



Foodborne Outbreak Associated with Fried Rice in Hardin County, Kentucky, May 2006

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Background

Bacillus cereus is a rare infectious cause of foodborne illness in the U.S. that accounted for less than 1% (52) of foodborne disease outbreaks reported to the Centers for Disease Control and Prevention (CDC) through the Foodborne Disease Outbreak Surveillance System during 1995-2004. In May 2006, an outbreak of *B.cereus* gastroenteritis occurred among 32 people who ate at a restaurant in Hardin County, Kentucky. This report summarizes the outbreak investigation conducted by the Lincoln Trail District Health Department.

Investigation Methods

On May 8, 2006, the Hardin County Health Department Environmental Office received reports of acute gastrointestinal illness that occurred among 6 members of a family after eating at a local restaurant in Hardin County. The family reported that they ate dinner at the restaurant on May 7th and symptoms of illness began within 1-6 hours afterward. These symptoms included nausea, vomiting, diarrhea, abdominal cramps, fever, and chills. All family members were interviewed and the environmental staff visited the restaurant to collect food samples. On May 9th, more complaints of gastrointestinal illness were received from individuals who ate dinner at the restaurant on May 8th. An outbreak investigation was initiated with active participation from local and state environmental, epidemiology and nursing staff.

A list of 32 people was gathered by identifying those known to be sick, as well as additional members of those parties who ate at the restaurant.

These individuals were interviewed by telephone and asked to answer a foodborne disease questionnaire. Information was obtained about the food items consumed, type of symptoms, time of onset of symptoms, and current health status. The local hospital was alerted for patients with complaints of gastrointestinal illness and instructed to collect appropriate samples to aid in the diagnosis of the illness.

Food samples of steamed rice, chopped vegetables, and uncooked chicken were collected from the restaurant on May 8th and were sent to the Kentucky Public Health Laboratory for analysis. Fecal samples and a carry-out box containing fried rice, chicken, and vegetables purchased by one of the ill patients were also submitted. An environmental inspection of the restaurant was performed on May 9th with an extensive review of food preparation, handling, and storage procedures. The kitchen was also inspected and employees were interviewed concerning any history of recent illness. Based on the inspection results, the Hardin County Health Department Environmental Office issued the restaurant a notice of permit suspension the same day.

Results

A clinical case of illness was defined as acute gastrointestinal illness characterized by nausea, vomiting, abdominal cramps, and diarrhea occurring within 12 hours of food consumption at the restaurant. Twenty-six of the 32 people interviewed were ill and matched the case definition. The investigation revealed that all ill persons ate dinner at the

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restaurant on May 7th or 8th. No reports of illness were received from individuals eating lunch at the restaurant on these days. The median incubation period was 3 hours, and symptoms resolved a median of 12 hours after onset (Figure 1). The main symptoms included nausea (88.5%), vomiting (88.5%), diarrhea (65%), and abdominal cramps (62%). None of those fallen ill were hospitalized. (Table 1).

Figure 1. Epi Curve for *B. cereus* foodborne outbreak

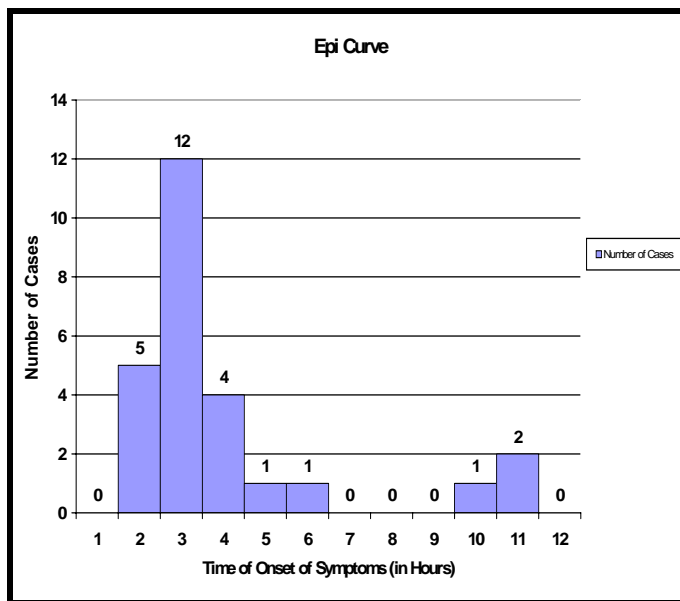


Table 1. Frequency of symptoms among 26 persons with *B. cereus* food poisoning, Hardin County, Kentucky

Symptom	Number of Cases with Symptom	%
Nausea	23	88.5
Vomiting	23	88.5
Diarrhea	17	65
Abdominal cramps	16	62
Chills	14	38.5
Fever	4	15

The food items consumed included fried rice, chicken, vegetables, soup, salad, fish, shrimp, sushi, and steak. Fried rice was the only food significantly associated with illness. Of those who consumed fried rice, 93% were ill. The food-specific attack rate among ill was 100% for persons who ate fried rice. Other food items with some association of illness were vegetables and salad.

