

Lecture Hall

Session Abstracts

National Environmental Health Association (NEHA)
72nd Annual Educational Conference & Exhibition

Emerging Pathogens

Wednesday, June 25

8:00 – 8:50am

Comparison of Top-Loading Versus Front-Loading Washing Machines on *Staphylococcus aureus* and MRSA Survival During Household Laundering

Jeanne Nordstrom, MS, CIH, Industrial Hygienist, Southern Arizona VA Health Care System, AZ

This study was conducted to determine whether *Staphylococcus aureus* and its methicillin resistant form (MRSA) added to cotton cloth swatches survive typical household laundry practices in the United States - a wash cycle, rinse cycle, and 28-minute permanent press drying cycle. Detergent was added to top-loading washing machines containing sterile and bacterial inoculated 232.25 cm² swatches and 3.2 kg of sterile cotton T-shirts. Loads containing soiled pillowcase designed to simulate the conditions (pH, organic load, etc.) encountered in soiled laundry were also run. The addition of bleach, different wash temperatures and cycle lengths were employed to determine the effect of each parameter on bacterial survival. Experiments were repeated with front-loading washers. Washing with detergent alone afforded a three log reduction in bacteria concentration. Complete drying further decreased this level by an additional log, and the addition of bleach another two log reduction. Front-load washers were more successful at lowering bacterial counts than top-loaders in nearly all laundry tests performed, most likely due to their much longer rinse cycles. Laundering practices in common use in the United States do not completely eliminate *Staphylococcus aureus* or MRSA from clothes. The use of hot water and bleach can further reduce the numbers of surviving bacteria in laundry.

9:30 – 10:20am

MRSA: A Re-Emerging Community Disease from an Emergency Room Perspective

David Hall, MD, Emergency Physician and Director, East Houston Regional Medical Center; Medical Director, Baytown Emergency Medical Services, TX

No abstract available.

11:00 – 11:50am

Primary Amebic Meningoencephalitis: Ecology, Epidemiology, and Risk Communication

Dean Bodager, MPA, DAAS, RS, Regional Environmental Epidemiologist, Florida Dept. of Health, FL

During the summer of 2007 Orange and Osceola County, Florida experienced three fatal cases of meningitis illnesses caused by amebas. These three fatalities occurred in June, August and September. Two of the cases had known lake exposure in Orange County prior to illness onset. Each of these exposures was at a different location in Orange County. Relevant exposures of the third case were indeterminate. All three cases were initially reported as Primary Amebic

Meningoencephalitis (PAM). The last reported cases of PAM in this area were two in 2002 in separate adjacent counties. Thirty cases were reported to CDC from 1991-2004 from seven states or territories in predominantly warm climates with Florida experiencing seven. The majority of cases occurred during July, August and September with exposure in lakes, rivers, ponds, and streams most commonly reported. While a rare disease, a single case of PAM reported in a community creates a high degree of alarm particularly in parents and people involved in fresh water activities. This presentation will discuss clinical presentations, exposure histories, and actual laboratory confirmation results of the Florida 2007 cases. The epidemiology and ecology of *Naegleria fowleri* will be summarized. Confirmation methods, case definitions and sampling procedures will be presented. Strategies for media interaction and the pros and cons of the various risk communication methods utilized will be discussed.

1:30 – 2:20pm

Speaker and Topic TBA

3:00 – 3:50pm

Norovirus Outbreaks of Rafting Trips in the Grand Canyon

Marlene Gaither, RS, MPA, MEE, Environmental Health Program Manager, Coconino County Health Dept., AZ

Coconino County, along with Grand Canyon Park and the University of Arizona, has been investigating norovirus outbreaks affecting commercial rafting operations since 1994. Over 30,000 people raft the Colorado River through the Grand Canyon every year. These trips are like floating “resorts” where all meals are prepared and provided as well as water purification, sleeping accommodations, human excreta, and solid waste handling, storage, and transport under extreme environmental conditions. Rafting groups have provided an extraordinary opportunity for the study of acute gastrointestinal diseases like norovirus. Specific individual report protocols were developed to gather information for this unique situation. Numerous samples were collected, including individual stool samples, samples from “group” toilets from the trips, food samples, and water samples, and surfaces were swabbed and analyzed for norovirus. The results of our investigations have revealed transmission modes including person-to-person, contaminated surfaces (fomites), and processed lunch meats. The identification of the last norovirus outbreak associated with the processed lunch meats was documented by the Centers for Disease Control & Prevention as the first case of its kind in the United States. From these investigations, the team identified risk factors for norovirus and devised appropriate preventive measures that are currently being utilized by commercial river companies.

4:00 – 4:50pm

Foodborne, Intestinal, and “Pseudo” *Clostridium botulinum* Infections: A Summary of Etiology, Investigation Processes, and Case Studies in Florida

Roberta M. Hammond, PhD, RS, Food and Waterborne Disease Coordinator, Florida Dept. of Health, FL

Kathleen Van Zile, RS, MSEH, Regional Environmental Epidemiologist, Florida Dept. of Health, FL

Foodborne botulism is caused by toxins produced by *Clostridium botulinum*, a spore-forming, anaerobic bacillus. In foodborne botulism, the spores activate in the food and produce the botulinum toxin. People ingest the preformed toxin present in the contaminated food. Symptoms include double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness. Symptoms generally begin 18 to 36 hours after eating a contaminated food, but they can occur as early as 6 hours or as late as 10 days. Implicated foods

include home-canned foods with low acid content. However, outbreaks of botulism from more unusual sources such as chopped garlic in oil, chili peppers, tomatoes among others.

Infant or “intestinal” botulism is the infectious intestinal form of botulism, which results when spores of the bacterium *Clostridium botulinum* are swallowed, colonize the large intestine and produce botulinum toxin. It most commonly affects newly born infants. However, immune-compromised adults have also acquired “infant botulism” or, more appropriately, “intestinal” botulism. All forms of botulism can be fatal and are considered medical emergencies. Foodborne botulism can be especially dangerous because many people can be poisoned by eating a contaminated food.

This presentation summarizes the etiology of botulism, investigatory processes which must be conducted with urgency and several case studies of recent botulism outbreaks and cases in Florida, including foodborne (garlic in oil, carrot juice), wound botulism from cosmetic botox injections, and infant botulism. We will also discuss a case of illness originally thought to be botulism, but that turned out to be something else.