Mercy Hospital
PGY 1 Required Pharmacokinetic Rotation

**Primary Preceptor:** Jama Huntley, Pharm.D.
**Additional Preceptors:** Dan Hansen, Pharm.D.
**Rotation Length:** 12 month, longitudinal

**Prerequisites:** Graduate from an accredited school of pharmacy.

**Purpose of Residency:** To prepare a pharmacist for clinical pharmacy practice in a community hospital or for a PGY 2 residency. In addition, the resident will be prepared to perform the duties of an adjunct faculty member.

**Purpose of Rotation:** To review the pharmacokinetic and pharmacodynamic properties of individual medications as they apply to specialized patient populations.

**Rotation Description:**
The pharmacokinetic longitudinal rotation is designed to provide the resident with a practical experience evaluating therapeutic drug monitoring. Initially using a series of patient case presentations, the principles of pharmacokinetics and pharmacodynamics will be introduced. The resident will be expected to evaluate primary and tertiary literature, attend monthly preceptor meetings and follow-up, participate in patient case presentations, and apply the learned skills to patients admitted to Mercy Hospital. After completing didactic reviews of therapeutically monitored medications, the resident will evaluate all drug levels drawn during each rotation they are on that are not currently be followed by a clinical pharmacist.

**Educational Content:**
1. The resident will begin this rotation with developing basic principles of pharmacokinetics and pharmacodynamics (elimination rate constant, volume of distribution, first-order kinetics, multi-compartment models of distribution, etc).

2. The resident will be responsible for developing a knowledge base pertaining to the following medications. This knowledge base should include, but will not be limited to therapeutic goals, pharmaceutical care monitoring parameters associated with each medication, and dosage adjustment in special populations.
   a) Vancomycin
   b) Aminoglycosides (conventional and once daily dosing)
   c) Phenytoin and fosphenytoin
   d) Digoxin
   e) Enoxaparin (and other LMWH)
   f) Phenobarbital
   g) Caffeine
   h) Carbamazepine
   i) Cyclosporine
   j) Tacrolimus
   k) Valproic Acid
   l) _______________
**Topic Discussions:**

Complete this table as topic discussions are completed.

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**Reading List:**


**Rotation Goals/Objectives/Activities:**

Goal R1.5: Provide concise, applicable, comprehensive and timely responses to requests for drug information from patients and health care providers.

Activity: Utilized access to PubMed, Ovid, MDConsult, etc in order to completely and accurately respond to any question that has been asked by a patient or health care provider. It will also be imperative for the resident to understand the urgency of the question asked to know how to prioritize daily activities.

Goal R2.1: As appropriate, establish collaborative professional relationships with members of the health care team.

OBJ R2.1.1 (Synthesis) Implement a strategy that effectively establishes cooperative, collaborative, and communicative working relationships with members of interdisciplinary health care teams.

Activity: Be a visible health care provider and available to other health care providers in order to build rapport with physicians, nurses, etc and available to answer questions as appropriate regarding drug therapy and any new orders, or changes in therapy that are made for pharmacokinetic purposes.

Goal R2.2: Place practice priority on the delivery of patient-centered care to patients.

OBJ R2.2.1 (Organization) Choose and manage daily activities so that they reflect a priority on the delivery of appropriate patient-centered care to each patient.

Activity: Awareness of the timing of drug levels, dosing times and steady state of your patients’ medication regimens. When necessary, consult with laboratory to determine appropriate time to draw levels for send out labs. It is also necessary to form a complete patient history of compliance, timing of levels and organ function to maximize therapeutic effects with minimal toxicity.
Goal R2.3: As appropriate, establish collaborative professional pharmacist-patient relationships.

OBJ R2.3.1. (Synthesis) Formulate a strategy that effectively establishes a patient-centered pharmacist-patient relationship.

Activity: When appropriate will reconcile patient home medications and determine compliance in relation to inpatient drug levels. It will be expected that information be communicated with the primary care provider and a chart note wrote when appropriate.

Goal R2.4: Collect and analyze patient information.

OBJ R2.4.1 (Analysis) Collect and organize all patient-specific information needed by the pharmacist to prevent, detect, and resolve medication-related problems and to make appropriate evidence-based, patient-centered medication therapy recommendations as part of the interdisciplinary team.

