

# **HHS Public Access**

JAm Coll Clin Pharm. Author manuscript; available in PMC 2024 October 01.

Published in final edited form as:

Author manuscript

JAm Coll Clin Pharm. 2023 October ; 6(10): 1139–1145. doi:10.1002/jac5.1800.

# The Role of a Pharmacy Administration and Leadership Rotation within Postgraduate Year Two Critical Care Residency Training

Komal Pandya, Pharm.D.<sup>1</sup>, Ali Wiegand, Pharm.D<sup>1</sup>, Michael Behal, Pharm.D.<sup>1,2</sup>, Jackie Dempsey, Pharm.D.<sup>1</sup>, Bill Olney, Pharm.D.<sup>1</sup>, Jeremy Flynn, Pharm.D., FCCP<sup>1</sup>, Alexander H. Flannery, Pharm.D., Ph.D., FCCP<sup>1,2</sup>, Kathryn Ruf, Pharm.D., MBA<sup>1</sup>

<sup>1</sup>University of Kentucky Healthcare, Acute Care Pharmacy Services, Lexington, Kentucky, USA

<sup>2</sup>University of Kentucky College of Pharmacy, Department of Pharmacy Practice and Science, Lexington, Kentucky, USA

# Abstract

**Introduction:** The job of a critical care pharmacy specialist has evolved to include quality improvement and administrative tasks. As such, the American Society of Health-System Pharmacists (ASHP) highlights specific goals and objectives to ensure post-graduate year two (PGY2) critical care residents are sufficiently trained to perform these tasks. The PGY2 critical care pharmacy residency leadership at the University of Kentucky sought to develop a fourweek learning experience entitled, "Critical Care Administration / Medication Use Quality & Outcomes," as a unique rotation to capture these requirements and activities.

**Objectives:** The focus of this commentary is to serve as a guide for other residency programs to develop such a rotation, highlight resulting resident contributions to the department, describe perceived benefits of this rotation for residents, and highlight how this rotation impacted graduated residents' early years as practitioners.

**Conclusions:** This learning experience is pivotal to providing a more balanced view of the entire medication use process and the healthcare ecosystem during a specialty residency. PGY2 critical care residents can gain valuable experiences away from the bedside that better prepare them for future tasks in addition to patient care that will be expected of them as clinical pharmacists.

# Keywords

Leadership; Pharmacy Administration; Residency; Rotation

# Introduction:

Post-graduate year two (PGY2) pharmacy residency training in critical care affords learners the opportunity to apply knowledge and skills acquired in previous training settings to critically ill patients. It serves to prepare graduates for various career paths, particularly clinical specialist roles. The role of the critical care pharmacy specialist has evolved over

**Corresponding Author:** Komal Pandya, Pharm.D., 800 Rose Street, Room H110, Lexington, KY 40536, kapa223@uky.edu. **Conflict of interest statement:** The authors declare no conflicts of interest.

time to include patient care, education, research and scholarship, and institutional quality improvement.<sup>1</sup> As the accrediting body for pharmacy residency programs, the American Society of Health-System Pharmacists (ASHP) has developed objectives to ensure graduates of critical care residency programs are trained to master these tasks.<sup>2</sup>

The evolving role of the critical care pharmacy specialist is well described in the 2020 Update to the Position Paper on Critical Care Pharmacy Services. As mentioned, the role of the critical care pharmacist includes a wide array of responsibilities, including those related to quality improvement. They highlight the importance of the critical care pharmacist in using pharmacoeconomic analyses to aid in clinical decision making. Moreover, they state the critical care specialist should prepare formulary reviews of medications used in critically ill patients for institutional Pharmacy and Therapeutics committees.<sup>1</sup> Feedback from graduates of our residency program echoed the sentiment that while PGY2 specialty training prepares graduates well for direct patient care, it may not sufficiently prepare them for the non-patient care roles related to quality improvement and administrative projects that are expected of them in health-systems. ASHP Residency Standards specific to quality improvement and administrative responsibilities for critical care residencies include competency areas R2: Advancing Practice and Improving Patient Care and R3: Leadership and Management are of particular importance (Table 1).

