



HICU (Oncology-Hematology Intensive Care, PGY1 Pharmacy Practice)

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Duration: 4 weeks

Site & Rotation Description

The Huntsman Intensive Care Unit (HICU) is a 16-bed inpatient unit serving adult medical and surgical oncology/hematology patients as well as stem cell transplant recipients. Patients receiving ICU-level care are managed by an attending physician (medical intensivist) and a team of advanced practice clinicians (APCs: nurse practitioners and physician assistants), in collaboration with the patients' primary service (surgery, hematology, oncology, BMT). Patients on step-down status are managed by their primary service. Other disciplines on the team include the clinical pharmacist, a respiratory therapist, a clinical dietitian, social worker, and the primary nurse.

Role of the Pharmacist

The role of the pharmacist includes ensuring the clinical appropriateness and safety of all medications prescribed for admitted patients, verifying the accuracy and appropriate dispensing of chemotherapy orders, performing medication reconciliation at admission and discharge, and discharge medication education. The HICU pharmacist responds to all cardiac arrests at Huntsman, and rapid response team activations in procedural and inpatient areas. The clinical pharmacist actively participates in attending rounds daily or twice daily depending on patient acuity and attending preference and is responsible for medication-related education of patients and their family members, physicians and nurses, and pharmacy trainees. The pharmacist functions in a decentralized capacity and works directly with the HICU team and patients' primary services (including those teams' pharmacists), nurses, medical assistants, as well as centralized pharmacists and pharmacy technicians to optimize pharmaceutical care for this unit. The pharmacist also works with the HICU team on pertinent research projects and updating and

maintaining standards of practice and protocols for the HICU. The pharmacist also participates in pharmacy department educational activities and meetings as much as time allows based on the needs of the HICU service. The resident will also have the opportunity to participate in the monthly interdisciplinary HICU journal club and other educational discussions. This is an elective, 4-week learning experience for PGY1 Pharmacy Practice residents.

Expectations of Residents

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, immunosuppressants, and vancomycin. The pharmacy resident will work toward documenting all activities and pharmacist pass-off on all patients on the HICU, but assistance will be provided by the preceptor as needed to complete documentation. 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.

Disease States

Common disease states in which the resident will be expected to gain proficiency through literature review, topic discussion, and/or direct patient care experience including, but not limited to:

- Neurological disorders: Encephalopathy, drug-induced or metabolic; delirium, pain, sedation, and agitation in the critically ill
- Cardiovascular disorders: Sepsis, HTN, AFib
- Renal disorders: AKI, CKD
- Respiratory disorders: Respiratory failure, COPD, chemotherapy-induced pneumonitis
- Gastrointestinal disorders: GI bleed, diarrhea, constipation, N/V
- Endocrinologic disorders: Diabetes mellitus and iatrogenic hyperglycemia, thyroid disorders
- Infectious diseases: UTI, pneumonia, line infections, sepsis, abscess, fistulae, bacteremia, NF, endocarditis
- Neoplastic diseases: This rotation may expose the PGY2 oncology resident to any and all types of malignancies including solid tumors, hematologic malignancies, non-malignant hematologic disorders, and stem cell transplant recipients.
- Cancer-related disorders and cancer treatment disorders
 - Residents may commonly have direct patient experience with the following:
 - Hypercalcemia
 - Infections in immunocompromised patients
 - Nutritional deficiencies
 - Pain
 - Spinal cord compression
 - Thrombosis

- Tumor lysis syndrome
- In addition, residents may also encounter the following cancer-related disorders and cancer treatment-related disorders:
 - Diffuse alveolar hemorrhage
 - Disseminated intravascular coagulation
 - Malignant effusions
 - Medical emergencies
 - Organ-specific toxicities (e.g., cardiotoxicity, dermatologic, hepatotoxicity, nephrotoxicity, neurotoxicity)
 - Superior vena cava (SVC) syndrome
 - Surgical complications
 - Syndrome of inappropriate antidiuretic hormone secretion

1) **Goals and Objectives**

The goals (objectives in table below) selected to be taught and evaluated during this learning experience include:

ICU-1 Rotation

R1.1.1 Interact effectively with health care teams to manage patients' medication therapy

R1.1.3 Collect information on which to base safe and effective medication therapy

R1.1.4 Analyze and assess information on which to base safe and effective medication therapy

