

Be Alert for Idaho Health Alerts: your source for public health information

“Ebola Virus Disease: New PPE Guidelines, Instructions for Public Health Consultation and Reporting, and Patient Evaluation and Management,” “Request to Report Acute Limb Weakness in Idaho Children,” and “Enterovirus Infection and Severe Respiratory Illness in Children: Information for Idaho Providers” are examples of recent Health Alert Network (HAN) messages sent by Idaho Public Health Districts (PHDs) to Idaho healthcare providers. If you are not receiving these important health messages, please consider registering in the Idaho HAN. During preparations to receive a patient with Ebola virus disease in Idaho, many healthcare providers sought information from state and local public health agencies that Idaho HAN participants received through timely messages.

The Idaho HAN is an automated system designed to rapidly deliver targeted, time-critical, or updated health-related information, such as new or emerging agents in or threatening Idaho residents, disease management guidelines, increases in disease incidence, and clusters of disease of public health concern in a geographic area, including requests for participation in identifying and reporting cases.

PHDs have primary responsibility for communicating health messages to Idaho healthcare providers through the Idaho HAN. Health messages of national or statewide importance that originate from the Centers for Disease Control and Prevention (CDC) or the Idaho Department of Health and Welfare, Division of Public Health are tailored for local Idaho providers by PHDs before distribution.

Types of information that might be included in a health message sent through the HAN are:

- How to report cases of disease to public health agency officials
 - Outbreak investigation-specific information including, but not limited to, the geographic area involved, at-risk populations, patient information to report to public health, clinical signs and symptoms, specimen testing information, treatment guidelines and recommendations, and patient management
 - Information on disease-specific incidence in the community
 - Reports of unusual cases of disease in the community (including calls for cases)
 - The first reported case of illness or death associated with a seasonal disease (*e.g.*, West Nile virus)
 - Immunization information including vaccine availability (*e.g.*, shortages), changes to immunization recommendations, and vaccination clinics sponsored by the PHD
 - Educational opportunities sponsored by the PHD for patients with chronic diseases (*e.g.*, diabetes) or engaging in health risk behaviors (*e.g.*, tobacco cessation)
 - Updates to guidelines for treatment, testing, or management of certain diseases
 - Announcements targeted to the medical community for situational awareness (*e.g.*, poor air quality advisories, services provided by the PHD)
- Messages are tagged as “Alerts,” “Advisories,” “Updates,” or “Info” to let the recipient know the



IDAHO DEPARTMENT OF
HEALTH & WELFARE

DIVISION OF
PUBLIC HEALTH

BUREAU OF
COMMUNICABLE
DISEASE PREVENTION

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiologist

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

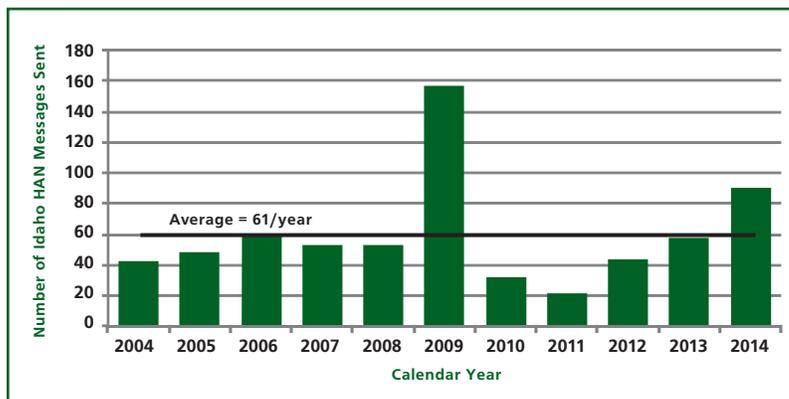
PATRICK GUZZLE, MPH
Food Protection Program Manager

SCOTT HUTTON, MPH
Public Health Informatics Specialist

MARIANA ROSENTHAL, PhD, MPH
Epidemic Intelligence
Service Officer

MITCHELL SCOGGINS, MPH
Immunization Program Manager

Figure 1. Frequency of Idaho Health Alert Network messages disseminated by year, 2004–2014.*



*PHD 2 used the Idaho HAN system for disseminating health messages only during the years 2004, 2005, 2007, and 2008. PHD 3 did not use the Idaho HAN system to disseminate health information during the years 2007–2011. The spike in 2009 coincided, in part, with the influenza A (H1N1) pandemic.

level of importance, the immediacy of the action requested, and whether the message is an update to a previous message or is informational only.

Health messages are generated sparingly: the total number of messages disseminated in Idaho since 2004 has ranged from 23 to 157 per year (Figure 1). The average number of messages disseminated by each PHD ranges from 6 to 14 per year, excluding test messages (Figure 2). Test messages, which do not require a response, are sent at least twice per year. PHDs target recipients based on the information in the message and its relevance to the roles

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

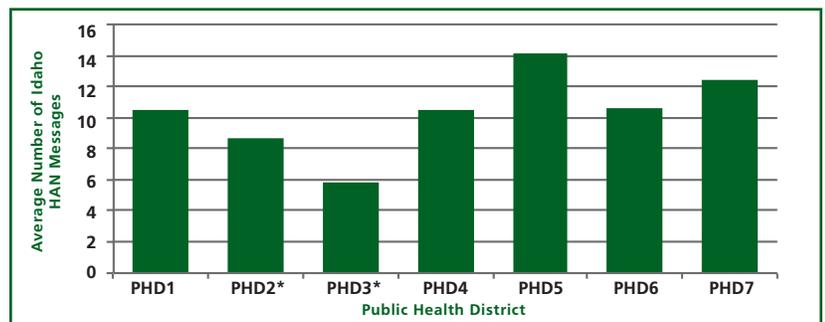
An electronic version of the Idaho Reportable Diseases Rules may be found at <http://admin-rules.idaho.gov/rules/current/16/0210.pdf>.
Current and past issues are archived online at www.idb.dhw.idaho.gov.

IDAHO HEALTH ALERTS CONTINUED FROM PAGE ONE

(e.g., primary care physician, veterinarian) the message recipient self-identifies in their Idaho HAN profile.

Healthcare providers can receive messages via e-mail after registering with the Idaho HAN. Text messaging will be available before July 1, 2015. To register with the Idaho HAN, visit the Idaho HAN registration page: https://health.dhw.idaho.gov/IDHAN/Form/User/register_user.aspx. If you experience technical difficulties registering, please refer to the “Contact Us” link on the left side of the registration page to find out how to contact your local PHD. The Idaho HAN is sponsored by the Division of Public Health’s Public Health Preparedness Program under a cooperative agreement with the CDC.

Figure 2. Average annual number of Health Alert Network messages disseminated by Public Health District* — 2004–2014.



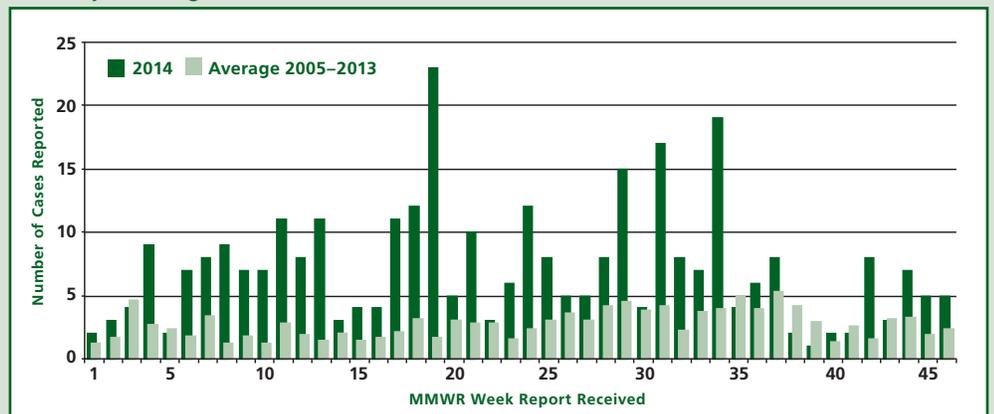
*Averages for PHD 2 and PHD 3 are based on the years the Idaho HAN was used to disseminate health messages (See Figure 1.)

Unusually High Pertussis Incidence Continues in Idaho

From January 1 through November 15 of this year 332 cases of pertussis have been reported to public health officials. This represents the second highest year-to-date incidence of reported cases in Idaho in the last 25 years. One Idaho infant has died this year because of pertussis.

Rates of pertussis this year are highest among children aged 7–17 years. These children and adolescents can unknowingly spread the infection to their younger siblings, relatives, and contacts in daycares and schools. Adolescents should receive a dose of Tdap at 11 to 12 years of age, at the same time they are getting their vaccines against meningitis and human papilloma virus.

Figure. Weekly counts of reported cases of pertussis during January–November, 15, 2014 compared with the nine-year average.



Disease Bulletin

IDAHO DEPARTMENT OF
HEALTH & WELFARE

- Seasonal Influenza in Idaho: recent trends and vaccine update
- Prevalence and Predictors of Late HIV Testing in Idaho, 1984–2010
- Data Snapshot: legionellosis — Idaho, 2009–2013

VOLUME 21 NUMBER 3 • OCTOBER 2014

Seasonal Influenza in Idaho: recent trends and vaccine update

According to the Centers for Disease Control and Prevention (CDC), seasonal influenza activity in the United States begins as early as October, generally peaks in January or February, and decreases significantly by the end of May.

Idaho Seasonal Influenza Surveillance

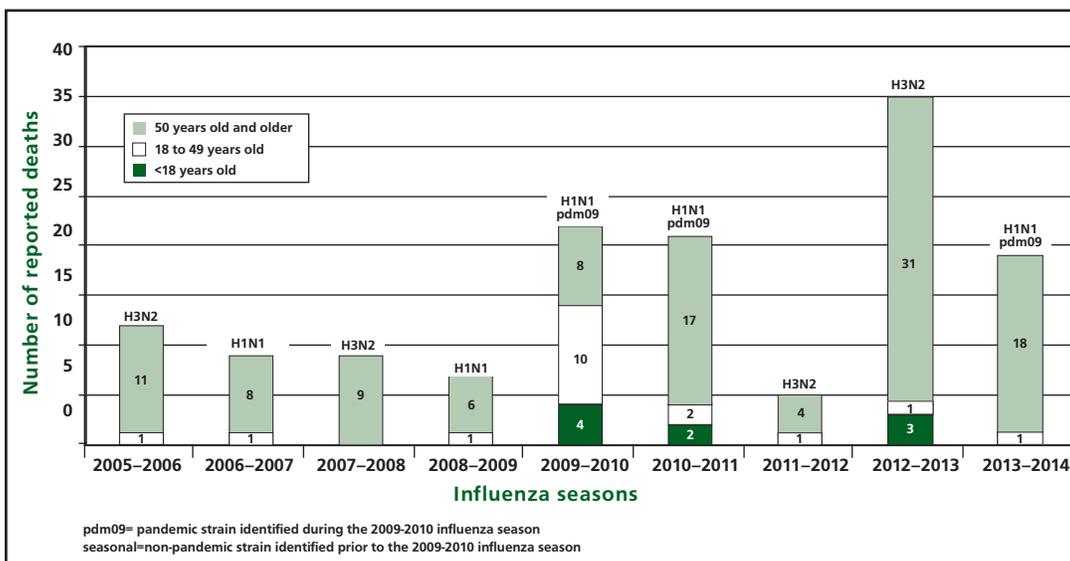
Virologic surveillance is useful for characterizing circulating influenza types and subtypes and mortality surveillance provides information on severity. Predominant influenza subtypes and number of deaths have varied during recent years (Figure 1). The influenza A H1N1(pdm09) subtype dominated last season and 19 influenza-associated deaths were recorded. During the 2013–2014 influenza season, the first rapid-test positive influenza specimen confirmed by the Idaho Bureau of Laboratories was received in mid-November.

Influenza-like illness (ILI) activity, reported by ILINet providers, peaked in January (MMWR week 1 of 2014). ILI activity diminished significantly by mid-February (MMWR week 6 of 2014). The season ended with a small, second wave of ILI during the last few weeks of May 2014 (Figure 2), almost exclusively caused by influenza B viruses B/Massachusetts/02/2012-like and B/Brisbane/60/2008-like.

The Idaho Influenza web site (<http://flu.idaho.gov>) includes a summary of Idaho-specific surveillance information updated weekly throughout the influenza season and resources for health professionals and the public. To learn more about how you can participate in influenza laboratory and epidemiologic surveillance in Idaho, please contact the Bureau of Communicable Disease Prevention, Epidemiology Program at (208)334-5939.

SEASONAL INFLUENZA CONTINUED ON PAGE TWO

Figure 1. Number of influenza-associated deaths, by age group, and predominant circulating seasonal virus subtype—Idaho, 2005–2014 influenza seasons.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

DIVISION OF
PUBLIC HEALTH

BUREAU OF
COMMUNICABLE
DISEASE PREVENTION

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiologist

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

SCOTT HUTTON, MPH
Public Health Informatics Specialist

MARIANA ROSENTHAL, PhD, MPH
Epidemic Intelligence
Service Officer

MITCHELL SCOGGINS, MPH
Immunization Program Manager

DIANA LU, BS
Public Health Associate

ANNA TALMAN, MPH
Public Health Prevention
Service Fellow, 2011–2013



SEASONAL INFLUENZA CONTINUED FROM PAGE ONE

Influenza Vaccine Components and Recommendations

The composition of the 2014–2015 influenza vaccines is the same as the 2013–2014 formulations. Since 2010, the Advisory Committee on Immunization Practices (ACIP) and CDC have recommended that anyone aged six months and older receive the influenza vaccine annually

with rare exception.

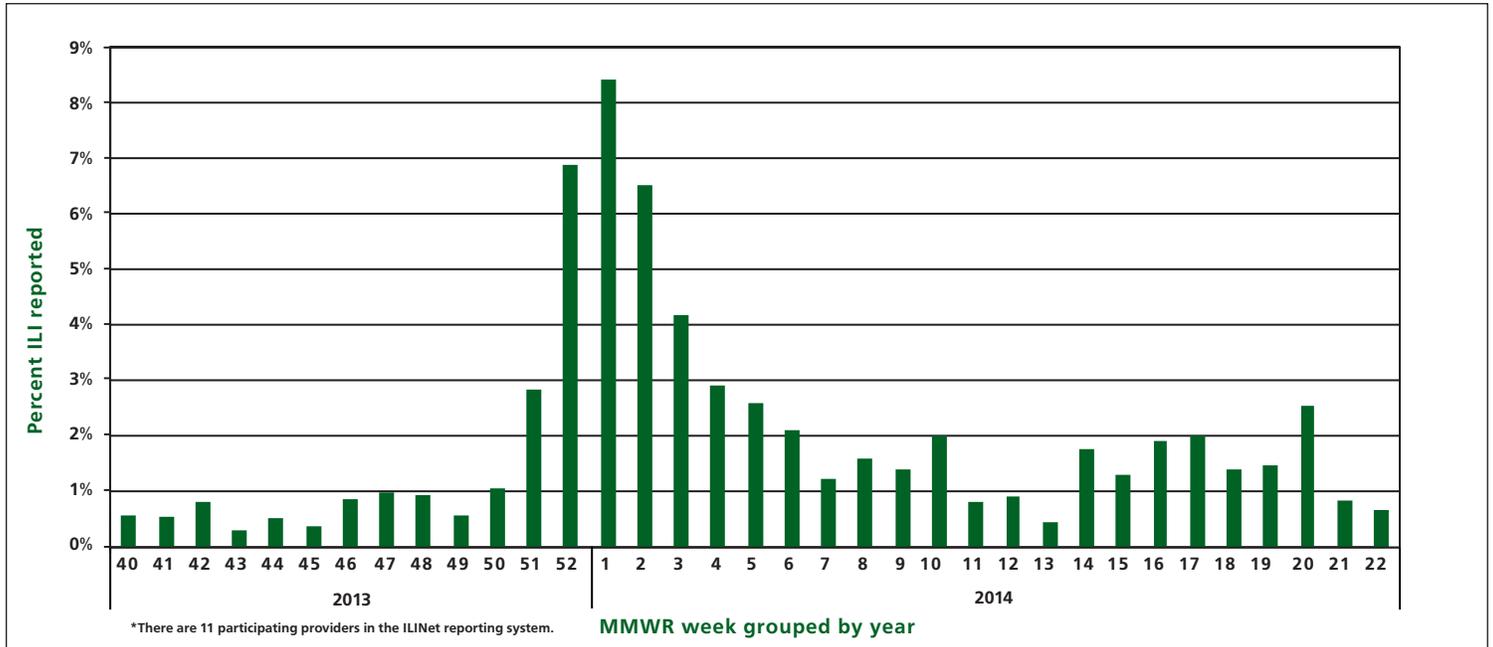
In June 2014, ACIP voted to recommend a preference for using the nasal spray flu vaccine (*i.e.*, LAIV) instead of the flu shot (*i.e.*, IIV) in healthy children 2–8 years of age based on studies in healthy children that suggested the nasal spray formulation was more efficacious in those age groups against laboratory-confirmed,

medically-attended influenza illness.¹ The recommendation also says that if the nasal spray flu vaccine is not immediately available, the flu shot should be given so that opportunities to vaccinate children are not missed or delayed.

References

¹ ACIP committee recommendation. <http://www.cdc.gov/media/releases/2014/s0625-acip.html>.

Figure. Percentage of visits for ILI reported by ILINet* providers, by MMWR week—Idaho, 2013–2014 influenza season.



Prevalence and Predictors of Late HIV Testing in Idaho, 1984–2010

Early testing and diagnosis of HIV can lead to improved long-term prognosis and quality of life, specifically through timely access to antiretroviral therapy (ART) and prophylaxis of opportunistic infections.¹ Additionally, ART and early intervention and counseling to reduce risk behavior can substantially reduce the likelihood of HIV transmission.² Potential implications of late testing include a higher risk of HIV-related clinical events and mortality in the time shortly after HIV diagnosis, increased hospital and drug costs, a reduced chance of viral suppression and immune response on antiretroviral medication, and an increased risk of onward transmission of HIV.³ We used public health surveillance data to describe the epidemiology of individuals in Idaho who test positive for HIV late in the course of the infection compared with those

who test early, to determine predictors of late testing for HIV in Idaho.

Late testers were defined as individuals diagnosed with HIV who went on to receive an AIDS diagnosis within one year. Early testers were defined as individuals who did not progress to AIDS during the study period, or did not receive an AIDS diagnosis within the first five years after their HIV diagnosis. The study excluded individuals who met the following criteria: could not be categorized as a late tester or early tester according to the criteria above, had less than five years of follow-up without an AIDS diagnosis, were pediatric patients aged <13 years, or were diagnosed with AIDS within one year, but also had documented HIV-negative tests within the year previous to receiving their HIV diagnosis. Ultimately, 840 HIV-positive individuals were included

in the analysis: 463 early testers, and 377 late testers.

Rural residence was associated with a three-fold increased odds (OR=3.35, P<0.0001) of late testing in this analysis, after adjusting for other possible predictors of late testing. Residents of rural counties were 36.2% of our study population, but were a higher proportion (54.3%) of late testers. Having received a diagnosis from a facility likely to provide routine HIV screening (*e.g.*, correctional facility, HIV, family planning, or STD clinics) was predictive of early testing, with early testers being nearly seven times as likely to have been diagnosed with HIV in one of these facilities when compared with patients tested in other facilities. When the group of people tested at facilities likely to offer routine HIV testing was stratified by rural residence, resi-



Data Snapshot: Legionellosis — Idaho, 2009–2013

During 2009–2013 in Idaho, 44 cases of legionellosis were reported to public health, ranging from 5 to 13 cases annually. After a low of 5 reported cases in 2012, an increase was observed in 2013. The annual age-adjusted incidence rate ranged from 0.33 to 0.82 cases per 100,000 population (Figure). One case of Pontiac fever occurred, in an infant aged one month; Legionnaires' disease accounted for the remaining 43 cases. Excluding the infant, patient age ranged from 25 to 90 years (median, 62.5y; mean, 58y) and did not differ significantly by sex). A higher proportion of Idaho cases were female (56.8%) when compared with the national proportion (36%).¹

Potential exposure locations were reported in 37 (84.1%) cases. Among those, 11 (29.7%) indicated out-of-state exposures, including 5 cases from out-of-country travel. Two of the 37 cases were related to outbreaks with exposure in other countries; the other 35 cases were sporadic (not related to outbreaks). Possible Idaho exposures

included spas or hot tubs, showers, swamp coolers, or misters in residences, accommodations, or other facilities.

Legionellosis incidence has seasonal and geographic variability. During 2009–2013, the months with the most cases reported in Idaho were July, September, and October, but cases can occur in any month. The Central District Health Department jurisdiction,² which includes part of the Treasure Valley, was disproportionately affected, accounting for 40.9% of all reported legionellosis cases, but only 28.0% of Idaho's population.

Comorbidities in legionellosis patients were reported in 17 (38.6%) cases; smoking was reported most frequently (n=7). Other comorbidities included compromised immunity (n=5), diabetes mellitus (n=4), renal disease (n=4), and chronic lung disease (n=3).

Among 42 cases, 45 diagnostic tests were reported: 39 (88.6%) urinary antigen tests, four (9.1%) bacterial cultures, and

two (4.5%) serologic titers. *L. pneumophila* serogroup 1 was detected by urinary antigen in 39 cases and by serology in one case; *L. pneumophila* serogroup 2–6 or 8 was identified by serology in one case and *L. anisa* was detected by culture in one case. Although the urinary antigen test provides the most rapid result, it is only conclusive for *L. pneumophila* serogroup 1 and does not allow for molecular comparison of clinical to environmental isolates. To help identify legionellosis clusters and exposure locations, collection of respiratory specimens for culture is highly encouraged.

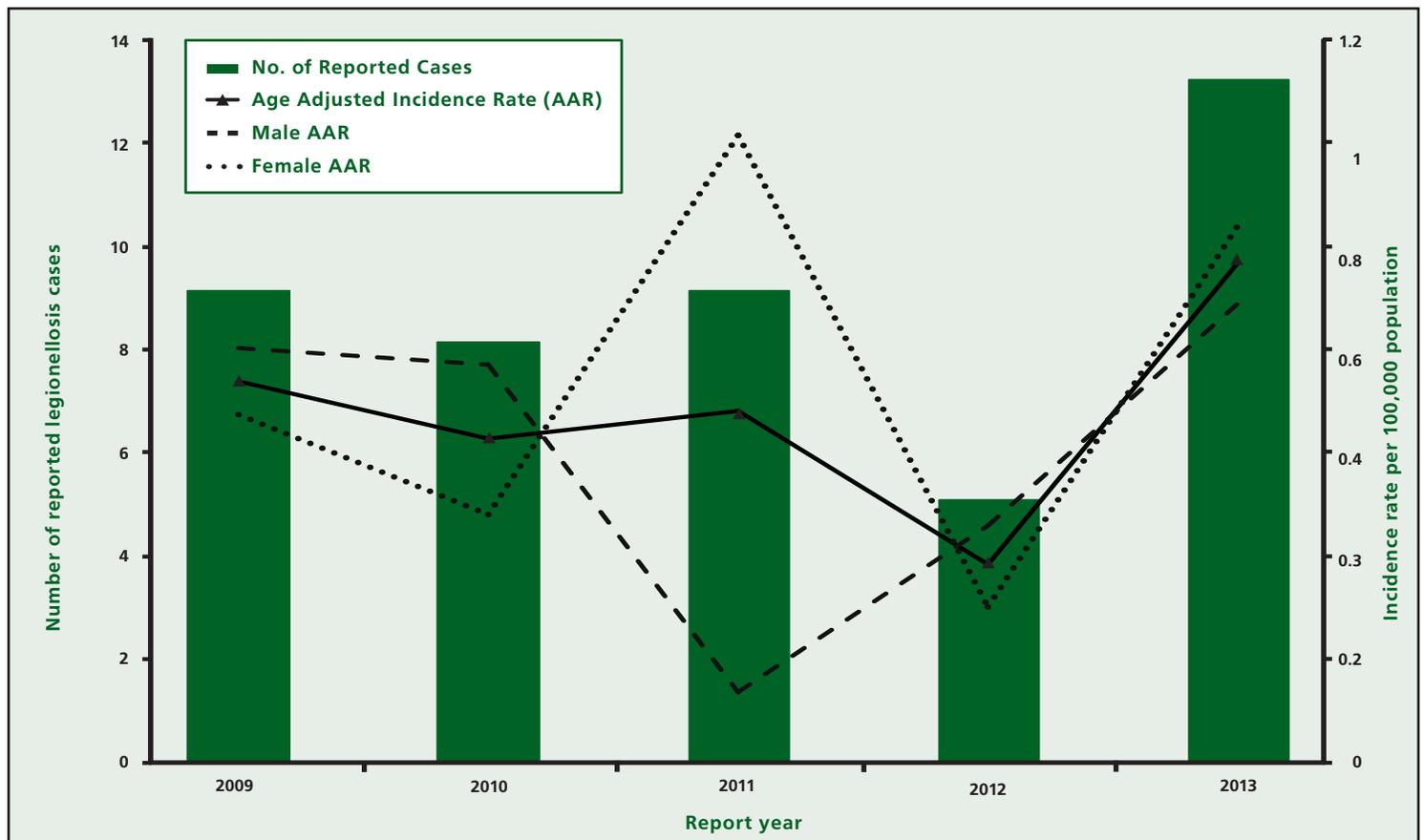
SEE SUPPLEMENT IN ONLINE VERSION FOR ADDITIONAL GRAPHICS: www.IDB.dhw.idaho.gov

References

¹ Centers for Disease Control and Prevention. Legionellosis in the United States, 2000–2009. MMWR 2011;60:1083–1086. Available at <http://www.cdc.gov/mmwr/pdf/wk/mm6032.pdf>. Accessed June 25, 2014.

² Idaho Public Health Districts. <http://www.healthandwelfare.idaho.gov/Health/HealthDistricts/tabid/97/Default.aspx>

Figure. Incidence rates of reported legionellosis in Idaho, 2009–2013.





ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927

EMERGENCY 24-Hour
Reporting Line
1.800.632.8000

An electronic version of the Idaho Reportable Diseases Rules may be found at <http://admin-rules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

LATE HIV TESTING CONTINUED FROM PAGE TWO

dents of rural counties were at reduced odds of having had a diagnosis in a facility likely to provide routine HIV screening when compared with residents of urban counties (OR=0.096 for rural residents; OR=0.16 for urban residents). These results suggest that access to clinics that routinely screen for HIV is limited for rural residence, although analysis could not determine what barriers to access might exist.

In this population, late testing was more likely as age-at-diagnosis increased, with each additional year of age increasing the odds of late testing by 4.0%. People who were not exposed to HIV through men who have sex with men (MSM) or injecting drug use (IDU) risk behaviors were also more likely to be tested late (12.4% increased odds, non-significant P). Previous studies have shown increased risk of late testing among those who are not perceived, or who do not perceive themselves, to be at high risk of HIV infection.³ Most targeted HIV prevention and testing interventions do not target heterosexual males, making them the most likely to have fewer opportunities for HIV testing than IDU, MSM, and women receiving prenatal care, who

might have better access to testing.⁴ Social stigma and related issues such as fear of positive test results or fear of losing health insurance, though difficult to quantify or assess, might also play a role in delaying HIV testing.

The strong association between rural residence and late HIV testing suggests that rural Idahoans might be at relatively higher risk of delaying HIV testing when compared with urban residents. It was not possible to discern in this analysis the barriers rural residents might face regarding HIV testing, but directing education and interventions that promote regular HIV screening to residents of rural areas and providers performing healthcare services in those areas could impact the proportion of rural residents that are late testers in Idaho.

Universal screening recommendations for all persons aged 13 through 64 years in routine healthcare settings were released in September 2006.⁵ Although not part of the current analysis, anecdotal evidence suggests that universal screening recommendations have not been fully implemented in Idaho. Where reported HIV incidence is low in Idaho (approximately 2.3 per 100,000 pop-

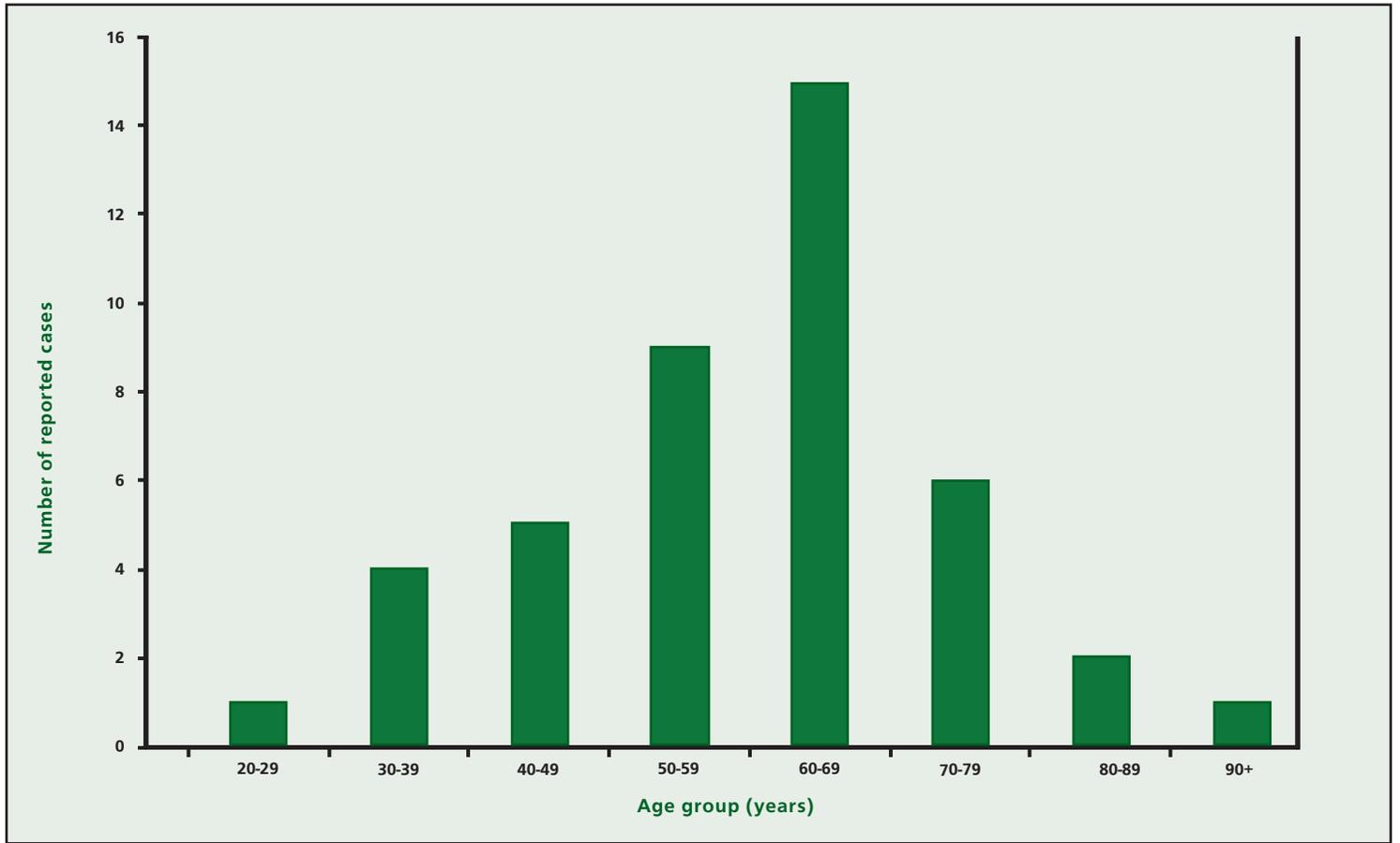
ulation in 2013),⁶ implementation of universal recommendations by Idaho providers might lead to the earlier identification, diagnosis, and treatment of HIV infected persons who might otherwise not be tested until significant clinical symptoms appear. However, evidence of case-finding from universal opt-out HIV testing is limited.

