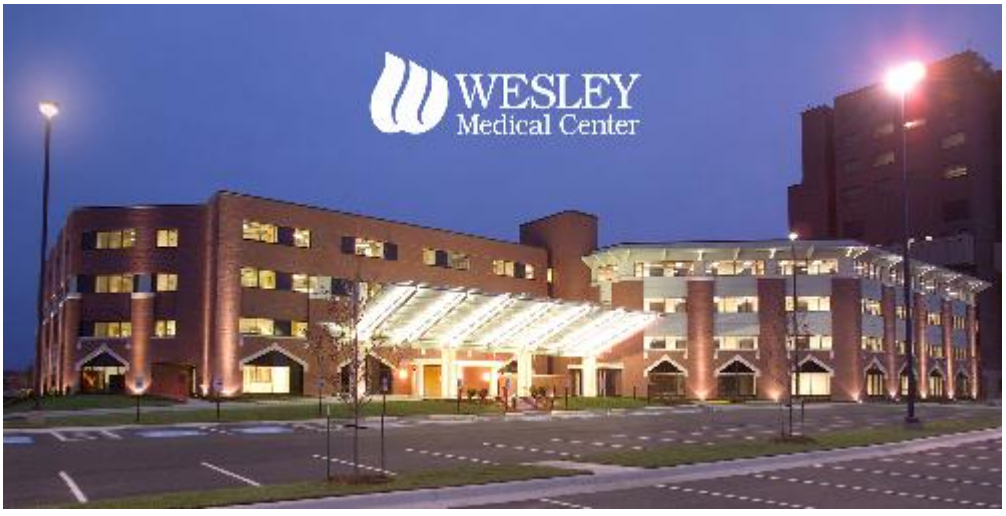
WESLEY Healthcare

Wesley Medical Center
Wesley Woodlawn Hospital & ER
Wesley Children's Hospital
Wesley West ER & Diagnostic Center
Wesley Derby ER
WesleyCare Clinics

PGY2 Critical Care Pharmacy Residency Manual

Wesley Medical Center
Wichita, Kansas



Updated 5/2019

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Welcome!

Congratulations on starting your Critical Care Residency with Wesley!

We are very pleased to welcome you as a new member of Wesley's highly trained and dedicated pharmacy team. Your pharmacy residency is an exciting and unique time to focus on learning and refining clinical skills, and we are dedicated to providing you with a variety of high-quality learning experiences during your residency. We believe that your residency year should be designed to fit your specific needs and interests, so do not hesitate to discuss opportunities to tailor activities to your specific interests.

This year you will experience great professional growth that is directly related to the amount of commitment and dedication applied. At Wesley, it is our goal to partner with you to guide you on your journey to become a highly trained and independent clinical pharmacist.

Again, congratulations and welcome to the team!

Amber Meister, PharmD, BCPS, BCCCP
Residency Program Director, PGY2 Critical Care
Clinical Pharmacy Specialist, Critical Care

This manual has been developed for the Pharmacy Residency Program at Wesley in Wichita, Kansas to provide information on policies, procedures, benefits and other elements that may directly relate to the completion of our program. Questions regarding the residency manual may be addressed with the Residency Program Director or the Resident Advisory Committee. There may be changes to policies and procedures at any time when deemed necessary. You will be informed of changes accordingly

About Wesley

We are a 760 bed, 102 bassinet, tertiary-care, community teaching facility and a Level 1 trauma center. The main campus is comprised of Wesley Medical Center, which includes the Critical Care Building (cardiac, medical, surgical/trauma, and neuro), Acute Care Building, Women's Hospital, and the BirthCare Center, as well as Wesley Children's Hospital. Wesley also has several off-site campuses including the Family Medicine Clinic, Wesley Woodlawn and the Wesley West and Derby Emergency and Diagnostic Centers.
Wesley Medical Center (WMC) is one of the most experienced and comprehensive medical centers in Kansas. Our mission is above all else, we are committed to the care and improvement of human life. Advanced technologies and services offered at WMC include state-of-the-art Neonatal and Pediatric ICUs, advanced care for high-risk pregnancies, neurodiagnostics and stroke management.

Wesley has been an HCA Healthcare facility since 1985.

Requirements for Application to the Program

1. Graduate from an accredited college or school of pharmacy; PharmD (preferred), or B.S. with equivalent clinical experience
2. Participation in the ASHP residency match program
3. Completion of residency program application and letter of interest
4. Curriculum vitae
5. Three (3) letters of recommendation.
6. College/University transcripts (mailed directly from the College/University)
7. On-site interview (for candidates progressing to the final step in the process)
8. Currently in process of completing or have completed an ASHP accredited PGY1 pharmacy residency

Pharmacy Services at Wesley

The pharmacy department at WMC has approximately 40 pharmacists and 35 technician support personnel. The pharmacy strives to provide industry leading clinical and drug distribution services. Our focus is on patient safety, accomplished through a variety of redundant drug use control and patient monitoring systems. Automation and bar code scanning systems help avoid potential errors and enable pharmacy staff to provide additional services that optimize patient outcome

Mission

The pharmacy department will provide optimal pharmaceutical care through continuous improvement to achieve the desired outcomes of drug therapy for our patients and those we serve.

Core Services

The pharmacy department provides a number of core services to all inpatient areas. Further information on the goals of clinical pharmacy services, drug distribution and research efforts may be found on the department web page.

The scope of core services includes:

- Management team (see Appendix A)
- Sterile products preparation
    - Central pharmacy
    - OR satellite pharmacy
    - Pediatrics/NICU/Women's Health satellite (LDR) pharmacy
    - Wesley Woodlawn pharmacy
- Medication distribution and administration system
    - Inventory/purchasing - MedCarousel® and Product Manager®
    - Unit-dose distribution – Pyxis®

    - Electronic Health Record – Meditech®
    - Bar Code Medication Administration (BCMA)
    - Electronic Medication Administration Record (eMAR)
    - Computerized physician order entry (CPOE)
- Clinical Pharmacy Specialists
    - Adult Medicine (Trauma Medical, Ortho/Spine, Cardiac Stepdown, Neuro Medical, Oncology & Hospice, Wesley Woodlawn)
    - Critical Care – Medical, Surgical, Cardiac, Neuro, Pediatric, Neonatal, Evening, Overnight
    - Drug Information/Formulary Management/Clinical Decision Support
    - Emergency Medicine
    - Infectious Disease
    - Oncology – Adult, Pediatric
    - Pediatrics
    - Quality Improvement/Process Improvement
- Decentralized Services
    - Medication review
    - IV to PO conversions
    - Anticoagulation dosing and monitoring
    - Renal and hepatic dose adjustments
    - Pharmacokinetic and therapeutic drug monitoring and dosing service
    - Total parenteral nutrition dosing service
    - Opioid stewardship
    - Patient counseling
    - Medication reconciliation
    - Antimicrobial stewardship
    - Adverse drug reaction detection, prevention and monitoring
    - Collaborative Practice – Level 2 trauma medication reconciliation
    - Real-time patient monitoring system - VigiLanz®
- Pharmacists respond to Code Blues, Level 1 traumas, massive blood transfusions, malignant hyperthermias, and pediatric sepsis alerts. ED pharmacists also respond to code sepsis and code stroke alerts.

Commitment to Education

Wesley is a teaching site for many area schools of medicine and pharmacy. Some clinical pharmacy specialists hold various faculty positions with the University of Kansas (KU) School of Pharmacy and School of Medicine.

PGY2 Critical Care Pharmacy Residency at Wesley

Purpose: Build on Doctor of Pharmacy education and PGY1 pharmacy residency programs to contribute to the development of clinical pharmacists in the specialized area of critical care. Provide residents with opportunities to function independently as practitioners by conceptualizing and integrating accumulated experience and knowledge and incorporating both into the provision of patient care that improves medication therapy. Ensure after completion of residency, residents possess competencies that qualify them for clinical pharmacist and/or faculty positions and position them to be eligible for attainment of board certification in critical care.

