### Rotation Summary

<table>
<thead>
<tr>
<th>Rotation Title: Pediatric Critical Care</th>
<th>Rotation Length: 6 Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Preceptors Names:</strong> Brian Gardner, Amanda Kuper</td>
<td></td>
</tr>
<tr>
<td><strong>Phone:</strong> 55972</td>
<td></td>
</tr>
<tr>
<td><strong>Hours:</strong> 0700 - 1700</td>
<td></td>
</tr>
<tr>
<td><strong>Pager:</strong> 127-89728</td>
<td></td>
</tr>
</tbody>
</table>

### General Description:

The Mayo Eugenio Litta Children’s Hospital is a “Hospital within a Hospital” based at the Saint Marys campus in Rochester. The Children’s Hospital is a 130-bed hospital that includes a General Care Area, Pediatric Intensive Care Unit, Neonatal Intensive Care Unit (level II and level III), Pediatric Transplant Unit, and a Pediatric Infusion Therapy Center.

The Pediatric Intensive Care Unit is an open 12-bed medical/surgical intensive care unit designed to provide care to pediatric patients requiring intensive care. A wide variety of patients including multiple surgical subspecialty patients, trauma, oncology, cardiology, metabolic, neurology, pulmonology, and endocrine patients are routinely treated. The Pediatric Critical Care Service is the primary care service for all medical patients in the Pediatric Critical Care Unit. They also co-manage all of the surgical patients and the patients in the adjoining 4 bed Pediatric Transplant Unit. Pediatric patients undergoing liver, kidney, and stem cell/ bone marrow transplant are cared for in the Pediatric Transplant Unit.

Comprehensive pharmacy services that are provided to the patients on the Pediatric Critical Care Service include: pharmacokinetic services, pharmaceutical care, team rounding, pharmacy clinical rounds, satellite pharmacy that provides a majority of medication doses to nursing in a ready-to-administer form.
Disease States:
The resident will be responsible for developing a knowledge base pertaining to the following pediatric critical care disease states and complications. This knowledge base should include, but will not be limited to etiology, epidemiology, pathogenesis, clinical presentation, diagnostic criteria, prognosis, common medication treatment regimens, therapeutic goals, pharmaceutical care monitoring parameters associated with disease and treatment.

<table>
<thead>
<tr>
<th>Disease States</th>
<th>Treatment/Prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic Ketoacidosis</td>
<td>Bone marrow/stem cell transplantation</td>
</tr>
<tr>
<td>Acute Renal Failure</td>
<td>• Bacterial prophylaxis/treatment</td>
</tr>
<tr>
<td>• Hemodialysis</td>
<td>• Fungal prophylaxis/treatment</td>
</tr>
<tr>
<td>• Continuous renal replacement</td>
<td>• Conditioning regimens</td>
</tr>
<tr>
<td>Status epilepticus</td>
<td>• Viral prophylaxis/treatment – CMV, herpes simplex, herpes zoster</td>
</tr>
<tr>
<td>Status Asthmaticus</td>
<td>• Pneumocystis carinii prophylaxis/treatment</td>
</tr>
<tr>
<td>Hypotension management</td>
<td>• Graft vs host disease</td>
</tr>
<tr>
<td>Nutrition in the critically ill patient</td>
<td>• Veno – occlusive disease</td>
</tr>
<tr>
<td>Cardiac dysrhythmias</td>
<td>• Bone marrow/stem cell infusion considerations</td>
</tr>
<tr>
<td>Shock Syndromes</td>
<td>Renal transplantation</td>
</tr>
<tr>
<td>• Hypovolemic</td>
<td>Liver transplantation</td>
</tr>
<tr>
<td>• Septic</td>
<td>Sedation in mechanically ventilated patient</td>
</tr>
<tr>
<td>• Cardiogenic</td>
<td>Pain management in mechanically ventilated patient</td>
</tr>
<tr>
<td>Acute hypertensive emergency</td>
<td>Acute Respiratory Distress Syndrome</td>
</tr>
<tr>
<td>Neuromuscular blockade</td>
<td></td>
</tr>
<tr>
<td>Stress ulcer prophylaxis</td>
<td></td>
</tr>
</tbody>
</table>

Goals Selected:

R1.4: Demonstrate ownership of and responsibility for the welfare of the patient by performing all necessary aspects of the medication-use system.
- R1.4.1: Display initiative in preventing, identifying, and resolving pharmacy-related patient-care problems.

R1.5: Provide concise, applicable, comprehensive, and timely responses to requests for drug information from patients and health care providers.
- R1.5.1: Discriminate between the requesters' statement of need and the actual drug information need by asking for appropriate additional information.
- R1.5.2: Formulate a systematic, efficient, and thorough procedure for retrieving drug information.
- R1.5.3: Determine from all retrieved biomedical literature the appropriate information to evaluate.
- R1.5.4: Evaluate the usefulness of biomedical literature gathered.
- R1.5.5: Formulate responses to drug information requests based on analysis of the literature.
- R1.5.6: Provide appropriate responses to drug information questions that require the pharmacist to draw upon his or her knowledge base.
- R1.5.7: Assess the effectiveness of drug information recommendations.

