

Digital content delivery in a pharmacy technician training program in a health system

Matthew J. Kelm, Pharm.D., M.H.A.,
Department of Pharmacy, Duke University
Hospital, Durham, NC.

**Paul W. Bush, Pharm.D., M.B.A.,
BCPS, FASHP,** Department of Pharmacy,
Duke University Hospital, Durham, NC.

Purpose. Development and implementation of a pharmacy technician training program are described.

Summary. As key members of the healthcare team, pharmacy technicians are integral to a pharmacy's operation. Training programs allow technicians to assume roles that support pharmacists practicing "at the top of their license," assist in providing optimal patient care, and serve as an important tool for retaining trained pharmacy technicians. Duke University Health System (DUHS) launched its Pharmacy Technology Training Program (DUHS-PTTP) within the department of pharmacy at Duke University Hospital in April 2018 to assist in meeting current and future pharmacy technician demand. Candidates are provided with the tools to become certified pharmacy technicians through the completion of an affordable accredited program incorporating didactic, simulation-based, and experiential education. The program's partnership with a digital content provider enables accelerated start-up, minimizes investment in content creation and maintenance, enables automated record keeping, and provides flexibility for program participants to complete didactic content outside of the traditional classroom setting. Implementation of this program aims to support students both internal and external to the institution. Students are trained to begin a career as a pharmacy technician with the intent of producing graduates well equipped and eligible for certification by the Pharmacy Technician Certification Board.

Conclusion. Implementation of a pharmacy technician training program is a logical extension of the demonstrated core training competency of health-system pharmacy departments.

Keywords: accreditation, education, pharmacy technician, training

Am J Health-Syst Pharm. 2020; 77:295-299

Pharmacy technicians are key members of the healthcare team and serve as a cornerstone of the pharmacy's operational and clinical roles. Recent professional literature demonstrates the advanced roles pharmacy technicians are assuming in the health system setting, including management of robotics, compilation of medication histories, prior-authorization process management, prescription refill approval programs, and informatics roles.¹ Along with this expansion of roles, the number of pharmacy technician positions is rapidly growing. The Bureau of Labor Statistics estimates that there were 420,400

pharmacy technician positions in 2018 and forecasts growth of 7% from 2018 to 2028.²

Supporting and developing pharmacy technicians will expand the pharmacy technician workforce and, therefore, allow pharmacists to practice "at the top of their license" to provide optimal patient care.³ The skills, knowledge, and competence of pharmacy technicians significantly affect the safety and effectiveness of the medication-use process, which indicates a need for not only developing a standardized training program but also supporting and developing pharmacy technicians.¹ This investment will also

Address correspondence to Dr. Kelm
(matthew.kelm@duke.edu).

© American Society of Health-System
Pharmacists 2019. All rights reserved.
For permissions, please e-mail: [journals.
permissions@oup.com](mailto:journals.permissions@oup.com).

DOI 10.1093/ajhp/zxz255

serve as an important tool to retain these critical members of the health-care team and elevate the professional standing of pharmacists by enabling them to better achieve their role as healthcare providers.⁴ For health systems, a reliable supply of high-quality technicians is imperative in providing optimal patient care.⁵ This article describes how an academic health system used digital content delivery to enhance its technician training program.

Background

Duke University Health System (DUHS), based in Durham, North Carolina, has pharmacy technicians who work in various departments of pharmacy of member institutions at multiple hospitals, clinics, and ambulatory surgical centers, as well as retail and specialty pharmacies. The system employs 269 pharmacists and 246 pharmacy technicians. In order to meet current pharmacy technician needs as well as projected future demands, DUHS launched the Pharmacy Technology Training Program (DUHS-PTTP) within the department of pharmacy at Duke University Hospital in April 2018. The DUHS-PTTP aligns with recommendations from the 2017 Pharmacy Technician Stakeholder Consensus Conference, where there was a consensus among an advisory committee representing all major branches of pharmacy that pharmacy technician education should be accredited and guided through national standards.⁶ From the outset, the program was designed to meet accreditation standards jointly issued by the American Society of Health-System Pharmacists (ASHP) and the Accreditation Council for Pharmacy Education (ACPE). The intent of the training program is to produce graduates well equipped and eligible for certification by the Pharmacy Technician Certification Board (PTCB). The program goals are as follows:

- To recruit candidates that will positively represent the program and excel academically

KEY POINTS

- Creation of health system-based pharmacy technician training programs can provide systems with a source of well-trained technicians to support the strategic plan of the organization.
- Through partnership with a digital content provider, programs can accelerate the launch of a program, offer flexibility to students in the completion of content, and digitize required documentation.
- Health-system pharmacy departments have a demonstrated capacity to integrate training and learners into the practice environment; application of this competency to pharmacy technician training is a worthwhile investment.