References

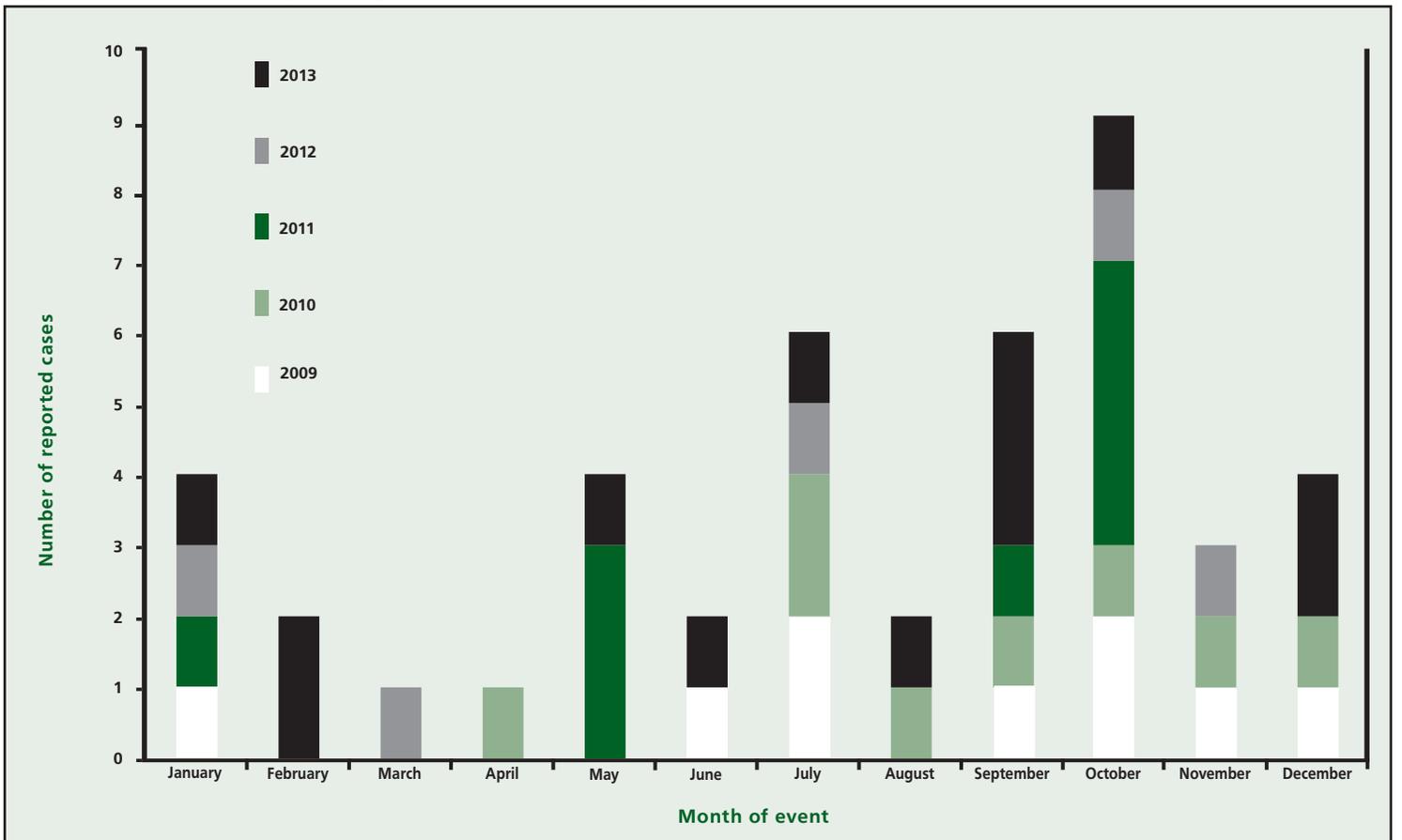
- ¹ Palella FJ, Deloria-Knoll M, Chmiel JS, Moorman AC, Wood KC, Greenberg AE, Holmberg SD, HIV Outpatient Study Investigators. Survival Benefit of Initiating Antiretroviral Therapy in HIV-Infected Persons in Different CD4+ Cell Strata. *Annals of Internal Medicine*. 2003; 138(8):620-6.
- ² Marks G, Crepaz N, Janssen RS. Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. *AIDS*. 2006;20(10):1447-1450.
- ³ Waters L, Sabin CA. Late HIV Presentation: epidemiology, clinical implications and management. *Expert Review of Anti-infective Therapy*. 2011 October; 9(10), 877-889.
- ⁴ Mukolo A, Villegas R, Aliyu M, Wallston KA. Predictors of Late Presentation for HIV Diagnosis: a literature review and suggested way forward. *AIDS and Behavior*. 2013 January; 17(1):5-30.
- ⁵ Branson BM, Handsfield HH, Lampe MA, Janssen RS, Taylor AW, Lyss SB, Clark JE, CDC. Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings. *Morbidity and Mortality Weekly Report: Recommendations and Reports*. September 22, 2006; 55(RR14); 1-17.
- ⁶ Enhanced HIV/AIDS Reporting System (eHARS). Data through 8/6/2014 and U.S. Census Bureau Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2012.



Supplement A. Number of reported legionellosis cases in Idaho by age group – Idaho, 2009–2013.



Supplement B. Number of reported legionellosis cases in Idaho by month – Idaho, 2009–2013.





IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Gastrointestinal Illness Among Rafters of the Middle Fork of the Salmon River
- West Nile Virus Neuroinvasive Disease Reports: important predictors of incidence
- Proper Lyme Disease Testing Can Reduce Misclassification

VOLUME 21 NUMBER 2 • JUNE 2014

Gastrointestinal Illness Among Rafters of the Middle Fork of the Salmon River

The Middle Fork of the Salmon River, in the remote region of Frank Church Wilderness of No Return, Idaho, was the location of an outbreak of gastroenteritis among river rafters during July–August 2013. Approximately 10,000 persons raft this 104-mile stretch of river annually on 4–10-day trips without road access.¹ During July–August 2013, a total of 7,399 persons rafted the river under permit from the U.S. Forest Service (USFS).²

On July 24, emergency services personnel notified Eastern Idaho Public Health District (EIPHD) that five rafters were transported by ambulance from a river take-out site to a hospital for treatment of nausea, vomiting, diarrhea, stomach cramping, and dehydration. Upon contacting the hospital, EIPHD epidemiologists learned that the patients had been treated and discharged; no clinical samples for laboratory testing were collected because the patients were unable to produce stool. EIPHD verified continued illness among river rafters with the help of USFS river checkpoint personnel through August 6, when the checkpoint closed because of a mudslide.

During the outbreak, EIPHD requested that clinics and hospital emergency departments contact EIPHD regarding patients who presented with symptoms of gastroenteritis after rafting the Middle Fork and provided stool sample kits for submission of specimens to the Idaho Bureau of Laboratories (IBL) for testing by culture, immunoassay, direct immunofluorescence antibody assay, and reverse-transcription-polymerase chain reaction. Environmental samples were collected at locations along the river for testing.

A case-control study was conducted by

the EIPHD and the Bureau of Communicable Disease Control of the Idaho Department of Health and Welfare (IDHW) to identify the etiologic agent, source, and risk factors for illness. We solicited participants among persons rafting the Middle Fork after July 1 through the media, in person, and by sending e-mail to rafting permit holders. We provided an online questionnaire August 7–October 22 regarding symptoms, meals, drinking water, and environmental exposures. A case was defined as nausea, vomiting, or diarrhea ≤ 25 days after rafting (maximum incubation period for giardiasis) in a person who had rafted July 1–September 23. Control subjects were well persons who had rafted July 1–September 23. The epidemic curve (Figure) indicates a propagated source of transmission.

A total of 102 case-patients and 293 control subjects were included in the case-control study. Study participants' ages ranged from 10 to 85 years. The proportion of female sex and mean age did not differ significantly between case-patients (32 [31.4%] female; mean age: 45.5 years) and control subjects (121 [41.3%] female; mean age: 49.7 years (P value = 0.08 and P value = 0.06, respectively).

Among the 102 case-patients, 75 (73.5%) had nausea; 51 (50%) had vomiting; and 80 (78.4%) had diarrhea. Median symptom duration was 2 days (range: 1–49 days). No association was identified between illness and exposure to hot springs; meals before, during, and after the trip; spigot or toilet use along the river; or group size. Sixty-nine (39.4%) of 175 rafters became ill after drinking filtered river water. Illness was associated with drinking filtered river water (odds ratio [OR]: 3.9; 95% confidence interval [CI]: 2.4–6.4). We later

GASTROINTESTINAL ILLNESS CONTINUED ON PAGE TWO



IDAHO DEPARTMENT OF
HEALTH & WELFARE

BUREAU OF COMMUNICABLE DISEASE PREVENTION

Idaho Department of
Health and Welfare

P.O. Box 83720
450 W State St, 4th floor
Boise, Idaho 83720-0036

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiologist

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

SCOTT HUTTON, MPH
Public Health Informatics Specialist

MARIANA ROSENTHAL, PhD, MPH
Epidemic Intelligence
Service Officer

MITCHELL SCOGGINS, MPH
Immunization Program Manager

ELLEN ZAGER HILL, MS, DLSTHM
Epidemiologist



GASTROINTESTINAL ILLNESS CONTINUED FROM PAGE ONE

defined norovirus-like gastroenteritis cases (n = 63) as illness duration ≤3 days, and giardia-like gastroenteritis cases (n = 38) as illness duration ≥4 days, after receipt of laboratory results (discussed below). The association between illness and drinking filtered river water was stronger among norovirus-like gastroenteritis cases (OR: 6.6; 95% CI: 3.3–12.9) than giardia-like gastroenteritis cases (OR: 2.2; 95% CI: 1.1–4.3). In March 2014, we initiated a follow-up online survey about water treatment methods used; results are pending.

Twenty-three (22.5%) case-patients reported seeking medical attention; of these, 13 (56.6%) persons reported having had clinical specimens submitted for laboratory testing. Results available from 11 ill rafters indicated that norovirus (n = 3) and giardia (n = 8) were detected in clinical specimens. Norovirus was detected on water spigots and outhouses; *Escherichia coli* was detected in an unregulated water source.

This multiple-etiology outbreak was likely propagated through environmental contamination and apparently associated with drinking filtered river water. Strict

adherence among river rafters to disseminated guidelines for gastrointestinal illness prevention, including sanitation, food handling, and water treatment, was advised.³ Medical consultants are encouraged to refer rafters to these guidelines and advise those going on extended wilderness trips to include oral rehydration salts, bismuth subsalicylate, and other antidiarrheal medications (e.g., loperamide, diphenoxylate, or paregoric) in trip medical kits, with instructions for use.

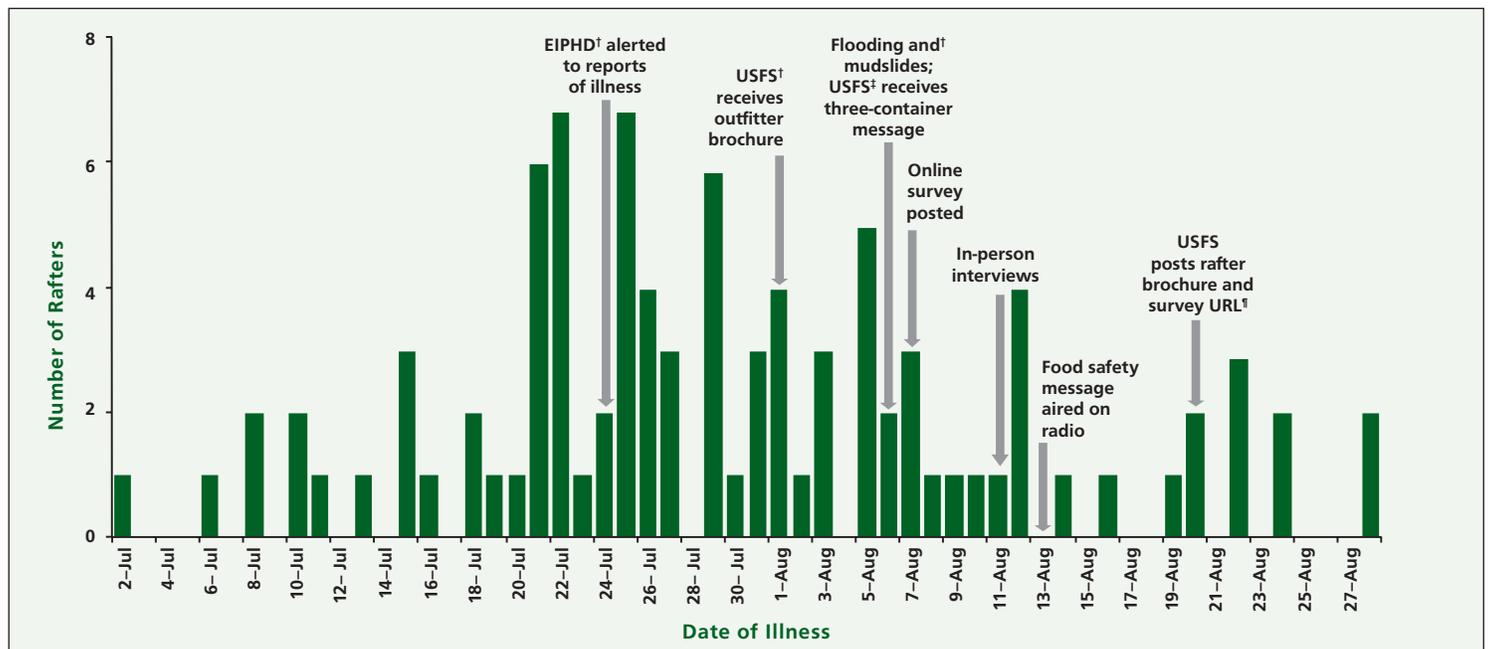
To help identify and control recreational water-associated outbreaks, health care providers are encouraged to collect clinical specimens from patients with gastroenteritis who have recently participated in a recreational water activity, particularly when multiple patients present with a similar exposure. Vomitus is an acceptable specimen for testing for norovirus if stool samples are unobtainable⁴ or if chemical or biologic toxins are suspected.^{5,6} Specimens from patients suspected of having outbreak-associated illness can be tested by IBL at no cost if prior arrangements are made with staff in one of the Public Health Districts. ([www.healthandwelfare.](http://www.healthandwelfare.idaho.gov/?TabId=97)

[idaho.gov/?TabId=97](http://www.healthandwelfare.idaho.gov/?TabId=97)). Suspected cases of waterborne illness must be reported to IDHW or a Public Health District within one working day of identification (IDAPA 16.02.10). The American College of Preventive Medicine sponsors free CME and MOC credits on recognizing waterborne disease and the health effects of water pollution at www.waterhealthconnection.org/.

References

- ¹ US Forest Service. Floating the Middle Fork of the Salmon River. www.fs.usda.gov/detail/scnfr/recreation/wateractivities/?cid=stelprdb5302105. Updated June 13, 2014. Accessed June 16, 2014.
- ²Source: U.S. Forest Service [FOIA Officer – Julieann Frederick, 11/15/2014 email communication]
- ³Idaho Department of Health and Welfare. www.healthandwelfare.idaho.gov/Portals/0/Health/FoodProtection/CleaningDishes.pdf; www.healthandwelfare.idaho.gov/Portals/0/Health/Epi/Waterborne/RiverRaftingSafetyWeb_FINAL.pdf. Accessed March 21, 2014.
- ⁴Centers for Disease Control and Prevention (CDC). Norovirus: specimen collection. www.cdc.gov/norovirus/lab-testing/collection.html. Accessed March 21, 2014.
- ⁵World Health Organization (WHO). Foodborne disease outbreaks: guidelines for investigation and control. Available at: www.who.int/foodsafety/publications/foodborne_disease/outbreak_guidelines.pdf. Published: 2008. Accessed March 21, 2014.
- ⁶International Association of Milk, Food, and Environmental Sanitarians, Inc. *Procedures to Investigate Waterborne Illness*. 2nd ed. Des Moines, IA: International Association for Food Protection;1996.

Figure. Dates of illness onset reported by rafters of the Middle Fork of the Salmon River, Idaho—2013 (n = 95*)



Abbreviations: EIPHD, Eastern Idaho Public Health District; USFS, U.S. Forest Service; URL, uniform resource locator.

* Illness onset date was unavailable for 7 case-patients.

[†]Prevent Foodborne and Waterborne Illness: Recommendations for Idaho River Outfitters at www.healthandwelfare.idaho.gov/Portals/0/Health/Epi/River%20Raft%20Brochure_FINAL_Updated_20130801.pdf

[‡]The three-container method is a technique used to clean and sanitize dishes when automatic dishwashing equipment is unavailable. See "A Quick Reference for River Rafters: Cleaning and Sanitizing Dishes Using

the Three-Container Method" at www.healthandwelfare.idaho.gov/Portals/0/Health/FoodProtection/CleaningDishes.pdf

[§]A Closer Look At Your Health: Food handling on a river trip. Transcript of podcast available at www.healthandwelfare.idaho.gov/Portals/0/Health/FoodProtection/0813_RiverFoodTips.pdf

[¶]Running the River (without getting the runs): How to Prevent and Control Vomiting and Diarrheal Illness on River Rafting Trips. See www.healthandwelfare.idaho.gov/Portals/0/Health/Epi/Waterborne/RiverRaftingSafetyWeb_FINAL.pdf



West Nile Virus Neuroinvasive Disease Reports: important predictors of incidence

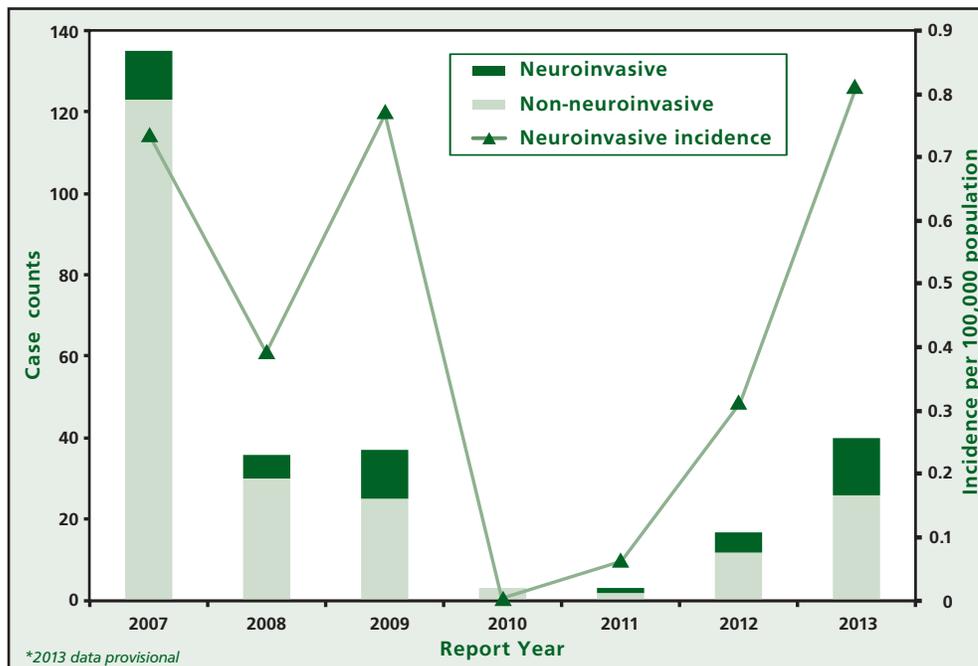
The incidence of reported West Nile virus (WNV) neuroinvasive disease in Idaho has been increasing since a nadir in 2010 (Figure). Reported WNV neuroinvasive disease is a more reliable indicator of WNV activity than non-neuroinvasive disease reports because persons with neuroinvasive disease (*i.e.*, encephalitis, meningitis,

meningoencephalitis, acute flaccid paralysis, or other acute signs of central or peripheral neurologic dysfunction) are more likely to seek medical attention and be tested for WNV than those with non-neuroinvasive disease (*e.g.*, febrile illness). Published estimates of the number of WNV infections and WNV non-neuroinvasive cases per

reported WNV neuroinvasive case range from 140 to 353, and 30 to 70, respectively.¹ During 2013 in Idaho, 14 WNV neuroinvasive cases and 26 non-neuroinvasive cases were reported. Using the published ratios, we estimate 420–980 non-neuroinvasive cases and 1,960–4,942 total WNV infections occurred in 2013. To improve our understanding of the epidemiology of WNV and other locally-acquired arboviral infections in Idaho, healthcare providers are encouraged to submit CSF from suspected cases of arboviral neuroinvasive disease to the Idaho Bureau of Laboratories (IBL) for WNV and St Louis encephalitis virus testing. If CSF specimens test negative for these two viruses, IBL will forward the specimens to Centers for Disease Control and Prevention for further arboviral testing. Testing is provided at no charge.

To learn more about WNV in Idaho visit: www.westnile.idaho.gov
To access the Idaho Bureau of Laboratories sampling and submission guide: www.healthandwelfare.idaho.gov/Health/Labs/SamplingandSubmissionGuide/tabid/2223/Default.aspx

Figure. Reported West Nile virus cases, by neuroinvasive status, and incidence of neuroinvasive disease—Idaho, 2007–2013*



References

¹Personal communication, CDC

Proper Lyme Disease Testing Can Reduce Misclassification

Borrelia burgdorferi, the causative agent of Lyme disease (LD), is transmitted by infected *Ixodes* spp. ticks. The western blacklegged tick (*Ixodes pacificus*) is found along the Pacific Coast, with isolated populations in a few interior western states, but not Idaho¹. Most LD cases coincide with the distribution of *I. scapularis*, blacklegged, or deer tick, found in the eastern United States.² All reported LD cases are required to be investigated, including determining if a tick exposure occurred while traveling, per the Idaho Reportable Disease Rules (IDAPA 16.02.10). During 2005–2012 in Idaho, an average of eight cases were reported annually (range, 2–16). Information about

travel was documented in 52 (78%) of 66 of the reports. Of these 52 reports, travel to known areas of endemicity during the likely exposure period was noted in 37 (71%) and the remaining 15 had only noted travel within Idaho borders. Although the risk of indigenous exposure is not recognized in Idaho, possible reasons for this include: populations of *I. pacificus* remain undiscovered in Idaho, an unidentified competent vector lives in Idaho, an infected vector was present transiently (a possibility with seasonal sheep movements into Idaho), the travel history did not adequately capture travel to areas of endemicity, or cases were misclassified as

probable or confirmed cases according to public health surveillance definitions due to incomplete use of LD diagnostic tiered testing or tests that are not approved by U.S. Food and Drug Administration (FDA).

To avoid misdiagnosis, the Centers for Disease Control and Prevention (CDC) recommends that laboratory tests cleared or approved by FDA be used to aid in the routine diagnosis of LD. Commercial and research laboratories might offer culture and polymerase chain reaction (PCR), but these are not considered good first-line tests and should be avoided until they become FDA-approved. When laboratory testing is indicated, CDC recommends using two-tiered



PRSRT STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Diseases Rules may be found at <http://admin-rules.idaho.gov/rules/current/16/0210.pdf>.
Current and past issues are archived online at www.idb.dhw.idaho.gov.

LYME DISEASE CONTINUED FROM PAGE THREE

testing³ (Figure) and restricting testing to individuals with a clinically compatible illness. The first test is an immunoassay EIA or IFA that can cross-react with antibodies against tick-borne relapsing fever (TBRF), which is endemic to Idaho and louse-borne relapsing fever, which is not endemic in

Idaho. If results of the first test are equivocal or positive, the second test—IgM and/or IgG WB—is employed (Figure). There is no utility in testing EIA/IFA-negative samples by WB, and the WB run in the absence of first tier testing, can increase the frequency of false-positive findings. Of the 15 Idaho

LD cases with a potential *Borrelia* exposure in Idaho, complete results of two-tiered LD testing were reported to the state for only 2 (13%); bringing into question the remaining case-reports.

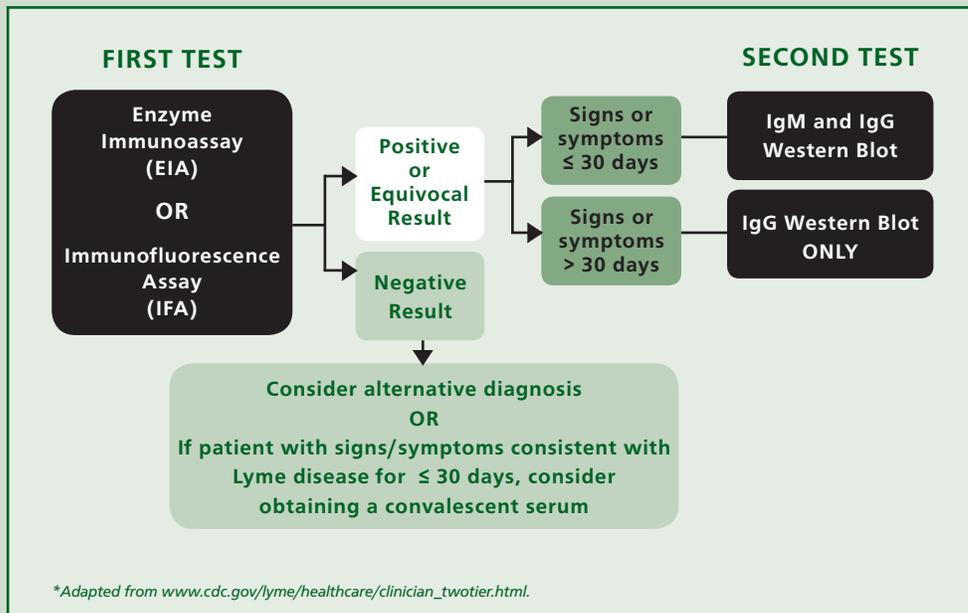
Gathering a detailed travel history from reported human cases and only using two-tiered laboratory testing in clinically compatible individuals will reduce the likelihood that non-cases are reported. This and entomologic studies into the natural history of *Ixodes* in Idaho will contribute to the knowledge of *B. burgdorferi* risks within the state.

Concise information for clinicians on LD and other tickborne diseases can be found in Tickborne Diseases of the United States: A Reference Manual for Health Care Providers, Second Edition, 2014 (available at www.cdc.gov/lyme/resources/TickborneDiseases.pdf).

References

- ¹ Geographic distribution maps of ticks that cause disease in the contiguous United States. www.cdc.gov/ticks/geographic_distribution.html
- ² CDC Lyme Disease statistics www.cdc.gov/lyme/stats/maps/map2012.html
- ³ Two-tiered testing approach www.cdc.gov/lyme/diagnosisting/LabTest/TwoStep/

Figure. Two-tiered testing for Lyme Disease.*



*Adapted from www.cdc.gov/lyme/healthcare/clinician_twotier.html.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Pertussis Outbreaks Affect Idaho Infants
- Bloodborne Pathogen Risk for People with Diabetes in the Community Setting
- New Idaho Influenza Website!
- STD Treatment Guide App

VOLUME 21 NUMBER 1 • MARCH 2014

Pertussis Outbreaks Affect Idaho Infants

Pertussis incidence peaks every 3 to 5 years and outbreaks occur every year in the United States. The primary goal of pertussis control efforts is to decrease morbidity and mortality among infants; a secondary goal is to decrease morbidity among people of all ages. Pertussis outbreaks can be difficult to identify because of co-circulation with other respiratory pathogens. Because of variability in specificity of PCR testing, getting confirmation with culture for at least one suspect case is recommended any time there is suspicion of a pertussis outbreak. Often, identification of an ongoing outbreak is made based on a positive laboratory result received about the index case. However, this identification can occur well after symptom onset of the index and associated cases, highlighting the importance of recognizing clinical signs and symptoms.

To reduce the risk of pertussis in new mothers and their very young infants, the Centers for Disease Control and Prevention (CDC) now recommends that pregnant women receive Tdap vaccine during each pregnancy. During outbreaks, prevention efforts focus on improving rates of Tdap vaccination among pregnant women and their families to reduce severe illness and possible deaths in vulnerable infants in the weeks and months after birth, when they are at highest risk of severe illness.

In Idaho, epidemiologic investigations and interventions are conducted by epidemiologists working in one of Idaho's Public Health Districts. Public Health District epidemiologists collaborate with providers, patients, and patients' families to identify contacts at risk of exposure; recommend prophylaxis, isolation, or vaccination; and implement additional disease control strategies as needed. To better understand pertussis outbreaks in Idaho, we analyzed pertussis outbreaks occurring during January 1, 2002 through June 1, 2013.

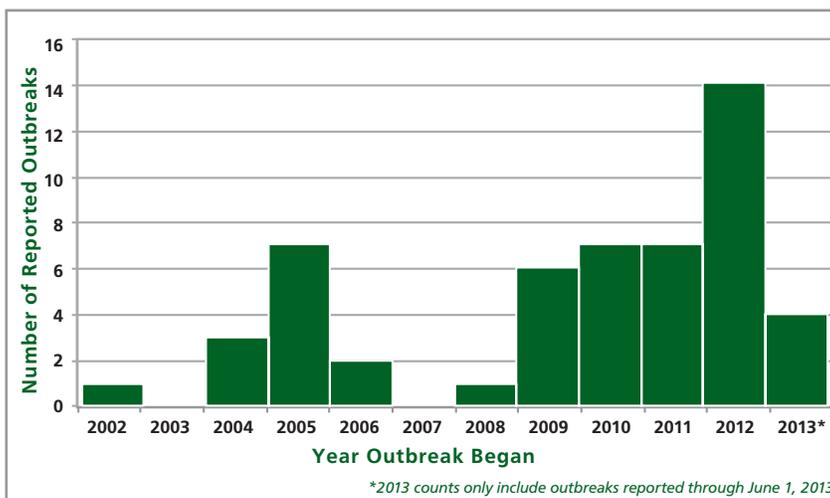
Results

Fifty-two outbreaks associated with 717 cases of pertussis were analyzed (Figure 1).

The number of cases associated with outbreaks varied considerably, ranging from 2 to 182, with a median of 4 cases and mean of 14 cases.

Outbreak-specific case definitions used to identify cases during an epidemiologic investigation can differ from standard public health surveillance case definitions. Among the 717 cases associated with the 52 outbreaks analyzed,

Figure 1. Number of pertussis outbreaks reported in Idaho by year outbreak began, January 2002–June 2013



PERTUSSIS OUTBREAKS CONTINUED ON PAGE TWO



IDAHO DEPARTMENT OF
HEALTH & WELFARE

BUREAU OF COMMUNICABLE DISEASE PREVENTION

Idaho Department of
Health and Welfare

P.O. Box 83720
450 W State St, 4th floor
Boise, Idaho 83720-0036

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiologist

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

MARIANA ROSENTHAL, PhD, MPH
Epidemic Intelligence
Service Officer

MITCHELL SCOGGINS, MPH
Immunization Program Manager

ELLEN ZAGER HILL, MS, DLSTHM
Epidemiologist



PERTUSSIS OUTBREAKS CONTINUED FROM PAGE ONE

432 were reported as meeting the standard public health surveillance case definition for probable or confirmed pertussis (see wwwn.cdc.gov/nndss/script/casedefDefault.aspx for pertussis surveillance case definitions and categories). The mean age of reported cases was 6 years with a median of 2 years (range 17 days to 70 years) (Figure 2).

