

Dushanbe-Boulder Partners Team Up to Battle Typhoid Epidemic

By Julia Ross

For the staff of City Medical Center in Dushanbe, Tajikistan, 1997 will long be remembered as the year typhoid fever took their hospital hostage. Soon after the city's main water utility ran out of chlorine last December, Dushanbe's water supply became contaminated with Salmonella typhi bacteria, and typhoid fever began to spread through the population at a rapid pace. By February, several thousand cases had emerged in the city, and health officials ordered the medical center to treat typhoid patients exclusively.

At the height of the months-long epidemic, the 565-bed medical center--an AIHA partner--was treating 2,000 patients. "Every available open space was being used, including conference rooms and hallways," said Barbara Fisher, RN, vice president for nursing at Boulder Community Hospital in Boulder, Colorado and coordinator of the Dushanbe-Boulder partnership.

Fisher and seven of her US colleagues spent a month in Dushanbe from mid-May to mid-June, helping the medical center staff to cope with the influx of patients, whose symptoms included sustained high fever, loss of appetite, headaches and rash.

"It was a tremendous opportunity for us to learn. I, for one, had never seen a case of typhoid before," she said. Only 400 cases occur annually in the US and those are usually acquired by international travelers; 12.5 million people contract the disease every year in the developing world.

Dilbar Toshmatova, MD, director of City Medical Center, said the Boulder partners provided much needed help during the outbreak, giving clinical instruction in critical care and installing a state-of-the-art reanimation unit. The group also brought with them donated defibrillators, oxygen analyzers, cardiac monitors and supplies of glucose, saline solution and dextrose solution.

"Many of the patients suffered from complications of pneumonia, dehydration and encephalitis, so some of the things we were providing instruction on in intensive care were directly transferable to the typhoid patients," Fisher added.

Though City Medical Center was still admitting 30 to 80 cases a day during the partners' stay in Dushanbe, Fisher said the epidemic was beginning to slow as preventive public health measures began to take effect. According to Toshmatova, approximately 13,000 cases of typhoid fever were reported in Dushanbe from January through June.

Physicians and nurses at City Medical Center were able to treat patients effectively thanks to a healthy supply of the antibiotic ciprofloxacin; typhoid vaccine was unavailable in Dushanbe during the winter and spring. In part because vaccination is only about 70 percent effective, Tajik health officials chose to concentrate their efforts on an emergency public health campaign to halt the disease's spread. They issued a boil-water alert and recruited medical students to go door to door to enforce this message and to encourage hospitalization when necessary. Additionally, the World Bank and the International Federation of the Red Cross have begun supplying Dushanbe's water utility with chlorine.

City Medical Center staff played a key role in tracing the source of the outbreak by working with a team from the US Centers for Disease Control and Prevention (CDC), which arrived in Dushanbe in March. The team, invited by the Tajik Ministry of Health, the US embassy in Dushanbe and the USAID office for Central Asia, began its investigation by interviewing 152 of

the hospital's typhoid patients and working with hospital microbiologists to analyze corresponding blood and stool samples. The scientific detective work eventually led to the city's water supply, and lab tests revealed that 93 percent of *S. typhi* samples taken were resistant to four commonly used antimicrobial agents for typhoid fever. No ciprofloxacin resistance was detected, however.

The CDC scientists noted that the mortality rate from typhoid in Dushanbe had remained at a low one percent during the early months of 1997, and attributed this success in part to "administration of effective agents and high-quality supportive care" at City Medical Center. Mortality rates from complications of typhoid fever can rise as high as 20 percent when patients go untreated.