Competency Areas:

- **R1:** Patient Care
- **R2:** Advancing Practice and Improving Patient Care
- **R3:** Leadership and Management
- **R4:** Teaching, Education, and Dissemination of Knowledge
- **A1:** E5: Participate in the Management of Medical Emergencies

Educational Goals:

- **Goal R1.1:** In collaboration with the health care team, provide safe and effective patient care to critically ill patients following a consistent patient care process
- **Goal R1.2:** Ensure continuity of care during critically ill patient transitions between care settings.
- **Goal R1.3:** Prepare, dispense, and manage medications to support safe and effective drug therapy for critically ill patients.
- **Goal 2.1:** Demonstrate ability to manage formulary and medication-use processes for critically ill patients, as applicable to the organization.
- **Goal 2.2:** Demonstrate ability to evaluate and investigate practice, review data, and assimilate scientific evidence to improve patient care and/or the medication-use system related to care for critically ill patients.
- **Goal 3.1:** Demonstrate leadership skills in the provision of care for critically ill patients
- **Goal 3.2:** Demonstrate management skills in the provision of care for critically ill patients
- **Goal 4.1:** Provide effective medication and practice-related education to critically ill patients, caregivers, health care professionals, students, and the public (individuals and groups).
- **Goal 4.2:** Effectively employ appropriate preceptor roles when engaged in teaching students, pharmacy technicians, or fellow health care professionals) in critical care.

Pharmacy Residency Program Structure

Residency Program Director (RPD): Amber Meister, PharmD, BCPS, BCCCP

Patient care practitioners Adjunct faculty				
R1: Patient Care	**R2: Advancing Practice and Improving Patient Care**	**R3: Leadership and Management**	**R4: Teaching, Education, and Dissemination of Knowledge**	**A1: Management of Medical Emergencies**
MICU	CCU	Surgery/Trauma	Teaching Experience	Code/Trauma
Surgery/Trauma	MUE	ED	MICU	
PICU	Administration	Overnight ICU		
ED	Research Project	Clinical Staffing		
Overnight ICU		Program Development		
CCU		Administration		
ID				
Orientation				
Clinical Staffing				
MUE				

Resident Qualifications

Prerequisites

Eligible candidates for the PGY2 Critical Care Pharmacy Residency Program must:

- Attain a Doctor of Pharmacy degree from an accredited college of pharmacy, or B.S. from an accredited college of pharmacy with equivalent clinical experience.
- Complete an ASHP PGY1 pharmacy residency
- Agree to take the Kansas Board of Pharmacy examination.

Technical Standards

Pharmacy residents at Wesley are held to the highest professional standards. Residents must practice the following:

- Critical thinking and problem-solving skills
- Sound judgment
- Emotional stability and maturity
- Empathy for others
- Physical and mental stamina
- Ability to learn and function in a variety of settings

Residents seeking exceptions to these standards or reasonable accommodations should initiate their request with the program's director.

Human Resources steps in the hiring process

- Creating an account in ReadySet (our Employee Health records data base)
- Completing the assigned health surveys in ReadySet
- TB test
- Current Tdap vaccine (bring record of one within the past 9 years or we will provide one)
- Two MMR vaccines (or titers showing immunity or we will draw titers and provide vaccines as needed)
- Three Hepatitis B vaccines (or titers showing immunity or we will draw titers and provide vaccines as needed.)
- Two Varicella vaccines (or titers showing immunity or we will draw titers and provide vaccines as needed.)
- Current Flu Vaccine during flu season (Nov 1 to approx. April 1) or we will provide.
- We will draw baseline labs (CBC w/Diff, BUN, Creat, Liver Panel and UA) on all employees working with Chemotherapeutic medications
- N-95 (mask) fit testing

Medical insurance

Resident medical insurance is a benefit of employment and thus can be purchased through Wesley. You can also choose to have your medical insurance covered through other, non-Wesley plans (i.e., insurance held through a parent or spouse, or an independent commercial plan). Evidence of medical coverage must be provided when your educational program begins.

Background check

Prospective residents must pass a criminal background check and/or drug screening required by state laws, prior to the start of the residency year.

Resident responsibilities

Residents are required to exhibit professional and ethical conduct at all times.

Equal opportunity

Wesley upholds all federal and state laws that preclude discrimination on the basis of race, sex, age, religion, national origin, marital status, sexual orientation, disabilities or veteran's status.

Requirements for Completion of the Residency

Established activities and projects are required to ensure achievement of the goals and objectives as dictated by residency accreditation standards.

- A formal orientation program for all residents is scheduled in July of each year. All new residents are expected to attend these sessions and complete required competencies. Returning residents may be excused from many of the scheduled sessions. All required competencies must be completed (new or existing) prior to resident graduation.
- Successfully attain BLS, ACLS, PFCCS, and PALS certification when classes are available. The resident's registration and textbook fees for attendance at BLS, PALS, PFCCS and ACLS will be covered.
- Research
    - Complete a longitudinal research project.
    - Present research poster at ASHP Midyear
    - Present research at the Midwest Pharmacy Residents Conference. If unable to present at this meeting, the resident is required to present at an alternate professional conference (i.e. KCHP, ACCP).
    - Prepare a publishable manuscript.
- Medication Usage Evaluation
    - Complete a medication usage evaluation (MUE) to understand medication use policies and procedures.
- Communication Skills
    - Resident must give at least three (3) formal presentations to healthcare providers during the residency year. All presentations must be present in the resident's portfolio.
- Teaching Commitment
    - A Teaching Certificate is available through the University of Kansas. PGY2 resident is required to participate in this program if a certificate not previously completed.
- Service
    - All residents have an operational pharmacy practice (staffing) component as required by the program
- Evaluations
    - Resident is required to achieve 100% of patient care goals (will be defined as achieving at least 75% of objectives)
        - R1, A1
    - Resident is required to achieve 50% of non-patient care goals and be at a minimum of satisfactory progress for the rest (i.e. no "needs improvement")
        - R2, R3, R4
    - Achieved for residency can only be determined by the RPD and will be reviewed by RAC
        - For patient care goals: SP followed by ACH on consecutive patient care rotations or determined by resident development plan
        - For non-patient care goals: SP in first half of residency followed by RPD and mentor determination during resident development plan
- Maintain and complete a Residency Portfolio on the shared drive prior to graduation, the resident may copy their portfolio to take with them

Resident's Criteria for Completion of Residency Checklist

☐ Complete all orientation competencies by the second quarterly development plan
☐ Successfully attain BLS, ACLS, PFCCS, and PALS certification when classes are available
☐ Complete longitudinal research project, present research at Midwest Pharmacy Residents Conference and prepare publishable manuscript
☐ Complete medication usage evaluation
☐ Give at least three formal presentations to healthcare providers and have presentations available in resident's portfolio
☐ Complete teaching certificate if not previously obtained
☐ Competently perform required staffing component
☐ Achieve 100% of patient care competency area and goals: R1 and A1
☐ Achieve 50% of non-patient care competency area and goals and be at a minimum of satisfactory progress for the rest (i.e. no "needs improvement): R2, R3 and R4
☐ Maintain and complete residency portfolio on the shared drive prior to graduation

Additional Residency Expectations

- Residents are encouraged to attend the following throughout the year:
    - Residency Core Lecture Series
    - Co-resident presentations at Midwest Pharmacy Residents Conference
    - Assigned committee meetings
        - Residency Advisory Committee
        - Pharmacy Council
        - Pharmacy and Therapeutics Committee
        - Any other assigned committees. PGY2 residents participate in committees selected jointly by the RPD and the PGY2 resident to meet the objectives of the residency. Committee opportunities for the PGY2 Critical Care include Critical Care Collaborative, Trauma Collaborative, Stroke Collaborative and others.
    - Ten (10) medical conferences (i.e. Grand Rounds, noon conferences, etc.)
- Residents are required to complete twelve (12) hours of continuing education credit at ASHP Midyear.
- PGY2 resident coordinates city-wide journal club
- Apply for SCCM Resident Journal Club Lottery
- Apply to present research at SCCM Annual Congress
- Present summary of topics from SCCM Annual Meeting.
- All residents are required to participate in recruitment events (ASHP Midyear)
- A precepting elective is offered. Residents would direct patient and topic discussion for the student and be involved in the evaluation of the student.

