

C. difficile Outbreak Not From Antibiotics

BY MIRIAM E. TUCKER
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WASHINGTON — Quebec's recent outbreak of *Clostridium difficile*-associated diarrhea does not appear to have been associated with any specific antibiotic use pattern. Rather, poor infection control practices are likely to blame.

That was the conclusion of an analysis from four Canadian hospitals conducted by Dr. Karl A. Weiss and his associates at Maisonneuve-Rosemont Hospital, Montreal, and reported in a poster at the annual Interscience

Conference on Antimicrobial Agents and Chemotherapy.

The outbreak of *C. difficile*-associated diarrhea (CDAD), which occurred in 2002-2004 at several Quebec hospitals, was caused by a new strain of *C. difficile* found to be more virulent than those previously seen (N. Engl. J. Med. 2005;353:2442-9).

Although antibiotic usage has been strongly associated with the occurrence of CDAD, the circumstances of this outbreak were at odds with that explanation: No increase in CDAD cases was seen in any province other than Quebec, which actually has the lowest per capita antibiotic consumption of all the Canadian provinces.

The investigators analyzed antibiotic use data for the time periods 1999-2001, 2002, and 2003 from two hospitals that were af-

ected by the new *C. difficile* strain outbreak and two that were not. In one of the affected hospitals, the number of CD diagnoses per 1,000 population rose from 9 in 1999-2001 to 14 in 2002 to 33 in 2003. In contrast, rates in one of the unaffected hospitals remained stable, from 5/1,000 in 1999-2001 to 4 in 2002 to 5.5 in 2003.

A comparison of affected and unaffected hospitals showed no significant association between the number of CDAD cases per 1,000 admissions and the daily consumption of cephalosporins, carbapenems, β -lactams/ β -lactamase inhibitors,

fluoroquinolones, or intravenous clindamycin. There was no significant protective effect from any class of antibiotics, Dr. Weiss and his associates reported at the meeting, sponsored by the American Society for Microbiology.

Proper antibiotic use is key to controlling the emergence of resistant organisms, but in the case of CDAD antibiotics appear to be acting mainly as triggering agents in patients who acquire the new strain during their hospital stay.

Instead, the Quebec outbreak appeared to be mostly caused by poor infection control practices. The situation improved dramatically in 2004-2005 following substantial investment by the provincial government and the implementation of infection control measures. ■

The Quebec outbreak appeared to be caused by poor infection control practices. The situation improved following infection control measures.

Mechanical Ventilation Increases CDAD

WASHINGTON — Mechanical ventilation significantly increases the risk that a hospitalized patient will develop *Clostridium difficile*-associated diarrhea, Dr. Chad A. Spangler and Dr. George F. Risi reported in a poster at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

This novel finding "has the potential to support new, additional prevention and control strategies in high-risk patient populations," said Dr. Spangler and Dr. Risi, of St. Patrick Hospital, Missoula, Mont.

The incidence of *C. difficile*-associated diarrhea (CDAD) in-

creased from 1.6 to 8.0 cases per 1,000 discharges between 2001 and 2004 at the investigators' 200-bed hospital, with most cases occurring in the intensive care unit. There was no change in the rate of CDAD cases between 2003 and 2004 despite a reduction in the use of both antipseudomonal penicillins and fluoroquinolones during that period.

Among 3,247 patients who received antibiotics and had a length of stay greater than 3 days between January 2004 and March 2005, a total of 19% required ventilation. Of those 614, CDAD developed in 47 (7.6%). With the ventilated population

excluded, the infection rate was just 1.2%, the investigators reported at the meeting, which was sponsored by the American Society for Microbiology.

Other significant risk factors for CDAD included ICU stay; use of either proton pump inhibitor or H₂-blocker antacids; and exposure to carbapenems, third-generation cephalosporins, or antipseudomonal penicillins. In the mechanically ventilated population, those requiring more than 2 days on the ventilator were 11 times more likely to develop CDAD than were those requiring less ventilation, they reported.

—Miriam E. Tucker

Probiotics Cut Antibiotic-Associated Diarrhea

WASHINGTON — In hospitalized patients taking antibiotics, coadministration of the probiotic *Saccharomyces boulardii* can reduce costs, shorten hospital stays, and may save lives, Allyson L. Rovetto and her associates reported in a poster at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

Antibiotic-associated diarrhea (AAD) occurs in up to 30% of all hospitalized patients given antibiotics. *Clostridium difficile*-associated diarrhea (CDAD) is both the most common and the most severe manifestation, with potential complications including colitis, ileitis, toxic megacolon, and death, noted Ms. Rovetto and associates, of Mount Sinai School of Medicine, New York.

