

# Key Elements of a Comprehensive Medical Writing Rotation for Pharmacy Residencies

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**R**esearch and contribution to medical literature are key components of pharmacy practice. The American College of Clinical Pharmacy (ACCP) encourages pharmacists to become involved in research and scholarship to advance patient care.<sup>1</sup> The American Society of Health-System Pharmacists (ASHP) also emphasizes the importance of research in its residency accreditation standards.<sup>2</sup> However, even with this emphasis on research and scholarship, many pharmacists fail to make the jump from finishing a project to pursuing publication of their results. An estimated 10-15% of pharmacy resident projects are completed all the way to publication.<sup>3-5</sup> This number is surprisingly small considering that participation in research is a requirement for ASHP-accredited residencies, and may be attributed in part to lack of mentorship and support for publishing. A residency program director at Froedtert & the Medical College of Wisconsin (F&MCW) created a medical writing rotation to better prepare their residents for scholarship post-residency.

F&MCW consists of a 700+ bed academic medical center and level 1 trauma center, as well as 11 other hospitals and 40+ clinics located in southeast Wisconsin. F&MCW also supports pharmacy education with an expansive residency program that trains more than 40 pharmacy residents annually across a variety of specialties. As part of the PGY2 Medication-

Use Safety and Policy (MUSP) program, F&MCW requires residents to participate in a Medical Writing and Publication rotation. Currently, this rotation is only available to MUSP residents but may be beneficial for a variety of learners. We believe there are myriad benefits provided by this experience; therefore, the objective of this article is to detail the key elements entailed in a successful medical writing rotation by describing some of the lessons learned at F&MCW.

## Which Learners Should Take a Writing Rotation?

It is likely that learners at most levels would benefit from this rotation. However, due to limited resources, preceptors, and preceptor bandwidth, residency programs may have to reserve this experience for certain residents. A pragmatic approach considering a resident's career path and previous exposure to medical writing will help determine which residents to target. At F&MCW this rotation aligns well with PGY2 residents, because they have had more opportunities to complete longitudinal projects, write manuscripts, and critically evaluate and use medical writing in real-life scenarios. While pharmacy students and PGY1 residents are often exposed to these activities, taking the rotation during the PGY2 year allows for increased independence and encourages the resident to own the rotation projects. PGY2 residents

have gained a level of professional maturity that allows them to take a deeper dive into the topics of medical writing and hone the skills they have already begun to develop. Specifically at F&MCW, this is a required rotation for the PGY2 MUSP residents due to their career paths and the nature of the work involved; including extensive writing in the form of drug monographs, medication-use evaluations, cost analyses, and institutional policies. This rotation may also lend itself well to other PGY2 programs (e.g. critical care, emergency medicine, oncology) as many specialized pharmacists participate in research in their respective fields; specifically at F&MCW, these three specialties account for the majority of post-residency scholarship in the form of peer-reviewed manuscripts.

At F&MCW, the PGY1 program includes a required research certificate that is set up to provide an introductory experience to medical writing and scholarship. Absence of a research certificate or similar experience does not preclude a successful medical writing rotation; however, residents with previous exposure to the basics of medical writing are better prepared for the level of granularity presented in the rotation. It may be logistically challenging to make a research certificate pre-requisite for a medical writing rotation due to differences in PGY1 residencies; however, the authors strongly recommend a similar experience prior to participation in a medical writing rotation.

## Rotation Preceptor

An ideal preceptor has extensive experience writing, publishing, and participating in peer review. In other words, they should not only have a working knowledge of the process of preparing and submitting a manuscript for publication, but they also are regularly and actively pursuing scholarship. It should be acknowledged that the preceptor does not necessarily have to be a pharmacist. Many physicians participate in research and regularly publish manuscripts. Academic medical centers may have access to PhD researchers or other non-clinical experts who have the skills to lead this rotation. For sites with fewer resources, it may be possible to collaborate with local universities or colleges of pharmacy to identify an appropriate preceptor. Other potential resources are the various professional organizations and networks. For example, there may be a research network within a local pharmacy society that can provide access to experts in research and medical writing.