R1.1.5 Design or redesign safe and effective patient-centered therapeutic regimens and monitoring plans (care plans)

R1.1.6 Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions

R1.1.8 Demonstrate responsibility to patients

R1.2.1 Manage transitions of care effectively

R3.1.1 Demonstrate personal, interpersonal, and teamwork skills critical for effective leadership

ICU-2 Rotation

R1.1.1 Interact effectively with health care teams to manage patients' medication therapy

R1.1.3 Collect information on which to base safe and effective medication therapy

R1.1.6 Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions

R1.1.8 Demonstrate responsibility to patients

R1.3.2 Manage aspects of the medication-use process related to formulary management

R3.1.2 Apply a process of on-going self-evaluation and personal performance improvement

R3.2.4 Manages one's own practice effectively

R4.1.1 When engaged in teaching, select a preceptor role that meets learners' educational needs

2) Activities

The activities assigned to this learning experience reflect the activities a pharmacist working in this environment is expected to be able perform. Since this is a hybridized and very complicated patient population, it is not expected that any PGY1 pharmacy practice resident be able to fully accomplish all of the necessary behaviors and actions of a pharmacist that regularly serves in this unit. These activities were also selected to help the resident work toward achieving specific objectives which in turn will help the resident achieve the goals assigned to the learning experience. There is not usually one discrete activity assigned to help achieve an objective and/or goal.

Residents will be provided with a detailed list of objectives associated with each goal assigned to this rotation. Achievement of the goals of the residency is determined through assessment of the resident’s ability to perform the associated objectives. The table below demonstrates the relationship between the activities the resident will perform on the learning experience and the goals/objectives assigned to the learning experience.

Activities Evaluated:

Rotation Activities	RLS Objective	Teaching Methods
ICU-1 ROTATION		
Attend and participate in daily inpatient rounds Interact with physicians, APCs, nurses, medical assistants, other pharmacy personnel, and patients to resolve medication-related problems for HICU patients. Work up some or all of the admitted patients, depending on patient load and the resident’s comfort level with HICU practices. Respond to drug information requests from the providers. Formal and/or informal patient presentations to the preceptor and/or HICU interdisciplinary team. Resident will be shown how to utilize Omnicells for medication and supply dispensing, and how to operate Alaris SmartPumps for medication administration during emergent and ordinary circumstances. Resident will be expected to demonstrate reasonable competency in remembering how to perform these functions.	R1.1.1 Interact effectively with health care teams to manage patients’ medication therapy	IMCF

Rotation Activities	RLS Objective	Teaching Methods
<p>Attend and participate in daily inpatient rounds</p> <p>Work up some or all of the admitted patients, depending on patient load and the resident's comfort level with HICU practices.</p> <p>Respond to drug information requests from the providers.</p> <p>Formal and/or informal patient presentations to the preceptor and/or HICU interdisciplinary team.</p>	R1.1.3 Collect information on which to base safe and effective medication therapy	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Work up some or all of the admitted patients, depending on patient load and the resident's comfort level with HICU practices.</p> <p>Respond to drug information requests from the providers.</p> <p>Formal and/or informal patient presentations to the preceptor and/or HICU interdisciplinary team.</p>	R1.1.4 Analyze and assess information on which to base safe and effective medication therapy	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Work up some or all of the admitted patients, depending on patient load and the resident's comfort level with HICU practices.</p> <p>Respond to drug information requests from the providers.</p> <p>Formal and/or informal patient presentations to the preceptor and/or HICU interdisciplinary team.</p>	R1.1.5 Design or redesign safe and effective patient-centered therapeutic regimens and monitoring plans (care plans)	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Work up some or all of the admitted patients, depending on patient load and the resident's comfort level with HICU practices.</p> <p>Respond to drug information requests from the providers.</p> <p>Formal and/or informal patient presentations to the preceptor and/or HICU interdisciplinary team.</p>	R1.1.6 Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions	IMCF

