

**University of Utah Health Care Hospitals and Clinics  
PGY1 ICU Rotation CVICU-1/CVICU-2  
Salt Lake City, Utah**

**Rotation Name: Cardiovascular Intensive Care Unit (CVICU)**

**Rotation Preceptors:**

Nick Lonardo, PharmD  
Wayne Shipley, PharmD, BCPS, BCCCP  
Kimberly Terry, PharmD, BCPS  
Amanda Zomp, PharmD, BCPS, BCCCP

Duration: 4 weeks

**1) Site & Rotation Description (Hours 6:00-2:30)**

The Cardiovascular Intensive Care Unit (CVICU) is a 20-bed inpatient unit serving medical and surgical cardiac patients (20 beds). Patients in the CVICU are managed by an attending physician (cardiology or surgical intensivist), surgical, anesthesia, emergency medicine, and cardiology residents and fellows, clinical nurses, medical students, dietitians, pharmacists, and respiratory therapists. The acuity is very high and it is not unusual for patients to stay greater than 30 days. The emphasis for this rotation will be on the cardiothoracic surgical patients, although the pharmacist aids the cardiology pharmacist on arrests, ICU specific questions, and medication histories. Residents will spend at least one week with the cardiovascular medicine team during their rotation.

**Role of the Pharmacist**

The clinical pharmacist on the CVICU is responsible for ensuring the clinical appropriateness and safety of all medications prescribed for admitted patients, verifying the accuracy and appropriate dispensing of physician orders, performing medication reconciliation upon admission, and daily documentation in the electronic medical record. The clinical pharmacist actively participates in multidisciplinary rounds daily or multiple times daily depending on patient acuity and attending preference and is responsible for medication-related education of patients and their family members, physicians, nurses, and pharmacy trainees. The pharmacist functions in a decentralized capacity and works directly with the CVICU team and patients' primary services as well as centralized pharmacists and pharmacy technicians to optimize pharmaceutical care for these units. The pharmacist also works with the CVICU team on pertinent research projects and updating and maintaining standards of practice and protocols for the CVICU. The pharmacist also participates in pharmacy department educational activities and meetings as much as time allows based on the needs of the CVICU service. The resident will also have the opportunity to participate in the weekly interdisciplinary meeting for CVICU.

**Role of the Resident**

CVICU is a 4-week learning experience at the University Hospital at the University of Utah. The pharmacy resident is responsible for identifying and resolving medication therapy issues for patients and will work toward assuming care of all patients on the unit throughout the learning experience. The resident will provide therapeutic drug monitoring services for patients on their team receiving drugs requiring monitoring including, but not limited to, warfarin, aminoglycosides, and vancomycin. The pharmacy resident will work toward documenting all activities on all patients on the CVICU, but assistance will be provided by the preceptor as needed to complete notes. Good communication and interpersonal skills are vital to success in this experience. The resident must devise efficient strategies for accomplishing the required activities in a limited time frame.

**2) Disease States**

Residents will be exposed to many cardiac and related disease states during rotation. Disease states reviewed during rotation depend highly on the variable patient population. The resident will be expected to gain proficiency through literature review, topic discussion, and/or direct patient care experience.

**Common disease states**

- Shock (Cardiogenic, Septic, hypovolemic)
- Hemodynamics
- Mechanical circulatory devices (durable, non-durable)
- VTE prophylaxis
- Bowel protocols
- Mechanical ventilation/RSI and pulmonary diseases (ie ARDS)
- Pain, agitation, and delirium
- Infectious disease

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- Acid base disorders
- CV disease (HTN, HFrEF, arrhythmias, CAD, dissections)
- Transplant (heart and lung)

**3) CVICU Rotation Activities and Teaching Methods Linked to Objectives**

**Rotation goals and objectives:**

**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**

- R1.1.1 Interact effectively with health care teams to manage patients' medication therapy (ICU-1, Acute-2/ICU-2)
- R1.1.3 Collect information on which to base safe and effective medication therapy (ICU-1, Acute-2/ICU-2)
- R1.1.4 Analyze and assess information on which to base safe and effective medication therapy (ICU-1)
- R1.1.5 Design or redesign safe and effective patient-centered therapeutic regimens and monitoring plans (care plans) (ICU-1)
- R1.1.6 Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions (ICU-1, Acute-2/ICU-2)
- R1.1.8 Demonstrate responsibility to patients (ICU-1, Acute-2/ICU-2)

