



March/April 2023

The Journal

of the Pharmacy Society of Wisconsin

**Strengthening
Connections**



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UpFront: Strengthening Connections

by Michael Nagy, PharmD, BCACP

The year 2022 marked a decade in my connection with the Pharmacy Society of Wisconsin (PSW). Early on, as a student, PSW seemed overwhelmingly large. I was unconfident on where or even if I would fit in with the state pharmacy society. At the time, I was unaware of many aspects that make PSW visionary. With PSW's unified voice, allowing one place for students to engage with professional pharmacy practice in Wisconsin, my good fortune in beginning my pharmacy practice journey here became apparent. After attending a few conferences and even presenting posters, I began recognizing familiar friendly faces of pharmacists and technicians throughout the state. In my final year of school and throughout residency training, PSW conferences became cherished events where I could reconnect with classmates, mentors, and friends.

The Journal of the Pharmacy Society of Wisconsin (JPSW) is a valuable resource and provides a welcoming environment for emerging as well as experienced writers. My first experience with *The Journal* was

as a lead author for a student writing club team publishing a project from my time at Gundersen Health System. Soon thereafter, Dr. Amanda Margolis (*JPSW* Editor) recruited me as a pharmacy resident (and emerging writer) to join the *JPSW* editorial advisory committee to share my perspective, and it provided opportunities to collaborate and connect, and secured a sense of my own belonging within PSW. Since then, I have led the development of the student writing club at the Medical College of Wisconsin; conducted an evaluation of the student writing club experience at all schools that contribute to *JPSW*; and in collaboration with Dr. Amanda Margolis, Dr. Cassie Sedgewick, Megan Grant, and the *JPSW* editorial advisory committee, created an on-demand [Emerging Writers Program](#). This programing can be used for students, residents (and residency programs), or pharmacists to enhance writing skills and engage with PSW resources.

As I reflect, I recognize the value PSW provided for me in the past as a trainee and now as a pharmacist. I utilize the resources created and maintained by PSW to advance my knowledge as well as strengthen my

professional connections. In PSW's [Plan 2027](#), a tactic that resonates with me is, "Provide visibility to existing PSW engagement opportunities for pharmacy students and new practitioners and evaluate if additional engagement opportunities could be beneficial to expanding belonging." To that end, as a PSW member and new staff with *The Journal of the Pharmacy Society of Wisconsin*, I hope to create opportunities for member engagement, facilitate statewide dissemination of scholarly work, and be an indispensable resource to all.

I look forward to my future with PSW and highly recommend that if you have the time and interest, to get involved (as well as your learners) with *The Journal*. We have volunteer opportunities to peer review manuscripts and can provide training and guidance. Additionally, if you are completing a quality improvement, research, or residency project, we welcome manuscript submissions of your original work to *JPSW* through our [online submission platform](#).

Michael Nagy is the Associate Editor of *The Journal of the Pharmacy Society of Wisconsin*

PHARMACIST & TECHNICIAN CE:

Preceptor Perceived Value from Pharmacy Practice Development Projects During Advanced Pharmacy Practice Experiences



by Kayla Judson PharmD, Paige Edwards PharmD, Denise Walbrandt Pigarelli PharmD, BC-ADM, Amanda Margolis PharmD, MS, BCACP

Teaching and mentoring pharmacy students on advanced pharmacy practice experiences (APPEs) can be incredibly rewarding for preceptors, but often requires a significant time commitment.¹⁻³ Fortunately, pharmacy students can add value to the rotation site to help offset the time spent on training.³⁻¹⁰ Pharmacy students can increase value by completing comprehensive medication reviews, providing patient education, making therapeutic recommendations, and taking high-quality medication histories. Additionally, clinical interventions and daily contributions provided by pharmacy students can lead to cost savings for APPE sites.⁷⁻¹⁰ An additional way preceptors can facilitate site value from pharmacy students is through project completion.^{2,3,11}

The University of Wisconsin-Madison School of Pharmacy (UW-Madison SOP) implemented pharmacy practice development projects into elective APPEs in 2000. UW-Madison strongly embraces the Wisconsin Idea, a long-standing belief that education should give back to the community and environment beyond learning in the classroom.¹² The pharmacy practice development projects support the Wisconsin Idea by having a positive impact on APPE sites, patients, and the community. The projects serve multiple purposes, including promoting the profession of pharmacy, facilitating student project management skills, and adding value to the pharmacy site. Through these

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Learning Objectives

- List the major categories of practice development projects students on advanced pharmacy practice experiences (APPEs) complete
- Describe the value APPE practice development projects contributes to rotation sites
- Compare which practice development projects increase value to preceptors in different practice settings
- Describe ways preceptors can increase the value of their practice development projects

projects, students strengthen their project management and practice development skills in order to ultimately become more competitive for jobs and residencies.

With few exceptions, students at UW-Madison SOP are required to complete a pharmacy practice development project for each of their six-week elective APPEs. Most students complete three to four elective APPEs and, therefore, three to four pharmacy practice development projects throughout their fourth year. The elective APPE can be completed at a variety of direct patient care and non-patient care sites, including managed care, pediatric intensive care, academic, long-term care, and specialty pharmacy. Preceptors select the pharmacy practice development projects based on what they think will add value to their practice site. Any project the preceptor feels would be beneficial is appropriate for the required assignment; examples of past projects can be found in Figure 1. These include medication use evaluations

(MUEs); developing educational materials for patients, pharmacy, or medical staff; updating site clinical guidelines; and helping to develop new workflows or pharmacy services (e.g., implementing med-sync or revising a medication error reporting system). The APPE preceptor evaluates the pharmacy student's performance and quality of the project using a rubric that includes the project title; the preceptor evaluation of the student's process, timeliness, and quality of final project; and the prompt, "Please describe the value this student project adds to your practice site." The evaluation is submitted online to the experiential database and is a component of the student's final letter grade for the rotation.

It is currently unknown to what extent the pharmacy practice development projects are adding value to pharmacy sites. The primary objective of this analysis was to determine how the pharmacy practice development projects added value from the preceptors' perspective and to identify what

FIGURE 1. Examples of Student Projects

Inservice Projects

- Drugs in Breast/chest feeding
- Drugs in Dialysis
- Drug class updates
- Hepatitis C
- Transplant
- Weight loss
- Guideline Updates
- Asthma
- COPD
- Diabetes
- Hyperlipidemia
- Hypertension
- Schizophrenia
- Hypokalemia Protocol / Inservice
- Medications and Genetics
- Medication Errors / Workflow
- Pain Medications During Labor

DUE/MUE Projects

- Concentrated insulin
- Penicillin allergy appropriateness
- Pneumococcal vaccine in nursing home
- PPI utilization
- TNF-alpha inhibitor hep B and TB screening

Patient Education Projects

- Asthma education
- Cholesterol management
- Grapefruit interactions
- HTN screening
- Immunizations
- Lyme disease prevention
- OTC information
- Patient safety projects
- Sinusitis guidelines
- Tobacco treatment

Other Projects

- Assessment of asthma care for mail order
- Assessment of nursing home pharmacy services
- Assist with research being conducted at rotation site
- Chemo dose rounding protocol/algorithm
- Cost analysis of infusion pump hardware
- Cost analysis of fentanyl vial size for anesthesiology
- Development / assessment of a new pharmacist service / role
- Development of collaborative practice agreement/protocol
- Develop recommendations for P&T committee
- Dosing standardization / building order sets
- Health literacy: identifying and addressing
- Immunization reminders and promotion
- New hire / onboarding handbook
- New medication monographs
- Osteoporosis screen / protocol
- Patient consultation projects
- Pharmacist billing for cognitive services
- Pharmacist handoff procedure
- Prepare information to aid in pharmacy business decisions (e.g., cost-benefit analysis)
- Reducing controlled substance waste
- Reference guide for specialty medications
- Renal dosing in LTCF
- Retrospective review of drug-drug interactions

types of pharmacy practice development projects most frequently added high value. This information can be shared to help APPE sites optimize the value that can be gained from pharmacy practice development projects and learn how pharmacy students can help advance pharmacy practice.

Methods

This retrospective analysis examined preceptors' perceptions of the value that pharmacy practice development projects added to their sites. A report was generated from the UW-Madison SOP experiential database from June 2017 through December 2018 (a total of 13 six-week APPE cycles). The database included the project title, the preceptor answer to "Please describe the value this student project adds to your practice site," the type of rotation (e.g., health system, community, or other), a rural/urban designation, and a patient care or non-patient care designation. Student names and the project evaluation scores were removed to keep the analysis anonymous.

Three investigators (KJ, PE, and AM)

independently reviewed the first 50 project entries and created categories for the different project types, value outcomes, and specific phrases that designated high value. These categories were used to create a codebook to complete the content analysis. Prior to finalizing the codebook, the categories and definitions were discussed until the group came to a consensus. The final codebook contained 12 project categories (definitions and examples in Table 1), and 15 value outcomes (definitions and examples in Table 2), including a category to designate high-value projects. The value outcomes were explicitly based on what preceptors submitted at the time of the project evaluation. "High-value" projects were determined based on the specific wording listed in Figure 2. Each project was given one project type designation unless the project had two parts that fit more than one category. Projects could have more than one value outcome. For example, a project could contribute value outcomes in both monetary ways and in increased patient safety if the preceptor stated both.

After the codebook was finalized, two

investigators (KJ and PE) independently coded the first 200 projects and compared coding for consistency. The next 500 projects were split between the two investigators. To maintain coding consistency between the two investigators, every third data point was checked by the other investigator. This is a commonly used qualitative research technique to increase data accuracy and minimize bias. Discrepancies were discussed between the two investigators. If the discrepancy was not easily resolved, a third investigator (AM) helped decide how to code the entry. If the project type could not be determined from the report, the third investigator, who was also an elective APPE course coordinator, obtained additional information from the full project evaluation and student presentation assignment (a complementary project presentation students complete as another rotation assignment). Project entries were considered unusable when there was not enough information to determine the project type or when the value question was not described by the preceptor on the evaluation form.

A quantitative data analysis was completed by determining the frequency of each project type and value outcome using descriptive statistics. The primary analysis was high-value designations within project type, and high-value designations within value outcomes. Secondary analyses were done to compare project types by site description, patient care or non-patient care, and rural or urban setting. Inferential statistics were conducted when comparing project types between site variables. All statistical inference comparisons used a Fischer's exact test with a two-sided alpha level of 0.05 indicating statistical significance. No adjustments were made for repeated tests. The analysis was performed using StataSE version 14.2. This analysis was certified as a quality assurance project by the University of Wisconsin-Madison Education and Social/Behavioral Science Institutional Review Board.

Results

There were 822 evaluations completed by preceptors for student rotations, with 19 deemed as unusable due to not having enough information to determine the project type or an incomplete value question by the preceptor. During coding, 138 projects needed more information to determine accurate project type. In those cases, the APPE coordinator was able to extract that information from either the full preceptor evaluation or the students' project presentation assignments. There were 119 projects designated as high-value (14.5% of evaluated projects).

The most common project types (Table 1) were 1) developed provider or pharmacy educational materials (21.2%), 2) improved process (20.2%), and 3) performed MUE (14%). Business proposal projects had the highest proportion of being designated as high-value (50%) but with only 4 projects in that category, it was a rare project type. Other project types with high proportions of high-value projects included: expanded current pharmacy service or updated materials (26.2%), developed a pharmacy service (22.4%), improved patient education (18.5%), and improved process (16.3%).

Table 2 includes definitions for the value outcomes, with the most frequent outcomes being 1) increased pharmacy staff or clinical staff knowledge (31.9%), 2) provided information about pharmacy site

FIGURE 2. High-Value or Other Overly Positive Statements

<i>High-Value Designation</i>	<i>Non-high Value Designation</i>
"Added great value"	"Potential" for high value
"High value"	"great" with no further explanation
"Huge value"	"adds value"
"Very valuable"	"very useful"
"Huge asset to our site"	"very helpful"
"Invaluable"	"great results"
"Project will save lives"	"very valuable" statements without additional overly positive statements"
"Extremely valuable"	Overly positive statements describing high quality work
"Adds a lot of value"	
"Tremendous value"	
"Incredible value"	
"Immense value"	
"Meaningful piece of work"	
"Allows us to provide exceptional care"	
"Significant impact"	
"Extremely helpful"	
"Project is essential"	
"Very useful", "very helpful", "great benefit", with additional overly positive statements included about how the site has benefited from the project	

or for the pharmacy site to use (20%), and 3) improved patients' pharmacy or health care system experience (11.7%). The value outcomes with the highest proportion of preceptors suggesting the project was high-value was increased adherence (33.3%); however, there were only 21 instances within that value outcome. Projects that brought monetary value to a site were high-value 27.8% of the time, and those that improved patients' pharmacy or health care experience also were high-value 22.3% of the time.

Considering the projects conducted within different pharmacy settings, 54 out of 411 rotations were designated as high-value (13%) in health system rotations; 43 out of 142 rotations (30.3%) in the community setting; and 20 out of 151 (13.2%, $p=0.001$) in "other" types of health settings. The distribution of each project type by rotation characteristics can be found in Table 3. Notably, 82.6% of MUEs, 78.9% of P&T committee materials, 70.3% of updated clinical guidelines or protocols, and 65.5% of inservices or education presentations for clinical staff

were conducted within health systems (all with $p<0.05$ compared to other settings). In the community pharmacy setting, there was a higher rate of expansion of pharmacy services or updating materials (55.4%) and patient education (51.9%) projects (both with $p<0.001$).

Among rotations that focused on direct patient care, 92 out of 548 projects were designated as high-value (16.8%) compared to 25 out of 156 projects of rotations that were non-direct patient care (16%). These rates were similar and not statistically significantly different ($p=0.91$). There was a statistically significantly higher number of direct patient care rotation projects, as opposed to non-direct patient care rotations projects, seen across all project categories except for three (Table 3).

Lastly, among urban rotations, 110 out of 663 rotations were designated as high-value (16.6%) compared to 7 out of 41 projects among rural rotations (17%); this was not statistically significantly different ($p=1.00$). The number of projects conducted at urban rotation sites was consistently higher than rural rotations (Table 3). This

TABLE 1. Project Types Definitions and Counts (n=822 projects)

<i>Projects Type</i>	<i>Definition</i>	<i>Example</i>	<i>Count n (%)</i>	<i>High Value within Project Type n (%)</i>
Developed provider or pharmacy educational material(s)	Develop tools, handouts, presentations, etc. to educate pharmacy staff, pharmacy learners, or other health care providers	<i>"Urinary incontinence resources for nursing and pharmacy staff"</i>	174 (21.2)	19 (10.9)
Improved process	Develop and/or implement workflow changes to save time or reduce errors Evaluate errors, productivity, impact from interventions, staff satisfaction, patient satisfaction, etc.	<i>"Reducing controlled substance waste in a children's hospital"</i>	166 (20.2)	27 (16.3)
Performed MUE	Collect data to evaluate how medications are used at pharmacy site	<i>"[proton pump inhibitor] utilization evaluation"</i>	115 (14)	14 (12.2)
Presented Inservice/education for clinical staff	Present educational topic to pharmacy and/or clinical staff	<i>"Preoperative antibiotic inservice"</i>	87 (10.6)	11 (12.6)
Expanded current pharmacy service or updated materials	Update tools or materials for a current service or expand current pharmacy service through increased outreach	<i>"Expanded immunization program"</i>	65 (7.9)	17 (26.2)
Developed or updated clinical guidelines or protocols	Create or update site clinical guidelines or institutional protocols	<i>"Pediatric community acquired pneumonia guideline"</i>	64 (7.8)	7 (10.9)
Improved patient education	Develop informational handout or present educational topic to patients	<i>"Inhaler device patient education materials"</i>	54 (6.6)	10 (18.5)
Developed a pharmacy service	Develop and/or implement tools, materials, or workflow for a new pharmacy service	<i>"[Medication therapy management] program development"</i>	49 (5.9)	11 (22.4)
Developed recommendations for P&T committee	Prepare and/or present cost comparisons, drug monographs, etc. for P&T committee meetings	<i>"[Direct oral anticoagulant] new drug/drug class review monograph for [organization] P&T"</i>	38 (4.6)	3 (7.9)
Prepared a business proposal	Prepare information such as a cost-benefit analysis to aid in pharmacy business decisions	<i>"[Pharmacy name]: a business proposal"</i>	4 (0.5)	2 (50)
Other	Collect data for non-MUE research project, perform research for the site, help the site adhere to corporate requirements, etc.	<i>"Heart failure data collection"</i>	18 (2.2)	3 (16.7)
Not Usable		<i>"USP 800"</i>	19 (2.3)	NA

MUE = medication use evaluation; P&T = Pharmacy and Therapeutics

was consistent with the general distribution of urban and rural rotations. However, none of these were statistically significantly different proportions, except for “developed or updated clinical guidelines or protocols” which was only performed as a project on urban rotations and was statistically significantly different (P=0.027).

Discussion

Based on preceptors; comments related to the value their APPE students’ projects brought to their sites, we found that 14.5% of projects were determined to be high-value through this analysis. Projects types with a higher proportion of high-value projects were: expanded current pharmacy service or updated materials; developed a pharmacy service; improved patient education; and

improved process. These projects often improved the site utilization of a service, helped learn about the current practice, or increased knowledge for clinical staff. We hope preceptors can use the results from this evaluation to generation ideas for high-value student projects at their practices. Specifically, preceptors are encouraged to use Figure 1 and Table 1 when brainstorming potential projects.

The value of similar student projects and activities (similar to those we’ve described as high-value in this analysis) has been highlighted in the past.^{11,13,14} For example, Cannon and colleagues demonstrated that APPE students added value to pharmacy sites through population health management projects (i.e. expansion of pharmacy services).¹¹ Students were given

lists of patients to review and independently reviewed the electronic medical record and identified actionable interventions (e.g., non-adherence to dual antiplatelet therapy within one year of coronary stent placement or with renal dysfunction and requiring dose adjustment of lipid-lowering therapy). In addition to improving patient care, these student projects saved approximately 18 hours of preceptor time per APPE student.¹¹ Preceptors take on a large responsibility when APPE students are learning at their pharmacy sites, and the completion of the practice development projects are one way for students to give back to their preceptors and sites.^{3,11}

A higher proportion of projects designated as high-value were found within the community pharmacy settings.