R2.1: As appropriate, establish collaborative professional relationships with members of the health care team.
- R2.1.1: Implement a strategy that effectively establishes cooperative, collaborative, and communicative working relationships with members of interdisciplinary health care teams.

R2.2: Place practice priority on the delivery of patient-centered care to patients.
- R2.2.1: Choose and manage daily activities so that they reflect a priority on the delivery of appropriate patient-centered care to each patient.

R2.4: Collect and analyze patient information.
- R2.4.1: 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.
- R2.4.2: 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.

- R2.4.3: Using an organized collection of patient-specific information, summarize patients’ health care
needs.

R2.6: Design evidence-based therapeutic regimens.
- R2.6.1: 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.

R2.7: Design evidence-based monitoring plans.
- R2.7.1: Design a patient-centered, evidence-based monitoring plan for a therapeutic regimen that
effectively evaluates achievement of the patient-specific goals.

R2.8: Recommend or communicate regimens and monitoring plans.
- R2.8.1: 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.

R2.9: Implement regimens and monitoring plans.
- R2.9.1: When appropriate, initiate the patient-centered, evidence-based therapeutic regimen and
monitoring plan for a patient according to the organization's policies and procedures.
- R2.9.2: 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.

R2.10: Evaluate patients’ progress and redesign regimens and monitoring plans.
- R2.10.1: Accurately assess the patient’s progress toward the therapeutic goal(s).
- R2.10.2: Redesign a patient-centered, evidence-based therapeutic plan as necessary based on evaluation
of monitoring data and therapeutic outcomes.

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

R5.1 - Provide effective medication and practice-related education, training, or counseling to patients, caregivers,
health care professionals, and the public.
E5.1 - Participate in the management of medical emergencies.
Develop a drug therapy-monitoring plan.
- Determine parameters (objective and subjective) to monitor for efficacy and/or toxicity.
- Determine how often each monitoring parameter should be reviewed.
- Define acceptable endpoints for therapy.

Evaluate the outcomes of implementing the pharmacotherapeutic regimen and modify as needed based on continuous evaluation of data.
- Gather data as called for in the monitoring plan
- Compare values of each parameter to the desired values
- Modify the pharmacotherapeutic regimen as necessary based on evaluation of data
- Document outcomes of implementing the pharmacotherapeutic regimens and modifications to the regimen

Assess and monitor fluid, electrolyte, and parenteral nutrition therapy.
- Determine appropriate volume intake, electrolyte requirements, and nutritional needs when applicable.
- Evaluate parenteral nutrition therapy for physical incompatibilities, appropriate fluid intake, caloric intake, and daily intake of electrolytes, vitamins, trace elements, fat, and protein.

Pharmacokinetic consultation on any medications monitored by serum levels
- Aminoglycosides, Vancomycin, Digoxin, Tacrolimus, antiepileptics, etc.

Documentation
- Review all monitors for the pediatric intensive care unit
- Document all of the above activities in P-Care
- Document all therapeutic interventions in P-Care
- Document all patient progress notes in P-Care
- Document clinical activities in the Electronic Medical Record per Hospital Policy

Attend PICU service rounds daily. Contribute to drug therapy decisions, bring forth medication-related issues, provide drug information, and provide informal medication education as the need arises or is requested. Perform transfer reconciliation on all patients, and discharge counseling on solid-organ transplant patients.

Research therapeutic issues as requested by the PICU staff, nurses, or preceptors.

Participate in PICU Code 45 activities as appropriate.

Attend Friday Morning Pediatric Grand Rounds.

**Preceptor Interaction:**
- Meet with preceptor on a regular basis (4-5 times per week) to review Pediatric Critical Care Service patients. Review past medical history, history present illness, and pertinent laboratory data as it relates to disease state and therapeutic drug monitoring, evaluate initial drug therapy, identify potential medication related issues, develop monitoring plan for medication therapy, report on parameters being followed in monitoring plan, discuss potential modification of therapy base on results of monitoring, identify medication therapy endpoints and patient progress towards reaching the endpoints.
- Present at least one 30 minutes inservice to the pharmacy staff or Pediatric Critical Care Service. As an alternative, may develop a specific pharmacy/medication project that pertains to the Pediatric Critical Care Service and their patients.
- Meet with the preceptor at the midpoint of the rotation for a verbal evaluation and near the end of the rotation for a written evaluation, using Resitrak.
**Evaluation Strategy**
ResiTrak will be used for documentation of formal evaluations. For evaluations, resident and preceptor will complete the evaluations separately. The preceptor and the resident will meet to discuss the evaluations. This discussion will provide feedback for both the resident and preceptor on their performance.

<table>
<thead>
<tr>
<th>What type of evaluation</th>
<th>Who</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal</td>
<td>Preceptor, Resident</td>
<td>Mid-Rotation</td>
</tr>
<tr>
<td>Summative</td>
<td>Preceptor, Resident</td>
<td>End of learning experience</td>
</tr>
<tr>
<td>Summative Self-evaluation</td>
<td>Resident</td>
<td>End of learning experience</td>
</tr>
<tr>
<td>Preceptor, Learning Experience Evaluation</td>
<td>Resident</td>
<td>End of learning experience</td>
</tr>
</tbody>
</table>