Pertussis in Infants

Nearly half of the outbreaks analyzed included an infant aged <12 months. Young infants are at highest risk for acquiring pertussis-associated complications, including secondary bacterial pneumonia. National data from 1997 through 2000 indicate that pneumonia occurred in 5.2% of all reported pertussis cases, and among 11.8% of infants aged 6 months or younger.* Among Idaho outbreak-associated cases, pneumonia occurred in 12.5% of cases among infants aged 6 months or younger and in 11.9% of cases among all infants (aged <12 months). Of the 32 outbreak-associated cases of pertussis among infants aged 6 months or younger, 56.3%

(n=18) were hospitalized (Figure 3). One death occurred in an unvaccinated 10 month-old hospitalized with pertussis-associated pneumonia in 2011.

Among the outbreak-associated cases of pertussis in infants, one-quarter (24.4%) were less than two months of age, and therefore too young at the time of diagnosis to have received the first recommended dose of DTaP. While absolute certainty of disease transmission is often difficult to ascertain for sporadic cases of disease, epidemiologic investigations can provide insight into the most likely source of disease transmission during outbreaks. Among the nine infants too young to be vaccinated, four (44.4%) appeared to have acquired the disease from a parent, three (33.3%) from an older sibling, and three (33.3%) from other symptomatic family members (e.g., grandparents, cousins).

Conclusions and Recommendations

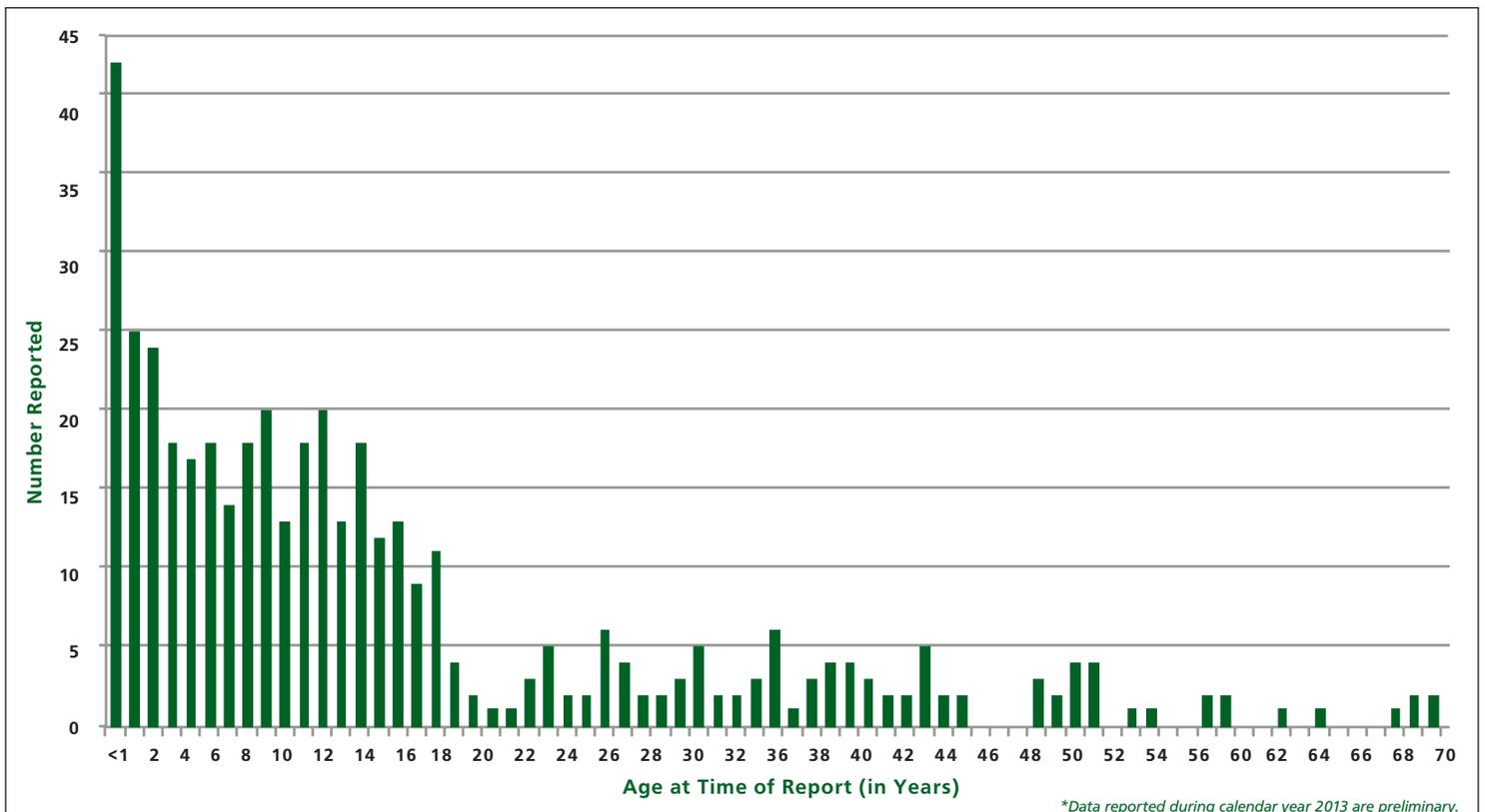
Pertussis incidence continues to be considerably higher than other vaccine-preventable diseases in the United States and Idaho. Although infants are dispro-

portionately affected by morbidity and mortality, it is important to remember that pertussis is not just a childhood disease and immunity after vaccination is not life-long. Unrecognized pertussis among adolescents and adults is a risk factor for pertussis in infants. Early symptoms are indistinguishable from those of minor respiratory tract infections; persistent cough due to pertussis can be misdiagnosed as bronchitis or asthma. For this reason, healthcare providers should ensure all patients are up to date on pertussis vaccination and boosters and consider pertussis in differential diagnoses of cough illness among adolescents and adults. Early detection, treatment, and reporting of pertussis are crucial to preventing disease in these populations and protecting infants. For the current pertussis vaccination recommendations, see www.cdc.gov/vaccines/schedules/hcp/index.html.

If you suspect a case of pertussis, report the diagnosis to your Public Health District or the Bureau of Communicable Disease Prevention's Epidemiology Program. Laboratory confirmation is

PERTUSSIS OUTBREAKS CONTINUED ON PAGE THREE

Figure 2. Age distribution of probable and confirmed pertussis cases identified in outbreaks reported in Idaho, January 2002–June 2013*



*Data reported during calendar year 2013 are preliminary.



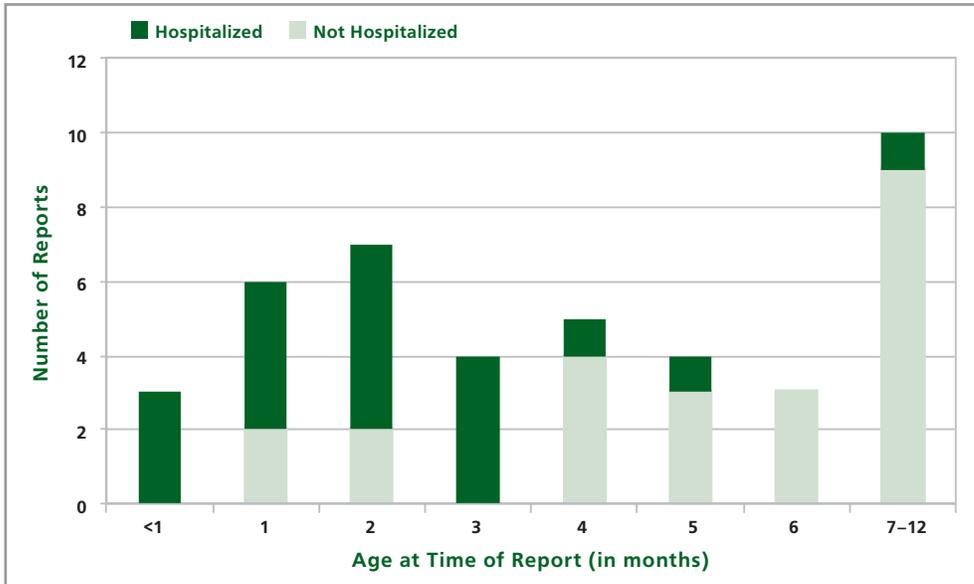
PERTUSSIS OUTBREAKS CONTINUED FROM PAGE TWO

not required for reporting. Public health interventions are most effective when implemented quickly and include identi-

cation of close contacts, referring contacts to healthcare providers for evaluation and follow up, and advising patients and fami-

lies on how to avoid further transmission of the disease within their households and the community.

Figure 3. Disease incidence and hospitalization among infants reported with pertussis in outbreak events, 2002–2013.



*Centers for Disease Control and Prevention. Pertussis. In: The Pink Book: Course Textbook, 12th Ed. Accessed December 24, 2013. URL: www.cdc.gov/vaccines/pubs/pinkbook/pert.html

Idaho Disease Bulletin Available Electronically

The Idaho Disease Bulletin (IDB) website (www.IDB.dhw.idaho.gov) includes searchable indices of issues from the last 10 years, the ability for readers to suggest topics, and the ability for readers to sign up to receive an electronic copy of the IDB. If you would like to receive an email with a link to new issues of the IDB please go to www.IDB.dhw.idaho.gov to submit a request or send an email to IDB@dhw.idaho.gov.

Bloodborne Pathogen Risk for People with Diabetes in the Community Setting

In June 2013, an acute hepatitis B virus (HBV) infection in an adult male living with diabetes was reported. Public health investigation identified three contacts during his exposure and infectious period, one who was also living with diabetes and shared a blood glucometer with him. Insulin injection equipment was not shared. Serologic testing of this person indicated early acute HBV infection. The infection status of the remaining contacts of the index patient was unable to be verified and contacts of the second patient were not infected. Available information implicates transmission of HBV infection via blood glucose monitoring equipment.

Outbreaks of bloodborne pathogens from blood glucose monitoring equipment have been reported in long-term care and medical facilities.¹ Community-based transmission has been reported², but is less frequently described. In addition to educating medical staff assisting patients with diabetes monitoring and treatment in facilities, it is important for healthcare providers to ensure their patients with diabetes living in community settings are adequately educated

about the risks of blood-borne pathogen transmission if blood glucose monitoring equipment and insulin and injection equipment are shared, and for healthcare providers to offer HBV vaccination per the Advisory Committee on Immunization Practices (ACIP) recommendations.

Sharing equipment for blood glucose monitoring and insulin administration can be an overlooked risk for exposure to blood-borne pathogens. Sharing lancet devices can expose persons to blood-borne pathogens, even if the disposable lancet is not shared, because the device containing the lancet is difficult to adequately disinfect. Glucose meters can become contaminated by blood on the test strip insertion site and outside surfaces³ and should be assigned to single individuals whenever possible and never shared. Insulin injection pens are for single-patient use only and should never be used for more than one person. Changing the needle and reusing the cartridge does not protect against contamination with blood, and changing the cartridge does not make these safe for multi-person use. Even dried blood in amounts not visible to the naked

eye can result in transmission of bloodborne pathogens during blood glucose monitoring and injectable insulin administration.⁴ As a result, the Centers for Disease Control and Prevention (CDC) and the U.S. Food and Drug Administration (FDA) have recommended these devices never be used for more than one person.^{5,6,7}

Adults with diabetes are estimated to acquire HBV infection at approximately twice the rate of people without diabetes.⁸ The ACIP recommends that HBV vaccine be administered to all unvaccinated adults with diabetes aged 19 through 59 years as soon as possible after a diagnosis of diabetes is made, and for people with diabetes aged 60 years or older at the discretion of the treating clinician.⁹

Healthcare providers can refer patients to Certified Diabetes Educators for instruction on diabetes management, including safe and appropriate blood glucose monitoring and insulin injection techniques. A list of recognized Diabetes Education Centers in Idaho can be found at www.diabetes.idaho.gov.



Division of Public Health
P.O. Box 83720
Boise, ID 83720-0036

PRSR STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

New Idaho Influenza Website!

A new IDHW influenza web page has been created. From the new page, readers are able to access information on seasonal influenza, influenza vaccination, and pandemic influenza preparedness. The influenza page provides access to national and Idaho trends in laboratory surveillance, influenza-like illness surveillance, and disease severity. Visit the new page at www.flu.idaho.gov.

STD Treatment Guide App

The STD Treatment Guide app for iOS® or Android™ smartphones and tablets is available free from CDC. In addition to guidance on the treatment of over 21 sexually transmitted infections, the app includes guidance for evaluation and prophylaxis after sexual assault and for effectively taking a patient's sexual history.

The guidelines may also be downloaded to Apple® smartphones and tablets as an eBook readable via the native iBooks® app, and to other devices as an Adobe® PDF document.

BLOODBORNE PATHOGEN CONTINUED FROM PAGE THREE

References

- ¹Centers for Disease Control and Prevention. Healthcare-Associated Hepatitis B and C Outbreaks Reported to the Centers for Disease Control and Prevention (CDC) in 2008-2012. Available at: www.cdc.gov/hepatitis/outbreaks/healthcarehepoutbreaktable.htm. Accessed December 20, 2013.
- ²Karia K, et al. Acute Hepatitis B Infection Acquired from Shared Glucometer Use. Web Page Document. Available at: www.cornellmedicine.com/education/research_overview/pdf/KunalACGFinal103111.pdf. Accessed December 12, 2013.
- ³Louie RF, Lau MJ, Lee JH, et al. Multicenter study of the prevalence of blood contamination on point-of-care glucose meters and recommendations for controlling contamination. *Point of Care* 2005;4:158-163.
- ⁴Thompson ND, Perz JF. Eliminating the blood: Ongoing outbreaks of hepatitis B virus infection and the need for innovative glucose monitoring techniques. *J Diabetes Sci Technol* 2009;3(2):283-288.
- ⁵U.S. Food and Drug Administration. Use of Fingerstick Devices on More Than One Person Poses Risk for Transmitting Bloodborne Pathogens: Initial Communication: Update 11/29/2010. Web Page Document. Available at: www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm224025.htm. Accessed December 12, 2013.
- ⁶U.S. Food and Drug Administration. Letter to Manufacturers of Blood Glucose Monitoring Systems Listed With the FDA. Web Page Document. Available at: www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/InVitroDiagnostics/ucm227935.htm. Accessed 12 Dec 2013.
- ⁷Centers for Disease Control and Prevention. CDC Clinical Reminder: Use of fingerstick devices on more than one person poses risk for transmitting bloodborne pathogens. Web Page Document. Available at: www.cdc.gov/injectionsafety/PDF/Clinical_Reminder_Fingerstick_Devices_RiskBBP.pdf. Accessed December 20, 2013.
- ⁸Reilly ML, Poissant T, Vonderwahl CW, Gerard K, Murphy TV. Incidence of acute hepatitis B among adults with and without diabetes, 2009–2010. Presented at the 49th Annual Meeting of the Infectious Disease Society of America and the HIV Medicine Association; Boston, MA, October 20–23, 2011. Abstract available at: <https://idsa.confex.com/idsa/2011/webprogram/Paper31404.html>. Accessed December 20, 2013.
- ⁹Centers for Disease Control and Prevention. Use of Hepatitis B Vaccination for Adults with Diabetes Mellitus: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2011;60:1709-1711. Available at: www.cdc.gov/mmwr/pdf/wk/mm6050.pdf. Accessed December 20, 2013.

Disease Bulletin

IDAHO DEPARTMENT OF
HEALTH & WELFARE

- Norovirus Outbreaks in Long-Term Care Facilities
- WNV Entrenched in South and Southwestern Idaho
- Meaningful Use in Idaho: an update on public health reporting for providers
- Hepatitis C Update: screening for hepatitis C in Idaho

VOLUME 20 NUMBER 4 • DECEMBER 2013

Norovirus Outbreaks in Long-Term Care Facilities

The Centers for Disease Control and Prevention estimates that norovirus causes an average of 19–21 million cases of acute gastroenteritis in the United States annually. Over half of all norovirus outbreaks reported in the United States during 2010–2011 and 73% of norovirus outbreaks reported in Idaho during 2011–2012 occurred in long-term care facilities (LTCFs) (e.g., nursing homes and assisted living facilities).¹ To better understand the epidemiology of norovirus outbreaks in LTCFs in Idaho, we characterized reported outbreaks which occurred during 2008–June 24, 2013. We examined outbreak data and reports submitted by Public Health Districts. We included outbreaks classified* as confirmed or probable; where norovirus was the confirmed, probable, or suspected etiologic agent; and the venue was an LTCF.

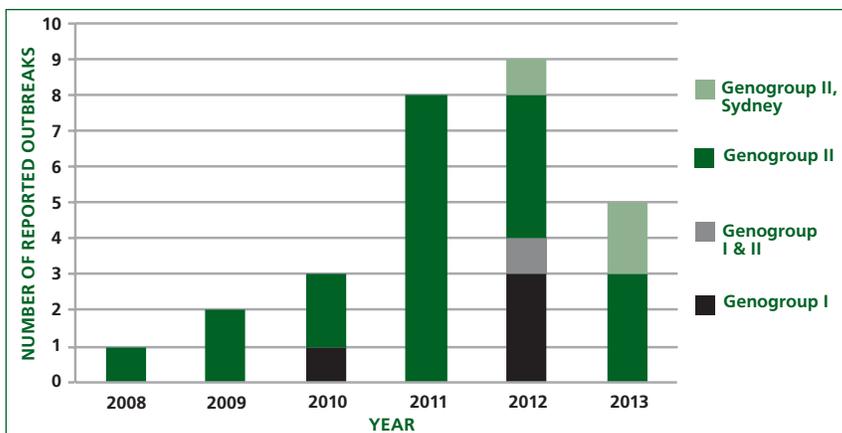
Results

During the study period, 57 norovirus outbreaks occurring in LTCFs were reported, accounting for 21% of all confirmed and probable outbreaks reported. Among 42 (74%) of these 57 outbreaks, the mean attack proportion was 39% for residents and 30% for staff. A mean of 29 residents and 20 staff were reported to be ill. The index case was identified in a resident in

8 (53%) and in staff in 7 (47%) of 15 outbreaks. Severe illness was reported: 1–2 hospitalized residents or staff were identified in 17 (33%) outbreaks (n=51) and 1–3 deaths among residents in 7 (13%) outbreaks (n=52). Among 33 outbreaks in which the total number of stool samples submitted for laboratory testing was reported, the mean number of stool samples submitted for laboratory testing and positive for norovirus was 5 and 4, respectively. Genogroup II (GII) was detected in 24 (86%) of 28 outbreaks for which genotyping results were available (Figure).

Outbreak duration ranged from 3 to 45 days (mean, 17.8; SD, 10.5) (n=57). We examined the association between duration of outbreak and facility size, quarter of report, and time to report (i.e., the number of days from illness onset in the first case to the date the outbreak was reported to the Public Health District). Facility size was available for 39 (68%) outbreaks. Outbreaks in small (40–89 beds) and medium-sized (90–139 beds) facilities lasted longer than outbreaks occurring in large (140–189 beds) facilities.[†] Among these 39 outbreaks, most were reported in fall and winter months; among 34 outbreaks reported during 2008–2012 (complete years), 14 (41%) began in January–March and 10 (29%) began in October–December.[‡] Fewer outbreaks were

Figure. Norovirus outbreaks for which genotyping results were available (n=28) by genogroup and year, Idaho—2008–June 24, 2013.



reported in spring and summer: 7 (21%) began in April–June, and 3 (9%) began in July–September. Outbreaks occurring in April–June were approximately half the duration of outbreaks occurring in January–March.[†] Preliminary analysis indicates that time to report is moderately positively correlated[§]



IDAHO DEPARTMENT OF
HEALTH & WELFARE

BUREAU OF COMMUNICABLE DISEASE PREVENTION

Idaho Department of
Health and Welfare
P.O. Box 83720
450 W State St, 4th floor
Boise, Idaho 83720-0036

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program Specialist

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

TRAVIS KUSHNER, MPA
Public Health Informatics Specialist

MARIANA ROSENTHAL, PhD, MPH
Epidemic Intelligence
Service Officer

MITCHELL SCOGGINS, MPH
Immunization Program Manager

ELLEN ZAGER HILL, MS, DLSTHM
Epidemiology Program Specialist

BRITTANY HOLZHAMMER
PNWRCE Intern, OHSU

NOROVIRUS OUTBREAKS CONTINUED ON PAGE TWO



NOROVIRUS OUTBREAKS CONTINUED FROM PAGE ONE

with outbreak duration: longer times to report are associated with longer outbreak durations.

Discussion and Recommendations

Both residents and staff of LTCFs are at risk of illness from norovirus. Although infrequent, mortality associated with norovirus outbreaks can occur in LTCF residents. Staff with symptoms of norovirus infection should be excluded for a minimum of 48 hours after resolution of symptoms. Our finding that norovirus GII was the predominant genogroup in these outbreaks is consistent with CDC estimates

that in 2011, over 80% of confirmed human norovirus infections were associated with GII.² Increased efforts to submit stool samples for norovirus testing and genotyping are needed. Although norovirus outbreaks in LTCFs predominate in fall and winter, they occur throughout the year, demonstrating the need for ongoing surveillance and readiness to implement norovirus outbreak management practices. Prompt reporting of outbreaks to Public Health Districts is encouraged. Further study is needed to evaluate factors associated with duration of norovirus outbreak in LTCFs.

*Two or more cases of similar illness associated in time and place, and laboratory confirmation in 1–2 persons or additional epidemiologic or environmental evidence.
¹Cox Proportional Hazards model.
²Similar to proportion among all 50 outbreaks beginning during 2008–2012, of which 20 (40%) began in January–March and 16 (32%) began in October–December.
³Spearman's correlation coefficient

References

¹Centers for Disease Control and Prevention. Norovirus: trends and outbreaks. www.cdc.gov/norovirus/trends-outbreaks.html?s_cid=cs_1049 Updated August 1 2013. Accessed October 3, 2013
²MacCannell T, Umscheid CA, Agarwal RK, et al. Guideline for the Prevention and Control of Norovirus Gastroenteritis Outbreaks in Healthcare Settings. Centers for Disease Control and Prevention. May 4, 2011. www.cdc.gov/hicpac/pdf/norovirus/Norovirus-Guideline-2011.pdf.

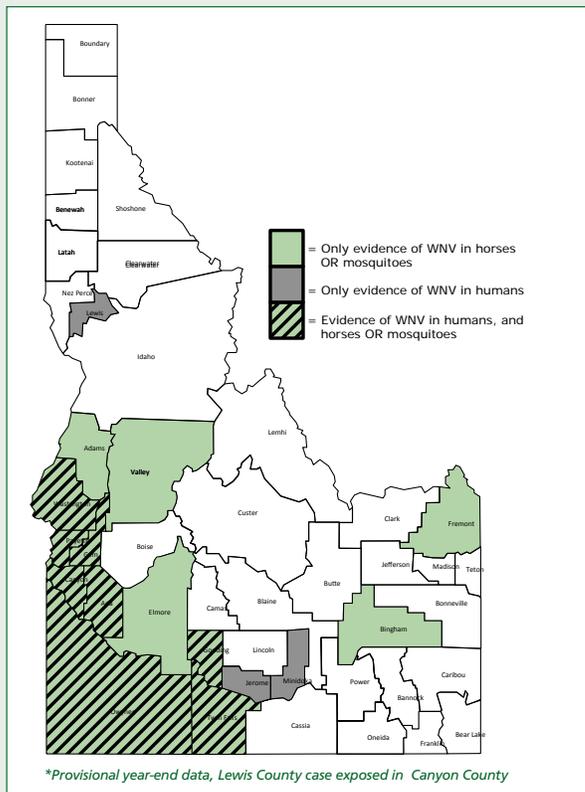
WNV Entrenched in South and Southwestern Idaho

Much of southern and western Idaho is high desert and sports a dry climate, but don't let that fool you: mosquito-borne transmission of West Nile virus (WNV) has occurred seasonally in many of these areas for the last 10 years. WNV entered the United States in the greater New York City area in 1999, and crossed the continent by 2003. WNV has been considered

endemic in Idaho since 2004. In 2013, as of November 1, 40 human cases, 10 horse cases, and multiple positive mosquito samples have been identified in 16 Idaho counties (Figure); up from 11 counties in 2012. Of the 40 human cases, 26 are classified as West Nile fever (WNF) and 14 as West Nile neuroinvasive disease, including one death. The current 2013 case count is more than double the number of cases reported in 2012 (17 cases).

tory for all symptomatic WNV infections in Idaho, 43% of cases reported in 2013 and 47% of cases reported in 2012 required hospitalization, suggesting severe cases are more likely to be reported. The number of case reports likely underrepresents incidence of milder disease in Idaho.

Figure. WNV Surveillance Findings, by County of Residence (or Collection)—Idaho, 2013*



According to CDC, approximately 75% of infections are asymptomatic. Of the remaining 25%, < 1% (1 in 150 to 1 in 250) are classified as neuroinvasive and the rest are classified as WNF*. WNV-related disease is likely underreported because WNF symptoms can range from mild to severe and are non-specific. CDC suggests that disease trends are best monitored by the incidence of neuroinvasive disease because reporting of these cases is considered high, compared to persons with mild WNF who might not seek medical attention, be misdiagnosed, and could be less likely to be reported even if diagnosed correctly.

WNV is maintained in nature in a complex cycle involving mosquitoes and birds, sometimes spilling into other mammalian species such as squirrels, horses, and people. Two mosquito species are primarily responsible for maintenance of the virus in nature and spread: *Culex pipiens*, associated with urban transmission, and *C. tarsalis*, more strongly associated with rural transmission. These mosquito species feed primarily on birds early in the summer, and become less discerning and feed on mammals (including humans) later in the summer. This change in feeding preference, known as bridging, accounts for the seasonality of infections, which typically peak in August and continue until a killing frost.

To learn more about WNV in Idaho visit the Idaho Department of Health and Welfare WNV webpage: www.westnile.idaho.gov.

*Petersen LR, Brault AC, Nasci RS. West Nile Virus: review of the literature. JAMA. 2013;310(3):308-315 <http://jama.jamanetwork.com/article.aspx?articleid=1713596>

Although reporting is manda-



Meaningful Use in Idaho: an update on public health reporting for providers

More doctors and hospitals are making the switch from paper to electronic health record keeping as part of a government-incentivized initiative to improve health outcomes through the use of health information technology, otherwise known as “Meaningful Use” (MU). Recent data suggest that nationwide more than half of physicians have implemented electronic health record (EHR) systems in their practice and 80% of hospitals have implemented EHR systems. In Idaho, 42% of providers and 58% of hospitals have adopted an EHR system.

In order to receive monetary incentives, providers are required to meet specific MU objectives through use of certified EHR system technology. These MU objectives are being rolled out in three stages through 2016.

Meaningful Use Requirements for Eligible Providers

MU Stage 2 (MU2) will begin for eligible providers (EPs) in January 2014. The focus of MU2 is to use the capacity built in MU Stage 1 (MU1) for advanced clinical processes. These processes focus on more rigorous health information exchange, electronic transmissions of patient care summaries, and patient controlled data. In MU2, providers must meet 17 core objectives and 3 of 6 menu objectives.

In MU2, ongoing submission of electronic immunization data has moved from

a menu objective to a core objective. A new menu objective includes public health reporting of data electronically to the Idaho Cancer Registry of Idaho (CDRI). The Idaho Bureau of Communicable Disease and Prevention (BCDP) has declared its readiness to receive electronic data from EPs. The BCDP will accept the submission of electronic immunization data and the CDRI will accept submission of cancer case information. The state of Idaho currently does not have the capacity to receive syndromic surveillance data from providers.

Registration Process

EPs must register their intent to initiate public health reporting in order to meet requirements to receive incentive payments. Any provider currently submitting ongoing immunization data in production using HL7 version 2.3.1 (MU1 requirement) will be grandfathered into MU2 and will not be required to upgrade their data to HL7 version 2.5.1; however, they must still register in order to meet MU2 requirements to receive incentive payments. A Public Health Reporting registration site is available to register intent to report to Idaho Public Health www.healthandwelfare.idaho.gov/Providers/PublicHealthMeaningfulUseReporting/tabid/2486/Default.aspx.

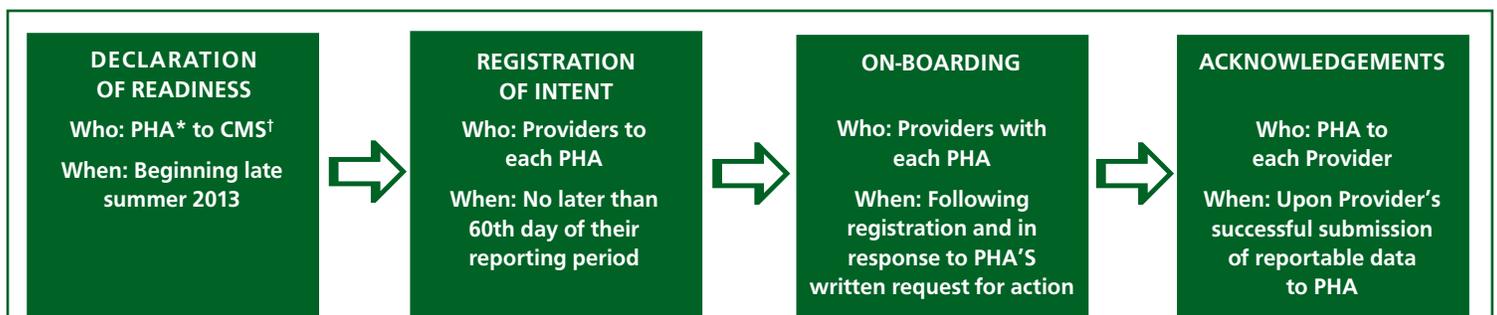
Onboarding and Acknowledgement

The person named as a contact for Meaningful Use public health reporting

during the registration process will be provided instructions on the process and timelines for onboarding electronic data reporting. Onboarding refers to the testing and validation process to integrate clinical electronic data feeds into public health surveillance systems (Figure). After registering, the contact will receive a written request for action via email. The request for action will vary based on the type of reporting that was registered for, but will generally include contact information, message testing phase timelines, implementation guides, and reporting-type specific information. Once electronic message testing is implemented, BCDP (or CDRI for cancer reporting) will provide direction to achieve MU2 acknowledgement of ongoing submission. The onboarding process ends when the reporter is routinely submitting actual patient data that meets electronic data standards set out in the Meaningful Use regulations. Those seeking MU2 acknowledgement will be required to provide actual patient data from production systems. A written acknowledgement from BCDP that the reporter is engaged in ongoing data submission will be provided after successful electronic data reporting is implemented and sustained.

For more information on public health reporting to meet meaningful use, please visit our website at the URL listed in middle column or email questions to PublicHealthMU@dhw.idaho.gov.

