Collaborative Oncology Pharmacy Practice in the United States: The UCSF Experience

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Goals and Objectives

- Discuss Collaborative Practice in the USA

- Discuss the type of education and training required of oncology pharmacists in the USA

Describes strategies for developing collaborative practice
Background

- Evolution of Expanded Scope of Practice
  - Utilizes the Collaborative Practice Model
  - Premise—improve communications with other health care practitioners and responsibilities of pharmacists
  - As of 1999, 24 states in the USA allow some form of collaborative practice agreement with physicians.
Expanded Scope of Practice

- 2000: legislative changes in many states
- Specific activities
  - Prescriptive authority for certain drugs
  - Drug administration for first dosages and emergencies
  - Drug therapy monitoring
  - Selection of Therapeutic Devices
  - Modification of Drug Therapy: case-by-case based on written protocol
Drug Therapy Monitoring

- Physical Assessment
  - Blood Pressure
  - Oral integrity
- Serum glucose
- Lipid management
- Therapeutic drug level monitoring
Do physicians accept such practice?

- American College of Physicians
  - Endorse the all-PharmD degree in the USA
  - Endorse activities listed in previous slide
American College of Physicians

- Supports physician-directed collaborations limited to pharmacist involvement in patient education and hospital rounds
- Referral system to pharmacists
- Compensation for pharmacists
- Support pharmacists as a primary information source, host for immunizations sites, and immunizer. Allowed in 30 states
- Oppose independent prescribing by a pharmacist

Pharmacist Training in the USA

- All-PharmD Curriculum
- 6 years of education
- Licensure exam (NAPLEX, North American Pharmacist Licensure Exam—given in all but 1 state (California)
- 1976: The American Pharmaceutical Assoc (APhA) developed the Board of Pharmaceutical Specialties (BPS) to recognize specialty areas of Pharmacy Practice
Board of Pharmaceutical Specialties

- Nuclear Pharmacy (1978)
- Pharmacotherapy (1988)
- Psychiatric Pharmacy (19920
- Oncology (1996)
Post Graduate Training

- Residency Training: one year training
  - 472 program in 2000 listing in ACCP
  - 23 institutions provide oncology residencies, many are 2nd year programs given after a 1st Pharmacy Practice Residency.
  - Some residencies are not listed, e.g. MD Anderson Hospital (30 specialists)
Collaborative Care and Value of Oncology Pharmacist Interventions

- Collaborative Drug Therapy
  - Designed to maximize quality of life, reduce drug-related problems, and improve social benefits of pharmaceuticals
  - Process involves the physician, pharmacists, and other health care professionals
  - Procedures include dispensing, drug information, drug problem solving, and therapeutic decision making.
Collaborative Drug Therapy (CDT) Studies

- Overwhelmingly successful when associated with

  ✓ Clinical services in hospitals
  ✓ Clinical research
  ✓ Drug information
  ✓ Medication administration histories
  ✓ Participation on CPR teams
Lower hospital costs (41%) are realized for

- Drug information services
- Drug use evaluation
- Adverse drug reaction reporting
- Drug protocol management
- Medical rounds
- Antibiotics had greatest cost reduction

CDT (cont)

- In intensive care units
  - Adverse drug reaction rate is reduced by 66%
  - Physicians accepted recommendations by pharmacist in 362/365 instances (99%)

Clinical Services in Clinics

- Disease Management Programs
  - Anticoagulation Diabetes
  - Asthma
  - Immunizations
- National Institute for Standards in Pharmacist Credentialing
- Improvement in Patient Outcomes documented for heart failure management and diabetes monitoring
Reimbursement & Liability

- Medicare (National): pharmacists are not approved providers except for immunizations
- Medicaid (State)
  - Demonstration projects on patient education and monitoring
  - Improved cost effectiveness in states of Mississippi
    - Reimbursement for Asthma, diabetes, hyperlipidemia, anticoagulation
Collaborative Practice Programs in Oncology--UCSF

- Inpatient (Hospital)
  - Adult Leukemia-BMT Pharmacy Protocol

- Outpatient (Ambulatory Infusion Center)

- Credentials needed
  - California Pharmacist License
  - Curriculum Vitae
  - Documentation of Continuing Education
  - Current Cardiopulmonary Resuscitation Certificate

- Certification and Peer Review of Pharmacy Practitioners
  - Physician
  - Clinical Pharmacists
BMT Pharmacists at UCSF
CP may perform the following activities

