Multidrug-Resistant TB Persists Among Immigrants

BY HEIDI SPLETE
Senior Writer

WASHINGTON — Cases of multidrug resistance in immigrant populations in the United States and links to the AIDS epidemic in Africa are attracting the attention of researchers.

"There is an erroneous assumption that tuberculosis has been eradicated," Catherine D. DeAngelis, M.D., editor of the Journal of the American Medical Association, said at a press briefing on tuberculosis sponsored by JAMA.

"In fact it is a big problem, and should be taken seriously," she said.

Of note, 407 cases of multidrug-resistant tuberculosis (MDR-TB) with specific resistance to at least isoniazid and rifampin occurred in a study of 28,712 tuberculosis cases in California from 1994 to 2003, according to Reuben M. Granich, M.D., of the Centers for Disease Control and Prevention in Atlanta, and his colleagues.

Cases of multidrug-resistant tuberculosis are highly complex and require 18-24 months of observed therapy to achieve recovery.

Patients with MDR-TB were seven times more likely to have reported prior tuberculosis treatment, compared with those with non-MDR disease, Dr. Granich said at the press conference..

In addition, 83% of the MDR-TB patients were born outside the United States, which highlights the need for both international control and improved screening, said Dr. Granich.

Prior treatment for tuberculosis was the strongest risk factor for MDR-TB in his study.

"There are two ways to develop MDR-TB," Dr. Granich said.

One is through noncompliance with the treatment regimen, and the other is via airborne transmission from one patient to another, he said.

Once infected, the average lifetime risk for developing tuberculosis is 10%, and the risk is highest during the first 2 years after infection.

Most healthy people who are exposed to tuberculosis won't go on to develop the disease, and a person's state of health can modify the risk, Dr. Granich noted. For example, the risk of HIV/AIDS patients for developing tuberculosis increases significantly over that of a healthy person exposed to tuberculosis to an approximately 10% annual risk.

Of the 407 MDR-TB cases in Dr. Granich's study, 71 (17%) were resistant only to isoniazid and rifampin, and 86 (21%) were resistant to all four first-line drugs—isoniazid, rifampin, ethambutol, and pyrazinamide.

Most cases of tuberculosis are curable if patients are compliant and take the right medication for 6-9 months.

The "right medication" depends on the seropositivity of the patient's sputum sample, Dr. Granich said. However, cases of MDR-TB are highly complex, and require 18-24 months of therapy under the supervision of a specialist in order to achieve recovery, he noted.

The World Health Organization has stated goals of detecting 70% of new TB cases and successfully treating 85% of them, said Christopher Dye, D.Phil., at the press briefing.

The most significant barriers to achieving the goals set by WHO exist in Africa, where the HIV epidemic has led to an increased vulnerability to tuberculosis, and in Eastern Europe, where tuberculosis rates doubled during the 1990s, and multidrug resistance is high due to low compliance.

Dr. Dye and his colleagues reported that, with the exception of Africa and Eastern Europe, WHO can achieve its goals with increased application of the Directly Observed Treatment Scheme (DOTS).

This public health strategy that includes gaining political commitment, detecting cases based on sputum smear microscopy, utilizing standard short-course therapy with supportive patient management, ensuring regular drug supplies, and standardizing systems for recording cases and reporting outcomes (JAMA 2005;293:2767-75).

"There is a major education job to be done in terms of keeping tuberculosis on the agenda," he said.

Another study in the same issue of JAMA found that isoniazid reduced the odds of developing a primary case of tuberculosis in a highly vulnerable population—1,655 male gold miners in Orkney, South Africa, who had previously tested positive for HIV.

After adjustment for age, calendar date, and silicosis grade in 1,041 individuals, there was a 46% reduction in tuberculosis incidence with isoniazid.

Only nine patients discontinued the drug because of adverse events (JAMA 2005;293:2719-25). ■

Computer Keyboards Act as Bacteria Reservoir

BY BETSY BATES
Los Angeles Bureau

LOS ANGELES — Computer keyboards and keyboard covers harbored vancomycin-resistant *Enterococcus faecium* and methicillin-resistant *Staphylococcus aureus* for more than 24 hours, during which time the bacteria easily spread to bare, and in some cases, gloved hands, a Northwestern University study has found.

The findings strongly suggest the need for health care providers to wash their hands after using computers, particularly in hospital settings and around immunocompromised patients, said Gary A. Noskin, M.D., an infectious disease specialist at Northwestern University and director of health care epidemiology and quality at Northwestern Memorial Hospital in Chicago.

Electronic patient records have ushered more computers into examining and patient rooms, heightening the importance of their role as a "viable reservoir for pathogenic bacteria," in the words of the study presented in poster form at the annual meeting of the Society for Healthcare Epidemiology of America.

Investigators inoculated a number of standard computer keyboards and Dell computer keyboard covers with isolates of vancomycin-resistant *E. faecium* (VRE), methicillin-resistant *S. aureus* (MRSA), and *Pseudomonas aeruginosa* (PSAE).

Samples obtained at various time intervals determined that both VRE and MRSA survived for 24 hours, while PSAE was less hardy, growing for 5 minutes on computer keyboard covers and 1 hour on computer keyboards.

Keyboards are never going to be sterile, so it's important for health care workers to wash their hands so the contamination is less relevant.

Bacteria transmission to volunteers' hands increased with the number of times they touched the computer keyboards.

For example, MRSA resulted in recovery of bacteria on hands 92% of the time with 5 touches, versus 42% of the time after 1 touch of the computer keyboard.

Rates for VRE were 50% and 22% after 5 touches and 1 touch, and with PSAE, 18% and 9%, respectively.

Bare hands were more likely than were gloved hands to acquire VRE and MRSA, 67% versus 7%, and 80% versus 67%, respectively.

Investigators then conducted an experiment to see whether two quaternary ammonium–based germicides commonly used in health care settings could eliminate bacterial contamination on keyboards and keyboard covers.

Virex II 256 (Johnson Wax Professional, Sturtevant, Wisc.), when used as directed with a 10-minute dwell time, successfully disinfected both keyboards and keyboard covers.

Sani-Wipes (PDI, Upper Saddle River, N.J.), when used as directed and allowed a 5-minute dwell time, disinfected computer keyboards but failed to eliminate VRE and PSAE on computer keyboard covers.

Dr. Noskin and his associates recommended hand washing after contact with computers.

It is unknown how keyboards and keyboard covers should be disinfected, since there are "just no data" on how frequent germicide use might impact their durability, circuitry, and electronics, he said in a telephone interview following the meeting.

"On a practical level, keyboards and other environmental surfaces are never going to be sterile, so it's just very important for health care workers to wash their hands so the contamination is less relevant," he said.

No industry funding was used for the study. ■