Figure: Meaningful Use Public Health Reporting Process for Stage 2



Source: www.naccho.org/topics/infrastructure/informatics/upload/MU2_PHA_ReadinessGuidance_Recommendations.pdf

*Public Health Agencies

†Centers for Medicare and Medicaid



Division of Public Health
P.O. Box 83720
Boise, ID 83720-0036

PRSR STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

Hepatitis C Update: screening for hepatitis C in Idaho

It is estimated that up to 80% of all hepatitis C virus (HCV) infections in the United States are among adults born between 1945 and 1965, a birth cohort also known as “baby boomers.” The Idaho Viral Hepatitis Prevention Task Force supports and promotes the 2013 United States Preventive Services Task Force (USPSTF) recommendations on screening for HCV infection in persons at high risk for infection, and recommends offering one-time screening for HCV infection to adults born between 1945 and 1965. The recent

endorsement by USPSTF of the screening recommendations released by CDC in 2012 sends a strong message to health care providers, policy makers, and the public that expanded screening for HCV is beneficial for patients and the overall health of the public. When considered together, the Affordable Care Act’s requirement for insurers to cover the cost for one-time HCV screening and the newly expanded HCV screening recommendations for baby boomers can generate the momentum needed to identify the millions of U.S.

adults currently unaware of their infection status. To help prevent liver disease and deaths related to chronic HCV infections, medical providers should focus on ensuring capacity for the delivery of clinical preventive services that can reduce missed opportunities for HCV diagnosis and linkage to care and treatment. To access the full article regarding the USPSTF recommendation on baby boomer HCV screening, go to www.uspreventiveservicestaskforce.org/uspstf12/hepc/hepcfinalrs.htm#summary.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Influenza Surveillance in Idaho
- 2013–2014 Seasonal Influenza Vaccine Scramble
- Another Bird Flu Makes the News: novel influenza A (H7N9)
- Data Snapshot: Cryptosporidiosis—Idaho, 2007–2012

VOLUME 20 NUMBER 3 • SEPTEMBER 2013

Influenza Surveillance in Idaho

The 2012–2013 United States influenza season was considered moderately severe. In Idaho, influenza activity peaked in December, the influenza A (H3N2) subtype predominated, and 35 influenza-associated deaths were reported. Influenza infections, with the exception of novel influenza or those that are part of an outbreak, are not reportable in Idaho; however, comprehensive year-round surveillance is important to provide situational awareness for seasonal, “variant” (the term for flu viruses normally seen in pigs, when the virus infects people), novel, and pandemic influenza detection.

Influenza surveillance at the Idaho Department of Health and Welfare (IDHW) falls into three broad categories: human morbidity, human mortality, and laboratory-based virus testing. These categories provide information on the burden of disease on the population, severity of disease, and types of circulating viruses, respectively.

Human morbidity surveillance

The Centers for Disease Control and Prevention (CDC) maintains a web-based monitoring platform (ILINet) to collect weekly counts of sentinel healthcare provider patient encounters for influenza-like illness (ILI). For ILINet, ILI is defined as fever (temperature $\geq 100^{\circ}\text{F}$ [$\geq 37.8^{\circ}\text{C}$]), and cough and/or a sore throat without a known cause other than influenza. ILINet reports provide morbidity data by age group, week of report, and geographic location. The Bureau of Communicable Disease Prevention (BCDP) reviews the weekly ILINet reports from participating Idaho ILINet providers to monitor disease activity in the state. If you are interested in participating as an ILINet sentinel site and you see a variety of age groups in your practice, please contact an epidemiologist within BCDP at 208-334-5939. To learn more about ILINet, visit the CDC website www.cdc.gov/flu/weekly/fluviewinteractive.htm.

INFLUENZA SURVEILLANCE CONTINUED ON PAGE TWO

2013–2014 Seasonal Influenza Vaccine Scramble

New influenza vaccine products for the 2013–2014 influenza season include quadrivalent vaccine, cell culture-based vaccine, and recombinant vaccine. Patients may be confused by the widening selection of vaccine options to choose from.

Quadrivalent vaccine (several products) include influenza B Victoria lineage virus in addition to an influenza A California 2009 (H1N1)-like virus, influenza A (H3N2) virus of the Victoria lineage, and influenza B Yamagata lineage virus included or incorporated in trivalent vaccines. It is hoped that including two B viruses will improve the performance of this influenza vaccine during each season, since there are often two strains of influenza B circulating.

A cell culture-based, trivalent vaccine

(FLUCELVAX[®]), which is grown on a canine kidney cell line, was approved for use in persons aged >18 years by the Food and Drug Administration (FDA) in November 2012. It contains less than 50 femtograms (5×10^{-8} ug) of egg protein. Persons with severe egg allergies have received egg-based influenza vaccines containing up to 1.4 ug ovalbumin per dose of vaccine administered without occurrence of anaphylaxis. This canine kidney cell line does not express known major canine allergens, but minor canine allergens could be present. Hypersensitivity reactions among persons self-reported to be allergic to dogs have not been documented; however, few reported dog-allergic persons received vaccine in clinical trials.¹ Bioassay performed with serum from 30 docu-

INFLUENZA VACCINE CONTINUED ON PAGE TWO



IDAHO DEPARTMENT OF
HEALTH & WELFARE

DIVISION OF PUBLIC HEALTH

Bureau of Communicable Disease Prevention

P.O. Box 83720
450 W. State Street, 4th Floor
Boise, Idaho 83720-0036

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
Public Health Medical Director and
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program Specialist

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

MARIANA ROSENTHAL, PHD
Epidemic Intelligence
Service Officer

MITCHELL SCOGGINS, MPH
Immunization Program Manager

ELLEN ZAGER HILL, MS, DLSHTM
Epidemiology Program Specialist



INFLUENZA SURVEILLANCE IN IDAHO CONTINUED FROM PAGE ONE

Human mortality surveillance

The IDHW Bureau of Vital Records and Health Statistics reviews death certificate data weekly and contributes to national mortality surveillance by participating in the 122 Cities Mortality Reporting System (<http://wonder.cdc.gov/mmwr/mmwrmort.asp>). Because influenza may not always be explicitly mentioned on a death certificate, CDC applies statistical models to underlying cause of death data reported as pneumonia and influenza or respiratory and circulatory to estimate the number of nationwide seasonal influenza-associated deaths. Influenza-associated death data in Idaho, where influenza is explicitly mentioned on the death certificate, are tabulated by week of report, number of deaths, geographic location, and age group(s) affected, and provided to the BCDP; this number is likely an underestimate of influenza associated mortality. During the 2005–06 through 2012–13 influenza seasons, an average of 15 influenza-associated deaths were reported annually (range: 5–35).

Laboratory-based viral surveillance

The Idaho Bureau of Laboratories (IBL) conducts sub-typing of viruses isolated from clinical samples year-round, with particular focus on testing during the beginning, middle, and end of the influenza season. Viral surveillance is key to determining circulating subtypes and detection of sporadic cases or outbreaks of novel or variant viruses. Viral surveillance also contributes to detection of antiviral resistance and evaluation of vaccine effectiveness. This information informs public health policy recommendations and future vaccine component selection. Rapid influenza diagnostic test kits are useful, but do not provide subtype or drug sensitivity information. Healthcare providers are encouraged to submit samples to IBL year-round for viral surveillance. Currently, surveillance has been enhanced to detect an influenza variant circulating in the United States in the summer months, swine-associated influenza A (H3N2v). IBL may employ reverse transcriptase polymerase chain reaction (RT-PCR) and culture

techniques to further evaluate respiratory samples for pathogens.

During the influenza season, each state evaluates data from their influenza surveillance system, including reports such as influenza clusters in long term care facilities and school closures, to provide a simple weekly report to CDC (see www.cdc.gov/flu/weekly/usmap.htm) on the estimated level of statewide geographic spread (no activity, sporadic, local, regional, or widespread). Please remember to report any unusual ILI activity to your public health district.

To learn more about seasonal and unique enhanced surveillance efforts to track the emergence of influenza subtypes visit the CDC website: www.cdc.gov/flu/weekly/overview.htm. To learn more about influenza activity in the United States during the 2012–13 season and the composition of the 2013–14 influenza vaccine, see www.cdc.gov/mmwr/pdf/wk/mm6223.pdf. For national surveillance summaries, see Flu View at www.cdc.gov/flu/weekly/.

INFLUENZA VACCINE CONTINUED FROM PAGE ONE

mented dog-allergic persons was negative for response to this vaccine.²

Recombinant trivalent vaccine (Flublok[®]) is produced by incorporating influenza hemagglutinin gene into a baculovirus, infecting a fall armyworm Sf9 cell line with the engineered virus, and formulating the expressed and purified protein into vaccine. It was approved by the FDA in January 2013 for use in adults aged 18–49 years. Recombinant vaccine contains no egg protein and can be produced in 21 days. Providers purchasing Flublok[®] should be aware that it has a shorter shelf life than other inactivated influenza vaccines, with an expiration period of 16 weeks from the production date.

Changes in influenza vaccine production methods and composition required changes in vaccine categories and abbreviations for 2013–14. The acronym TIV (trivalent influenza vaccine) has been retired. IIV will be used for inactivated influenza vaccine,

RIV for recombinant hemagglutinin influenza vaccine, and LAIV will continue to be used for live, attenuated influenza vaccine. A numeric suffix (e.g., LAIV4) specifies the number of influenza virus antigens contained in the vaccine. A prefix “cc” indicates cell culture-based vaccine when appropriate. Seasonal influenza vaccines available during 2013–14 include IIV3 (egg-based and cell culture-based), IIV4 (egg-based), RIV3, and LAIV4. IIV3 will be available in both standard and high dose formulations.

Routine influenza vaccination continues to be recommended for all persons aged ≥6 months. See www.cdc.gov/flu/professionals/acip/2013-interim-recommendations.htm for interim/current ACIP recommendations on seasonal influenza vaccine.

H, 5, 7, N, 1, 9: Update on vaccines for non-seasonal influenza

In light of over 130 cases of influenza with a high mortality rate due to H7N9

reported from China in the past year, U.S. public health officials are preparing in case this virus should begin circulating in the human population. At least one vaccine company began clinical trials with influenza A (H7N9) (see page 3) vaccine this summer. Nine different seed strains have been developed, but antigen yields using egg-based production methods are lower than expected. A recombinant oral influenza A (H7N9) vaccine is reported to have induced robust titers in preclinical testing. Vaccine trials with an influenza A (H7N1) vaccine began in July. H7N1 is one of the flu viruses considered to have pandemic potential. Early trials of inactivated subunit H7 vaccines with and without adjuvant haven't shown a strong immune response. A two-dose series might be necessary to produce an adequate immune response (e.g., priming with LAIV H7 vaccine followed by IIV H7 vaccine). Avian influenza A (H5N1), first detected in humans in



Another Bird Flu Makes the News: novel influenza A (H7N9)

Epidemiology and characteristics

A novel strain of influenza A (H7N9) was first reported in Eastern China on February 19, 2013. This particular strain has a high case fatality rate: deaths occurred in 44 (32.6%) of 135 cases reported as of August 12. Deaths have been associated with severe pneumonia, acute respiratory distress syndrome (ARDS), sepsis, and septic shock. This strain is believed to be derived from at least four different avian influenza viruses and has been isolated from ducks, chickens, and captive-bred pigeons at live animal markets in China. A history of exposure to birds, mostly chickens, has been reported in 77% human cases. Influenza A (H7N9) is notable for its low pathogenicity in avian species. Low pathogenicity in the avian reservoir implies this virus could spread insidiously in poultry and result in sporadic infections in humans, in contrast to the influenza A (H5N1) strain still circulating in many countries, which causes severe disease in avian species. China and Taiwan are the only two nations which have reported cases of H7N9 as of mid-July.

This H7N9 strain has demonstrated two mutations resulting in increased affinity for human type receptors. The virus has infected individuals of all ages, but has a predilection for middle-aged or older men. As of July 2013, the median age of cases is 61 years, in contrast to the persons reported with the avian influenza H5N1 strain circulating in other countries since 1997, in which the median age of cases is 26 years.

Clinical manifestations of H7N9 have largely been described in persons with severe illness, including persons with severe pneu-

monia and ARDS. Currently, evidence does not support sustained human-to-human transmission: only 6 cases of H7N9 were confirmed among a sample of 20,000 people with influenza-like-illness during a study in China in March and April 2013. These data suggest that milder cases of H7N9 are not prevalent and the virus is not spreading in the human population.

Diagnosis and treatment

Laboratory diagnosis of H7N9 is accomplished on clinical specimens through real time (RT-PCR) from nasopharyngeal swabs or aspirates. CDC currently recommends testing for H7N9 in individuals requiring hospitalization due to new-onset severe acute respiratory infection for which no alternative infectious etiology is identified, and who have recently (within 10 days of illness onset) traveled to China or Taiwan or had recent close contact with a confirmed case of H7N9. To test for H7N9 in Idaho, providers are asked to contact the Idaho Bureau of Laboratories to discuss sample submission for testing. Nasopharyngeal swabs or nasal aspirates or wash in viral transport medium are preferred unless lower respiratory tract illness is present, in which case endotracheal aspirate or bronchoalveolar lavage is preferred. Of note, rapid flu tests are often unable to detect avian or variant influenza A viruses; consequently, negative rapid tests should not discourage further testing if suspicion is high for these influenza viruses.

To date, H7N9 has been susceptible to the neuraminidase inhibitors oseltamivir and zanamivir. A mutation in the neuraminidase (NA) protein associated with in vitro resis-

tance to neuraminidase inhibitors has been detected in only one clinical isolate to date. Because of the potential severity of illness associated with H7N9 infection, CDC recommends that all confirmed, probable, and suspected cases be treated immediately with oseltamivir 75mg BID for 5 days (patients of any age), or zanamivir 10mg (2 inhalations of 5 mg each) BID for 5 days (patients aged ≥ 7 years), even if onset of symptoms was greater than 48 hours prior to presentation to medical care. A 10-day course of neuraminidase inhibitor therapy is suggested in cases of severe illness. If a patient is so severely ill that oral medication cannot be tolerated, an intravenous zanamivir formulation may be available through compassionate use or emergency investigational new drug request (see www.cdc.gov/flu/avianflu/h7n9-antiviral-treatment.htm).

Provider precautions

CDC is recommending that healthcare providers take additional precautions when caring for patients with confirmed or suspected H7N9, including wearing N95 respirators and eye protection. Asymptomatic healthcare providers who have had unprotected exposure to a patient who meets the case definition may be recommended to take prophylactic antivirals and wear a facemask if necessary to allow them to keep working and ensure adequate staffing of the facility. There is no vaccine available to prevent H7N9 at this time. The World Health Organization is providing coordination and guidance regarding possible vaccine candidates, and clinical trials are slated to begin this month.

INFLUENZA VACCINE CONTINUED FROM PAGE TWO

1997, has caused cases and clusters of illness in several countries, but has not achieved pandemic potential. An influenza A (H5N1) vaccine was first licensed in the United States in 2007 for intramuscular use in persons aged 18–64 years who are at increased risk of exposure to the subtype in the vaccine. This vaccine is in the National Stockpile, but is not available commercially.

Phase I clinical trials of an oral recombinant influenza A (H5N1) vaccine for humans are reported to have positive results for safety and immunogenicity. Oral delivery by tablet could greatly simplify logistics of vaccine administration. For a complete list of clinical trials on influenza vaccine, see <http://clinicaltrials.gov>.

References

- ¹Communication from Novartis Vaccines and Diagnostics, Inc.
- ²Wanich N, Bencharitwong R, Tasi T, et al. In vitro assessment of the allergenicity of a novel influenza vaccine produced in dog kidney cells in individuals with dog allergy. *Ann Allergy Asthma Immunol* 2010; 104: 426-433.



**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.
Current and past issues are archived online at www.idb.dhw.idaho.gov.

Data Snapshot: Cryptosporidiosis—Idaho, 2007–2012

Idaho’s annual rate of reported cryptosporidiosis has been comparable to the national rate since 2001 (Figure). However, during 2007, Idaho experienced a very high rate of 35.4 per 100,000 population; among 513 reported cases, 362 (71%) were attributed to 4 large outbreaks. Annual incidence dropped in 2008, but has been steadily increasing since then. Last year, Idaho’s rate of reported cryptosporidiosis more than doubled from the previous year; 5 reported outbreaks accounted for 53% of the reported cases.

During 2007 through 2012, among 1,171 cryptosporidiosis cases, the number reported by month peaked in September, at 29.6 times greater than the lowest number of cases reported by month, which was in February (445 [38%] and 15 [1.3%], respectively). The majority of reported cases per 100,000 population occurred in counties in the Treasure Valley. Age- and gender-specific rates of reported cases per 10,000 population was highest among male (4.0) and female (2.7) children aged <5 years.

Most human cases of cryptosporidiosis are caused by either *Cryptosporidium*

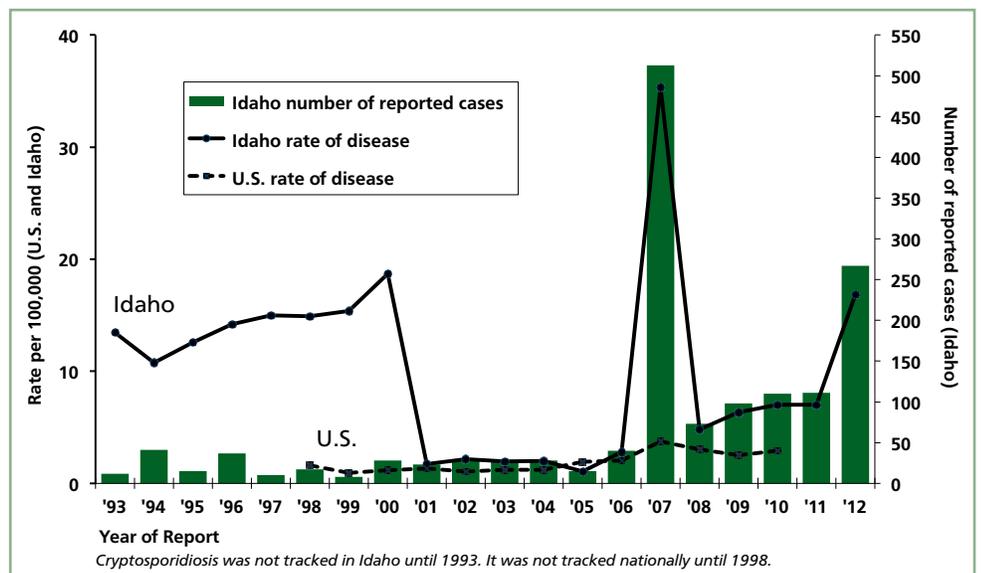


Figure. Number and rate of reported cryptosporidiosis cases, Idaho and U.S., 1993–2012

hominis, with a primarily human-to-human transmission cycle, or *C. parvum*, which infects both humans and ruminants. Other *Cryptosporidium* species such as *C. felis* and *C. canis* only occasionally cause human infection. Because multiple potential exposures, such as daycare, animal contact, and recreational water are often reported for

each case, making the source of infection often unclear, collection and submission of *Cryptosporidium*-positive stool samples from sporadic and outbreak cases to the Idaho Bureau of Laboratories for speciation and genotyping is encouraged to help identify sources of infection.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Norovirus GII.4 Sydney Arrives in Idaho
- Diseases and Conditions Reported to Idaho Public Health, 2012
- Vaccine Distribution for Children in Idaho: update

VOLUME 20 NUMBER 2 • JUNE 2013

Norovirus GII.4 Sydney Arrives in Idaho

Noroviruses are considered by the Centers for Disease Control and Prevention (CDC) to be the most common cause of instances and outbreaks of acute gastroenteritis in the United States. CDC estimates that noroviruses cause approximately 21 million illnesses, including 70,000 hospitalizations, and 800 deaths annually, mostly among young children, elderly, and immunocompromised patients.¹ A recent study reported that noroviruses are now the leading cause of medically-attended acute gastroenteritis in U.S. children, replacing vaccine-preventable rotavirus.¹

Common symptoms include nausea, vomiting, diarrhea, and abdominal pain. Fever, headache, and body aches can also occur. Symptoms occur acutely, within 12–48 hours after exposure. Virions are shed in vomitus and in stool up to six weeks after resolution of symptoms, although peak viral shedding, with approximately 100 billion viral copies per gram of feces, occurs 2–5 days after infection. Asymptomatic shedding is common, particularly in children. Fecal-oral transmission of noroviruses occurs directly

person-to-person or indirectly via contaminated surfaces, food, or water; aerosolized vomitus is also a source of infection. It only takes 18 virions to cause disease; consequently, the outbreak potential is high, particularly in restaurants and in fecally incontinent and congregate residential populations.²

Noroviruses are in the Family Caliciviridae. Currently five genogroups are recognized, with a sixth genogroup under investigation, three of which (GI, GII, and GIV) cause human infection. The genogroups are divided into genotypes and strains. Antigenically novel norovirus strains have been emerging in the United States and other countries every 2–3 years through the process of strain replacement.¹ Because there is no cross-protection between strains, new strains entering communities can produce increased numbers of outbreaks in the immunologically naïve population.³ Since 2002, various strains of GII genotype 4 (GII.4) have predominated in the United States and have repeatedly gone through strain replacement. The Sydney strain of GII.4 was first described in March 2012 in

NOROVIRUS GII.4 SYDNEY CONTINUED ON PAGE TWO

Diseases and Conditions Reported to Idaho

Assessment of the population's health is a core public health function. Surveillance for communicable diseases is one means of assessment. Epidemiologic surveillance is the systematic collection, analysis, and dissemination of health data for the planning, implementation, and evaluation of health programs. The Idaho Division of Public Health Bureau of Communicable Disease Prevention (BCDP) includes epidemiologists who work to collect information on certain communicable diseases for the purposes of determining disease impact, assessing trends in disease occurrence, characterizing affected populations, prioritizing control efforts, and evaluating prevention strategies. Prompt reporting allows outbreaks to be recognized in a timely fashion when control

measures are most likely to be effective in preventing additional cases.

In Idaho, public health disease reporting is not centralized and healthcare providers can submit disease reports to the BCDP or Public Health Districts. Cases of disease are reported pursuant to Idaho Reportable Diseases (Idaho Administrative Code 16.02.10). As stated in the rules, physicians, healthcare facilities, laboratories, and others are required to report these diseases. Reporting sources can designate an individual within an institution to perform routine reporting duties (*e.g.*, an infection control preventionist for a hospital). Provisions of the Health Insurance Portability and Accountability Act (HIPAA) allow for routine disease reporting to Public

DISEASES AND CONDITIONS CONTINUED ON PAGE TWO



IDAHO DEPARTMENT OF
HEALTH & WELFARE

DIVISION OF PUBLIC HEALTH

Bureau of Communicable Disease Prevention

P.O. Box 83720
450 W. State Street, 4th Floor
Boise, Idaho 83720-0036

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
Public Health Medical Director and
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

MITCHELL SCOGGINS, MPH
Immunization Program Manager

ELLEN ZAGER HILL, MS, DLSHTM
Epidemiology Program Specialist



NOROVIRUS GII.4 SYDNEY CONTINUED FROM PAGE ONE

Sydney, Australia.³ By the end of 2012, CDC noted that outbreaks of GII.4 Sydney-associated illnesses in the United States had occurred and were on the rise, quickly surpassing the frequency of outbreaks associated with the previously most common strains, GII.4 New Orleans and GII.4 Minerva. Strain replacement is occurring in Idaho, as well: GII.4 Sydney was first detected in Idaho in December 2012.

During September–December 2012,

CDC reported that 65% of the GII.4 Sydney outbreaks reported to CDC were long-term care facility (LTCF)-associated and 13% were restaurant-associated.³ In Idaho, for all norovirus clusters, regardless of genogroup, 62% in 2011 and 84% in 2012 were associated with LTCFs, nursing homes, or assisted living facilities. In LTCFs and other healthcare facilities with high-risk individuals, rapid implementation of infection prevention strategies is key to norovirus

control and outbreak management.⁴ These strategies include aggressive disinfection using an EPA-approved antimicrobial product effective against norovirus⁵, cohorting ill patients, and exclusion of ill workers to prevent facility-wide spread.

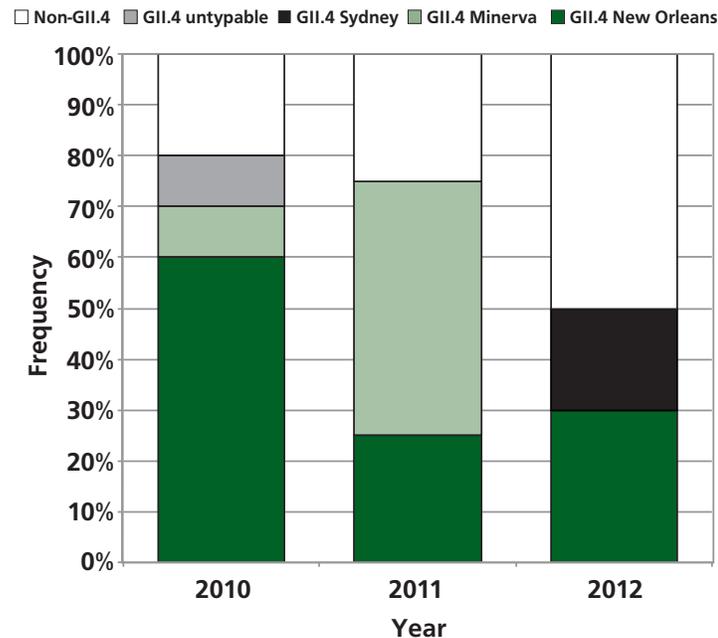
The Idaho Bureau of Laboratories (IBL) is a regional CaliciNet laboratory. CaliciNet is a nationwide network of public health and food regulatory laboratories

coordinated by CDC that participates in national norovirus surveillance efforts. IBL is able to detect norovirus genogroups I and II in stool and vomitus samples. Although there is no difference in clinical management of patients with norovirus based on strain typing, strain information is used to link outbreaks that might be caused by common sources (such as food), monitor trends, and identify emerging strains. The Idaho Division of Public Health encourages healthcare providers to collect clinical samples in support of outbreak investigations to help assess the public health implications and significance of emerging norovirus strains.⁶

References

¹Payne DC, Vinjé J, Szilagyu RG, et al. Norovirus and medically attended gastroenteritis in U.S. children. *NEJM*. 2013; 368(12): 1121–1130.
²Norovirus: Clinical Overview. www.cdc.gov/norovirus/hcp/clinical-overview.html. Updated February 21, 2013. Accessed April 22, 2013.
³Barclay L, Wikswo M, Gregoricus N, et al. Notes from the Field: Emergence of New Norovirus Strain GII.4 Sydney- United States, 2012. *MMWR Morbidity and Mortality Weekly Report*. 2013 January 25; 62(3):55. www.cdc.gov/mmwr/preview/mmwrhtml/mm6203a4.htm?_cid=mm6203a4_e
⁴Healthcare-associated infections: norovirus in healthcare settings, prevention of norovirus. www.cdc.gov/HAI/organisms/norovirus.html#a4. Updated February 25, 2013. Accessed April 12, 2013.
⁵US Environmental Protection Agency: Office of Pesticide Programs. List G: EPA's Registered Antimicrobial Products Effective Against Norovirus (Norwalk-like virus). www.epa.gov/oppad001/list_g_norovirus.pdf. Published January 9, 2009. Accessed April 12, 2013.
⁶Norovirus: Specimen Collection. www.cdc.gov/norovirus/lab-testing/collection.html. Updated April 12, 2012. Accessed April 16, 2013.

Figure. Proportion of norovirus genotypes in outbreak-associated isolates, by year, 2010–2012—Idaho



DISEASES AND CONDITIONS CONTINUED FROM PAGE ONE

Health without patient authorization. Data maintained by the BCDP are private and protected from redisclosure under state and federal law.

The table summarizes reported cases of selected communicable diseases reported during calendar year 2012. Pertinent observations for some of these diseases follow. Incidence rates in this report were calculated using disease-specific numerator data collected by BCDP and a standardized set of denominator data derived from United States Census data, which are also available from the Bureau of Vital Records and Health Statistics at www.healthandwelfare.idaho.gov/Health/VitalRecordsandHealthStatistics/HealthStatistics/VitalStatistics/tabid/914/Default.aspx

Botulism (infant)

Idaho received reports of two cases of infant botulism in 2012. The average number of cases reported per year over a 20 year period is less than 1; therefore, 2 cases in one year is unusual. Patients were aged 4 months and 12 months at the time of illness. Both patients were hospitalized in Utah and have recovered. There was no connection between the two cases.

Cryptosporidiosis

In 2007, Idaho experienced a very high rate of reported cryptosporidiosis cases, in part, due to a large outbreak associated with water parks in the Treasure Valley area. Since then, the incidence rate of cryptosporidiosis has been at or below about 7.0 cases per 100,000 population. However, in

2012, the Treasure Valley again experienced clusters of illness associated with bodies of recreational water and the incidence rate of illness more than doubled to 16.9 cases per 100,000 population.

E. coli (STEC)

With 139 cases reported, 2012 was a record year for reported cases of *E. coli* STEC infections, although the incidence rate of 8.7 cases per 100,000 population was slightly lower than the last peak in 2007 of 8.9 cases per 100,000 population (n=130). Most cases in 2012 were not found to be linked to other reported cases, but a large outbreak in the summer of 2012 among attendees of two large family reunion gatherings accounted for 40 (29%) of the cases that year. Forty-eight (36%) of


DISEASES AND CONDITIONS CONTINUED FROM PAGE TWO

the 138 reported cases were confirmed as *E. coli* O157:H7 and 42 (30%) were not serotyped.

Giardiasis

Mandated reporting of giardiasis in Idaho started in 1983. The disease began to be tracked nationally in 2002 and since then, Idaho's annual incidence rate has ranged from 10.2 to 15.3 cases per 100,000 population, generally about double the national rate. However, in 2012, the incidence rate of giardiasis in Idaho fell to 9.6 cases per 100,000 population, the lowest since reporting began.

Pertussis (whooping cough)

Pertussis incidence was up nationwide in 2012. Washington state health authorities declared an epidemic of pertussis in the state in the spring of 2012. Although Idaho did not experience the intense increase in cases reported that Washington did, the 235 cases reported in 2012 was the highest incidence of disease since 1998 when 263 cases were reported. Idaho's 2012 incidence rate of 14.7 cases per 100,000 population was the 19th highest in the United States. Other western states, including neighboring Oregon, Utah, and Montana reported rates higher than Idaho, but the national provisional incidence rate was 13.4 cases per 100,000 population (see www.cdc.gov/pertussis/downloads/Provisional-Pertussis-Surveillance-Report.pdf). Please see previous Idaho Disease Bulletin articles published in 2012 for more detail on Idaho's pertussis surveillance. Most pertussis in Idaho was due to household transmission and clusters. The death of an Idaho infant in May 2012 received local and national media attention.

Salmonellosis

Reports of infection with *Salmonella* have been decreasing over the past 5 years and the 2012 incidence rate of 8.4 cases per 100,000 population is the lowest rate in Idaho since 1995. The decrease in incidence this year is likely a result of the fewer number of cases associated with in-state outbreaks of disease compared with previous years combined with no reports of Idaho cases associated with major national outbreaks of *Salmonella* infections in 2012.

Syphilis

Idaho's incidence rate of syphilis has historically been well below the national incidence rate. However, since 2010, reports of syphilis have increased substantially. The increased incidence is due in a large part to an ongoing syphilis outbreak among Treasure Valley men who have sex with men. During June 1, 2011–April 15, 2013,

the outbreak investigation has involved follow-up of 229 individuals, including 59 cases of early syphilis. New or existing HIV diagnosis was found in 37 cases and contacts; where HIV testing results were available, 69 had tested HIV negative.

