Safe Handling of Hazardous Drugs

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By Melissa K Slate, RN, BA, MA

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PURPOSE: This course segment is necessary for all healthcare workers in the precautionary measures in preparing, administering, and caring for all patients receiving hazardous drugs.

OBJECTIVES: When completing this course, you will be able to:

1. Will be able to define hazardous drugs.
2. When in a clinical area, you will be able to specify what drugs may be considered hazardous
3. You will be able to list the three routes of exposure to hazardous drugs
4. When caring for patients receiving medications that are considered hazardous, you be able to identify all personal protective equipment in caring for that patient.
5. Explain all steps in an occurrence of a hazardous drug spill.
6. Describe in detail, all steps taken when a healthcare worker is exposed to hazardous drugs

Introduction

Healthcare practitioners may underestimate the exposure risk associated with hazardous drugs. The risk of exposure extends along the drugs' entire life cycle, including the manufacturing, transporting, dispensing, and administering processes. The safe handling of hazardous drug spills is uniquely different from other healthcare spills, and exposure extends beyond patients and healthcare practitioners because nonclinical staff are often involved with the containment and disposal of spills. Pennsylvania alone has received more than 40 reports of patients and staff exposure to hazardous drugs. Many events involved intravenous (IV) tubing disconnections resulting in hazardous drugs leaking to the floor, the patient, hospital gowns, and linens. Many exposure incidents were attributed to IV port or site leaks and involved IV spiking issues, resulting in large hazardous spills. Risk reduction strategies include developing a hazardous drugs program; encouraging personnel compliance in the storing, dispensing, transporting, and administering of these medications; managing spills; and disposing of hazardous drugs in such a way that the most appropriate guidelines are used to minimize exposure.

The majority of all medications used in the healthcare facilities today have known adverse effects that have a dramatic impact on patients. Many of the drugs that are being handled by health care workers have extensive adverse effect and are considered to be hazardous. There are several diseases that implicate usage of hazardous drugs such as cancer, rheumatoid arthritis, HIV, and also multiple sclerosis. Cytotoxic drugs, biological drugs, antiviral drugs, and immunosuppressive medications can also be considered hazardous drugs. This course study was made for health care workers to practice and understand the importance of handling hazardous drugs in accordance to the guidelines that where established by the Occupational Safety and Health Administration, the National Institute for Occupational Safety and Health and the Oncology Nursing Society.

What is a Hazardous Drug?

A hazardous drug is a drug that is capable of causing illness or injury to those that come into contact with it. The characteristic of a hazardous drug is described bellow in one or more forms:

Genotoxicity: The ability to cause a change in a genetic material.

Carcinogenicity: the ability to cause cancer.

Teratogenicity: In the fetal development stage this has the ability to cause defects.

Fertility Impairment: This can cause the interruption of normal reproduction.

Refer to your material data safety sheet or (MSDS) to identify if the drug is considered to be hazardous or refer to current drug inserts or literature.

Exposure Routes

During drug preparation, administration, and in disposal of hazardous drugs, the health care worker can be affected and/or exposed in the following ways:

Inhalation: coming in contact with hazardous drugs, that are aerosolized and containing dust particles of the drug through the breathing passageways.

Absorption: hazardous drugs coming in contact with skin, mucus membranes or eyes.

Ingestion: A hazardous drug contact with food, beverages, gum, cosmetics, tobacco, or of which is contaminated hand to mouth contact.

Need Sticks: tissue contamination.

A specific time or procedure, which puts heath care workers at risk and has an exposure to hazardous drugs.

Preparation of drugs: the health care worker may be at risk for exposure by absorption through inhalation or direct skin contact during, the transferring of the drug from one container to another, manipulation, or during reconstitution.

These risks and exposures can come about from the breaking open of ampules, drug-filled syringe that explodes due to air, the withdrawal of needles from drug vials, syringes and needles or filter straws through the transfer of drugs.

The administration of drugs: hazardous drugs that are being administered to a parenterally and orally pose a high risk and opportunity for the absorption through direct contact or areosolization. Examples of these exposures include:

When a drug is injected into a IV line, or the leakage at the tubing, syringe or the injection site or clearing the air out of the syringe or IV tubing can expose a health care worker to hazardous drugs.

A health care worker caring for a patient that is receiving hazardous drugs may be exposed to hazardous body fluids exerted from there patients. These body fluids contain high concentration of the drug or its breakdown product. This poses a high risk factor for the health care worker.

Surface contamination can occur where hazardous drugs are prepared, administered or even stored.

Prior to administering hazardous drugs placed on the surface or counter top can be hazardous. Outside the urinary bags of patient receiving hazardous drugs can be contaminated. Waste disposal containers for hazardous materials, storage containers, storage rooms of IV pumps and poles and their equipment, the outside of the bag or syringe that contains the hazardous drugs that is going to be administered.