Orientation

- Residents will attend the one day general hospital orientation program prior to starting PGY2.
- Residents will complete an orientation learning experience for their first rotation
- Residents will complete the general pharmacy checklists during the orientation rotation.
- Residents will complete Human Subjects Training and Good Clinical Practice for Biomedical Researchers through CITI (Collaborative Institutional Training Initiative) Program online prior to end of their orientation rotation.
- Each resident will complete PALS and ACLS when classes are available, if certificates not previously attained or current.

- Residents will meet with RPD and preceptors to discuss research project. The project is to be decided on during the first week of orientation. A research advisor (determined by area of the project) will work with the resident and RPD.
- There will be an evaluation at the end of orientation. The general hospital pharmacy checklists and evaluation will be completed by the resident's 2nd development plan meeting in order for residents to continue the residency.

Orientation to Learning Experience

- Orientation will be provided by the preceptor to the area the resident will practice for that time.
- The preceptor will provide a brief review of the learning experience and requirements for the learning experience. The learning experience description should be reviewed by the resident prior to meeting with the preceptor.
- All scheduled meetings, presentations, lectures, etc., will be outlined the first day of the learning experience.
- The preceptor will review the evaluation schedule with resident on the first day of learning experience.

Operational Pharmacy Practice (staffing)

The PGY2 resident will staff every six weekend and every sixth Friday evening in a clinical specialist position.

The PGY2 resident will staff up to two holidays (one major and one minor), which will be assigned at the beginning of the year according to current holiday staffing grid.

Clinical Preceptors

Biographies of clinical preceptors are available on the WMC Pharmacy Residency Website.

Each rotation has one primary preceptor with or without additional co-preceptors. The primary preceptor is responsible for the resident's learning activities, experiences, and scheduling for that rotation. Where there are additional co-preceptors, the learning experience evaluation of the resident will be completed by primary preceptor with documented communication with other co-preceptors.

The week prior to the start of each rotation, the resident is to contact the preceptor for the rotation and make the preceptor aware of other activities the resident will be completing during the rotation (presentations, projects, trips, etc.). The resident shall communicate directly with the primary preceptor if conflicts or concern arise with scheduling, performance, professionalism and/or personal issues. If additional resources are needed, the preceptor should contact the RPD.

Resident Mentor

During orientation in July, the resident will select a preceptor to be his/her mentor for the year. Quarterly, the mentor will meet with the resident and RPD to review the Resident Development Plan to assess progression through the program and address any areas of improvement/growth. The mentor also will act as the resident's teaching mentor for the resident and provide feedback on teaching/presenting styles. The mentor will also serve as a mentor for teaching certificate requirements and will be assessing/coaching the resident.

Research

Experience and training in research is gained through: (1) Resident Research Project; and (2) Research lectures within the Core Lecture Series. Residents may refer to the ASHP Foundation's Residency Research Tips website for further guidance. Prior to starting the process of research at WMC, all residents are required to complete the HIPAA and Human Subjects Research Training.

Project selection / Scope of projects/ Approval

The purpose of completing a research project is for the resident to gain experience in all aspects of research: study design and conduct, data analysis, presentation of results, and submission of manuscript for publication. The process of generating resident research projects begins soon after the match process. Ideas for projects are solicited from incoming residents, RPD and preceptors.

Timeline

Each resident should develop a project timeline within the first month of residency that includes specific goals to attain throughout the year. These goals include, but are not limited to, identification of research project topic, methodology development, statistical support guidance, IRB approval attainment, completion of data collection and analysis and manuscript preparation. Residents are also encouraged to submit abstracts to a professional meeting (ACCP, ASHP, SCCM, etc.), therefore review of these abstract deadlines early in the research process is important. A detailed schedule of expectations will be provided to the residents in July with further information about the Wesley Research Committee, Scientific Review Committee (SRC), HCA External Data Review and Investigational Review Board (IRB) meetings.

To keep on task with project completion, residents are encouraged to integrate research responsibilities into their daily activities. Reminders will be placed on each resident's Outlook calendars to keep on task with the research project.

Status Reporting

Each resident should regularly discuss progress on the research project with his/her project mentor and RPD. Residents are expected to complete month status updates via PharmAcademic. Problems/roadblocks should be immediately addressed and a plan for resolution identified.

Presentations

- **ASHP Midyear Research Poster**
  Each resident will present their research methods at ASHP Midyear. With Midyear being in December most residents do not have data collection completed.
- **Wesley Department of Pharmacy**
  To prepare for Midwest Pharmacy Residents Conference and to meet requirement s of the residency's research objective, each resident will present their research findings to the pharmacy department and undergo rigorous review of content and presentation skills. A revised presentation will then be given prior to Midwest Pharmacy Residents Conference.
- **Midwest Pharmacy Residents Conference**
  This presentation is generally a 15 minute presentation (<5 minutes for background, with the remaining 10 minutes utilized for study design, results, and discussion). A 3 minute question and answer period will follow the presentation.

Statistical Support

In general, statistics are run by the primary investigator and research mentor. However, based on study requirements, statistical support may be pursued through discussion with RPD.

Manuscript Writing

Several resources are available to assist in writing a publishable manuscript. Resources are available from the ASHP Foundation and ASHP Media.

Medication Usage Evaluation

Purpose

The Medication Usage Evaluation (MUE) program is a structured, ongoing, organizationally authorized, process designed to improve quality of drug use by ensuring that drugs are used appropriately, safely, and effectively.

Policy

It shall be the responsibility of the Pharmacy and Therapeutics (P&T) Committee to oversee and make recommendations on the MUE outcomes brought to its attention. The P&T Committee shall be responsible for the development and implementation of the program. Findings and recommendations shall be forwarded to the Medical Executive Committee and each Medical Section for their consideration.

Procedure Guidelines

MUE project ideas are formulated by pharmacy management and clinical preceptors, in conjunction with the P&T committee, to identify important aspects of care.

1. Indicator Identification: The resident and the MUE project mentor shall develop criteria for each of the drugs/disease states included in the plan. These indicators must reflect current knowledge, clinical experience, and relevant literature and meet the particular needs of this institution.

2. Threshold Evaluation: The resident and MUE project mentor shall develop criteria and establish thresholds for each of the drugs/disease states included in the plan.

3. Data Collection and Organization: The resident is responsible for collecting agreed upon data points to analyze for the purpose of process improvements.

4. Care Evaluation: The data gathered shall be evaluated and analyzed by the resident and MUE project mentor.

5. Problem Solving: The resident shall develop process improvement recommendations and educational measures for consideration and implementation. Any corrective actions will be taken by appropriate departments as needed.

6. Documentation and Communication of Improvement: The resident shall present all MUE outcome reports to the P&T Committee. The P&T Committee then steers what information that the resident should then communicate to Medical Staff, Nursing, Medical Executive Committee and appropriate Section Meetings and other departments when appropriate and as feasible. (Laboratory, QA, etc.).