The preceptor should have time dedicated to precepting and scholarship. While clinical pharmacists often participate in research and projects, many of them do so outside of their work hours. These pharmacists make excellent mentors; however, it may be difficult for them to focus their attention on this type of rotation without protected time. As there becomes more of a focus on preventing and reducing burnout among residents and preceptors, it is important to consider a preceptor's bandwidth. At F&MCW, this preceptor's primary role is pain stewardship coordinator, with a secondary role as chair of pharmacy research committee. While the research role does not have protected time or dedicated FTE, it is a passion for the preceptor. With preceptor bandwidth in mind, and to better accommodate the medical writing rotation, their primary pain rotation is closed to learners between Thanksgiving and New Years. In our experience, the preceptor generates 30-60 minutes of face time, three to five times per week with the resident, with additional time set aside for peer review. It is difficult to quantify how much time the preceptor will spend with the resident, as that is variable based on the needs of the resident, length of rotation, agenda for the rotation, and efficiency of the preceptor. The emphasis

**TABLE 1. Suggested Topic Discussions and Readings**

Topic	Readings/Resources
Manuscript Writing	<ul style="list-style-type: none"> <li>*Hammond et al. <i>JACCP</i>. 2019;3(4):818-824<sup>11</sup></li> <li>Fisher et al. <i>J Pediatr</i>. 2017;185:241-244<sup>12</sup></li> <li>Roederer et al. <i>Am J Health Syst Pharm</i>. 2013;70(14):1211-8<sup>13</sup></li> </ul>
Authorship	<ul style="list-style-type: none"> <li>Institutional Authorship Guidelines (if available)</li> <li>Miles et al. <i>Glob Public Health</i>. 2022;17(10):2547-2559<sup>14</sup></li> </ul>
Reporting Race and Ethnicity	<ul style="list-style-type: none"> <li>*Flanagin et al. <i>JAMA</i>. 2021;326(7):621-627<sup>15</sup></li> </ul>
How to Write a Cover Letter	<ul style="list-style-type: none"> <li>Bahadoran et al. <i>Int J Endocrinol Metab</i>. 2021;19(3):e115242<sup>16</sup></li> <li>Nicholas. <i>Saudi J Anaesth</i>. 2019;13(Suppl 1):S35-S41<sup>17</sup></li> </ul>
Selecting a Journal for Publication	<ul style="list-style-type: none"> <li><a href="#">Journal/Author Name Estimator (JANE)</a></li> <li><a href="#">Journal Citation Reports (JCR)</a></li> <li>Nicholas. <i>Saudi J Anaesth</i>. 2019;13(Suppl 1):S35-S41<sup>17</sup></li> </ul>
Predatory Journals	<ul style="list-style-type: none"> <li>*Beall. <i>Nature</i>. 2012;489:179<sup>18</sup></li> <li>Beall. <i>Am J Health Syst Pharm</i>. 2016;73(19):1548-50<sup>19</sup></li> <li>Peppard et al. <i>J Pharm Pract</i>. 2023;36(3):494-500<sup>20</sup></li> </ul>
Peer Review (as an author and a reviewer)	<ul style="list-style-type: none"> <li>*Baker et al. <i>Am J Health Syst Pharm</i>. 2017;74(24):2079-2079<sup>21</sup></li> <li>*DiDomenico et al. <i>Am J Health Syst Pharm</i>. 2017;74(24):2080-2084<sup>22</sup></li> <li>*Haines et al. <i>Am J Health Syst Pharm</i>. 2017;74(24):2086-2089<sup>23</sup></li> <li>*Johnson et al. <i>Am J Health Syst Pharm</i>. 2023;81(5):e137-e140<sup>24</sup></li> </ul>
Promoting your work	<ul style="list-style-type: none"> <li><a href="#">Open Researcher and Contributor ID (ORCID)</a></li> <li><a href="#">Wiley - How-to Guide</a></li> </ul>
Writing a CV	<ul style="list-style-type: none"> <li>Flannery et al. <i>Am J Health Syst Pharm</i>. 2014;71(24):2115-7<sup>25</sup></li> <li>Bournique et al. <i>HCA Healthc J Med</i>. 2020;1(1):11-13<sup>26</sup></li> </ul>
Letters of Recommendation	<ul style="list-style-type: none"> <li>Brazeale et al. <i>Am J Health Syst Pharm</i>. 2023;80(5):245-248<sup>27</sup></li> </ul>
* Indicates required or highly recommended readings	

on active learning in the form of writing or conducting peer reviews is of great benefit to the resident,<sup>6</sup> but also creates extra work for the preceptor and should be approached mindfully.

