

Late-Breaking Reports



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DEPARTMENT OF HEALTH AND HUMAN SERVICES



Friday, April 28, 2006

Late-Breaking Reports

- 10:30** Late-Breaking Reports. Moderator: Douglas H. Hamilton
- 10:35** Inhalation Anthrax: Joint Response by Public Health, Animal Health, and Law Enforcement---New York City, February 2006. *Benjamin Tsoi*
- 10:45** Tuberculosis Outbreak Among People Using Methamphetamines-Snohomish County, Washington, 2005-2006. *Eric Pevzner*
- 10:55** Evaluation of the Role of School Children in the Adoption of a School-Based Safe Drinking Water and Hygiene Intervention in Their Households-Nyanza Province, Western Kenya, 2006. *Ciara O'Reilly*
- 11:05** An Outbreak of *Phialemonium* Mold Infections in Hemodialysis Patients: When Purified Water is Not so Pure – Illinois, 2005. *Carol Rao*
- 11:15** Where There Is No Plumber: Water, Latrines and Sewage Poisoning in Botswana, 2006. *Wences Arvelo*
- 11:25** Eliminating Iodine Deficiency in the Republic of Georgia: Results of a 2005 National Survey. *Parminder Suchdev*
- 11:35** Routine Early Infant HIV Testing as National Program – Preliminary Results and Lessons Learned, Rwanda, 2005 - 2006. *Thomas Finkbeiner*
- 11:45** The Largest Mumps Outbreak Since 1988 is Occurring Despite Highly Childhood Vaccination – Iowa, 2006. *Gianluca Flamigni*

Inhalation Anthrax: Joint Response by Public Health, Animal Health, and Law Enforcement — New York City, February 2006

Benjamin W. Tsoi, T.Q. Nguyen, N. Arboleda and members of the PA DOH, CDC, USDA, FBI, NYPD, and NYC DOHMH Inhalation Anthrax Investigation Team*

Background: Although 11 inhalation anthrax cases resulted from the 2001 terrorist attack, the last known naturally acquired inhalation anthrax case in the United States occurred in 1976. On February 21, 2006, inhalation anthrax was diagnosed in a New York City (NYC) resident.

Methods: We interviewed the patient, his family, and colleagues to ascertain the source of infection and risk posed to others of inhalation exposure. NYC health-care providers were notified through the Health Alert Network and hospital teleconference calls to report suspect cases. Targeted environmental culturing was conducted at the patient's workspace, van, and residence.

Results: The patient acquires dried animal hides from Africa and locally to make drums. He rehydrates the hides, then scrapes hair from the hides with a razor, without personal protective equipment and in a poorly ventilated workspace. Scraping was last done on February 12, one day before illness onset. Widespread contamination with anthrax spores in the workspace, including an unfinished drum and wall vent, suggested aerosolization had occurred there. Culture results from the residence and van were consistent with cross-contamination (e.g. shoes, floor). Postexposure prophylaxis was recommended for four persons who were in the workspace while hair was being removed from the hides or swept from the floor. Enhanced surveillance revealed no additional cases. No evidence of criminal activity was identified.

Conclusions: This inhalation anthrax case likely occurred from aerosolization of spores during scraping of contaminated hides, similar to historical cases among workers in animal-hide processing factories. Rapid environmental confirmation of the exposure source allowed public messages to emphasize the natural exposure, limited risk of inhalation anthrax to others, and risk-mitigation measures for persons who make drums from animal hides.

Key words: anthrax, disease transmission, animal hides, public health practice, *Bacillus anthracis*

Tuberculosis Outbreak Among People Using Methamphetamines— Snohomish County, Washington, 2005–2006

Eric Pevzner, John Oeltmann, Susan Robison, Donna Allis, Rachel Friedman, Hollianne Bruce, Chris Spitters, Ward Hinds, Dave Peterson

Background: An estimated 12.3 million Americans have used methamphetamines (meth). Meth use has been implicated in the transmission of HIV and STDs. Although congregation of people using illicit drugs (i.e., cocaine, heroin, marijuana) has led to tuberculosis (TB) outbreaks, there is no documentation of meth use being associated with TB transmission. In 2006, we worked with the Snohomish Health District in Washington State to investigate a TB cluster among people using meth.