TABLE 2. Value Outcomes Definitions and Counts (n=803 projects)

<i>Value</i>	<i>Definition</i>	<i>Example</i>	<i>Count n (%)</i>	<i>High value within value type n (%)</i>
Increased pharmacy staff or clinical staff knowledge	Project increased pharmacy or clinical staff knowledge through a presentation or by providing other educational materials	<i>"This project helped the nursing staff in the Outpatient Surgery Center more fully understand antibiotic therapy in their area."</i>	256 (31.9)	31 (12.1)
Provided information about pharmacy site or for the pharmacy site to use	Project provided the site more information such as MUE results, quality assurance results, or research for P&T committees	<i>"Helps us determine our compliance with the recommended weight based limits in our [direct oral anticoagulant] patient population."</i>	161 (20)	22 (13.7)
Improved patients' pharmacy or health care system experience	Project created medication educational materials for patients, improved patients' access to care, improved patient outcomes, or increased patients' trust in pharmacists as health care providers	<i>"Excessive use of sliding scale insulin in [Rotation name] is a huge problem. [Student's] project will literally save lives and increase patients quality of life. Direct feedback from our medical providers looks positive for changing prescribing habits based on [Student's] intervention."</i>	94 (11.7)	21 (22.3)
Optimized therapy	Project increased use of appropriate therapies, decreased use of inappropriate therapies, optimized medication doses, or increased vaccination rates	<i>"The data [they] collected will help us to evaluate the appropriateness of twice daily [proton pump inhibitors] in pediatric children. The hope is that we will be able to use this data to reduce inappropriate use among physicians, and ensure patients do not go home with inappropriate therapy."</i>	92 (11.5)	17 (28.5)
Improved work environment/work site	Project improved workflow, decreased errors, improved employee satisfaction, improved Medicare Star Ratings, etc.	<i>"This form will eventually be made into a template that will hopefully be used on all patient transfer with the intent of making med rec simpler at the time of transfer. [Student's] pilot project proved to be useful in the [intensive care unit] setting."</i>	91 (11.3)	19 (20.9)
Increased patient safety	Project increased safety by decreasing medication errors, unsafe medication use, or interactions between medications	<i>"Cardiac device infections are becoming more common and appropriate/timely treatment is critical to prevent devastating complications to the patient."</i>	67 (8.3)	7 (10.5)
Saved time	Project saved pharmacy staff time by increasing efficiency or improving workflow process	<i>"The learning module is important for training new pharmacists and techs and as a yearly refresher for pharmacy staff. The reference tool for updating the module will help save time in future years. This was a valuable project for ensuring appropriate administration and documentation of influenza vaccine administered by community pharmacy staff."</i>	56 (6.9)	10 (17.9)
Saved money	Project increased profit or decreased costs for pharmacy or patients	<i>"The project has added tremendous value to our patients as well as increasing revenue in the pharmacy. [They have] done a great job of promoting [Pharmacy] as an immunization resource. Overall we would like to continue this work as we move forward with our staff and other students."</i>	54 (6.7)	15 (27.8)
Expanded service	Project created a pharmacy service or expanded a current pharmacy service	<i>"This project is very important as it relates to current initiatives and creates a framework for the continued development of projects related to medical drug management. [They] did an excellent job researching the justification for criteria and creating a framework for a standardized process moving forward."</i>	41 (5.1)	8 (19.5)
Increased patients' awareness of services offered by pharmacy	Project promoted pharmacy services such as vaccinations	<i>"The project has added tremendous value to our patients as well as increasing revenue in the pharmacy. [They have] done a great job of promoting [Pharmacy] as an immunization resource. Overall we would like to continue this work as we move forward with our staff and other students."</i>	41 (5.1)	6 (14.6)
Increased trainee learning	Project developed materials for onboarding of new trainees or created materials for trainees to learn clinical and institutional guidelines. Trainees could be students, residents, interns, etc.	<i>"Having these statistics discussion guides will streamline and organize our preparation and topic discussion with our pharmacy residents."</i>	40 (5)	6 (15)

TABLE 2. Value Outcomes Definitions and Counts (n=803 projects) Cont.

<i>Value</i>	<i>Definition</i>	<i>Example</i>	<i>Count n (%)</i>	<i>High value within value type n (%)</i>
Increased adherence	Project created or improved medication synchronization programs or improved adherence for patients through interventions	<i>“Highly valuable as it will help model a pharmacist provider-based engagement and health education platform to improve adherence and outcomes.”</i>	21 (2.6)	7 (33.3)
Increased pharmacy rapport with other health care providers	Project demonstrated the value pharmacy staff can add to interprofessional teams	<i>“This project is of great value to the pharmacy. We no longer have a delay in getting a patient started on smoking cessation potentially missing the key window of motivation for the patient. It further enforces our trust relationship with the patients and providers to contact with medication and health questions or concerns.”</i>	13 (1.6)	4 (30.8)
Strengthened pharmacist/patient relationship	Project demonstrated and increased relationship with the pharmacist has with patients	<i>“This project is of great value to the pharmacy. We no longer have a delay in getting a patient started on smoking cessation potentially missing the key window of motivation for the patient. It further enforces our trust relationship with the patients and providers to contact with medication and health questions or concerns.”</i>	5 (0.6)	3 (60)
Poor Quality	Project did not provide value to APPE site	<i>“Unfortunately, this project did not provide us with much value. It will need to be rewritten in order to appropriately convey the information that is needed.”</i>	2 (0.3)	0 (0)

MUE = medication use evaluation; P&T = Pharmacy and Therapeutics; APPE = advanced pharmacy practice experience

When considering the workflow in community pharmacies and the limited ability of staffing pharmacists to step out of patient care activities to complete a project, this finding is not surprising. It is well documented that two common limitations to implementing new projects in community pharmacy are time and workflow.¹⁵⁻¹⁸ By having an APPE student complete needed projects, they had an additional well-trained individual available to assist with project implementation.³

Another way for sites to increase the value of projects is to consider the department’s strategic plan and how an APPE practice development project could facilitate a department goal.¹⁹ Rotation sites or pharmacy departments may also consider developing a practice development project board to help brainstorm, track, and assign projects to increase value to the rotation site. Additionally, preceptors or practice development project boards may consider larger projects that can be strategically split longitudinally among multiple APPE students. For example, a first student may perform a gap analysis, a second student may implement a process improvement, and a third student may evaluate the impact of the process change. Additional details on these techniques can be found in [Precepting Tips: Precepting Research Projects for](#)

Success.¹⁹

In addition to choosing a meaningful project, preceptors can also increase the value of a practice development project by minimizing the pharmacist and site resources used to achieve the project. There are two well-documented models to consider for resource minimization of APPE practice development projects: layered learning and team precepting. Layered learning is when a senior learner precepts a junior learner who are both supervised by a preceptor.²⁰ Several articles have described successful use of layered learning, often with residents precepting students, for student research or projects.^{21,22} Benefits included expanded capacity of pharmacists to take students and resident opportunities to precept while still receiving feedback from preceptors.²³ However, this arrangement can make some activities take longer for preceptors, as they need to set expectations and assess both student and resident performance. For more guidance on layered learning, please see [Meeting Challenges with Layered Learning](#).²⁰ A second model to minimize the preceptor time needed to facilitate a project may be team precepting. It is not unusual for the same pharmacist to consistently serve as the primary or secondary preceptor, which can lead to increased rates of burnout.²⁴

In team teaching, multiple preceptors can share the precepting responsibilities; in this scenario, a specific preceptor may manage the practice development project while other preceptors are responsible for the final student evaluation or other assignments and activities.²⁴ Beecroft and colleagues also present evidence that suggests team precepting increases nurses’ satisfaction with precepting.²⁵

The value to the site is not the only consideration when selecting a practice development project. Many preceptors also consider what will be a good learning experience for their APPE student. Kolbs Experiential Learning Theory explains that learning in higher education should focus on a process with feedback on how the student is learning and their efforts, in order for the student to grow their learning, and be able to integrate their learning into the real world.²⁶ Practice development projects completed by students throughout their elective APPEs allow adult students to be in a real-world pharmacy practice setting to grow their knowledge of the profession. The purpose of completing these projects is not only to allow student at the site to advance their careers by developing professional independence and enhancing their communication skills, but also to help the pharmacy sites and preceptors with whom

TABLE 3. Project Type by Rotation Characteristics (n=803 projects)

Categories	Health system (n=465) n (%)	Community/Retail (n=185) n (%)	Other (n=171) n (%)	P-Value	Patient care n (%)	Non-patient care n (%)	P-Value	Urban n (%)	Rural n (%)	P-Value
Developed provider or pharmacy educational material(s)	98 (56.3)	42 (24.1)	34 (19.5)	0.81	141 (81)	33 (18.9)	0.3	167 (96)	7 (4)	0.28
Improved process	91 (54.8)	40 (24.1)	35 (21.1)	0.82	115 (69.3)	51 (30.7)	0.003	155 (93.4)	11 (6.6)	0.58
Performed MUE	95 (82.6)	5 (4.6)	15 (13)	<0.001	105 (91.3)	10 (8.7)	<0.001	108 (93.9)	7 (6.1)	0.83
Presented Inservice/ education for clinical staff	57 (65.5)	11 (12.6)	19 (21.8)	0.05	76 (87.4)	11 (12.6)	0.03	83 (95.4)	4 (4.6)	0.81
Expanded current pharmacy service or updated materials	17 (26.2)	36 (55.4)	12 (18.5)	<0.001	49 (75.4)	16 (24.6)	0.64	60 (92.3)	5 (7.7)	0.58
Developed or updated clinical guidelines or protocols	45 (70.3)	6 (9.4)	13 (20.3)	0.02	61 (95.3)	3 (4.7)	<0.001	64 (100)	0 (0)	0.03
Improved patient education	19 (35.2)	28 (51.9)	7 (12.9)	<0.001	51 (94.4)	3 (5.6)	0.001	50 (92.6)	4 (7.4)	0.55
Developed a pharmacy service	15 (30.6)	15 (30.6)	19 (38.8)	<0.001	28 (57.1)	21 (42.9)	0.001	43 (87.8)	6 (12.2)	0.06
Developed recommendations for P&T committee	30 (78.9)	1 (2.6)	7 (18.4)	0.002	23 (60.5)	15 (39.5)	0.01	38 (100)	0 (0)	0.16
Prepared a business proposal	2 (50)	1 (25)	1 (25)	1.00	2 (50)	2 (50)	0.21	4 (100)	0 (0)	1.00
Other	6 (33.3)	4 (22.2)	8 (44.4)	0.048	10 (55.6)	8 (44.4)	0.04	16 (88.8)	2 (11.1)	0.28

p-values are comparisons of the specific project type compared between the rotation characteristic
MUE = medication use evaluation; P&T = Pharmacy and Therapeutics

students work.

There are several limitations to this analysis. This analysis is based on preceptor perception, making it subjective, and perceptions may vary depending on the individual completing the form and their own expectations. Additionally, as the value statement was part of the preceptor evaluation of students' projects, there may also be rater biases observed within this report. Most notably, a potential halo effect could influence these results. This is where preceptors who appreciate the students or have positive perceptions of a student may evaluate their work according to student characteristics as much as behaviors or the quality of their work.²⁷ Another notable limitation to this analysis is the timing of the projects included. These projects were conducted and evaluated from the summer of 2017 through the fall of 2018, which was prior to the COVID-19 pandemic.

It is suspected that COVID-19 may have influenced both the types of projects conducted and the value preceptors would have assigned. However, anecdotally, in reviewing student project presentations over time, the types of projects conducted during and after the main phase of the pandemic could also be categorized in a similar manner and the information presented can be extrapolated to current project idea generation.

Conclusion

The goal for this analysis was to assist preceptors in determining practice development project ideas for their APPE students that will be the most beneficial for their practice, while allowing the students to continue to master their project management skills. We encourage preceptors to use Figure 1 and Table 1 when brainstorming potential projects.

Preceptors could consider projects to expand current pharmacy service, update materials, develop a pharmacy service, improve patient education, and improve processes, as those project types were found to have a higher proportion of the high-value terms in preceptor evaluations.

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28. service or updating materials and patient education
29. c. Develop provider or pharmacy educational materials and develop or update clinical guidelines or protocols
30. d. Develop or update clinical guidelines or protocols, process improvement, and medication use evaluation
31. 2. Which of the following statements would be considered high-value for this analysis?
 - a. The student did a great job on their project! We learned a lot about our prescription trends at the pharmacy.
 - b. This project will be very useful for the pharmacists on staff.
 - c. This project has the potential for high-value as it is expected to increase patient adherence.
 - d. The development of the new service was extremely helpful and allows us to continue to provide exceptional care.
32. 3. What proportion of projects were determined to be high-value?
 - a. 2.3%
 - b. 14.5%
 - c. 26.2%
 - d. 33.3%
33. 4. Which was the most common way projects brought value to the rotation site?
 - a. Improved work environment/work site
 - b. Provided information about pharmacy site or for the pharmacy site to use
 - c. Increased pharmacy staff or clinical staff knowledge
 - d. Improved patients' pharmacy or health care system experience
34. 5. Which setting had the highest proportion of high-value projects?
 - a. Community pharmacy
 - b. Direct patient care settings
 - c. Health system pharmacy
 - d. Urban settings
35. 6. Which project types were most frequent among community pharmacy rotations?
 - a. MUEs and developing P&T committee materials
 - b. Develop or update clinical guidelines or protocols and inservice/education presentation for clinical staff
 - c. Expansion of current pharmacy services or updating materials and patient education
 - d. Process improvement and business proposal
36. 7. Which of the following is a suggestion for improving the selection of a practice development project that results in high-value to the site?
 - a. Allow the student to choose

Assessment Questions

- b. Ask upper management to assign the projects
 - c. Only choose project types designated as high-value from this analysis
 - d. Consider the pharmacy department strategic goals and create a board to identify and assign projects
8. Which of the following is a model that may increase the value of student projects, but also has evidence to suggest increased satisfaction with precepting?
- a. Layered learning
 - b. Splitting larger APPE projects into smaller projects
 - c. Team precepting
 - d. Use of a collaborative practice agreement
9. Did the activity meet the stated learning objectives? (if you answer no, please email sarahs@pswi.org to explain)
- a. Yes
 - b. No
10. On a scale of 1 – 10 (1-no impact; 10-strong impact), please rate how this program will impact the medication therapy management outcomes or safety of your patients.
11. On a scale of 1 – 10 (1-did not enhance; 10-greatly enhanced), please rate how this program enhanced your competence in the clinical areas covered.
12. On a scale of 1 – 10 (1-did not help; 10-great help), please rate how this program helped to build your management and leadership skills.
13. How useful was the educational material?

- a. Very useful
 - b. Somewhat useful
 - c. Not useful
14. How effective were the learning methods used for this activity?
- a. Very effective
 - b. Somewhat effective
 - c. Not effective
15. Learning assessment questions were appropriate.
- a. Yes
 - b. No

16. Were the authors free from bias?
- a. Yes
 - b. No
17. If you answered “no” to question 16, please comment (email info@pswi.org).
18. Please indicate the amount of time it took you to read the article and complete the assessment questions.

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Perceptions on Technician Entry-Level Requirements and Workforce Implications For The Future

by Brianne K. Bakken, PharmD, MHA, Aaron N. Winn, PhD, Jacob Dyer, PharmD, Breanna Kneip, 2023 PharmD Candidate

Technicians are critical members of the healthcare team who are essential for patient safety and effective medication therapy.¹ The roles and responsibilities of pharmacy technicians continue to evolve and expand to meet the ever-changing needs of the pharmacy profession and the US healthcare system.

The National Pharmacist Workforce Study reported that pharmacists spent approximately 55% of their time performing dispensing tasks and only 16% on patient care in 2009 compared to 49% dispensing and 22% on patient care in 2019.^{2,3} As pharmacists transitioned from traditional dispensing roles into expanded clinical patient care roles, pharmacy technicians assumed many of the medication dispensing activities, such as coordinating prior authorizations and refills, communicating with insurance companies, billing insurance, and interacting with patients.⁴ The implementation of “tech-check-tech” (TCT) programs allowed trained technicians to perform final verification of medications, further supporting pharmacist involvement in direct patient care activities.⁵ In addition to TCT, pharmacy technicians have also become involved in direct patient care activities, including collecting medication histories, medication reconciliation, medication synchronization services, and, most recently, COVID-19 testing and vaccine administration.⁶⁻⁹

Although pharmacy technicians are crucial to the success of pharmacy, there are inconsistencies in the entry level requirements for education, training, registration, licensure, and ongoing education requirements for pharmacy technicians across the United States.¹⁰ Registration is the process of supplying information and documentation to the

Abstract

Background: Pharmacy technician roles and responsibilities continue to evolve and expand to meet the ever-changing needs of the pharmacy profession. Developing and maintaining a robust supply of educated technicians will continue to be paramount for the pharmacy profession. At the time of this study, the state of Wisconsin was one of very few states with no education, training, or registration requirements for pharmacy technicians.

Objective: Describe the demographics, education, and training of Wisconsin technicians and explore differences in perceptions between pharmacists and technicians related to hypothetical requirements for technician registration, certification, and continuing education.

Methods: This study analyzed data from the 2020 Wisconsin Pharmacy Workforce Study, which utilized an online survey distributed to both pharmacists and technicians using a 3-contact approach. Statistical analyses included proportions and means, as well as t-tests and chi-squared tests for bivariate relationships comparing the perceptions of pharmacists to those of pharmacy technicians.

Results: The majority of pharmacists and technicians perceived requiring technicians to register with the state as positive, requiring technician certification as positive, and requiring technician continuing education as positive. There were no statistically significant differences in perceptions of certified versus uncertified pharmacy technicians by pharmacists or pharmacy technicians.