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

- R1.2.1 Manage transitions of care effectively (ICU-1)

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

- R1.3.2 Manage the aspects of the medication-use process related to formulary management (Acute-2/ICU-2)

**R3.1 Demonstrate leadership skills**

- R3.1.1 Demonstrate personal, interpersonal, and teamwork skills critical for effective leadership (ICU-1)
- R3.1.2 Apply a process of on-going self-evaluation and personal performance improvement (Acute-2/ICU-2)

**R3.2 Demonstrate management skills**

- R3.2.4 Manages one's own practice effectively (Acute-2/ICU-2)

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

- R4.1.1 Design effective educational activities (Acute-2/ICU-2)

<b>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</b>		
R1.1.1 Interact effectively with health care teams to manage patients' medication therapy (ICU-1, Acute-2/ICU-2)	Direct Instruct. Coaching Facilitating Modeling	(ICU-1, Acute-2/ICU-2): The resident will actively participate with the interdisciplinary team on daily rounds. The resident will be prepared to round and collaborate with the health care team to develop medication therapy plans in addition to resolving issues on the unit. The resident will be prepared to answer questions from the team and complete all tasks for the unit that includes medication histories, vaccine screenings, and documentation. Residents will present a patient case assessing literature and inpatient medication therapy.  (Acute-2/ICU-2): in addition to the description above, the resident is expected work independently and resolve time-sensitive issues on the unit and report back to the team.
R1.1.3 Collect information on which to base safe and effective medication therapy (ICU-1, Acute-2/ICU-2)	Direct Instruct. Coaching Facilitating Modeling	(ICU-1, Acute-2/ICU-2): The resident will learn to collect patient data, review medication profiles for appropriate therapy, design therapeutic plans and monitoring, and implement the plan with redesigning as necessary. The data collected should follow a systems based approach that assess neurocognitive status, cardiovascular condition, respiratory states, gastrointestinal and renal function, hematologic, infectious disease, and musculoskeletal information. The resident will be able to integrate the subjective and objective data and develop conclusions regarding a patients state,