Rotation Activities	RLS Objective	Teaching Methods
<p>Attend and participate in daily inpatient rounds</p> <p>Write daily progress notes on all or some of the HICU/HIMU patients, depending on patient load and the resident's comfort level with HICU practice.</p> <p>Obtain accurate medication histories and ensure appropriate medications are ordered while inpatient.</p> <p>Ensure appropriate medications are ordered at discharge and counsel patients/care takers on new and continued discharge medications.</p>	R1.1.8 Demonstrate responsibility to patients	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Resident will be shown how to utilize Omnicells for medication and supply dispensing, and how to operate Alaris SmartPumps for medication administration during emergent and ordinary circumstances. Resident will be expected to demonstrate reasonable competency in remembering how to perform these functions.</p> <p>Write daily progress notes on all or some of the HICU/HIMU patients, depending on patient load and the resident's comfort level with HICU practice.</p>	R1.2.1 Manage transitions of care effectively	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Interact with physicians, APCs, nurses, medical assistants, other pharmacy personnel, and patients to resolve medication-related problems for HICU patients.</p> <p>Attend any educational activities within the oncology pharmacy department or within the HICU program as schedule permits.</p>	R3.1.1 Demonstrate personal, interpersonal, and teamwork skills critical for effective leadership	IMCF
ICU-2 ROTATION		
<p>Attend and participate in daily inpatient rounds</p> <p>Interact with physicians, APCs, nurses, medical assistants, other pharmacy personnel, and patients to resolve medication-related problems for HICU patients.</p> <p>Resident will be shown how to utilize Omnicells for medication and supply dispensing, and how to operate Alaris SmartPumps for medication administration during emergent and ordinary circumstances. Resident will be expected to demonstrate reasonable competency in remembering how to perform these functions.</p>	R1.1.1 Interact effectively with health care teams to manage patients' medication therapy	IMCF

Rotation Activities	RLS Objective	Teaching Methods
<p>Attend and participate in daily inpatient rounds</p> <p>Work up some or all of the admitted patients, depending on patient load and the resident's comfort level with HICU practices.</p> <p>Respond to drug information requests from the providers.</p> <p>Formal and/or informal patient presentations to the preceptor and/or HICU interdisciplinary team.</p>	R1.1.3 Collect information on which to base safe and effective medication therapy	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Work up some or all of the admitted patients, depending on patient load and the resident's comfort level with HICU practices.</p> <p>Respond to drug information requests from the providers.</p> <p>Formal and/or informal patient presentations to the preceptor and/or HICU interdisciplinary team.</p>	R1.1.6 Ensure implementation of therapeutic regimens and monitoring plans (care plans) by taking appropriate follow-up actions	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Write daily progress notes on all or some of the HICU/HIMU patients, depending on patient load and the resident's comfort level with HICU practice.</p>	R1.1.8 Demonstrate responsibility to patients	IMCF
<p>Attend and participate in daily inpatient rounds</p> <p>Work up some or all of the admitted patients, depending on patient load and the resident's comfort level with HICU practices.</p> <p>Respond to drug information requests from the providers.</p> <p>Relay information to the medical team about inpatient formulary restrictions and how to obtain permission to use those medications on inpatients.</p> <p>Know the current drug shortages and work with the HICU providers and pharmacy buyers to make sure the patient receives appropriate therapy.</p>	R1.3.2 Manage aspects of the medication-use process related to formulary management	IMCF

Rotation Activities	RLS Objective	Teaching Methods
Use and incorporate self-evaluation and feedback from preceptors to continuously improve performance on the rotation.	R3.1.2 Apply a process of on-going self-evaluation and personal performance improvement	CF
Be on time and prepared for rotation activities. Integrates new learning into subsequent performances of task until expectations are met. Attend any educational activities within the oncology pharmacy department or within the HICU program as schedule permits.	R3.2.4 Manages one's own practice effectively	CF
Lead the HICU journal club or provide another educational presentation once during the rotation. Journal club article will be selected by the preceptor or other members of the interdisciplinary team. The presentation at the journal club will be given to a group that may include MDs, APCs, , pharmacy and medical students, and RNs. Lead topic discussions.	R4.1.1 When engaged in teaching, select a preceptor role that meets learners' educational needs	CF

D: Direct Instruction, M: Modeling, C: Coaching, F: Facilitating

Topics to be reviewed as time allows: *Articles to be chosen from are in a separate reading list. Since this type of learner may or may not have a sufficient exposure to ICU and/or oncology practice settings, depending on their educational experiences thus far, readings will be tailored to their individual background to providing broad exposure to oncology- and ICU-based topics.*

