Medical News

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American Hospital Association Closes Infection Control Program

After a five-decade presence in the infection control arena, the American Hospital Association's executive staff met on October 24, 1995, and made the decision to end AHA program in the area of infection control. The program will close officially on December 31, 1995. This decision reflects the tremendous changes that hospitals and healthcare networks currently are experiencing.

E-mail Facilitates Outbreak Investigation

Upon returning home from a conference in Baltimore that included attendees from 50 states, one conference attendee (index case) became ill with diarrhea, and *Salmonella* was isolated from his stool. After learning that four other attendees had diarrheal illness, the attendee contacted the Centers for Disease Control and Prevention (CDC). Upon learning of a possible multistate food outbreak, the CDC conducted an epidemiological investigation using the electronic mail (e-mail) system of the organization sponsoring the conference. Because it was an internal e-mail, responses to the questionnaire were returned to CDC via fax. Within 4 weeks, 40% (156) of the conference attendees returned the questionnaire. Six respondents reported having diarrhea during the period beginning 12 hours after the conference started and ending 5 days after the conference ended; two additional persons had known *Salmonella* infection. Illness was not found to be associated with taking the same flight as the index case. Because few conference attendees or airline flight passengers became ill with symptoms suggestive of salmonellosis during the likely period, the possibility of an airplane- or conference-associated outbreak was thought to be improbable.

The *Salmonella* isolates were identified at CDC as *Salmonella* serotype Norwich, of the *Salmonella* serogroup C1. In 1994, only 102 isolates of this serotype were reported to the Public Health Laboratory Information System (PHLIS), a nationwide, electronic, laboratory-based surveillance system that collects and summarizes data on isolates from state public health laboratories. Because infection with *S* Norwich is so uncommon, a common source outbreak was suspected. Additional cases of salmonellosis caused by serogroup C1 had been reported to the Maryland Department of Health and were traced to a restaurant in Baltimore where the conference attendees had eaten. *Salmonella* serotype Norwich subsequently was isolated from several travelers that had eaten at the restaurant and from an employee of the restaurant who had reported a diarrheal illness. No single menu item had been eaten by all ill persons.

This outbreak illustrates the usefulness of rapid electronic communication in a public health setting. Isolation of a rare *Salmonella* serotype and national electronic reporting to the PHLIS assisted in the detection and investigation of this widely dispersed multistate outbreak of salmonellosis in record-breaking time. New technologies undoubtedly will continue to be useful in addressing emerging public health problems.

FROM: Mahon BA, Rohn DD, Pack SR, Tauxe RV. Electronic communication facilitates investigation of a highly dispersed foodborne outbreak: *Salmonella* on the superhighway. *Emerging Infectious Diseases* 1995;1(3):94-95.

Reducing TB Exposures

Dr. Henry Blumberg and colleagues at Grady Memorial Hospital in Atlanta, Georgia, recently reported the dramatic reduction in both tuberculosis (TB) exposure episodes and healthcare worker (HCW) tuberculin skin-test (TST) conversion rates following the implementation of expanded infection control measures.

The initiation of expanded control measures were prompted by the documentation of nosocomial transmission of drug-susceptible tuberculosis caused by HCW-to-HCW transmission and patient-to-HCW transmission. The TB control measures, implemented between March and July 1992, focused first on administrative controls and included (1) an expanded respiratory isolation policy that included a protocol for early identification and isolation of suspect TB patients, isolation of all patients with HIV infection, and an abnormal radiograph of the chest; (2) increased surveillance for proper isolation of patients; (3) hiring of a nurse epidemiologist to serve as TB infection control coordinator; (4) expanded HCW educational program on TB; and (5) mandatory skin test for all HCWs, with an increase in frequency from annually to every 6 months to include nonemployee HCWs (eg, attending physicians, agency nurses). The interim engineering controls that were implemented consisted of converting 90 patient rooms without air circulation to negative pressure with the use of a window fan and periodic monitoring of negative pressure. Finally, dust-mist particulate respirators was used for entering all isolation rooms.

The number of tuberculosis exposure episodes and skin-test conversion rates of HCWs were measured before and after implementation of expanded infection control measures. Tuberculosis exposure episodes were defined as the number of patients who were not placed in respiratory isolation at admission but who subsequently had a diagnosis of acid-fast bacilli smear-positive pulmonary TB during admission of within 2 weeks of discharge. Six-month TST conversion rates among HCWs were evaluated during a 2.5-year period.