Conclusions: The majority of Wisconsin pharmacists and technicians, regardless of their current certification status, perceived technician registration, certification, and continuing education as positive.

state Board of Pharmacy and may also include completion of a background check. Certification requires successful passing of a national certification exam, such as the Pharmacy Technician Certification Exam (PTCE). Licensure is the process of submitting information and documentation, such as your certification results, to the state Board of Pharmacy for them to verify that you meet the requirements to receive

a license to practice. Several national pharmacy organizations have released statements advocating for standardized entry-level training and education requirements, including completion of an accredited PTCE to prepare pharmacy technicians for this integral position.¹¹ Additionally, a Technician Stakeholder Meeting in February of 2017 revealed that there is strong support for national

training standards and nationally accredited education (95% and 85%, respectively). Nevertheless, there has been inaction on a national level and inconsistencies noted throughout the United States. At the time of this study, the state of Wisconsin was one of very few states with no requirements for pharmacy board oversight, registration, training, or examination for pharmacy technicians.¹⁰ As a result, there is no database of pharmacy technicians and their demographics. The objectives for this study were to describe the demographics, education, training, and work characteristics of pharmacy technicians in Wisconsin, and explore differences in perceptions between pharmacists and technicians regarding technician registration, certification, and continuing education using data from the 2020 Wisconsin Pharmacy Workforce Study.

Methods

Survey Instrument

The purpose of the 2020 Wisconsin Pharmacy Workforce Study was to describe the demographics and work characteristics of pharmacists and technicians employed in Wisconsin in 2020. The survey was also designed to explore relevant issues and trends impacting the pharmacy profession. Questions used in the Wisconsin Pharmacy Workforce Study were developed based on prior workforce surveys, including the 2019 National Pharmacist Workforce Survey, other published work, and validated instruments. Three new survey questions were developed to assess pharmacist and technician perceptions of potential technician education and training requirements in Wisconsin, specifically (1) mandatory registration with the Pharmacy Examining Board, (2) mandatory completion of national technician certification exam, and (3) required ongoing continuing education (CE) for technicians. The three perception questions were developed through collaboration with the state's pharmacy association, the Pharmacy Society of Wisconsin, and were based on anticipated legislative initiatives surrounding technician advancement. Survey respondents were given three potential technician advancement scenarios and asked to rate their perception using a five-point Likert scale with responses "very negative," "negative," "neutral," "positive,"

and "very positive."

The survey instrument was pilot tested using a convenience sample of academic, community, and hospital pharmacists. Minor edits and wording changes were made based on the results of the pilot before official distribution. The 2020 Wisconsin Pharmacy Workforce Study was reviewed and approved by the Human Subjects Office/Institutional Review Board at the Medical College of Wisconsin.

Survey Distribution

The Wisconsin Pharmacy Workforce Study utilized an online survey that was distributed by email to pharmacists and pharmacy technicians in Wisconsin using a 3-contact approach. Pharmacists and technicians received three emails containing a hyperlink to the online survey. Survey respondents were allowed to skip questions they did not feel comfortable answering. The three email prompts were distributed on: (1) August 25, 2020, (2) September 8, 2020, and (3) September 22, 2020. Data was collected using Qualtrics (Qualtrics, Provo, UT, USA). On October 17, 2020, the survey data files were downloaded from Qualtrics and uploaded to SPSS Statistics Software (IBM Corp., Armonk, NY, USA) and Stata MP 15.0 (Stata Corp., College Station, TX, USA) for further analysis.

Email addresses for licensed pharmacists living in Wisconsin were obtained from the Wisconsin Department of Health and Professional Services (WDHPS) database of in-state pharmacy licenses, current as of July 23, 2020. The list obtained included a total of 6,651 individuals; however, only 1,300 (19.5%) provided functioning email addresses. Given that there is no organization that maintains a centralized database of pharmacy technicians in Wisconsin, they were recruited using an alternative process. The email addresses of pharmacy license holders were obtained from the Wisconsin Department of Health and Professional Services (WDHPS) database. Pharmacy license holders received three emails informing them of the survey and asking their willingness to participate in the research study. Pharmacy license holders were asked to report the total number of technicians employed by their organization and were asked to send the hyperlink to those technicians.

Statistical Analysis

Survey responses missing key demographic variables of age, race, gender, and technician advancement question responses were removed from the sample. Proportions and means were calculated for technician demographic variables. The primary study analysis compared the perceptions of practicing pharmacists to pharmacy technicians across all pharmacy settings. Pharmacists and technicians were compared using t-tests and chi-squared tests for bivariate relationships. Likert scale responses to the technician advancement scenario question, "Would you consider this to be positive or negative change in practice?" were trichotomized from a five-point scale. Responses of "positive" (very positive + positive), were compared with responses of "negative" (very negative + negative) and "neutral."

Results

Sample & Response

Of the 1,300 pharmacists and 360 technicians who received the survey link via email, a total of 439 pharmacists and 142 technicians responded to the survey, resulting in an overall response rate of 35% (33.8% pharmacists and 39.4% technicians, respectively). After removing incomplete responses, the resulting sample used for analysis included 258 pharmacists and 96 technicians.

Wisconsin Technician Demographics

Overall, 62.5% of technicians were under age 40. By gender, 86.5% of technicians identified as female, 12.5% identified as male, and 1.0% identified as non-binary. There was very limited racial diversity among technicians (82.3% White). Technicians reported working in practice settings of hospital/health-systems (84.4%), community/retail (9.4%), and "other" settings (6.3%). In terms of education, most technicians had completed high school education including receipt of a high school diploma (63.5%) or a GED (3.1%). A smaller proportion of technicians had completed college education. Regarding technician-specific education and training, 25% had completed a formal technician training program, 60.4% had completed the certification exam required for the Certified Pharmacy Technician or "CPhT" credential, and 8.3% had completed advanced technician certification in specialized areas.

TABLE 1. Technician Demographics

<i>Age</i>	<i>Technicians N=%</i>
<30	33.3
31-40	29.2
41-50	20.8
51-60	12.5
61-70	4.2
>70	0.0
<i>Gender</i>	<i>Technicians N=%</i>
Male	12.5
Female	86.5
Non-Binary	1.0
<i>Race</i>	<i>Technicians N=%</i>
American Indian	1.0
Asian	3.1
Black	4.2
White	82.3
Other	9.4
Hispanic [^]	6.3
<i>Practice Setting</i>	<i>Technicians N=%</i>
Hospital/Health-System	84.4
Community	9.4
Other	6.3

[^] Respondents received one multiple choice question for race identity and a separate yes/no question for Hispanic identity.

* Respondents were instructed to select all that apply. Only one technician respondent reported completing both the PTCB and NHA certifications.

<i>Education*</i>	<i>Technicians N=%</i>
High School Diploma	63.5
GED	3.1
Some College, No Degree	39.6
Associate Degree	21.9
Bachelor's Degree	14.6
Master's Degree	2.1
Technician Training Program	25.0
<i>Technician Certification (CPhT)*</i>	<i>Technicians N=%</i>
Pharmacy Technician Certification Board (PTCB)	58.3
National Healthcareer Association (NHA)	3.1
No Certification	39.6
<i>Advanced Technician Certification</i>	<i>Technicians N=%</i>
PTCB Certified Compounded Sterile Preparation Technician	1.0
PTCB Advanced Certified Pharmacy Technician	0.0
PTCB Medication History Certificate	1.0
PTCB Technician Product Verification Certificate	5.2
PTCB Hazardous Drug Management Certificate	0.0
PTCB Billing and Reimbursement Certificate	1.0
No Advanced Certification	91.7
<i>Average Hourly Wage</i>	<i>US Dollars (\$)</i>
No Certification	16.84
With CPhT Certification	18.96

The average hourly wage for certified technicians was only somewhat higher than that of noncertified technicians (\$18.96 and \$16.84, respectively) (see Table 1).

Pharmacist and Technician Perceptions of Technician Entry-Level Requirements

The majority of pharmacists and technicians rated their perception of technician registration, technician certification exams, and continuing education requirements as positive. Results from our study found that “requiring technicians to register with the state Board

of Pharmacy” was perceived positively or very positively by both pharmacists (65.1%) and technicians (50%). Overall, negative perceptions were minimal among pharmacists and technicians, ranging between 8.1% and 15.1%. There were no statistically significant differences between pharmacists and technicians, except regarding technicians being required to register with the Wisconsin Pharmacy Examining Board (p-value 0.034). Requiring technicians to register with the Board was perceived positively or very positively by 65.1% of pharmacists and

50% of the pharmacy technicians (see Table 2).

Perceptions of Technician Entry-Level Requirements Based on Certification Status

There were no statistically significant differences between certified and uncertified pharmacists or between certified and uncertified technicians with regard to technician entry-level requirement perception questions (see Table 3).

Discussion

During the period in 2020 when this survey was conducted, Wisconsin was one of very few states without standard entry-level requirements (e.g. minimum degree, technician training program, certification, or registration/licensure) for pharmacy technicians.¹⁰ Other healthcare technicians in Wisconsin, such as radiology and laboratory technicians, have standardized and more significant entry-level requirements. For example, radiology technicians in Wisconsin are required to complete a two-year degree in radiologic technology, pass a national certification exam, apply for and maintain a license from the state, and complete ongoing continuing education requirements.¹² Utilizing similar requirements for pharmacy technicians would be reasonable and would also create uniformity for healthcare technicians in Wisconsin.

Registration

A study by Mattingly and colleagues in 2018 reported that 43 states and the District of Columbia required pharmacy technician registration.¹⁰ Registration

TABLE 2. Pharmacist and Technician Perceptions of Technician Entry-Level Requirements

	Overall N=354	Pharmacists N=258	Technicians N=96	p-value
Technician Registration	%	%	%	
Perception of Registration as Positive	61.0	65.1	50.0	0.034*
Perception of Registration as Neutral	28.0	25.2	35.4	
Perception of Registration as Negative	11.0	9.7	14.6	
Technician Certification	%	%	%	
Perception of Certification as Positive	63.8	64.0	63.5	0.730
Perception of Certification as Neutral	21.8	20.9	24.0	
Perception of Certification as Negative	14.4	15.1	12.5	
Technician Continuing Education (CE)	%	%	%	
Perception of CE as Positive	67.8	71.3	58.3	0.059
Perception of CE as Neutral	22.6	20.5	28.1	
Perception of CE as Negative	9.6	8.1	13.5	

Five-point Likert scale responses were trichotomized into "positive" (very positive + positive), "negative" (very negative + negative), and "neutral".
** Statistically significant p-value less than 0.05*

TABLE 3. Perception of Technician Entry-Level Requirements Based on Certification Status

Certification Status	Pharmacists			Technicians		
	Certified* N=65	Not Certified N=184	p-value	Certified* N=58	Not Certified N=38	p-value
Technician Registration	%	%		%	%	
Perception of Registration as Positive	73.8	62.0	0.216	56.9	39.5	0.244
Perception of Registration as Neutral	18.5	28.3		31.0	42.1	
Perception of Registration as Negative	7.7	9.8		12.1	18.4	
Technician Certification	%	%		%	%	
Perception of Certification as Positive	69.2	62.2	0.539	72.4	51.3	0.139
Perception of Certification as Neutral	20.0	21.6		19.0	30.8	
Perception of Certification as Negative	10.8	16.2		8.6	17.9	
Technician Continuing Education (CE)	%	%		%	%	
Perception of CE as Positive	73.8	70.8	0.642	65.5	48.7	0.227
Perception of CE as Neutral	16.9	21.6		25.9	30.8	
Perception of CE as Negative	9.2	7.6		8.6	20.5	

Certified pharmacists included any practicing pharmacist that self-identified as having obtained one or more BPS recognized pharmacist board certifications. Certified technicians included technicians that self-identified as having completed a national technician certification exam, including the Pharmacy Technician Certification Board (PTCB) certification exam and the National Healthcareer Association (NHA) certification exam.
Five-point Likert scale responses were trichotomized into "positive" (very positive + positive), "negative" (very negative + negative), and "neutral".
** Statistically significant p-value less than 0.05*

requires pharmacy technicians to provide basic demographic information (e.g. name, address, date of birth, etc.), proof of education or other practice requirements, and employment information to the state, often accompanied by a registration fee. Requiring pharmacy technician registration is important for protecting the health and safety of the patients who utilize pharmacy services. Registration does this by ensuring that pharmacy services are provided by individuals who adhere to the legal, ethical, and safety standards required for pharmacy practice.¹³ Requiring pharmacy technicians to register with the state allows the disciplinary process to take place, which helps safeguard employers from hiring technicians with a history of illegal, unethical, or unsafe behaviors, and ultimately promotes patient safety.

Since the time of the survey, the state of Wisconsin passed Senate Bill 300, now 2021 Wisconsin Act 100, which requires all pharmacy technicians to register with the State of Wisconsin. Act 100 stipulates that a pharmacy technician must have graduated from high school or an equivalency or be enrolled in a pharmacy technician youth apprenticeship program.¹⁴ A fee is required at registration, along with the name of the technician's employer, if they have one at the time of registration.¹⁴ Technicians are also required to notify the state of any changes in employment or home mailing address. At the time of this manuscript, the specific rules and details for technician registration in Wisconsin were not established.

Technician Certification

Requiring technician registration is an important change for Wisconsin that will create a centralized database of individuals working as pharmacy technicians in the state. However, Wisconsin has yet to require pharmacy technicians to complete a national certification exam or technician training program. The 2018 study by Mattingly and colleagues reported that 19 states require pharmacy technicians to complete a national certification exam or training program, and Wisconsin was not among them.¹⁰ Results from our study found that both pharmacists and technicians in Wisconsin perceived "requiring technicians to complete national certification" as positive or very positive and more than 50% of technician respondents had completed a national certification

exam despite the state not requiring it to practice. While not required by the state, many employers require or encourage technician certification. The Pharmacy Technician Certification Exam (PTCE) administered by the Pharmacy Technician Certification Board (PTCB), and the ExCPT exam administered by the National Healthcareer Association (NHA) are the two national exams available for obtaining the Certified Pharmacy Technician or "CPhT" credential.^{15,16} Of the Wisconsin pharmacy technicians already certified, the largest majority had completed the PTCB exam as opposed to the NHA exam. This finding aligns with national trends, which show the PTCB exam currently being the most common approach to technician certification. Of the 415,000 pharmacy technicians working in the United States in 2020, approximately 67.4% were PTCB-certified.^{17,18}

Nationally, the number of certified pharmacy technicians is increasing, and certification is becoming a standard entry-level requirement in many states. A survey of certified and non-certified pharmacy technicians by Wheeler and colleagues in 2019 compared perceptions of the value of certification, confidence in their skills and abilities, career engagement and satisfaction, and productivity. Certified pharmacy technicians reported significantly higher confidence ratings for taking on new responsibilities and a significantly lower perceived rate of medication errors compared to noncertified technicians.¹⁹ Furthermore, certified pharmacy technicians had a significantly higher desire to remain in the pharmacy field and significantly lower intentions to leave their job in the next 12 months.¹⁹ However, the majority of both certified and noncertified pharmacy technicians were dissatisfied with their hourly wage and did not feel their pay was sufficient.¹⁹

Technician Pay

Results of our study showed only a moderate increase in the average hourly wage for certified technicians compared to noncertified technicians. As pharmacy technicians have taken on more responsibilities and obtained additional education and training, their pay has not necessarily kept pace. The U.S. Bureau of Labor and Statistics reported the median

pay for pharmacy technicians in the United States was \$14.62 per hour in 2015, which increased minimally to \$17.66 per hour in 2021.²⁰ For many hospitals, health systems, and pharmacies, increasing wages and salaries for technicians is often easier said than done. Adding educational requirements, such as degrees, trainings, and certifications like PTCE or ExCPT can be a catalyst for increasing the starting hourly wage for technician positions. However, it also runs the risk of restricting the candidate pool in an already difficult drought of pharmacy technicians and can also contribute to pay compression. When pay compression occurs, new technicians join the organization at compensation levels similar to more experienced or senior technicians, which can also contribute to further turnover when experienced employees feel undervalued.

Broadly speaking, regulation of professionals in terms of requiring official licenses and certifications will change the technician labor market. Economists believe that licenses and certifications can incentivize professionals to invest time, energy, and money because the professional will reap the benefit of their investment by no longer needing to worry about less skilled professionals competing for the same positions. One of the main mechanisms is that licenses or certifications can reduce uncertainty over the quality of the licensed professional both for employers when hiring and for consumers receiving services.²¹ Overall, licenses and certifications strive to increase the quality of services by setting minimal standards, which ideally result in better care. This is particularly important in pharmacy where poor quality and mistakes could have serious implications to medication safety and patient health outcomes. However, the potential impact of licensing and certification is a reduction in the number of new professionals becoming pharmacy technicians. This may impact quality in many ways. First, we would expect the quality of technicians to increase as less competent individuals are not able to attain licensure or certification and are therefore prevented from becoming a technician. Requiring licenses or certifications could also reduce the overall supply of technicians. While the demand for their technician services remains constant (or increases as pharmacist

roles shift), this could create or amplify a technician shortage. Second, the addition of technician licenses and certification could create a career ladder where technicians can attain various positions or payment levels based on additional certifications or credentials. Higher hourly wages or salaries for technicians would also impact pharmacy budgets and margins. Naysayers argue that any positive effects of licensing and certifications are vastly reduced due to the reduction in supply of technicians and increased wages. Additionally, skeptics wonder if those who have already been licensed or certified will implement tougher statutes, while “grandfathering in” current technicians in order to further restrict the supply of new entrants, which would raise salaries for those currently working in the field.²²

Technician Workforce Concerns and Future Research

Pharmacy technicians have been integral to the pharmacy workforce for many years and their importance to pharmacy practice was further highlighted during the COVID-19 pandemic when pharmacy technician responsibilities and their scope of practice in many states were expanded to include COVID-19 testing and vaccine administration. The 2020 Wisconsin Pharmacy Workforce Study reported an overall demand rating for technician between “in balance” and “moderate demand” as provided by pharmacists and “moderate demand” by technicians.²³ As the pandemic continued, the demand for technicians continued to increase and the shortage of pharmacy technicians became a significant concern at both the state and national levels.