Table. Incidence and incidence rates for selected communicable diseases, 2012—Idaho

Disease / Condition	Condition Incidence	Incidence Rate *
Amebiasis	3	0.2
Botulism, infant	2	0.1
Campylobacteriosis	293	18.4
Chlamydia	4,550	285.1
Cryptosporidiosis	267	16.7
<i>E. coli</i> STEC	139	8.7
Encephalitis, viral or aseptic	5	0.3
Giardiasis	153	9.6
Gonorrhea	168	10.5
<i>Haemophilus influenzae</i> , invasive disease	18	1.1
Hemolytic uremic syndrome	3	0.2
Hepatitis A	14	0.9
Hepatitis B, acute	7	0.4
Hepatitis C, acute	12	0.8
HIV	58	3.6
Lead, elevated blood levels	112	7.0
Legionellosis	5	0.3
Listeriosis	1	0.1
Lyme Disease	5	0.3
Malaria	8	0.5
Meningitis, viral or aseptic	22	1.4
Meningococcus	4	0.3
Methicillin-resistant <i>Staphylococcus aureus</i> , invasive	98	6.1
Pertussis	235	14.7
<i>Pneumocystic pneumoniae</i>	3	0.2
Q fever	1	0.1
Respiratory syncytial virus	530	33.4
Spotted fever rickettsiosis	4	0.3
Salmonellosis	134	8.4
Shigellosis	9	0.6
<i>Streptococcus pneumoniae</i> , invasive (<18 years of age)	5	0.3
<i>Streptococcus pyogenes</i> (Group A Strep), invasive	11	0.7
Syphilis	48	3.0
Toxic Shock Syndrome, staphylococcal	1	0.1
Tuberculosis	15	0.9
Tularemia	1	0.1
West Nile virus infection	17	1.1
Yersiniosis	5	0.3

*Incidence rate is per 100,000 population



**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

Vaccine Distribution for Children in Idaho: update

House Bill 178 “Immunization Boards,” passed the legislature on March 29, 2013. Passage of the bill extends the authority of the Idaho Vaccine Assessment Board, which otherwise would have sunsetted on July 1, 2013, for an additional two years. Idaho’s vaccine assessment system was created in 2010 in response to the loss of state general fund dollars which had been used to provide free vaccines for insured children in Idaho prior to the economic downturn in 2009. Funds collected by assessing insurance companies on a per-covered-child basis ensures access to immunizations is maintained.

The federally funded Vaccines for

Children (VFC) program provides free vaccine for children who are covered by Medicaid, or uninsured or underinsured, or are American Indian or Alaska Native. With the addition of vaccine purchased with assessment funds for insured children, Idaho is able to maintain its status as a “universal” vaccine state. “Universal” means that any Idaho child who presents at a provider enrolled with the state vaccine program is eligible for free vaccine purchased through the state program (though providers are permitted to charge a fee for the administration of the vaccine). If House Bill 178 had failed to pass the legislature, Idaho would have become a “VFC-only” state on July 1, 2013.

Providers who wanted to vaccinate insured children would have had to purchase vaccines for insured children from the private market, keep track of VFC and non-VFC vaccine stocks separately, and bill insurance companies for reimbursement.

Insurance companies support Idaho’s assessment system not only because it improves access to vaccines, but because they can take advantage of the lower cost of vaccines purchased by the state from federal vaccine contracts relative to the private market. Stakeholders agreed that an extension of the sunset date to July 1, 2015 will allow more time for evaluation of the expected cost savings of this program.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Idaho Public Health Response to a Multi-State Outbreak of Fungal Meningitis
- Maternal Hepatitis B Infection and Prevention of Perinatal Hepatitis B
- Meaningful Use of Electronic Health Records for Syndromic Surveillance

VOLUME 20 NUMBER 1 • MARCH 2013

Idaho Public Health Response to a Multi-State Outbreak of Fungal Meningitis Associated with Contaminated Steroids

On a Saturday, September 29, 2012, the Idaho Division of Public Health was alerted to a joint CDC/FDA investigation of a cluster of clinical meningitis cases following spinal injection procedures for pain. A week earlier, the Tennessee Department of Health had been notified of a patient with clinically-diagnosed meningitis following an epidural steroid injection (ESI) at a Tennessee ambulatory surgical center. The fungus *Aspergillus fumigatus* was isolated from CSF. Subsequent outreach demonstrated nine additional ill patients with similar clinical presentation, including one at a facility in North Carolina. All patients had received at least one ESI with methylprednisolone acetate (MPA) distributed by New England Compounding Center (NECC) in Framingham, MA that was recalled September 26.

Public health response and outreach to providers

A list of providers in the United States who had received one or more of the lots of recalled MPA was received from CDC. CDC recommended all patients that had an ESI at one of the clinics that received any of the three recalled lots (05212012@68, 0629212@26, 08102012@51) of MPA from NECC be contacted to determine their clinical status. Two providers in Idaho received the recalled (“hot lots”) of MPA. They were contacted via FAX and phone, alerted to the investigation, and were provided with details about the known clinical picture of identified patients. Providers were encouraged to perform in-person follow-up with patients if possible because symptoms were varied and insidious. Infectious disease physicians and public health district epidemiologists were notified via email of the investigation, Idaho’s planned response,

and information on how to contact public health officials of any possible cases.

Over the next week, daily follow up with the two Idaho facilities was conducted by Division of Public Health staff. Facilities in Idaho proactively contacted patients that had received an ESI with MPA from the hot lots. An October 5 press release alerted the public to what symptoms might be and urged them to contact their providers if they received an ESI from one of the two Idaho facilities.

On October 6, NECC voluntarily recalled all products distributed. In addition to the two Idaho facilities that received the hot lots of MPA, an additional nine Idaho facilities had received other injectable products from NECC, including betamethasone and triamcinolone. Those facilities were contacted and encouraged to follow-up with patients to evaluate their health status.

For purposes of the public health investigation, a case of infection linked to this outbreak was considered in any person who:

1. Received an injection with MPA produced by NECC,
2. Developed fungal meningitis or non-bacterial and non-viral meningitis¹ of sub-acute onset, and
3. Had an epidural injection on and after May 21, 2012.

As of 2/22/2013, infections have been diagnosed in 707 patients. The predominant fungus identified in patients continues to be *Exserohilum rostratum*, although the index case had a laboratory-confirmed *A. fumigatus* infection.

¹ Clinically diagnosed meningitis meaning one of more of the following symptoms: headache, fever, stiff neck, or photophobia and a cerebrospinal fluid (CSF) profile showing pleocytosis (>5 white blood cells, adjusting for presence of red blood cells) regardless of glucose or protein levels.

IDAHO PUBLIC HEALTH RESPONSE CONTINUED ON PAGE TWO



IDAHO DEPARTMENT OF
HEALTH & WELFARE

DIVISION OF PUBLIC HEALTH

Bureau of Communicable Disease Prevention

P.O. Box 83720
450 W. State Street, 4th Floor
Boise, Idaho 83720-0036

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
Public Health Medical Director and
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

MITCHELL SCOGGINS, MPH
Immunization Program Manager

ELLEN ZAGER HILL, MS, DLSHTM
Epidemiology Program Specialist



IDAHO PUBLIC HEALTH RESPONSE CONTINUED FROM PAGE ONE

These fungi are common in the environment; infections are usually seen in immunocompromised persons and are not transmissible person to person.

Idaho-specific case investigations

During the week ending October 6, nine patients that received ESIs reported symptoms and were further evaluated. Two additional patients had lumbar punctures to rule out infection. Of these 11 patients, 1 female was hospitalized over the weekend, had normal CSF, and was released; a male patient was hospitalized overnight due to elevated CSF protein, but was then released.

On October 10, the Idaho Public Health Medical Director was notified of a male in his 70s who met the CDC outbreak surveillance definition for meningitis, although ultimately the treating physician decided this patient did not have meningitis.

Forty follow up appointments with patients exposed to the contaminated products were conducted by Idaho physicians the weeks ending October 13 and October 20 to ensure they were in good health and to follow up on any mild symptoms. These follow up visits sometimes identified additional persons with mild or nonspecific symptoms requiring further investigation to rule out subtle clinical disease. Evaluations included clinical examination, MRI, and other studies. As of February 22, no addi-

tional cases have been identified in Idaho.

Product recalls and investigation

CDC and FDA have isolated *E. rostratum* in unopened vials of MPA from two of the three implicated lots (06292012@26 and 08102012@51). The laboratory confirmation further links steroid injections from these lots from NECC to the outbreak. Testing on the third implicated lot continues.

CDC and FDA have identified additional microbial contamination of non-MPA NECC injectable products including beta-methasone, triamcinolone, and cardioplegia solution. Identified organisms include *A. tubingensis*, *A. fumigatus*, *Bacillus circulans*, *B. firmus*, *B. flexus*, *B. halmapalus/horikoshii*, *B. idriensis*, *B. lentus*, *B. niabensis*, *B. niacin*, *B. pumilus*, *B. simplex*, *Brevibacillus choshinensis*, *Cladosporium* sp., *Kocuria rosea*, *Lysinibacillus* sp., *Paenibacillus barengoltziitimonensis*, *P. pabuli/amolyticus*, and *Penicillium* sp. Although rare, some of the identified *Bacillus* species can be human pathogens. Some of the fungal organisms identified, particularly *A. fumigatus*, are known to cause disease in humans. It is not known how product contamination with these organisms could affect patients clinically.

On October 31, NECC's parent company, Ameridose, LLC, based in West-

borough, MA voluntarily recalled all unexpired products that company had in circulation. FDA investigation of both NECC and Ameridose continues. For information on the ongoing outbreak investigation and product recalls, visit the CDC website at www.cdc.gov/hai/outbreaks/meningitis.html and FDA website at www.fda.gov/Drugs/DrugSafety/FungalMeningitis/default.htm.

This is by far the largest outbreak of fungal meningitis linked to injectable pharmaceutical products used in medical procedures. Federal congressional hearings and FDA investigations into the activities of NECC are ongoing and have expanded into regulatory oversight of compounding pharmacies. The Idaho Board of Pharmacy is collaborating with other state boards of pharmacy through the National Association of Boards of Pharmacy to formulate solutions to better identify companies potentially blurring the line between dispensing compounded medication and distributing manufactured product. The Idaho Board of Pharmacy has inspected, and subsequently surveyed, all Idaho sterile compounding pharmacies, penned responses to dozens of questions posed by Congress, testified at an FDA hearing, held various informal meetings with Idaho compounders, and is engaged in negotiated rulemaking for the current legislative session.

Maternal Hepatitis B Infection and Prevention of Perinatal Hepatitis B through Case Management

Background

During 2001–2011, an average of 16 births per year to women infected with Hepatitis B virus (HBV) were reported in Idaho. Transmission of HBV to infants from infected mothers is of particular concern. Infants infected at birth are more likely than older children and adults to suffer clinical complications and serious liver disease.¹ Without intervention, perinatal transmission of HBV from mother to infant during pregnancy and birth is high (approximately 80%–90%), but appropriate prophylaxis can decrease the probability of transmission

by up to 95%.² Hepatitis B immune globulin (HBIG) and Hepatitis B vaccine are recommended to be administered to exposed infants within 12 hours of birth.

Prevention of perinatal transmission

Public Health Districts and Idaho's Perinatal Hepatitis B Prevention Program provide case management of pregnant HBV-infected women and exposed infants to ensure that HBIG and hepatitis B vaccine are administered at birth and to follow up on post-vaccination serologic testing of infants at 9–12 months of age. During

2001–2010 in Idaho, 91% of case-managed infants received appropriate prophylaxis at birth, but only 34% of infants had documented results of post-vaccination serology. Improved coordination among prenatal care providers, delivery providers, and pediatric providers could improve the proportion of exposed infants tested. Not only is serologic testing important to determine if viral transmission has occurred, it also provides evidence of an appropriate immune response to the completed Hepatitis B vaccine series.

Because not all HBV infections among pregnant women are identified before



MATERNAL HEPATITIS B CONTINUED FROM PAGE TWO

delivery, and prenatal screening records are not always available during delivery, the universal birth dose of hepatitis B vaccine continues to serve as a safety net for preventing transmission to infants. Data suggest that the 3-dose series of HBV vaccine can prevent infection by as much as 75%–90%.² Standing orders or protocols for screening and administration of immune globulin and vaccine can help to ensure that infants born to potentially infected women are protected.

Underreporting of hepatitis B during pregnancy

Both acute and chronic HBV infection are reportable to Idaho public health officials. Based on Idaho demographic data and national HBV prevalence data, the Centers for Disease Control and Prevention (CDC) estimates that the number of hepatitis B surface antigen (HBsAg)-positive pregnant women in Idaho might be underreported by 50%–75%; however, a recent evaluation of perinatal hepatitis B surveillance in Idaho suggests that the number of unreported cases

is likely more in the range of 5%–10%.

HBV infection might be undetected if prenatal screening is not performed. Screening using the surface antigen test early in prenatal care is recommended as standard of care by American College of Obstetricians and Gynecologists,² the United States Preventive Services Task Force,³ the American Association for the Study of Liver Diseases,⁴ and CDC;⁵ however, prenatal care providers might not always screen women for HBV, especially if a woman returns to the same provider after a pregnancy and she was previously screened for HBV infection. Women of unknown HBV infection status who present at delivery facilities might not be screened immediately for HBV infection as recommended.

Idaho public health are not always informed when a woman chronically infected with HBV becomes pregnant, either because no HBV testing was done at the time of pregnancy or because the mother's chronic HBV case was previously reported. Notification to public health officials about all pregnancies in HBV-infected women

helps ensure timely provision of HBIG and Hepatitis B vaccine within 12 hours of birth and public health case management services for the infant.

References

- ¹Centers for Disease Control and Prevention. Hepatitis B. In: *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book). Atkinson W, Wolfe S, Hamborsky J, editors. 12th ed. Washington, DC: Public Health Foundation, 2011. www.cdc.gov/vaccines/pubs/pinkbook/index.html
- ²American College of Obstetricians and Gynecologists (ACOG). *Viral hepatitis in pregnancy* (ACOG practice bulletin no. 86). Washington, D.C.: American College of Obstetricians and Gynecologists (ACOG); October 15, 2007.
- ³U.S. Preventive Services Task Force. Screening for hepatitis B virus infection in pregnancy: U.S. Preventive Services Task Force reaffirmation recommendation statement. *Ann Intern Med*. 2009;150(12):869-73, W154.
- ⁴Lok AS, McMahon BJ. Chronic hepatitis B: update 2009. *Hepatology*. 2009;50(3):661-2.
- ⁵Weinbaum CM, Williams I, Mast EE, Wang SA, Finelli L, Wasley A, Neitzel SM, Ward JW. Recommendations for identification and public health management of persons with chronic hepatitis B virus infection. *MMWR Recomm Rep*. 2008;57(RR-8):1-20.

Meaningful Use of Electronic Health Records for Syndromic Surveillance in Idaho using BioSense 2.0

The Health Information Technology for Economic and Clinical Health Act (HITECH) includes provisions for a financial incentive to eligible providers and hospitals for adopting use of qualified, certified electronic health record (EHR) systems that are used in a meaningful way (“Meaningful Use”) to achieve significant improvements in care. Payments are administered by the federal Medicare and state Medicaid programs with oversight by the federal Centers for Medicare and Medicaid Services (CMS). Rules released by CMS July 2010 for Stage 1 and August 2013 for Stage 2 (beginning in 2014) define criteria for EHR certification and eligibility to receive incentive payments. Eligible hospitals and providers can meet requirements by submitting immunization, reportable disease laboratory result, and syndromic surveillance

data electronically to public health agencies.

Stage 1 of Meaningful Use includes submission of data for syndromic surveillance as one of the public health reporting menu options an eligible hospital or provider can choose to qualify for incentive payments. This reporting becomes a core requirement for eligible hospitals in Stage 2, but remains optional for eligible providers. In contrast to other public health surveillance systems, syndromic surveillance uses near real-time patient data to enable the timely assessment of community data. Syndromic surveillance can help public health track the health of communities, maintain situational awareness during outbreaks, more closely monitor seasonal increases or decreases of known illnesses, identify health effects of events such as poor air quality, and detect health events early.

Syndromic surveillance capacity in Idaho

The Idaho Department of Health and Welfare Division of Public Health (DPH) has received funding to build syndromic surveillance capacity through use of BioSense 2.0 to capture emergency department data for syndromic surveillance. Data from hospital EHRs are sent using secure data transmission methods to BioSense 2.0 (www.cdc.gov/biosense/biosense20.html), an application designed by the Centers for Disease Control and Prevention, using a standardized format. Algorithms categorize the chief complaint and diagnosis data into syndrome classes that can be analyzed by public health to enhance the monitoring of population health. The main goal of the first year of funding is to collaborate with at least five Idaho hospitals to begin

Idaho Disease Bulletin



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Division of Public Health
P.O. Box 83720
Boise, ID 83720-0036

PRSR STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

MEANINGFUL USE CONTINUED FROM PAGE THREE

transmitting emergency department data to BioSense 2.0 by August 2013. Panhandle Health District and Southwest District Health are participating in a pilot project to engage with hospitals in their district on BioSense 2.0 activities. As eligible hospitals implement Meaningful Use Stage 2 activities, the DPH anticipates enrolling additional facilities. Once the number of hospitals contributing data is sufficient to obscure facility identification, views of aggregate data may be shared with DPH-approved public health stakeholders. Throughout the project, DPH will consult the Governor's Health Care Council Health Information Technology (HIT) Workgroup

to develop policies for ensuring appropriate data aggregation and security.

For hospitals interested in providing emergency department data for syndromic surveillance, DPH has guidance available online: go to www.epi.idaho.gov and click on "Public Health Meaningful Use Reporting" on the left side of the screen. Eligible hospitals can email PublicHealthMU@dhw.idaho.gov for information related to Meaningful Use public health reporting, including syndromic surveillance. DPH is not currently accepting data from eligible providers for syndromic surveillance.

Idaho Disease Bulletin Available Electronically

The Idaho Disease Bulletin (IDB) website (www.IDB.dhw.idaho.gov) includes searchable indices of issues from the last 10 years, the ability for readers to suggest topics, and the ability for readers to sign up to receive an electronic copy of the IDB. If you would like to receive an email with a link to new issues of the IDB please go to www.IDB.dhw.idaho.gov to submit a request or send an email to IDB@dhw.idaho.gov.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Notice to Providers: new HIV testing algorithms approved
- Elevated MICs Relegate Cefixime to Alternative Gonorrhea Treatment
- First Reported Idaho Human Metapneumovirus Outbreak

VOLUME 19 NUMBER 4 • DECEMBER 2012

Notice to Providers: new HIV testing algorithms approved

Many healthcare providers are familiar with the most common screening algorithm for HIV infection, involving an enzyme immunoassay (EIA) followed by a Western blot for confirmation of the presence of HIV antibody. Developments in HIV testing technologies over the last few years have necessitated assessment of testing algorithms that do not rely on traditional confirmatory tests such as Western blot or IFA (immunofluorescent antibody) assays. Healthcare providers are beginning to receive laboratory results for HIV tests using these new algorithms from some laboratories, which could be difficult to interpret. A new algorithm is already in use by the Idaho Bureau of Laboratories, Idaho's public health laboratory, and LabCorp, a commercial laboratory; we have not yet seen changes in other laboratories' HIV testing algorithms. The two main benefits of the new algorithms—earlier detection of acute HIV infection and determination of HIV-1 or HIV-2 subtype—are described below.

Background

CDC and the Association of Public Health Laboratories collaborated several years ago to assess the need to change HIV testing algorithms because of advancing testing technologies. The result was a report which "...describes a menu of HIV testing algorithms that have the potential to augment and provide alternatives to the algorithm currently used to diagnose HIV infection..." and detailed key data needs for advancing the algorithms evaluated.¹

This effort led to the publication of approved guidelines for six algorithms by the Clinical and Laboratories Standards Institute (CLSI) in July 2011.² Although further guidance on use of such algorithms is expected from CDC next year, the CLSI guidelines allow clinical laboratories to change their HIV diagnostic testing practices. The

change in the HIV testing algorithm does not apply to rapid tests performed in health clinics or in the field, as confirmation of HIV infection cannot be made at the point-of-care using Clinical Laboratory Improvement Amendments (CLIA)-waived tests. The guideline does not address organ or tissue donation, or screening the blood supply.

The most important new HIV testing algorithm outlines an HIV-1/HIV-2 antigen/antibody (Ag/Ab) combination immunoassay as the initial screening test, followed by HIV-1/HIV-2 Ab differentiation immunoassay, with an HIV nucleic acid amplification test (NAAT) to resolve discrepant results from the first two steps^{3,4} (Figure). This algorithm provides earlier detection of HIV infection and HIV-1 or HIV-2 subtype determination, and identification of acute HIV infection in the absence of detectable antibody. One other algorithm in the CLSI guidelines will offer similar benefits, with an HIV-1/HIV-2 Ag/Ab differentiation immunoassay when the test becomes available; the remaining four algorithms do not provide acute HIV infection detection or do not determine subtype. For more information about approved HIV diagnostic testing algorithms, see the CLSI guidelines document.

Earlier detection of newly infected persons

Enhancements to the HIV EIAs over time have resulted in better detection of IgG to HIV in 2nd generation immunoassays and the ability to detect IgM to HIV in 3rd generation immunoassays, shortening the "window period" — the time between HIV infection and the ability to detect HIV antibody. The availability of Ag/Ab combination immunoassays (sometimes referred to as 4th generation EIAs) which will give a positive result if p24 (a component of the capsid surrounding the HIV RNA strand) is detected or if HIV antibody



IDAHO DEPARTMENT OF
HEALTH & WELFARE

DIVISION OF PUBLIC HEALTH

Bureau of Communicable Disease Prevention

P.O. Box 83720
450 W. State Street, 4th Floor
Boise, Idaho 83720-0036

WWW.IDB.DHW.IDAHO.GOV

*Idaho Disease Bulletin
Contributing Staff*

CHRISTINE G. HAHN, MD
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

PATRICK GUZZLE, MPH
Food Protection Program Manager

MITCHELL SCOGGINS, MPH
Immunization Program Manager

ELLEN ZAGER HILL, MS, DLSHTM
Epidemiology Program Specialist



HIV TESTING ALGORITHMS CONTINUED FROM PAGE ONE

is detected, shorten the window period even more.

The difference is remarkable. Estimated average time between infection and detection is now 2–3 weeks with newer Ag/Ab combination immunoassays or as little as 6–12 days for HIV NAATs, compared with the 5–6 week average window period using Western blot for confirmation.⁵

Additionally, these tests can assist in diagnosing acute HIV infection when antigen or HIV nucleic acid is detected, but antibody is not. Acute HIV infection precludes the use of Western blot for confirmation because the ability to detect antigen typically occurs before the ability to detect antibody. Individuals with acute HIV infection have been shown to have higher HIV viral load and consequently an increased risk of transmitting HIV to others if exposed.⁶ Counseling about HIV risk reduction, partner notification, and immediate referral and initiation of HIV medical care are important to preventing transmission during acute HIV infection.

Distinguishing HIV-1 from HIV-2 infection

The ability to distinguish both acute HIV and HIV-1 or HIV-2 infection provides an opportunity for providers to discuss exposures and treatment with patients at initial diagnosis. HIV-2 infection has been largely confined to persons in or from West Africa. Although both HIV-1 and HIV-2 share the same routes of transmission and both can cause AIDS, HIV-2 infection is less likely to cause AIDS and clinical management of HIV-2 is different because of differences in intrinsic and acquired resistance in HIV-2. For example, HIV-2 appears intrinsically resistant to non-nucleoside reverse transcriptase inhibitors and to enfuvirtide. HIV-2 also differs in virologic response to common treatment regimens.⁷

In summary, clinical and laboratory use of new diagnostic algorithms for HIV testing can identify acute HIV infection earlier and determine HIV type, allowing clinicians to provide

earlier diagnosis and counseling of acutely infected patients, and referral for type-specific HIV medical care.

References

¹ Association of Public Health Laboratories. HIV testing algorithms—status report 2009. www.aphl.org/aphlprograms/infectious/hiv/Pages/HIVStatusReport.aspx
² Clinical and Laboratory Standards Institute. Criteria for laboratory testing and diagnosis of human immunodeficiency virus infection; approved guideline. CSLI document M53-A. Wayne, PA: CSLI. 2011.

³ Branson BM. The future of HIV testing. *J Acquir Immune Defic Syndr* 2010;55:S102–S105.

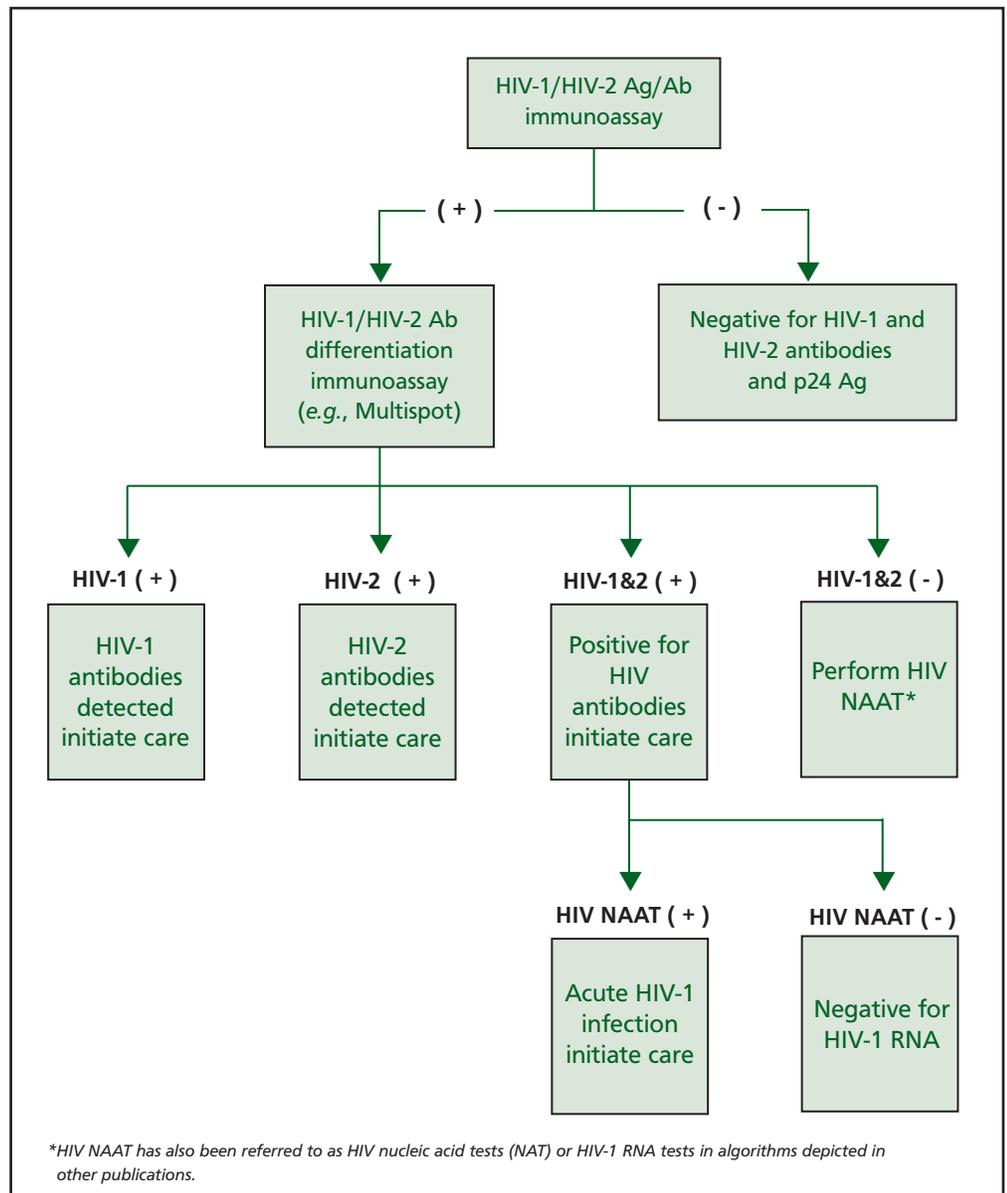
⁴ Branson BM. Establishing the diagnosis of HIV infection: new tests and a new algorithm for the United States. *J Clin Virol* 2011; 52S:S3–S4.

⁵ Branson BM, McDougal JS. Establishing the diagnosis of HIV infection. In: *AIDS Therapy* 3rd Ed 2008.

⁶ Pilcher CD, Tien H, Eron JJ, et al. Brief but efficient: acute HIV infection and the sexual transmission of HIV. *JID* 2004; 189:1785–1792.

⁷ Panel on Antiretroviral Guidelines for Adults and Adolescents. US Department of Health and Human Services. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Published 2011. www.aidsinfo.nih.gov/contentfiles/adultandadolescentgl.pdf Accessed October 18, 2012.

Figure. Example of a new diagnostic algorithm for HIV diagnosis (now in use at the Idaho Bureau of Laboratories)



*HIV NAAT has also been referred to as HIV nucleic acid tests (NAT) or HIV-1 RNA tests in algorithms depicted in other publications.

Adapted from: Clinical and Laboratory Standards Institute. Criteria for laboratory testing and diagnosis of human immunodeficiency virus infection; approved guideline. CSLI document M53-A. Wayne, PA: CSLI. 2011 and Branson BM. Establishing the diagnosis of HIV infection: new tests and a new algorithm for the United States. *J Clin Virol* 52S (2011) S3-S4.



Elevated MICs Relegate Cefixime to Alternative Gonorrhea Treatment

CDC has updated its treatment guidelines for gonococcal infection in response to increasing proportions of gonococcal isolates with elevated minimum inhibitory concentrations (MICs) to cefixime in the United States during 2006–2011. CDC no longer recommends cefixime at any dose as a first-line regimen for treatment of gonococcal infections.¹ If cefixime or other alternative regimens are used, CDC recommends performing a test-of-cure at the site of infection at one week post-treatment (Figure). Although no documented treatment failures have been reported in the United States, an increasing number of cefixime treatment failures have been reported from other countries.¹ Treatment recommendations were updated in anticipation of declining effectiveness of cefixime and aim to slow the emergence of drug resistance to ceftriaxone.

Ceftriaxone (250 mg IM in a single dose) is the only cephalosporin recommended for inclusion in dual-therapy regimen for gonococcal infection (Figure). Cefixime can be used in an alternative regimen when ceftriaxone is not available; azithromycin can be used as an alternative for patients having a severe allergy to cephalosporins. Neither alternative is recommended for gonococcal infections of the pharynx. Culture for test-of-cure is preferred, but nucleic acid-based methods can be used if culture is not available. There is concern about using nucleic acid amplification tests (NAATs) as a test-of-cure because the test can detect residual

gonococcal nucleic acid even if no viable gonococcal bacteria are present. CDC is confident the NAAT for *Neisseria gonorrhoeae* will be negative one week after treatment unless there are intervening exposures or treatment failure. However, due to the body's slower clearance of chlamydia nucleic acid, a one week test-of-cure using a NAAT that tests for both chlamydia and gonorrhea will likely result in a false positive chlamydia result. The patient should not be retreated for chlamydia, but should be instructed to return for a chlamydia rescreen in 3–4 months per current recommendations.² Patients with persistent or recurrent

symptoms of gonorrhea shortly after treatment with the recommended combination therapy and without intervening exposures should also have a new sample collected for testing by culture; isolates should be submitted for antimicrobial susceptibility testing.

References

- Centers for Disease Control and Prevention. Update to CDC's Sexually Transmitted Diseases Treatment Guidelines, 2010: Oral Cephalosporins No Longer a Recommended Treatment for Gonococcal Infections. *MMWR* 2012;61(31):590–594.
- Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2010. *MMWR* 2010;59(No. RR-12):49–55.
- Centers for Disease Control and Prevention. Cephalosporin susceptibility among *Neisseria gonorrhoeae* isolates — United States, 2000–2010. *MMWR* 2011;60:873–877.