The May 9th environmental inspection of the restaurant revealed a low rating score of 57/100 with multiple violations of Kentucky's food code. The handling and storage of rice was noticed to be improper, with rice cooked during lunch, stored at improper temperatures for longer periods of time, and then served during dinner. There were also many food code violations in the kitchen and the equipment was not well-maintained. After the Hardin County Health Department Environmental Office issued a notice of permit suspension and closed the restaurant, the restaurant owner was advised to rectify the violations and apply for reinstatement. A re-inspection was performed on May 11th, and the restaurant was reopened after securing a rating score of 97/100.

Laboratory results of the food samples revealed 4.1 million colony forming units (CFU) of *B. cereus*/gram of steamed rice. The carry-out box sample and chopped vegetables had 75,000 CFU/gram and 120 CFU/gram of *B. cereus* respectively. No additional foodborne pathogens were detected.

Discussion

Bacillus cereus is a spore-forming bacterium found in soil, vegetation, and in many raw and processed foods. *B. cereus* causes two types of foodborne illness, an emetic form and a diarrheal form. These two types of illness occur due to the survival and multiplication of *B. cereus* spores in contaminated food and subsequent production of exotoxins or enterotoxins. The emetic syndrome is associated mostly with consumption of toxin in boiled or fried rice. It has a short incubation period of 1-5 hours and a 6-24 hour duration of illness. It is characterized predominantly by upper

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gastrointestinal symptoms such as nausea, vomiting, and can also cause diarrhea and abdominal cramps. The diarrheal illness occurs after consumption of contaminated meats products, soups, sauces, and vegetables. The onset of symptoms occurs within 8-16 hours and subsides within 12-24 hours. Symptoms include watery diarrhea, abdominal pain, occasional nausea, and vomiting.

The diagnosis of *B. cereus* food poisoning can be confirmed by the isolation of more than 10^5 *B. cereus* organisms per gram of contaminated food. The positive lab result showing 4.1 million CFU of *B. cereus*/gram of fried rice confirmed *B. cereus* as the causative organism associated with this outbreak. Improper storage of cooked rice at room temperature, preparing food several hours before serving, and storing cooked rice in large containers in refrigerators might have predisposed the production of heat-stable toxin by *B. cereus*. This resulted in the emetic form of *B. cereus* food poisoning in this outbreak. It is assumed that those who ate lunch were not ill, as they were served freshly prepared rice.

Closing Notes

After the completion of the outbreak investigation, the Lincoln Trail District Health Department provided the staff of the restaurant with information and training on safe food handling practices and proper storage of steamed rice. Because some of the restaurant staff had limited English proficiency, posters in their native languages were posted in the kitchen explaining the importance of hand hygiene and other proper food handling methods. The local media played a significant role in keeping the public informed during and after the outbreak by providing regular media updates.

References

References are available and will be furnished upon request.

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**World AIDS Day
and the Impact of HIV/AIDS in Kentucky**
Prevention efforts essential to halt progression
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December 1st was declared World AIDS Day by the World Health Organization to focus attention on the impact of the HIV/AIDS epidemic throughout the world.

On a local level, Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) have made a substantial public health impact in Kentucky. As of June 30, 2006, there have been 4,407 AIDS cases reported in Kentucky since 1982. As important as these cases are, diagnosed AIDS cases comprise only a portion of the HIV/AIDS epidemic in Kentucky. This number of individuals diagnosed with AIDS does not reflect those who have tested HIV positive but have not yet progressed to a clinical diagnosis of AIDS. Additionally, this number does not include those who may be HIV positive, but have never been tested and thus are unaware of their infected status. If all cases were added from the diagnosed AIDS cases to the number of people who have tested HIV positive but have not yet reached the stage of AIDS, as well as the number of those unaware of their HIV positive status, the final case total would be even more alarming. The HIV/AIDS Branch in the Kentucky Department for Public Health has responded to the HIV/AIDS epidemic in many ways including surveillance, HIV prevention, and providing services for those living with the disease throughout the state.