Additionally, becoming a clinical pharmacy specialist is just one potential avenue a residency graduate may pursue. Over the course of their career, professional interests and goals may evolve to place a greater emphasis on teaching, research, leadership and / or administrative roles. Furthermore, PGY2 residencies with a clinical focus often progress at a grueling pace with near constant patient care experiences. A 2021 survey of post-graduate pharmacy residents determined a burnout rate of 74.4% among pharmacy residents.<sup>3</sup> Given the nature of intensive care, critical care pharmacy residents may be at particularly high risk of burnout.<sup>4</sup> Efforts to ensure well-rounded experiences that are congruent with future expectations from employers while making concerted efforts to consider resident wellness are warranted.

Based on these considerations, in 2017 the PGY2 critical care pharmacy residency leadership at the University of Kentucky sought to develop a four-week required learning experience as a unique rotation to capture these requirements and activities. The goal of this endeavor was to provide specialty-specific exposure to pharmacy administration and quality improvement, fulfill the aforementioned ASHP Residency Standards, and attempt to optimize resident wellness. A four-week required concentrated learning experience entitled "Critical Care Administration / Medication Use Quality & Outcomes" was developed. While residents may have rotated through a general administrative rotation as a component of post-graduate year one (PGY1) training, the skill sets developed by their second year of specialty training offers needed background to make an additional experience during PGY2 training value-added for both the learner and institution. The focus of this commentary will serve as a guide for other residency programs to develop such an experience, highlight resulting resident contributions to the department, provide perceived benefits of this learning experience for residents, and highlight how this rotation impacted graduated residents' early years as practitioners.

# **Discussion:**

#### **Rotation Design**

As previously stated, one reason this rotation was developed was to meet elements of ASHP objectives R2.1, 3.1, and 3.2 and focus on formulary maintenance, medication use outcomes, medication safety, and leadership. Structurally, it intentionally builds on the required PGY1 administration rotation. The resident is responsible for taking the lead both in design and execution of activities. Core activities include topic discussions, and leading pharmacy and multidisciplinary projects. Additionally, residents may elect to take this rotation during the first quarter in an effort to generate an abstract and presentation for a national or international conference that would occur later in the academic year. This is helpful if residents have not yet had a focused critical care project that would be appropriate for submission.

Prior to the rotation, residents are asked to draw on their clinical and interpersonal experiences to identify specific themes for topic discussions (Table 2). Themes frequently selected include negotiations, data strategy / analytics, organizational culture, leadership styles, and change management. Discussions are led by the resident and may include students, other residents, and/or other interested preceptors. They are often framed by specific core readings; however, the resident is encouraged to seek additional resources and to draw from their own experiences to augment the conversation. This supports the resident in identifying real world applicability to the topics selected. They are also challenged to evaluate experiences encountered throughout the rotation through the lens of these topics. For example, debriefs occur routinely after attending meetings, and subjects such as interpersonal dynamics and meeting management strategies are discussed while using tools and strategies highlighted during topic discussions.

Quality improvement projects selected during the rotation are tailored to the interest of the resident within the context of enterprise need (Table 3). At minimum, they include a medication-use evaluation and the development or update of a policy, workflow, or clinical guideline. For successful completion, the resident must identify and scope the work as well as engage key stakeholders. Recent deliverables have included Tableau<sup>5</sup> dashboards, new position descriptions / justifications, formulary addition requests, policy updates, and new and updated guidelines. Specific skills developed from each of the projects vary depending on its focus. However, there are a few consistent areas of growth for the resident, including navigating challenging conversations, delegation of work, and organizing and leading multidisciplinary groups. Each step of a project is an opportunity for the resident to reflect and for the preceptor to provide structured and actionable feedback.