Given the increase in technician turnover and current difficulty in finding technicians, employers are focusing their attention and resources on technician recruitment and retention strategies. These strategies often include increasing pay (e.g. sign-on bonuses, higher wages, or benefits), offering education programs (e.g. technician training programs, on-the-job training, or covering certification expenses), and developing career ladders or opportunities for advancement.²⁴⁻²⁷ More research is needed to understand what is driving technician turnover and what strategies are most useful in attracting and

retaining pharmacy technicians. Future research should also determine whether there are actual differences in the safety and quality of practice between certified and uncertified technicians, and evaluate the long-term impact of changing entry-level requirements, as well as the long-term impact of employer-based educational programs and technician career ladders.

Limitations

This study has several limitations. The responses given by this study’s respondents may not be representative of all pharmacy technicians and pharmacists in Wisconsin for several reasons. First, this study has a limited sample size and at the time of this study, there were a total of 6,651 licensed pharmacists living in Wisconsin. The number of pharmacy technicians in Wisconsin is difficult to obtain due to the lack of registration requirements and lack of a centralized database. The U.S. Bureau of Labor Statistics estimated there were 8,840 pharmacy technicians in Wisconsin 2021.²⁸ Additionally, of those who were able to be contacted, response rates were low for both pharmacists and pharmacy technicians. Secondly, the pharmacy technician participants overwhelmingly represent those employed in a hospital setting and overwhelmingly represent White women. There was no delineation between those practicing in an urban setting compared with those in a rural setting. Finally, the evolving COVID-19 pandemic has had massive impact on healthcare workers and presented numerous changes and unique challenges. In the short time between participant responses and publication, these changes and challenges could have impacted participant responses.

Conclusions

The majority of Wisconsin pharmacists and technicians, regardless of their current certification status, perceived technician registration, certification, and continuing education as positive. Pharmacy technicians are crucial to pharmacy services in all practice settings and are essential for patient and medication safety. As the roles and responsibilities of pharmacy technicians expand, the standardization of pharmacy technician entry-level requirements, such as registration and certification, may be helpful for maintaining patient safety. However,

increasing pharmacy technician entry-level requirements may have implications on the future supply of pharmacy technicians and their pay. More research is needed to better understand the short-term and long-term impact of changing entry-level requirements for technicians.

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Requests for data and survey instruments from the 2020 Wisconsin Pharmacy Workforce Study should be directed to the Principal Investigator, Brianne Bakken, Assistant Professor, Medical College of Wisconsin School of Pharmacy, 8701 Watertown Plank Rd, Milwaukee, WI 53226.

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APPENDIX: TECHNICIAN ADVANCEMENT SCENARIO SURVEY QUESTIONS

Question 1

Registration: Complete an application form that provides your basic demographic information (e.g name, address, date of birth) and employment information (name of employer, address of employer) and pay a registration fee every two years.

If the state of Wisconsin required all pharmacy technicians to register with the Wisconsin Pharmacy Examining Board, would you consider this to be positive or negative change in practice?

- Very Negative
- Negative
- Neutral
- Positive
- Very Positive

Question 2

If the state of Wisconsin required all pharmacy technicians to successfully pass a national technician certification exam in order to practice as a technician, would you consider this to be positive or negative change in practice?

- Very Negative
- Negative
- Neutral
- Positive
- Very Positive

Question 3

If the state of Wisconsin required all pharmacy technicians to complete ongoing Continuing Education (CE) in order to practice as a technician, would you consider this to be positive or negative change in practice?

- Very Negative
- Negative
- Neutral
- Positive
- Very Positive

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CONFERENCE FEES

	Price	Amount
<input type="checkbox"/> Pharmacist	\$85	\$_____
<input type="checkbox"/> Pharmacy Technician	\$50	\$_____
<input type="checkbox"/> Resident/Grad Student	\$60	\$_____
<input type="checkbox"/> Student	FREE	

PAYMENT

Total Enclosed \$_____

Send this form with check (payable to: Pharmacy Society of Wisconsin) or credit card order to:
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Charge: VISA Master Card Discover American Express

Card # _____ Exp Date _____ 3-4 digit security code _____

Name on Card _____

YES, preferred address above is the billing address

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Signature _____

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Integration and Advancement of Diversity, Equity, and Inclusion Within a Health-System Pharmacy Department

by Julia G. Gilbertson, PharmD, Rachel K. Russ, PharmD, Grace A. Nixon, BS, 2023 PharmD Candidate, Ellina S. Seckel, PharmD, BCACP, DPLA, Andrew J. Wilcox, PharmD, DPLA

The integration and advancement of diversity, equity, and inclusion (DEI) within the workplace has been a topic of interest across the United States for many years. A corporation's commitment to DEI showcases value for their employees and customers socially and may simultaneously benefit business performance.¹ Strong organizational emphasis on DEI is associated with improved employee satisfaction, staff engagement, workplace innovation, and better relations with external entities.²⁻⁵ Enhanced awareness around events related to social inequity and racial tensions have accelerated the need for meaningful and actionable changes by organizational leadership. Current efforts toward more robust incorporation of DEI within organizations include: developing metrics to assess retention, promotion, and compensation of historically marginalized groups; creating accountability measures for employees who engage in discriminatory behavior; establishing workplace environments that view DEI training as leadership development; and recognizing the need for ongoing DEI conversations among all employees, not merely those in human resources or involved in employee resource groups.⁶

The healthcare industry has taken a particular interest in DEI initiatives due to the increasing need to address disparities in patient outcomes related to social determinants of health. It is vital for healthcare practitioners to create safe, open spaces to better understand their implicit biases and devise meaningful, sustainable changes to provide a more inclusive and equitable environment for all. This creates a culture of collaboration among healthcare teams where clinicians feel comfortable in sharing their expertise and variable

Abstract

Objective: To design a sustainable and effective model for integrating and advancing diversity, equity, and inclusion (DEI) within a health-system pharmacy department.

Methods: Frontline staff and leadership were engaged to design an effective model for improving DEI. Extensive background research and employee focus groups informed the creation of departmental goals and proposed DEI initiatives for implementation. A DEI steering team was established to systematically develop DEI recommendations aligned with departmental goals, which were then modified based upon findings from a department climate assessment survey. Recommendations were sent to pharmacy staff to provide comments for changes and were refined based upon feedback. Final recommendations were prioritized and assigned to department managers, who collaborated with frontline staff to operationalize initiatives. An initiative tracker was created to organize planned initiatives, goals, and action steps.

Results: Three overarching DEI goals for the pharmacy department were identified: increase equitable opportunities for diverse representation in the pharmacy workforce; foster self-development and self-awareness to contribute to a culture of inclusion; and make changes to pharmacy systems, policies, and procedures for sustainable advancement of DEI. The DEI steering team developed a total of 53 recommendations aligning with these goals, 31 of which were prioritized to implement first by pharmacy managers and frontline staff.

Conclusions: The use of a highly collaborative, team-based approach was successful in identifying actionable opportunities for integration and advancement of DEI within the pharmacy department. Outcomes have yet to be determined and will require sustainable implementation strategies to create positive and meaningful change.

perspectives with other team members, which improves accuracy of patient care decisions.⁷ Additionally, evidence shows that patients from historically marginalized racial and ethnic groups report increased care satisfaction and higher quality of care when treated by someone of their same racial or ethnic background.⁸ Workplace

environments that celebrate DEI may attract clinicians who represent the diversity of patient populations served. Beyond this, when DEI is emphasized in the healthcare workplace, all clinicians can be inspired to expand their understanding of cultural, social, and other factors that influence patient care, which has been correlated with

improved health outcomes.⁹⁻¹¹ Recognizing this, leaders within the nursing profession have called for enhanced commitment to DEI in organizational strategic goals, recruitment and retention of staff from historically marginalized backgrounds, and promotion of shared governance models in which frontline staff have an active voice in decision-making.¹²

As the profession of pharmacy grows and pharmacists become more patient-facing, it is imperative that pharmacists, like nurses and other healthcare professionals, are well equipped to address health disparities and issues of bias while working with both patients and other providers. In a recent article discussing the pharmacist role in dismantling systemic racism, pharmacists are urged to take individual responsibility to improve their awareness of DEI.¹³ This individual responsibility calls for pharmacists to engage in personal learning and development opportunities to increase self-awareness rather than looking to leadership or members of historically marginalized backgrounds for education on DEI topics. Additionally, pharmacy departments are encouraged to create an environment for pharmacy practitioners, leaders, and learners to participate in dialogue regarding anti-racism and implicit bias. The authors also call for the creation of specific task forces within healthcare organizations and professional societies to lead anti-racism efforts.

Given the urgent need for pharmacists to engage in DEI, the American Society of Health-System Pharmacists (ASHP) created a Task Force on Racial Diversity, Equity, and Inclusion and made specific recommendations for health-system pharmacy departments.¹⁴ These recommendations include educating residents on diversity and cultural competence, encouraging residency applications from Black, Indigenous, and People of Color (BIPOC) student pharmacists, incorporating expectations of the pharmacy service related to DEI in departmental statements, and providing DEI-focused continuous professional development and training to pharmacy leaders and staff.

Advancing DEI has been a priority of facility leadership at the William S. Middleton Memorial Veterans Hospital, known colloquially as the Madison VA, for

several years as part of the facility's strategic plan. Pharmacy department leaders have likewise showcased a strong commitment to integrating DEI within workplace culture and patient care. However, actionable steps towards this priority had been limited to specific projects without a broader overarching plan until the initiation of this project. The purpose of this project was to design a robust, sustainable, and effective model for integrating and advancing DEI among employees of the Madison VA pharmacy department. As DEI was emphasized among employees, it was intended that DEI would naturally become a focus of patient care and healthcare team interactions.

Methods

Drawing from human-centered design principles, frontline staff were engaged to co-design a sustainable and effective model for integrating and advancing DEI within the pharmacy department with the overall goal of achieving an optimally inclusive work environment. A team was formed to lead the project, including a pharmacy resident with support from a pharmacy intern and pharmacy leadership at the site. The project involved five main stages of implementation: pharmacy leadership and staff engagement; creation of a DEI steering team; climate assessment survey analysis; call for comments and refinement of recommendations; and operationalizing recommendations through pharmacy leadership and staff re-engagement.

Pharmacy Leadership and Staff Engagement

Extensive background research was initially performed by the pharmacy resident on current best practices for integrating and advancing DEI within pharmacy and the healthcare industry as a whole. After the initial research was complete, the pharmacy resident facilitated a meeting with the pharmacy leadership team to present findings and develop key goals for the pharmacy department. These goals were then presented at a staff-wide meeting. Following the meeting, a call for focus group members was sent to all pharmacy staff, and two frontline employee focus groups were held virtually with participation from clinical pharmacist staff, pharmacy technicians, pharmacy residents, and

pharmacy students. Led by the pharmacy resident, focus group members reviewed the information presented at the staff-wide meeting, refined proposed departmental goals, and brainstormed potential initiatives aligned with the departmental goals. The pharmacy resident then collaborated with interested members of the focus groups and leadership to operationalize proposed initiatives.

Creation of Pharmacy DEI Steering Team

Information and outcomes from DEI focus groups were shared with the department via staff-wide email, and a call was sent for the establishment of a DEI steering team. The DEI steering team was tasked with developing a set of recommendations for the integration and advancement of DEI within the pharmacy service. Interested frontline staff established a Steering Team Charter (Supplementary Material Figure S1) and met biweekly for several months to develop recommendations aligned to each departmental goal. Upon completion, pharmacy leadership reviewed the proposed recommendations and provided feedback. The DEI steering team made additional edits based on leadership suggestions. The recommendations were then forwarded to the pharmacy intern to integrate into an initiative tracker (Supplementary Material Figure S2) to organize initiatives, associated departmental goals, individual action items and deliverables, responsible parties, and anticipated completion dates.

Climate Assessment Survey Analysis

Concurrently, a facility-wide climate assessment survey (Supplementary Material Figure S3) was sent to all Madison VA staff via e-mail to gain an understanding of their thoughts, feelings, attitudes, and experiences related to DEI. The survey was created by facility leadership and was intended to be generalizable to all employees at the Madison VA. Results were sorted by department, and the pharmacy intern analyzed the results specific to pharmacy. Findings were presented to the pharmacy leadership team at a granular level with data for each question. Results were then presented to the department as overall themes alongside the recommendations developed by the DEI steering team. The aim of this presentation was to inform and

gather feedback about the current climate and the proposed DEI initiatives.

Call for Comments and Refinement of Recommendations

In order to ensure the proposed recommendations would provide sustainable and effective progress, an anonymous and optional “call for comments” survey was distributed to all pharmacy staff via Microsoft Forms following the staff-wide presentation on the climate assessment survey results. As it was vital for every member of the pharmacy department to have a voice in the creation of the recommendations and initiatives, the “call for comments” presented staff with each recommendation and the option to indicate support, support with revisions, or hesitation, as well as a section to provide overall feedback and comments. The DEI steering team used this feedback to finalize the recommendations, which were then updated in the initiative tracker. Leadership in other departments requested pharmacy department guidance in assessing their specific climate assessment survey results, leading to the creation of a pharmacy model roadmap (Supplementary Material Figure S4) detailing the process outlined above.

Operationalizing Recommendations through Pharmacy Leadership and Staff Re-Engagement

The pharmacy leadership team engaged in a series of monthly standing managers’ meetings to review the list of finalized DEI recommendations via the initiative tracker. Recommendations were discussed within the team and each initiative was assigned a manager liaison to fulfill action items in collaboration with interested frontline staff members.

To engage front-line staff members, these DEI initiatives were converted into a sign-up survey by the pharmacy intern for distribution to frontline pharmacy staff. The pharmacy resident, chief of pharmacy, and associate chief of ambulatory and specialty care services presented a DEI update at a monthly pharmacy staff meeting. The presentation consisted of a timeline of the department’s DEI efforts, a review of the finalized DEI steering team recommendations, and a request for frontline pharmacy staff to respond to the sign-up survey to express their interest in

TABLE 1. A List of Initiatives Proposed and Developed by Pharmacy Staff to Meet the Departmental Goal of Increasing Equitable Opportunities for Diverse Representation in the Pharmacy Workforce

<i>Equitable Opportunities for Diverse Representation</i>
Integration of a point-based application screening process (including allocation of points for DEI-related activities) and blinding of CVs in hiring practices
Addition of DEI-focused questions to interview process
Development of a DEI Commitment Statement and incorporation into recruitment materials
Expansion of recruitment efforts to new geographic areas and engagement with historically black colleges of pharmacy
Review of residency recruitment materials to incorporate inclusive language (e.g. use of gender-neutral pronouns)
Addition of gender pronouns to Zoom calls during the virtual recruitment and interview process
<i>DEI = diversity, equity, and inclusion, CV = curriculum vitae</i>

TABLE 2. A List of Initiatives Proposed and Developed by Pharmacy Staff to Meet the Departmental Goal of Self-Development and Self-Awareness to Contribute to a Culture of Inclusion

<i>Fostering Self-Development and Self-Awareness</i>
Establishment of a DEI Self-Development and Awareness Group and DEI Open Forum
Ongoing pharmacy manager article discussions/bias assessments incorporated into standing managers’ meetings
Incorporation of DEI presentations and updates into monthly all-staff pharmacy meetings
Implementation of department-wide DEI holiday calendar
<i>DEI = diversity, equity, and inclusion</i>

TABLE 3. A List of Initiatives Proposed and Developed by Pharmacy Staff to Meet the Departmental Goal of Changing Pharmacy Systems, Policies, and Procedures for Sustainable Advancement of DEI

<i>Systems Integration</i>
Establishment of DEI Steering Team
Development of DEI Steering Team recommendations
Integration of DEI into pharmacy service strategic plan
<i>DEI = diversity, equity, and inclusion</i>

contributing to the presented initiatives. The pharmacy resident compiled the survey results and added interested team members to each recommendation within the initiative tracker. To improve staff commitment and engagement, all staff who expressed interest in a certain initiative were able to participate in its implementation as desired.

At a standing managers’ meeting, the

leadership team reviewed sign-up survey results and established which initiatives were highest priority or most time-sensitive based on alignment with service needs, capacity of manager liaisons, and total number of interested staff members. Each manager selected initiatives they would be responsible for implementing based on the determined priority. Anticipated timelines and completion dates were updated on

the initiative tracker to reflect pharmacy leadership discussions.

Results

The five stages of DEI integration and advancement took place over the course of 24 months. Implementation of DEI recommendations within the pharmacy department remains ongoing.

Pharmacy Leadership and Staff Engagement

Three overarching goals were identified and refined through pharmacy leadership discussions and DEI focus groups: increase equitable opportunities for diverse representation in the pharmacy workforce; foster self-development and self-awareness to contribute to a culture of inclusion; and make changes to pharmacy systems, policies, and procedures for sustainable advancement of DEI. Concurrently with the formation of a pharmacy DEI steering team to formalize DEI recommendations for the department, a series of initiatives were operationalized by pharmacy leadership and frontline staff aligning with each goal, as outlined in Tables 1, 2, and 3. Additional details about several of these initiatives are described as follows.

To meet the first departmental goal of increasing equitable opportunities for diverse representation in the pharmacy workforce, the leadership team made several interventions within the residency recruitment process. A DEI commitment statement was developed by the pharmacy resident and leadership team, which was then reviewed and updated by frontline pharmacy staff during the focus group meetings. This DEI commitment statement (Figure 1) was added to residency program brochures and other recruitment materials that were shared with candidates. In addition to including a DEI commitment statement, residency recruitment materials

TABLE 4. Example DEI Interview Questions Integrated into the Residency Recruitment Process

<i>Example DEI Interview Questions</i>
We are interested to know how you mindfully engage with diversity. Please give us an example of a situation you're either proud of or learned from with respect to diversity.
Please give us an example of a way that you could incorporate cultural factors into a patient's medication consultation.
What is your approach to understanding the perspectives of colleagues of different backgrounds?
Please share an example that demonstrates your respect for people and their differences. How have you worked to understand the perspectives of others?
How has your background and experience prepared you to be effective in an environment that values diversity and is committed to inclusion?

were reviewed to ensure that inclusive language, such as gender-neutral pronouns, was used throughout the text. The residency interview panel was expanded to include members of the pharmacy technician workforce for additional insight and input. The interview panel met to create and implement a point-based application screening process, which included specific allocation of points toward candidates who included didactic or extracurricular activities related to the advancement of DEI. Prior to scoring applications with the updated rubric (Supplementary Material Figure S5), resident applications were blinded by pharmacy administrative support staff to ensure equitable review. Additionally, interview templates for each panel member were updated to include questions where candidates could showcase their knowledge and commitment to DEI (Table 4).