- To prepare students for employment with DUHS
- To develop a consistent source of well-trained technicians to meet the needs of the health system
- To provide a superior level of clinical training to technician students at an affordable price
- To prepare students to achieve PTCB certification

A key feature of the program is the system's ability to team pharmacists with high-performing pharmacy technicians who have specific expertise in the health system setting as instructors. The DUHS-PTTP additionally seeks to distinguish itself through digital delivery of the program's didactic content and portions of its simulation-based content. Finally, the program has the infrastructure to support student experiential rotations in 15 distinct ambulatory care and inpatient locations across the health system's campus.

Program design

Planning for the program began with development of a business plan to create a break-even program. The plan described the business product and the program customer base. The program focuses on candidates pursuing a career in pharmacy technology, with emphasis on the diversity of opportunities offered by a health system setting. The program targets existing non-health-system pharmacy technicians as well as individuals seeking to begin or transition into a career in pharmacy technology. The geographic focus is North Carolina, with a particular focus on Durham and neighboring counties.

The value proposition for the DUHS-PTTP is to offer a unique, health system-affiliated program to provide students with the qualifications to be successful candidates for employment. Through completion of an affordable, accredited program, candidates will be provided with the tools to become a certified pharmacy technician. Additionally, the institution will benefit from creating a strong pool of highly trained candidates who are well known to the program in order to provide for existing needs and projected future demand.

Additionally, the business plan outlines the projected costs for the program, marketing strategy, local and national competitive assessment, SWOT (strengths, weaknesses, opportunities, and threats) analysis, and business reasons for the program.

Partnering with a digital content provider

A distinguishing aspect of the program is the innovative use of technology to deliver didactic and a portion of simulation content. Vendor selection involved a request for proposal process whereby 3 vendors who had a product offering that had undergone accreditation review by ASHP and ACPE were contacted and made aware of the program's interest to partner. Demonstrations of the products were organized, and a preferred vendor was selected. Selection criteria included content quality, use of

active learning techniques, vendor experience in delivering digital content, ability to capture all required program documentation, and cost.

The contracting process involved a fee for initial setup and a license fee based on an agreed-upon number of students gaining access to the platform in a calendar year. By partnering with a vendor, our program was able to accelerate start-up time, minimize investment in content creation and maintenance, automate record keeping, and provide flexibility for program participants to complete didactic content outside of a traditional classroom setting.

Prescreening

Technician training program accreditation element 4.1 requires that applicants review and attest to several elements of the program.⁷ This includes review of the program handbook, admission policy, dismissal policy, information regarding state registration and national certification, job outlook and salary projections, and background check requirements.

Additionally, by partnering with a vendor the program was able to meet accreditation program element 4.1.c, which requires assessment of both mathematics and English competency, by incorporating these assessments into the program interview process. The digital platform created the infrastructure to document policy review and attestation and performance on preenrollment assessments. Lastly, by incorporating this preenrollment screening into the interview process, the program was able to meet the element 4.2 requirement of verification of student identification.

Candidate selection

The program is designed to support enrollment from candidates both internal and external to the institution. The program has partnered with local workforce development organizations to market and screen candidates in the community who are seeking employment or development and training opportunities. Workforce development organizations often have broad and

effective networks to disseminate program awareness and grant funding to support student tuition. Additionally, marketing the program internally within the organization has led to the referral of relatives or friends of existing employees within the institution. Future plans include extending awareness of the program to high school guidance counselors and community-based career fairs.

For several employees in the organization, the opportunity to develop into a pharmacy technician is seen as an advancement opportunity. Historically, candidates for pharmacy technician positions were required to either have prior pharmacy experience or to have completed a pharmacy technician training program. Specific interest has come from nursing assistants, unit coordinators, patient transporters, electrocardiography and surgical technicians, food service personnel, and environmental service employees. Creation of this program creates a pathway for internal applicants to begin a career as a pharmacy technician. The program is internally marketed through newsletters, digital display boards, tent cards in dining areas, and creation of a program website (Pharmacy.Duke.edu/TechTraining.)

Organizational support for internal applicants is available through tuition support for employees who enter into a 1-year retention agreement with the institution. Throughout the duration of the program, the employee's salary is dually funded through a work commitment of 20 hours within his or her home department and 20 hours of salary from a program budget. This type of institutional support allows employees to maintain full salary and benefits while completing the program. The program has been highlighted within the institution as an employee development initiative.

Didactic instruction

The didactic platform integrates narrated lectures, pacing questions, digital animations, and interactive assessments of knowledge application. Examples in the program include a digital pharmacy shelf allowing students to rotate and arrange stock bottles, a simulated

prescription and insurance entry system, and interactive graphics that students must manipulate accurately. Additionally, many didactic modules are supported by key point worksheets to facilitate note taking and key point recap documents for quick reference.