HIV/AIDS Surveillance

The driving force behind the HIV prevention program and the HIV services program is HIV surveillance. It is the responsibility of the surveillance program to maintain a secure database of HIV and AIDS cases reported in Kentucky. This is accomplished by both active and passive surveillance techniques. State statute requires testing facilities (both public and private) to report HIV and AIDS cases to the state surveillance program. According

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to state regulation 902 KAR 2:020, Section 7, health professionals, health facilities, and laboratories are required to report both HIV and AIDS cases to the Kentucky Department for Public Health within 5 business days of diagnosis. HIV and AIDS cases are reported by name. HIV cases were previously reported by a 'Unique Identifier' consisting of the person's initials of last and first name, date of birth, and the last 4 digits of the person's social security number. However, on July 13, 2004, new HIV/AIDS reporting requirements were adopted in Kentucky to include reporting for HIV using a "Confidential Name Based" reporting system. According to 902 KAR 2:020, Section 7, HIV cases are to be reported by name, gender, race, and risk factor as identified by the Centers for Disease Control and Prevention (CDC).

HIV tests can be either anonymous or confidential; however, only confidential HIV positive cases are reported to the Kentucky Department for Public Health. Cases residing in the Kentucky counties of Bullitt, Henry, Jefferson, Oldham, Shelby, Spencer, and Trimble are reported to an HIV/AIDS surveillance nurse consultant at the Louisville Metro Health Department. All other HIV and AIDS cases are reported to HIV/AIDS surveillance representatives at the Kentucky Department for Public Health. Some testing entities fail to provide reports to the state surveillance program, which necessitates site visits by Kentucky Department for Public Health staff to review patient charts. This is both time consuming and has the potential of creating conflict between testing entities and the surveillance program. The surveillance system will be greatly enhanced when all testing entities comply with reporting requirements as mandated by law.

Because baseline funding for HIV prevention activities and HIV client services are tied to the number of reported cases, it is extremely important that every case be reported to the state surveillance program in order for it to be counted. Approximately 35 new HIV cases and 20 new AIDS cases are currently being reported monthly.

Data from the new HIV 'Confidential Name Based' reporting system, which was implemented as a result of these requirements, will not be released until

a complete evaluation of the system has been performed. This systemic evaluation is expected to be completed by April 2007 and the new HIV 'Confidential Name Based' data should begin to be released by June 2007.

Disparities

Through surveillance, the HIV/AIDS Branch has determined that among those Kentuckians diagnosed with AIDS, certain demographic groups are affected disproportionately. Case reports indicate that the greatest number of people are being diagnosed with AIDS during their thirties. Since progression to AIDS from HIV infection may take several years, it is estimated that these individuals were infected with HIV in their twenties. This is extremely important because it means that the epidemic is incapacitating people at the most productive stage of their lives.

AIDS also tends to impact those communities that are already vulnerable and burdened with pre-existing healthcare disparities. Hence, the disproportionate impact of HIV/AIDS on minority populations in Kentucky mirrors national levels. According to the 2004 Kentucky population estimates, African Americans comprised only 7.5% of the total Kentucky population, yet accounted for 34% of all newly diagnosed AIDS cases in the same year. The impact on African American females in Kentucky is even more alarming with 58% of the AIDS cases for women being African American. The AIDS rate for African American women is 20 times higher than that of white women. In addition, Hispanic women residing in Kentucky have an AIDS rate 4 times higher than their white counterparts. African American males are also disparately impacted. For instance, the AIDS rate for both African American and Hispanic males is 5 times higher than that of white males.

HIV/AIDS Services

AIDS can be a debilitating illness that leaves a patient dependent upon public assistance with an average cost of \$9,000 - \$10,000 per year for medications. Kentucky, like many other states, frequently lacks the level of funding required to provide the much needed services for all those diagnosed with

HIV/AIDS. To compromise, states create cost containment measures such as waiting lists for AIDS drug assistance. For a number of years, Kentucky remained at the top among states with waiting lists. Fortunately, pharmaceutical companies usually provide medications for patients on the waiting list, but the process is cumbersome and not guaranteed.

The Kentucky AIDS Drug Assistance Program (KADAP) reports that the Medicare Part D Supplement has provided savings that allowed the elimination of Kentucky's waiting list in late September of this year. However, the HIV/AIDS Branch cautioned that the KADAP waiting list will most likely be re-established in 2007 due to a current trend of increased testing efforts by prevention specialists in response to the Presidential Domestic AIDS Initiative. This is a new and not fully-implemented AIDS spending program proposed by the president to fund the expansion of HIV/AIDS care, treatment, testing, and outreach. The CDC recently provided guidelines recommending the inclusion of HIV testing as part of routine medical care for those aged 13 to 64. As a result, it is anticipated that as more people are diagnosed through these increased testing efforts, the demand for services such as medication assistance will outweigh the capacity to supply them if the current funding levels are not increased.