Under the second departmental goal of fostering self-development and self-awareness to contribute to a culture of inclusion, a DEI self-development and awareness group was established. This is a voluntary group of pharmacy staff, residents, and students who meet to discuss various topics related to DEI, with the ultimate goal of promoting self-learning and self-

reflection. Two meeting times are offered quarterly to all pharmacy staff. Meetings have been hosted on a virtual platform in the setting of the COVID-19 pandemic. Topics focus on various historically marginalized groups, including BIPOC individuals, and Asian Americans and Pacific Islanders (AAPI), as well as members of the LGBTQ+ community. Additionally, various forms of media and literature are provided prior to each meeting to facilitate discussion (e.g. movies, podcasts, books, news articles, etc.). Each discussion has a moderator, which includes either the pharmacy resident or a volunteer frontline staff member. Discussion questions are prepared in advance, and breakout groups are utilized to encourage vulnerability and participation among attendees.

The third departmental goal of changing pharmacy systems, policies, and procedures for sustainable advancement of DEI was largely operationalized through the creation of a pharmacy DEI steering committee to guide DEI efforts within the department.

Creation of Pharmacy DEI Steering Team

The DEI pharmacy steering team consisted of 11 active frontline staff members, including pharmacists, pharmacy

FIGURE 1. The Pharmacy Department's DEI Commitment Statement, Which was Developed and Updated with Input From Frontline Pharmacy Staff and Included in Residency Recruitment Materials

Pharmacy Commitment to Diversity, Equity, and Inclusion:

At the William S. Middleton Memorial Veterans hospital, we are committed to growing and maintaining an environment which celebrates diversity, provides equitable opportunities for employment and promotion, and supports inclusiveness in pharmacy culture. We embrace our differences as individuals and unite as a pharmacy team toward a common goal: to provide optimal, patient-centered care for our Nation's Veterans.

technicians, and pharmacy residents. The steering team reported to three members of the pharmacy leadership team, including the chief of pharmacy service, the associate chief of ambulatory and specialty care, and the associate chief of acute care and operations. The team developed a set of 53 total recommendations (Supplementary Material Figure S6) for the pharmacy service, which aligned with the three overarching departmental goals. Recommendations included the continuation and optimization of current initiatives developed by pharmacy staff in addition to new recommendations.

Climate Assessment Survey Analysis

The climate assessment survey provided insight into the current experiences and feelings surrounding DEI from the pharmacy department staff. Highlighted within the results were the current celebration of racial and ethnic identities within the pharmacy team and a culture of team members' voices being valued and included. Staff emphasized a desire to continue small group conversations surrounding DEI topics along with the need for leadership to continue to demonstrate commitment to these issues. Additionally, staff underscored the need to incorporate training for staff to feel more confident intervening when faced with racism and to ensure opportunities for equitable career advancement. These findings reinforced the importance of the recommendations proposed by the DEI Steering Team and also identified opportunities for modification of the recommendations to meet the specific needs of the department.

Call for Comments and Refinement of Recommendations

Thirteen staff members (6.5% of total pharmacy staff) responded to the "call for comments" survey over a two-week period. The feedback gathered through the "call for comments" showed an overall support and alignment with the recommendations developed by the DEI Steering Team from the pharmacy department. There was unanimous support for most of the recommendations. Among the feedback, there were concerns related to an initiative to incorporate a DEI measure in performance appraisals. The concerns included a lack of direction and fear of subjective critique over individual

DEI involvement. Specific aims and opportunities for DEI involvement were added to the initiative to guide staff and build objective criteria for this performance measure. The concerns and incorporated feedback were presented by pharmacy leadership to the department during a staff-wide meeting. This presentation highlighted the purpose behind the recommendation and included specific examples of how to achieve the performance measure within the context of pharmacist and pharmacy technician roles.

Operationalizing Recommendations through Pharmacy Leadership and Staff Re-Engagement

All recommendations within the initiative tracker were assigned to one or two manager liaisons to oversee the initiative and carry the initiative forward alongside frontline pharmacy team members.

A total of 40 frontline staff members and residents (20% of total pharmacy staff) responded to the sign-up survey, demonstrating interest in various recommendations. For each recommendation within the sign-up survey, a range of two to 17 staff members were interested in operationalizing each initiative. The survey results were shared with the pharmacy managers. Of the 53 total recommendations, five had been completed at the time of prioritization at the managers' meeting. Thirty-one recommendations were deemed high-priority or time-sensitive to initiate or continue. Each manager liaison selected one to two of the high-priority or time-sensitive recommendations to gather interested frontline staff, develop a timeline for completion, assign action items, and implement. Of the 31 recommendations, 16 have been initiated by pharmacy leadership and staff and are ongoing. The department's administrative officer has been tasked with continuously updating the initiative tracker to ensure accountability amongst team members.

Discussion

The results of this project are initial steps for the integration and advancement of DEI within a pharmacy department. Meaningful and enduring changes will require ongoing, intentional thought and planning, as well as personal growth and vulnerability at the individual level. The

pharmacy service will continue to listen, support, and follow recommendations of the groups and communities most impacted by DEI initiatives to ensure sustainability and continuous growth. Of note, the recommendations developed as part of this project are specific to the needs of frontline staff and strategic goals within the Madison VA. The intent of this project is not to provide a step-by-step guide for the implementation of specific DEI initiatives within a pharmacy service, but rather to provide an example approach or framework for advancing DEI.

Limitations

There were several limitations with this project. First, there is minimal data available regarding DEI initiatives that are proven effective, especially within the field of pharmacy. The pharmacy department at the Madison VA utilized existing frameworks as a platform and adapted these based on the current needs and available resources of the pharmacy service and the facility. Due to the lack of validated tools to measure outcomes of DEI work in existing literature, it has proven difficult to determine what is a "successful" result of these initiatives. Long-term outcomes have yet to be defined and assessed, but the current goal of this project is to provide a cultural shift within the pharmacy service to ensure that pharmacy staff and leadership are looking at their daily work through a DEI lens. In other words, the goal is that these initiatives provide a platform for pharmacy staff to continuously grow and engage in meaningful DEI work.

Given that this project was initiated during the beginning of the COVID-19 pandemic, focus groups and team meetings were hosted in a virtual format. This may have limited the comfort of pharmacy staff to have candid, open discussions about a potentially sensitive topic and may have limited the opportunity to obtain accurate and meaningful feedback. With vaccination and additional on-site presence of staff members, there will be increased opportunity to host in-person meetings in the future.

Furthermore, the climate assessment survey (Supplementary Material Figure S3) was developed at the facility level and focused on racial and ethnic disparities compared to other aspects of diversity, equity, and inclusion. This had the potential

to introduce bias into departmental initiatives given that the results of this survey informed the refinement and finalization of the department's DEI recommendations.

It is important to acknowledge that a commitment to the advancement of DEI requires allocated time to collect information from staff, manage a team, and coordinate the implementation of DEI initiatives. The 16 recommendations that are either completed or in progress were operationalized based on the capacity of the pharmacy resident to facilitate their implementation. The resident was designated this responsibility as part of a longitudinal residency project. While the dedication of a pharmacy resident project toward DEI advancement is a potential strategy for other sites to utilize, it may not be a long-term solution and will require commitment by frontline staff and support from pharmacy leadership to achieve a sustainable model.

Future Directions

Pharmacy leadership will continue to work with frontline staff to implement and maintain the remaining DEI steering team recommendations. These will be integrated into the pharmacy service's annual strategic plan to ensure long-term sustainability of DEI advancement. The pharmacy management team plans to review the current recommendations at least quarterly and report on their progress. In the future, when new initiatives are proposed by staff members, a process will need to be developed to prioritize these initiatives and assign to an appropriate manager liaison.

Inspired by this work, a subsequent residency project is underway at the Madison VA to address health disparities at the patient level using existing VA population health management tools. Primary care clinical pharmacists and pharmacy interns provide outreach to patients identified on clinical dashboards to optimize guideline-directed therapies for the management of chronic disease states including diabetes, hypertension, and hyperlipidemia.

DEI efforts continue to grow within the VA system, both at the Madison VA facility and nationwide. The Madison VA pharmacy department plans to leverage partnerships with leadership to share best practices and minimize duplication of

work. Representatives from pharmacy leadership will participate in the facility's annual strategic planning meeting as part of a DEI workgroup to share service-level initiatives. This will provide a model for the integration of DEI among other services within the organization and on a broader scale. Additionally, front-line pharmacy staff and leadership at the Madison VA serve as members on the facility's Anti-Racism Action Team and participate in the national VA DEI Community of Practice, which will inform future changes in organizational culture.

Conclusions

The use of a highly collaborative, team-based approach with a focus on frontline staff and leadership engagement was successful in establishing the integration and advancement of DEI within the Madison VA pharmacy department. Utilization of a systems-based approach is crucial for ensuring sustainability and long-term growth of DEI initiatives.

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Integration and Advancement of Diversity, Equity, and Inclusion Within a Health-System Pharmacy Department

Supplementary Material

FIGURE S1. DEI Steering Team Charter Developed by Pharmacy Department

Diversity, Equity, and Inclusion Pharmacy Steering Team Charter William S. Middleton Memorial Veterans Hospital

Charter

The pharmacy leadership Team at the Madison VA, including the Chief of Pharmacy, Associate Chief of Pharmacy, and Associate Chief of Acute Care Operations, has commissioned the Diversity, Equity, and Inclusion (DEI) Pharmacy Steering Team to brainstorm, create, and execute pharmacy-led initiatives surrounding improvement in DEI. This charter will establish principles, as well as clarify roles, processes, and procedures for the structure of DEI Steering Team.

Diversity, Equity, and Inclusion Statement

Our Commitment to Diversity, Equity, and Inclusion:

At the William S. Middleton Memorial Veterans Hospital, we are committed to fostering and sustaining an environment which celebrates diversity, provides equitable opportunities for employment and promotion, and supports inclusiveness in pharmacy culture. We embrace our differences as individuals and unite as a pharmacy team toward a common goal: to deliver optimal, patient-centered care for our nation's Veterans.

Definitions

Diversity: Diversity refers to the composition of a groups of people from any number of demographic backgrounds, identities (innate and selected), and the collective strength of their experiences, beliefs, values, skills, and perspectives. The variability in a diverse group is apparent in the characteristics that we see and hear as well as through behaviors and expressions that we encounter and experience in our workplaces and organizations. Diverse organizations are not by definition inclusive.

Equity: Creating opportunities for equal access and success for historically marginalized underrepresented populations, in three main areas:

- Representational equity, the proportional participation at all levels of an organization;
- Resource equity, the distribution of resources in order to close equity gaps; and
- Equity-mindedness, the demonstration of an awareness of and willingness to address equity issues among organizational leaders and staff

Inclusion: Inclusion is the act of establishing philosophies, policies, practices, and procedures to ensure equal access to opportunities and resources to support individuals in contributing to the organization's success. Inclusion creates infrastructure for allowing the diversity within the organization to exist and thrive in a manner that can enhance innovation and problem solving. Inclusive organizations are by definition diverse at all levels.

Team Commitments

- Meet at least monthly as a large team to provide updates from committees and divide into breakout rooms for groups to work as a team
- Communicate via email as appropriate in between team meetings
- Follow through on commitments and communicate with co-leads if responsibilities/timing needs to be adjusted
- Schedule calls/meetings with Madison VA Pharmacy leadership as needed

Team Roles/Responsibilities

Supervisor: Oversee and provide approval for DEI projects and receive periodic updates from DEI Co-Leads.

Chair/Co-Chairs: Work collaboratively to prepare for meetings in order to lead and facilitate effective discussions, develop structure to guide the team’s work, exhibit servant leadership, support team members in executing ideas to result in improved diversity, equity, and inclusion.

Secretary: Send out meeting agenda prior to each monthly meeting. Transcribe pertinent discussions and team reports into meeting minutes and send to all team members.

Team Members: Attend scheduled DEI Team meetings (notify co-leads in advance if unable to attend), contribute meaningfully to discussions/decision making, volunteer to assist with follow up/deliverables, follow through on commitments, raise ideas and/or concerns openly and honestly to ensure the team is able to benefit fully from diverse perspectives and execute meaningful change. Members will be divided into three committees, with each committee focusing on different overarching areas of DEI:

1. **Workforce Diversity Committee:** strong focus on investigating strategies for improving diversity in the pharmacy workforce through engaging pharmacy students, residency candidates, and community members in Madison VA Pharmacy.
2. **Inclusive Culture Committee:** focus on determining ways to foster a culture of inclusion within the pharmacy department.
3. **Self-Development and Awareness Committee:** focus on finding creative ways to encourage pharmacy staff to engage and self-learn in regards to topics surrounding DEI.

Reporting Relationship

Progress of the DEI Team will be reported to the following members of the pharmacy leadership team:

- Chief of Pharmacy
- Associate Chief of Pharmacy
- Associate Chief of Acute Care Operations

Start Date: January 2021 **End Date:** TBD

FIGURE S2. Initiative Tracker Template Used to Organize DEI Initiatives and Action Items Within the Pharmacy Department

Please note: This is an excerpt from the full initiative tracker at the Madison VA to aid health system pharmacy departments in implementation of a similar process and not intended to be comprehensive.

Objective	Goals/ Initiatives	Action Items	Responsible Group, Group Leader	Designated Team Members	Deliverables	Anticipated Completion Date	Days Until Due	Call for Comments Survey Results	Status/Current Barriers/ Comments	Group Contact Information
<i>Example Entry:</i>										
Self-Development and Awareness	Raise awareness about available DEI resources and activities	Maintain DEI Holiday Calendar	PGY1/PGY2, (Chaplain Service in tandem?)	xxx		9/26/22	xx	13 of 13 support	"I absolutely support resources and activities. I do think bystander training should be required and this should be the ONLY activity that is required for performance appraisal."	xxx
		Set goal for 100% of pharmacy department to complete Bystander Intervention training by February 2022	xxx	xxx		2/28/22	xx		"I would love to see more DEI content and opportunities disseminated to pharmacy staff more frequently."	xxx

FIGURE S3. Climate Assessment Survey Sent to Staff Facility-Wide to Garner Information on Staff Experiences Regarding Diversity, Equity, and Inclusion

1. Racial and/or ethnic identities of our team members are acknowledged, valued, and celebrated.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
2. I have felt under-valued on my team because of my race.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
3. The value of racial equity is clearly articulated by my supervisor.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
4. My supervisor provides feedback that helps me be conscious of potential bias.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
5. My team regularly engages in discussions that challenge our recognition of bias (race, class, gender, disability, ethnicity, etc.) that may affect our work.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
6. Promotions and rewards are free from bias on my team.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
7. I have the same opportunity to advance my career as colleagues in similar roles.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
8. My organization's recruitment process for diverse talent is transparent.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
9. My voice is heard on my team.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
10. Diverse perspectives are included in decision making on my team.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
11. There are regular opportunities within my team to challenge racist organizational attitudes and practices.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
12. There are regular opportunities outside of my team to challenge racist organizational attitudes and practices.
 - a. Do not know
 - b. Strongly Disagree
 - c. Disagree
 - d. Neutral
 - e. Agree
 - f. Strongly Agree
13. I have witnessed other people being undervalued because of their race.
 - a. Yes
 - b. No
 - c. Maybe or Unsure
14. Do you currently feel undervalued because of your race?
 - a. Yes
 - b. No
 - c. Maybe or Unsure
15. Within your team, how often do you feel racial bias results in the unfair treatment of team members?
 - a. Do Not Know
 - b. Never
 - c. Rarely
 - d. Sometimes
 - e. Often
 - f. Always
16. Within your team, how often do you feel racial bias negatively affects work with Veterans?
 - a. Do Not Know
 - b. Never
 - c. Rarely
 - d. Sometimes
 - e. Often
 - f. Always
17. How often have you personally experienced racial bias in your organization in the past year?
 - a. Do Not Know
 - b. Never
 - c. Rarely
 - d. Sometimes
 - e. Often
 - f. Always
18. How often do you ask about race related issues in your work with Veterans?
 - a. Do Not Know
 - b. Never
 - c. Rarely
 - d. Sometimes
 - e. Often
 - f. Always
19. How often do you feel confident in your abilities to intervene when witnessing or identifying racism with Veterans?
 - a. Do Not Know
 - b. Never
 - c. Rarely
 - d. Sometimes
 - e. Often
 - f. Always
20. How often do you feel confident in your abilities to intervene when witnessing or identifying racism with colleagues?
 - a. Do Not Know
 - b. Never
 - c. Rarely
 - d. Sometimes
 - e. Often
 - f. Always
21. Please select and/or provide options below that you think would have the greatest positive impact in addressing issues of race and racism at the Madison VA. We value every employee's input and would especially encourage those who identify as a person of color to share your perspectives. With your insight, we can make truly meaningful change.
 - a. Change recruitment strategies to recruit more diverse talent
 - b. Continuing small group conversations
 - c. Executive leadership and Department Chiefs demonstrating commitment/ understanding of these topics
 - d. Focus groups
 - e. Include questions surrounding diversity, equity, and inclusion in interviews
 - f. More diverse representation in leadership (Pentad and Service Chiefs)
 - g. Trainings/education for all staff
 - h. Trainings/education for supervisors

FIGURE S4. Pharmacy Model Roadmap Which Was Disseminated to Other Service Lines at the Madison VA to Aid in Interpretation of Climate Assessment Survey Results



Utilizing the Climate Assessment Survey

Pharmacy Model Roadmap

1. Establish a team to work on project

- Engage management and interested staff; option to charter a steering team

2. Obtain your service's Climate Assessment Survey data

- Obtain data – reach out to organizational contact for service-level data
- Analyze the results - reach out to organizational contact for data analysis support

3. Cross-reference other survey results & resources

- Compare results with All Employee Survey DEI results
- Review DEI: A Supervisor's Guide for additional resources and ideas for actions

4. Develop recommendations

- Develop recommendations for action

5. Share results and recommendations with service leadership

- Present granular survey results to managers and supervisors

6. Present overview and recommendations to staff

- Present overall themes and recommendations communicated to entire staff
- Follow presentation with call for comments survey
 - Staff can support, offer revisions, or state they are hesitant with an opportunity to provide additional feedback