#### **Rotation Implementation & Evolution**

The decision to transition to a dedicated rotation month was complex. Historically, ASHP objectives R2.1, 3.1, and 3.2 were achieved longitudinally throughout the PGY2 year. Ultimately, the change to a focused rotation month was based on three core tenants. First, the jobs residents are seeking often blend patient care with administrative responsibilities in accordance with what is described by Lat and colleagues.<sup>1</sup> These responsibilities extend

Pandya et al.

beyond those required in the ASHP Residency Standards. It is critical that residents leave with the knowledgebase, experience and confidence to perform in these roles. The concentrated rotation time provides an opportunity to focus on leadership, project management, and communication skills in a depth beyond what is possible longitudinally. Secondly, a concentrated rotation allows for the resident to have allotted time to complete the required projects and truly makes it an area of focus that would not have been otherwise possible with concomitant patient care responsibilities. This supports more complex and meaningful projects to be undertaken. Finally, a rotation gives the resident the opportunity to decompress from the rigors of daily direct patient care in the intensive care unit while still developing essential skills for their future careers and continuing to build their knowledge base.

However, the decision to transition from a longitudinal experience to a concentrated rotation month did have a few potential drawbacks that were evaluated. Most significantly, it reduced an elective rotation opportunity available to the residents. To evaluate this further, residency leadership evaluated the purpose of elective rotations in training. One intention is to support the refinement of certain and specific targeted skills intended to be essential and additive to patient care responsibilities. The residency advisory committee determined the overall intent of an elective rotation experience as described parallels the intent of the critical care administration rotation and elected to move forward with a focused rotation month. Secondly, this experience does not necessarily model real world expectations where pharmacists are not often allocated focused blocks of time to complete projects. However, we noted the resident was already tasked with many other longitudinal projects, like research and teaching, where time management skills are already developed and assessed. In this rotation model, we have found the resident is leads projects that are significantly more impactful when compared to a longitudinal experience. Therefore, throughout this focused month, they develop different skills as they face competing priorities, larger data sets, organizational cultural challenges, and tight deadlines.

The rotation has evolved over time based on feedback from each critical care resident (Table 4). For example, with the advancement of advanced analytics in healthcare, many residents are interested in seeing how an organization creates, stores, and uses data. This has been the most significant change to the rotation and something where interest from the residents exceeded what was even anticipated. Residents now participate in report writing, analysis, and data visualization activities that are often incorporated into their medication use evaluation. The focus is often on how to use data to communicate in a compelling and actionable way to stakeholders. Resident feedback has also led to the incorporation of a leadership themed book club. Finally, feedback has resulted in working to incorporate networking sessions with other leaders and preceptors in informatics and data analytics roles within our organization and across the country to highlight the various roles a clinical pharmacist may play in this arena. Often two to three other preceptors in addition to the primary preceptor are now also included in some facet to engage in topics, support projects, and to provide feedback. Moving forward, an increasing focus on implementation science and other quality improvement strategies will be incorporated into the rotation based on recent resident feedback.

#### Perceived Benefits to Department

This rotation benefits the pharmacy department in many specific ways. First, department initiatives are enhanced because of resident engagement. The resident is uniquely positioned to provide critical insight as a result of their diverse clinical rotations. Given that residents may rotate through services across the enterprise, they are better able to understand how a change in process may impact multiple groups. On both the projects they complete and the meetings they attend and lead, the resident can provide a contemporary practice perspective that ensures successful project implementation and sound department decisions. The resident is often able to suggest new initiatives directly from their rotation experiences. Completing this work on rotation ensures that current issues are addressed in a timely manner. As with patient care rotations, residents also serve as key "extenders" of the pharmacy department during this rotation experience thereby ensuring issues are addressed in a timelier manner than would have otherwise been feasible. Finally, the skills acquired during the rotation are used beyond this experience. As the year progresses, residents who have completed the experience are more familiar with institutional processes and goals, organizational culture, and data and reporting. They use this as a basis to not only identify but also solve issues they encounter outside of the rotation. This has had a tremendous positive impact on critical care patient care delivery. Lastly, with residency program director approval, residents may remain engaged in ongoing work that may have emerged from their required activities so that they can be a part of the process from beginning to end and ensure its completion.