Figure. Updated gonorrhea treatment guidelines

Recommended regimen (uncomplicated gonococcal infections of the cervix, urethra, rectum, and pharynx* [†])	Alternative regimen 1 (uncomplicated gonococcal infections of the cervix, urethra, and rectum*)	Alternative regimen 2 (uncomplicated gonococcal infections of the cervix, urethra, and rectum*) (if the patient is severely cephalosporin-allergic)
Ceftriaxone 250 mg IM in a single dose PLUS Azithromycin 1 g orally in a single dose [‡] OR Doxycycline 100 mg orally twice daily for 7 days [§]	Cefixime 400 mg orally in a single dose PLUS Azithromycin 1 g orally in a single dose [‡] OR Doxycycline 100 mg orally twice daily for 7 days [§] PLUS Test-of-cure in 1 week	Azithromycin 2g orally in a single dose PLUS Test-of-cure in 1 week
<p>*Dual antibiotic treatment should be given regardless of any chlamydia test result. [†]Dual treatment with ceftriaxone is the only recommended treatment for pharyngeal infection. [‡]Azithromycin is preferred over doxycycline for dual antibiotic treatment due to high rates of co-existing tetracycline resistance among gonococcal isolates with elevated cefixime minimum inhibitory concentrations (MICs)³. [§]Pregnant women should not be treated with quinolones or tetracyclines.</p>		

First Reported Idaho Human Metapneumovirus Outbreak

On February 8, 2012, Southwest District Health was notified of a cluster of pneumonia among residents of a long-term care facility (LTCF). Public health district epidemiologists conducted a public health investigation, with assistance from facility staff and the Idaho Division of Public Health, to determine the extent and etiology of the outbreak. A case was defined as new cough onset in a facility resident during January 31–February 29. Patient medical records, including prior laboratory results, were reviewed. Cases were identified

in 29 (36%) of 80 residents; 2 (40%) of 5 hospitalized residents died. Eleven of approximately 100 facility staff also reported respiratory illness during this time, but no laboratory testing was done.

Illness among residents was characterized mainly by lower respiratory tract symptoms; 10 had physician-diagnosed pneumonia. Median duration of illness among 26 residents was 4.5 days (range: 1–4.5 days). Eighteen (62%) of 29 cases in residents were treated empirically with antibiotics. Physician-ordered diagnostic tests,

including rapid influenza antigen, rapid respiratory syncytial virus (RSV), *Legionella* urinary antigen, *Streptococcus pneumoniae* urinary antigen, and bacterial cultures on sputum and blood collected up to seven days after illness onset were all negative; however, in two of five patients, blood was collected for bacterial culture four days after antibiotic therapy was initiated.

Because both influenza and pneumococcal vaccines might reduce risk of respiratory infection or complications, we collected information about influenza and

OUTBREAK CONTINUED ON PAGE FOUR



**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

OUTBREAK CONTINUED FROM PAGE THREE

pneumococcal vaccinations for ill residents from patient medical records. Although long-stay resident influenza and pneumococcal vaccination coverage >90% was reported by the facility to the Centers for Medicaid and Medicare Services, documentation in patient charts was often difficult to find and residents might have been vaccinated elsewhere.

Nasopharyngeal (NP) specimens from nine non-hospitalized resident cases were collected within four days of illness onset for respiratory virus testing at the Idaho Bureau of Laboratories (IBL). Rhinovirus/enterovirus was detected in one NP specimen. Human metapneumovirus (hMPV) was detected by qualitative nucleic acid multiplex assay or reverse transcription polymerase chain reaction (PCR) in 5 (56%) of 9 NP specimens and in a bronchoalveolar lavage specimen from one patient who died. No other viruses were detected by viral culture, qualitative nucleic acid multiplex assay, or PCR.

First detected in 2001 in the Netherlands¹, hMPV is a paramyxovirus closely related to RSV. Clinical manifestations of disease range from mild upper

respiratory symptoms to bronchiolitis and pneumonia and are indistinguishable from those caused by RSV. Infants and young children are most at risk for severe disease; advanced age and underlying cardiopulmonary disease are risk factors for severe disease among adults. Serologic evidence suggests that most people have been infected by five years of age, so infection in older children and adults likely represents reinfection. Although hMPV has been detected in communities and causes outbreaks in LTCFs throughout the year, peak activity for hMPV is generally in the late winter and spring in temperate climates.² Outbreaks caused by hMPV reported elsewhere from community hospitals, and pediatric and adult LTCFs typically resulted in attack proportions of 18%–35% and case fatality proportions of 7–12%.^{3,4} No specific treatment other than supportive care is recommended for hMPV.

Viral testing by IBL in this outbreak of respiratory illness at an LTCF enabled public health to identify the first outbreak caused by hMPV reported in Idaho. Prompt reporting of clusters of influenza-like illness (ILI) in congregate settings to your local public health district can help facilitate

identification of outbreak etiology and implementation of appropriate infection control measures, treatment, or chemoprophylaxis. To assist in tracking vaccination status among LTCF residents, LTCFs could consider using Idaho's Immunization Reminder Information System (IRIS) to record up-to-date immunization information that would be available to all of a resident's medical providers who use IRIS.

General guidance for infection control in the long-term care setting can be found at www.cdc.gov/HAI/settings/ltc_settings.html. Additional guidance related to influenza and ILI outbreak management can be found at www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm.

References

- ¹ C Van den Hoogen BG, de Jong JC, Groen J, Kuiken T, de Groot R, Fouchier RA, Osterhaus AD. A newly discovered virus isolated from young children with respiratory tract disease. *Nat Med*. 2001;7(6):719–24.
- ² Kahn JS. Epidemiology of human metapneumovirus. *Clin Microbiol Rev*. 2006;19(3):546–57.
- ³ Falsey AR. Human metapneumovirus infection in adults. *Pediatr Infect Dis J*. 2008; 27(10 Suppl):S80–3.
- ⁴ Liao RS, Applegate DM, Pelz RK. An outbreak of severe respiratory tract infection due to human metapneumovirus in a long-term care facility for the elderly in Oregon. *J Clin Virol*. 2012;53(2):171–3.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

VOLUME 19 NUMBER 3 • OCTOBER 2012

- Query About Q Fever
- Spotlight on *Pertussis*: how does Idaho incidence compare?
- Invasive *Neisseria meningitidis*: why should you care about serogroup?

Query About Q Fever

An increase in reported goat-associated human cases of Q fever was reported from Washington and Montana beginning in late May of 2011¹. Beginning in August 2011, the Idaho State Department of Agriculture (ISDA) Dairy Bureau initiated a Q fever screening program for all dairy goat herds in Idaho. ISDA detected *Coxiella burnetii*, the causative agent of Q fever, in goats from one Eastern Idaho goat herd in June, 2012².

In response, Idaho public health officials sent a Health Alert to healthcare providers in Eastern and southeastern Idaho to enhance awareness of both Q fever laboratory detection methods and reporting requirements. ISDA quarantined the affected herd and its milk products; as of September 28, 2012, there has been no increase in reported human Q fever cases in Idaho. Both suspected and confirmed cases of Q fever must be reported within one working day to the Office of Epidemiology, Food Protection, and Immunization or your public health district.

Heightened awareness in the United States

Q fever in humans is uncommon in the United States; an average of 150 cases were reported annually during 2006–2008³. During 2005–September 28, 2012, five confirmed or probable human cases of Q fever were reported to the Idaho Department of Health and Welfare. Although uncommon here, large outbreaks of Q fever have occurred elsewhere. During 2007–2011, approximately 4,000 human cases, primarily associated with proximity to Q fever-positive goat herds, were reported in the Netherlands⁴.

Symptoms

C. burnetii can cause acute or chronic illness in humans³; although, approximately half of infected persons are asymptomatic. Onset of acute Q fever occurs in persons 2–3 weeks after exposure. Symptoms experienced vary greatly, but most people have fever and some of the following

symptoms:

- abdominal pain
- chest pain
- chills and/or sweats
- confusion
- diarrhea
- general malaise
- high fever
- myalgia
- nausea
- non-productive cough
- pre-term delivery or miscarriage
- severe headache
- sore throat
- vomiting

Chronic Q fever develops in <5% of patients 6 weeks to years post-infection. Endocarditis is the major form of chronic disease, comprising 60%–70% of all reported cases. Pregnant women, immunosuppressed persons, and those with pre-existing heart valve defects, arterial aneurysms, or vascular grafts are at highest risk for developing chronic disease. The estimated case fatality rate in untreated patients with endocarditis is 60%.

Diagnosis

According to Centers for Disease Control and Prevention, detectable antibody titers are typically found by 7–10 days after illness onset; therefore, a negative test during the first week of illness does not rule out Q fever³. The gold standard serologic test for diagnosis is the indirect immunofluorescence assay (IFA). Paired serum samples taken 2–4 weeks apart demonstrating a four-fold rise in antibody titer provide the best evidence for a correct diagnosis of acute Q fever. *C. burnetii* exists in two antigenic phases called phase I and phase II. In *acute* cases, phase II antibody levels are usually higher than those against phase I. In *chronic* cases, the reverse pattern occurs. For diagnostic purposes, testing should include Phase I and Phase II IgG and IgM serologic titers. Antibodies to phase I and

Q FEVER CONTINUED ON PAGE TWO

OFFICE OF EPIDEMIOLOGY, FOOD PROTECTION, AND IMMUNIZATION

Idaho Department of Health and Welfare

P.O. Box 83720
450 W. State Street,
4th Floor
Boise, Idaho 83720-0036
WWW.IDB.DHW.IDAHO.GOV

IDAHO DISEASE BULLETIN CONTRIBUTING STAFF

CHRISTINE G. HAHN, MD
State Epidemiologist

**LESLIE TENGESEN, PhD,
DVM**
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program
Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field
Officer

PATRICK GUZZLE, MPH
Food Protection Program
Manager

MITCHELL SCOGGINS, MPH
Immunization Program
Manager

**KATHRYN TURNER, PhD,
MPH**
Epidemiologic Data and
Surveillance Program Manager

**ELLEN ZAGER HILL, MS,
DLSHTM**
Epidemiology Program
Specialist

**Q FEVER CONTINUED FROM PAGE ONE**

II antigens have been known to persist for months or years after initial infection.

Treatment

Doxycycline is the treatment drug of choice for adults and children with severe illness. According to CDC³, treatment should not be withheld until laboratory results return, if suspicion for Q fever is high. Resistance to doxycycline has not been documented; therefore, failure to respond to doxycycline suggests an alternative etiology is possible. Severely ill patients can require longer periods before their fever resolves³. Recommended dosages for acute and chronic Q fever in children and adults is found on the CDC website www.cdc.gov/qfever/symptoms/index.html, along with additional information on use of doxycycline in children. Treatment duration for acute disease is typically 2–3 weeks, while treatment for chronic Q fever may take up to 18 months.

Risk factors for infection

Cattle, sheep, and goats are the primary reservoirs. Although large studies of *C. burnetii* prevalence in ruminants are uncommon, a 2007 study reported an estimated 90.1% of dairy cattle herds in the

western United States were infected⁵ and a 1978 study found 26% of 234 California goat herds were infected⁶. *C. burnetii* is found in highest concentrations in placenta and birth fluids of affected animals. The organism can also be shed in milk, urine, and feces and survive for prolonged periods in a dried state. Transmission to humans usually occurs through inhalation of contaminated barnyard dust. The organism can become airborne on dust particles, travel on wind currents for miles, and infect individuals with no discernible animal exposure. Consumption of unpasteurized milk or milk products; the bite of a tick; and exposure to infected dogs, cats, or other animals are also risk factors for infection, but are considered rare sources of infection. Human-to-human transmission is also rare.

Prevention

Because most infections arise from occupational exposure to contaminated barnyard dust, individuals in high risk occupations or activities (veterinarians and those working in the livestock industry, particularly during calving, kidding, or lambing) should be aware of exposure risks. A Purdue University website (www.purdue.edu/rem/

eh/anmluse.htm#q) provides information on Q fever risk reduction for ruminant handlers, stressing that particular attention should be paid to respiratory protection during the attendance of birthing procedures. There is currently no method for cow or goat dairies to be certified as “Q fever free”. Proper pasteurization will inactivate *C. burnetii*; therefore, persons wishing to avoid infection with *C. burnetii*, and other milk-borne zoonotic pathogens, should consume only pasteurized milk and dairy products.

References

- 1 Q Fever Outbreak Associated with Goat Farms – Washington and Montana, 2011. Notes from the Field, *MMWR*, October 14, 2011 60(40):1393.
- 2 Personal communication.
- 3 CDC. Q Fever. www.cdc.gov/qfever/index.html. Update 4/18/2011. Accessed 9/24/2012.
- 4 van der Hoek W, Dijkstra F, Schimmer B, Schneeberger PM, Vellema P, Wijkman C., ter Schegget, R., Hackert, V. and van Duynhoven, Y. (2010). Q fever in the Netherlands: an update on the epidemiology and control measures. *Euro Surveillance* 15(12) www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19520.
- 5 Veterinary Services, Centers for Epidemiology and Animal Health, APHIS, USDA. Technical Brief: Prevalence of *Coxiella burnetii* in bulk-tank milk on U.S. dairy operations, 2007. www.aphis.usda.gov/animal_health/nahms/dairy/downloads/dairy07/Dairy07_is_Coxiella.pdf. Published March 2011. Accessed 9/24/2012.
- 6 Guatteo R, Seegers H, Tarel A, et al. Prevalence of *Coxiella burnetii* infection in domestic ruminants: a critical review. *Veterinary Microbiology* April 2011;149: 1–16.

Spotlight on Pertussis: how does Idaho incidence compare?

Pertussis (whooping cough) incidence is up nationwide. Provisional data from the Centers for Disease Control and Prevention indicates the number of cases of pertussis reported in the United States during the first half of 2012 is more than double the number of cases reported during the same time in 2011¹. Pertussis incidence typically follows a cyclical pattern, with the number of cases peaking every three to five years as a result of waning immunity in the population and increased bacterial circulation.

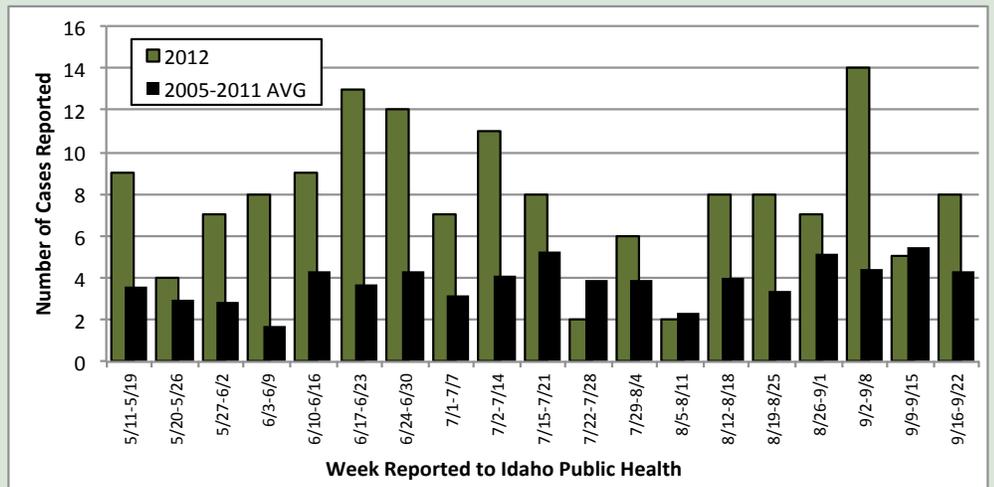
Incidence in western states

On April 3, 2012, Washington health authorities declared an epidemic of pertussis in the state. During January through September 22, 2012, there was an eight-fold increase in the number of reported cases of pertussis in Washington compared with the same period in 2011. Fifty-nine infants have been hospitalized; 83% of them aged less

than three months. Montana has reported over five times as many cases this year as the same time last year—the highest number of cases reported since a statewide outbreak in 2005. Four of the 29 cases of pertussis

were among infants that were hospitalized. In Oregon, nearly nine times as many cases have been reported as the same time last year. The Southern Nevada Health District is reporting more cases during January 1

Figure 1. 2012 weekly case counts of reported pertussis incidence in Idaho during the timeframe May 11–September 22, 2012 compared to the seven year average weekly incidence.





PERTUSSIS CONTINUED FROM PAGE TWO

through September 22 of 2012 than in all of 2011. As recently as 2010, California had over 9,000 cases of pertussis, including 10 deaths; the highest incidence in that state in decades. While no deaths have been reported in Washington, Oregon, Montana, or Nevada this year, the death of an Idaho infant in May received local and national media attention.

Incidence in Idaho

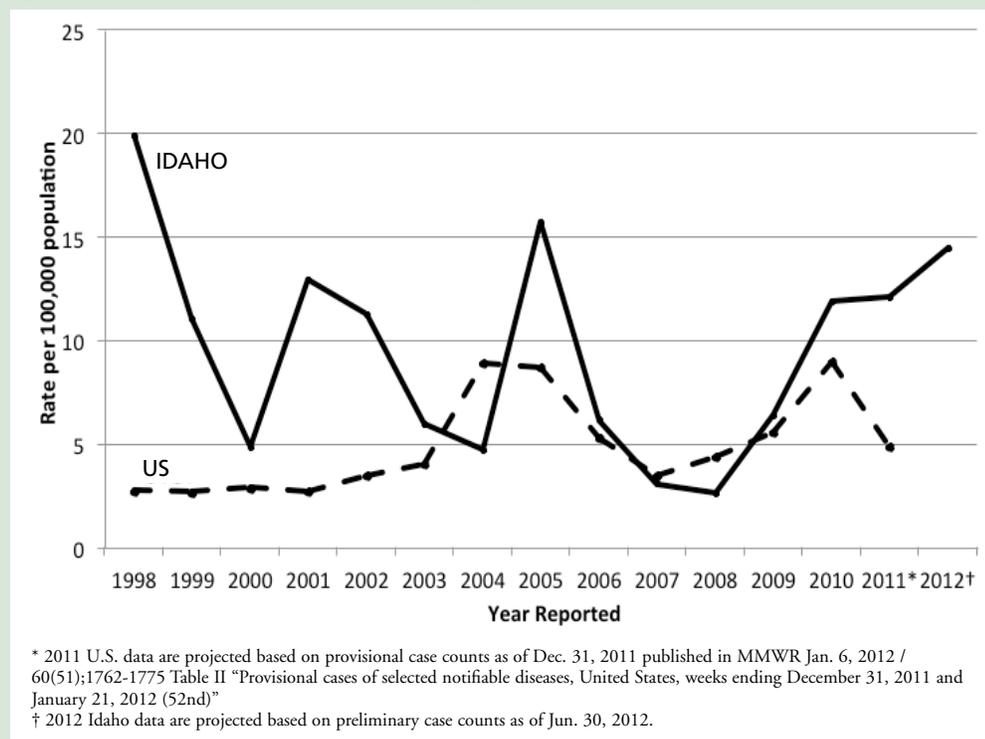
Fortunately, Idaho has not seen the same extreme increase in incidence as Washington. However, the number of reports of pertussis during January 1 through September 22 of this year has been higher than expected and Idaho could see the highest incidence rate of pertussis since 2005 if the trend continues. The Office of Epidemiology, Food Protection, and Immunization had received 184 reports of pertussis as of September 22, nearly double the number of cases during the same time frame in 2011. The increase in reported case counts compared with the average number of cases reported during 2005–2011 has been observed since mid-May (Figure 1). Typically, pertussis rates in Idaho have been higher compared with national rates (Figure 2). After a sharp increase in pertussis

incidence in Idaho during 2005, rates of the disease gradually decreased until 2009. Since then, incidence of pertussis has been increasing in Idaho, following the cyclical pattern of incidence observed in previous years.

References

¹ CDC. ND-353-ND366 Table II. Provisional cases of selected notifiable diseases, United States, weeks ending June 30, 2012 and July 2, 2012 (26th week). MMWR. July 6, 2012 61(26). Available at www.cdc.gov/mmwr/preview/mmwrhtml/mm6126md.htm?&_cid=mm6126md_w#tab2.

Figure 2. Annual rate of pertussis per 100,000 population, Idaho and United States, 2000–2012*†



Invasive *Neisseria meningitidis*: why should you care about serogroup?

Three cases of invasive *Neisseria meningitidis* disease with onset of illness in May and June 2012 were reported in Idaho, two from the same public health district in women aged 65–75 years. As part of the public health investigation, isolates were requested to be sent to the Idaho Bureau of Laboratories (IBL); however, only two *N. meningitidis* isolates were received from these three cases. This is the first reported case of invasive *N. meningitidis* of unknown serogroup in Idaho since 2007 (Figure). Why does this matter?

Thirteen antigenically-distinct polysaccharide capsules have been described for *N. meningitidis*; some strains have no capsule and are not classified in any serogroup. Serogroups A, B, C, W-135, and Y cause the majority of cases of invasive disease worldwide and caused the majority (24 [71%] of 34) of Idaho cases reported

during 2007 through July 13, 2012 for which serogroup is known (Figure). Meningococcal vaccines MCV4 and MPSV4 contain antigens to elicit protection against serogroups A, C, W-135, and Y. Serogroup B polysaccharide capsule is poorly immunogenic due to antigenic mimicry with polysaccharide in human neurologic tissues; therefore, serogroup B antigen is not in current vaccines. Vaccines, therefore, are a very useful tool if outbreaks of meningococcal disease due to serogroups A, C, W-135, or Y are detected, but will not be helpful if serogroup B or untypeable strains are causing the outbreak. MCV4 is FDA-approved for use in persons aged 9 months through 55 years (Menactra®) or 2 years through 55 years (Menveo®); MPSV4 (Menomune®) is FDA-approved for use in persons aged 2 years and older. Although routine vaccination of persons aged >55

years against meningococcal disease is not recommended by the Advisory Committee on Immunization Practices, during an outbreak caused by *N. meningitidis* serogroups A, C, W-135, or Y, MPSV4 could be considered for use in persons at risk including those aged >55 years. A third vaccine type, MenCY-Hib (MenHibrix®) was FDA-approved in June for prevention of invasive disease caused by *N. meningitidis* serogroups C and Y and *Haemophilus influenzae* type b for children aged 6 weeks through 18 months.

As a clinician treating a patient for suspected invasive meningococcal disease, you can help inform prevention efforts by obtaining specimens for culture and requesting that your laboratory submit *N. meningitidis* isolates to IBL for serogroup determination. Serogrouping at IBL is done at no cost to the patient or provider, and



**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

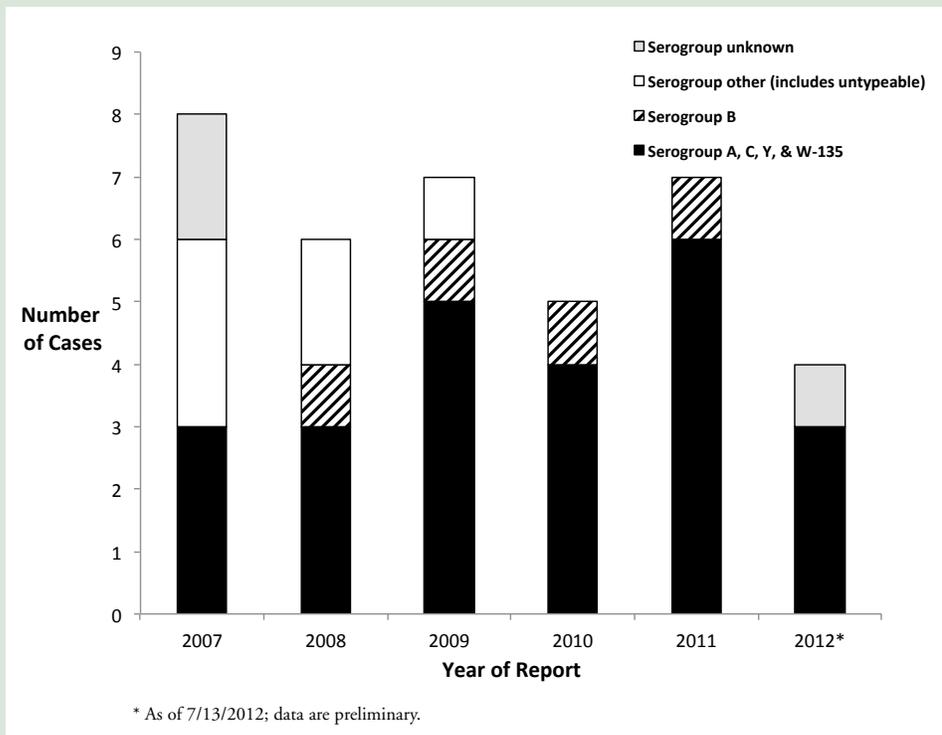
MENINGITIDIS CONTINUED FROM PAGE THREE

although individual serogroup results do not inform patient treatment, the results are critical to determining if an outbreak of

meningococcal disease is occurring and if vaccination could be a method for controlling an outbreak. Serogroup results are also

sent to the Centers for Disease Control and Prevention for national surveillance of vaccine-preventable diseases and to help guide vaccine policy and development.

Figure. Number of reported cases of *Neisseria meningitidis* invasive disease by serogroup—Idaho, 2007–2012*



Idaho Disease Bulletin Available Electronically!

Did you know the Idaho Disease Bulletin (IDB) is available electronically? The IDB website (www.IDB.dhw.idaho.gov) was redesigned to include the ability for you to sign up to receive an electronic copy of the IDB, searchable indices of issues from the last 10 years, and the ability for you to suggest topics. If you would like to receive a link to new issues of the IDB by e-mail please go to www.IDB.dhw.idaho.gov to submit a request or send an email to IDB@dhw.idaho.gov.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Diarrhea Fells Wildland Firefighters
- Continuing March of Antimicrobial Resistance in *Neisseria gonorrhoeae*
- Outbreaks in Idaho: a brief history and current perspective

VOLUME 19 NUMBER 2 • JUNE 2012

Diarrhea Fells Wildland Firefighters

On August 31, 2011, the Black Canyon Fire was ignited by lightning in the southern end of the Lemhi Mountain Range on the Salmon-Challis National Forest near Howe, Idaho. An incident command post and base camp were established in Howe by United States Forest Service fire managers. Responders from Idaho, Colorado, Nevada, New Mexico, Utah, and Wyoming arrived at camp on September 1. Responders included supervisory personnel, fire-fighting hand crews, crews for fire trucks, a camp crew, employees of a caterer, attendants of a mobile shower trailer, staff for water trucks, and a person delivering and servicing portable toilets.

On September 3, the incident safety officer reported an outbreak of acute gastrointestinal illness affecting about 30 of ~180 responders. An emergency medical response involving ambulances and personnel from multiple services ensued. The Idaho State Emergency Medical Services Communications Center was notified. Emergency departments able to accept patients from the fire camp were asked to collect stool samples for submission to the Idaho Bureau of Laboratories (IBL) for bacterial culture and norovirus testing. Southeastern Idaho Public Health (SIPH) and the Idaho Department of Health and Welfare's Office of Epidemiology, Food Protection, and Immunization (OEFI) conducted an epidemiologic and environmental investigation.

Clinical care was provided at area hospitals and at an alternate site near base camp. Nine ill persons were transported to two hospitals; two persons were hospitalized. Ill persons who were not transported to a hospital were housed in a church, facilitating treatment and segregating ill from well persons to reduce the potential for person-to-person transmission in camp, consistent with infectious diseases guidelines for wildland fire incident management teams. Because of the substantial number of ill responders and the potential impact

on local medical providers, one medical center sent medical personnel to the camp to provide clinical care. They were assisted by emergency services personnel. A mobile paramedic clinic responded to cover any additional medical requirements at the camp.

Epidemiologic investigation included a cohort study and case ascertainment. The cohort study, using the responder group as the unit of analysis, implicated a local restaurant as the initial source of illness. Eight (89%) of nine responder groups who had eaten at the restaurant on September 1 had ill persons. None who had eaten elsewhere were ill. A clinical case was defined as vomiting or diarrhea of any duration on or after September 2 in a person associated with the fire camp. Forty-nine cases directly associated with the fire camp were identified, including 5 secondary cases with exposure to the restaurant (Figure). Two secondary cases were among medical responders. Overall, approximately 25% of the ~180 fire and medical responders were ill and incapacitated for at least 1 day. Stool samples were submitted to IBL from two persons treated at one medical center, and both tested positive for norovirus GII by reverse transcriptase-polymerase chain reaction. Control measures implemented at the camp, in addition to cohorting of ill persons off-site, included increased sanitation frequency for common areas and portable toilets and increased emphasis on hand hygiene and maintenance of social distance. Environmental investigation included inspection of the local restaurant by an SIPH environmental health specialist; measures were taken to mitigate food safety deficiencies.

Norovirus is a highly contagious and common cause of foodborne illness. Infection usually presents as acute illness with nausea/vomiting and nonbloody watery diarrhea with abdominal cramps. Norovirus is transmitted primarily through the fecal-oral route, either by the consumption

FIREFIGHTERS CONTINUED ON PAGE TWO

OFFICE OF EPIDEMIOLOGY, FOOD PROTECTION, AND IMMUNIZATION

Idaho Department of Health and Welfare

P.O. Box 83720
450 W. State Street,
4th Floor
Boise, Idaho 83720-0036
WWW.IDB.DHW.IDAHO.GOV

IDAHO DISEASE BULLETIN CONTRIBUTING STAFF

CHRISTINE G. HAHN, MD
State Epidemiologist

**LESLIE TENGESEN, PhD,
DVM**
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program
Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field
Officer

PATRICK GUZZLE, MPH
Food Protection Program
Manager

MITCHELL SCOGGINS, MPH
Immunization Program
Manager

**KATHRYN TURNER, PhD,
MPH**
Epidemiologic Data and
Surveillance Program Manager

**ELLEN ZAGER HILL, MS,
DLSHTM**
Epidemiology Program
Specialist



FIREFIGHTERS CONTINUED FROM PAGE ONE

of contaminated food or water or by direct person-to-person spread. Symptoms typically resolve in 1–3 days among otherwise healthy persons. Dehydration is the most common complication, especially among young children and older persons. Outbreaks caused by norovirus are reported annually from such venues as nursing homes, cruise ships, and recreational camps. Norovirus is a reportable disease in Idaho; cases should be reported to your public health district or to OEFI.

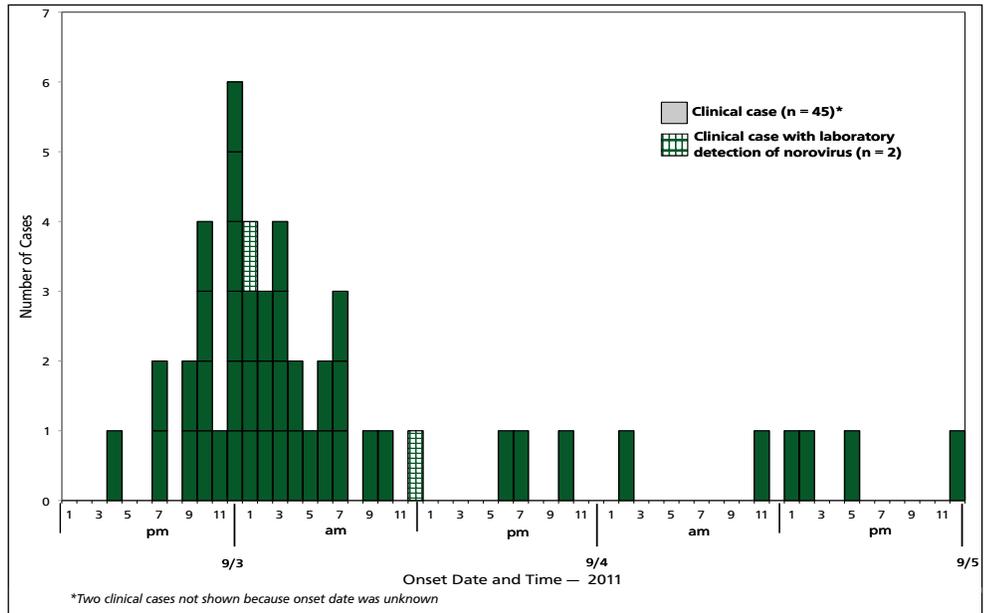
During years of high fire activity, >20 wildland fires large and complex enough to require that responders be housed at base camps can occur in Idaho. Base camps might house as many as 1,000 responders and exist for days or weeks. Medical care for certain responder injuries and illnesses is available at the camps, but since patients with conditions beyond the scope of practice for the medical providers at the camps are referred to local clinics and hospitals for care, local clinicians might be the first to identify an illness cluster. Clusters of unexplained acute illness and early stage disease symptoms are reportable within one working day (IDAPA 16.02.10.260).