ESTIMATED RESEARCH TIMELINE

MONTH	DAY	EXPECTATION
July	2nd	☐ Meet with preceptors to discuss research topics ☐ Choose research topic
	15th	☐ Methods presentation draft to preceptors
	19th	☐ MUE topic chosen
	24th-26th	☐ Methods presentations
August	12th	☐ IRB draft to preceptors
	15th	☐ ASHP Midyear Poster Abstract Submission opens
	19th	☐ MUE criteria draft to preceptors
	22nd	☐ Submit to Wesley Research Committee (submits to WMREF IRB upon approval)
September	3rd	☐ MUE criteria ready to present to P&T
October	1st	☐ ASHP Midyear Poster Abstracts Due
November	27th	☐ ASHP Midyear posters ready for printing ☐ ASHP Midyear poster submitted to Wesley external data release
December	8th-12th	☐ ASHP Midyear
January	21st	☐ MUE results draft to preceptors
February	4th	☐ MUE results ready to present to P&T
March	30th	☐ Midwest powerpoint draft to preceptors
April	13th-17th	☐ Midwest practice presentations
	22nd	☐ Midwest powerpoint presentation to external data release/pubclear
May	6th-8th	☐ Midwest Pharmacy Resident Conference
June	1st	☐ Research manuscript draft to preceptors
	15th	☐ All close-out documents submitted to WMREF IRB ☐ All research documents required to be retained printed and placed in appropriate storage

Learning Experiences

Required Rotations	**Preceptor(s)**
Hospital/Residency Orientation (1/2 block)	Amber Meister, PharmD, BCPS, BCCCP
Medical Intensive Care (1 block)	Amber Meister, PharmD, BCPS, BCCCP
Pediatric Intensive Care (1 block)	Chris Durham, PharmD, BCPPS
Cardiology Intensive Care (1 block)	Joe Slechta, PharmD ,BCPS, AQ-Cardiology
Surgical/Trauma Intensive Care (1 block)	Kathy Hall, PharmD, BCPS
Neuro Intensive Care (1 block)	Spencer Dingman, PharmD
Emergency Medicine - Adult (1 block)	Brian Gilbert, PharmD, BCCCP, BCPS/Joel Huffman, PharmD
Infectious Diseases (1 block)	Stephanie Harding, PharmD,BCPS, AQ-ID
Overnight ICU (1 block)	Steven Le, PharmD, BCPS
Administration (1/2 block)	Jack Bond RPH, MPH
Program Development (1/2 block)	Amber Meister, PharmD, BCPS, BCCCP
Elective Rotations May repeat any required elective or choose elective to fill remaining blocks	**Preceptor(s)**
Emergency Medicine – Pediatric	Chris Durham, PharmD, BCPPS
Nephrology	Amber Meister, PharmD, BCPS, BCCCP
Evening ICU	Jake Reeder, PharmD
Preceptorship	Various
Longitudinal	**Preceptor(s)**
Clinical Staffing	Amber Meister, PharmD, BCPS, BCCCP
Research Project	Project preceptor
Medication Usage Evaluation	MUE preceptor
Teaching Experience	Mentor
Code Blue/Level 1 Trauma Response	Kathy Hall, PharmD, BCPS
Concentrated Experiences	
Advanced Cardiac Life Support (ACLS)	
Pediatric Advanced Life Support (PALS)	
Pediatric Fundamentals of Critical Care Support (PFCCS) when available	
ENLS when available	

PGY2 Core Lecture Series and Landmark Trials

The pharmacy core lecture series will cover a variety of important topics in critical care. The Lecture Series occurs every other Wednesday from 1500-1600. The resident should prepare a handout detailing the key literature for each topic and be prepared to lead a discussion about the study design and methods, conclusions, controversies, and applicability to clinical practice for each. A background section reviewing the disease state and pathophysiology may be necessary for less frequently encountered topics. The resident should reach out to the topic preceptor at least one week in advance to discuss preparation for the discussion. Additional preceptors may attend discussions.

The specific dates and rooms are updated each year. See Appendix B for a list of landmark trials to be reviewed independently by the resident during the year. The PGY2 Critical Care resident may (but is not required to) also attend the PGY1 core lecture series on Thursdays from 1300-1400.

PGY2 Core Lecture Series: Wednesdays 3-4pm in MICU Conf. Room
(May be adjusted for ED/overnight preceptor availability)

Date	Preceptor	Topic
9/4 - Block 3 CCU	Kathy	New Onset AFib
9/18	Steven	BB/CCB Overdose
10/2 - Block 4 EM	Joel	Pulmonary Embolism
10/16	Kathy	ECMO
10/30 - Block 5 NCC	Amber/Tessa	Pulmonary Hypertension
11/13	Jake	Nutrition
11/27 - Block 6 Transition	Stephanie	MDRs – CREs
12/13 (moved for Midyear)	Brian	Dermatological Diseases (Burns, SJS/TENS)
12/25		*None (Holiday)*
1/8 - Block 7 ID	Stephanie	Medication Allergies/Desensitization
1/22 - Block 8 Admin	Derick	Acute Transplant Rejection/Immunology
2/5	Dave	Glycemic Control
2/19 - Block 9 Elective		*None (SCCM)*
3/4	Jake/Tessa	ARDS
3/18 - Block 10 Overnight	Steven	Toxidromes
4/1	Dave	Intraoperative Resuscitation
4/15 - Block 11 PICU	Derick	Oncologic Emergencies/Neutropenic Fever
4/29	Dr. Harting	Cystic Fibrosis
5/13 - Block 12 MICU	Brian	Thyroid Storm/ICU Hypothyroid States
5/27	Amber/Tessa	Renal Replacement Therapy
6/10 - Block 13 Elective	Brian	Landmarks in Critical Care Pharmacy Practice
6/24	Paola	Drug-Induced Pulmonary Diseases

Learning Experience Schedule Example:

Block	CC Resident
1 (1/2 block)	Orientation
2	Surg/Trauma ICU
3	MICU
4	MICU
5	ID
6	Transition
7	EM
8	CCU
9 (1/2 block)	Administration
10 (1/2 block)	Program Development
11	PICU
12	*Elective*
13	Overnight ICU
14	Surg/Trauma ICU
15 (1/2 block)	*Elective*

Clinical Rotation Core Standards for Pharmacy Residents

The goal of our pharmacy resident education programs at Wesley is to provide a positive environment where the self-learner can acquire the knowledge and skills necessary to provide patient care as an independent practitioner. This goal is primarily accomplished through resident membership on the team providing direct care to patients.

Residents are expected to provide patient care by identifying a patient's potential and actual drug therapy problems, resolving actual drug related problems and by preventing potential problems from becoming actual problems. It will be necessary for the resident to review disease state management and drug therapy topics to effectively care for patients. It is primarily the responsibility of residents to review these topics through self-study and through attendance at pharmacy department and clinic-wide conferences. Residents should not hesitate to ask their preceptors to help clarify drug therapy issues/problems.

Hours and Attendance

- The resident will be on-site during the hours and days as set by the preceptor.
- The resident participates in patient care and other rotation responsibilities Monday through Friday unless an exception is approved by the preceptor.
- The resident will contact the team and/or preceptor if he/she will be late or absent from patient care activities or scheduled meetings.

Preparation for Rounds and Meetings with the Preceptor

- The resident will complete all required readings according to the timelines established by the preceptor and will be prepared to lead and/or actively participate in the discussion of these topics. The resident needs to "study" the information well in advance and not just complete the readings before the meeting with the preceptor.
- The resident will be prepared to discuss patient care issues with the service for all patients during morning rounds.
- The resident will review all pertinent information on a daily basis, unless otherwise indicated by the preceptor. This review should be made prior to rounds.
- The resident will be prepared to present all patients to the team and/ or preceptor. This goal may need to be modified at the beginning of a rotation and/or when there are a large number of patients on service. It may be adequate to cover only those patients with significant pharmaceutical care issues. The "quality" of the patient presentations is more important than the number of patients presented.

The suggested format for presenting a patient is:

Initials is a _____ year old *race* *sex* who enters the hospital with a chief complaint of _____.

HPI: Chronological history; include medications, other therapies, surgery relating to problem

PMH: Significant past medical, surgical history, and social history; medication history (include medications on admission); allergies

Assessment and Plan: Problem List (by disease state), assessment of drug therapy appropriateness by disease state including physical assessment and vital signs, as well as, monitoring plan and response to drug therapy.

Resident Documentation and Communication with Decentralized Pharmacists

The resident will follow department policy to document all clinical interventions and outcomes follow-up in Meditech, Vigilanz and/or PDOC, including recommendations and discussions held during rounds. Documentation expectations will be outlined by preceptors at the start of each rotation.

The resident is to communicate any follow-up requests with pharmacy team members covering evening shifts. These requests include a review pertinent clinical issues not fully clarified in the patient note and /or intervention history (e.g. *only* pertinent positives, pending drug levels, etc). These communications should take place before the end of the resident's work day whenever possible.