#### Perceived Benefits as a Resident

Over the past six years of shifting to this rotation model, PharmAcademic<sup>®</sup> evaluations of the experience have been overwhelmingly positive (Table 4). Each of the 18 residents stated the rotation consistently met the stated objectives of the learning experience. Many strengths are described in these evaluations, too. Residents highlight that this unique experience provides many opportunities for resident growth and development that significantly differ from traditional patient care rotations.

An overarching theme throughout the month is project management, which is accomplished through participation in a variety of projects and tasks with multidisciplinary and interdisciplinary groups. At the beginning of the rotation, project options for the month are discussed and selected based on resident interests, all differing in scope, focus, and resident role. Given the opportunity to participate and lead many of the projects, this rotation experience provides residents the ability to manage multiple projects simultaneously, with many of them being at different stages of completion with diverse timelines. Each resident participates in a larger project with a lead role, which requires coordination with others to refine leadership skills and achieve ASHP Objective R2.1.1 and R2.2.3.<sup>2</sup> Serving in varying leadership roles on these projects provides residents the opportunity to explore where their management interests may lie in their future careers. Residents may identify they enjoy, and can effectively lead, a large multidisciplinary initiative while other residents' interests may better align with coordinating smaller, interdepartmental projects. Furthermore, effectively participating in or leading multiple projects simultaneously is a skill necessary to be a successful and well-rounded clinical pharmacist in the future. Refining such skills may allow residents to better assimilate into their first career following residency training, quickly

Pandya et al.

become involved in institutional initiatives, and balance projects with patient care duties. Additionally, these skills help residents better manage projects throughout the completion of the residency year.

Throughout the month, residents participate in a multitude of topic discussions tailored to their interests and goals as a future critical care pharmacist (Table 2). As a specific example, residents can participate in a topic discussion focused on change management, which is pertinent to residents in their training and beyond. This also allows residents to fulfill ASHP Objective R3.1.1.<sup>2</sup> Residents attend various meetings throughout the month within the pharmacy department and with other health care professionals and leaders throughout the enterprise. This allows residents the opportunity to visualize conflict and implement management strategies in real time while also understanding the effects of change on the institution.

Another emphasis of the rotation experience is negotiation skills which align critical care residents to fulfill ASHP Objective R3.1.1.<sup>2</sup> Career negotiation concepts and techniques are introduced and reinforced through dedicated topic discussions and meetings with various hiring managers within the pharmacy department. As residents are preparing to enter or actively participating in the job search at the time of the rotation experience, this is an opportune time to reinforce these concepts. Additionally, residents with an interest in management can experience negotiations from a managerial standpoint through various pharmacy department and multidisciplinary meetings.

In addition to career negotiations, institutional discussions surrounding full time employee justification and acquisition, allocation of department resources, and performance monitoring and benchmarking are cornerstones to this rotation experience. Lastly, numerous opportunities for policy, protocol, guideline, and practice change discussions are presented to residents throughout the month. Residents are exposed both passively while observing department and enterprise meetings as well as actively as they navigate the various projects throughout the month that often pertain to department policies or practice guidelines.

For a current resident, one of the most impactful benefits of the rotation is the flexibility and customization to individual resident interests. For example, a resident with interest in pharmacy leadership may choose topics and projects regarding leadership development and people management, while another resident with an interest in data analytics may request topics including big data, data visualization, and work on projects utilizing software like Microsoft Excel and Tableau.<sup>5,6</sup> Additionally, departmental and institutional meetings and policy, protocol, or guideline involvement may be tailored to clinical or process improvement areas of interest. Given the demanding nature of a critical care residency, this rotation experience is a distinct change of pace from direct patient care, while also exposing residents to a different aspect of critical care pharmacy that fosters development of new skills.