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After the expanded respiratory isolation policy was implemented, the number of tuberculosis episodes decreased from 4.4 per month (35 episodes among 103 patient admissions for TB over 8 months) to 0.6 per month (18 episodes among 358 patient admissions for smear-positive pulmonary TB over 28 months). There was an eightfold reduction in TST conversion rates among HCWs over the 2.5-year period. Six-month TST conversion rates decreased steadily from 3.3% (118 conversions in 3,579 HCWs tested between January 1992 and June 1992), 1.7%, 1.4%, and 0.6% to just 0.4% (23 TST conversions among 5,153 HCWs between January 1994 to June 1994; $P < .001$).

The authors concluded that administrative controls appear to be the most important component of a tuberculosis program and should be the first focus of such a program, especially at public hospitals such as Grady Memorial where resources are most likely to be limited.

FROM: Blumberg HM, Watkins DL, Berschling JD, et al. Preventing the nosocomial transmission of tuberculosis. *Ann Intern Med* 1995;122:658-663.

Elimination of Routine Ventilator Circuit Changes

Dr. Marin Kollef and colleagues from Washington University School of Medicine, Barnes Hospital and Jewish Hospital, St. Louis, Missouri, recently conducted a study to determine whether the practice of not routinely changing ventilator circuits in patients who require prolonged mechanical ventilation was associated with an increased risk of nosocomial pneumonia.

In a randomized controlled trial in the intensive care unit (ICU) of two university-affiliated teaching hospitals, 300 patients admitted to an ICU and who required mechanical ventilation for more than 5 days were assigned randomly to receive either no routine ventilator circuit change or circuit change every 7 days. Ventilator-associated pneumonia rates were similar in both groups: 36 of 147 (24.5%) patients receiving no routine changes developed pneumonia compared to 44 of the 153 (28.8%) receiving changes every 7 days. In addition, there were no significant differences found between the treatment groups for hospital mortality, ICU mortality, death during mechanical ventilation, death in patients with ventilator-associated pneumonia, or mortality directly attributed to ventilator-associated pneumonia. Patients receiving circuit changes every 7 days had 247 circuit changes at a total cost of $7,410, compared to $330 in the patient receiving no routine changes.

The authors concluded that elimination of routine ventilator circuit changes can reduce medical care costs without increasing the incidence of nosocomial pneumonia. This study has significant implications for the hospital epidemiologist. Currently, because of the limitations in study design and the small number of patients prospectively examined in previous studies, the CDC, in their nosocomial pneumonia guidelines, could not give clear recommendation for the maximum length of time that ventilator circuits can be left in place safely during prolonged mechanical ventilation.

FROM: Kollef MH, Shapiro SD, Fraser VJ, et al. Mechanical ventilation with or without 7-day circuit changes. *Ann Intern Med* 1995;123:168-174.

Albuterol-Associated *Burkholderia cepacia*

An outbreak of *Burkholderia* (formerly *Pseudomonas*) *cepacia* respiratory tract colonization and infection in mechanically ventilated patients recently was reported by Dr. Richard Hamill and colleagues at the Veterans Affairs Medical Center and Texas Southern University in Houston. Forty-two patients had *B cepacia* respiratory tract colonization or infection. Observation of intensive-care unit and respiratory-care personnel showed faulty infection control and respiratory therapy practices, including the following: (1) Respiratory therapists commonly carried a 10 mL bottle of albuterol in their pockets—frequently for several days at a time—and used it for multiple mechanically ventilated patients; (2) handwashing was not performed regularly; (3) when patients were being weaned from ventilators, the breathing circuits, including the in-line nebulizer, remained attached to the ventilator located at the bedside, and frequently these stand-by circuits were observed to be moist from condensation; and (4) the in-line nebulizers were not removed routinely from the circuit, rinsed or dried between treatment. In addition, at each successive treatment, the respiratory therapists added medication and diluent to the nebulizer reservoir without discarding the residual contents.

A case control study revealed that more case patients than controls received both nebulized albuterol and more respiratory therapy treatments. In-use albuterol solutions had pH values that were unstable, and benzalkonium chloride concentrations declined over time to levels capable of supporting bacterial growth. *B cepacia* was recovered from four of eight in-line medication nebulizer reservoirs or ventilation tubing and from two of two previously opened bottles of albuterol. Molecular fingerprints of patient isolates and environmental *B cepacia* isolates were identical using repetitive-element polymerase chain reaction.

The authors point out that this outbreak emphasizes the importance of adherence to appropriate respiratory care and infection control practices, particularly when using multiple dose vials. Further, benzalkonium chloride may not be an appropriate medical preservative, because the agent did not provide effective bacteriostasis on numerous occasions.

FROM: Hamill RJ, Houston ED, Georghiou PR, et al. An outbreak of *Burkholderia cepacia* respiratory tract colonization and infection associated with nebulized albuterol therapy. *Ann Intern Med* 1995;122:762-766.

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