For several modules, including those addressing medication safety, drug information, and pharmacology, the program supplements the material by providing an in-person content expert lecture by a pharmacist or pharmacy technician who routinely works in those specialty areas. The lectures provide student exposure to additional individuals in the organization; illustration of institution-specific implementation of concepts, with demonstration in a live environment; and the opportunity for students to ask questions or raise points for clarification. While the majority of content (160 hours) is vendor created, 6 hours of institution-specific content is delivered.

The program is paced to require completion of 40 hours of content in a 7-day period; this allows students to complete most didactic content when it is convenient for them while maintaining pace and milestones to keep them on track with the program targets.

Simulation instruction

The simulation component of the program also blends remote and onsite simulations. A design principle of the program was to critically evaluate the simulation activities and only require onsite attendance for exercises from which trainees derive benefit from a physical presence onsite. Of the program's 92.25 simulation hours, 70 occur in person. Examples of simulations that are performed remotely include counseling a patient who is hard of hearing, leaving a HIPAA (Health Insurance Portability and Accountability Act)-compliant voice mail, and locating information on storage conditions in a package insert. For these remote simulations, students record the activity using a digital camera and submit videos for central observation, grading, and feedback. After the feedback is given, the

student is given access to a video presentation by a content expert; on review of the video, credit for completing the exercise is awarded.

Onsite simulations comprise activities through which both learners and instructors benefit from in-person interaction. Examples of this type of simulation include reconstitution of an oral solution and suspension, compounding a paste, laminar flow hood preparation, aseptic technique, manipulating ampules, and reconstituting lyophilized powders. During one of their final simulation exercises, students undergo gloved fingertip and media-fill testing to assess their technique and suitability to spend time in a cleanroom.

Experiential instruction

Experiential instruction occurs in 2 blocks of 180 hours over 4 and a half weeks. Students are first scheduled to rotate through ambulatory care pharmacy locations. During the course of this instruction, students gain practical experience in a variety of settings. Students rotate through a traditional retail pharmacy, a pediatric-specific retail pharmacy, a specialty pharmacy, an ambulatory surgery pharmacy, a patient assistance program, and, finally, through an outpatient oncology pharmacy. The rotations expose students to both traditional ambulatory care pharmacy operations and advanced roles for pharmacy technicians, including prior-authorization support, medication history collection, and supporting patients' enrollment in pharmaceutical assistance programs.

The second experiential block focuses on inpatient sites of service within the health system. During this rotation, students are exposed to central pharmacy operations and automation, sterile product compounding, drug distribution systems, perioperative pharmacy services, pediatric pharmacy services, inpatient medication reconciliation, and patient interviewing. This rotation provides robust exposure to both sterile and nonsterile compounding, interprofessional collaboration, and modern technology used in pharmacy practice.

Program experience and monitoring

Development of a health system-based pharmacy technician training program is an investment on behalf of the institution and pharmacy department in developing a well-trained pool of candidates to fulfill current and anticipated needs.⁴ In designing such a program, several factors must be considered in order to launch a program capable of achieving accreditation. A health system considering investing in this approach should consider the physical space required for training and simulation, the availability of experiential training sites within the department and whether external partnerships will be needed, the capacity of the department to support the training, and development of an advisory board to vet policies and a strategic plan for the program. For our program the optimal cohort size is 10 students, with 3 cohorts trained annually. With that cohort size, the roles of program director and experiential coordinator have been successfully incorporated into the roles of existing staff members.

By partnering with a vendor, a program can accelerate implementation by avoiding the time needed to create didactic content and assessments. Use of a digital platform provides a repository for required documentation, student attestations, evaluation forms, tracking of credit hours, and student transcripts. Students and program directors are able to simplify progress tracking through visualization of program completion status as well as detailed reports of performance on individual modules.

The program strategic plan should outline how the program will align with the organizational mission and the role the program will play in the community. The program should define long-term goals with specific program objectives. Strategies for achieving the defined goals and objectives should also be identified. A plan for program monitoring and outcome assessments should be defined. The strategic plan and outcomes of our program are reported to the program's advisory board. Examples of outcomes that are

indicators of program success are outlined in [Table 1](#). Monitoring should be designed to allow the program to integrate both quantitative and qualitative measures to assess progress over time. Plans for addressing program variance should be included as well. Lastly, the program should define a schedule for program evaluation and revision of the strategic plan.