As mentioned in the rotation's PharmAcademic <sup>®</sup>, residents comment on the benefits of this highly immersive experience within pharmacy leadership and administration in PharmAcademic <sup>®</sup>. They acquire skills that will be beneficial to them as a resident and

as a clinical pharmacy specialist. They develop problem solving skills and are exposed to benchmarking and metrics that will impact their clinical practice. As such, residents have commented that this has made an impact on their job interview process since they have developed a stronger ability to negotiate and will have more diverse leadership and project management experiences to draw from when answering interview questions. In addition to these favorable comments, residents have been pivotal in helping evolve the learning experience by providing ideas for optimizing the rotation. In addition to the book club, residents also suggested having a critical care-focused list of potential projects for them to select from in addition to them bringing their own ideas. Now, before the academic year starts, project ideas are solicited from the critical care pharmacist preceptor group for consideration.

#### Perceived Benefits as an Early Practitioner

As critical care pharmacy residents graduate into their initial post-training practice setting, the skills acquired during a critical care administration rotation become increasingly relevant. One of the most significant noted benefits of this rotation is the development of one's unique leadership style, which begins to flourish once out in independent practice. A significant amount of time is devoted to both self-reflection on current and desired leadership styles as well as assessment of common traits and actions of leadership. While this rotation includes a variety of formal discussions on the topic, a major focus is on gaining meaningful interactions with local leaders and seasoned preceptors. Many of these traits can be assessed through observation, however, the opportunity to lead groups of people in a variety of projects throughout the month encourages implementation of gained leadership techniques while still having a formal feedback process. Development of this individualized leadership style while in training encourages a confident and competent practitioner early in their career, optimizing them to take on roles in committees, teams, and projects.

Another benefit from the critical care administration rotation that easily translates into early clinical practice is project management. The rotation experience exposes the resident to a variety of institution-wide projects initiated from a recognized need or request including clinical research, drug cost analyses, and medication use evaluations. Many of these project types involve working with and managing multidisciplinary colleagues at varying levels of experience. Many residents have limited experience in similar situations, however, with the exposure of this rotation, our graduates gain confidence and are able to meaningfully contribute to projects earlier in their career. Project management skills have also been utilized when navigating a new work environment to identify growth opportunities and implement change.

Finally, the resident's creative repertoire is substantially broadened with exposure to a variety of leaders and projects. Drawing from Belbin and colleagues, pharmacy residents quickly experience a large variety of roles team members play within individual projects and can use unique mindsets to tactically solve problems.<sup>7</sup> Recent graduates are in a similar position with a broad perspective on how to approach and optimize a project and effectively utilize teammates' strengths. Dedicated time with a variety of critical thinkers is a major

Pandya et al.

advantage to sourcing creative thought processes, which can often advance project and team management further. This rotation enhances creativity in the new practitioner setting and encourages an accelerated transition from residency.

The skills developed during a critical care administration rotation make residents highly desirable job applicants and optimally prepare them to be highly functioning early practitioners. Exposure to organizational-level administrative concepts and developing data analytics and visualization skills are unique and likely to contribute to future work with project evaluation, team management, and benchmarking. New practitioners are eager to get involved in their new role and workplace, and the experience with assessing and communicating data allows for a seamless transition. Overall, the critical care administration rotation helps build and advance the foundation for critical care pharmacy residents to wholly integrate into a new position and quickly sets the resident up to begin their trajectory as a pharmacy leader.

# **Conclusion:**

Based on the authors' experiences and resident feedback, the critical care administration focused rotation is pivotal to providing a more balanced view of the entire medication use process and the healthcare ecosystem during a specialty residency. PGY2 critical care residents can gain valuable experience away from the bedside that prepares them for future careers that combine patient care and clinical leadership roles and responsibilities. Furthermore, armed with a strong clinical knowledgebase, focused exposure to activities on this rotation may help guide residents on their own continuous professional development during the early formative years of their career, including the pursuit of leadership positions.

