

Protecting the Health of the Health Care Worker

By Julia Ross

When a hepatitis B outbreak hit Armenia last year, the Ministry of Health immediately ordered all health care workers to be immunized against the disease. But by the time workers at AIHA partner Emergency Hospital in Yerevan received their vaccinations, two of 90 "high-risk" personnel had already contracted hepatitis B because they were not wearing gloves when working with blood products.

"We do not have a very good sterilization procedure at our hospitals," said Hripsime Nazarian, the hospital's head epidemiologist. "And quite often, we do not have a sufficient supply of needles, so the chance of acquiring the virus via a recycled needle is naturally greater than, say, in the United States."

Nazarian's comment reflects the situation in many NIS hospitals, where physicians, nurses and microbiologists face an arsenal of infectious threats and other health risks. In addition to fending off hepatitis B and C, these workers must guard against exposure to diseases like HIV, tuberculosis and diphtheria, whether by receiving immunizations or taking precautions such as handwashing or wearing protective gloves and masks. Health hazards can also occur when workers are exposed to chemicals used for medical sterilization, such as formaldehyde and ethylene oxide. In the NIS, these agents are often used in poorly ventilated spaces and can release noxious fumes that cause eye and lung irritation.

The bloodborne hepatitis B, however, appears to pose the most imminent danger to health care workers in the region, according to AIHA infection control initiative coordinator Elena Bourganskaia, MD. In a chapter of a forthcoming book titled *Immunizing Health Care Workers: A Practical Approach* (GA Poland, W Schaffner and G Pugliese, Editors, ETNA Communications, Chicago 1997), she writes: "In NIS countries ... more than 50 percent of hepatitis B infection cases are accounted for by medical procedures in health care settings, such as injections with non-disposable syringes and manipulations with other re-usable devices."

Among Russian health care workers with frequent exposure to blood, the prevalence of hepatitis B infection is estimated to range from 38.5 percent for surgeons to 50 percent for physicians working in hemodialysis units. In Ukraine, approximately 60 percent of health care workers are hepatitis B-infected--an alarmingly high figure compared to a 1-2 percent infection rate in US health care workers at "high risk" for blood contact.

Bourganskaia says these numbers can be explained by a higher endemicity of the disease in the NIS, an absence of universal precautions and frequent re-use of syringes and needles in NIS health care settings. Limited availability of hepatitis B vaccine and minimal health care worker compliance with immunization recommendations have added to the problem: "[It] is an issue for many of the same reasons that have been reported from facilities worldwide, including fear of needles, misconceptions about adverse reactions, and lack of knowledge," she writes. "However, health care workers in the NIS do have some legitimate concerns, including risks associated with reusable syringes and needles, and the inconsistent quality of some of the products available in the NIS."

But a few efforts are underway to make high quality vaccine available and encourage its use. Within the last two years, for example, the Moscow City Health Administration has procured foreign-made hepatitis B vaccine and is distributing it to the city's hospitals free of charge. As a result, the numbers of Moscow health care workers immunized against the disease have risen dramatically, Bourganskaia reports.

In another instance, a massive 1990 diphtheria outbreak in Russia prompted the Ministry of Health to invest in vaccine production and begin a public education campaign promoting

immunization. By 1995, 80 percent of the Russian adult population and 90 percent of health care workers were immunized.

Studying Contact with Blood

At partner Odessa Oblast Hospital in Odessa, Ukraine, protecting employees from disease no longer takes a back seat to protecting the patient. As a participant in a bloodborne infection control program coordinated by the Seattle, Washington-based Program for Appropriate Technology in Health (PATH), the hospital has studied the frequency and circumstances surrounding workers' contact with blood products, and has implemented a related risk-reduction strategy to safeguard its staff.

Over a ten-week period in 1995, physicians and nurses at the hospital reported 183 blood contacts and exposures in the delivery room, and 98 blood contacts during 2300 surgical cases. Of the delivery room blood contacts, 66 percent were with intact skin, 10 percent were with mucous membranes and 21 percent were punctures. In the operating room, half of the blood contacts occurred during emergency cases, and thoracic and vascular surgeons were found to be at greatest risk for contact with blood. Suturing was the activity deemed most likely to cause punctures and lead to exposure.

As a result of this study, hospital authorities have since tightened procedures for passing instruments during surgery, along with rules concerning when double gloves should be worn, such as during surgeries expected to last longer than two hours.

The PATH project--now being replicated in 30 additional hospitals across Ukraine including AIHA partner Railway Clinical Hospital in L'viv--also provides educational materials to health care workers. A Russian and Ukrainian-language curriculum and slide set explaining the benefits of taking protective measures when handling blood are among the initiative's key elements.

"We hope we have instilled better education and raised consciousness in these hospitals," said Rosh Doan, MD, the project's director at PATH. "One thing that's really helping with this right now is the rising threat of AIDS in Ukraine ... the entire country is faced with a rapidly increasing likelihood of exposure to HIV."

A comprehensive infection control program crafted by Odessa Oblast staff and partners at Coney Island Hospital in Brooklyn, New York provided a framework for the PATH project, added Regina Napolitano, RN, director of infection control at Coney Island. "[PATH] picked up the occupational health component as a specialized area and really developed it, so that we were then able to concentrate on other areas," she said. "They made tremendous progress and there has been a heightened awareness of hazards in working with blood and body fluids."

Special Risks for EMS Workers

Administering health care outside hospital walls can create new, potentially more dangerous scenarios for emergency medical workers in the NIS, who regularly perform their jobs without the benefit of personal protective equipment (PPE), such as gloves and masks, or soap and water for handwashing.

"Very little PPE, if any, is provided to pre-hospital care providers throughout the NIS, due to the fact that they are not considered part of the 'traditional' health care system. The same attitude is prevalent in pre-hospital EMS systems in the US as well" said Jim Alexander, assistant director of the Community Health Center at Coney Island Hospital. Alexander was a lead instructor at a three-day infection control workshop for EMS instructors, held in Kiev, Ukraine last August.

The nature of EMS work can lead to exposure to a variety of airborne and bloodborne pathogens, with little time or opportunity for workers to take precautions, he said. "It is not uncommon for an EMS staff member to be exposed to blood or body fluids on their hands or clothing. The first opportunity they have for decontamination might be an hour after the exposure, having to wear the contaminated clothing until they can change into new uniforms. This increases the likelihood of their becoming infected ... and possibly exposing their fellow workers or families to viruses or bacteria."

The introduction of new infectious diseases from sources outside the NIS also threatens the health of EMS personnel, he noted: "Typically, the first medical professional to examine an ailing foreigner or returning NIS native is the ambulance or the admitting department staff."

With these concerns in mind, the Kiev workshop trained instructors at AIHA's NIS EMS centers to teach infection control methodology as part of their standard EMS curriculum. "We hope to increase the awareness of the [EMS] students--ambulance physicians, feldshers and nurses," Alexander said. "The patients they treat may or may not be able to provide their medical histories; therefore, we must emphasize the need for providing quality EMS care while minimizing potential exposure to infectious diseases."