The Pharmacist’s Role in Chemotherapy Order Set Development

Stephanie Sutphin, PharmD, BCOP
Hematology/Oncology Clinical Specialist
University of Kentucky HealthCare
Assistant Professor, Adjunct
University of Kentucky College of Pharmacy
Learning Objectives

- Discuss elements of a complete chemotherapy order
- Describe how standardized order sets can decrease cost and improve throughput
- Demonstrate how orders can help effectively communicate the plan of care
Chemotherapy Agents

- **Lowest** therapeutic index
- Small **safety margin**
- **Complex** regimens
- **Variable** dosing ranges
  - Disease state
  - Regimen
  - Renal/hepatic function
  - Body Surface Area (BSA)
  - Concomitant radiation
Selection of Correct Agent

- **Generic: sound-alikes**
  - carboplatin or cisplatin
  - vincristine or vinblastine

- **Trade names**
  - Taxol or Taxotere
  - Amethopterin, Mexate, Folex

- **Abbreviations/Chemical Names**
  - CPT-11, VP-16, BCNU
Routes of Administration

- Administration route: IV, IM, SQ, IT, IVP, CIVI or PO
- Intrathecal (IT)-must be preservative free/isotonic
- IV Push
  - Toxicity of infusion
  - Extravasation risk
    - doxorubicin, vincristine
- Subcutaneous or Intramuscular: small volumes
Stability/Storage Requirements

- Stability Information
  - Compatible solutions (NS or D5W)
  - Polyvinyl chloride vs. Non-PVC
  - Volume of solution (concentration of final soln)
- Protect from Light
- Expiration
- Refrigeration
Calculations: BSA

- Nomogram
- BSA Slide Rule
- Manual calculations (Mosteller vs. Dubois)
- BSA calculator (Dubois)
- Pharmacy computer system
- 5% error rule
- Weight to use
  - Actual (ABW), Ideal (IBW), Corrected (CBW)
Types of Med Errors

- Dosage/BSA miscalculations
- Wrong drug/regimen
- Chemo protocol/order misinterpretation
- Changes in organ function (ex: carboplatin)

- Preparation errors
  - Drug (Doxil vs. doxorubicin)
  - Amount (60.5ml vs. 65ml)
  - Wrong IVF, volume

- Administration
  - rate, route, patient, timing
Prevention of Errors
Hospital/Pharmacy Policy

- Goal: Medication error prevention
- Consistency of prescriber habits
- Consistency of pharmacy order processing & product preparation
- Chemotherapy cut-off times
- Training of nurses, pharmacists and technicians
Physician Prescribing Criteria

- Chemotherapy orders
  - Written on standard chemotherapy form
  - Typed as preprinted form

- Computerized Physician Order Entry (CPOE)

- Dose is prescribed as amount/unit (m² or kg)

- Dose must be written per day and per course of therapy
Physician Prescribing Criteria

- Oncology Attendings (credentialing)
- No verbal orders
- No acronyms
  - cisplatin, not CDDP
- No trailing zeros
  - 5.0gm or 50gm
- Unapproved abbreviations
  - units, not u
- Informed consent from patient
**CHEMOTHERAPY ORDERS**

**NOTE:** Use Physician Order Sheet (H310) for all other medication/lab orders.

**DIAGNOSIS**
Non-Hodgkin's Lymphoma

**IS PATIENT ON PROTOCOL**
NO

**YES - LIST PROTOCOL NAME OR NUMBER:**

<table>
<thead>
<tr>
<th>DRUG (Amt/m² or Amt/kg)</th>
<th>PATIENT'S DOSE</th>
<th>SOLUTION &amp; VOLUME</th>
<th>ROUTE</th>
<th>INFUSION RATE</th>
<th>GIVE ON DAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cyclophosphamide 750mg/m²</td>
<td>1642.5mg</td>
<td>—</td>
<td>INP</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2 Doxorubicin 50mg/m²</td>
<td>109.5mg</td>
<td>—</td>
<td>INP</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3 Vincristine 1.4mg/m²</td>
<td>2mg</td>
<td>—</td>
<td>INP</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4 Prednisone 100mg/m²</td>
<td>220mg</td>
<td>—</td>
<td>PO</td>
<td>1-5</td>
<td></td>
</tr>
</tbody>
</table>

**PRECHEMOTHERAPY MEDICATION ORDERS** (e.g., antiemetics, hydration)

- Ketril 2mg PO x 1
- Decadron 20mg IV x 1

**POSTCHEMOTHERAPY MEDICATION ORDERS** (e.g., antiemetics, hydration)

- Compazine 10mg PO @ 8'a, 12'st, 4'a, 8'a, 12'st, 4'a - Script attached.

**Signature, Ordering Physician:**
L. P. Monke MD

**Date:** 9-22-97
**Time:** 1400

**Name of Attending Physician:**
Lucille Parker, M.D. #1234
Pharmacy-Verify Orders for Accuracy

- Correct patient? Need two identifiers
  - Name, birth date, medical record number
- Calculations
  - BSA, unit conversion, patient specific dose
- Is the chemotherapy regimen appropriate for diagnosis?
- Review IVF compatibility (if appropriate)
- Check rate of administration
- Independent check by another pharmacist
Chemo Regimens

- Appropriate dose for regimen?
- Common references for chemo regimens:
  - Drug Information Handbook
  - Chemoregimen.com
  - Pharmacy Practice News (yearly publication) and wall chart (poster).
  - Original protocols/investigational studies (SWOG, ECOG, etc)
  - MicroMedix
  - PubMed
Other Verification Issues

- Lab values
- Adequate hydration
  - Ex: cisplatin
- Tumor Lysis Syndrome prophylaxis
  - allopurinol, sodium bicarbonate in IVF
- Anti-emetic regimen
- Pre-medications/adjunct therapy?
Approval for Chemotherapy

- Before preparation, MD verifies patient okay to receive therapy (labs/toxicity criteria)
- Confirm “Consent for Treatment” signed
- Labs are drawn and evaluated:
  - electrolytes, renal function, hepatic function, blood counts
- Patient weighed prior to each treatment cycle
- Is it the correct date and time to prepare the chemo?
- Expiration must be > administration time
Administration

- Double check pharmacy prep/labels/orders
- Personal Protective Equipment
- Tubing primed by pharmacy with IVF, not chemo
- Limit syringe size for IV push (IVP)
- Flush tubing/buretrol
Summary: What’s in it for me?

- Error prevention is the responsibility of all pharmacists
  - hospital, retail, industry
- Systems should be in place to minimize errors in order processing, preparation and administration of chemotherapy
- Peace of mind
Every great mistake has a halfway moment, a split second when it can be recalled and perhaps remedied.

**Pearl Buck**

*US novelist in China (1892 - 1973)*