University of Utah Health Care Hospitals and Clinics
PGY1 Pharmacy Residency
Salt Lake City, Utah

Rotation Name: Medical ICU (ICU1- and ICU-2)

Rotation Preceptors:

Ben Gebhart, PharmD;
Brianne Wolfe, PharmD, BCPS, BCCCP;

Supporting Staff:
Brian Barker, RPh

Duration: 4 weeks

Site Description:

The Medical Intensive Care Unit (MICU) is a 25 bed critical care unit that cares for patients from throughout the Intermountain West (Utah, Idaho, Wyoming, Nevada, Montana, Colorado, and New Mexico). Patient demographics vary considerably and commonly encountered disease states include respiratory failure, states of impaired perfusion (septic, hemorrhagic, hypovolemic, and cardiogenic shock), acute and chronic kidney injury, toxic ingestions, gastrointestinal bleeds, acute and chronic liver failure, solid-organ transplant, and thromboembolic diseases. This rotation includes extensive coverage of various infectious disease topics. The Medical ICU team serves as the primary response team for all inpatient cardiac arrests.

Role and Value Added by Pharmacist:

The role of the Medical ICU Pharmacist includes evaluation of all patients cared for by the Medical ICU team and development of comprehensive treatment plans for each patient. The Medical ICU Pharmacist will evaluate each therapeutic plan for efficacy (ensuring that individualized pharmacodynamics and kinetic parameters have been considered and optimized), adverse drug reactions, drug-drug, drug-disease, or drug-nutrient interactions, and establish a clinical endpoint for each therapeutic intervention. The pharmacist must consider the dynamic nature of the critically ill patient and constantly be reassessing the treatment plan throughout the day and readjusting as necessary. The Medical ICU Pharmacist will participate in daily multidisciplinary rounds and contribute to education of the medical staff as needed when educational opportunities arise. The Medical ICU Pharmacist serves as a resource for all issues regarding procurement, administration, and disposal of medications for nursing staff. The Medical ICU Pharmacist will perform medication reconciliations on all patients admitted to the Medical ICU including obtaining records from transferring facilities and performing searches of appropriate controlled substance databases. The Medical ICU pharmacist will prioritize the needs of the patients and the medical staff and first and foremost seek to provide excellent patient care.

Rotation Description and Role of the Resident:

The MICU utilizes a multidisciplinary team approach consisting of an attending physician, fellow, residents, interns, medical students, nursing, pharmacy, nutrition, physical therapy, respiratory therapy, social work, and case management, who round daily on each patient.

The pharmacy resident on service will be responsible for providing comprehensive pharmaceutical care to all patients on the MICU service. Patient care is the primary focus of this rotation. The resident is expected to attend daily work rounds with the medical team as well as be the primary pharmacy contact person for the team. The resident will be expected to follow more patients as the rotation progresses; generally four to six patients by the end of week two and eight to ten

patients by the end of the rotation. Rounds typically begin around 0800 and may last from anywhere from two to five hours depending on the patient census and acuity. Residents are also expected to perform thorough medication and vaccination histories on each of their patients. Communication of pertinent patient information through documentation in the electronic chart is also expected for all patients that transfer from the Medical ICU to other locations.

A great deal of patient variety is seen on this rotation. Daily topic discussions typically encountered include infectious disease issues, renal failure, liver failure, respiratory failure, and general critical care issues such as vasoactive medications, sedation, and emergency medications. The resident is expected to present one topic discussion per week in addition to leading a discussion on a relevant journal article each week. When possible, the resident will also present a 15 to 30 minute presentation to the MICU multidisciplinary team. The resident may also participate in additional quality improvement projects during the rotation if time allows and opportunities present themselves.

Residents will also be expected to respond (with a preceptor) to all cardiac arrests that occur during normal work hours.

Typical Daily Activities:

6:00 – 8:00: Preparation for MICU work rounds including pre-round discussion with preceptor regarding patients
8:00 – 8:30: Participation in MICU education rounds
8:30 – variable: Participation in MICU work rounds

Following MICU work rounds the resident will complete unfinished work including medication histories, documentation of interventions and updating patient information in EPIC, drug information inquiries that were brought up during work rounds, etc.

The remainder of the day will be spent with the preceptor discussing patients, topic discussions, formal presentations, and any other activities relevant to patient care or residency requirements.

Progression of the Resident:

Residents will undergo continuous evaluation of their progression during this rotation with active feedback provided by the preceptor. Progression will be individualized based on the resident's previous experiences and prior preceptor feedback/evaluations.

