NIOSH Alert declares antineoplastics an occupational hazard

Texium® and SmartSite® IV sets and accessories

In September 2004 the National Institute for Occupational Safety and Health (NIOSH) placed a publication of its Alert, Preventing Occupational Exposures to Antineoplastic and other Hazardous Drugs in Healthcare Settings on its website.1 The purpose of the Alert is to bring awareness to the potential hazards associated with working with hazardous drugs and to identify appropriate measures for protecting healthcare workers against exposure to hazardous drugs.

The following is a synopsis of the NIOSH Alert. Refer to http://www.cdc.gov/niosh/docs/2004-165/ to view the Alert in its entirety. Additional information about exposure to hazardous drugs is available at 1-800-35-NIOSH (1-800-356-4674), fax: 1-513-533-8573, E-mail: pubstaff@cdc.gov, or Web site: http://www.cdc.gov/niosh.

What is a hazardous drug?
Any drug that has been associated with or suspected of causing adverse health effects from workplace exposures. Adverse effects include cancer, developmental or reproductive toxicity, gene mutations or harm to organs when the drug is in low doses. Although the majority of hazardous drugs are classified as antineoplastics, some antivirals and antibiotics are known hazardous drugs.

Who is at risk for exposure?
Those at risk include pharmacists, pharmacy technicians, nurses, physicians, operating personnel, environmental services, shipping and receiving personnel, and personnel involved in veterinary practice.

The number of exposed workers exceeds 5.5 million (this figure is not representative of workers in drug R&D and manufacturing).

How are healthcare workers exposed?
Conditions for exposure include, but are not limited to the following:

- Reconstitution of powdered or lyophilized drugs and further dilution of concentrated liquid hazardous drugs;
- Aerosolization when expelling air from a syringe or during the administration of drugs by intramuscular, subcutaneous, or IV routes;
- When droplets of hazardous drug are left behind on work surfaces and drug products (vials, bags, syringes);
- When priming an IV infusion set; and
- Intraoperative intraperitoneal chemotherapy.
What evidence exists of healthcare worker exposure?
Numerous studies have concluded that hazardous drugs have been absorbed in the urine of healthcare workers handling those drugs. However, absorption has also been documented in the urine of healthcare workers who did not handle hazardous drugs, but rather who became exposed through aerosols and/ or work surfaces.

Warning:
Healthcare workers who prepare or administer hazardous drugs or who work in areas where these drugs are used may be exposed to these agents in air or on work surfaces, contaminated clothing, medical equipment, patient excreta or other sources. Studies have associated workplace exposures to hazardous drugs with health effects such as skin rashes and adverse reproductive events (including infertility, spontaneous abortions or congenital malformations) and possibly leukemia and other cancers. The health risk is influenced by the extent of the exposure and the potency and toxicity of the hazardous drug. Potential health effects can be minimized through sound procedures for handling hazardous drugs, engineering controls and proper use of protective equipment to protect workers to the greatest degree possible.

What precautions should be applied when handling hazardous drugs?
The health risk depends on how much exposure an individual has to these drugs and how toxic they are. The use of antineoplastics to treat non-malignant rheumatologic and immunologic diseases is more common today than ever before. As the practice of hazardous drug use increases, so does the potential for exposure.

Certain precautions should be taken to protect from exposure when handling known hazardous drugs. These precautions, which are outlined in the Alert, include the following:

- A risk assessment of the total environment to include equipment, physical layout, maintenance of equipment, type of drugs, decontamination, handling of waste and spill response;
- Written policies and procedures for handling hazardous drugs through the trajectory of drug preparation through disposal; and
- Use of equipment that serves to reduce exposure (ventilated cabinets, closed-systems, needleless systems and protective clothing).

Supplementary procedures to reduce unintentional exposure include the following:

- Priming in-line IV sets with diluent prior to adding the hazardous drug;
- Never removing tubing from an IV bag containing hazardous drug; and
- Thoroughly flushing the IV line prior to disconnecting the set from any Y-site, stopcock, etc., along the administration system.