ADMINISTRATION OF ANTINEOPLASTIC HAZARDOUS DRUGS
(CHEMOTHERAPY)

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DISCLAIMER

- The information contained in these slides is designed to review the basic components of safe handling of chemotherapy [antineoplastic hazardous drugs (HDs)] as recommended by NIOSH.
- Differences in handling procedures may be warranted for non-antineoplastic HDs (e.g. hormones).
- Please refer to your institution's policies and procedures for specific details.
- For information pertaining to the Washington state law, refer to the Labor and Industries website http://www.lni.wa.gov/Safety/Topics/AtoZ/HazardousDrugs/

ANTINEOPLASTIC HAZARDOUS DRUGS (CHEMOTHERAPY)

- Familiarize yourself with medications to be handled as hazardous drugs, as defined by NIOSH.
- Refer to your institution's specific list of hazardous drugs as handing will differ depending on the agent and route of administration.
- IV hazardous drugs should be prepared in a biologic safety cabinet

CLOSED SYSTEM TRANSFER DEVICES (CSTDS)
(CHEMOTHERAPY)

- These devices are designed to reduce exposure to hazardous drugs during preparation, administration, and disconnection
- While not required in the Washington State law, use of these devices allow for significant differences in administration practices while maintaining worker safety
- Where applicable, these differences are described in this reference

UPON RECEIPT OF IV HDS
(CHEMOTHERAPY)

- Visually inspect that the HD arrives for administration:
  - in a sealed plastic bag
  - spiked in pharmacy with tubing pre-primed using a neutral solution OR
  - spiked in pharmacy with CSTD spike OR with a CSTD "dry spike"

CSTD SPIKE AND CSTD DRY SPIKE EXAMPLES

CSTD Spike Connectors

CSTD Dry Spikes

PERSONAL PROTECTIVE EQUIPMENT (PPE)
(CHEMOTHERAPY)

- PPE is required for handling, administration and disposal of HDs
- Proper PPE for HDs includes:
  - Chemotherapy resistant gown
  - Chemotherapy resistant gloves (ASTM D6978 - 05(2013)
- Limit glove wear time to 30 minutes
- Ensure glove covers cuff of gown
- A full face shield or eye protection should be worn if there is potential for splash (i.e., high risk procedures such as intravesicular administration)
- Refer to NIOSH guidelines for further details

http://www.astm.org/

PPE
(CHEMOTHERAPY)

Outer glove covering cuff of chemotherapy gown

DONNING PPE
(CHEMOTHERAPY)

- Wash hands either with soap and water or gel
- Don PPE
  - Don gown
  - Don gloves
    - While not required by Washington State law, ASHP & ONS recommend double gloving for administration

https://www.ashp.org/DocLibrary/BestPractices/PrepGdlHazDrugs.aspx

IV ADMINISTRATION
(CHEMOTHERAPY)

- Ensure hazardous drug spill kit is readily available prior to administration
- Do not spike drug at bedside (unless CSTD dry spike used)
- Remove gloves before touching IV pump
- After infusion, do not disconnect secondary tubing from primary line (unless CSTD is used)

IV PUSH ADMINISTRATION
(SYRINGE CHEMOTHERAPY)

- Visually inspect that the HD syringe arrives for administration:
  - In a sealed plastic bag
  - No needles attached
  - Use of a CSTD is recommended but not required
- To avoid inadvertent contamination, do not expel air from syringe

RECOMMENDED SEQUENCE FOR DOFFING PPE (CHEMOTHERAPY)

1. Doff gloves (outer pair when double-gloved)
2. Face protection (and/or respirator for spills)
3. Gown
4. Inner pair of gloves (when double-gloved)
5. Dispose of PPE
6. Wash hands with soap and water (do not use hand sanitizers)

M. Polovich, PhD, RN, AOCN, Editor "Safe Handling of Hazardous Drugs"

DOFFING PPE
(CHEMOTHERAPY)

1

2

3

4

5

6

ORAL AND TOPICAL CHEMOTHERAPY

- Do not crush or manipulate outside of a biologic safety cabinet
- Work with pharmacy for oral agents that are to be administered via NG route
- Gloves should be worn when handling oral HDs
- Gown and gloves are recommended by ONS and ASHP for topical administration

Polovich, M. "Safe Handling of Hazardous Drugs," Oncology Nursing Society, 2011

SPILLS
(CHEMOTHERAPY)

- Develop / define a spill response procedure including first aid and decontamination
- Refer to your institution's policy and procedure for spill management. Policy must include:
  - Who is authorized to respond and under what circumstances
  - Location and use of spill kits
  - Procedure for containment, including signage
  - Proper PPE, including respiratory protection
  - Reporting and evaluating circumstances of spill
  - Restricting access to spill area
  - Waste disposal

RESPIRATORY PROTECTION FOR CHEMOTHERAPY SPILLS

- Minimal data exists regarding vaporization of HDs at room temperature
- The following agents have been identified:
  - Carmustine
  - Etoposide
  - Cyclophosphamide / Isofasfamide
  - Thiotepa
  - Nitrogen Mustard
  - 5-FU
  - Cisplatin

Connor, T. , Shults, M. & Fraser, M. (2000). Determination of the vaporization of solutions of mutagenic antineoplastic agents at 23 and 37C using a desiccator technique. Mutation Research 470 (2000) 85–92.; Kiffmeyer, T. et al. (2002). Vapour pressures, evaporation behaviour and airborne concentrations of hazardous drugs: implications for occupational safety. The Pharmacy Journal, 268.

RESPIRATORY PROTECTION FOR CHEMOTHERAPY SPILLS

- Although no studies have been published regarding optimal respiratory protection for spilled HDs, NIOSH requires adequate protection be available
- Surgical masks do not offer protection, and N95 respirators are not effective for vapors

http://www.cdc.gov/niosh/docs/2004-165/pdfs/2004-165.pdf

RESPIRATORY PROTECTION FOR CHEMOTHERAPY SPILLS

- Therefore, one of the following are recommended to deactivate chemicals:
  - A full-face combination respirator (p100, OV and a carbon layer)
  - PAPR (powered air purifying respirator) with (p100, OV and a carbon layer) cartridge
- Note: All respirators require fit testing and a medical evaluation questionnaire
- Refer to institution's policies and procedures

http://multimedia.3m.com/mws/media/639110O/3m-adflo-respirator-selection-guide.pdf?fn=Respirator%20Selection%20Guide%20Final

DISPOSAL OF PPE AND CHEMOTHERAPY

- After administration, HD bags and tubing should be disposed of in containers specifically designated for hazardous drugs
- Refer to institution's policy on HDs for:
  - Disposal of PPE
  - Disposal of partial or intact doses