Day 1:

- The resident is expected to arrive to rotation to allow for adequate time for patient workup
- The resident will be professional and prioritize daily activities throughout the rotation with an emphasis on patient care
- The resident should come ready to discuss what they are hoping to glean from their rotation in the Medical ICU and have 3 specific goals which should incorporate their areas for improvement as well as continuing to enhance their areas of excellence
- The resident will take full ownership of their patients and recommendations
- The resident is excepted to read primary literature and guidelines daily as they pertain to their patients without prompting from the precepting pharmacist
- The resident will develop a list of topics they would like covered during their rotation and discuss this during the first week of rotation
- The resident will take initiative of their learning experience and openly discuss their ideas for learning with the pharmacist preceptor

Week 1:

- Resident will model the preceptor participation in rounds, as well as with the rest of the healthcare team in the Medical ICU
- The resident will start by working up 2-3 patients and by the end of week one the resident will be expected to provide comprehensive care for 2-4 patients
    - Comprehensive care includes medication reconciliation, data collection, plan formulation and implementation

- The resident will present patients daily in an organized manner to the pharmacist before rounds; the resident will continue to work on their patient presentation with coaching from the pharmacist
- The resident will continue to assess the patient throughout the day as their clinical status changes and reformulate plans to reflect the dynamic nature of the critically ill patient
- The resident will learn processes for documenting pertinent pharmacist pass off information in the Handoff Tool as well as the electronic medical record
- Preceptors will assist with communicating with the MICU providers during the first week but the resident will be expected to talk with the bedside nurse daily throughout the entire rotation
- The resident will come prepared for topic discussions, but need to also be flexible; knowing that topic discussion may not occur on a planned day if patient care issue arise

Week 2:

- By the end of week 2 the resident should be able to comprehensively care for an additional 1-2 patients (goal 3-6 patients) and round independently with the exception of the most critically ill patients
- The resident's plans should be ready to discuss with the preceptor prior to rounds for all patients; incorporating feedback on presentation from previous week and applying this each day to improve presentation skills
- The resident is expected to retain knowledge obtained during the previous week and continue to apply this knowledge to new patients
- It is expected that the resident communicate with all healthcare providers by the end of week 2 without assistance of the preceptor
- The resident will continue to model the preceptor in regard to their role on the health care team and rounding style
- The resident will begin to provide independent pass off to the evening pharmacist
- Resident will write pertinent and accurate notes, with preceptor provided feedback for each patient they are responsible

Week 3:

- By the end of week 3 the resident should be able to comprehensively cover 4-6 patients with minimal preceptor input and assistance
- The resident will continue to discuss patients prior to rounds with minimal coaching required
- The resident will continue to document in the Handoff Tool and electronic medical records accurately and more efficiently
- Resident to take on more responsibilities as the primary pharmacist on the team, but will take full ownership of the patients they are actively covering and are expected to follow-up on all daily recommendations

Week 4:

- By the end of week 4 the resident will be expected to cover 5-8 patients with little to not preceptor input and assistance with the exception of the most critically ill patients
- The resident is expected to be able to round independently on all patients they are covering
- The resident will continue to document in the Handoff tool and the electronic medical record in addition to giving succinct pass-off to the evening pharmacist

RLS Goals

ICU-1

Goal R1.1: In collaboration with the health care team, provide safe and effective patient care to a diverse range of patients, including those with multiple co-morbidities, high-risk medication regimens, and multiple medications following a consistent patient care process.

Objective R1.1.1: (Applying) Interact effectively with health care teams to manage patients' medication therapy.
Objective R1.1.3: (Analyzing) Collect information on which to base safe and effective medication therapy.
Objective R1.1.4: (Analyzing) Analyze and assess information on which to base safe and effective medication therapy.
Objective R1.1.5: (Creating) Design or redesign safe and effective patient-centered therapeutic regimens and monitoring plans (care plans).
Objective R1.1.6: (Applying) Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions.
Objective R1.1.8: (Applying) Demonstrate responsibility to patients.

Goal R1.2: Ensure continuity of care during patient transitions between care settings.

Objective R1.2.1: (Applying) Manage transitions of care effectively.

Goal R3.1: Demonstrate leadership skills.

Objective R3.1.1: (Applying) Demonstrate personal, interpersonal, and teamwork skills critical for effective leadership.

ICU-2

Goal R1.1: In collaboration with the health care team, provide safe and effective patient care to a diverse range of patients, including those with multiple co-morbidities, high-risk medication regimens, and multiple medications following a consistent patient care process.