Participation in Patient Care Activities

The resident will take the initiative to communicate with team members for patient care issue follow-up. Team membership requires active participation.

Other Core Resident Responsibilities

- The resident will perform all duties as requested by the medical team unless otherwise directed by the preceptor.
- The resident will attend all meetings as scheduled by the preceptor.
- The resident will stay current with the pertinent medical literature and, whenever possible, make evidence-based recommendations to the team.
- The resident will write notes in the patient's electronic chart as per department policy for all pharmacists.

Resident Evaluation

Rating	Definition
Needs Improvement (NI)	• Deficient in knowledge/skills in this area • Often requires assistance to complete the objective • Unable to ask appropriate questions to supplement learning
Satisfactory Progress (SP)	• Adequate knowledge/skills in this area • Sometimes requires assistance to complete the objective • Able to ask appropriate questions to supplement learning • Requires skill development over more than one rotation
Achieved (ACH)	• Fully accomplished the ability to perform the objective • Rarely requires assistance to complete the objective; minimum supervision required • No further developmental work needed
Achieved for Residency (ACHR)	• Resident consistently performs objective at Achieved level, as defined above, for the residency.

Resident Responsibilities

- Complete ALL PharmAcademic evaluations for all rotations prior to meeting with the preceptor at the end of each rotation or prior to due date if for a longitudinal experience
- Residents must schedule a meeting to occur 1-2 days prior to the end of the rotation to discuss rotation evaluations. This meeting should be scheduled within the first week of the rotation by sending an outlook calendar meeting request to the preceptor.
- Evaluations not completed by above stated expectations without prior approval from the preceptor will be considered a missed deadline. Please refer to Guidelines for Dismissal for consequences.

Resident Advisory Committee (RAC)

- Purpose: Oversight of all aspects of the residency program
- Members: RPDs, director of pharmacy and preceptors. RAC preceptors serve two year terms. Residents participate in the RAC to learn and participate in the residency quality improvement process.
- Meeting Time: Third Tuesday of every month at 1300.

Resident Development Plan

- The resident will complete a pre-residency interest/self-evaluation with required/elective residency goals.
- The resident, RPD and mentor will complete a resident development plan at the end of July and then quarterly thereafter. These development plans will be emailed out to preceptors through PharmAcademic. Resident progress will be reviewed during RAC meetings.
- Prior to each meeting the resident will be prepared to discuss the criteria listed below and must bring a completed self-evaluation.
- The development plan criteria are but not limited to:
    - % goals achieved, also going over any needs improvement goals
    - Updates to development plan
    - Areas for improvement
    - Career goals
    - Licensure status
    - Criteria for completion of residency progress
- The resident will be responsible for organizing information (except % goals achieved) prior to resident development plans (**See Appendix A**).
- The RPD, RAC and the resident will develop and document the initial development plan as a variation to the original plan. Variations include additions/deletions of goals/objectives, changes in the structure of the year, changes in preceptor ship, or changes in the assessment strategy.
- The RPD and RAC will determine effectiveness of the quarterly development plan and with the resident will determine the subsequent quarterly plan which can include the same variations stated above.

Resident Portfolio

Purpose: To standardize resident's folder on the shared drive and allow for easy retrieval of documents.

Contents:

- **CV** folder:
  - Updated version of CV
- **DI** folder:
  - MUE final draft
  - MUE data collection
  - MUE final results and recommendations
  - Other DI documents (if applicable)
- **Presentations / Projects** folder :
  - Final drafts of any formal presentation / educational document
  - Topic discussion handouts
  - Preceptor presentation feedback
  - Completed Presentation Assessment Forms
  - Midyear abstract
  - Midyear poster
  - Midwest Residency Conference applications materials
  - Midwest Residency Conference PowerPoint presentation
- **Research** folder:
  - Final draft of research proposal
  - Completed / signed research proposal
  - Approval documents from IRB/ QI department
  - Data collection sheet
  - Final draft of manuscript
- The resident may customize the remaining content in the portfolio
  - Folder examples:
    - Rotations
    - Statistics
    - Teaching Certificate

Resident Duty Hours

1. Duty hours are defined as all scheduled clinical and academic activities related to the pharmacy residency program. This includes inpatient and outpatient care; in-house call; administrative duties; and scheduled and assigned activities, such as conferences, committee meetings, and health fairs that are required to meet the goals and objectives of the residency program.
   Duty hours do not include: reading, studying, and academic preparation time for presentations and journal clubs; travel time to and from conferences; and hours that are not scheduled by the residency program director or a preceptor.

2. Duty hours will be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities and all moonlighting.

3. Moonlighting (internal or external) must not interfere with the ability of the resident to achieve the educational goals and objectives of the residency program.
   a. Moonlighting will be limited to 3 shifts in a rolling 3 week period
   b. Residents must inform and obtain approval the residency program director of any moonlighting hours outside the facility

4. Residents must have a minimum of one day in seven days free of duty (when averaged over four weeks).

5. Residents should have a minimum of 8 hours free of duty between scheduled duty periods, and no more than 16 hours of continuous scheduled duty.

6. Residents must attest on a monthly basis in PharmAcademic that he/she is meeting the above requirements.

Communications

Paging System
Residents are assigned a personal alphanumeric pager for various emergency pages (code, trauma, sepsis etc).

iMobile
Residents will be given an iPhone for using the MH-Cure system. Residents are expected to assign their patients as requested by their preceptor.

A physician may be paged by calling the hospital operator at 2-3030 and requesting the physician or staff member be paged to your phone number.

E-mail
The resident is responsible for reading and acknowledging all e-mail messages in Outlook from faculty and staff in a timely manner. Failure to review email at least daily could result in the resident missing valuable information such as schedule changes, meetings and policy announcements.

Residents are also required to be proficient in Microsoft Outlook and maintain an up-to-date Outlook calendar.

Telephone
Keep personal phone calls to a minimum. If you need to make a call that will be lengthy or possibly disruptive, please remove yourself from the resident office for the call.

Pharmacy Phone/Fax Numbers
Pharmacy department phone numbers, including the pharmacy office, central and satellite phone numbers may be found on the Wesley Pharmacy Intranet page or the shared drive.
Pharmacist numbers can be found in the MH-Cure Directory

The pharmacy department fax number is (316) 962-2568.

Internal and External Mail System
Resident mailboxes are located main pharmacy. Mailboxes should be checked routinely.

Internal mailing can be placed in an envelope (normal or confidential) and placed in the outgoing mail basket on the outside of the administrative assistant's office. The envelopes can be found near the copy room. See the administrative assistants for official external mailings. Personal external mailing needs to have appropriate postage and placed in any of the US postal service drop boxes located campus-wide.

Mailing address: 550 N. Hillside, Wichita, KS 67214-4976

Professional Meetings and Travel

Professional Membership and Fees

Pharmacy residents are required to be members of the American Society of Health-System Pharmacists (ASHP). ASHP membership dues are reimbursed for all residents.

Travel

Month	Conference	Location	Required	Subsidized
October	ACCP Annual Meeting	Varies	No	No
December	ASHP Midyear Meeting	Varies	Yes	Yes
Jan / Feb	SCCM Annual Congress	Varies	Yes	Yes
May	Midwest Pharmacy Residents Conference	Omaha, NE	Yes	Yes

Reimbursement

All reimbursement is processed through Concur or WMREF. Training will be provided to residents as needed.