OBJ R2.4.2 (Analysis) Determine the presence of any of the following medication therapy problems in a patient's current medication therapy:

1. Medication used with no medical indication
2. Patient has medical conditions for which there is no medication prescribed
3. Medication prescribed inappropriately for a particular medical condition
4. Immunization regimen is incomplete
5. Current medication therapy regimen contains something inappropriate (dose, dosage form, duration, schedule, route of administration, method of administration).
6. There is therapeutic duplication
7. Medication to which the patient is allergic has been prescribed
8. There are adverse drug or device-related events or potential for such events.
9. There are clinically significant drug-drug, drug-disease, drug-nutrient, or drug-laboratory test interactions or potential for such interactions.
10. Medical therapy has been interfered with by social, recreational, nonprescription, or nontraditional drug use by the patient or others.
11. Patient not receiving full benefit of prescribed medication therapy
12. There are problems arising from the financial impact of medication therapy on the patient.
13. Patient lacks understanding of medication therapy.
14. Patient not adhering to medication regimen.

OBJ R2.4.3 (Analysis) Using an organized collection of patient-specific information, summarize patients’ health care needs.

Activity: Utilize Bridge to determine if drug levels have been drawn appropriately, if the medication has reached steady state, or if there are any other erroneous complications to explain a non-therapeutic drug level. Using this information, it will be expected that the primary care providers will receive communication (written and/or verbal) with recommendations to resolve any medication complications. This same process should also be utilized for therapeutic levels to verify that they are not falsely therapeutic.

Goal R2.5: When necessary, make and follow up on patient referrals.

OBJ R2.5.1 (Evaluation) When presented with a patient with health care needs that cannot be met by the pharmacist, make a referral to the appropriate health care provider based on the patient’s acuity and the presenting problem.

OBJ R2.5.2 (Synthesis) Devise a plan for follow-up for a referred patient.

Activity: Be familiar with the services available to provide adequate and complete health care. Knowing when it is appropriate to consult a specialist is a key to recognizing the needs of your patient.
Goal R2.6:  Design evidence-based therapeutic regimens.

OBJ R2.6.1  (Synthesis)  Specify therapeutic goals for a patient incorporating the principles of evidence-based medicine that integrate patient-specific data, disease and medication-specific information, ethics, and quality-of-life considerations.

OBJ R2.6.2  (Synthesis)  Design a patient-centered regimen that meets the evidence-based therapeutic goals established for a patient; integrates patient-specific information, disease and drug information, ethical issues and quality-of-life issues; and considers pharmacoeconomic principles.

Activity:  Meet monthly with preceptors to discuss the pharmacokinetics, pharmacodynamics of assigned medications. Actively practice these principles through managing patients and making therapeutic recommendations to the health care team during each rotation and in each patient who have been consulted by pharmacy.

Goal R2.7:  Design evidence-based monitoring plans.

OBJ R2.7.1  (Synthesis)  Design a patient-centered, evidenced-based monitoring plan for a therapeutic regimen that effectively evaluates achievement of the patient-specific goals.

Activity:  Meet monthly with preceptors to discuss appropriate monitoring plans based on evidence for each of the assigned medications. Actively practice these monitoring plans through managing patients during each rotation who have been consulted by pharmacy.

Goal R2.8:  Recommend or communicate regimens and monitoring plans.

OBJ R2.8.1  (Application)  Recommend or communicate a patient-centered, evidence-based therapeutic regimen and corresponding monitoring plan to other members of the interdisciplinary team and patients in a way that is systematic, logical, accurate, timely, and secures consensus from the team and patient.

Activity:  All pharmacokinetic recommendations will be documented in the progress section of the patient chart using the pharmacy approved format for writing a chart note. When possible, recommendations to a patients’ therapeutic regimen will also be verbally communicated with the patients nurse and physician. Recommendations should also include a monitoring plan in addition to any other pertinent information that a health care provider would need to understand and follow-up on your recommendations.

Goal R2.9:  Implement regimens and monitoring plans.