The disposal of drugs and contaminated material: According to all federal, state and local laws all gloves, gowns, syringes, vials, tubing's used in the administration of hazardous drugs or in the preparation of must be disposed of according to laws. The handling of these contaminated materials poses a great threat to all health care workers when exposed in this environment. To reduce the risk and exposure during spillage the proper spill management must be taken in consideration at all times during this occurrence. The proper handling of the contaminated surfaces must e followed according procedure.

When the hazardous drug is at its highest concentration is when you are at the greatest risk of exposure!

The exposure risk is lower during which, the health care worker is handling the patient's excreta. This is due to the concentration or its breakdown products are lower.

Minimizing the risk of hazardous drug exposure

When mixing, preparing, or manipulating hazardous drugs, ventilated cabinets are used. In most health care facilities the use of Class II Biological Safety Cabinets are used. You will also find these cabinets in pharmacies for hazardous drug preparation. By using HEPA filters the air flow is directed to the outside instead of being released into the work area. A centralized area is designated, to which a trained health care worker can prepare hazardous drugs for administration; here you will find these safety cabinets.

PPE- personal protective equipment - The most effective way a health care worker can protect themselves is through the use of PPE. The use of PPE protects from the hazardous exposure of these hazardous drugs. PPE should be used during the preparation, administration, and the handling of patient excreta, and the disposal of hazardous drugs.

Chemotherapy gloves will provide protection against skin contact, and should be worn during all hazardous drug handling activities. Chemotherapy gloves are thicker which reduces leakage, and they are also powder free latex. Chemotherapy gloves are also longer, in which they are capable of covering the gown cuffs. This will also reduce the risk of the wrist being exposed. Reasons of powder free being preferred is powder may absorb contaminate.

All gloves must be inspected for any holes prior to use. Contaminated or torn gloves must be changed. Gloves should be changed every hour. Health care workers that are sensitive to latex should use gloves that are made of nitrile, polyurethane or neoprene.

Disposable gowns are made of low permeability fabric which is lint free. The gowns are closed in the front, the sleeves are long, and the elastic or knit cuffs should be worn. When wearing double gloves the outer glove should be worn over the sleeve of the gown and the inner glove should be worn under the cuff. When removing the garments the inner gloves should be taken off last.

Goggles should always be worn when the possibility of any splashing, spraying, or aerosolization is being used. Goggles and full face shields provide the best protection from contamination by splashes, sprays, or aerosolization of any hazardous drugs. Eyeglasses and side shields are inadequate protection.

When administering any aerosolized drugs, the use of Dust-Mist Respirator Mask. Surgical masks do not provide protection from inhalation.

When administering hazardous drugs Gloves, Gowns and Goggles are recommended.

All disposable materials used in the drug preparation or administering, such as gloves, gowns be disposed of in the hazardous waste material disposal bucket. Goggles can be cleaned with a mild detergent for reuse.

When lowering the exposure risk when and during the administering of hazardous drugs a health care worker should always wash their hands before dinning and after removing their gloves. Always place all contaminated equipment in a plastic bag sealed and disposed of in the hazardous waste disposal bucket. Do not try to make room for material by pushing down on any contaminated hazardous material deposal buckets or any other containers. When expelling air from syringes, and priming any IV sets, they must be handled in a pharmacy using biological II safety cabinets that have ventilation units. After the use of any IV bags, syringes, and pumps, they should be wiped clean using sterile gauze. When the transportation of hazardous drugs between floors, the use of sealed bag, and the use of a sealed container should be used. The container should be leak proof impervious container. To assure of any possible leakage the use of leur-lock fittings for the fusion sets should be used. Every clinical area that preparation and the administering of hazardous drugs should have a spill kit and the MSDS resource

available. During any administration, in order to catch any leakage, the use of a plastic backed absorbent pad should be used, along with sterile gauze around any push sites.

Caring for patients that receiving hazardous drugs will have excreta that contain a variable amount of drugs and the break down components of these products. There is a standard recommended time frame of 48 hours to maintain precaution and the use of all personal protective equipment (PPE) when dealing with body fluids. When cleaning body fluids thick latex gloves, disposable gowns, goggles splashing can occur. All PPE should be placed in a sealed plastic bag and placed into an impervious hazardous waste bucket. Gloves should be taken off last and hands washed.

Safe Handling Precautions

Patients that are receiving hazardous drugs will be identified through the use of Chemotherapy Precaution sign over their bed. This sign will state the start and the stop date. The Chemotherapy precautions will at the time of the administration and end 48 hours after the administration has been completed. All patients charts should be identified by the use of Chemotherapy Precaution stickers to alert any staff that is caring for the patient.

Hazardous Drug Spills

When dealing with a hazardous drug spill, remember to follow all guidelines by OSHA when using the chemotherapy spill kit. All spills regardless of their size are to be handled in the same way. All spill kits can found in all areas that patient care of hazardous drugs are being prepared, administered, prepared and stored.