7. Operationalize the recommendations

- Create workgroups of staff volunteers and/or DEI steering team

8. Track and report actions and outcomes

- Create dynamic document to capture progress and impact; report out at service meeting

FIGURE S5. Residency Applicant Screening Rubric Updated to Include Points for DEI-related Activities

Assignment of Scores			Score
<p align="center">Quality of Letters of Recommendation* (subtracts points only)</p>			
Letter(s) identify significant concern by mention of one or more blatantly negative factors that is potentially problematic in any letter (maximum of -10)	-10		
Generic letter(s) that describe ideal program desires that do not match with our program or seems to be a templated letter (maximum of -5)	-5		
<p>*Scoring considerations include level of recommendation, relationship to applicant, level of detail/thoroughness of recommendation, personalization to program</p>			
<p align="center">Quality of letter of intent</p>			
Exceptional (Program matches goal, enthusiasm expressed, professional without significant formatting or grammatical errors)	20		
Average (General goals, letter professional but feels templated, minor formatting or grammatical errors)	5		
Concerning (Candidates goals are unclear or do not match program, lukewarm letter, significant formatting or grammatical concerns)	-5		
<p>*Consider how well written, tailored to program, future goals, how the candidate could bring something to the program, and overall style/flow.</p>			
<p align="center">CV and Application Packet Review – information can be found in CV or other areas of application</p>			
Pharmacy Work Experience			
Pharmacist (dual appointment or other)	10		
Technician or Intern ≥1 year	5		
Technician or intern ≤1 year	3		
None	0		
Non-Pharmacy Career Experience			
≥1 year	5		
≤1 year	3		
None	0		

Additional Graduate or Post-Graduate Degree (any for PGY1 program; degree that provides relevant skills to program for PGY2)		
Yes	2	
No	0	
VA Experience as student or resident		
High (multiple APPE rotations, current or past VA employment, special projects volunteer)	5	
Moderate (1 APPE rotation)	3	
Low (shadow, IPPE, other)	1	
None	0	
Pertinent Clinical Experiences or Elective APPE (or Residency Rotation) Experiences		
High (3 or more experience directly in the program's specialty)	10	
Moderate (2 experiences related to the specialty)	5	
Low (1 experience that required writing progress notes)	3	
None	0	
Research (completed outside a student or residency rotation)		
High (led a research project or was noted to be student project lead on a faculty project)	5	
Moderate (involved in a research project outside of rotation for ≥ 1 year)	3	
Low (involved in a research project outside of a rotation for < 1 year)	1	
None	0	
Publications		
High (1 peer-reviewed publication OR 6 or more publications of any type)	5	
Moderate (1 non-peer reviewed publication OR 3-5 publications of any type)	3	
Low (1-2 publications of any type, including local/facility level)	1	
None	0	
Posters & Presentations		
High (6 or more presentations or posters of any type OR presentation at a national level)	5	
Moderate (3-5 presentations or posters of any type OR presentation at a state level)	3	
Low (1-2 presentations or posters of any type, including local/facility level)	1	
None	0	
Leadership		
High (≥ 2 committee positions)	10	
Moderate (one or two orgs with extensive engagement or specific leadership training)	5	
Low (member with active engagement)	3	
None	0	
DEI Specific Activities		
High (Leading activities supporting DEI advancement)	10	
Moderate (Recurrent engagement in activities supporting DEI advancement)	5	
Low (Engaged in one DEI activity)	3	
None	0	
AVG GPA as a consideration (consider explanation in letter of intent)		
No points awarded. "YES" if concerns about academic performance or "NO" if no concerns regarding academic performance.		

Other considerations regarding application that is not included above:

FIGURE S6. A Complete List of 53 Recommendations Made by the DEI Pharmacy Steering Team for Implementation Within the Madison VA Pharmacy Department

DEI Pharmacy Steering Team Recommendations 2021: William S. Middleton Pharmacy Department

Our Commitment to Diversity, Equity and Inclusion: The William S. Middleton Memorial Veterans Hospital pharmacy department is committed to fostering and sustaining an environment which celebrates diversity, provides equitable opportunities for employment and promotion, and supports inclusiveness in pharmacy culture. We embrace our differences as individuals and unite as a pharmacy team toward a common goal: to deliver optimal, patient-centered care for our Nation's Veterans.

To honor this commitment, the Madison VA pharmacy department has formed a Diversity, Equity, and Inclusion Steering Team to develop recommendations for pharmacy leadership to prioritize and execute. To encompass the broad perspectives of the Diversity, Equity, and Inclusion (DEI) Steering Team's recommendations, these recommendations have been divided into three focus areas (with specific actions included for consideration and implementation):

- **Self-Development and Awareness**
- **Inclusive Culture**
- **Workforce Diversity**

Self-Development and Awareness

Overarching goal: To develop and implement practices within the Madison VA pharmacy department which encourage staff engagement and self-learning in topics surrounding DEI.

- Ensure DEI remains a priority within the pharmacy department long-term (combating action bias)
 - Highlight DEI work in performance appraisals
 - Meet quarterly to discuss DEI-related media (books, podcast, movies, television shows)
 - Include DEI material regularly in staff meetings (at least quarterly) and encourage staff to share stories and DEI-related content
- Raise awareness about available DEI resources and activities
 - Provide updates regarding impact of DEI initiatives, including showcasing our work beyond our facility to help disseminate successful practices
 - Maintain DEI Holiday Calendar
 - Include DEI-related topics into Preceptor Development meetings
 - WhatsApp open forum group for sharing resources, including volunteer opportunities
 - Set goal for 100% of pharmacy department to complete Bystander Intervention training by February 2022
 - Incorporate DEI material into pharmacy publications/emails (stories, advertise DEI-related programs)
 - Introduce Implicit Association Tests to pharmacy staff
- Ensure DEI remains a priority to leadership

- Incorporate pharmacy manager discussions/bias assessments into standing manager meetings
- Leverage DEI training materials for all supervisors
- Incorporate DEI topics into annual Strategic Goals
 - Utilize results of facility-wide Climate Assessment Survey
- Vetting/Utilizing existing resources
 - Review work of other facilities/organizations (University of Wisconsin, Pharmacy Society of Wisconsin, other VA pharmacy departments, YWCA, Project Implicit)
 - Recommend trainings to staff and provide protected time to complete these and review
 - Partner with DEI Diversity Officer and DEI groups at our VA

Inclusive Culture

Overarching goal: To establish a baseline of current feelings of inclusivity across all pharmacy staff, and develop unique and meaningful ways to ensure all staff feel the pharmacy department is a safe space to be their authentic selves, regardless of their race, color, ethnicity, culture, national origin, sexual orientation, age, sex, gender identity, social class, physical ability/attributes, religious or ethical value systems, language, or other perspective shaping backgrounds.

- Gather baseline information on current state of inclusivity in department
 - Ensure the following information is obtained via survey:
 - How often you personally feel a lack of inclusion
 - How often you notice a lack of inclusion of other individuals
 - Management handles diversity matters appropriately
 - Level of comfort going to supervisor with matters related to DEI
 - Organization values diversity/inclusion
 - Open-ended questions
 - Distribute survey and meet to reassess baseline needs and reform DEI plan
- Establish sustainable mechanism for peer accountability
 - Changing cultural norms around how peers respond to microaggressions and leverage resources/training to be prepared to address situations in real-time.
 - Maintaining contact with Equal Employment Opportunity office to ensure continued visibility and reinforcement in bystander training resources
- Increase presence of DEI initiatives at new employee and learner orientations (e.g. new employee orientation, residency orientation, student pharmacist orientation, etc.)
 - Work with leadership to determine current DEI-related material at orientation
 - Develop new materials as needed and embed within mandatory orientations
 - When creating email signatures, encourage new employees to include pronouns
- Taste of Madison VA Pharmacy (potluck)/holidays
 - Potential partnership with UW-Madison School of Pharmacy Multicultural Affairs Program in Pharmacy
- Convert DEI Holiday Calendar into an active learning experience
 - Send out announcement email (opportunity to pair with monthly birthday email)
 - Provide staff with the opportunity to identify missed holidays
- *Anonymous* DEI comment/question box

- Allows individuals to start conversations/safely ask questions/provide suggestions regarding culture and inclusivity
- Introduce at new employee orientation for new employees
- Increase visibility of Pharmacy Mission/Vision/DEI Statements
 - Make more visible/accessible (on SharePoint and to public)
 - Print out and distribute lanyard cards with mission statement/vision/DEI statement
 - **Pharmacy Mission:**
 - *Our mission is to provide safe, evidence-based, cost-effective and efficient pharmacy services through exceptional patient care, research, and education.*
 - **Pharmacy Vision:**
 - *Our vision is to provide the best, integrated pharmacy care to every patient, every day. Our high performing team of pharmacy professionals strives to advance pharmacy practice through evidence-based, diverse, and innovative clinical practice. We continue to improve patient safety through advancement of medication use systems and technology. Our department serves as a premier training and research site. Our employees practice in a safe, engaging environment that values teamwork and always places the patient at the center of all we do.*
 - **Pharmacy Commitment to Diversity, Equity, and Inclusion:**
 - *At the William S. Middleton Memorial Veterans hospital, we are committed to growing and maintaining an environment which celebrates diversity, providing equitable opportunities for employment and promotion, and supporting inclusiveness in pharmacy culture. We embrace our differences as individuals and unite as a pharmacy team toward a common goal: to provide optimal, patient-centered care for our Nation's Veterans.*

Workforce Diversity

Overarching goal: To institute cultural change through implementing equitable hiring practices, decreasing barriers to entry, and showcasing the department's inclusive culture that makes candidates of all backgrounds desire to work as part of the team.

- Leverage partnerships to begin understanding perceptions of diversity and inclusiveness in the Midwest/Wisconsin
 - Leveraging University of Wisconsin diversity programs to perform study on opinions and possible impact on recruitment and retention
 - Applying for grant funding through pharmacy organizations or other avenues
 - Determining local awareness on opinions and impact and identifying specific areas of opportunity to increase diversity and inclusion
- Outreach to more diverse populations of students, pharmacy personnel, and pharmacists – broaden recruitment to reach more diverse areas across the country

- Leverage current pharmacist relationships outside of the Midwest to reach out to other pharmacy schools for resident recruitment as well as to reach out to pharmacists across the country for open positions
- Focused emphasis on historically black schools
- Work with local and national organizations that foster diversity and accommodate disabilities
 - Consider specific outreach to high schools to encourage pharmacy as a career
- Expand the hiring process to be more inclusive and decrease barriers to entry
 - Not rely only on grade point average and/or interview questions in the hiring process
 - Within interview process, continue incorporating DEI-related interview questions
 - Begin including pronouns as part of introductions and including next to names on Zoom/online interviews
 - De-identify applications
 - Consider having a third-party complete this to ensure adequate blinding
 - Review and calibrate current application grading system.
 - Consider having a third-party review to ensure minimal bias
 - Review and calibrate current questions being asked during interviews
 - Consider having a third-party review to ensure minimal bias
 - Consider adding supplemental questions to answer along with cover letter for initial application
 - Consider collaborating with University of Wisconsin School of Pharmacy to explore PharmD application processes.
- Maintain inclusive pharmacy culture to retain diverse population
 - Ensure adequate career growth and opportunities for promotion for all pharmacy employees

Additional Recommendations for Pharmacy Leadership:

- Prioritize Recommendations
 - Create and maintain a detailed timeline for completion with assigned champions/responsible persons for each initiative
- Engage *all* members of the pharmacy leadership team in DEI work
 - Consider having each member of the management team choose a DEI recommendation, put together a team, and see the project through to completion
 - Consider having members of pharmacy leadership rotate through facilitating DEI discussions, such as during:
 - Weekly manager meetings
 - Quarterly DEI Self-Development and Awareness Groups
 - Pharmacy staff meetings

Pharmacist-Driven First-Dose Education Project to Improve HCAHPS Survey Scores

by Alexis Mowry, PharmD, Karlee Dulak, PharmD

Reedsburg Area Medical Center (RAMC) is a critical access hospital that has identified improving Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey scores as a priority.¹ The HCAHPS Survey is a 29-question patient satisfaction survey sent to a random sampling of patients after discharge from a hospital with the purpose of collecting national data on patients' perceptions of healthcare experiences. The HCAHPS Survey is administered between two and 42 days after hospital discharge and scores are made publicly available on a quarterly basis to allow patients to compare hospitals. Scores from the HCAHPS Survey are converted into a star rating to allow for easy comparison, with the highest-performing hospitals awarded five stars, lowest-performing hospitals awarded one star, and middle-performing hospitals awarded between two and four stars.

Since 2012, HCAHPS Survey scores have affected hospital reimbursement through Medicare via the Hospital Value-Based Purchasing Program. Hospitals with higher star ratings and overall performance on the HCAHPS Survey are provided higher rates of reimbursement through Medicare, while lower-performing hospitals are provided lower rates of reimbursement. Hospitals are therefore incentivized to achieve higher performance on HCAHPS Survey scores not only to provide the best service to their patients, but also for financial reasons. RAMC's current star rating is four out of five, leaving room for improvement in this area.

According to the publicly available HCAHPS Survey scores from 2019, nearby critical access hospitals are outperforming RAMC on a number of the survey questions, including the three questions that relate to medication use.¹ The three patient questions that directly relate to medication use are:

Abstract

Objective: To implement a pharmacist-driven, first-dose education process to improve scores on medication-related Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey questions.

Methods: Pharmacists will identify new medications started in the hospital that patients are expected to continue after discharge. For each identified medication, pharmacists will provide a consultation emphasizing the purpose, directions for use, and main side effects of the medication, using a patient-friendly, medication-specific handout. The percentage of patients responding that staff always tell them what new medications are for; that staff always describe new medicine side effects in a way the patient can understand; and who strongly agree they understand the purpose of taking each of their medications at discharge will be trended monthly from implementation to conclusion. Scores after implementation will also be compared to scores from the year prior to implementation.

Results: By the end of the evaluation period, the HCAHPS Survey medication-related scores were higher than scores from the year prior to implementation for the percentage of patients responding that staff always tell them what new medications are for (54.55% in April 2021, versus 94.74% in April 2022); the percentage of patients reporting that staff always describe medicine side effects in a way the patient can understand (36.36% versus 63.16%); and the percentage of patients who strongly agree they understood the purpose for taking each of their medications at discharge (50% versus 76.19%).

Conclusions: A pharmacist-driven first-dose education process for medications patients are expected to continue after hospital discharge increased medication-related HCAHPS survey scores.

1. Before giving you any new medicine, how often did staff tell you what the medicine was for?
2. Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?
3. When I left the hospital, I clearly understood the purpose for taking each of my medications.

In 2019, RAMC's percentage of patients reporting that staff always explain what new medicines are for was 77%, which was

lower than the average score of 87% across eight nearby critical access hospitals within 50 miles. RAMC also performed worse on the percentage of patients reporting that staff always describe possible side effects in a way they could understand (54% vs. 62%), and on the percentage of patients who reported that they strongly agree they understood the purpose of their medications when leaving the hospital (54% vs. 69%). To assess the difference in scores, the pharmacy departments at the eight nearby critical access hospitals were surveyed to

determine their process surrounding patient education, and to identify possible reasons for their better performance on HCAHPS medication-related questions. Based on responses from three of the eight hospitals, no clear reason was identified for those sites' better performance. In fact, RAMC's pharmacists actually provide more education to patients about medications throughout their hospital stays, which is contradictory to their overall lower performance on HCAHPS medication-related questions.

One hypothesis for RAMC's lower performance on HCAHPS medication-related questions is that the current workflow only has pharmacists involved in education about medications at discharge. Pharmacists provide discharge education to all inpatients with medication changes before they leave the hospital, but this education would not apply to two of the three medication-related HCAHPS survey questions, which specifically ask patients if they were provided education about their medications before receiving their first dose. Nurses are currently responsible for providing first dose education, but the education can be inconsistent when compared across nurses, because there is no standardization for the process. In addition, the detail provided during new medication education can vary based on the workload on the floor (for instance, less education may be provided when the hospital is busier). Lastly, nurses may not be as familiar with the medications for which they are responsible for providing education, compared to pharmacists, who are medication experts.

The hypothesis of this evaluation is that implementing a pharmacist-driven first-dose education process, wherein pharmacists will provide education to patients about new medications started in the hospital at the time they are ordered, will improve HCAHPS Survey medication-related scores and patient understanding of medications started in the hospital. A previous study using pharmacy students to provide patient education on medications newly started in the hospital reported improvements in HCAHPS medication-related scores over a four-month period, but solely utilized pharmacy students, and not pharmacists, to perform the education.² Other studies have shown that multimodal interventions from pharmacists (including involvement

in medication reconciliation, medication education, discharge education, and post-discharge follow-up phone calls) can lead to improvements in HCAHPS scores.³⁻⁵ However, these studies reported on the improvements in HCAHPS scores due to multiple pharmacist interventions, instead of isolating the impact of pharmacist-provided first-dose education alone, and therefore findings are not directly comparable to this evaluation.

Methods

RAMC is a 25-bed critical access hospital. The inpatient pharmacy has four full-time clinical pharmacists, one lead pharmacist, and a director of pharmacy. There are at least two clinical pharmacists on-site during weekdays, one who staffs the central pharmacy, and one who is decentralized on the medical/surgical unit.

Pharmacists identified all new medications started in the hospital that patients were expected to continue at discharge. This was done using the intervention (I-vent) feature in the Epic electronic health record (EHR) platform, which allowed direct pharmacist-to-pharmacist communication within the EHR. Pharmacists filled out a medication information template within the I-vent that specified the medication name, purpose, directions for use, side effects, warnings/precautions, and monitoring for each new medication. This template is customizable, and the most commonly prescribed medications at hospital discharge are pre-populated to save pharmacist time.