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		<p>The ICU is a changing environment with very little stagnation. As such, the resident is expected to adapt to the changing environment and follow-up on therapies initiated in the morning and see if changes have occurred by the afternoon.</p> <p>(Acute-2/ICU-2): in addition to the responsibilities as outlined above, the resident will ensure all medical history and information is obtained in a timely manner. This may include following up with outside hospitals or facilities to update medication histories, pertinent laboratory values, culture data, and significant antibiotic use.</p>
R1.1.4 Analyze and assess information on which to base safe and effective medication therapy (ICU-1)	Direct Instruct. Coaching Facilitating Modeling	(ICU-1): The resident will be responsible for discussion/integration of all patient data during daily pre-rounds and post-rounds discussions with the preceptor and during multidisciplinary rounds with the team. The resident will use all tools to analyze and assess information, not limited to EPIC and Pulse resources. By utilizing all available resources, the resident will develop a safe and effective medication therapy plan. Residents will be asked to present a patient case, where all patient information will be discussed along with evidence supporting medication therapies.
R1.1.5 Design or redesign safe and effective patient-centered therapeutic regimens and monitoring plans (care plans) (ICU-1)	Direct Instruct. Coaching Facilitating Modeling	(ICU-1): Gain perspective of the various ways to solve patient care issues in the ICU setting based on interpretation of patient data, literature, and various experiences from members of the ICU team. As new information is acquired via laboratory data or other objective findings, develop the flexibility in patient's medication therapy to allow for adaptation to the patient's current state of health. The resident will discuss those changes with the primary team and communicate clearly the modifications to the patient's medication therapy. All interventions will be completed in a clear and timely manner with appropriate monitoring.
R1.1.6 Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions (ICU-1, Acute-2/ICU-2)	Direct Instruct. Coaching Facilitating Modeling	(ICU-1, Acute-2/ICU-2): Create an individualized pharmacotherapy plan for each of their patients prior to daily rounds and discuss these plans with the preceptor. The resident will become familiar with the therapeutic regimens commonly used and are expected to take appropriate follow up. This may include continuous monitoring of patient status, culture data, vital signs, metabolic labs, pharmacokinetics, and mental status. Based on finding during the day, the resident will communicate any post-rounds modifications of the therapeutic plan with at a minimum the resident/intern responsible for the patient but optimally the entire team. The resident will communicate any modifications with the preceptor who will also assist the resident in determining the optimal communication strategy, including how urgently the modification needs to be addressed.
R1.1.8 Demonstrate responsibility to patients (ICU-1, Acute-2/ICU-2)	Coaching Facilitating Modeling	(ICU-1, Acute-2/ICU-2): The resident will demonstrate responsibility to their patients by taking full ownership of their care. The resident will provide education to patients and family members as requested and to the ICU team. The resident will further communicate pass off on transitioning patients to the appropriate floor pharmacist in a timely manner to prevent lapses in care.
<b>R1.2 Ensure continuity of care during patient transitions between care settings</b>		
R1.2.1 Manage transitions of care effectively (ICU-1)	Direct Instruct. Coaching Facilitating Modeling	(ICU-1): The resident will further communicate pass off on transitioning patients to the appropriate floor pharmacist in a timely manner to prevent lapses in care. All information is to be updated by the resident via the unit specific handoff. If written pass-off is not sufficient, the resident will provide verbal notification to the covering pharmacist. The resident will ensure all information is accurate and essential information is documented electronically.
<b>R1.3 Prepare, dispense, and manage medications to support safe and effective drug therapy for patients</b>		

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R1.3.2 Manage the aspects of the medication-use process related to formulary management (Acute-2/ICU-2)	Coaching Facilitating Modeling	(Acute-2/ICU-2): The resident will work with physicians and nurses to utilize high-risk or high-cost medications only when necessary and help recommend alternatives as necessary. Be cognizant of supply and shortage issues prior to recommending therapies. Help address wastage issues in the ICU setting by working closely with physician and nursing staff (discussing stop dates/times to avoid wasting already made bag, returning IV medications to central pharmacy earlier to attempt to reallocate the medications, being aware of stability issues that might make administration a higher priority, etc.). Review all medication orders daily for adherence to University of Utah policies and guidelines.
<b>R3.1 Demonstrate leadership skills</b>		
R3.1.1 Demonstrate personal, interpersonal, and teamwork skills critical for effective leadership (ICU-1)	Coaching Facilitating Modeling	(ICU-1): The resident will participate in daily multidisciplinary rounds. During rounds, the resident will present and implement the regimens and become proficient in speaking with confidence and efficiency to the medical team, utilizing pertinent information and communicating only pertinent data. The resident will become an excellent listener and learn from the medical team so as to collaborate on patient specific care plans and regimens. The resident will also be respectful and personable at all times, and is anticipated to gain the confidence of their team over the course of the rotation through daily interaction. Gain perspective of the various ways to solve patient care issues in the ICU setting based on interpretation of patient data, literature, and various experiences from members of the ICU team.
R3.1.2 Apply a process of on-going self-evaluation and personal performance improvement (Acute-2/ICU-2)	Coaching Facilitating	(Acute-2/ICU-2): Resident will complete self-assessments on a regular basis and apply feedback from preceptors to subsequent clinical activities. Resident will self-identify areas of weakness and knowledge deficits to allow for targeted education and ensure competence.
<b>R3.2 Demonstrate management skills</b>		
R3.2.4 Manages one's own practice effectively (Acute-2/ICU-2)	Coaching Facilitating Modeling	(Acute-2/ICU-2): The resident will be independent and proficient by their fourth week of rotation. They are to assume all responsibilities for their patient with minimal oversight. The goal for this week is for the resident to develop their own practice and take ownership of their recommendations, monitoring, and follow-up assessments.
<b>R4.1 Provide effective medication and practice related education to patients, caregivers, health care professionals, students, and the public (individuals and groups)</b>		
R4.1.1 Design effective educational activities (Acute-2/ICU-2)	Direct Instruction Coaching Facilitating Modeling	(Acute-2/ICU-2): The resident is expected to be the medication expert on the interdisciplinary team. The resident will provide accurate and timely answers to medication therapy questions. All questions directed to pharmacy will be directed to the resident to research and report back to the team. The resident may have the opportunity to provide education to the nursing/interdisciplinary staff centered around medication therapy and monitoring.