ASHP Midyear Meeting

Website: www.ashp.org

Deadlines – please see website for updates and actual dates:

- *Abstract submission:* late September to early October
- *Hotel reservation:* mid-July – reserve early please
- *Registration:* by mid-October
- Travel expenses for Midwest will be reimbursed after through HCA Concur

SCCM Annual Congress

Website: www.sccm.com

Deadlines – please see web site for updates and actual dates:

- May consider submitting previous research to present in the Research Snapshot Theater
- *Abstract submission:* fall - see website
- *Presentation submission:* mid-January to mid-February
- *Hotel reservation and registration:* October - December – reserve early please
- Travel expenses for SCCM are reimbursed through WMREF Scholarship

Midwest Pharmacy Residents Conference

Website: www.mprconference.com

Deadlines – please see web site for updates and actual dates:

- *Abstract submission:* late February to mid-March
- *Hotel reservation and registration:* February or March – reserve early please
- Travel expenses for Midwest will be reimbursed after through HCA Concur

Salary and Benefits

The salary for the PGY2 pharmacy specialty resident is $47,480.
Residents will be paid every two weeks for the previous two weeks of work. There are a total of 26 pay periods a year. Your stipend will be divided equally among the 26 pay periods. Direct deposit to your financial institution is required. Pay days are every other Friday and the timing of your first paycheck will be discussed during orientation.

Residents are provided with an excellent benefit package that includes day1 medical, prescription, dental and vision coverage. Additional benefits include but are not limited to:

- 401K participation
- Benefits Continuation (COBRA)
- Jury Duty Leave
- Life Insurance
- Military Leave
- Short-Term Disability
- Bereavement
- Medical and Daycare flexible spending accounts
- Corporate discounts (cell phone, shopping, rental car, electronics etc.)

Vacation and Leave

Vacation

Residents are considered benefits-eligible as other full-time employees are at WMC. Paid time off (PTO) will begin accruing immediately and is based on productive hours worked. Vacation time will be limited to ten (10) days unless other arrangements are made with the RPD.

Personal Appointments

Appointments for personal issues (physician, dentist, banking, etc.) should have minimal impact on rotation activities. Appointments must be approved by the preceptor at least two days prior to the appointment, and ideally, prior to the start of the rotation.

Sick Leave

Weekday: Residents must contact their current preceptor and the pharmacist in charge (PIC) if they are going to be out sick and absent from rotation by 7 a.m.
Weekend staffing: If the resident is going to be out sick for a weekend staffing shift, he/she must contact the pharmacist in charge (PIC) at least two hours prior to the start of the shift when possible. The resident is required to make up the shift at a later date.

Emergency Leave

Preceptors and the RPD are aware that certain life emergencies or life events may occur and that residents may need to be away or request to be away. Attempts will be made to accommodate the resident should this situation arise during the residency year, not exceeding 12 weeks. Approval must be granted by the RPD.

Professional leave

Professional leave is allowed for approved conferences per hospital policy (see Travel).

Maternity / Paternity Leave / Extended Leave of Absence

The resident may have the residency extended by an appropriate amount of time to compensate for time away from the residency program. If the leave is greater than 12 weeks or if residency requirements cannot be met, the members of the Residency steering committee may dismiss the resident from the program.

Resident Disciplinary Process

Guidelines for dismissal from the program

1. Residents must meet agreed upon and documented deadlines for projects and presentations. If a preceptor feels that an agreed upon deadline has been missed, written documentation should be completed and reviewed with the resident and uploaded into PharmAcademic Written documentation should also be completed by the preceptor for any unprofessional conduct. If three occurrences due to missed deadlines or any occurrence of unprofessional conduct during the residency year, the resident must go before the RAC and explain the issues and complete an action plan. RAC will then determine, based on the circumstances, whether one more missed deadline or episode of unprofessional conduct will result in review with Human Resources and a subsequent final warning. Immediate dismissal from the program can result with any additional missed deadline or unprofessional conduct following the final written warning.

2. It is not recommended that residents miss more than 3 consecutive days of training. However, there may be times when an extended leave of absence is required. Any time away from the program following an initial 5 consecutive days should be made up prior to receiving the residency certificate. RAC will make the final determination based upon circumstances.

3. Two failed attempt to pass the NAPLEX or Kansas law exam or failure to obtain licensure as a pharmacist in the State of Kansas within 60 days of program start date.

4. If extended leave extends 12 weeks from Residency end date (June 30th)

Resident Impairment

- Residents perform their educational and assigned duties unimpaired by alcohol, drugs, and psychological, medical, or behavioral disorders.
- Residents will not engage in unlawful or unethical acts in relation to drugs and alcohol.
- Residents are not under the influence of, nor consume alcohol or drugs while engaged in work or educational activities.

Miscellaneous

Confidentiality
Maintaining confidentiality of patient, employee, and business information is critical and pertains to all information (oral, paper-based, and electronic).

Identification Cards
WMC identification badges must be worn by all employees while on duty. The badge must be worn above the waist and name and picture must be clearly visible. Residents may not wear non-professional insignia such as pins or buttons not related to Wesley or the health care profession while on duty unless pre-approved by the Pharmacy Department Director.

Professional Dress and Decorum
All residents are expected to maintain a professional appearance while delivering services to patients and their families, as outlined in Human Resources Professional Dress Standards policy. Standardized professional scrubs are allowed when the resident is on Trauma Call or rotating through the Emergency Department.

If dressed improperly, the resident may be instructed to return home to change clothing or take other appropriate action. Subsequent infractions may result in disciplinary action.

Trauma Pagers
Residents are designated to carry the trauma pagers and respond to all Level 1 Traumas on a rotating basis.

Workspace and Supplies
Residents have a designated work space that will include, at a minimum, a desk, desktop computer and printer, telephone, bookshelf, and a file cabinet. Residents have access to a copy machine, scanner and a fax machine that can be used for official business associated with the residency.

Licensure
Newly hired, unlicensed pharmacy graduates are expected to have a scheduled appointment to sit for the NAPLEX and Multistate Jurisprudence exam prior to their start date and obtain licensure as a pharmacist in the State of Kansas within 60 days of program start date with no more than 2 attempts. Licensing fees are not reimbursed.

Liability Insurance
All pharmacists at WMC are required to carry professional liability insurance. Suggested insurers include Pharmacists' Mutual and through ASHP via Marsh Affinity Group Services. Proof of insurance must be provided to the administrative assistants by July 31st of the residency year. Liability insurance is not reimbursed.

Parking and Transportation
Residents will receive information about parking on the one-day hospital orientation in July. Residents are allowed to park in the Rutan Parking Garage. The vehicle must be registered with WMC security office and the WMC parking permit must be displayed while parking on WMC campus.

Housing
WMC does not provide housing for the pharmacy resident. The RPD can help direct residents interested in finding housing to various resources, as well as current residents for advice.

Preceptor of the Year and Mentor of the Year
Each spring, the resident class selects a Preceptor of the Year and Mentor of the Year. This preceptor excels in teaching, clinical skills, dedication to the pharmacy profession and mentoring. The Mentor has gone "above and beyond" to help guide his/her resident though residency.

Wesley Medical Center
PGY2 Critical Care Residency Program

PGY2 RESIDENT STATEMENT OF AGREEMENT

As a resident in the Critical Care Residency Program at Wesley Medical Center, I agree to the following:

1. I am participating in a one (1) year training program in critical care pharmacy that is scheduled to begin on July 15, ____ and scheduled to end on July 14,____.
2. I will provide my PGY1 residency certificate of completion to the RPD on or before day one of my residency and upload a copy into my resident portfolio
3. I will be considered benefits-eligible as other full-time employees are at Wesley Medical Center. Paid time off (PTO) will begin accruing immediately and is based on productive hours worked. Vacation time will be limited to 10 days unless other arrangements are made with the Residency Program Director.
4. I will receive a salary of $47,480/year, paid on a two-week pay period basis.
5. I understand that I will be required to work one of every six (6) weekends and one of every six (6) Friday evenings in a Clinical Specialist role as well as up to two holidays (one major and one minor). The compensation for weekend, holiday and Friday evening shifts is included in the base salary.
6. I will avoid engaging in any activities that compete with my duties and responsibilities with the residency program. If I wish to work extra hours as a pharmacist, I will discuss this (and receive approval) with the Residency Program Director and will generally work those hours (for pay) at Wesley Medical Center by signing up for available overtime shifts.I will follow ASHP Duty hours as outlined in the Residency Manual.
7. I understand that I must sit for the Kansas law exam prior to July 15th of this year and notify my residency director of my test date. If I fail to pass the Kansas law exam after two attempts or fail to obtain licensure as a pharmacist in the State of Kansas within 60 days of my start date, I understand that I will not be able to continue in the program.
8. I understand that I must obtain, and provide proof of, adequate professional liability insurance prior to beginning residency training.
9. I will take full advantage of what the residency program offers me; I understand that this will typically require more than 50 hours per week.
10. I will accept the responsibility placed on me, insofar as my knowledge and experience allow; I am aware that my rotation preceptors, Resident Mentor and Residency Program Director will be available for assistance.
11. I will accept constructive criticism and act on it.
12. I will strive to complete all assignments on time, including learning experience evaluations.
13. I understand that I must satisfactorily complete all of the competencies and requirements outlined in the Residency Manual in order to earn an ASHP-accredited PGY2 Critical Care residency certificate.
14. By signing this, I attest that I have read and reviewed the PGY2 Critical Care Pharmacy Residency Manual.