Providers are encouraged to collect appropriate clinical specimens to

identify the etiology of a cluster or outbreak. Collecting stool samples from ≥5 ill persons is recommended. Patients are not charged for laboratory testing at IBL when specimens are collected at the request of Idaho public health and submitted to IBL as part of an outbreak investigation. See www.healthandwelfare.idaho.gov/Default.aspx?TabId=99 for IBL services, sampling and submission guidelines, and sample submission forms.

The American Medical Association offers the primer “Diagnosis and Management of Food-borne Illnesses” free at www.ama-assn.org/ama/pub/physician-resources/medical-science/food-borne-illnesses/diagnosis-management-foodborne.page. Continuing medical education credits related to foodborne illness are available online at www.netce.com/coursecontent.php?courseid=594 (expiration date September 30, 2012).

Figure. Epidemic curve (n = 47*), norovirus outbreak in a fire camp — Idaho, September 2011.



Continuing March of Antimicrobial Resistance in *Neisseria gonorrhoeae*

Increases in antimicrobial resistance of *Neisseria gonorrhoeae* isolates since 2008 could present clinicians with few options for curing their patients of gonorrhea infection. In the last three years, reports in the literature have shown increased resistance of *N. gonorrhoeae* to azithromycin¹ and cephalosporins^{2,3,4} raising the concern that prevalent gonorrhea could soon carry enough resistance to eliminate these drugs as recommended treatments. National sentinel surveillance data indicate the proportion of specimens with resistance to cephalosporins increased during 2000–2010 and is highest in the western United States and among men who have sex with men (MSM)⁵. These findings have become so concerning, the Centers for Disease Control and Prevention (CDC) announced in February that it’s time to “sound the alarm” over reduced gonorrhea

Box 1. Recommended treatment¹ for gonorrhea*

- Ceftriaxone 250 mg IM in a single dose[†]
OR, if not an option,
- Cefixime 400 mg orally in a single dose
OR
- Single-dose injectable cephalosporin regimens
PLUS
- Azithromycin 1 g orally in a single dose[‡]
OR
- Doxycycline 100 mg orally twice daily for 7 days

*Dual antibiotic treatment should be given regardless of any chlamydia test result.

[†]Ceftriaxone is the only recommended treatment for pharyngeal infection.

[‡]Azithromycin is preferred over doxycycline for dual antibiotic treatment due to high rates of co-existing tetracycline resistance among gonococcal isolates with elevated cefixime minimum inhibitory concentrations (MICs)⁵.

antimicrobial susceptibility⁶, calling for clinicians to treat all cases of gonorrhea with the most effective regimen, be vigilant for treatment failure, and retest by culture patients with persistent or recurrent symptoms shortly after treatment without intervening exposures and submit those isolates for antimicrobial susceptibility testing.

The prevalence of increased antimicrobial resistance among gonorrhea cases in Idaho is unknown due to the lack of surveillance for resistance patterns in Idaho and the almost exclusive use of nucleic acid amplification testing (NAAT) for diagnosis. Specimens for NAAT are less invasive to collect; NAAT has the advantage of being very sensitive and specific, but currently does not detect the genetic markers for antimicrobial resistance.

Current treatment recommendations for uncomplicated gonorrhea are described



Outbreaks in Idaho: a brief history and current perspective

From 1997 through 2011, 468 probable and confirmed outbreaks were reported to the Idaho Office of Epidemiology, Food Protection, and Immunization (OEFI); an annual average of 31 outbreaks. In 2011, 62 outbreaks were reported to OEFI, the highest number ever reported in a single year. The proportion of outbreaks with an undetermined etiologic agent has decreased as the availability of methods for detecting viral agents has increased (Figure). In recent years, OEFI has received an increasing number of reports of outbreaks associated with influenza and norovirus, frequently occurring in institutions and residential facilities.

Etiologic agents: old friends and new acquaintances

Similar to previous years, the most common etiologic agent associated with outbreaks in 2011 was norovirus (34%) (Table 1) followed by *Salmonella* spp. (11%), *Bordetella pertussis* (11%), influenza (11%), and Shiga-toxin producing *Escherichia coli* (10%). Reported outbreaks of influenza rose to an all-time high in 2011, likely due to efforts by public health districts to increase awareness of rules regarding reporting of illness clusters. The number of reported pertussis outbreaks remained at a five-year high in 2011. The increase in reported pertussis outbreaks since 2009 parallel the increase in reported cases of pertussis nationwide and in Idaho.

Figure. Number of probable and confirmed outbreaks reported in Idaho by etiologic agent.

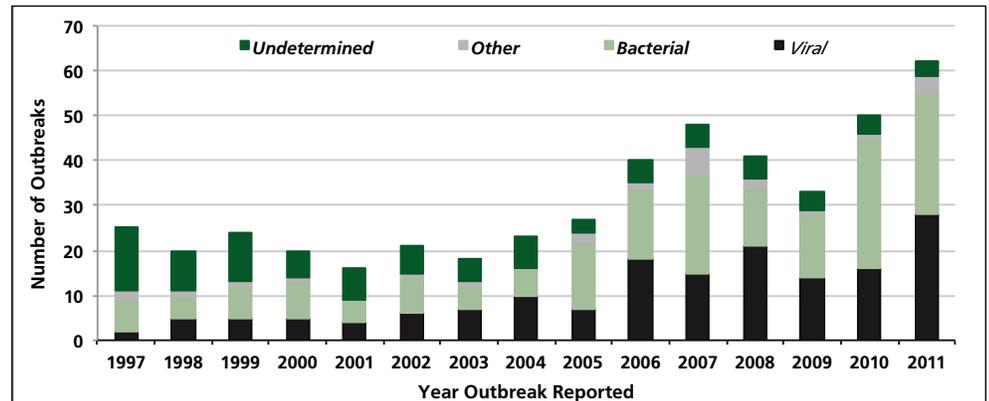


Table 1. Etiology of reported outbreaks in Idaho, 2007–2011

Etiologic Agent	2007		2008		2009		2010		2011	
	Count	%								
Norovirus	12	25.0%	18	43.9%	12	36.4%	15	30.0%	21	33.9%
<i>Salmonella</i>	9	18.8%	5	12.2%	3	9.1%	8	16.0%	7	11.3%
Pertussis	1	2.1%	1	2.4%	6	18.2%	7	14.0%	7	11.3%
STEC	6	12.5%	4	9.8%	1	3.0%	5	10.0%	6	9.7%
Gastroenteritis of unknown etiology	5	10.4%	5	12.2%	4	12.1%	3	6.0%	3	4.8%
<i>Campylobacter</i>	2	4.2%	3	7.3%	3	9.1%	6	12.0%	2	3.2%
Influenza	1	2.1%	1	2.4%	1	3.0%	0	0.0%	7	11.3%
Other*	12	25.0%	4	9.8%	3	9.1%	6	12.0%	9	14.5%
TOTAL	48		41		33		50		62	

*Other etiologies include (in descending order): *Cryptosporidium*, *Giardia*, *Shigella*, *Listeria*, HIV, West Nile virus, *Streptococcus pneumoniae*, *Neisseria gonorrhoeae*, cancer, *Bacillus cereus*, varicella, mumps, *Sarcoptes scabiei* (scabies), *Staphylococcus aureus*, Respiratory Syncytial virus, syphilis, and environmental lead.

OUTBREAKS CONTINUED ON PAGE 4

ANTIMICROBIAL CONTINUED FROM PAGE 2

in Box 1. A recommended cephalosporin regimen together with azithromycin or doxycycline provides additional coverage for potentially resistant gonorrhea. Additionally, dual antibiotic treatment enhances efficacy against pharyngeal infection when using oral cephalosporins and is effective against commonly-occurring chlamydia co-infection.

Treatment failure might be the first indicator a clinician has that antimicrobial resistant-gonorrhea is present. When treatment failure is suspected, providers should retreat the patient with 250 mg ceftriaxone intramuscularly and 2 g azithromycin orally⁵, seek consultation with an infectious disease

specialist, request culture and susceptibility testing, and report the treatment failure to public health. Although test of cure 1–3 weeks post-treatment is not recommended unless symptoms persist, retesting of all gonorrhea patients at three months post-treatment to detect potential reinfection by untreated partners is advised.

When treatment failure is suspected, the Idaho Bureau of Laboratories (IBL) will accept primary specimens for culture and gonorrhea isolates for antimicrobial susceptibility testing by CDC. Additionally, IBL performs NAAT on urine, urogenital, and pharyngeal specimens transported in Gen-Probe APTIMA collection kits for routine identification of gonorrhea.

References

- Centers for Disease Control and Prevention. *Neisseria gonorrhoeae* with Reduced Susceptibility to Azithromycin — San Diego County, California, 2009. MMWR 2011;60:579–581.
- Tapsall J. *Neisseria gonorrhoeae* and emerging resistance to extended spectrum cephalosporins. Curr Opin Infect Dis 2009;22:87–91.
- Ohnishi M, Saika T, Hoshina S, et al. Ceftriaxone-resistant *Neisseria gonorrhoeae*, Japan. Emerg Infect Dis 2011;17:148–9.
- Unemo M, Golparian D, Syversen G, et al. Two cases of verified clinical failures using internationally recommended first-line cefixime for gonorrhoea treatment, Norway, 2010. Eurosurveillance 2010;15:19721–3.
- Centers for Disease Control and Prevention. Cephalosporin susceptibility among *Neisseria gonorrhoeae* isolates — United States, 2000–2010. MMWR 2011;60:873–877.
- Bolan G, Sparling P, Wasserheit J. The Emerging Threat of Untreatable Gonococcal Infection. N Engl J Med 2012; 366:485–487.



**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Rules may be found at <http://adminrules.idaho.gov/rules/current/16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

OUTBREAKS CONTINUED FROM PAGE THREE

Venues: there's no place like home

Twenty-one (34%) of the 62 outbreaks reported in Idaho in 2011 occurred in assisted living or long-term care facilities resulting in 483 confirmed or probable illnesses. Most outbreaks occurring in these facilities were attributed to norovirus (57%) and influenza (29%) (Table 2). The next most common outbreak venues were households (31%) and restaurants (10%).

Transmission modes: who you know and what you eat matters

In 52 (84%) of the 62 outbreaks reported in 2011, the most likely mode of transmission was noted (Table 3). The most common modes of disease transmission reported were person-to-person (79%) and foodborne (21%); more than one transmission mode was reported in 9 (17%) outbreaks.

¹ Pertussis Rising in Idaho. *Idaho Disease Bulletin*. August 2010. 17(3):1-2. www.healthandwelfare.idaho.gov/LinkClick.aspx?fileticket=d-vkpoT4Lbc%3d&tabid=682&cmid=7107

Table 2. Etiology of outbreaks in long-term care and assisted living facilities and number of associated confirmed and probable cases—Idaho, 2011

Etiologic Agent	Number of	
	Outbreaks	Cases
Norovirus	12	213
Influenza	6	186
Gastroenteritis – unknown etiology	2	62
<i>Salmonella</i>	1	22
TOTAL	21	483

Table 3. Transmission mode of outbreaks reported—Idaho, 2011

Transmission Mode (n=52)	Number of Outbreaks	Percent of Outbreaks*
Person to Person	41	78.8%
Foodborne	11	21.2%
Environmental	5	9.62%
Animal	3	5.8%
Water	1	1.9%

*Percentages will sum to greater than 100% due to multiple transmission modes reported for 9 outbreaks.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

VOLUME 19 NUMBER 1 • MARCH 2012

- New Treatment Option for Latent TB Infection
- U.S. Army Public Health Command Implements Rabies Prevention Program
- Two in the Tub: Reporting Waterborne Illness
- Data Snapshot: *Vibrio parahaemolyticus*

New Treatment Option for Latent TB Infection: Impact in Idaho

Success in reducing the rate of active tuberculosis (TB) in the United States (see Figure on page 2) has led to a greater emphasis in the medical and public health communities on identifying and treating persons with latent infection (LTBI), as they are the great reservoir from which new cases arise. Worldwide, approximately 1/3 of persons are infected with TB; in the U.S., approximately 4% of persons are estimated to be infected. A person latently infected with TB has a 10%–15% lifetime risk of developing active disease; this risk can increase sharply in individuals who acquire chronic conditions such as diabetes, or are treated with immunosuppressing medications.

The current standard regimen for treating LTBI is a 9-month course of daily isoniazid (INH), supplemented with pyridoxine (vitamin B6) if the patient is at higher risk of INH toxicity.

Completion rates for those taking the 9-month regimen are generally low, ranging from 30%–60%; some of the completion failure is due to adverse events related to INH hepatotoxicity, peripheral neuropathy, or hypersensitivity reactions, but many persons drop out of therapy for unclear reasons. New, shorter regimens for treating persons infected with, but not ill from, TB are desperately needed to continue to decrease the incidence of TB in Idaho and the United States.

On December 8, 2011, the New England Journal of Medicine published the results of a study that demonstrated a new combination regimen consisting of INH and rifapentine for three months was not inferior to the standard 9-month regimen of INH currently used to treat LTBI. This study was followed by the publication of new guidelines by the Centers for Disease

NEW TREATMENT OPTION CONTINUED ON NEXT PAGE

U.S. Army Public Health Command Implements Rabies Prevention Program

During a public health investigation of the August 2011 death of a U.S. Army soldier from rabies, it was determined that the soldier was infected from contact with a dog during deployment in Afghanistan. Other soldiers in the same unit reported seeking medical care for dog bites and not receiving rabies post-exposure prophylaxis (rPEP), or not reporting bites to their chain of command. As a result, the Department of Defense (DoD) has instructed individuals meeting the following three criteria to report for medical evaluation, which could occur in the U.S. (see <http://phc.amedd.army.mil/PHC%20Resource%20Library/Information%20for%20Providers.pdf>):

1. Soldiers or separated soldiers, DoD civilians,

and contractors who were eligible for military medical care during a deployment, and

2. Who had a possible animal exposure that occurred after March 1, 2010, and
3. Who had no medical evaluation or incomplete/undocumented evaluation of rPEP following the exposure.

Soldiers and separated soldiers returning to Idaho who have been screened for possible rabies exposure and have been advised to receive rPEP, or who have self-screened using the DoD screening questionnaire (see link at left), might contact Idaho healthcare providers for assistance in obtaining rPEP. Idaho public health districts do not provide

RABIES PREVENTION CONTINUED ON PAGE THREE

OFFICE OF EPIDEMIOLOGY, FOOD PROTECTION, AND IMMUNIZATION

Idaho Department of Health and Welfare

P.O. Box 83720
450 W. State Street,
4th Floor
Boise, Idaho 83720-0036
WWW.IDB.DHW.IDAHO.GOV

IDAHO DISEASE BULLETIN CONTRIBUTING STAFF

CHRISTINE G. HAHN, MD
State Epidemiologist

**LESLIE TENGESEN, PhD,
DVM**
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program
Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field
Officer

PATRICK GUZZLE, MPH
Food Protection Program
Manager

MITCHELL SCOGGINS, MPH
Immunization Program
Manager

**KATHRYN TURNER, PhD,
MPH**
Epidemiologic Data and
Surveillance Program Manager

**ELLEN ZAGER HILL, MS,
DLSHTM**
Epidemiology Program
Specialist



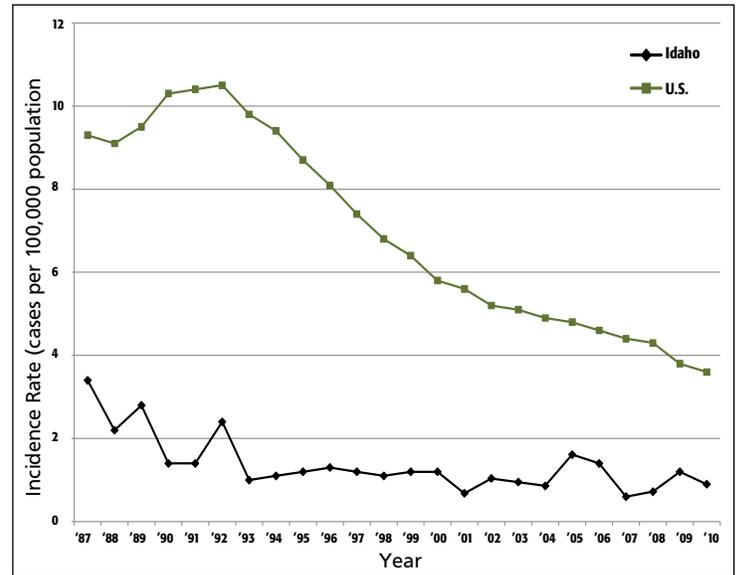
NEW TREATMENT OPTION CONTINUED FROM PAGE ONE

Control and Prevention on December 9, 2011, in the Morbidity and Mortality Weekly Report (MMWR) for the treatment of LTBI, which stated “The combination regimen of INH and rifampine given as 12 weekly directly observed therapy (DOT) doses is recommended as an equal alternative to 9 months of daily self-supervised INH for treating LTBI in otherwise healthy patients aged ≥12 years who have a predictive factor for greater likelihood of TB developing, which includes recent exposure to contagious TB, conversion from negative to positive on an indirect test for infection (*i.e.*, interferon-gamma release assay or tuberculin skin test), and radiographic findings of healed pulmonary TB.” This recommendation includes HIV-infected patients who are otherwise healthy and are not taking antiretroviral medications (see www.cdc.gov/mmwr/preview/mmwrhtml/mm6048a3.htm?s_cid=mm6048a3_w).

While this is great news, there are challenges to implementing the new regimen. Most significantly, in clinical practices, it is not easy to arrange that the patient be observed while taking the 12 weekly doses. Although public health personnel provide DOT for persons with active pulmonary TB, additional resources to provide DOT for persons undergoing treatment for LTBI are limited. Additionally, in Idaho, the Division of Public Health has been able to offer free medications for persons on tuberculosis therapy for both active and latent infection; however, the cost of rifampine for the 12-week regimen is substantial, and the TB Program budget

cannot cover the additional cost. Thus, for the time being, this new rifampine-based regimen will probably be used only in selected circumstances in Idaho; the traditional INH regimen will still be utilized for most persons being treated for LTBI, and remains free to those providers requesting it for their patients.

Figure. Incidence rate of active tuberculosis cases—Idaho and the United States, 1987–2010.



Two in the Tub: Reporting Waterborne Illness

In November 2010, a family that had stayed at an Idaho hotel stated in a review of the hotel posted on a travel website that five of seven children using the hotel pool and hot tub broke out with a rash. Is this event reportable in Idaho? If you had seen one of these children in your practice, should you have reported the event to public health? Test yourself by deciding if the statements below are correct or incorrect (the correct answers are revealed further in the article).

- 1a. I don't need to report this because no specific etiology was identified.
- 1b. I need to report this because more than one child was affected.

In February 2011, a young woman stated on her blog that she had commercial laboratory-confirmed *Pseudomonas aeruginosa* folliculitis following 30-minute soaks in a hot tub during one weekend at an Idaho rental vacation home, and her boyfriend had a single, similar lesion following one 5-minute soak in the hot tub. Is this event reportable in Idaho? If you had seen the young woman in your practice, should you have reported the event to public health?

Test yourself by deciding if the statements below are correct or incorrect.

- 2a. I don't need to report this because *Pseudomonas* is not specifically reportable.
- 2b. I don't need to report this because only one case was diagnosed.
- 2c. I need to report this because folliculitis due to *P. aeruginosa* was associated with hot tub use.
- 2d. I don't need to report this because the testing laboratory will report results from this event to Idaho public health.
- 2e. Both this event and the November 2010 event are reportable by the affected persons to the public health district in which the rental unit is located.

The correct statements are 1b and 2c; explanation follows.

- 1a. *Incorrect.* Clusters of unexplained acute illness are reportable within one working day (IDAPA 16.02.10 Section 260). A suspected or known etiology is not a condition for

reporting a cluster of unusual illness. Illness associated with a public access pool could indicate a significant risk to the public and could involve large numbers of persons. Rash outbreaks among pool users have been associated with improper chemical levels due to poor pool and pool equipment maintenance, as well as with *P. aeruginosa*.

- 1b. *Correct.* An aggregation of cases or suspected cases in time or place is a cluster. Similar illness in more than one child at the same time and location characterizes this event as a cluster.
- 2a. *Incorrect.* Each case or suspected case of waterborne illness is reportable within one working day (IDAPA 16.02.10 Section 270). A specific etiology is not required for reporting.
- 2b. *Incorrect.* A single case of suspected waterborne illness is reportable (IDAPA 16.02.10 Section 270).



RABIES PREVENTION CONTINUED FROM PAGE ONE

or administer rPEP, but can assist providers with exposure evaluations and by providing information on prophylaxis.

According to current CDC guidelines, rabies post-exposure prophylaxis for previously unvaccinated persons should include administration of human rabies immunoglobulin (HRIG) 20 IU/kg body weight at the site of the wound and any remaining volume distal to rabies vaccine site; and a series of rabies vaccine, 1ml IM days 0, 3, 7, and 14 (also day 28 if the patient is immunosuppressed or on antimalarials). Persons who have been vaccinated previously or have a documented protective titer should not receive HRIG and require only 2 doses of vaccine, 1ml IM on days 0 and 3. Day 0 is the day the first dose of vaccine is administered. See www.cdc.gov/rabies/resources/acip_recommendations.html for more information. (See also page 4 regarding the availability of a new online course on rPEP). In Idaho, the administration of rPEP

is reportable to public health. The DoD has requested that care provided outside of the Military Health System be documented as described in the “Provider Message” in <http://phc.amedd.army.mil/PHC%20Resource%20Library/Information%20for%20Providers.pdf> and a copy provided to the service member. Refusal of recommended rPEP should be documented in the medical record.

Veterans who are enrolled in the Veteran’s Administration (VA) healthcare system can be evaluated and treated by the VA (see www.publichealth.va.gov/exposures/rabies/index.asp). Veterans who are not enrolled can find out if they qualify for VA health care at www.va.gov/healthbenefits/. The DoD has indicated that persons who require rPEP will be reimbursed for care not covered by the VA or health insurance; however, because rPEP, particularly HRIG, administered in the private sector can be very expensive, we encourage veterans to obtain care from the VA when possible. For a list

of VA facilities in Idaho and their parent VA Medical Centers (VAMC), see www2.va.gov/directory/guide/state.asp?STATE=ID. VA community-based outpatient clinics in southern Idaho do not stock rabies vaccine and will refer soldiers needing rPEP to their parent VAMCs. VA clinics in Lewiston and Grangeville can obtain vaccine within 24 hours, and the clinic in Coeur d’Alene can order vaccine to complete the series after a veteran has been referred to the parent VAMC and received HRIG and the first dose. Veterans who need travel assistance can be advised to start the line of duty process to ensure that their travel expenses are covered.

See <http://phc.amedd.army.mil/topics/discond/aid/Pages/Rabies.aspx> for information about rabies provided by the U. S. Army Public Health Command. Providers having questions about the Rabies Prevention Outreach Program may call 800-222-9698 or e-mail phcrabiesinfo@amedd.army.mil for more information.

TWO IN TUB CONTINUED FROM PAGE TWO

- 2c. *Correct.* The second event is reportable because the *P. aeruginosa* infection was associated with a known exposure to water in a hot tub. *P. aeruginosa* infections that are suspected to be foodborne, waterborne, or part of a cluster are reportable in Idaho (IDAPA 16.02.10 Sections 260 and 270).
- 2d. *Incorrect.* Culture and identification of *P. aeruginosa* will not be reported through routine laboratory reporting. If testing is done at the Idaho Bureau of Laboratories (IBL) in conjunction with a cluster or outbreak investigation, IBL will report results to public health districts or the Office of Epidemiology, Food Protection, and Immunization, but the ordering provider is still required to report.
- 2e. *Incorrect.* Although affected persons are encouraged to contact the public health district in which they reside or in which the rental unit is located to inform public health of these events, official reporting is

only required for physicians, other health care providers, and other persons as specified in IDAPA 16.02.10 Section 020. Public health agencies in Idaho do not regulate hotel or private pools and spas; however, public health districts do have the authority to inspect these venues as part of the public health investigation that is required after suspected waterborne illness or clusters are reported.

Reporting of cases or suspected cases of waterborne illness to public health is crucial for initiating a public health investigation to identify the etiology, determine the source, and initiate control measures to prevent additional cases of illness. In Idaho, reporting of waterborne illness and outbreaks has led to interventions that have limited further exposures and subsequent illness, such as:

- improvements in spring water intakes and treatment,
- identification of cracks in irrigation canals,
- correcting of improper installation of backflow preventers in residential

- pressurized irrigation water systems,
- labeling of non-potable water sources,
- improved disinfection methods for water at splash parks,
- improved maintenance practices for hot tubs and spas,
- bather load control and provision of hand hygiene equipment and supplies at community pools,
- improved practices for managing water, play tables and wading pools at daycares,
- education of outfitters on prevention of foodborne and waterborne illness, and
- intensified *Legionella* source investigation in other states.

For more information on illnesses associated with recreational and drinking water, see CDC’s Healthy Water website at www.cdc.gov/healthywater/. Up to 22 credit hours of CME or MOC on recognizing waterborne disease and the health effects of water pollution is sponsored by the American College of Preventive Medicine and available at www.waterhealthconnection.org/.



Division of Public Health
P.O. Box 83720
Boise, ID 83720-0036

PRSR STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Rules and Regulations Governing Idaho Reportable Diseases may be found at <http://adm.idaho.gov/adminrules/rules/idapa16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

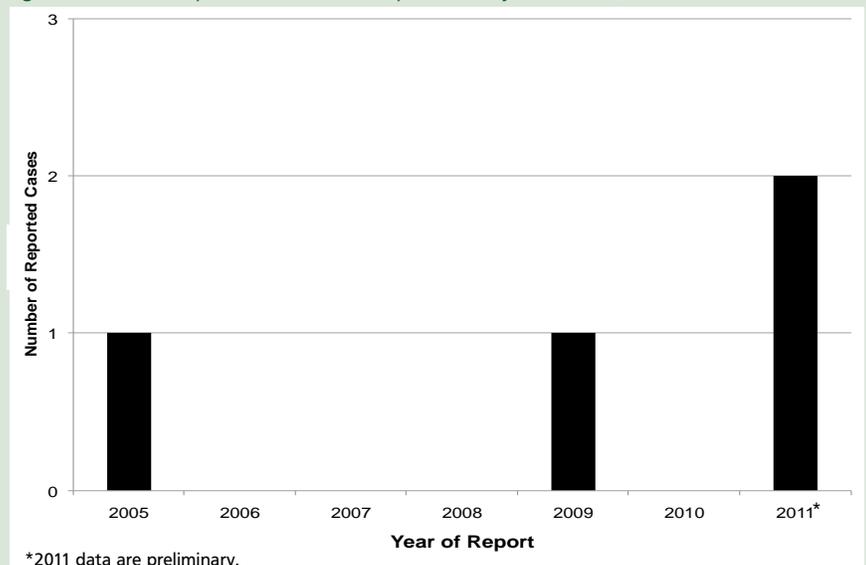
Rabies Postexposure Prophylaxis Online Course Available

Idaho residents are exposed to rabid or potentially rabid animals every year. A free online course on the basics of rabies post-exposure prophylaxis (rPEP), including recent changes to the rPEP schedule, is now available. This course, based on the most current rPEP guidelines from the Advisory Council on Immunization Practices (ACIP), was developed collaboratively by the Maryland Department of Health and Mental Hygiene and the Centers for Disease Control and Prevention. It is designed to educate healthcare and public health professionals about rabies, the approach used in assessing potential rabies virus exposures, and administration of rPEP based on ACIP recommendations. Continuing Education credits are available to any physician, nurse, pharmacist, or veterinarian who takes the training. "Rabies Post-exposure Prophylaxis (PEP) Basics: Case Illustrations of the 2010 Advisory Committee on Immunization Practices (ACIP) Guidelines" can be accessed at <http://ideha.dhmh.maryland.gov/training/SitePages/rabies.aspx>. To learn about the epidemiology of rabies in Idaho, visit www.healthandwelfare.idaho.gov/Health/DiseasesConditions/RabiesInformation/tabid/176/Default.aspx

Data Snapshot: *Vibrio parahaemolyticus*

During July–September 2011, two cases of *Vibrio parahaemolyticus* were reported in Idaho, compared with two cases reported during 2005 through June 2011. Both persons ill in 2011 consumed raw oysters imported into Idaho from domestic coastal sources. *Vibrio* are found naturally in coastal waters and multiply rapidly in warm conditions; consequently, seafood is more likely to be contaminated in the summer. Healthcare providers should consider vibriosis in the differential diagnosis of patients presenting with diarrheal illness 0.5 to 4 days after consumption of raw seafood, particularly oysters. Oral rehydration is usually sufficient treatment; however, antimicrobial therapy can benefit patients who have severe diarrhea, wound infection, or septicemia.

Figure. Number of reported cases of *Vibrio parahaemolyticus*—Idaho, 2005–October 2011*





IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- *Listeria monocytogenes* Outbreak
- New Options for Influenza Vaccine
- Syphilis Outbreak in Treasure Valley

VOLUME 18 NUMBER 4 • DECEMBER 2011

Idaho Part of Nationwide *Listeria monocytogenes* Outbreak

Cantaloupe has been implicated as the food vehicle responsible for a nationwide outbreak of *Listeria monocytogenes*. As of December 9, 2011, two Idaho cases, one with a history of cutting up cantaloupe, have been confirmed with the outbreak strain. On September 2, 2011 the Colorado Department of Public Health and Environment first alerted the Centers for Disease Control and Prevention (CDC) of a cluster of seven *L. monocytogenes* cases that were reported over a five day period.¹ As of December 8, 2011, there are 146 reported cases associated with the outbreak from 28 states, including 30 deaths.² Evaluation of detailed food histories from early cases identified cantaloupe consumption as a common risk factor. Traceback of implicated cantaloupe sold under a variety of names identified Jensen Farms in Colorado as the producer. *L. monocytogenes* strains have been cultured from human cases and cut and whole

cantaloupe. As part of the FDA traceforward and a local public health investigation, it was determined that approximately 43,000 pounds of Jensen Farms cantaloupe was distributed to communities in Southeastern Idaho between August 30, 2011 and September 2, 2011. On September 14, 2011 Jensen Farms issued a voluntary recall of their cantaloupe.

Listeria basics

L. monocytogenes is a non-spore forming, toxin producing, hardy bacterium that can multiply at refrigerator temperatures. It is commonly found in soil and water and can be carried by asymptomatic animals. Four of 14 known serotypes (1/2a, 1/2b, 1/2c, and 4b) account for 95% of human infections. Serotypes 1/2a and 1/2b are implicated in the current outbreak. *L. monocytogenes* has been isolated from mammalian, avian, and aquatic species, soil, silage, and other environmental sources.³

CONTINUED ON NEXT PAGE

New Options This Year for Influenza Vaccine—More Than You Think!

Many healthcare providers might think there is nothing much new to learn this year with influenza vaccine—after all, the strain formulation is exactly the same as last year, and now everyone aged six months or older without specific contraindications is recommended to get the vaccine. But there is news! Some new vaccination options are available this year, and some may appeal to patients who have been resistant to influenza vaccination in the past. Not all of these options are widely available yet, but if successful, these formulations and delivery devices will certainly be more widely available in the future. In addition, the supply of influenza vaccine appears to be adequate this year. The Centers for Disease

Control and Prevention recommends that influenza vaccination begin as soon as 2011–2012 flu vaccine becomes available and continue throughout the flu season.