- Routine management of chemotherapy toxicities
  - antiemetics
  - analgesic pain control
  - electrolyte management
  - TPN management
  - discharge medications
Standardized Pharmacy Protocol
Adult Leukemia

- CP may perform the following procedures
  - Ordering and interpreting drug therapy related lab tests
  - Administering immunizations pursuant to a prescriber’s order
  - Initiating or adjusting the drug regimen (standardized chemotherapy orders)
Standardized Pharmacy Protocol
Adult Leukemia

- Practice Guidelines have been developed for:
  - TPN
  - Antiemetics
  - Pain Control
  - Clarification of Chemotherapy Orders
  - Discharge Medication Ordering
Standardized Pharmacy Protocol
Adult Leukemia--Results

- Antiemesis Monitoring (1996),
  - Monitor ~6 pts/day using the modified Rhodes Scale.
  - Oral 5HT3-based regimen
  - ~15% of pharmacist interventions arose from assessment of the Rhodes Scale
  - 5HT3 usage has decreased by 57% (24.6 to 10.5 doses/pt) since implementation
Avoidance of Chemotherapy Errors

✓ 30% of interventions concerned with chemotherapy orders

✓ Rate of chemotherapy order clarification was 32.3% physician vs. 2.6% for pharmacists over 3 months. Some errors were class 2 & 3 (serious, usually related to incorrect dose)
All Interventions

- 4 audits performed—intervention outside the guidelines amount to 100 per 40 patients/week
- Staffing included 2 pharmacists, 1 pharmacy resident, and 2 pharmacy students
- Acceptance rate = 97%
- Interventions rated by independent pharmacists
Standardized Pharmacy Protocol
Adult Leukemia--Outcomes

- Outcomes not assessed
  - Patient Survival
  - Bounce-back hospitalizations
  - Emergency Department Visits
  - Unscheduled clinic visits
  - Consumption of Unnecessary Drugs
Ambulatory Infusion Center
Oncology Pharmacy

- Pictures
Guidelines for chemotherapy order verifications, antiemetics per pharmacy, Pending guidelines for cancer pain management

Evidence-based chemotherapy regimens are frequently used by prescribers, but a standard method for writing orders was not in place.

Director of Medical Oncology requested an assessment of chemotherapy errors by prescriber.

Oncology pharmacists developed Standardized chemotherapy orders similar to the inpatient setting.
All orders should contain the following information:

1. Patient name
2. Diagnosis
3. Weight, height, BSA (if needed)
4. Dates to be given.
5. Protocol name or regimen (if not a standard regimen, include refs)
6. Generic drug name (may also include brand name as a double check)
7. The dose in mg/kg or mg/m² (or desired AUC for carboplatin) and the calculated dose
8. Route of administration and rate of administration.
9. Antidotes as indicated, for example leucovorin for high dose methotrexate, mesna for ifosfamide.
   a. Premedications as indicated, example for paclitaxel.
   b. Hydration if needed, for example with cisplatin.
   c. Anti-emetics as indicated for emetogenicity of chemotherapy drug.
10. Prescriber’s signature and day/month/year
UCSF Guidelines on Chemotherapy Orders (2)

Recommended Prescribing Guidelines: to avoid chemotherapy errors

1. Write the full name of the drug. Avoid using abbreviations for drug names.
2. Include the cycle number on the order.
3. If the chemotherapy dose is adjusted for toxicity, include the percent reduction and the reason for the dose reduction. This helps the nurses and pharmacists to monitor the patient and check the dose.
4. Whenever possible, order practical doses of chemotherapy. The pharmacist will confer with you on rounding of certain drugs to their most practical dose as long as it does not vary by more than 5% of the original dose. (study drugs are excluded)
5. Write medication doses in milligrams whenever possible, rather than in grams.
6. Write “micrograms” or “mcg” clearly: “µg” may be misinterpreted as “mg” (milligram).
7. Avoid trailing zeros: 2.0 mg may be misinterpreted as 20 mg.
8. Use a leading zero for doses less than a whole unit: .4 mg may be misinterpreted as 4 mg.
9. Write out “units.” A “u” or “U” may be interpreted as a 0 (zero).
Audit of ChemoRx Errors

- N = 200 shadow charts including chemotherapy orders were reviewed retrospectively during 2 time periods (6/1/01-10/31/01; 2/1/02 – 3/31/02)
- Errors were coded by prescriber. An error included non compliance with the UCSF guidelines.
- During the 2nd audit period, a set of chemotherapy standardized orders were developed and implemented
Chemotherapy Orders for Topotecan