Preceptors should be able to adapt their teaching styles, but adapting to learner needs is especially important on project-based rotations.<sup>7,8</sup> The opportunities and projects that are available from rotation to rotation will likely not be predictable or consistent; therefore, the preceptor should take special care to adjust experiences and teaching techniques to match what is available to the skill level of the resident. Ultimately, the ideal preceptor is highly invested in truly owning this rotation, customizing and tailoring it to each resident in order to create meaningful experiences.

## Rotation Logistics

Careful thought should be put into when during the residency year the rotation should occur. Situating the rotation within the first half of PGY2 may be beneficial, as

that will allow the resident to gain writing skills early enough to apply them to their longitudinal project. Some residency programs use a flipped model for their research projects,<sup>9</sup> where a previous resident completes the bulk of the project, and the task of manuscript writing is delegated to new, incoming residents. In these cases, it may be especially important to place the writing rotation at the beginning of the residency year. Many programs offer a research month in which the resident has dedicated time to focus on completing data collection and starting their manuscript. This is different from a medical writing rotation because it lacks the structured didactic component of the rotation. Additionally, the rotation focuses heavily on writing; ideally, projects for this rotation would either require minimal to no data collection, or use projects where data was previously collected. Having a medical writing rotation prior to a research month sets up the resident to make the most of that time and put together a high-quality

manuscript. It seems realistic that programs would be able to combine the medical rotation and research month; however, the authors urge caution in doing so, so as not to have one detract from the other.

When deciding the length of rotation, it is important to consider the goals and activities that will be covered. The rotation should be long enough to provide realistic goals and meaningful active learning experiences. At F&MCW, the rotation is two weeks (10 days) long, which allows for near-daily topic discussions and associated active learning. During this time, the residents are also expected to put together a draft of either their longitudinal manuscript or another publishable project, with the understanding that revisions may spill over into the following rotation. However, a month-long rotation may also be appropriate if the goal is to have enough dedicated time to get all revisions complete and a submitted manuscript by the end of rotation. We urge creators of this rotation to consider shorter-duration rotations that are filled with meaningful experiences.

This rotation is heavily project based, allowing the residents to stretch their independence. At F&MCW, this rotation is a remote/hybrid setting, granting the residents flexibility to work where they prefer, whether at home or in the office. There are opportunities for the residents

to attend in-person activities; however, the majority of topics and check-ins take place via virtual conferencing. This type of setting is another reason this rotation may be more appropriate for PGY2 residents than other learners, as there is little supervision and more independence.

Finally, programs should consider whether residents will take this rotation individually or concurrently. F&MCW trains two PGY2 MUSP residents annually who take the medical writing rotation together. We have found that having the residents on rotation at the same time allows for certain advantages and economies of scale; the residents can peer review each other's manuscripts, and topics become more discussion based. This needs to be balanced with how many residents a single preceptor can effectively teach.

### Rotation Content and Goals

For ASHP-accredited residency programs, learning experiences need to be tied to Competency Areas, Goals and Objectives (CAGOs) which can give guidance when creating the goals for the rotation. Each residency type has different CAGOs; however, there are many objectives that are similar across all residencies. At F&MCW, the medical writing rotation is built to accomplish the following CAGOs for the MUSP program:

- R8.1 – Retrieve, evaluate and communicate pertinent evidence-based medication literature in response to a question
- R8.2 – Employ advanced literature analysis skills to analyze evidence-based information
- R8.3 – Provide effective medication and practice-related education to patients, caregivers, health care professionals, and students
- E2.1 – Contribute to scientific literature

More importantly, the rotation should expose the resident to the medical writing and publication process with a strong emphasis on active learning. Writing and publishing a manuscript is one of the primary objectives of this rotation. While it is certainly appropriate and efficient to use the resident's longitudinal project for this activity, it is also worth considering other projects. Perhaps there is a project within the department that has already been completed that the resident can write up. Preceptors can use this opportunity to create a mutually beneficial experience from the rotation by having the resident draft a manuscript of a project they have had limited bandwidth to publish themselves. Even non-research-based writing can be explored; for example, this article itself was written as a rotation project. We encourage





creators of this rotation to not limit the experience to the required residency manuscript, because more opportunities to practice writing will ultimately improve its quality.