Print Name:_____

Resident Signature:_____ Date:_____

Resident Checklists

Resident Beginning of the Year Checklist

☐ Complete pre-residency survey

☐ Provide proof of PGY1 residency completion by uploading PGY1 certificate into PharmAcademic and into your file on the shared drive

☐ Complete HIPAA and Human Subjects Research Training

☐ Complete required competencies

☐ Become a licensed pharmacist in Kansas within 60 days of program start date with no >2 attempts

☐ Provide a photocopy of your license to the pharmacy department secretary

☐ Obtain professional liability insurance and provide proof of insurance to pharmacy dept. secretary

☐ Join American Society of Health-System Pharmacists (ASHP) if not already a member

☐ Register for ASHP Midyear Meeting

☐ Reserve hotel room for ASHP Midyear Meeting

☐ Coordinate City-Wide Journal Club schedule

Resident End of Year Checklist

Name _____ Date_____

Program_____

The following must be completed to successfully finish the residency and receive your completion certificate:

☐ Present MUE and research results to P&T

☐ Provide research manuscript ready for publication submission

☐ Submit completed IRB Report

☐ Place all patient-specific information from research project into the Investigational Pyxis

☐ Complete all required competencies

☐ Complete all PharmAcademic tasks and evaluations

☐ Complete Residency Portfolio in the shared drive

☐ Turn in ID card, car parking tags, and pager to residency director

☐ Clean out workspace, including wanted files on computers and network drives

☐ Arrange healthcare insurance (you have 45 days from termination date to sign up for COBRA)

☐ Change address with respective Board of Pharmacies. Update forwarding address with Wesley HR.

☐ Complete post-residency survey

Submit completed checklist to program director.

_____ _____

Residency Director signature Date

Appendix A

Resident Development Plan

Resident: _____

Evaluator: _____

Mentor: _____

Date/Time: _____

Career Goals:

Interests:

Evaluations/% patient care goals achieved/% non-patient care goals achieved/any needs improvement goals

Licensure status

Strengths:

Areas to Improve:

Criteria for completion of residency progress:

☐ Complete all orientation competencies by the second quarterly development plan

☐ Successfully attain BLS, ACLS, PFCCS, and PALS certification when classes are available

☐ Complete longitudinal research project, present research at Midwest Pharmacy Residents Conference and prepare publishable manuscript

☐ Complete medication usage evaluation

☐ Give at least three formal presentation to healthcare providers and have presentations available in resident's portfolio

☐ Complete teaching certificate if not previously obtained

☐ Competently perform required staffing component

☐ Achieve 100% of patient care competency area and goals: R1 and A1

☐ Achieve 50% of non-patient care competency area and goals and be at a minimum of satisfactory progress for the rest (i.e. no "needs improvement): R2, R3 and R4

☐ Maintain and complete residency portfolio on the shared drive prior to graduation

Plan:

Program Director:_____ Resident:_____

Appendix B: Landmark Trial Checklist

Check	Trial	Citation
Sedation		
	MENDS	Randharipande PP, et.al. JAMA 2007; 298: 2644-53.
	SEDCOM	Riker RR, et.al. JAMA. 2009; 301: 489-99.
	PRODEX / MIDEX	Jako SM, et al. JAMA. 2012; 307: 1151-60.
	Lorazepam v Propofol	Carson SS, et.al. Crit Care Med. 2006; 34: 1326-32.
	Daily Awakenings	Kress JP, et.al. N Engl J Med. 2000; 342: 1471-7.
Sepsis / Septic Shock		
	ALBIOS	N Engl J Med. 2014; 370:1412-21.
	HES vs LR	N Engl J Med. 2012;367:124-34.
	Rivers Protocol	N Engl J Med. 2001; 345:1368-77.
	PROCESS	N Engl J Med 2014; 370:1683-93.
	ARISE	N Engl J Med. 2014; 371:1496-506.
	PROMISE	N Engl J Med 2015; 372:1301-11.
	SEPSISPAM	N Engl J Med 2014;370:1583-93.
	VASST	Russell JA, et.al. N Engl J Med. 2008; 358: 877-87.
	SOAP II	De Backer, et.al. N Engl J Med. 2010; 362:779-89.
	VANISH	JAMA. 2016;316(5):509-518.
	Annane	Annane, et.al. JAMA. 2002; 288: 862-71.
	CORTICUS	Sprung, et.al. N Engl J Med. 2008; 358: 111-24.
	HYPRESS	JAMA. 2016;316(17):1775-85.
	ADRENAL	DOI: 10.1056/NEJMoa1705835
	Kumar – Early Abx Sepsis	Kumar A, et.al. Crit Care Med. 2006; 34: 1589-96.
Glycemic Control		
	Leuven 1 (SICU)	N Engl J Med. 2001; 345: 1359-67.
	Leuven 2 (MICU)	N Engl J Med. 2006; 354: 449-61.
	NICE-SUGAR	N Engl J Med. 2009; 360: 1283-97.
Anemia / Transfusions		
	TRICC	Hebert PC, et.al. N Engl J Med. 1999; 340: 409-17.
	TRICS III	N Engl J Med 2017;377:2133-44.
	TRISS	Holst LB, et al. N Engl J Med. 2014; 371: 1381-1391.
	EPO	Corwin HL, et.al. N Engl J Med. 2007; 357: 965-76.
Pulmonary / Acute Respiratory Distress Syndrome		
	Meduri 1	Meduri GU, et.al. JAMA. 1998;280:159-65.
	ARDSNet	N Engl J Med 2000;342:1301-8.
	Meduri 2	Meduri GU, et.al. CHEST. 2007; 131: 954-963.
	ACURASYS	Papazian L, et.al. N Engl J Med. 2010; 363: 110-16.
	MOPETT	Sharifi M, et al. Am J Cardiol. 2013; 111:273-277.
	PEITHO	Meyer G, et al. N Engl J Med. 2014; 370: 1402-11.
Neurology		
	ECASS	JAMA. 1995; 274:1017-25.
	NINDS	Stroke 1997; 28: 2109-18.
	ECASS-2	Lancet 1998; 352: 1245–51.
	ECASS-3	N Engl J Med. 2008;359:1317-29.
	ATACH-2	N Engl J Med 2016;375:1033-43.
	INTERACT2	N Engl J Med 2013;368:2355-65.
	Nimodipine for aSAH	Allen GS, et.al. N Engl J Med. 1983; 305: 619-24.