OBJ R2.9.1  (Application)  When appropriate, initiate the patient-centered, evidence-based therapeutic regimen and monitoring plan for a patient according to the organization's policies and procedures.

OBJ R2.9.2  (Application)  Use effective patient education techniques to provide counseling to patients and caregivers, including information on medication therapy, adverse effects, compliance, appropriate use, handling, and medication administration.

Activity:  Actively participate in patient care rounds and make pharmacokinetic recommendations when needed based on up-to-date guidelines and evidence base treatment recommendations.

Goal R2.10:  Evaluate patients' progress and redesign regimens and monitoring plans.

OBJ R2.10.1  (Evaluation)  Accurately assess the patient's progress toward the therapeutic goal(s).

OBJ R2.10.2  (Synthesis)  Redesign a patient-centered, evidence-based therapeutic plan as necessary based on evaluation of monitoring data and therapeutic outcomes.
Activity: Monitor patient’s daily progress utilizing graphics and laboratory information to make adjustments to therapeutic monitoring plan as needed. Take into account organ function and clinical status in order to achieve maximum therapeutic effect.

Goal R2.11: Communicate ongoing patient information.
OBJ R2.11.1 (Application) When given a patient who is transitioning from one health care setting to another, communicate pertinent pharmacotherapeutic information to the receiving health care professionals.
OBJ R2.11.2 (Application) Ensure that accurate and timely medication-specific information regarding a specific patient reaches those who need it at the appropriate time.

Activity: Assure that all interventions and daily recommendations are documented in HealthProLink for internal pharmacy communication. For external communication it is imperative for progress notes to be found in the patient chart utilizing the pharmacy approved format for writing a chart note.

Goal R2.12: Document direct patient care activities appropriately.
OBJ R2.12.1 (Analysis) Appropriately select direct patient-care activities for documentation.
OBJ R2.12.2 (Application) Use effective communication practices when documenting a direct patient-care activity.
OBJ R2.12.3 (Comprehension) Explain the characteristics of exemplary documentation systems that may be used in the organization’s environment.

Activity: All therapeutic recommendations, pharmacokinetic consults, interventions, dosage adjustments, etc must be documented in HealthProLink. Ideally, as the year progresses the number of interventions per month should increase and be at a higher level of acuity.

Role of the Preceptor:

Instructing: The preceptor will teach the resident with reading material, topic discussions and patient case discussions on a regular basis to improve the resident’s understanding of disease states and pharmacotherapy.

Modeling: The preceptor will go to the patient care area with the resident to model how the preceptor approaches care of patients by:
- chart review (integrating medication, diagnoses, lab values, etc…) to develop a care plan;
- using drug information skills;
- selecting appropriate communication strategies;
- prioritization, and;
- other necessary clinical pharmacist activities

Coaching: Once the resident has shown appropriate self-assessment and clinical skills, the preceptor will allow the resident to develop their own care plans then get feedback from the preceptor. The resident can approach the preceptor with questions whenever they have a problem.

Facilitating: If and when the resident is ready, the preceptor will allow the resident to work independently, only coming to the preceptor with problems about new situations or unfamiliar disease states and for occasional scheduled meetings. This will allow the resident to gain confidence, improve their self-assessment skills, and begin to transition into clinical practice.
Rotation Requirements:

1. Present at least two 30 minute in-service to the physicians or allied health professionals. As an alternative, may develop a specific pharmacy/medication project that pertains to pharmacokinetics.
2. Complete all tasks as assigned.
3. Meet with the preceptor on a monthly basis for a verbal evaluation and at least quarterly for a written evaluation utilizing ResiTrak.

Assessment Strategy:

The resident will be evaluated by the preceptor in ResiTrak based upon achievement of outcomes, goals and objectives, using the instructional objectives as a guide. The preceptor will evaluate the resident at the midpoint and the end of the rotation. The resident will be expected to complete a preceptor and learning experience evaluation at the end of the rotation. The resident is also required to complete a self evaluation to “practice self-managed continuing professional development with the goal of improving the quality of one’s own performance through self-assessment and personal change.”

Below is the complete evaluation and assessment schedule.

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<td>Self, Preceptor and Learning Experience</td>
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<td>Resident</td>
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Last Updated 10/14/13 JH, DH