In addition to writing a manuscript, it is important for residents to learn and practice the peer review process. Specifically, we recommend focusing on the different perspectives of peer review, such as submitting feedback as a peer reviewer and receiving feedback as an author. After a topic discussion detailing the process, residents can perform a peer review for work being done within the department or participate in a formal peer review with their preceptor. Additionally, residents should have the opportunity to practice responding to peer review feedback.

Other types of professional writing that should be explored during this rotation include but are not limited to cover letters for manuscripts, succinct abstracts, letters of recommendation, and policies or guidelines.

Recognizing that literature is constantly evolving and improving, Table 1 has some recommendations for topic discussions, with accompanying readings. While this is not a comprehensive list (and will surely outdate quickly), it provides a good place to start for programs looking to get a medical writing rotation started. The authors recommend that residents perform a brief, supplemental literature search as they prepare for scheduled topic discussions.

## Discussion

Although the most apparent goal of this type of rotation is to help the resident develop a skill, the hidden objective is to instill confidence in their abilities. The role of the preceptor is to act as a guide who demonstrates that medical writing is a systematic process, while allowing the resident to experience this process firsthand. A resident who previously took this rotation expressed how they had always been intimidated by writing, but after taking this rotation, they realized that there is a simple framework to work within and they even became excited and eager to work on the projects that were assigned. This highlights the real value in this type of rotation. Many pharmacists participate in and complete projects and research but never take the final jump to compose a manuscript and pursue publication. We believe that if pharmacists

receive more formal training and practice (and confidence) with medical writing that they will be more likely to pursue scholarship.

One thing that we want to highlight is the importance of active learning. It is one thing to talk, read, and discuss how to conduct medical writing, but another altogether to actually do it. The topic discussions should align with and be augmented by intentionally planned assignments. For example, in our rotation, the residents read and discussed the American Medical Association guidelines for reporting race and ethnicity, which was followed by reviewing a colleague's paper for appropriateness. As they learned about the different perspectives of peer review, they had the opportunity to conduct a peer review and provide feedback, as well as another opportunity to respond to feedback as an author. Writing is a skill that improves the more it is practiced; residency programs should aim to provide their residents with as much practice as is feasible. As a secondary effect of leveraging active learning, other skills this rotation will develop include time management, project prioritization, and identifying core references.

Another point of emphasis is that this is not a "how to write a manuscript" rotation. While developing a manuscript is certainly a large component, this rotation is meant to more fully explore scholarship and publication. It should delve into issues such as identifying quality journals versus predatory journals, who qualifies for authorship versus acknowledgements, or how to write a letter of recommendation. These aspects (and more) provide experiences that foster the ability and readiness of the resident to confidently participate in scholarship upon entering the workforce. This is different from student writing clubs, which focus on and hone the skill of writing. While such clubs are important, this rotation teaches the science of publishing in addition to the art of writing.

This is not a one-size-fits-all guide for creating a rotation. In fact, F&MCW still continues to evaluate and amend the structure of its own rotation each year. One change being considered is the addition of a second preceptor who will teach the residents how to conduct a systematic review and meta-analysis, with the goal of

the resident taking charge of the project. The authors hesitate to prescribe a schedule for topics and activities in this rotation because it is important for programs to find what flows naturally with their specific goals and objectives. If programs are looking for a little more direction in this area, Brown et al describe detailed timelines for manuscript development.<sup>10</sup> Additionally, the authors are willing to provide additional advice should programs need further direction on learning objectives, topic discussions, or other rotation logistics. Providing pharmacy residents with formal education on medical writing and publication prepares them to participate in scholarship, and we encourage pharmacy residencies to consider adding this experience to their program.

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This article has been peer-reviewed.  
The contribution in reviewing is greatly appreciated!

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*Disclosure: The authors declare no real or potential conflicts or financial interest in any product or service mentioned in the manuscript, including grants, equipment, medications, employment, gifts, and honoraria.*

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