PGY-2 Residency Training Program

**Neurocritical Care Rotation - EUH**

Preceptor: Bill Asbury, B.S., Pharm.D.
Office: EUH- EG35
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**General Description:**

Neurocritical Care is a four week learning experience at Emory University Hospital. The neurocritical care team consists of neurointensivists, nurse practitioners, a neurocritical care PharmD, neurocritical care fellow(s), neurosurgery and neurology residents, and occasionally other critical care fellows and students. This team works with neurosurgeons, neurologists and neurointerventionalists. The resident will spend five days a week with the neurocritical care team. The neurosurgery team begins at ~0600 AM and their rounds include morning checkout in the neuro-intensive care unit conference room at 0700 AM. Patient care rounds, led by the neurointensivist, generally begin at 0900 – 0930 AM in the neuro-intensive care unit and can last until 1200 – 1230 PM. Afternoon checkout rounds begin at 1700 PM in the neuro-intensive care unit conference room. The resident is expected to attend 2 of these 3 rounds. Morning or afternoon check-out rounds are not mandatory, but may be necessary at times to assist with continuity of care.

This rotation will provide exposure to various surgical and medical neurological diseases. The pharmacy resident is expected to provide comprehensive pharmaceutical care for the neurocritical care team, including drug information, recommendations to optimize pharmacotherapy, and coordinating pharmaceutical services when deemed necessary. In addition, the resident is expected to serve as a pharmacy liaison to the neurosurgical step-down unit. At a minimum, the resident is required to check in daily with the neurocritical care fellow, neurosurgery resident, neurology resident, nurse practitioner or neurointensivist to assess the need for pharmacotherapy services and individually review medication profiles once daily for major pharmacotherapeutic concerns.
The preceptor will round with the resident during the first week only. After that time, the preceptor will occasionally round with the resident to ensure appropriate patient care or to observe the resident’s progress. However, the preceptor will be available to address any questions, either being directly visible in the intensive care unit or immediately accessible via pager or cell phone.

The resident will lead or participate in topic discussions and literature evaluation at least once weekly. When students are also on rotation, the resident will be primarily responsible for supervision and education of the student, and will provide input for the student’s evaluation.

Pharmacy resident responsibilities include:

- Daily neuro-ICU interdisciplinary rounds, including team topic discussions
- Attendance at Neurology, Neurosurgery or Neurocritical Care Grand Rounds (TBD)
- Patient profile review with identification and resolution of medication related issues
- Provide assistance with medication verification, order review, and other clarification as needed
- Resource for the coordination of distribution problems not resolved by in-patient pharmacy
- Work in concert with 3rd floor and main inpatient pharmacy staff to discuss patients therapies and provide answers to questions related to patients that may help expedite their pharmacotherapy orders
- Provide and document therapeutic drug monitoring (pharmacokinetics) services for all patients in the neuro-ICU receiving aminoglycosides, vancomycin, phenytoin, warfarin, enoxaparin, heparin, fondaparinux, argatroban, and valproic acid; documentation must be completed within the electronic medical record on the day service was provided
- Participation in Dr. 99 codes that occur in the neuro-ICU

Attention to detail, excellent communication and interpersonal skills are vital to the successful completion of this learning experience. Patient acuity is very high and clinical status may change quickly requiring reassessment of therapeutic regimens and monitoring plans on an ongoing basis. The resident must devise efficient strategies for accomplishing the required activities in a limited time frame. In addition to patient care, the resident must provide education to the team or pharmacists as the need arises. At least one educational presentation is required to be presented to the team and/or nursing staff during the learning experience.

**Disease States**
The resident will apply knowledge of pathophysiology, signs and symptoms, diagnosis and pharmacotherapy of specific disease states. The resident will be expected to gain proficiency through literature review, topic discussion, and/or direct patient care experience for 5 of the following topics:

- Subarachnoid hemorrhage
- Cerebral vasospasm
- Hospital acquired/Ventilator associated pneumonia
- Status epilepticus
- Meningitis/Ventriculitis
- Cerebral venous sinus thrombosis
- Brain/Spinal abscess
- Intracranial hemorrhage
- Ischemic stroke
- Intracranial hemodynamics
- Arteriovenous malformation
- Nosocomial infections and antimicrobial use in neurocritical care patients
- Venous thromboembolism prophylaxis
- Pharmacokinetics in neurocritical care patients
- Syndrome of inappropriate diuretic hormone
- Cerebral salt wasting
- Diabetes insipidus
- Guillain-Barre’ syndrome
- Myasthenia gravis
- Vasopressor pharmacology
- Hypertensive urgency/emergency
- Brain tumors
- Traumatic brain injury
- Spinal cord injury

Goals Selected

Goals selected to be taught and evaluated during this learning experience include:

R2.2: Prioritize the delivery of care to critically ill patients.
R2.4: Collect and analyze pertinent patient information.
R2.5: Design evidence-based therapeutic regimens for critically ill patients.
R2.6: Design evidence-based monitoring plans for critically ill patients.
R2.8: When appropriate, implement selected aspects of therapeutic regimens &/or monitoring plans.
R2.10: Communicate ongoing patient information.