	Triple H	Sen J, et.al. Lancet Neurol. 2003; 2: 614-21.
	CAST	Lancet. 1997; 349:1641-9.
Cardiology		
	AVP in ACLS	Wenzel V, et.al. N Engl J Me. 2004; 350:105-13.
	AVP vs EPI+AVP in ACLS	Gueugniaud PY, et.al. N Engl J Med. 2008; 359:21-30
	HACA	HACA Study Group. N Engl J Med. 2002; 346: 549-56.
	HACA 33 vs 36	Nielsen N, et al. N Engl J Med. 2013; 369: 2197-206.
	DAPT 12 vs 30	Mauri L, et al. N Engl J Med. 2014; 371: 2155-66.
Surgical/Trauma		
	Fluid in Pen. Chest Trauma	Bickell WH, et.al. N Engl J Med. 1994; 331:1105.
	NASCIS II	Bracken MB, et.al. N Engl J Med. 1990; 322: 1405-11.
	SAFE-TBI	N Engl J Med. 2007; 357:874-84.
	CRASH	Lancet. 2004; 364: 1321-8.
	CRASH-2	CRASH-2 Investigators. Lancet. 2010; 376: 23-32.
	Temkin – Sz TBI	Temkin, et.al. N Engl J Med. 1990; 323: 497-502.
	Temkin - Sz TBI	Temkin, et.al. J Neurosurg. 1999;91:593-600.
	POISE	Lancet. 2008; 371: 1839-47.
	POISE-ASA	N Engl J Med. 2014; 370: 1494-503.
	Eurotherm3235	N Engl J Med 2015;373:2403-12.
Nutrition		
	Immunonutrition ALI	Crit Care Med. 2006; 34: 1033-38.
	Immunonutrition Sepsis	Crit Care Med. 2006; 34: 2235-2333.
	Early vs Late PN	N Engl J Med. 2011; 365:506-17.
	CALORIES	N Engl J Med 2014;371:1673-84.
Infectious Diseases		
	C. Difficile and SUP	Leonard J, et.al. Am J Gastroenterol. 2007; 102: 2047-56.
	C. Difficile – Vanc vs. Metro	Zar FA, et.al. Clin Infect Dis. 2007; 45: 302-7.
	SUP and PNA	Herzig SJ, et.al. JAMA. 2009; 301: 2120-2128.
	8 vs 15 days for PNA	Chastre J, et.al. JAMA 2003; 290: 2588-98.
	Linez. Vs. Vanc MRSA PNA	Wunderink RG, et.al. CHEST. 2003; 124: 1789-97.
Misc		
	GIB	Van Rensburg C, et.al. Aliment Pharmacol Ther. 2009; 29:497-501. Andruilli A, et.al. Am J Gastroenterol. 2008; 103:3011.
	SAFE	N Engl J Med. 2004; 350:2247-56.
	Low-Dose DA	Holmes CL, Walley KR. CHEST. 2003; 123:1266-75
	SUP	Cook DJ, et.al. N Engl J Med. 1994; 330: 377-81. Cook DJ, et.al. Crit Care Med. 2001;5: 368-75. Conrad SA, et.al. Crit Care Med. 2005;33:760-5
	WOMAN - TXA in PPH	Lancet 2017; 389: 2105–16.
	AKIKI	N Engl J Med. 2016; 375(2): 122-33.
	CRISTAL	JAMA. 2013; 310 (17): 1809-17.

Appendix C. Disease States to be Reviewed

The resident will demonstrate an understanding of the mechanism of action, pharmacokinetics, pharmacodynamics, pharmacogenomics, pharmacoeconomics, usual regimen (dose, schedule, form, route, and method of administration), indications, contraindications, interactions, adverse reactions, and therapeutics of medications and non-traditional therapies, where relevant, that are applicable to the diseases and conditions and have the ability to design appropriate treatment regimens and treat and assess outcomes.

For some diseases and conditions, direct patient care is required. For other diseases and conditions, a case-based, didactic approach may be substituted. In these cases, the resident will demonstrate understanding of the diseases and condition via didactic instruction, case-based application, simulation, or other appropriate approach.

For these diseases and conditions, the resident will demonstrate an understanding of signs and symptoms, epidemiology, risk factors and etiology, pathogenesis, pathophysiology, clinical course, and a comprehensive pharmacotherapy treatment plan.

In the list, an asterisk (*) indicates that direct patient care is required. The other items are required but may be covered in the case-based, didactic approach described above.

Pulmonary

1. *Acute respiratory distress syndrome
2. *Severe asthma exacerbation
3. *Acute COPD exacerbation
4. *Acute pulmonary embolism
5. *Acute pulmonary hypertension
6. *Drug-induced pulmonary diseases
7. *Mechanical ventilation
8. Chronic severe pulmonary hypertension
9. Pneumothorax and hemothorax
10. Chest tubes
11. Cystic fibrosis
12. Inhaled medication administration

Cardiovascular

1. *Advanced cardiac life support
2. *Arrhythmias (atrial and ventricular)
3. *Acute decompensated heart failure
4. *Acute coronary syndromes
5. *Hypertensive emergencies and urgencies
6. *Shock syndromes
7. Acute aortic dissection
8. Pericardial tamponade
9. Mechanical devices (e.g., intra-arterial balloon pumps, ECLS, ECMO)
10. Invasive and non-invasive hemodynamic monitoring
11. PALS

Renal

1. *Acute kidney injury
2. *Acid-base imbalance
3. *Fluid and electrolyte disorders
4. *Contrast-induced nephropathy
5. *Drug-induced kidney diseases
6. Rhabdomyolysis
7. Syndrome of inappropriate antidiuretic hormone
8. Continuous renal replacement therapies/hemodialysis

Neurology

1. *Status epilepticus
2. *Ischemic stroke
3. *Subarachnoid hemorrhage
4. *Intracerebral hemorrhage
5. *Critical illness polyneuropathy
6. Intracranial pressure management
7. Traumatic brain injury
8. Spinal cord injury
9. Central diabetes insipidus
10. Cerebral salt wasting
11. Encephalopathy in coma
12. EEG or bispectral monitoring for level of sedation
13. Ventriculostomies
14. Targeted temperature management/induced hypothermia

Gastrointestinal

1. *Acute upper and lower gastrointestinal bleeding
2. *Acute pancreatitis
3. Fistulas
4. Ileus
5. Abdominal compartment syndrome

Hepatic

1. *Acute liver failure
2. *Complications of cirrhosis
3. *Drug-induced liver toxicity

Dermatology

1. Burns
2. Stevens-Johnson syndrome
3. Toxic epidermal necrolysis
4. Erythema multiforme
5. Drug Reaction (or Rash) with Eosinophilia and Systemic Symptoms (DRESS)

Immunology

1. Acute transplant rejection
2. Graft-versus-host disease

3. Management of the immunocompromised patient
4. Acute management of a solid organ or bone marrow transplant patient
5. Medication allergies/desensitization

Endocrine
1. *Relative adrenal insufficiency
2. * Hyperglycemic crisis
3. *Glycemic control
4. Thyroid storm/ICU hypothyroid states

Hematology
1. *Acute venothromboembolism
2. *Coagulopathies
3. *Drug-induced thrombocytopenia
4. *Blood loss and blood component replacement
5. Anemia of critical illness
6. Drug-induced hematologic disorders
7. Sickle cell crisis
8. Methemoglobinemia

Toxicology
1. *Toxidromes
2. *Withdrawal syndromes
3. Drug overdose
4. Antidotes/decontamination strategies

Infectious Diseases
1. *CNS infections
2. *Complicated intra-abdominal infections
3. *Pneumonia
4. *Endocarditis
5. *Sepsis
6. *Fever
7. *Antibiotic stewardship
8. *Clostridium difficile associated diarrhea
9. Skin and soft-tissue infection
10. Urinary tract infections
11. Wound infection
12. Catheter-related infections
13. Infections in the immunocompromised host
14. Pandemic diseases
15. Febrile neutropenia
16. Acute osteomyelitis

Supportive Care
1. *Pharmacokinetic and pharmacodynamic alterations in critically ill

2. *Nutrition (enteral, parenteral nutrition, considerations in special patient populations)
3. *Analgesia
4. *Sedation
5. *Delirium
6. *Sleep disturbances
7. *Rapid sequence intubation
8. *Venous thromboembolism prophylaxis
9. *Stress ulcer prophylaxis
10. Pharmacogenomic implications
11. Oncologic emergencies

Other devices
1. Intravascular devices
2. Peripheral nerve stimulators
3. IV pumps

Related Topic
The resident will be able to describe key landmark events in the evolution of critical care pharmacy as a specialty and summarize the findings from key studies documenting the association of critical care pharmacy services with favorable health care outcomes.