.
4. Clark FL, Beckley RG. Bacterial meningitis in the national forest: tracking contacts at the Rainbow Family Gathering, Arkansas 2007 [Abstract 166569]. The 135th APHA Annual Meeting and Exposition. November 4, 2007. Available at: http://apha.confex.com/apha/135am/techprogram/paper_166569.htm. Accessed October 27, 2010.

Cases of Select Notifiable Diseases in Pennsylvania *

	Total cases reported for previous 5 years				
Disease	2010 †	2009	2008	2007	2006
Chlamydia	47,521	43,068	42,233	42,469	39,487
Gonorrhea	12,829	10,138	11,071	12,706	11,466
Salmonella	1,783	1,701	1,721	1,866	1,692
Campylobacter	1,616	1,542	1,554	1,359	1,262
Giardia	772	837	873	751	822
Pertussis (whooping cough)	754	468	368	257	205
Shigella	631	1,201	248	171	88
Cryptosporidiosis	487	465	326	939	286
Varicella (chicken pox)	356	461	853	1,821	1,943
Legionella	322	383	408	308	334

* Confirmed cases only
† Case counts for 2010 are provisional and subject to change.

Disease Reporting

Healthcare practitioners, healthcare facilities, and clinical laboratories are required to report certain diseases to the Pennsylvania Department of Health. In addition to the diseases on the list, all disease outbreaks and/or unusual occurrences of disease are reportable within the Commonwealth. In most cases, reporting must be done electronically via Pennsylvania's version of the National Electronic Disease Surveillance System (PA-NEDSS). To request a PA-NEDSS account, healthcare providers may email PA-NEDSS@state.pa.us; please include your contact information and the name and address of the facility for which you will be reporting.

Coming up in the next issue (April 2011)

- Outbreak of Group A Strep in a Long Term Care Facility
- Rates of Vaccine-Preventable Diseases and Vaccination Coverage

Pennsylvania Epi Notes

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