# Acknowledgments:

Research reported in this publication was supported by the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health under Award Number K23DK128562 (AHF). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health

# **References:**

- Lat I, Paciullo C, Daley MJ, MacLaren R, Bolesta S, McCann J, Stollings JL, Gross K, Foos SA, Roberts RJ, Acquisto NM, Taylor S, Bentley M, Jacobi J, Meyer TA. Position Paper on Critical Care Pharmacy Services (Executive Summary): 2020 Update. Am J Health Syst Pharm. 2020 Sep 18;77(19):1619–1624. doi: 10.1093/ajhp/zxaa217. [PubMed: 32814962]
- American Society of Health Systems Pharmacists. (2016). REQUIRED COMPETENCY AREAS, GOALS, AND OBJECTIVES FOR POSTGRADUATE YEAR TWO (PGY2) CRITICAL CARE PHARMACY RESIDENCIES. https://www.Ashp.Org/-/Media/Assets/Professional-Development/ Residencies/Docs/Pgy2-Newly-Approved-Critical-Care-Pharmacy-2016.Ashx.
- Gonzalez J, & Brunetti L (2021). Assessment of burnout among postgraduate pharmacy residents: A pilot study. Currents in Pharmacy Teaching and Learning, 13(1). 10.1016/j.cptl.2020.08.008
- Ball AM, Schultheis J, Lee HJ, Bush PW. Evidence of burnout in critical care pharmacists, American Journal of Health-System Pharmacy, Volume 77, Issue 10, 15 May 2020, Pages 790–796, 10.1093/ajhp/zxaa043 [PubMed: 32280966]
- 5. Tableau [Computer software]. Version 2021.1. Seattle, WA: Salesforce; 2022.
- 6. Excel [Computer software]. Version 16.65. Redmond, WA: Microsoft; 2022.

- 7. Belbin RM (2011). Management Teams: Why They Succeed or Fail (3rd ed.). Human Resource
  - Management International Digest, 19(3). 10.1108/hrmid.2011.04419cae.002

#### Table 1:

PGY2 Critical Care Residency - ASHP Goals & Objectives Related to Quality Improvement and Leadership

Goal or Objective	Description	
Goal R2.1	Demonstrate ability to manage formulary and medication-use processes for critically ill patients, as applicable to the organization.	
Objective R2.1.1	(Creating) Prepare or revise a drug class review, monograph, treatment guideline, or protocol related to care of critically ill patients, including proposals for medication-safety technology improvements.	
Objective R2.1.2	(Evaluating) Participate in a medication-use evaluation related to care for critically ill patients. (Guidance: This should not be the major project but may be part of the project.)	
Objective R2.1.3	(Applying) Participate in the review of medication event reporting and monitoring related to care for critically ill patients	
Objective R2.1.4	(Analyzing) Identify opportunities for improvement of the medication-use system related to care for critical care patients.	
Goal R3.1	Demonstrate leadership skills for successful self-development in the provision of care for critically ill patients.	
Objective R3.1.1	(Applying) Demonstrate personal, interpersonal, and teamwork skills critical for effective leadership in the provision of care for critically ill patients.	
Objective R3.1.2	(Applying) Apply a process of ongoing self-evaluation and personal performance improvement in the provision of care for critically ill patients.	
Goal R3.2	Demonstrate management skills in the provision of care for critically ill patients	
Objective R3.2.1	(Applying) Contribute to critical care pharmacy departmental management	

