Introduction: I am an associate professor of Pharmacy Practice at the University of Kansas School of Pharmacy. I teach general Pharmacy and Oncology Pharmacy in the classroom, as well as Pediatric Oncology Pharmacy in Clinical Clerkships at the University of Kansas Medical Center.

2. KU Medical Center is a medium-sized hospital of about 350 – 400 beds currently. It serves as the main hospital for the School of Medicine, School of Nursing, School of Allied Health, and as a major site for clinical clerkships for the School of Pharmacy.

3. KU Medical Center has strong programs in Cardiology, Neurology (Parkinson’s and Alzheimer’s Diseases), Polycystic Kidney Disease, and Cancer.

4. I work with the Pediatric Hematology and Oncology Service. Acute Lymphoblastic Leukemia is the most common pediatric malignancy in the U.S. Brain tumors and lymphomas are also common, but our service takes care of a relatively large number of solid tumor patients. This is due to an Orthopedic Oncology Surgeon at our institution who is well known and receives many referrals.

5. My first role as a Clinical Pharmacy Specialist in Pediatric Oncology is to help with patient care. I provide drug information to our team, and I help monitor patients’ therapies on a daily basis. It is important for me to read patient charts and collect information about the patients before I go to rounds with the physicians. In this way, I recognize potential drug-related problems that other healthcare professionals would never think of asking me about. If I wait for questions asked by the other professionals, I can only help them on problems that they recognize, which limits the use of my education and experience.

6. On patient care rounds, I give any suggestions I have to the physicians, and answer any questions they have for me. In our medical school setting, where many orders are written by medical residents, I can often help the staff physicians (faculty) ensure that the residents and students have written correct drug orders for our patients. I also help monitor the therapies to ensure that patients are receiving the benefits of the therapy. My students and I provide information to nurses and nursing students regarding new drugs or drugs that they are less familiar with. Patient education is also an important function for pharmacists, although I find that I only help in special cases since I am not consistently available on the floor to offer counseling. When I do have the chance to talk to patients about their drugs, it is one of the more fun activities I perform.

7. The medical team has the need for a variety of types of drug information. Most commonly they need simple information on the availability, cost, or dosage of medications. More difficult questions that might require more research include dosage modifications for patients who are obese, malnourished, or who have kidney or liver dysfunction. Recently we did a literature search which found general information on chemotherapy in pregnancy, plus 3 case reports (one from Japan) of chemotherapy used successfully in pregnant patients with Ewing’s Sarcoma. The typical regimen
alternates vincristine, doxorubicin, and cyclophosphamide with ifosfamide and etoposide. Two of the cases we found used ifosfamide with doxorubicin to try to limit spread of the disease until the baby could be delivered several weeks later. This is the option our physicians chose.

8. A second major role for the Pediatric Oncology pharmacist is service to the hospital and profession. Numerous guidelines are available from Oncology organizations for antiemetic prophylaxis, empiric antibiotics in febrile, neutropenic patients, and treatment of various cancers. I help keep track of published guidelines for my medical team and for the hospital pharmacy department. I volunteer to serve on committees that develop hospital guidelines for drugs that we use in pediatric oncology patients. A recent example is intravenous promethazine, which can cause ischemia, gangrene, and loss of a hand if mistakenly injected into an artery. Although I am not a member of the KU Medical Center Institutional Review Board, many oncology pharmacists are members of their IRB’s, since many of the studies reviewed by IRB’s are for the institution’s cancer patients. (IRB’s review investigational studies for appropriateness, and to ensure they are ethical and provide good informed consent for the patients)

9. One of the main professional organizations that I am currently involved with is the Children’s Oncology Group, a multi-institutional research group that includes most pediatric Oncology centers in the U.S., Canada, Australia, and New Zealand. The purpose of such groups is to enroll large numbers of patients on research protocols so that results can be obtained over a relatively short period of time. (2-5 years usually) I am active in the Pharmacy committee, which helps develop guidelines for drug use and helps train pharmacists to keep good investigational drug records. I also participate in several protocol committees that write protocols for patients with soft tissue sarcomas and Ewing’s sarcoma. The nutrition committee has also invited me to lend my drug knowledge to their educational and research efforts. These activities have helped me become involved in research within the group also. Oncology pharmacists can help themselves and others by participating in all Pharmacy organizations as well as Oncology-specific organizations.

10. A third role for Pediatric Oncology pharmacists is research. One area of importance in pediatrics is extemporaneous oral formulations for patients who are not able to take solid dosage forms. With the large numbers of drugs used in Oncology patients, there is also a need for more data on compatibilities of parenteral drugs. Within the Children’s Oncology Group, I have been able to serve on protocol writing committees, the nutrition committee, and a protocol review committee that is attempting to improve the way protocols are written within COG.

11. One method of becoming involved with research efforts is to retrospectively collect data on chemotherapy dosage in obese, malnourished, or renally or hepatically impaired patients. Even literature reviews are needed to help us determine the best guidelines for altering drug dosages in various types of patients.

12. The key to being a good Pediatric Oncology pharmacist is the same as it is for any pharmacist: use your drug knowledge to improve patient care!