High dose vaccine

The Advisory Committee on Immunization Practices (ACIP) included Fluzone High-Dose® vaccine for adults aged 65 years and older in its recommendations for the 2010–2011 and the 2011–2012 influenza seasons. There is no preferential recommendation between the high dose flu vaccine and other inactivated seasonal flu vaccines. In a recent preliminary evaluation of adverse event

CONTINUED ON NEXT PAGE

OFFICE OF EPIDEMIOLOGY, FOOD PROTECTION, AND IMMUNIZATION

Idaho Department of Health and Welfare

P.O. Box 83720
450 W. State Street,
4th Floor
Boise, Idaho 83720-0036
WWW.IDB.DHW.IDAHO.GOV

IDAHO DISEASE BULLETIN CONTRIBUTING STAFF

CHRISTINE G. HAHN, MD
State Epidemiologist

**LESLIE TENGESEN, PhD,
DVM**
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program
Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field
Officer

PATRICK GUZZLE, MPH
Food Protection Program
Manager

MITCHELL SCOGGINS, MPH
Immunization Program
Manager

**KATHRYN TURNER, PhD,
MPH**
Epidemiologic Data and
Surveillance Program Manager

**ELLEN ZAGER HILL, MS,
DLSHTM**
Epidemiology Program
Specialist

**LISTERIA OUTBREAK CONTINUED FROM FIRST PAGE**

Most human infections are associated with consumption of contaminated animal products, fruits or vegetables contaminated in the field, or ready-to-eat products contaminated during processing. Outbreaks have been associated with hot dogs, turkey deli meats, unpasteurized soft cheeses, and alfalfa sprouts. This is the first known melon-associated outbreak. Asymptomatic, mild gastrointestinal, or flu-like illness can occur; however, invasive disease and a case-fatality rate approaching 20% can be seen in persons at high risk. High-risk groups include the immunocompromised, the elderly, pregnant women and their newborn infants, and those with other underlying medical conditions. Invasive disease can

include septicemia, meningitis, perinatal infection and subsequent miscarriage, still-birth, premature delivery, or serious neonatal infection. The incubation period ranges from 3–70 days. According to the CDC, about 1,600 cases and 260 deaths due to *L. monocytogenes* infection are reported annually in the United States. During January 1, 2000 through December 6, 2011 there have been 14 cases reported in Idaho, including one death.

Preventing *Listeria* infection

Persons at high risk for invasive disease should avoid consuming ready-to-eat meats, refrigerated pâtés, uncooked smoked fish, or soft cheeses made from unpasteurized milk.

Raw fruits and vegetables should be washed thoroughly prior to consumption.

For other prevention tips visit the CDC listeriosis website at: www.cdc.gov/listeria/prevention.html.

References

¹ Multistate Outbreak of Listeriosis Associated with Jensen Farms Cantaloupe --- United States, August--September 2011 MMWR October 7, 2011 / 60(39);1357-1358 www.cdc.gov/mmwr/preview/mmwrhtml/mm6039a5.htm?s_cid=mm6039a5_w

² Multistate outbreak of listeriosis linked to whole cantaloupes from Jensen Farms, Colorado www.cdc.gov/listeria/outbreaks/index.html

³ FDA Bad Bug Book: *Listeria monocytogenes* www.fda.gov/food/foodsafety/foodborneillness/foodborneillnessfoodbornepathogensnaturalttoxins/badbugbook/ucm070064.htm

INFLUENZA VACCINE CONTINUED FROM FIRST PAGE

reports following Fluzone High-Dose® vaccination in adults aged 65 years and older, more than 90% of adverse events were not serious and resolved on their own. Among reported adverse events, a higher proportion of vomiting and ocular hyperemia was reported after Fluzone High-Dose® compared with all other inactivated vaccines. When only reports classified as serious were considered, a higher proportion had gastrointestinal diagnoses (usually vomiting) after Fluzone High-Dose® compared with standard dose influenza vaccines; however, for these reports most of the conditions had resolved by the time a report was submitted. Clinical trials to determine if this vaccine offers superior protection to seniors are ongoing.

Intradermal vaccine

In May 2011, the intradermal vaccine Fluzone Intradermal® was licensed for use in adults aged 18–64 years. In clinical trials, the safety of intradermal vaccine was comparable

to the commonly used intramuscular form of vaccine. However, some injection site reactions were more frequent with intradermal administration. These reactions tended to be mild and resolved on their own. Clinical trials have shown that the antibody response to intradermal administration is comparable to the intramuscular formulation.

Needle-free intramuscular vaccination no longer available

According to a press release issued by the company PharmaJet®, a new needle-free injection technique was licensed by the Food and Drug Administration (FDA) earlier this year. The manufacturer states that “PharmaJet® injectors use pressure to create a fine stream of liquid that penetrates the skin, delivering doses to the desired depth, while eliminating needle-stick risk and the burden of sharps waste management.” This option was briefly available at some pharmacies, but in late October, the FDA issued

a statement that “At this time, there are no inactivated influenza vaccines that are approved and specifically labeled by the FDA for administration by jet injector” so this practice has been discontinued. The FDA and CDC believe that persons who received the influenza vaccine by jet injector do not need to be revaccinated.

New guidelines for persons with egg allergies

New recommendations were released this year regarding management of persons with egg allergy. The intent of these new guidelines is to clarify when it is safe to vaccinate such persons, and proper evaluation of those who may be at risk of a reaction to vaccination. Detailed recommendations for vaccination of persons with egg allergy can be found at: www.cdc.gov/mmwr/preview/mmwrhtml/mm6033a3.htm#vaccination_egg_allergy.

Outbreak of Syphilis in the Treasure Valley

During June 1, 2011 through November 30, 2011, 12 early syphilis cases were reported in Southwest (n=1) and Central Public Health Districts (n=11), an area including Boise, Nampa, and Caldwell; 12 cases is 1 more than the number of reported cases in these districts during all of 2010.

Of the 12 infected persons, 8 (67%) had symptoms of primary or secondary

syphilis, 2 (18%) were asymptomatic contacts of a person with primary syphilis, and the remaining 2 (18%) were suspected early syphilis cases based on risk or exposure history, high syphilis titers often indicative of recent infection, and temporal and geographic proximity. Two of the 12 patients also had HIV infection.

The median age of persons reported was 42.5 years. Ten cases were among males

who had reported sex with other males (MSM), four of whom also had reported sex with females. Two reported only sex with females.

Recommendations for healthcare providers**Identification of syphilis**

Maintain a high index of suspicion for



syphilis when working with patients whose behaviors carry risk for syphilis infection or who report symptoms that might be indicative of syphilis. Syphilis, a systemic disease caused by the bacterium *Treponema pallidum*, progresses through a series of overlapping stages, based on symptomatology and duration of infection, which are used to guide treatment and follow-up. Individuals with early syphilis might seek treatment for signs or symptoms of primary infection (ulcer or chancre at infection site), secondary infection (e.g., skin rash, mucocutaneous lesions [mucous patches], or lymphadenopathy), and neurologic infection (e.g., cranial nerve dysfunction, meningitis, stroke, auditory or ophthalmic abnormalities). Among MSM, the primary lesion, which is usually painless, can sometimes be occult – located in the anal canal, rectum, or oral cavity. Clinicians have observed at least one oral lesion in this outbreak. Persons without symptoms are also considered to have early infections if they are determined by history or other evidence to have acquired syphilis within the past 12 months.

Patient education

Inform patients and clients about the outbreak and provide information about

the signs and symptoms of syphilis and other sexually transmitted diseases (STDs). Emphasize the seriousness of neurosyphilis, especially in discussions with persons who are HIV positive or are at risk of acquiring HIV. Please encourage patients with early syphilis to cooperate with public health investigators so that partner services, which include preventive treatment and serologic testing for syphilis, can be effectively delivered to help prevent the further spread of syphilis.

Screening recommendations

Persons at increased risk for syphilis infection include sexually active MSM, individuals who exchange sex for money or drugs, and adults in correctional facilities.¹ Persons who have had sexual contact with patients who have received a diagnosis of syphilis and persons with signs or symptoms of syphilis, should also be tested for syphilis. Screening intervals should be based on clinical judgment of prevalence and risk behaviors; sexually active MSM should be screened at least annually.¹ All persons with syphilis should be tested for HIV infection.² Women who are pregnant or who have recently delivered must be screened at their first encounter for pregnancy-related care by

HIGHLIGHTS

- 12 new early syphilis cases reported since June 1, 2011; HIV coinfection has been reported
- Be alert for symptoms of syphilis infection
- Presumptively treat persons suspected of being or having been exposed to early syphilis
- Report cases to your public health district or OEFI

state law³ and should be screened again, if at high-risk, in the third trimester to prevent congenital syphilis infection⁴; women should be tested at delivery if no prenatal care was sought.

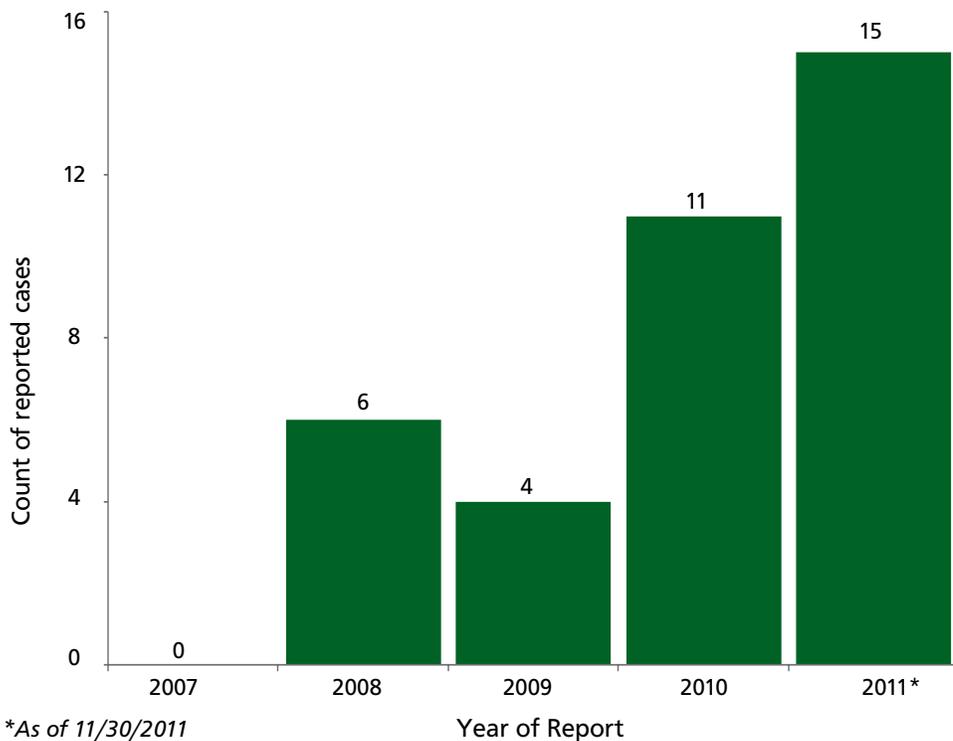
Testing and evaluation

Obtain a serologic specimen for rapid plasma reagin (RPR) or venereal disease research laboratory (VDRL) testing on all suspect early syphilis cases. If positive, the laboratory should provide a quantitative titer result and run a confirmatory test, such as the *Treponema pallidum* particle agglutination (TP-PA) or fluorescent treponemal antibody-absorption (FTA-ABS) test. Patients with signs or symptoms of neurologic or ophthalmic disease might have neurosyphilis and should have an evaluation that includes CSF analysis, ocular slit-lamp ophthalmologic examination, and otologic examination.

Treatment

Treat persons with suspected early syphilis and their sexual contacts with 2.4 million units of benzathine penicillin (Bicillin L-A®) administered intramuscularly, or, if penicillin-intolerant and not pregnant, use doxycycline 100 mg twice daily for 14 days or tetracycline 500 mg four times daily for 14 days. Pregnant women with suspected early syphilis who are penicillin-intolerant must be desensitized and treated with the above dose of benzathine penicillin. Carefully ensure the proper penicillin is being used to treat individuals with syphilis. Inadvertent use

Figure. Early syphilis by year of report—Southwest and Central Public Health Districts, 2007–2011*





Division of Public Health
P.O. Box 83720
Boise, ID 83720-0036

PRSR STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Rules and Regulations Governing Idaho Reportable Diseases may be found at <http://adm.idaho.gov/adminrules/rules/idapa16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

OUTBREAK OF SYPHILLIS CONTINUED FROM PAGE 3

of Bicillin C-R®, a mixture of benzathine penicillin G and procaine penicillin G, has been reported in the past⁵ and is inadequate to cure syphilis. Consult the latest version of the CDC's sexually transmitted disease treatment guidelines for guidance in treating syphilis infection of greater than one year duration, congenital infection among infants or children, or infections with neurologic involvement (www.cdc.gov/std/treatment).

HIV infection

Serologic tests for syphilis can be interpreted in the usual manner for most patients with HIV and syphilis coinfection. However, atypical serologic responses have been observed among HIV-infected persons with syphilis infection, usually but not always involving higher than expected non-treponemal titers. Rare instances of false negative serologic test results and delayed seroreactivity have been reported.⁶ Compared with

HIV-negative patients, HIV-positive patients with early syphilis are at higher risk for neurologic complications.²

Follow-up

Persons treated with penicillin should have serologic follow-up 6 and 12 months after treatment to document the response to treatment, which should be a 4-fold or greater decline in RPR or VDRL titer. Because of the greater potential for treatment failure, follow-up for HIV-infected patients should be at least every 3 months after treatment up through 12 months after treatment and include a 24-month test. Follow-up at 3, 9, and 12 months after treatment is also recommended for persons treated with non-penicillin regimens.

Reporting

Report suspected and serologically positive syphilis cases within three working days to your public health district or the

Office of Epidemiology, Food Protection, and Immunization so that public health investigation and identification of contacts can begin.

References

- ¹Centers for Disease Control and Prevention (CDC). Sexually transmitted diseases treatment guidelines, 2006. *MMWR Recomm Rep* 2006; 55:1–94.
- ²Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2010. *MMWR* 2010; 59 (No. RR-12):26–40.
- ³Idaho Code. Title 39 Health and Safety. Chapter 10, §1001 and 1002.
- ⁴U.S. Preventive Services Task Force. Screening for syphilis infection: recommendation statement. *Ann Fam Med*. 2004;2(4):362–365.
- ⁵Centers for Disease Control and Prevention (CDC). Inadvertent use of Bicillin C-R to treat syphilis infection—Los Angeles, California, 1999–2004. *MMWR*. 2005 March 11; 54(9): 217–9. www.cdc.gov/mmwr/preview/mmwrhtml/mm5409a1.htm
- ⁶Kingston AA, Vujevich J, Shapiro M, et al. Seronegative secondary syphilis in 2 patients coinfecting with human immunodeficiency virus. *Arch Dermatol* 2005;141:431–3.



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Disease Bulletin

- Hyatid Disease: Call for Cases
- Expanded Recommendations for Tdap
- How Does Invasive MRSA Impact Idaho
- CDC Fellows Join OEFI

VOLUME 18 NUMBER 3 • SEPTEMBER 2011

Hydatid Disease: Call for Cases

Follow-up to article featured in the April 2010 edition of the Idaho Disease Bulletin <http://www.healthandwelfare.idaho.gov/tabid/682/Default.aspx>

Idaho's public health epidemiologists at the Division of Public Health would like to hear about any cases of *Echinococcus granulosus* diagnosed in Idaho. This small zoonotic tapeworm is the cause of unilocular hydatid disease in humans and has a complex lifecycle involving primary and intermediate hosts. There has been increased interest in this tapeworm since the detection of the disease in wild game and wolves in Idaho, and concerns that these findings may represent an increased risk to public health.

Domestic dogs or wild canids (*e.g.*, coyotes, foxes, and wolves) are the primary parasite host and shed viable proglottids (packets of eggs) in their feces. Depending on the strain of *E. granulosus*, domestic ungulates (*e.g.*, sheep, goats, swine, cattle, horses) or wild ungulates (*e.g.*, deer, elk, mountain goats) are the intermediate hosts. Intermediate hosts are infected

by ingesting eggs during the course of grazing and can develop cystic tapeworm brood sacs, often ≥ 10 cm in diameter, in organs such as lung and liver. They do not shed eggs into the environment. The phase of the parasite found in the brood sacs is not considered infectious to humans, but can infect canids that consume cystic internal organs from infected intermediate hosts, completing the lifecycle. Humans are functionally intermediate hosts and can acquire *E. granulosus* by consuming the eggs in contaminated food or water or by indirect transmission through contact with egg-contaminated surfaces. Reporting of human infection is not mandated in most states, including Idaho, so the true burden of disease is unknown. A 2011 phone survey of infectious disease physicians in Idaho indicated that the rare case is seen; however, all infections appear to have been acquired abroad, usually by foreign-born persons immigrating to the United States. The last known locally-acquired infection in Idaho was reported in 1977 (believed to be

CONTINUED ON NEXT PAGE

Expanded Recommendations for Tdap: Pregnant Women

Preventing pertussis (whooping cough) in very young infants continues to challenge the medical and public health communities. Vaccination of very young infants does not confer immunity during the critical first few months of age when the risk of severe complications and death is the highest; therefore, other protective strategies are needed. One current strategy is to try to ensure immunity of close contacts of a newborn by urging vaccination of parents, grandparents, and other caretakers, as well as ensuring that older siblings are up-to-date on their vaccinations. This strategy, called "cocooning", although logical, has not yet been proven to decrease the risk of pertussis in

infants.

Another potential strategy is to continue to emphasize that every adolescent and adult has a single dose of tetanus, diphtheria and acellular pertussis vaccine (Tdap), as currently recommended. This strategy is unlikely to have a major impact on exposure risk to infants, since despite the increasing use of pertussis-containing vaccine in adolescents and adults, pertussis rates in these age groups have continued to rise even after the introduction of adult pertussis vaccination. Achieving high pertussis immunization coverage in adults has been difficult. According to the Centers for Disease Control and Prevention (CDC)'s 2009

CONTINUED ON NEXT PAGE

OFFICE OF EPIDEMIOLOGY, FOOD PROTECTION, AND IMMUNIZATION

Idaho Department of Health and Welfare

P.O. Box 83720
450 W. State Street,
4th Floor
Boise, Idaho 83720-0036
WWW.IDB.DHW.IDAHO.GOV

IDAHO DISEASE BULLETIN CONTRIBUTING STAFF

CHRISTINE G. HAHN, MD
State Epidemiologist

**LESLIE TENGESEN, PhD,
DVM**
Deputy State Epidemiologist

JARED BARTSCHI, MHE
Epidemiology Program
Specialist

CARLA BRITTON, PhD, MS
Epidemic Intelligence Service
Officer

KRIS CARTER, DVM, MPVM
Career Epidemiology Field
Officer

PATRICK GUZZLE, MPH
Food Protection Program
Manager

MITCHELL SCOGGINS, MPH
Immunization Program
Manager

**KATHRYN TURNER, PhD,
MPH**
Epidemiologic Data and
Surveillance Program Manager

**ELLEN ZAGER HILL, MS,
DLSHTM**
Epidemiology Program
Specialist



HYDATID DISEASE CONTINUED FROM FIRST PAGE

herding dog-associated). Person-to-person transmission is not known to occur. The low number of reports of human disease in Utah and Alaska, where reporting is mandated, suggest that the disease burden is low. During 1990 through 2010, Alaska reported 12 locally-acquired human cases. Although the risk factor contributing to

infection was not always documented in the medical record, many cases were linked to dog exposures. Utah reported the last locally-acquired infection in 2005 and continues to document sporadic reports of imported cases. To better understand the burden of human disease in Idaho, the Idaho Department of Health and Welfare,

Office of Epidemiology, Food Protection, and Immunization (OEFI) encourages healthcare providers to report any suspected or confirmed case of hydatid disease.

To learn more about this parasite, see: <http://www.healthandwelfare.idaho.gov/Health/HunterHealth/tabid/1280/Default.aspx>

EXPANDED TDAP RECOMMENDATIONS CONTINUED FROM FIRST PAGE

National Health Interview Survey (NHIS), only 61% of adults aged ≥19 years reported receiving a tetanus-containing vaccine within the past 10 years, and of adults aged 19–64 years who received a tetanus vaccine since 2005 and knew if that vaccine contained a pertussis component, only 51% reported receiving Tdap rather than Td.

protects neonates against pertussis is not clear, although historical data suggests there is some protection; whether increased titers of passive antibody to pertussis vaccine antigens could potentially substantially interfere with response to DTaP given at 2, 4, and 6 months of age is also of concern. All licensed Td and Tdap vaccines are categorized as

Pregnancy Category C agents by

FDA. Pregnant women were excluded from prelicensure trials, and animal reproduction studies have not been conducted for Td or Tdap.

Vaccination of pregnant women has appeal since these women routinely receive medical care, are generally very interested in doing what they can to protect their babies from illness, and are generally young and healthy with

women who have never received the Tdap vaccine should be immunized during their second trimester (after 20 weeks gestation) or during their third trimester rather than in the immediate postpartum period.

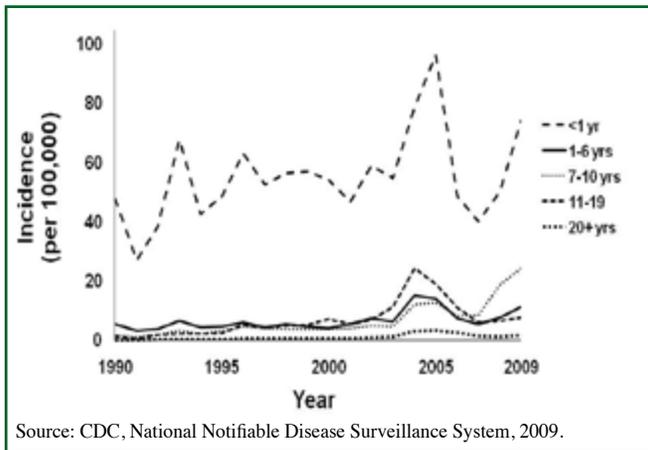
ACIP's provisional recommendation specifies the following stipulations for Tdap:

- if a pregnant woman is up-to-date on tetanus and diphtheria toxoids, or Td, vaccine but has never had Tdap, she should receive Tdap during her second or third trimester, and
- if a woman's history of Td vaccination is unknown, or she never has received it, she should be brought up-to-date with series of immunizations, including one dose of Tdap.

This new recommendation will require education of providers providing prenatal care; a commitment by those providers to offer Tdap vaccine to pregnant women; and coordination with the delivering hospital so that if a pregnant woman chooses not to receive Tdap, or does not receive prenatal care, Tdap can be offered to the mother immediately postpartum.

Idaho continues to see cases of pertussis in young infants each year including infants requiring intensive care. It is hoped that this new recommendation will aid in reducing the impact of this disease on our youngest Idahoans.

Figure. Reported pertussis incidence by age group 1990–2009



Source: CDC, National Notifiable Disease Surveillance System, 2009.

These challenges have raised the question of whether vaccination of pregnant women, in large part to protect their newborns, might be a reasonable strategy. Antibodies to pertussis antigens are passively transferred during pregnancy, but serologic correlates of protection against pertussis are not known. Whether passive transfer of maternal antibodies to pertussis antigens

robust immune systems able to respond to the vaccine.

At the June 22–23, 2011, meeting, CDC's Advisory Committee on Immunization Practices (ACIP), made a provisional recommendation that could significantly alter the way family physicians approach Tdap vaccination. In particular, ACIP voted to recommend that pregnant

How Does Invasive MRSA Impact Idaho?

Before national rates were published in the *Journal of the American Medical Association* in 2007, invasive MRSA incidence estimates were predominantly based on surveillance conducted in single large urban areas or limited to specific populations, facilities, or outbreaks. Although the

JAMA study produced improved national incidence and mortality rate estimates, surveillance data were collected from largely urban areas, a limitation to the representativeness of the study sample. Due to Idaho's largely rural geography, additional study was undertaken by the Idaho Office

of Epidemiology, Food Protection, and Immunization to determine if the national estimates could accurately describe the incidence and epidemiology of invasive MRSA in our state.

In 2008, Idaho passed legislation requiring laboratories to report cases of



Table 1. Descriptive epidemiology of invasive MRSA cases: 18-month incidence and proportions and annual incidence rates

Demographic	Cases reported and proportions (4/16/08-10/15/09)	Annual incidence rate 100,000 pop
Total	166 (100.0)	7.2
Rural residence		
Rural	49 (29.5)	3.5
Urban	117 (70.5)	12.4
Sex		
Male	94 (56.6)	2.4
Female	72 (43.4)	9.4
Age (median)	65.0 Years	
<45	31 (18.7)	3.2
45-59	31 (18.7)	10.4
60-74	60 (36.1)	329.7
75+	44 (26.5)	51.6

invasive MRSA to Idaho public health authorities. To enhance our understanding of the impact of this newly reported condition, reports of invasive MRSA with a specimen collection date from 4/15/2008–10/15/2009 (18 months) were matched to official death records filed from 4/15/2008–12/31/2010. Medical chart reviews were conducted to collect additional patient data on risk factors, underlying conditions, primary diagnosis, and to categorize the infection as healthcare- or community-associated. Annual incidence and mortality rates were calculated from cases with specimens collected during 7/1/2008–6/30/2009; epidemiologic analysis included all cases reported during the 18-month time frame.

Results of Idaho Study of Invasive MRSA incidence and disease severity

Invasive MRSA infection affects primarily urban, older residents of Idaho. Risk of disease was positively related to age, with the lowest rates of disease among residents less than 45 years of age (Table 1). Using the lower bound of the national incidence rate estimate published in *JAMA*, we expected to receive approximately 375 cases of invasive MRSA annually. We received 111 reports from July 1, 2008 through June 30, 2009, the one-year time frame used to calculate annual incidence, resulting in an annual incidence rate of 7.2 / 100,000 population. The Idaho incidence rate was significantly lower than the national estimate of 31.8 / 100,000 population¹ ($p < .0001$). The case fatality rate of

invasive MRSA in Idaho was 148.1 / 1,000 cases. The standardized mortality rate of 1.0 / 100,000 population in Idaho was significantly lower than the national rate of 6.3 / 100,000 population ($p < .0001$).

The incidence rate among rural Idaho residents was 3.5 / 100,000 population, significantly lower than the rate among urban Idaho residents of 12.4 / 100,000 population ($p < .0001$). Case fatality rates are independent of disease incidence differences in populations. When considering case fatality differences between rural and urban populations in Idaho, the case fatality rate among rural residents (61.2 / 1,000 cases) was significantly lower than among urban residents (179.5 / 1,000 cases) ($p = .0268$). This is similar to what has been seen in other studies in the United States. Authors have attributed differences in disease incidence and outcomes between rural and urban populations in other states to probability of exposure to infected individuals, socioeconomic factors, health status, occupation, and age. While the Idaho-specific investigation did not address all possible factors that might have an impact on invasive MRSA incidence and severity, it did confirm findings of other studies in which differences in disease incidence by geography were noted.

The annual incidence rate of invasive healthcare-associated MRSA (HA-MRSA) was 5.8 / 100,000 population. The HA-MRSA incidence rate was significantly higher than the invasive community-associated MRSA (CA-MRSA) rate of 0.3 / 100,000 population. CA-MRSA patients tended to be younger (median age = 51.2 years) than HA-MRSA patients and had a higher incidence of illicit drug use and an initial diagnosis of cellulitis. Patients with invasive CA-MRSA infections had significantly fewer days of hospitalization during their infection and had no deaths attributable to MRSA. The significantly lower level of disease severity as measured by length of hospital stay and lack of deaths reported among invasive CA-MRSA patients is an indicator that disease severity is lower

in infections associated with community environments compared with healthcare environments. Although other explanations for differences were explored, there were no factors definitively found to be protective among patients with invasive CA-MRSA infections relative to patients with invasive HA-MRSA infections, including geographic location (rural vs. urban).

Antimicrobial susceptibility patterns for invasive HA-MRSA and CA-MRSA infections were tabulated (Table 2). Data correlated with what has been reported nationally and recommended in the Infectious Disease Society of America (IDSA) guidelines for outpatient treatment of MRSA SSTIs. Idaho invasive CA-MRSA infections were less resistant to ciprofloxacin, clindamycin, levofloxacin, and rifampin. IDSA recommends, that for empirical coverage of CA-MRSA in outpatients with SSTI, oral antibiotics including clindamycin, trimethoprim-sulfamethoxazole, a tetracycline, or a linezolid are appropriate. Data from this study indicate trimethoprim-sulfamethoxazole or tetracyclines for treatment of invasive infection would be appropriate, as well as linezolid.

¹Klevens RM, Morrison MA, Nadle J, et al. Invasive methicillin-resistant *Staphylococcus aureus* infections in the United States. *Journal of the American Medical Association*. 2007;298:1763-71.

Table 2. Percent of invasive MRSA specimens resistant to selected antimicrobial agents

ABX TESTED	CA-MRSA(%)	HA-MRSA(%)	N
Ampicillin	100.0	91.8	55
Cefazolin	100.0	98.8	90
Ciprofloxacin	40.0	79.2	29
Clindamycin	40.0	54.3	126
Daptomycin	0.0	0.0	55
Erythromycin	88.9	89.9	118
Ggentamicin	0.0	2.8	80
Imipenem	66.7	95.7	26
Levofloxacin	28.6	69.6	86
Linezolid	0.0	0.0	65
Rifampin	14.3	1.6	71
Tetracycline	0.0	4.5	120
Trimeth-Sulfa	0.0	0.9	125
AMOX-KCLAV	80.0	100.0	43



Division of Public Health
P.O. Box 83720
Boise, ID 83720-0036

PRSR STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Rules and Regulations Governing Idaho Reportable Diseases may be found at <http://adm.idaho.gov/adminrules/rules/idapa16/0210.pdf>.

Current and past issues are archived online at www.idb.dhw.idaho.gov.

CDC Fellows Join Office of Epidemiology, Food Protection, and Immunization (OEFI)

On August 1, 2011, Dr. Carla Britton joined OEFI for a 2-year assignment as a CDC Epidemic Intelligence Service (EIS) Officer. Dr. Britton earned her PhD in epidemiology from the University of Iowa in 2010 while working as a research assistant for the university's sports medicine clinic. Her dissertation topic was risk factors for injury among federal wildland firefighters in the United States. She has published on injury patterns in collegiate swimming in the *American Journal of Sports Medicine*, and on quality of life and perception of shoulder function in patients with rotator cuff disease in Shoulder and Elbow. She earned an MS in Environmental and Public Health from the University of Wisconsin at Eau Claire in 2002, with a thesis on emergency medical services utilization in Sawyer County, Wisconsin. During her tenure here, Dr. Britton will analyze

surveillance systems, participate in field investigations, and conduct epidemiologic analyses, as well as assist OEFI in responding to infectious disease reports and outbreaks. For more information on CDC's EIS Program <http://www.cdc.gov/eis/index.html>.

Ms. Anna Talman, MPH, will join OEFI October 11th for a 2-year assignment as a CDC Public Health Prevention Service (PHPS) Fellow. During 2007–2009, Ms. Talman was a health organization development advisor for the US Peace Corps' International Training and Education Center for Health in Ethiopia, where her primary focus was on strengthening HIV prevention, treatment, and adherence programs. In 2010, Ms. Talman earned her MPH in Global Health from the University of Washington while working as a research assistant examining link-

ages between the HIV epidemic and the natural environment, and received the University of Washington School of Public Health Omenn Award for academic achievement and commitment to community service in public health. Her first PHPS fellowship year at CDC included assignments to evaluate crisis and emergency risk communication processes, and to conduct epidemiologic and spatial analysis of environmental health issues. While with OEFI, Ms. Talman will be an integral part of the Immunization Program, providing expertise for community partners and evaluating program components to help improve vaccination coverage of Idaho's children. She will also work with the Epidemiology Program on infectious disease surveillance projects. For more information on CDC's Public Health Prevention Service, see <http://www.cdc.gov/PHPS/index.html>.