The responsibility to coordinate the activities of the program resides with the program director. This responsibility includes ensuring that the design and conduct of the program are in accordance with the accreditation requirements. It is necessary that the program director is actively involved in the selection of applicant qualifications for acceptance as trainees. The authority and responsibilities of the director shall be commensurate with those of other allied health, technical, or vocational training programs offered by the organization.⁷

Future work

Health-system pharmacy departments have a demonstrated capacity to integrate training and learners into the practice environment through the training of residents and pharmacy students. Expansion of these efforts by investing in pharmacy technicians is a logical extension of this demonstrated core competency.

By producing well-trained pharmacy technicians who are eligible for certification with the PTCB through the ASHP/ACPE-accredited DUHS-PTTP, we expect to increase retention rates among pharmacy technicians who are hired at our institution following completion of the training program. Future research will be conducted to investigate the impact of completion of the training program on pharmacy technician retention rates at DUHS.

Conclusion

Implementation of a pharmacy technician training program is a logical extension of the demonstrated core training competency of health-system pharmacy departments.

Table 1. Outcomes Measured for Program Monitoring and Modification^a

Outcome	Monitoring Method	Plan for Addressing Positive or Negative Variance
Graduation rates	Collect and analyze graduation rates as recorded in learning management system portion of digital platform.	<ul style="list-style-type: none"> Identify instructional elements with which students are commonly having difficulty. Modify instructional elements to clarify and improve.
PTCE pass rates	Students submit PTCE scores to the program.	<ul style="list-style-type: none"> Modify program as required to ready students to take PTCE.
Job placement rates	Collect and analyze job placement data based on internal data.	<ul style="list-style-type: none"> Modify program as required to ready students for employment as pharmacy technicians.
Application rates	Collect and analyze rates of applications to enter the program and compare with projected demand for qualified technicians.	<ul style="list-style-type: none"> If application rates are too high, expand program to meet demand. If application rates are too low, conduct appropriate marketing and communications activities to increase applications.
Passing rates	Analyze results from quizzes and tests within the program to identify areas for instructional improvement.	<ul style="list-style-type: none"> Modify instructional material or test questions as necessary to support high passing rates and student success.
Student evaluations	Analyze student evaluation data collected online in all 3 areas of the program: didactic, simulation, and experiential.	<ul style="list-style-type: none"> Incorporate appropriate student feedback into revisions of the instructional materials while maintaining the requirements of the ASHP/ACPE guidelines. If evaluations are low, address issues raised through revisions to content. If evaluations are high, identify areas for improvement that do not jeopardize areas that received positive reviews.
Instructor evaluations	Analyze instructor evaluation data collected online during experiential portion of program.	<ul style="list-style-type: none"> If evaluations are low, address issues raised through revisions to program. If evaluations are high, identify areas for improvement that do not jeopardize areas that received positive reviews.
Pharmacist satisfaction rates	Collect and analyze satisfaction data through regular focus groups, feedback sessions, and postcompletion surveys.	<ul style="list-style-type: none"> If satisfaction rates are low, address issues raised through revisions to program or content. If evaluations are high, identify areas for improvement that do not jeopardize areas that received positive reviews.

^aPTCE = Pharmacy Technician Certification Exam, ACPE = Accreditation Council for Pharmacy Education.

Acknowledgments

The assistance of Janet A. Silvester, Pharm.D., M.B.A., in the review of the article manuscript is acknowledged.

Disclosures

The authors have declared no potential conflicts of interest.

References

- Schultz JM, Jeter CK, Keresztes JM et al. ASHP statement on the roles of pharmacy technicians. *Am J Health-Syst Pharm.* 2016; 73:928-30.
- Bureau of Labor Statistics. Occupational outlook handbook, healthcare, pharmacy technicians. www.bls.gov/ooh/healthcare/pharmacy-technicians.htm (accessed 2019 Feb 1).
- Bush PW. Caring for patients and frontline pharmacy staff. *Am J Health-Syst Pharm.* 2017; 74(16):1267-70.
- Traynor K. Pharmacy directors say technicians are valuable investment. *Am J Health-Syst Pharm.* 2017; 74(10):630-2.
- Manasse HR Jr, Menighan TE. Single standard for education, training, and certification of pharmacy technicians. *Am J Health-Syst Pharm.* 2010; 67(5):348-9.
- Zellmer WA, McAllister EB, Silvester JA, Vlasses PH. Toward uniform standards for pharmacy technicians: summary of the 2017 Pharmacy Technician Stakeholder Consensus Conference. *Am J Health-Syst Pharm.* 2017; 74(17):1321-32.
- American Society of Health-System Pharmacists. Accreditation standards for pharmacy technician education and training programs. www.ashp.org/Professional-Development/Technician-Program-Accreditation/Accreditation-Standards/Accreditation-Standards-for-Pharmacy-Technician-Education-and-Training-Programs (accessed 2019 Feb 1).