Once the pharmacist filled out the template, pharmacists published the completed medication information sheet as an EHR progress note to signify to other healthcare providers that first-dose education was being provided by the pharmacist. The pharmacist also printed a copy of the medication education sheet to bring to the patient's room, and performed a direct patient consultation (similar to how a pharmacist would provide a medication consultation in the outpatient setting). If the pharmacist was unable to complete the education directly (for instance, due to infection control restrictions), the pharmacist had the nurse bring the medication information sheet to the patient and provided consultation by phone. Patients kept the copy of the medication

information sheet in their discharge folder for reference during their hospitalization and after discharge. Once education was completed, pharmacists also documented that education was completed so another pharmacist did not repeat the same education process.

Patients were eligible for first-dose education from a pharmacist if they were admitted to the medical-surgical or intensive care unit at RAMC and were starting a new medication in the hospital that they were expected to continue at discharge (e.g., antihypertensive, antidiabetic, anticoagulant, or antihyperlipidemic medications). Patients did not receive first-dose education from the pharmacist if they were on other units in the hospital (e.g. birth center, emergency room), received a total joint replacement (these patients already receive education preoperatively at a "joint camp") or were expected to discharge to a facility where they will not manage their own medications (e.g., skilled nursing facility). Pharmacist discretion was used to determine if a medication was started for short-term use in the hospital versus likely to be continued at discharge.

IRB approval was not required because it was a quality improvement project.

Results

Pharmacist-provided first-dose education was completed for 58 medications from November 2021 through April 2022. The most common medications educated on (in order) were: amlodipine, apixaban, warfarin, clopidogrel, aspirin, and lisinopril. All four full-time clinical pharmacists in the department reported subjective satisfaction with providing first-dose education to patients, and believed patients had a better understanding of their medications at the time of discharge from the hospital.

Results on HCAHPS Survey medication-related scores demonstrated an overall trend towards improvement, not only when comparing scores at the end of the evaluation period to scores from the previous year (April 2021 versus April 2022), but also when comparing scores from the beginning to the end of the evaluation period (November 2021 through April 2022). The percentage of patients reporting that staff always explain what new medicines are for increased by 40.24% compared to the previous year (54.55% in April 2021,

versus 94.74% in April 2022), and increased by 23.31% across the 6-month evaluation period (71.43% versus 94.74%) (Figure 1). The percentage of patients who report that staff always describe medicine side effects in a way the patient can understand increased by 26.8% compared to the previous year (36.36% versus 63.16%), and 13.16% across the evaluation period (50% versus 63.16%) (Figure 2). The percentage of patients who strongly agree that they understood the purpose of taking each of their medications at discharge increased by 26.19% compared to the previous year (50% versus 76.19%), and 23.25% across the evaluation period (52.94 versus 76.19%) (Figure 3).

Discussion

The HCAHPS Survey scores on medication-related questions increased compared to previous year's scores, and increased across the six-month evaluation period. Findings from this evaluation may be generalized to other hospitals. Sites may find this intervention most successful if they have pharmacists on-site 24/7, and expand the number of medications for which patients receive first-dose education. It is likely not feasible to have pharmacists provide first-dose education for every medication in the hospital; however, an interdisciplinary intervention that includes pharmacists, pharmacy students, nurses, respiratory therapists, and providers may be most effective. This was shown by Allen and colleagues who showed similar improvements in HCAHPS medication-related scores through the use of pharmacy students providing education on medications newly started in the hospital.² This study reported that over a 4-month period there was a 23% increase (statistically significant) in the percentage of patients always reporting that staff tell them what new medications are for, and a 6% increase (not statistically significant) in the percentage of patients reporting that staff always describe medicine side effects in a way they can understand.

When comparing scores from April 2022 (six months after implementation) to scores from April 2021 (scores from one year prior to implementation), one important difference is that education in early 2021 was being provided entirely via telephone due to restrictions during

FIGURE 1. Report Staff "Always" Tell What New Medications Are For
Percentage of respondents that report staff always tell what new medications

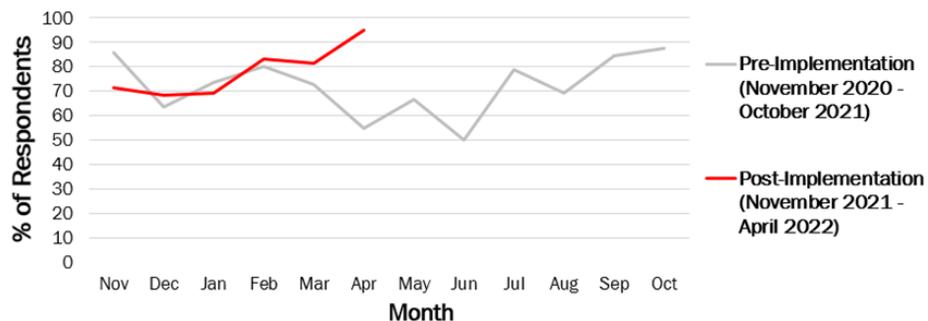


FIGURE 2. Report Staff "Always" Describe New Medicine Side Effects in a Way They Can Understand
Percentage of respondents that report staff always explained medicine side effects in a way the patient can understand

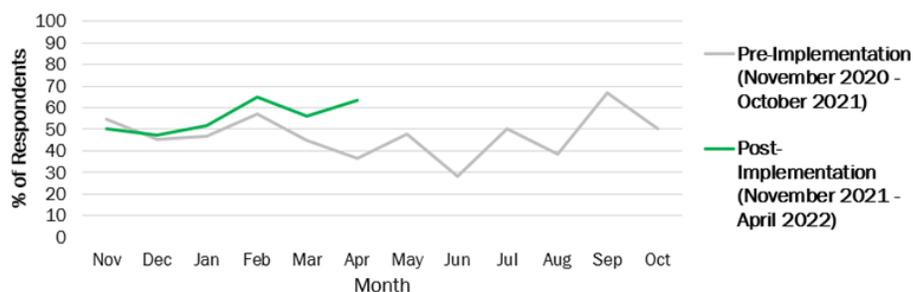
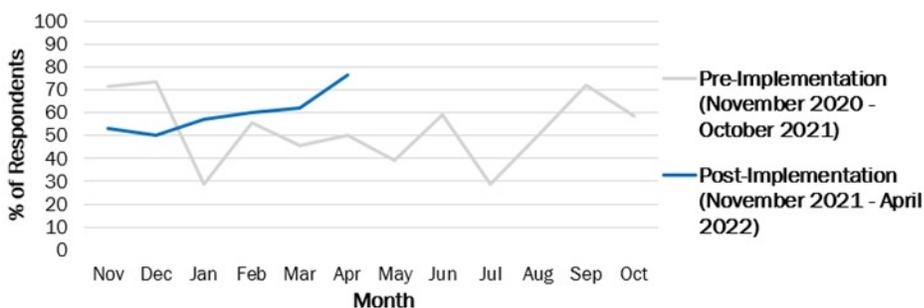


FIGURE 3. Report They "Strongly Agree" They Understood The Purpose of Each of Their Medicines at Discharge
Percentage of respondents that strongly agree they understood the purpose of each of their medicines at discharge



the COVID-19 pandemic, whereas in April 2022 in-person education had been resumed (except for patients with airborne restrictions). The quality and effectiveness of education provided over the phone may not be as high as the quality of education provided face-to-face, therefore limiting the usefulness of the comparison of scores from April 2021 to April 2022.

Limitations

One limitation of this evaluation is that the HCAHPS Survey is sent to a random

sampling of patients after hospital discharge, so there is no way to determine whether the patients who took the survey actually received intervention (first-dose education) from the pharmacist. Therefore, although there was an improvement in the HCAHPS scores within the period, it is impossible to say with certainty that the improvement in HCAHPS scores is solely attributable to this intervention. Scores were also subject to bias due to the limited sample size (14-29 respondents per month).

Another limitation of this evaluation

is that, despite meeting inclusion criteria, numerous patients did not receive first-dose education from the pharmacist at the time the medications were ordered. The reasons for this are multifactorial. First, pharmacists are not on site 24/7 at RAMC so medications started overnight would not receive any first-dose education by the pharmacist. Second, to pilot this new workflow model, first-dose education was limited to medications the pharmacist expected patients to continue at discharge. This means that any intravenous (IV) medications, or medications temporarily started in the hospital (e.g., short-term antibiotics), were not educated on. Additionally, this evaluation required pharmacists to determine if they felt the medication ordered was for short-term use in the hospital, versus likely to continue at discharge. A pharmacist may have judged a medication as being only for short-term use and, therefore, not provided first-dose education, despite the medication being continued at discharge. Lastly, pharmacist time was limited, particularly during a

COVID-19 infection surge, resulting in high hospital census at RAMC from December 2021 to January 2022, and first-dose education may not have been completed due to higher-priority tasks and time constraints.

Conclusion

Pharmacist-provided first-dose education for patients who were expected to continue newly prescribed medications after hospital discharge led to improvements in HCAHPS Survey medication-related scores.

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CONGRATULATIONS CREATING SERVANT LEADERS

Throughout pharmacy school and residency training at Concordia, **Karina Rauenhorst, PharmD**, continues to grow as a leader and as a pharmacist. Congratulations on her election as President of the Northern Plains Province for Kappa Psi Pharmaceutical Fraternity.



SCHOOL OF
PHARMACY



Double Threat: Analysis of Opioid and Benzodiazepine Discontinuation Rates After a Pharmacy Benefit Manager Mailing to Prescribers in Commercial Clients

by NgocThanh Nguyen, PharmD, Marleen Wickizer, PharmD, AE-C, CDCES, Agata Siwak, PharmD, Maria Hurst, PMC, Nicole Dahlke, Robert Topp PhD, RN

The increasing number of opioids being prescribed for chronic noncancer pain has contributed to the opioid epidemic, which has led to an increase in opioid misuse and abuse, illicit drug use, and overdose.¹⁻² Hospitalizations due to opioid use increased by 64% between 2005 and 2014.³⁻⁴ National overdose deaths related to prescription opioids steadily increased from 1999, with 3,442 deaths annually, to 17,029 deaths in 2017. A decline in opioid-related deaths was observed in 2019 with 14,139 deaths, but it increased again in 2020 with 16,416 deaths.⁵ When taken concurrently, benzodiazepines and opioids together put patients at a higher risk for respiratory depression and fatal overdose.⁶⁻⁸ Deaths related to drug overdose with concurrent use of opioids and benzodiazepines increased from 1,135 in 1999 to 11,537 in 2017, then declined to 9,711 in 2019. By 2020, drug overdoses involving opioids with benzodiazepines increased again to 12,290.^{5,9} Due to these events, the Food and Drug Administration (FDA) has updated the labeling for both classes of medications to include a boxed warning that cites the serious risks—including risk of death—of taking

Abstract

Objective: To determine the effect of prescriber mailings on the discontinuation of opioids and/or benzodiazepines among commercial health plan members who are prescribed these medications concurrently.

Methods: A retrospective analysis was conducted on members of two commercial health plans who had concurrent claims for both opioids and benzodiazepines for two of four months between March and June of 2019. Letters were mailed to the prescribers of members of one commercial health plan; this was the intervention group. The primary endpoint was the percentage of members with discontinuation of one or more opioids and/or benzodiazepines after the intervention. Secondary endpoints included morphine milligram equivalent (MME) for opioids, number of prescriptions, day supply, and quantity in each class.

Results: A higher percentage of the intervention group (52.8%) discontinued an opioid and/or benzodiazepine compared to the control group (41.4%). However, this difference was not statistically significant ($p=0.09$). Over the duration of the study, the intervention group experienced a significant decline ($p<0.05$) in all metrics of opioid prescriptions. This included the change in average MME compared to the control group (-10.5 vs. -4.1, $p<0.05$). The intervention group significantly declined in all metrics of benzodiazepine prescriptions over the duration of the study compared to baseline and the control group.

Conclusion: Following prescriber mailings, opioid and benzodiazepine prescriptions were reduced among members concurrently prescribed these medications.

both classes of medications together.¹⁰ To combat the opioid epidemic, the Centers for Disease Control and Prevention (CDC) has created guidelines outlining 12 steps for opioid prescribing.¹¹ These guidelines describe the steps for initiation or continuation of opioids for chronic pain, selection of opioids, opioid dosage, duration, follow-up, and termination. To reduce the risk of overdose, the 2016 CDC Opioid Prescribing Guidelines recommend avoiding concurrently prescribing opioids with benzodiazepines when possible.¹⁰⁻¹¹ Other ways to decrease the misuse of opioids include prescription drug monitoring programs, Drug Enforcement Administration (DEA) drug take-back days, reformulation of opioids to be tamper resistant, and access to treatment for opioid use disorder.¹²⁻¹³ Overdose reversal agents, like naloxone, can be administered by the patient or patient's agent, are available as a prescription or dispensed by a pharmacist under a standing order depending on the state.

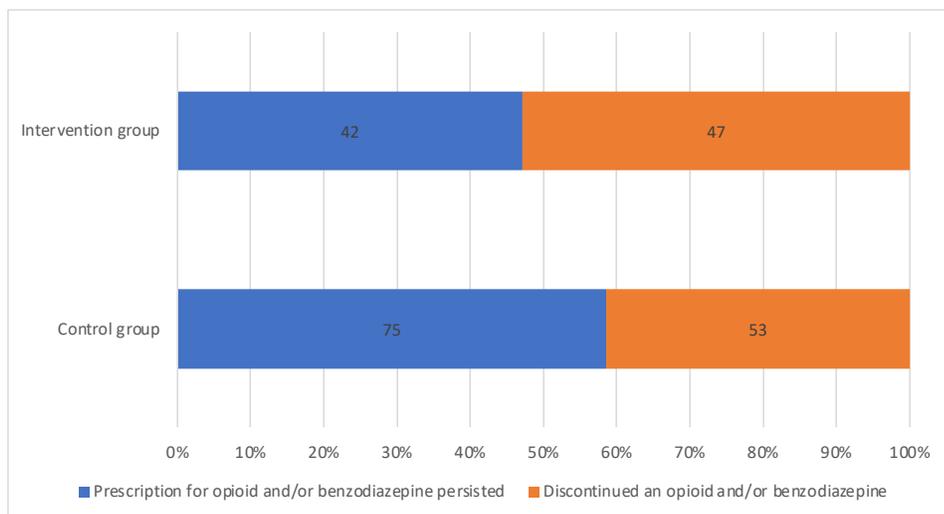
The Center for Medicaid and Children's Health Insurance Program (CHIP) released guidance to reduce opioid abuse and misuse through the implementation of the new Medicaid Drug Utilization Review (DUR).¹⁴ The guidance includes prescription claim reviews at the point of sale, retrospective review, identification of processes to detect fraud and abuse, and mandatory DUR report updates. States are required to implement safety edits and claims review automated processes.

Pharmacy benefit managers (PBMs) are in a unique position in healthcare, because they have access to pharmacy claims data from multiple prescribers and from multiple pharmacies, allowing them to detect when a member is filling prescriptions for opioids and benzodiazepines concurrently. The Double Threat program is a retrospective DUR safety program used by Navitus Health Solutions, LLC, a PBM, to identify members who have concurrent claims of both an opioid and benzodiazepine. The internal application identifies members and generates their opioid and benzodiazepine medication profiles during a four-month timeframe. The goal of the Double Threat safety program is to promote safe, effective, and appropriate prescription drug use for all members and encourage coordinated care among the health care

TABLE 1. Demographic Data

	<i>Control</i>	<i>Intervention</i>	<i>Combined</i>
Members	128	89	217
Male	44 (34.4%)	22 (24.8%)	66 (30.4%)
Female	84 (65.6%)	67 (75.2%)	151 (69.6%)
Age in years, mean +/- standard deviation	54.7 +/- 11.4	57.1 +/- 9.0	56.6 +/- 10.5

FIGURE 1. Number of Members with a Discontinuation of an Opioid and/or Benzodiazepine from 2019 to 2020 (n=217).



*Not significant, Chi-square = 2.75, p=0.09

team. Limited data is available on the effects of a prescriber mailing as an intervention in reducing concurrent use of opioids and benzodiazepines.

The purpose of this study was to determine the effect of prescriber mailings on the discontinuation of opioids and/or benzodiazepines among members who are prescribed these medications concurrently.

Methods

Study Design

A retrospective analysis of the Double Threat DUR safety program was conducted. Prior to accessing data, the study received an IRB exemption. Two similar commercial health plans were selected, with one health plan as the control group and the other as the intervention group. Inclusion criteria consisted of active members within either commercial health plan during the pre- (March-June 2019) and post- (March-June 2020) intervention period. Members had to have pharmacy claims for both an opioid and benzodiazepine for at least two

of four months during the timeframe of March 1, 2019, through June 30, 2019. Exclusion criteria were members who were in hospice or long-term care, had claims for an oncology medication, or were included in another DUR safety program. There were no age or medication quantity exclusion criteria.

The intervention consisted of letters mailed to all prescribers who concurrently prescribed an opioid or benzodiazepine to members in the intervention group. The mailings occurred on November 25, 2019, and March 30, 2020. These letters included the member's medication profile and a message referring to CDC guidelines, encouraging prescribers to use their clinical judgment to discontinue opioids or benzodiazepines when they were prescribed concurrently.

Post-intervention outcomes were collected from March 1, 2020, through June 30, 2020. The primary endpoint was the number of members with discontinuation of opioids and/or benzodiazepines after

prescriber mailings. Secondary endpoints were the change from 2019 to 2020 in average daily morphine milligram equivalent (MME), the number of unique prescriptions, day supply, and quantity in each class.

Statistical Analysis

The statistical analysis involved identifying eligible subjects in a database over the duration of the study. These individuals were identified by pharmacy claims using the Double Threat DUR program. After eligible subjects were identified, their opioid and benzodiazepine prescription claims data filled during 2019 and during 2020 were downloaded to an Excel spreadsheet. The data compiled included the average daily MME, quantity, day supply, and prescriptions per member for each opioid and benzodiazepine prescription filled. The second step of the analysis involved transferring the data into an SPSS.v27 data set and then calculating repeated measures analysis of variance (R-ANOVA) statistics for each of the outcome variables, using time (2019 vs. 2020), group (intervention vs. control), and the interaction of time by group as the independent factors. Significant main or interaction effects for any of these R-ANOVA statistics were then addressed through Tukey post hoc comparisons to determine which means were significantly different (alpha value of 0.05).¹⁵

Results

A total of 217 members were identified as eligible for the Double Threat DUR safety program. There were 128 members in the control group and 89 members in the intervention group. More than half of the population was female (69.6%) and the overall mean age was 56 years (Table 1). After the prescriber mailings, the primary endpoint showed 47 (52.8%) members in the intervention group discontinued an opioid and/or benzodiazepine compared to only 53 (41.4%) members in the control group ($p=0.09$) (Figure 1).