In addition to assisting low income Kentuckians diagnosed with HIV/AIDS to obtain medications, the state program provides medical insurance continuation benefits for those in jeopardy of losing their coverage, as well as care coordination services and case management via the following network of regional HIV Care Coordination Programs:

1. Matthew 25 - Henderson and Bowling Green
2. Cumberland Valley District Health Department - London
3. Bluegrass Care Clinic - Lexington
4. Northern Kentucky District Health Department - Fort Mitchell
5. Heartland Cares - Paducah
6. Volunteers of America, Inc. - Louisville

The Kentucky HIV/AIDS Care Coordinator Program (KHCCP) is funded through the Ryan White

(RW) Title II Comprehensive AIDS Resources Emergency (CARE) Act. The CARE Act is a federal mandate that was created to address healthcare and service needs of People Living With HIV/AIDS (PLWH/A). The intent of KHCCP is to facilitate the provision of quality care and services to PLWH/A in a timely manner that is consistent across a continuum of care. The optimum goal is to provide PLWH/A the tools to become self-sufficient. KHCCP provides care coordinators within the six regions of the state who identify and access needed services for PLWH/A. Presently there are approximately 2,000 Kentuckians enrolled in care coordination.

HIV Prevention

Being diagnosed with either HIV or AIDS can be very difficult for a patient to cope with in terms of dealing with societal stigma and discrimination, the difficulty of managing the illness, and the resulting financial constraints. But there is hope in the fact that HIV infection is preventable. HIV is primarily a sexually transmitted infection, but injection drug use with shared syringes also accounts for a substantial number of cases. Kentucky's HIV prevention efforts are concentrated on populations practicing behaviors that increase their risk of becoming infected. These efforts are guided by a prevention plan produced by a community group made up of representatives of infected and affected populations called the Kentucky HIV/AIDS Planning and Advisory Council (KHPAC).

HIV prevention messages cannot succeed by simply asking people not to engage in behaviors that could lead to infection. Effective prevention efforts must address the underlying issues that cause people to engage in risky behaviors. Factors such as poverty, culture, religion, socio-economy, power-imbalance, discrimination, stigma, mental illness, and other psychological issues often put certain populations at a higher risk for HIV and other health problems. Scientifically based effective interventions such as SISTA (Sisters Informing Sisters about Topics on AIDS) and 3MV (Many Men Many Voices) are designed to be culturally competent and to empower participants in an effort to affect positive behavioral changes.

KENTUCKY EPIDEMIOLOGIC NOTES & REPORTS

Printed With State Funds
by the
Commonwealth of Kentucky
Cabinet for Health and Family Services
Department of Public Health
275 East Main Street
Frankfort, Kentucky 40621

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HIV counseling and testing is a major part of HIV prevention efforts. All HIV tests provided by public health entities are required by state statute to be accompanied by a face-to-face pretest counseling session, which includes a risk assessment and development of a risk reduction plan. These counseling sessions may be the only in-depth HIV prevention message that an individual ever receives, and can establish the framework for the adoption of less risky behaviors if properly conducted. Public health partners such as local health departments and community-based organizations provide more than 20,000 HIV antibody tests annually in Kentucky. Less than 1% of these tests are reactive for HIV, but if the accompanying pre- and post-counseling sessions are performed correctly, the potential exists to help a large percentage of these 20,000 individuals reduce their level of existing risky behaviors. Currently, an HIV antibody test involving a blood draw can be obtained at any local county health department. Some local health departments and community-based organizations also have the capability to collect an oral specimen. Several locations across the state have access to a rapid screening test that can provide preliminary HIV results in as little as 20 minutes.

World AIDS Day is a day when those working in the field of HIV stress the importance of knowing about this illness and its continuing impact within every single community. It is a time to advocate for changes in attitude toward this disease by calling individuals to action to get involved in the fight against AIDS and to encourage continued funding for prevention efforts, better, safer and more-affordable medications, as well as comprehensive quality care and service systems.

To learn more about the Kentucky HIV/AIDS Program, community-based programs, AIDS service organizations and regional HIV testing sites, call 1-800-420-7431 or visit the Web site <http://chfs.ky.gov/dph/epi/hiv aids.htm>