Methods: We included patients with TB diagnosed from January 2005–February 2006 having genotypes matching and/or epidemiological links to the index patient. We reviewed medical records and interviewed patients, their contacts, and nurses. Information about meth use was self-reported or gathered through key informants.

Results: Nine patients met the inclusion criteria. All used meth and were either directly (n=5) or indirectly (n=4) linked to a house known for illicit drug activities. Of 119 reported contacts, 73 had a tuberculin skin test (TST); 28 (38%) of these had a positive TST result. Forty-two percent of adult contacts used meth. Among contacts using meth, 14 (64%) of 22 had a positive TST result compared with three (25%) of 12 not using meth. Several cases diagnosed from 1991-2002 were also linked to this house, and the one available *M. tuberculosis* isolate from these had a genotype matching the current outbreak strain.

Conclusion: We document over a decade of ongoing TB transmission associated with a known drug house. In the current outbreak, meth use was related to both latent tuberculosis infection and active TB disease. TB control and substance abuse programs should collaborate to control TB while addressing the other health needs of people addicted to meth.

Evaluation of the Role of School Children in the Adoption of a School-Based Safe Drinking Water and Hygiene Intervention in Their Households—Nyanza Province, Western Kenya, 2006

C.E. O'Reilly, M. Freeman, M. Ravani, S. Ombeki, J. Migele, A. Mwaki, M. Ayalo, R. Quick

Background: Safe drinking water and hygiene are essential in reducing the burden of diarrhea, a major cause of childhood morbidity and mortality in Kenya. In May 2005, CARE-Kenya implemented a school-based safe water and hygiene intervention in 45 rural primary schools in Nyanza Province, western Kenya. In February 2006, we evaluated the impact of the intervention on students' knowledge and on the adoption of safe water and hygiene practices in the home.

Methods: Teachers trained in safe water and hygiene practices taught the material to their pupils. Schools were provided safe water storage vessels, water treatment solution, and handwashing stations. We surveyed randomly selected pupils from nine rural schools, and made home visits to interview the pupils' parents/guardians at baseline and 9 months after intervention. We assessed knowledge, attitudes, and practices about water, sanitation, and hygiene.

Results: We enrolled 390 and 363 pupils and their parents at baseline and final evaluation, respectively. A higher percentage of pupils reported learning about water treatment at school at the final evaluation than at baseline (93% vs. 10%, $p < 0.05$). A greater percentage of pupils demonstrated knowledge of the correct water treatment procedure, using a locally available disinfection product, at the final evaluation than at baseline (65% vs. 21%, $p < 0.05$). At final evaluation, 16% of parents reported treating their current water, compared with 7% at baseline ($p < 0.05$). At final evaluation, 38% of parents demonstrated the correct steps of handwashing that had been taught to their child in school, and 25% reported changing their handwashing practices because of messages their child brought home from school.

Conclusions: This novel school-based intervention shows promise for promoting water and hygiene interventions in the home.

Key words: Safe drinking water, sanitation, hygiene, school, Kenya

An Outbreak of *Phialemonium* Mold Infections in Hemodialysis Patients: When Purified Water is Not So Pure – Illinois, 2005

Carol Y. Rao, Constance Pachucki, Salvatore Cali, Matthew Arduino, Mangai Santhiraj, Judith Noble-Wang, Mary Brandt, Kathi Krankowski, David Leehey, Subhash Popli, Scott Fridkin

Background: In the U.S., about 300,000 people with end-stage renal disease receive maintenance hemodialysis (HD) treatment. Although bloodstream infections (BSI) are common in HD patients, non-catheter related BSIs, especially with molds, are rare. In December 2005, we investigated *Phialemonium* BSI in 2 HD patients treated at HD Center A (HCA). The source of the only other outbreak of *Phialemonium* BSI in HD patients was never identified.