Objective R1.1.1: (Applying) Interact effectively with health care teams to manage patients' medication therapy.
Objective R1.1.3: (Analyzing) Collect information on which to base safe and effective medication therapy.
Objective R1.1.6: (Applying) Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions.
Objective R1.1.8: (Applying) Demonstrate responsibility to patients.

Goal R1.3: Prepare, dispense, and manage medications to support safe and effective drug therapy for patients.

Objective R1.3.2: (Applying) Manage aspects of the medication-use process related to formulary management.

Goal R3.1: Demonstrate leadership skills.

Objective R3.1.1: (Applying) Demonstrate personal, interpersonal, and teamwork skills critical for effective leadership.

Goal R3.2: Demonstrate management skills.

Objective R3.2.4: (Applying) Manage one's own practice effectively.

Goal R4.1: Provide effective medication and practice-related education to patients, caregivers, health care professionals, students, and the public (individuals and groups).

Objective R4.1.1: (Applying) Design effective educational activities.

Medical ICU Rotation Activities and Teaching Methods Linked to Objectives (ICU-1 and ICU-2)

Rotation Activity	Teaching Method(s)	Objective
	Model	R1.1.3

The resident is expected to compose a pharmacy pass-off using the "handoff" functionality in EPIC for each of the patients that they follow. This pass-off will be assimilated from direct patient/family interview, referral documentation (transfer documents, clinic visits notes, etc.), and information obtained from EPIC. The note will contain the following at a minimum: • A brief synopsis of why the patient was initially admitted to the hospital in addition to why they were admitted to the Medical ICU. • A pharmacy specific problem list with a history of what happened in the ICU and follow up requirements for each of these problems • A detailed antibiotic history for each patient • DVT prophylaxis • If the patient's medication/vaccination history is incomplete, the reason why it was not completed and the information needed to complete the medication reconciliation. The resident is expected to update these notes on a daily basis. A section at the bottom of the handoff will include interventions/discussion that is initiated by the resident. It is also expected that the resident will place pertinent issues for follow-up into the "to-do" section of the handoff. Items that may be included in this section include important labs that need follow-up (and time they are to be drawn), cultures, and discharge issues.	Coach Facilitate	R1.2.1
The resident will be responsible for coordinating patient discharges from the Medical ICU. This may include: • Coordination with the Discharge Pharmacist for patients being sent directly home. • Coordination with the MICU physician, RN, and Case Management when a patient is discharged to another facility (another hospital, LTAC, SNF). This includes a thorough review of discharge/transfer medications complete with documentation in the electronic medical record that the patient's medications have been reviewed by a pharmacist in compliance with our departmental policy. • Patient education for specific high risk medications (warfarin, enoxaparin, treprostinil, novel oral anticoagulants). These will be formally documented in the medical chart per hospital/department policy.	Model Coach Facilitate	R1.1.8 R1.2.1 R4.1.1
For each patient that the resident follows (up to 6-8 patients by the end of the rotation), the resident is expected to, at a minimum, create an individualized therapeutic plan that incorporates patient-specific information obtained from the patient, family members, other health care members, outpatient pharmacy records, and the medical record. Disease and drug information obtained from previous experiences, topic discussions, and literature reviews are also expected to be incorporated into the individualized therapeutic plan. The integration of the patient's goals of care, ethical considerations, and quality of life concerns are expected to be included in each plan. The preceptor will assess the resident's ability to perform adequate literature searches (primary, tertiary literature, various other medication databases, etc.) and assist the resident through direct instruction on how to improve in their ability to obtain answers for clinical questions. When applicable, pharmacoeconomic and formulary considerations will be addressed. It will be expected that the resident will evaluate every medication for appropriateness, dosing based on individualized pharmacokinetic/dynamic considerations, route of medication administration (including formulation since this is a significant issue in the critically ill patient), drug interactions, and monitoring parameters. The resident will prepare these therapeutic plans on a daily basis prior to rounds; however, these plans are dynamic and will change throughout the day based on the patient's condition. These plans will be discussed with the MICU physicians and the patient's RN.	Model Coach Facilitate	R1.1.1 R1.1.3 R1.1.4 R1.1.5 R1.1.6 R1.1.8 R3.1.1 R1.3.2

