

The Evolving Role of Microbiology

Microbiologists cannot isolate themselves in their laboratories culturing samples, but must become an integral part of a hospital's entire infection control program, panelists said at a workshop on microbiology. The afternoon-long session offered advice to microbiologists and other health care practitioners not just in the technical aspects of obtaining and analyzing specimens, but also in teamwork with clinicians.

"It is my contention that the role of microbiology labs is present in every step of the process of infection control. Even though it is not our role to see the patient, it is our role to communicate what the lab needs to know," said Michael Miller, MD, director of the Hospital Infections Program Laboratory at the Centers for Disease Control and Prevention in Atlanta.

Good interaction is essential between microbiologists and those taking samples to ensure that the primary microbes causing the infection can be grown and the proper antibiotic prescribed. Often samples sent to labs are contaminated with bacteria from outside the area cultured or don't contain any harmful bacteria because the sample was improperly obtained, Miller said. Re-sampling and culturing can also mean extra expense for already cash-strapped NIS hospitals, he said.

Donald Goldmann, MD, director of the bacteriology lab at Children's Hospital in Boston, Massachusetts, described the conflict between physicians and microbiologists more bluntly.

"Clinicians are seen [by microbiologists] as being demanding and rather stupid. There are either too many cultures, the wrong culture or no name of the doctor on the sample," he said. "Clinicians and microbiologists are like partners at a dance: if they're not in synch, there are bruised toes and bruised egos."

At the same time, clinicians may not be using the lab as often as they should. Part of the problem stems from doctors' fear of quantifying nosocomial infection rates, Goldmann said. "If culturing calls attention to a problem, departments may be punished for their high infection rates. This is especially a problem where laws say you are only allowed a 1 or 5 percent infection rate. Doctors may also be afraid that the image of the hospital will be tarnished."

But controlling, rather than hiding, infection is essential, said Anne Macone, director of the microbiology lab at Children's Hospital. After visiting several NIS labs, she had some advice for both practitioners and microbiologists.

"I was impressed with what I saw at the NIS labs. However, we are different," she said. "You need to make an effort in the NIS to have culture supplies near patients so doctors and nurses won't be reluctant to collect specimens."

She also advised both clinicians and microbiologists to protect specimens by carrying them inside a secondary container to ensure that there is less chance of ruining the specimen if it is dropped or of infecting the person carrying it. "The best precaution is to handle everything in the same way, as if were from a patient with AIDS or hepatitis," Macone said. She said that she observed gloves being used whenever blood was handled.

Microbiologists also explored their changing role and changing technology that enhances their jobs in a three-day pre-conference workshop on antimicrobial resistance surveillance. In the workshop, microbiologists shared their experiences with using WHONET, a computer program that enables epidemiologists to store data on infectious diseases and to measure the effectiveness of antibiotics in treating those infections. Through a joint AIHA-WHO effort, partner hospitals are the first in the NIS to participate in the WHONET program.

WHO's John Stelling, co-developer of the WHONET program, noted that the key to recognizing new infectious diseases, and to tracking the prevalence of more established ones, is surveillance.

"A well-documented, well-implemented surveillance program can detect unusual clusters of the disease, document geographic and demographic spread of an outbreak, and estimate the magnitude of the problem," Stelling said.

Six representatives from AIHA's future pilot WHONET sites in Russia and Ukraine participated in the workshop, and discussed the initial data which they have collected since July 1997, following an initial WHONET workshop. The data identifies various types of microorganisms isolated from patients, and reveals their susceptibility pattern.

In one session, participants analyzed *Enterococcus*, a highly drug-resistant microorganism that can cause meningitis, osteomyelitis and urinary tract infection. Utilizing WHONET, Anatoliy Shapiro, director of the National Institute of Epidemiology in Kiev, identified and entered data on antibiotics that are commonly used in Ukraine to treat the infection. In an actual situation, microbiologists would rely on already-recorded information to identify potential outbreak problem areas in their communities, and to identify effective ways to treat the infection.

"Enterococci are very strong, and often are very difficult to treat," making WHONET a vital tool in treating infections caused by the microbe, Shapiro said.