Management Consultation

Environmental exposure of health care workers to category D and X medications

Q: More female health care professionals, including pharmacists, are handling drugs in pregnancy categories D and X. What guidelines are available to help institutions avoid potentially dangerous exposures in their workers?

A: Drug preparation, compounding, and dispensing are an inherent part of most pharmacists' everyday tasks. Several studies have found that regular or excessive handling of hazardous drugs may be dangerous to health care workers if proper precautions are not used.[1-11] The Occupational Safety and Health Administration and the American Society of Health-System Pharmacists (ASHP) define hazardous drugs as drugs that may cause toxicity in anyone who comes into contact with them, including agents that may cause genotoxicity, carcinogenicity, teratogenicity, fertility impairment, miscarriages, and organ toxicity.[12-17] Some pregnancy category D and X agents are classified as hazardous because they may cause carcinogenicity or teratogenicity. The danger in handling these agents is directly related to the worker's level of exposure and the intrinsic toxicity of the drug.[16] Urinary mutagenicity, chromosomal damage, liver damage, and skin-absorption studies of hazardous drugs suggest varying detrimental effects to health care workers with standard occupational exposure.[17]

While the preparation, dispensing, and administration of category D and X drugs by pregnant health care professionals or those trying to conceive fall under the recommendations for handling hazardous drugs, specific guidelines are difficult to find. FDA defines pregnancy category X drugs as those associated with fetal abnormalities in animals or humans and for which the risk of use clearly outweighs the benefits.[18] Category X drugs are contraindicated for use in pregnant women and those trying to conceive. By definition, category D drugs pose fetal risk but offer benefits that may outweigh the risks.[18] Not all category D drugs are categorized as hazardous; however, the noninjectable medications azathioprine, cyclophosphamide, melphalan, and tamoxifen are all classified as known carcinogens by the National Toxicology Program.[19] The International Agency for Research on Cancer has reported that occupational exposure to these agents during manufacture, formulation, packaging, or administration may put workers at risk of adverse health events.[20-23]

Several policies and bulletins from national organizations and the U. S. government address the handling of hazardous drugs and the minimization of exposure of health care workers.[17,24,25] These focus mainly on injectable antineoplastic agents and hazardous agents that may be inhaled, as there have been several studies evaluating environmental exposure to these agents.[1-11] Universal precautions, such as gowning and gloving, are stressed to protect workers from harm. ASHP states that procedures for noninjectable forms of hazardous drugs should be developed to avoid release of these drugs into the workplace environment.[16] Some of ASHP's recommendations include

The Management Consultation *column gives readers an opportunity to obtain advice on common management problems from pharmacists practicing in health systems.*

AJHP *readers are invited to submit questions for this column. Selected questions will be forwarded to one or two experts in the field, who will prepare brief responses for publication. Questions should be narrow in scope, such that they can be answered in approximately 500 words. Responses will be sent to the inquirer before publication. Readers are also invited to comment on the answers of consultants; such comments will be considered for the* Letters *column.*

Suggestions for topics should be submitted to AJHP, *7272 Wisconsin Avenue, Bethesda, MD 20814 (301-657-3000 or ajhp@ashp.org).*