The resident will create patient-centered, evidence-based monitoring plans using their previous clinical experiences, review of the literature, and incorporation of consensus guidelines. The resident must also adapt to the unit specific culture of limiting laboratory draws and thus develop alternative ways to assess pharmacotherapy (ex. When diuresing with furosemide, the patient may not have daily potassium levels drawn via a BMP; however, it is likely that the patient will have electrolytes available from blood gas draws). An emphasis will be placed on trying to limit the use of laboratory draws and the resident will be coached on ways to determine when it is feasible and useful to obtain laboratory markers for monitoring of their pharmacotherapy (Ex. Determining when it is appropriate to obtain a vancomycin level to assess dosing adequacy as many times the drug is discontinued after 48 hours and in that situation it would not be prudent to get a level). This concept is important for cost reduction and limiting the amount of unnecessary blood loss that occurs in the critically ill patient due to laboratory draws. The preceptor(s) will aid the resident through direct instruction in regards to which sources of data are the most reliable (ex. Which blood pressure measurement is used when monitoring a patient on vasoactive medications) in addition to discussing what the desirable range for each parameter is (ex. Why the goal mean arterial pressure for a patient with septic shock is dependent on many variables and is not always 65 mmHg).	Model Coach Facilitate	R1.1.6 R1.1.8
The resident will participate in all cardiac arrests called throughout the hospital when they are available (notified through paging system). The preceptor will facilitate this objective through direct instruction (ex. Location of arrest carts, back up boxes, how to draw up certain medications, where to find medication concentrations, etc.) The resident will participate in cardiac arrest situations with the preceptor who will help guide the resident through the situation. After a minimum of one cardiac arrest the resident will act as the primary pharmacy representative with assistance from the preceptor. The resident will work with the Cardiac Arrest Team to optimize delivery of care to acutely ill patients.	Model Coach Facilitate	R1.1.6 R1.1.8 R1.3.2 (late only) R3.1.1
The resident will have ample opportunities to support the allocation of resources, particularly with regard to high-cost or high-risk drug items and wastage. The resident is expected to: • Work with physicians and nurses to utilize high-risk or high-cost medications only when necessary and help recommend alternatives as necessary. • Recognize supply and shortage issues prior to recommending therapies. • Help address wastage issues in the ICU setting by working closely with physician and nursing staff	Model Coach Facilitate	R1.3.2 (late only)
The resident will be expected to: • Present patients to preceptor daily (or more often if necessary) in concise and logical manner. • Prepare and lead at least 4 topic discussions on various disease states and management. The resident will present to the preceptors and be prepared for post-presentation discussion. The resident is expected to use a combination of tertiary and primary literature to create topic discussions. • Time permitting, prepare and present a formal topic to the Medical ICU team. • Participate in development of ICU protocols and research as needed if opportunities arise.	Model Coach Facilitate	R4.1.1 (late only)
The resident will:	Model	R3.1.2 (late only)

• Continuously incorporate all feedback provided by preceptor and medical team to enhance performance and effectiveness in patient workups, rounds, communication, and other patient care activities. • Recognize patterns and attempt to utilize past feedback to develop current and future processes to avoid need for repeat feedback from preceptor. • Attempt answering patient care questions or general informational questions by exhausting tertiary and primary literature before asking preceptor for assistance, unless the situation is urgent and requires immediate action. • Provide responses in a timely manner and take full responsibility for patients. • Utilize and learn from the preceptors' styles during rotation, while beginning to develop their own process during rotation in order to most effectively learn to care for patients. • Become self-sufficient and independent throughout the course of the rotation, essentially able to function as the rounding pharmacist in the ICU. The purpose of our rotation is not to create more pharmacists who think exactly like us, but to develop and create unique pharmacists who share our knowledge and processes and challenge us to become better.	Coach Facilitate	R3.2.4 (late only)

Readings and Preparatory Work

Familiarize yourself with the Drug Information Resource Center - https://pulse.utah.edu/site/dirc/Pages/Resources.aspx

Be familiar with contents of the Medication Management Process Q&A–
https://pulse.utah.edu/qandas/Lists/QuestionsAnswers/DispForm.aspx?ID=1682

Orientation Materials

Your preceptor will meet with you on the first day of rotation to make an individual orientation plan with you.

Evaluations

Evaluations will be documented in PharmAcademic™.

Residents will have continual verbal feedback on a daily to every other day basis. All evaluations will be independently performed by the preceptor and resident prior to the last day of rotation in draft form. These will then be discussed on the last day of rotation and will include feedback on performance and self-assessment. These will then be formally submitted on the last day of rotation.

What type of evaluation	Who	When
Midpoint	Preceptor, Resident	End of week 2
Summative	Preceptor	End of learning experience
Summative Self-evaluation	Resident	End of learning experience

Preceptor, Learning Experience Evaluations	Resident	End of learning experience

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