Medication Errors in Chemotherapy

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I have nothing to disclose regarding personal or professional affiliations or conflicts of interest to the course content presented.
LEARNING OBJECTIVES

1. Recognize medication errors associated with chemotherapy
2. Describe the magnitude of errors involving chemotherapy
3. Recall common causes of chemotherapy-related errors
4. Formulate strategies to encourage error reduction
5. Describe the role of the multidisciplinary team in error prevention
ADVERSE DRUG EVENTS

• ADEs are injuries that result from drug use
  • May be preventable or non-preventable

• Potential ADEs result from medication errors with potential to harm, but:
  • Are intercepted before reaching patient, or
  • Reach patient do not cause harm
ERRORS IN MEDICATION MANAGEMENT PROCESS

Ordering
- Wrong dose
- Wrong drug
- Wrong route/form
- Allergy, Drug interaction

Transcribing
- Wrong route
- Wrong dose
- Wrong patient
- Wrong time
- Wrong drug

Dispensing
- Wrong dose
- Wrong route
- Wrong patient
- Wrong time
- Incorrect labeling/Omitted
- Wrong route
- Primary catch for allergy, Drug interaction

Administering
- Wrong patient
- Wrong dose
- Wrong drug
- Wrong time/Omitted
- Wrong route
- Frequently involves infusion pump

Figure 1. Errors in medication cycle (National Council for Prescription Drug Programs). Am J Health-Syst Pharm. 2016;73(15):1153.
CHEMOTHERAPY

- Biohazard to those preparing and administering the agents
  - May cause adverse effects to any individual who comes in contact with the agents
  - Special protocols required for preparation, administration, and disposal of chemotherapy

- Medication errors may cause harm to patients or practitioners
EXAMPLE

- Breast cancer patient prescribed Cyclophosphamide

- Ambiguous Order: “4 g/m\(^2\) over 4 days”
  - Intended Cyclophosphamide Dose: 1 g/m\(^2\) for 4 days
  - Cyclophosphamide Dose Administered: 4 g/m\(^2\) DAILY for 4 days

- Result: Fatal cardiac toxicity
COMMON CAUSES OF INCREASED ERROR RISK

• Complex chemotherapeutic regimens
  • Multiple medications make up each regimen
  • i.e., ACT – Adriamycin plus Cyclophosphamide, followed by Taxol

• Chemotherapeutic agents combined with supportive therapies
  • Antiemetics, colony-stimulating factors, etc.
  • Each regimen may require 3-4 pre-meds for prevention of N/V or other adverse effects
  • Some pre-meds may be administered by the patient at home
COMMON CAUSES OF INCREASED ERROR RISK

• Complex dosing calculations
  • Dosing using body surface area (BSA) – i.e., 1 g/m² daily
  • Multiple-day regimens
    • 1 g/m² daily given on days 1, 3, and 5
    • 1 g/m² daily given every 2 weeks for 4 cycles

• Administration variability
  • Same drug administered IV push, intermittent IV infusion, multiple-day continuous infusions
  • Oral administration of IV or SQ products
COMMON CAUSES OF INCREASED ERROR RISK

- Non-standard nomenclature
  - Use of abbreviations
    - AC – (A)driamycin and (C)ylophosphamide
    - CHOP – (C)ylophosphamide, (H)ydroxydoxorubicin, (O)ncovin, (P)rednisone

- Non-standard or Investigational protocols
  - Dosing protocols may not be available in published textbooks for verification
STRATEGIES FOR ERROR REDUCTION

• Educating health care providers
• Verifying the dosage
• Establishing dosing limits
• Standardizing
• Working with pharmaceutical manufacturers (problems with labeling)
• Educating patients
• Improving communication
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