Methods: To determine risk factors and sources of infection, we reviewed microbiology and medical records, evaluated HD equipment, the purified dialysis water distribution system and infection control practices. We sent environmental samples and clinical isolates to CDC for mold identification confirmed by DNA-sequencing. Patterns of dialysis machine (22 machines) and treatment station use (19 stations) were evaluated. Dialysis staff were interviewed and observed.

Results: The closed patient population (N=60) at HCA undergoes HD three times per week. Only the two index patients had BSI with confirmed *Phialemonium curvatum*. Both were dialyzed on Machine X at Station Y during consecutive sessions when they became febrile and hypotensive due to BSI. Machines were equipped with Waste Handling Option (WHO) ports (previously implicated in BSI outbreaks) without consistent precautions to prevent backflow of waste-fluid (e.g., spent dialysis water) into the patients' bloodline. Although the purified dialysis water was reported to be within industry standards, we isolated *P.curvatum* from the water at 2 of 19 treatment stations, one of which was Station Y.

Conclusions: The water distribution system was the likely source of *P.curvatum*; the route of infection may relate to malfunction and/or improper maintenance of the WHO. Remediation of the water distribution system and maintenance practices should prevent additional infections.

Keywords: *Phialemonium*, mold, hemodialysis, environmental monitoring, fungemia, water microbiology

Where There is no Plumber: Water, Latrines and Sewage Poisoning in Botswana, 2006

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Background: Between January – March 2006, during a period of record-setting rains, Botswana reported a 2-fold increase in diarrhea morbidity and a 16-fold increase in diarrhea mortality among children <5 years old. Over 20,000 pediatric diarrhea cases and 400 deaths occurred, and multiple causative pathogens were identified. A case-control investigation was conducted at a large referral hospital to identify infection risk factors and develop control strategies.

Methods: We recruited children <5 years old presenting to the hospital emergency department between March 2 – 20, 2006. Cases had ≥ 3 loose stools per day, and no antecedent diarrhea among household members. Controls had no diarrhea since January 1, 2006. Caregivers were interviewed using a standard questionnaire. We conducted multivariate logistic regression controlling for socioeconomic status and age.

Results: Fifty-six cases and 72 controls were enrolled; overall 39 (31%) were born to women known to be HIV-positive. Case-parents were more likely to report household drinking water storage [adjusted odds ratios (AOR) 6.0; 95% confidence interval (CI) 2.0 – 18.2]; 31 (70%) of those who stored water used buckets. Overflowing latrines during the 12 days before illness were more likely to be reported by case-parents (AOR 6.1; CI 1.3 – 27.1). Handwashing after toileting was protective (AOR 0.3; CI 0.1– 0.7), as was breastfeeding during the 12 days before illness (AOR 0.1; CI 0.02 – 0.4). Case-patients were more likely to be admitted (OR 2.1; CI 1.1– 4.2); five cases died.

Conclusions: This lethal, widespread outbreak was associated with heavy rainfall, breakdowns in sanitation infrastructure, poor hygiene, unsafe water storage, and not breastfeeding. Where water and sanitation infrastructure are compromised, promotion of handwashing, safe water storage, and breastfeeding are vital for diarrhea prevention.

Eliminating Iodine Deficiency in the Republic of Georgia: Results of a 2005 National Survey

Parminder S. Suchdev, M. Jashi, G. Gegelashvili

Background: Iodine deficiency (ID) is the leading cause of preventable mental retardation worldwide. The most effective method of eliminating ID is widespread consumption of adequately iodized salt. In spite of public health efforts to increase salt iodization in the Republic of Georgia, one-third of household salt was not iodized in 2003. Following the passage of a law in February 2005 that banned the import and sale of non-iodized salt, the Government of Georgia and UNICEF conducted a national survey in November 2005 to measure the impact of this legislation.

Methods: A cross-sectional school-based cluster survey of children aged 6-12 years measured 1) their urinary iodine excretion (UIE) and 2) the iodine content of their household salt.