Growing evidence suggests that probiotics such as the live, nonpathogenic yeast *S. boulardii* may be effective in preventing AAD and recurrent CDAD, al-

though that organism is associated with an increased risk for fungemia, which may also lead to severe complications including death (Clin. Infect. Dis. 2005;40:1625-34).

In a study funded in part by the National Center for Complementary and Alternative Medicine of the National Institutes of Health, the investigators used data from published literature to perform a cost-effectiveness analysis of administering vs. not administering *S. boulardii* along with antibiotics to hospitalized patients.

The probability of CDAD was estimated to be 2% among those given the probiotic along with antibiotics vs. 5% given antibiotics alone. The increase in hospital cost per patient with CDAD was \$4,129, and the probability of CDAD complications was 3%. Compared with antibiotics alone, treatment with antibiotics plus the probiotic yielded a cost

saving of \$81.60 per patient in addition to shortening hospital stays by about 3 days.

Patients older than 65 and those with hospital stays longer than 2 weeks stand to benefit the most. The analysis revealed that even if the protective effect of *S. boulardii* was halved, it would remain the preferred strategy. In fact, the only way the probiotic's benefit would be offset is if the incidence of fungemia exceeded 2 per 100 patients, "which seems highly unlikely," they remarked.

But since the rate and potential severity of *S. boulardii*-associated fungemia is still not clearly defined, "We believe further studies are needed to confirm safety and effectiveness, especially in elderly and other high-risk populations" before issuing any recommendations, coauthor Dr. Henry Sacks said at the meeting sponsored by the American Society for Microbiology.

—Miriam E. Tucker

CDC Updates TB Prevention Guidelines for Health Providers

BY DOUG BRUNK
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The Centers for Disease Control and Prevention closed out 2005 by updating its 1994 guidelines for preventing *Mycobacterium tuberculosis* in health care settings.

The exhaustive guidelines were updated in an effort to respond to "shifts in the epidemiology of TB, advances in scientific understanding, and changes in health care practice that have occurred in the United States during the previous decade," wrote the authors, led by Paul A. Jensen, Ph.D., in the division of tuberculosis elimination at the CDC's National Center for HIV, STD, and TB Prevention (MMWR 2005;54[RR-17]:1-121).

TB rates have declined in recent years,

but "the 2004 rate of 4.9 per 100,000 remained higher than the 2000 goal of 3.5. This goal was established as part of the national strategic plan for TB elimination," the authors noted. Also, health care workers (HCWs) in different areas of the country face different risks.

One key change that makes these guidelines different is the use of the term "tuberculin skin tests" instead of purified protein derivative. Also, the guidelines state that the QuantiFERON-TB Gold test can be used instead of tuberculin skin tests in TB screening programs for health care workers. This one-step blood assay for *M. tuberculosis* (BAMT) is approved by the Food and Drug Administration.

Other changes include the following:

► **Expansion of settings.** The guidelines

have site-specific recommendations for more inpatient and outpatient setting types.

► **More concise criteria for who needs serial testing for TB infection.** Recommendations vary depending on the type of health care setting. In some settings, the frequency of TB screening for HCWs has been decreased.

► **New airborne terms.** The term "airborne isolation" replaces "respiratory isolation" while the term "airborne infection isolation room" (AII room) is defined as "a special negative-pressure room for the specific purpose of isolating persons who might have suspected or confirmed infectious TB disease from other parts of the [health care] setting."

► **Instructions on proper respirator use.** This includes criteria for selecting respi-

rators and recommendations for annual training and fit testing.

► **A nine-page "frequently asked questions" section.** One of the questions posed is: "Do health care settings or areas in the United States exist for which baseline two-step skin TST for newly hired HCWs is not needed?"

The reply reads: "Ideally, all newly hired HCWs who might share air space with patients should receive baseline two-step TST (or one-step BAMT) before starting duties. In certain settings, a choice might be offered not to perform baseline TST on HCWs who will never be in contact with or share air space with patients who have TB disease, or will never be in contact with clinical specimens (e.g., telephone operators in a separate building from patients)." ■