When cleaning up any hazardous drug spills, please refer to all policies and procedures for the very specific instructions on spill management. Below you find some general guidelines in for cleaning hazardous drug spills:

Always remember to STOP and to THINK before touching any spills!

Make sure you deny any access to the area in which the spill has occurred. Place appropriate signs to identify all warnings.

Immediately find the chemotherapy spill kits!

Use all PPE (personal protective equipment), gowns, shoe coverings, goggles, respirator masks, and two pairs of gloves with the thicker glove on the outside.

Use the chemosorb pad to cover the spill. This pad will transform the spill from a liquid to a gel.

The spill kits will contain a plastic hazardous waste bag for all contaminated towels. The area of which the spill has occurred, rinse with clean water, with the use of the spill kit towels. Be careful not to generate any splashing will doing this.

The spill area should be cleaned multiple times after which the spill has been successfully been gathered using the hospital and or facility approved cleaners and water. The wet area left over should be fully wiped dry with the remaining spill kit towels.

All the contaminated materials should be placed in a sealed plastic bag and placed in the hazardous disposal containers.

When removing all protective gear, shoe coverings, gowns, mask and goggles discard in the hazardous disposal bag that is supplied in the spill kit.

Wearing the inner gloves seal the plastic hazardous waste bag and place into the outer hazardous waste bag then removing inner gloves, place into the outer hazardous waste bag, and sealed which will be identified as bulk waste and disposed of by proper EPA guidelines.

WASH HANDS IMMEDIATELY FOLLOWING THE CLEANUP

All contaminated linen by excreta from patients receiving hazardous drugs puts health care workers and employees alike at a very high risk of exposure. All linen should be handled wearing the appropriate PPE, and will be washed according to OSHA guidelines and hospital or facility policy.

Personal contamination exposure MUST BE TAKEN VERY SERIOUSLY and requires immediate attention. Hazardous drugs can cause serious irritation to the area of which it came in contact with, and can cause tissue damage. When contamination occurs, remove all protective gear and wash the affected area with clean water and soap for the length of time specified in the MSDS material data safety sheet. MSDS usually requires 15-20 minutes of washing. Eye contamination flood eye with warm water for 15 minutes and then seek immediate medical attention according the OSHA guidelines and hospital or facility policy.

When caring for patients receiving hazardous drugs, here are the recommendations for the use of PPE.

ACTIVITY AND OR ROUTES PPE RECOMMENDATIONS

ORAL CHEMOTHERAPY = GLOVES

ALL DRUGS ADMINISTRTION = GLOVES, GOWNS,GOGGLES,
*RESPIRATOR MASK/FACEMASK

HANDLING PATEINT EXCRETA = GLOVES, GOGGLES,
*RESPIRATOR MASK/FACEMASK

HANDLING CONTAMINATED LINEN = GLOVES, GOWN,
*RESPIRATOR/FACEMASK

CLEANING UP HAZARDOUS DRUG SPILLS = 2 PAIRS GLOVES
GOWN, GOGGLES, RESPIRATOR/FACE SHEILD AND SHOE COVERS

*When there is a possibility of splashing, respirators and face shields and goggles should be worn.

Summary

Practice guidelines for the safe use of hazardous drugs exist, but inconsistent implementation of these guidelines can lead to inadvertent patient and staff exposure. Inpatient, outpatient, and office-based healthcare facilities may consider developing facility specific protocols and policies to facilitate consistent approaches to the safe handling of hazardous drugs. Risk reduction strategies include the development of the safe handling of hazardous drugs program, which incorporates guidelines for personnel compliance. The guidelines encompass the entire drug life cycle, including manufacturing, transporting, dispensing and administering these medications. Consistent managing of spills and disposing of hazardous spill cleanup materials will minimize risks to patient and staff in areas where these medications are used.

REFERENCES

National Institute for Occupational Safety and Health. U.S. Department of Health and Human Services. Preventing occupational exposure to antineoplastic and other hazardous drugs in health care settings [alert online]. No. 2004-165. 2004 Sep [cited 2010 Feb 22]. Available from Internet:

Blecher,C.,et al.(2008). Safe Handling of Cytotoxic Drugs. Oncology Nursing Press.

Chen DF, Thompson KK. ASHP guidelines on handling hazardous drugs. *Am J Health-Syst Pharm* 2009 Jun 15;63(12):1172-93.

Cancer Chemotherapy Guidelines & Recommendations for Practice, (2009) Pittsburg: Oncology nursing Press.

Occupational Safety and Health Administration (2008) Introduction to Hazardous Drugs, Accessed 8/14/2010 http://www.osha.gov/SLTC/hazardousdrugs

Occupational Safety and Health Administration. (2010). OSHA Technical Manual. Section IV, chapter 2. Washington DC: Office of Occupational Medicine