Results: Of the 970 children included in the survey, 50.0% were male, and median age was 9 years. Only 40 (4.4%) of 900 urinary samples analyzed had a low UIE (below 100 µg/L); the median UIE was 320.7 µg/L. Of 957 salt samples analyzed with rapid salt testing kits, 867 (90.6%, CI=86.9-94.3) were adequately iodized (>15 ppm), and only 39 (4.1%) had no iodine. These results indicate dramatic improvements both in the prevalence of low UIE among Georgian children (80% in 1998) and in the percentage of Georgian households using salt with adequate iodine (8% in 1999 and 67% in 2003).

Conclusion: These results show that in part because of the 2005 law, Georgia now meets the primary World Health Organization (WHO) criteria for universal salt iodization (USI) (i.e. >90% of households using adequately iodized salt and <50% of population with UIE <100 µg/L). Sustaining Georgia's USI program is essential for maintaining elimination of ID.

Key words: iodized salt, goiter, nutrition surveys, Georgia (Republic)

Routine Early Infant HIV Testing as National Program – Preliminary Results and Lessons Learned, Rwanda, 2005 – 2006

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Background: In most resource-limited settings, children born to HIV-positive mothers cannot be tested for HIV before 15–18 months by serology due to persisting maternal antibodies. Studies show a mortality rate of 40-50% in perinatally-infected children in the first two years. Earlier identification and treatment of these children could significantly reduce this high mortality rate. With polymerase-chain-reaction (PCR) HIV-infection can be diagnosed as early as 6 weeks. We present early results of an infant PCR testing program in Rwanda.

Methods: The first phase of a national early infant testing program was implemented at three sites in the Rwandan capital Kigali in October 2005. Children were identified as HIV-exposed during routine visits by the information on the mother's antenatal card. HIV DNA PCR testing (Roche Amplicor 1.5) was performed at the national reference laboratory.

Results: 239 children were identified as HIV-exposed between October 2005 and February 2006 (median age: 5 months; range: 6 weeks – 18 months). All known HIV-exposed children were tested; 27 (11.3%) tested PCR-positive and were referred for treatment. Data on PMTCT prophylaxis was known for 203 mother-child pairs. Of 146 mother-child pairs who received PMTCT prophylaxis (mainly single-dose nevirapine), 11% (16) children tested HIV positive, compared to 19% (11/57) who did not receive prophylaxis (OR 1.9%; 95% CI = 0.8-4.8).

Conclusions: Routine early PCR testing is feasible. HIV-exposed children can be identified during routine follow-up visits and testing uptake is high. In addition to identifying HIV-infected children and linking them to early care and treatment, routine early infant testing provides valuable information on the effectiveness of PMTCT programs.

The Largest Mumps Outbreak Since 1988 is Occurring Despite Highly Childhood Vaccination— Iowa, 2006

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Background: Mumps is an acute viral infection characterized by fever and nonsuppurative swelling of the salivary glands. During the prevaccine era, almost everyone experienced mumps with 90% of the cases occurring among children aged <15 years. Since 1977, Iowa law has mandated vaccination for school entrance with one dose of measles/mumps/rubella vaccine (MMR), and since 1992, two doses. Today, 98% of school children have received two MMR doses. Until recently, only 1–11 cases of mumps have occurred per year; thus far in 2006, a total of 130 cases have been reported. We conducted an investigation to characterize the outbreak and prevent further cases.

Methods: We are conducting case interviews by using a modified standard questionnaire and laboratory testing for case confirmation. Mumps viral isolates are being sent to CDC. Passive surveillance continues in the state, with targeted active surveillance occurring at six sites in Iowa, including three universities. Patients are being isolated, but quarantine is not being used.

Results: Of the 130 cases that have been reported since January 9, 2006, detailed information is available for 68 persons. Fifty-two (76%) and 11 (16%) have received two and one MMR dose respectively; five (7%) were not vaccinated. Ages range from 0 to 85 years, with 50% (60/120) aged 17–25 years; 30% (12/40) are college students. Six viral isolates were determined to be genotype G mumps virus.

Conclusions: Despite control efforts and a highly vaccinated population among children, this outbreak continues to spread across the state. Our ongoing investigation of this outbreak will focus on true vaccine coverage on college campuses, potential transmission modes, and effectiveness of one or two doses of mumps-containing vaccine.

Keywords: mumps, MMR, outbreak