Oncology Topics	ICU Topics
Week 1	
HICU Introduction: Utilization of ICU resources for cancer patients, SPIKES protocol Interleukin – 2 for metastatic melanoma and RCC Overview of chemotherapy certification (PGY1 Pharmacy Practice residents will not be chemo-certified)	Sepsis & Shock, Adrenal Insufficiency Fluids, Albumin, Plasma Expanders ACLS, Pressors, Invasive Monitoring Stress Ulcer Prophylaxis Interleukin – 2 for metastatic melanoma and RCC
Week 2	
Oncologic emergencies (Hypercalcemia, spinal cord compression, tumor lysis syndrome, malignant pleural/pericardial effusions, SVC syndrome)	Respiratory Problems & Mechanical Ventilation NMBAs Delirium in the ICU Sedation, Analgesia, Delirium, ICU Paralysis

Infectious Diseases: Neutropenic fever, preventing and treating infections in BMT recipients, surgical prophylaxis	Infectious Diseases: Ventilator Associated Pneumonia, Aspiration Pneumonia, Nosocomial Pneumonia, Community-Acquired Pneumonia; Fungal Infections; Surgical Prophylaxis; Fever; Intraabdominal Infections
Week 3	
Leukemias (ALL, AML, APML, CLL, CML) Lymphomas Stem cell transplant Lung cancer (including surgical management) Esophagus (including surgical management) HCC (including surgical management) Factors (hemophilia, factor VII), antifibrinolytics Nutrition Diffuse alveolar hemorrhage Disseminated intravascular coagulation	Diabetes & Hyperglycemia Management Nutrition Erythropoietin & Anemia in Critical Care Acid-Base, Blood Gases, Fluids & Electrolytes Arrhythmias
Week 4: topics to be discussed pending rotation workload	
Chemotherapy toxicities, supportive care (e.g., cardiotoxicity, dermatologic, hepatotoxicity, nephrotoxicity, neurotoxicity, N/V, mucositis) Growth factors (G-CSF, epoetin/darbepoetin)	Renal Dysfunction, CIN, Dialysis Therapy Anticoagulation Abdominal Compartment Syndrome GI Bleed Cirrhosis/Ascites, HRS Hypertension

Typical Daily/Weekly/Monthly Activities:

Pharmacists start at 0700 by working up all patients admitted to the HICU to prepare for daily rounds at 0900. Residents should arrive around or before 0700 to work up patients before rounds. Rounds typically last 1-4 hours, depending on the patient census, acuity, and attending physician. Time after rounds is occupied by patient discharge and counseling, medication reconciliation, following up on planned interventions discussed in rounds, working up new patients admitted that day, attending educational activities and meetings, entering and verifying chemotherapy orders throughout HCH, writing/updating daily iVents/passoff, and topic discussions.

Preceptor Interaction (daily)

- 0700-0830 Preceptor available while resident and preceptor work up patients
- 0830-0900 Pre-rounds with resident (assuming rounds start at 0900)
- 0900-1200 Daily rounds with resident and team (and preceptor until resident and preceptor comfortable with resident rounding independently)

1200-1730 Preceptor available for topic discussions, reviewing progress notes, patient updates, etc.

Communication:

- A. 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).
- B. 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.
- C. Office extension: Appropriate for urgent questions pertaining to patient care.
- D. 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 #).
- 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).

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 HICU learning activities and expectations with resident.

Week 1: Resident to start by working up at least 5 of the ICU-level and/or step-down (prioritize ICU patients) patients and progressing to work up all ICU 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 2-3: Resident to work up all ICU-level and at least 1 IL-2 patient at beginning of week, progress to working up as many of the ICU-level and step-down patients as possible by the end of the week. Preceptor still in workroom available for questions and to continue modeling behaviors. Resident will intake all assigned high-dose IL-2 patients. Expect 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 (preceptor sitting at a very short distance away with team able to see preceptor).

Week 4: Resident expected to work up all patients and round independently without team able to see preceptor (but possibly sitting somewhere to be able to eavesdrop and provide direct, specific feedback). Resident expected to write as many notes as possible for all ICU-level and step-down patients, and delegate those iVents/passoff or tasks they are unable to complete in a reasonable amount of time to preceptor. Continue to discuss identified problems with preceptor daily.

Evaluation Strategy

Residents will be provided with verbal feedback on a frequent (at least every other day, possibly several times daily) basis. PharmAcademic will be used for documentation of scheduled evaluations. For all evaluations completed in Pharm Academic, 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.

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