#### 4) Preceptor Interaction (daily)

0600-0800	Preceptors available while resident and preceptor work up patients
0800-0830	Pre-rounds with resident (assuming rounds start at 0730)
0530-1200	Daily rounds with resident and team (and preceptor until resident and preceptor comfortable with resident rounding independently)
1200-1530	Preceptor available for topic discussions, reviewing progress notes, patient updates, etc.

#### 5) Communication:

- Daily scheduled meeting times: Residents to prioritize questions and problems to discuss during scheduled meeting times as listed above (pre-rounds best time to maximize efficiency in implementing patient care during rounds).
- E-mail: Residents are expected to read e-mails at the beginning, middle and end of each day at a minimum for ongoing communication. This is appropriate for routine, non-urgent questions and problems, however, most communication is done in person verbally since preceptors are always available and usually on the unit.
- Office extension: Appropriate for urgent questions pertaining to patient care.
- Pager: Residents will carry unit-based pager once appropriate and would no longer be able to contact preceptor via this method (use preceptor personal phone #).

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- E. Personal phone number: Provided to resident at time of learning experience for issues that arise and the preceptor is not reachable on the unit (in person or telephone).

**6) Typical Daily/Weekly/Monthly Activities:**

Pharmacists start at 0600 by working up all patients admitted to the CVICU to prepare for rounds. Residents should arrive around or before 0600 to work up patients and have plans ready to review with the preceptor by 0800. Rounds typically last 1-3 hours, depending on the patient census, acuity, and attending physician. Time after rounds is occupied by medication reconciliation, following up on planned interventions discussed in rounds, working up new patients admitted that day, attending educational activities and meetings, writing daily progress notes, and topic discussions.

**Expected progression of resident responsibility on this learning experience:**  
*(Length of time preceptor spends in each of the phases will be customized based upon resident’s abilities and timing of the learning experience during the residency training year)*

- Day 1: Preceptor will review CVICU learning activities and expectations with resident.
- Week 1: Resident to start by working up at least 1/4 of the CVICU patients and progress to work up 1/2 CVICU patients by the end of the week. Resident must present patients to preceptor daily. Preceptor to attend and participate in team rounds with resident, modeling pharmacist’s role on the health care team.
- Week 2: Resident to work up 1/2 CVICU patients at beginning of week. Preceptor still in workroom available for questions and to continue modeling behaviors. Expect daily patient discussions daily. Preceptor to attend team rounds with resident, but encourage and coach the resident to take on more responsibilities as the pharmacist on the team.
- Weeks 3-4: Resident expected to work up all patients and round independently without direct supervision from the preceptor (but possibly sitting somewhere to be able to provide direct, specific feedback). Resident expected to write as many notes as possible for all CVICU patients, and delegate those notes they are unable to write in a reasonable amount of time to preceptor. Continue to discuss identified problems with preceptor daily.

**7) Evaluation Strategy**

Residents will be provided with verbal feedback on a frequent (at least every other day, possibly several times daily) basis. Feedback will be used for documentation of scheduled evaluations. For all evaluations completed in PharmaAcademic, the resident and the preceptor will independently complete the assigned evaluation and save as draft. The resident and the preceptor will then compare and discuss the evaluations. This discussion will provide feedback both on performance of the activities and the accuracy of the resident’s self-assessment skills. Evaluations will be signed in PharmAcademic following this discussion.

<b>What type of evaluation</b>	<b>Who</b>	<b>When</b>
Midpoint (verbal)	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