There was a significant difference in the change in average daily MME between the intervention group and control group [-10.4 mg (-44.5%) versus -4.1 mg (-15.3%) ($p<0.05$)] (Table 2). The intervention group also experienced a significant decline compared to the control group in total

TABLE 2. Comparing Opioid Prescriptions Between Intervention and Control Groups Over Time

Variable	2019		2020	
	Intervention Mean \pm SE	Control Mean \pm SE	Intervention Mean \pm SE	Control Mean \pm SE
Average Daily MME	23.3 \pm 2.3	27.2 \pm 1.9	12.9 \pm 2.5**	23.1 \pm 2.1
Average quantity/member	336.0 \pm 36.4	331.3 \pm 30.1	189.6 \pm 34.2*	283.2 \pm 28.5
Average day supply/member	85.0 \pm 7.3	82.5 \pm 6.1	51.4 \pm 7.5*	71.5 \pm 6.2
Average prescriptions/member	1.4 \pm 0.1	1.4 \pm 0.1	0.6 \pm 0.1*	0.9 \pm 0.1

*p<0.05, *Indicates study group changed over time, #indicates study groups were different at a specific time, MME= Morphine Milligram Equivalents*

TABLE 3. Comparing Benzodiazepine Prescriptions Between Intervention and Control Groups Over Time

Variable	2019		2020	
	Intervention Mean \pm SE	Control Mean \pm SE	Intervention Mean \pm SE	Control Mean \pm SE
Average quantity/member	142.2 \pm 13.8	175.5 \pm 11.5	70.6 \pm 13.3**	151.1 \pm 11.1
Average day supply/member	71.8 \pm 4.9	79.7 \pm 4.1	33.9 \pm 5.1**	69.2 \pm 4.2
Average prescriptions/member	1.1 \pm 0.0	1.1 \pm 0.0	0.5 \pm 0.1**	0.8 \pm 0.0

*p<0.05, *Indicates study group changed over time, #indicates study groups were different at a specific time*

opioid quantity (-43.6% versus -14.5%), day supply (-39.5% versus -13.3%), and prescriptions (-55.4% versus -34.8%) ($p<0.05$) (Table 2).

For benzodiazepines, a similar significant decrease in total quantity (-50% versus -13.9%), day supply (-52.7% versus -13%), and prescriptions (-56.4 versus -25%) were also observed for the intervention group compared to the control group ($p<0.05$) (Table 3).

Discussion

The results indicate that prescriptions for opioids and benzodiazepines were lower among patients whose prescribers received a mailing advising them of the risks of concurrent use and recommending they use their clinical judgment to discontinue opioids or benzodiazepines. Although not statistically significant, there appears to be clinical relevance to an almost 12% higher absolute rate of discontinuation of an opioid and/or benzodiazepine in the intervention group. These results may be impacted by the challenges that come with discontinuing an opioid or benzodiazepine over a short

period of time, including withdrawal or an exacerbation of the symptoms being treated. Both classes of medications require a slow tapering regimen to safely discontinue.¹¹ There may be a significant finding if outcome measurements were longer than a year or if the study size were increased. All other metrics of opioid and benzodiazepine prescriptions were significantly lower in the intervention group following the intervention phase of the study. This finding indicates the potential efficacy of the intervention to result in significant reductions in opioids and benzodiazepine claims among these individuals who were concurrently prescribed these medications.

Similar outcomes were seen in other studies involving a notification to prescribers either through mailings or facsimile. One study mailed letters to prescribers of members using high-dose opioids with another opioid, benzodiazepine, or antidepressant.¹⁶ The outcome was a 28.1% reduction in high-risk opioid use. A different study used a low-touch prescriber fax intervention to notify the prescriber of the recent benzodiazepine claim and

provide information about the CDC Opioid Prescribing Guideline's precautions regarding concurrent use of opioids and benzodiazepines.¹⁷ This intervention resulted in a significantly improved percentage of patients without concurrent use of opioids and benzodiazepines with a number needed to treat of 26.¹⁷ Additional studies using electronic databases of medication claims data to inform prescribers of patients concurrently prescribed opioids and benzodiazepines are needed to confirm the efficacy of prescriber mailings in reducing the rate of concurrently prescribed opioids and benzodiazepines.

Although the secondary findings indicate the potential efficacy of the intervention, these findings should be interpreted cautiously due to several limitations. First, the sample was small and drawn from a limited client database that may have limited the external validity. A larger, more heterogeneous sample may reveal a different finding in the primary endpoint. A second limitation was that claims were not captured if members paid out-of-pocket for either class of medications. While the intervention letter provided information to the provider about the risks of concurrent use of opioids and benzodiazepines, the actions in response to this information were not examined in this study. Future investigators may wish to examine the prescriber responses to these types of intervention letters to provide further insight regarding the impact of the intervention letter on clinical practice. Finally, the intervention letter did not provide clinical guidelines for discontinuing concurrent use of opioids and benzodiazepines, and thus the provider was not provided with suggested approaches to address the issue revealed. Tools to educate providers on opioid and benzodiazepine tapering may improve the prescriber confidence to implement change.

Conclusions

Prescriber mailings appear to be a potentially effective intervention to reduce concurrent use of opioids and benzodiazepines.

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MEDICAL COLLEGE OF WISCONSIN SCHOOL OF PHARMACY STUDENT WRITING CLUB:

Leadership Spotlight: Adam Gregg

by Keegan Norris, 2024 PharmD Candidate, Saba Tahir, 2024 PharmD Candidate



Adam Gregg, PharmD, BCPS, is the PGY1 pharmacy residency program director, program manager for pharmacy continuing professional development, and pharmacy technician training program director at Gundersen Health System. Gregg began his journey by earning a PharmD from Drake University. Afterward, he pursued post-graduate residency training in primary care pharmacy at the University of Oklahoma College of Pharmacy. Upon completing training, he was undecided on which direction to take his career. This led him to Gundersen Health System. At the time, Gundersen was looking for a hospital pharmacist and sought to expand into the ambulatory pharmacy sector. He viewed this as an opportunity to make a lasting impression.

Gregg credits his success in professional development to the challenges he overcame throughout his career. For example, although he intended to build an ambulatory clinical pharmacist presence at Gundersen, it did not go as planned. He was disappointed at the time, but this ultimately led him to other opportunities for lateral growth within Gundersen. He emphasizes that while failure can be discouraging, it is necessary and valuable for professional growth. In Gregg's case, he was able to apply his skills to acute care pharmacy services. He also revitalized the learning infrastructure at Gundersen for students, residents, and technicians.

Gregg oversees all aspects of the training and education of pharmacists and pharmacy technicians throughout Gundersen in his role as residency program director and pharmacy technician training program director. Additionally, he oversees the education of pharmacy students who come to Gundersen for Introductory Pharmacy Practice Experiences (IPPEs) and Advanced Pharmacy Practice Experiences (APPEs). Gundersen has fostered relationships with pharmacy schools across the tri-state

area, including Concordia University of Wisconsin, Drake University, the Medical College of Wisconsin, the University of Iowa, the University of Minnesota, and the University of Wisconsin-Madison, through their APPE or IPPE programs. Notably, Gundersen is one of the few hospitals in the nation that hosts a progressive in-house technician training program that Gregg oversees.

Gregg shares a very humbling view of his achievements. To him, "achievements are not measured in steps or accomplishments." He believes mentoring students, residents, and coworkers provides him with personal and professional fulfillment. He views working with residents as a luxury because he sees them develop into well-rounded pharmacists. Gregg considers aiding residents and helping them reach higher to achieve their goals his most outstanding achievement. Within Gundersen's pharmacy department, you can find a wall of past pharmacy residents they have hosted. On difficult days, you can find Gregg here, finding perseverance by remembering the impression he has made within pharmacy.

Concerns Today

Gregg acknowledges that one of the most significant threats the pharmacy profession faces is the chronic undervaluing of what pharmacists bring to healthcare. The public often views pharmacists' role as simply dispensing medications, rather than the patient care they can provide. Although progress has been made through policy changes and new legislation initiatives—such as pharmacist provider status—Gregg acknowledges that more progress must be made. The COVID-19 pandemic acted as a catalyst to transform the public perception of pharmacists. Through vaccinations, the public was exposed to the side of pharmacy that provides direct patient care.

Ultimately, Gregg would like to see the profession unify to make the vast number of health services that pharmacists can

provide common knowledge. He hopes to reach a point where patients see the pharmacist they regularly go to as "their pharmacist." Developing this relationship with patients could lead to a more evolved pharmacy care model, where pharmacists take a patient-centered approach and fully use their expertise as medication therapy experts. For example, pharmacists covering ambulatory care services provide complete patient care, which includes precision medication adjustments, clinic follow-ups, and navigating medication access barriers. Overall, the long-term goal would be integrating pharmacy-specialized knowledge in a patient-centered approach to providing direct care.

Advice for Future Leaders

Dr. Gregg advises prospective leaders to cultivate their radars. It is essential to be aware of the opportunities surrounding you. He believes you should avoid saying no to opportunities reflexively, but only after truly considering them. Although some opportunities may seem challenging, you should trust in yourself and your education to guide you to success. Through exposure to these experiences, you may find an area of pharmacy that you genuinely enjoy or expand your perspective beyond your current view to see areas of opportunity and improvement.

Keegan Norris and Saba Tahir are 2024 Doctor of Pharmacy Candidates at the Medical College of Wisconsin School of Pharmacy in Milwaukee, WI.

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Leadership Spotlight: Thomas Dilworth

by Noah Kaitz, 2023 PharmD Candidate

Being honest, humble, transparent, and decisional are core values that Thomas Dilworth, PharmD, BCPSAQ-ID strives to exemplify as a leader. As the system director of clinical pharmacy services at Advocate Aurora Health, Dilworth provides direct oversight of the infectious diseases and drug policy teams while also overseeing pharmacy practice advancement. Although he originally had aspired to become a community pharmacist, Dilworth found a passion for serving patients in an inpatient setting while completing his fourth-year pharmacy school rotations, particularly one at University Hospital at UW-Madison. Following these clinical experiences, Dilworth pursued a PGY1 residency at the University of New Mexico, where he was inspired to extend his residency training by completing a PGY2 residency in infectious diseases. To complement the clinical experience he had gained, Dilworth again stayed on at the University of New Mexico College of Pharmacy to complete a research fellowship in infectious diseases pharmacotherapy. Dilworth decided to move back to Milwaukee after his fellowship to be close to his and his wife's families. At that time, opportunities for pharmacists specializing in infectious disease were scarce in Milwaukee. Facing this challenge, Dilworth took a role as a pharmacy supervisor at St. Francis Hospital, which he states was "one of the greatest things [he] ever did." The job was totally outside his comfort zone. In the role, Dilworth took on many administrative responsibilities, which laid the foundation for many of the leadership skills Dilworth uses in his current role. He stayed in this role at St. Francis for about two years, during which he expanded clinical pharmacy practice, started an antimicrobial stewardship program, and began a PGY-1 pharmacy practice residency program. Then he returned to his interest in infectious disease and took a job as an infectious diseases

pharmacy specialist at Aurora St. Luke's Medical Center. There he started a PGY2 infectious diseases residency. After five years in this role, he applied for his current role. When asked about his greatest professional achievement, Dilworth cites his experience establishing the PGY1 residency at St. Francis and the infectious disease residency program at St. Luke's, which has trained five infectious disease pharmacists to date. Although rewarding, this experience came with many challenges. One of the biggest challenges Dilworth faced while developing the PGY2 infectious diseases program was working with the many pharmacy and non-pharmacy stakeholders to secure the right learning experiences for the ID residents. It was a priority for Dilworth that the residency learning experiences maximized the resident's exposure to all areas of ID pharmacy practice and antimicrobial stewardship during the one-year time frame.

Concerns Today

Reflecting upon the present and future state of pharmacy practice, Dilworth feels the pharmacy profession is taking many steps in the right direction, but he has two major concerns. The first concern is that the pharmacy profession lacks a unified voice. While there are many professional pharmacy organizations that act as key leaders in advancing pharmacy practice, Dilworth believes a singular voice for all pharmacy professionals in the U.S. would allow pharmacy advancement efforts to reach their full potential. For example, during the COVID-19 pandemic, a major barrier to expanding pharmacists' ability to prescribe Paxlovid® was incorporating the opinions and advice from a large number of pharmacy organizations into one coherent message. A unified organization would not only help streamline future practice advancements, but would create a synergistic voice for change. Dilworth's insight into this challenge aligns significantly with PSW's "One Voice, One Vision," which drove the 1998 unification



of all pharmacists, pharmacy technicians, and pharmacy students in Wisconsin into a single advocacy group.

The second big challenge that Dilworth believes the pharmacy profession faces is an awareness that, as the healthcare delivery system evolves, the pharmacist role must evolve with it. There are big changes to come and new challenges to be faced, so it is crucial that pharmacists are not only aware of these changes but are ready to adapt and advocate for their role to best meet the needs of future patients. Change is one constant in life, Dilworth says, which is why he believes it is a priority that we are thinking 10, 15, and 20 years in advance to anticipate and plan for these changes.

One change that Dilworth expects to see in the pharmacy practice over the next 10 years is an increase in home-based care services offered. With inpatient care being expensive, burdensome to the healthcare system, and inconvenient for many patients, Dilworth believes a shift to homecare is on the horizon. We have already seen the rapid expansion of telehealth services within recent years, which would likely play a role in home-based care. Pharmacists will likely have a significant role in home-based care, whether it is through telehealth or something completely new; therefore, it is important to consider how we want to expand the role of the pharmacist in a way that fills this growing need.

Advice for Future Leaders

Dilworth's advice for future pharmacy leaders is as follows: Be humble; seek the counsel of people around you. Be vulnerable; recognize that it is okay to not know everything, but you do need to know where to look and who to ask. Read books; they provide you with unique perspectives on life that you can bring into your own leadership role. Lastly, acknowledge that life is an infinite game (a term coined by Simon

Sinek in his book, *The Infinite Game*). In business and in life, you can never win, but you can be ahead or behind, so get ahead and then go home and enjoy yourself. There will always be more work to do when you return. When asked what he would do differently knowing what he knows now, one thing Dilworth says he would focus on is being authentic while at work, because by doing this, you will find yourself in a role that is the perfect fit for you.

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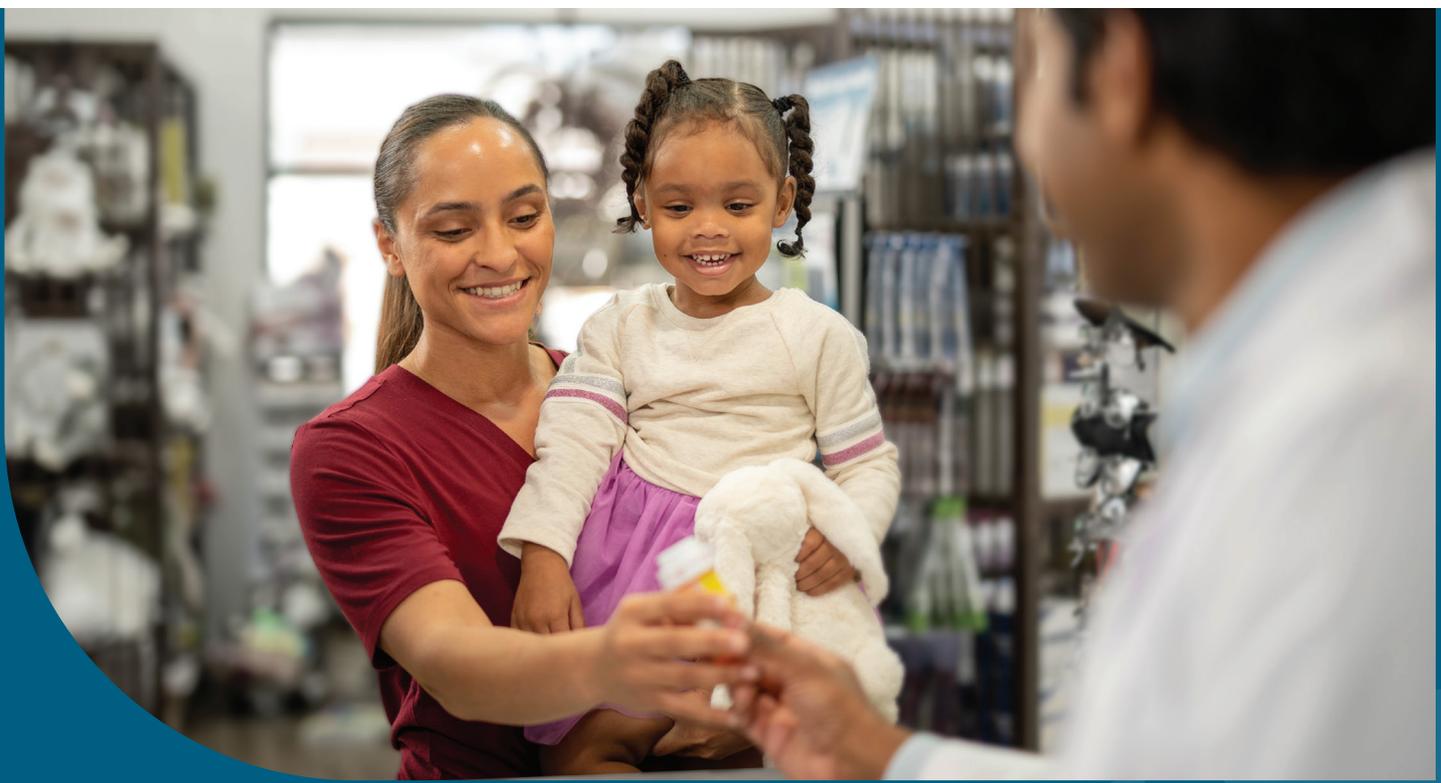
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