Activities
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<thead>
<tr>
<th>Activity</th>
<th>Objective</th>
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<tr>
<td>Accurately gather, organize, and analyze patient specific information for appropriateness of therapy, dose, dosage regimen, route/method of administration, compliance, therapeutic duplications, therapeutic outcomes, cost, and avoidance of ADRs prior to multidisciplinary rounds</td>
<td>R2.2.1, R2.4.1, R2.4.3, R2.4.4, R2.5.1, R2.5.2, R2.6.1</td>
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<td>Actively participate in multidisciplinary rounds by making recommendations to prescribers in a way that is systematic, logical, and secures consensus from the medical team</td>
<td>R2.2.1, R2.4.2, R2.4.4, R2.5.2, R2.6.1, R2.8.1, R2.8.2, R2.10.1</td>
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<td>Initiate medication therapy changes or monitoring plans as per protocol or verbal orders</td>
<td>R 2.2.1, R2.8.2</td>
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<td>Provide pharmacokinetic services for patients receiving drugs requiring monitoring including, but not limited to, aminoglycosides, vancomycin, warfarin, fosphenytoin, phenytoin, enoxaparin, heparin and valproic acid</td>
<td>R2.2.1, R2.4.1, R2.4.2, R2.4.3, R2.5.1, R2.5.2, R2.6.1, R2.8.1, R2.8.2</td>
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<td>Ensure continuity of pharmaceutical care as patients are admitted to the NeuroICU and are transferred to different levels of care throughout the hospital. This includes transfer to step down units and signing out kinetics and other important clinical issues during weekend, holidays and off days</td>
<td>R2.2.1, R2.10.1</td>
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<td>Compose accurate, concise progress notes documenting direct patient care activities (medication history, anticoagulation, pharmacokinetics, monitoring of therapy, adverse drug reactions) within time frame to be useful</td>
<td>R2.2.1, R2.10.1</td>
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<td>Resident is required to write 6 pharmacy notes in Powerchart related to medication history, pharmacokinetics, anticoagulation, or adverse drug reactions by the completion of the rotation. Each note must be co-signed by the preceptor within 24 hours of entry into Powerchart. The resident must provide hard copy of each note to the preceptor without patient identifiers.</td>
<td>R2.2.1, R2.4.2, R2.4.3, R2.10.1</td>
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<td>Ensure patients have their medications reconciled. Specific role: obtain or verify medication histories for patients admitted to the NeuroICU and review the patients’ medication regimen upon transfer.</td>
<td>R2.4.1, R2.4.2, R2.4.3, R2.4.4, R2.5.1, R2.5.2, R2.6.1</td>
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<tr>
<td>Present patients to preceptor in the afternoons – incorporating appropriate interpretation of primary literature gained via independent reading and learning and patient data into a daily plan that maximizes appropriate pharmaceutical care to critically ill patients</td>
<td>R2.4.1, R2.4.2, R2.4.3, R2.4.4, R2.5.1, R2.5.2, R2.6.1</td>
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<tr>
<td>Balance patient care and other residency responsibilities</td>
<td>R2.2.1</td>
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<tr>
<td>Discuss time management strategy with preceptor</td>
<td>R2.2.1</td>
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**Preceptor Interaction**

**Daily:**
- Multidisciplinary rounds at ~0900-0930am
- Preceptor available for patient presentations, reviewing progress notes, and/or topic discussions in the afternoons (hours depending on schedule)

**Expected progression of resident responsibility on this learning experience:**

**Day 1:** Preceptor to review Neurocritical Care learning activities and expectations with resident.

**Weeks 1:** Resident to work up assigned patients before rounds. Preceptor will attend and participate in rounds (modeling pharmacist’s role and coaching resident to take on more responsibilities on the health care team). Resident to present assigned patients to preceptor in the afternoons.

**Weeks 2-4:** Resident to work up assigned patients before rounds. The resident will be expected to round independently after the first week of the rotation. Resident to present patients and plan to preceptor in the afternoons. Preceptor will always be available for questions and will follow patients independently to monitor resident skill development in all aspects of the learning experience (facilitating the resident as the pharmacist on the health care team).

Note: The length of time the preceptor spends in each of the phases of learning will depend BOTH on the resident’s progression in the current rotation and when the rotation occurs during the residency year.

**Evaluation Strategy**

ResiTrak will be used for documentation of formal evaluations. For formative evaluations, residents will perform the activity appropriate to the snapshot with the preceptor. Resident and preceptor will then independently complete the snapshot. After both have signed the evaluation, the resident and preceptor will compare and discuss the evaluations. This discussion will provide feedback both on their performance of the activity and the accuracy of the self-assessment. Formative evaluation will also occur as verbal or written feedback on a daily basis.
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<tr>
<th>What</th>
<th>Who</th>
<th>When</th>
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<tr>
<td>Midpoint Summative Self-Evaluation</td>
<td>Resident</td>
<td>End of week 2</td>
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<tr>
<td>Midpoint Summative Evaluation</td>
<td>Preceptor</td>
<td>End of week 2</td>
</tr>
<tr>
<td>Summative Self-Evaluation</td>
<td>Resident</td>
<td>End of learning experience – deadline: to be signed and submitted the end of the day following rotation completion.</td>
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<tr>
<td>Summative Evaluation</td>
<td>Preceptor</td>
<td>End of learning experience – deadline 5 days post final day of rotation to meet with resident to discuss.</td>
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<tr>
<td>Preceptor &amp; Learning Experience Evaluation</td>
<td>Resident</td>
<td>End of learning experience – deadline 5 days post final day of rotation.</td>
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