Medication Errors in Chemotherapy

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DISCLOSURE STATEMENT

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

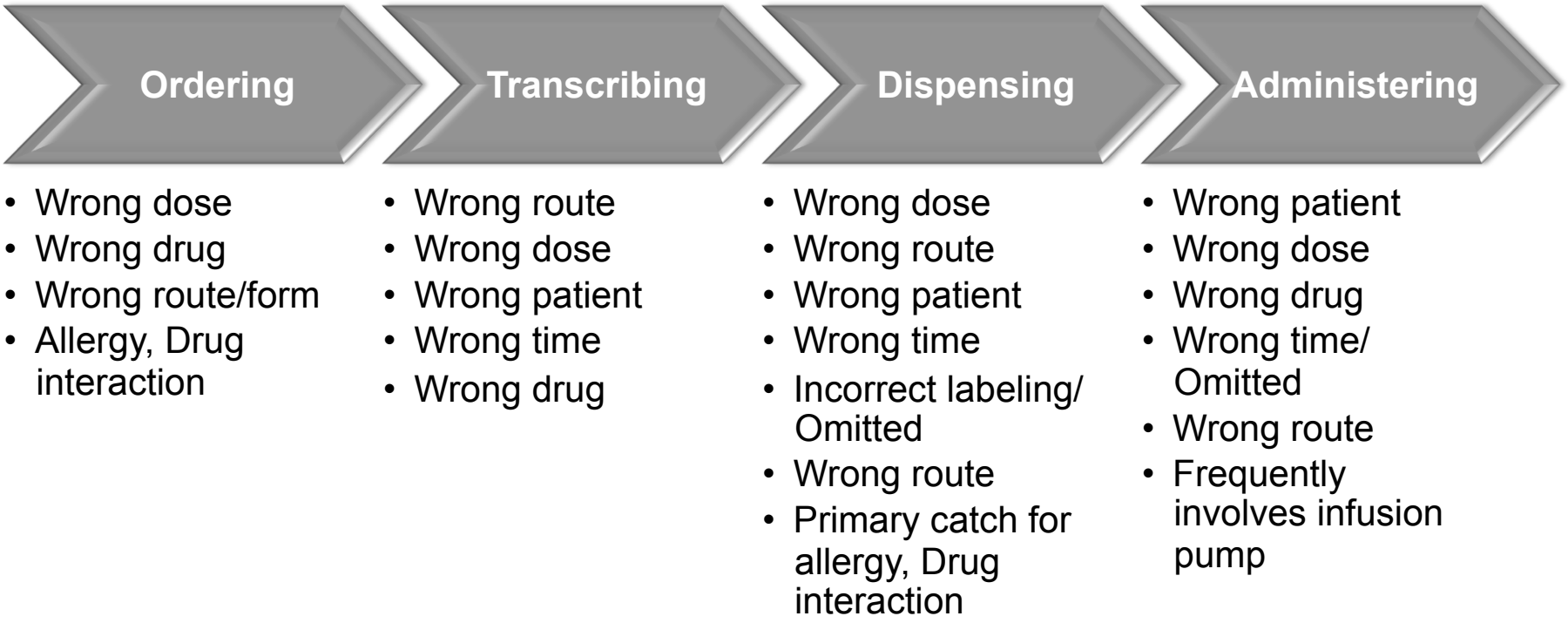

Figure 1. Errors in medication cycle (National Council for Prescription Drug Programs). *Am J Health-Syst Pharm*. 2016;73(15):1153.

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/m^2 daily
  - Multiple-day regimens
    - 1 g/m^2 daily given on days 1, 3, and 5
    - 1 g/m^2 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)yclophosphamide
    - CHOP – (C)yclophosphamide, (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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