- Dates to be given:______________ Allergies_________ Height:_____ in/cm
  Weight:_______________ lb/kg  BSA:______________ m²
- Diagnosis: _____________________ ICD-9 codes:_____________________
- Cycle:__________  Day(s):___________

Antiemetics: Pre-chemotherapy *(moderately low emetogenic potential)*
- □ Prochlorperazine ____ mg IV or □ prochlorperazine 10 mg po or □

Chemotherapy: (plan to be given daily for 5 days every 21 days)
Topotecan 1.25 mg/m² or ______ mg/m² = __________ mg IV in D5W 100 ml
over 30 minutes daily for five days (days 1-5) or □ Laboratory work: (Dose
adjustment recommendation for CrCl: If ≥ 40 ml/min give usual dose, if CrCl 20 to
39 ml/min give 50% of usual dose, if CrCl < 20 ml/min dose reduction is unknown)
- Pre-chemotherapy on Day 1 □ CBC with differential and platelets □
  Creatinine

- If ANC ≥1.5 x 10⁹/L, platelets ≥ 100 x 10⁹/L, give 100% of dose.
- If ANC < 1.5 x 10⁹/L, platelets < 100 x 10⁹/L, Cr > ____ mg/dL call
  Additional orders: (filgrastim should not be given until at least 6 days after
  the last dose of topotecan)
- □ Filgrastim (Neupogen) □ 300 mcg □ 480 mcg subcutaneous injection to
  start on date __________ and continue daily for ___________ days or □
  _________________________________
Chemotherapy Orders for Bleomycin, Cisplatin and Etoposide (PEB)
(see page 2 for bleomycin orders)

- Dates to be given: _________________________________
- Allergies ______ Height _______ in/cm Weight: ______ lb/kg  BSA: ______ m²
- Diagnosis: _______________ ICD-9 codes: __________
- Cycle: __________ Day(s): _______________________

Antiemetics: give prior to chemotherapy days 1-5 (select a steroid and a serotonin antagonist)

- □ Dexamethasone 10 mg IV or □ Dexamethasone __ mg
- □ Granisetron ____ mcg IV (10 mcg/kg) (round up to nearest 100 mcg) □ Granisetron 2 mg po
- □ Ondansetron 8 mg IV □ Ondansetron 16 mg po or □

Pre-hydration: □ NS 1000 ml IV over 2 hours on days 1-5 □

Chemotherapy (cisplatin and etoposide) (plan to repeat every 21 days)
- Cisplatin 20 mg/m² = _______ mg (or ______ mg/m² = ______ mg) in NS 500 ml IV over 1 hour on days 1-5
- Etoposide 100 mg/m² = _______ mg (or ______ mg/m² = ______ mg) in NS 500 ml IV over 1 hour on days 1-5

Post-hydration: □ NS 500 ml IV over 1-2 hours on days 1-5 □

Laboratory work:
- On Day 1 □ CBC with differential, platelets □ Electrolytes, Cr, BUN, Ca, Mg □
  Total bilirubin, AST, ALT, LDH □ βHCG, αFP, LDH □
  Other ____________________________
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*** Excludes Doxil

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Chemotherapy Orders Audit

- Handwritten orders resulted in a much higher frequency of error than printed orders.
- After Audit 1, individual prescribers were notified of their errors.
- Most prescribers were very appreciative of the information and were more diligent in writing subsequent chemotherapy orders.
- Communication of results regarding chemotherapy orders resulted in a 26% reduction in errors.
- However, the most significant intervention was the implementation of standardized chemotherapy orders.
Use of type-written standardized orders decreased the error rate by 95% (0.38 EPC).

We currently have developed more than 50 standardized chemotherapy orders, which are available in the pharmacy or on the institution web site.

Development of new orders must be signed by members of the Collaborative Practice Committee and include an oncologist, oncology pharmacist, and oncology nurse.

Changes in the standardized orders must only go through pharmacist coordinator.
Keys to Successful Collaborative Practice

- There are several methods of collaborative practice in oncology
- Partnering with physicians and nurses will avoid “turf” battles and focus on their primary mission—high quality patient care
- Pharmacists should utilize their knowledge to educate colleagues on drug interactions and collaborate in the management of side effects
- Pharmacists should take a proactive role in reducing errors, especially with regard to chemotherapy
Acknowledgements

- Physicians
- Nurses
- Pharmacists