#### Table 2:

# Selected Topics Discussions

Topics	ASHP Standards
Negotiations / Conflict Management	R3.1.1, R.3.1.2
Organizational Culture	R2.1.4, R3.1.1, R.3.1.2
Change Management / Influence	R2.1.1, R2.1.2, R2.1.4, R3.1.1, R.3.1.2
Finance Fundamentals	R2.1.4, R3.2.1
Benchmarking and Accreditation	R2.1.4, R3.2.1
Data Strategy	R2.1.1, R2.1.2, R2.1.3, R2.1.4, R3.2.1
Formulary Management	R2.1.1, R2.1.2, R2.1.4, R3.2.1
Medication Safety	R2.1.3, R2.1.4, R3.1.1, R3.2.1
Reimbursement Models in HealthCare	R2.1.1, R2.1.4, R3.2.1
Leadership / Management	R2.1.4, R3.1.1, R3.1.2, R3.2.1

#### Table 3:

# Selected Projects & Associated ASHP Standards

Projects	ASHP Standard	Activity Evaluated
Establishing a Perioperative Medication Safety Enterprise Committee and Creation of Event-Summary Tableau <sup>5</sup> Dashboard	R2.1.3, R2.1.4, R3.1.1, R3.2.1	Data Analytics Project Leadership
Pharmacotherapy & Pharmacist Authority Policy Revision	R2.1.1, R2.1.4, R3.1.1, R3.2.1	Policy
Stress Ulcer Prophylaxis Guideline Creation and Medication Use Evaluation	R2.1.1, R2.1.2, R2.1.4, R3.1.1, R3.2, R3.2.1	Guideline Medication Use Evaluation
Pharmacy Department Data Analyst	R2.1.4, R3.2.1	Position Justification
Albumin Guideline Update and Drug Shortage Management	R2.1.1, R2.1.2, R2.1.4, R3.1.1, R3.2, R3.2.1	Guideline Formulary Management
Medication-Use Evaluation Workflow Development and Training	R2.1.4, R3.2.1	Project Leadership
Electronic Health Record Report Writing Training Videos	R2.1.4, R3.2.1	Data Analytics
Evaluating the incidence of Blood Stream Infection with the use of Total Parental Nutrition	R2.1.2, R2.1.4, R3.1.1, R3.2, R3.2.1	Medication Use Evaluation
Diabetic Emergencies - Insulin Protocol Medication Use Evaluation	R2.1.2, R2.1.4, R3.1.1, R3.2.1	Medication Use Evaluation Guideline Revision
Neuromuscular Blockade Reversal Use Evaluation and Tableau <sup>5</sup> Dashboard	R2.1.2, R2.1.4, R3.1.1, R3.2, R3.2.1	Medication Use Evaluation Data Analytics Formulary Management

#### Table 4:

#### Resident Feedback

Learning Experience Evaluation	Average Resident Feedback (N=12)	
I understood the objectives for this learning experience prior to beginning.	Consistently True	
The learning opportunities afforded me during this learning experience matched the objectives specified for this experience.	Consistently True	
Resources I needed were available to me.	Consistently True	
I feel that the preceptor's assessment of my performance on the objectives was fair.	Consistently True	
I was encouraged to further develop my ability to self- assess during this learning experience.	Consistently True	
This learning experience provided me opportunities to provide patient-centered care in a responsible way to my patients.	Consistently True	
The preceptor(s) oriented me to the learning experience	Consistently True	
Strengths of the learning experience	<ul> <li>Fully immersed into pharmacy administration</li> <li>Topic discussions are highly valuable</li> <li>Very unique way to approach and view patient care</li> <li>Develop skills that will be used throughout career</li> <li>Exposure to a lot of types of administrative roles</li> <li>Enhanced ability to work with data analytics tools</li> <li>Develop problem solving skills</li> <li>Better understanding of organizational culture</li> <li>Exposure to benchmarking and clinical metrics that impact clinical practice</li> </ul>	
Opportunities for improvement	<ul> <li>Include more department managers and leadership to get more diverse perspective on topics</li> <li>Develop a list of MUE options</li> <li>Incorporate a book club</li> </ul>	