

ASHP long-range vision for the pharmacy workforce in hospitals and health systems

Ensuring medication use is optimal, safe, and effective in acute and ambulatory care settings



An audio interview that supplements the information in this article will be available at www.ajhpvoices.org.

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Purpose

Medication use for maintaining and restoring health is an interprofessional endeavor with the patient as the central focus and pharmacy personnel in positions of leadership and authority. The American Society of Health-System Pharmacists (ASHP) Vision for the Pharmacy Workforce in Hospitals and Health Systems seeks to prepare, engage, and leverage the pharmacy workforce to optimize health. With a 2030 outlook, this vision document positions the pharmacy workforce as the medication-use experts accountable for comprehensive medication management (CMM) and medication management services (MMS) in a constantly evolving healthcare environment.

Achieving the long-range vision

Pharmacists are accountable for optimizing medication use to improve

patient outcomes. By way of this document, ASHP expresses an aspirational and achievable vision for pharmacy personnel responsible and accountable for CMM and MMS in hospitals and health systems. Considering anticipated changes to the healthcare landscape, the vision will establish an intention to ensure a prepared and thriving pharmacy workforce through education, training, and professional development. ASHP will focus future resources, initiatives, and advocacy efforts in the areas consistent with this vision.

Introduction

Pharmacists of the future will have strengths in complex decision-making (e.g., defining problems, assessing options, and implementing solutions) and relational (e.g., reliable, empathetic, influential) competencies. Navigating the constantly evolving healthcare landscape will require advanced clinical knowledge, business and financial acumen, information systems aptitude, high reliability, and efficiency capacity. Also required will be maintenance of the human dimension that is essential for creating and sustaining meaningful connections with patients, colleagues, and other stakeholders. This vision document attempts to raise awareness of all these requirements. It builds upon content provided in the 2007 publication “ASHP Long-Range Vision for the Pharmacy Work Force in Hospitals and Health Systems: Ensuring the Best Use of Medicines in Hospitals and Health Systems,” which informed decisions related to the pharmacy workforce for over 10 years.¹

This vision document also seeks to complement other resources developed to guide the pharmacy profession, particularly within hospitals and health systems. These resources include but are not limited to the ASHP Foundation Pharmacy Forecast,

the Joint Commission of Pharmacy Practitioners Future Vision of Pharmacy Practice, the ASHP Practice Advancement Initiative, and ASHP’s national surveys of pharmacy practice in hospital settings.²⁻⁴

The document:

- Affirms a constantly evolving and persistently complex healthcare delivery model that implores pharmacy practice to advance and align to meet patient care needs and marketplace forces;
- Expresses ASHP’s commitment to support and build workforce capacity in hospitals and health systems to meet the challenges and demands related to optimizing the use of medications;
- Provides a guide for ASHP’s strategic plan, policies, education, publications, resources, and other activities to support the development of pharmacists, student pharmacists, and pharmacy technicians for practice readiness essential to work in hospitals and health systems; and
- Informs advocacy efforts to influence and shape public policy decisions developed by policymakers, external standards groups, hospital and health-system administrators and directors, and healthcare educators to ensure that the pharmacy workforce is engaged, relevant, and utilized to its highest ability.

Drivers of change in hospitals and health systems

Changes to the healthcare system will shape and influence the direction of pharmacy practice and needs of the pharmacy workforce in hospitals and health systems. With a keen focus on the overall healthcare landscape, pharmacy leaders will demonstrate the value of

Vision at a Glance

The American Society of Health-System Pharmacists (ASHP) Vision for the Pharmacy Workforce in Hospitals and Health Systems seeks to prepare, engage, and leverage the pharmacy workforce to optimize patient health. With a 2030 outlook, this vision positions the pharmacy workforce as the medication-use experts accountable for medication management services in a constantly evolving healthcare environment.

Vision for Pharmacists

Pharmacy Education	Residency Training	Certifications	Credentialing & Privileging	Ongoing Professional Development	Leadership
<ul style="list-style-type: none"> Pharmacy education will evolve to prepare graduates for future practice by individualized learning tracks, engagement in active learning models, dual degrees, and interprofessional activities. Certificate programs will play an important role in providing focused education and training to pharmacists, student pharmacists, and pharmacy technicians to enhance and demonstrate specific skill sets. 	<ul style="list-style-type: none"> Residency training will evolve to include more education around leadership, resiliency, interprofessional care delivery, population health, technology and data expertise, and soft skills. Residents will extend patient care and experiential education efforts in hospitals and health systems through the use of the layered learning practice model. 	<ul style="list-style-type: none"> Minimum credentials for new practitioners will expand to include board certification, specialized certifications, or PGY1 and/or PGY2 residency training along with state licensure. New board certification and professional certificate programs will adapt to the evolution of the profession of pharmacy in its entirety. 	<ul style="list-style-type: none"> The role of credentialing and privileging will gradually evolve as pharmacists continue to expand their roles and scope of practice to include more direct patient care, leading to greater recognition by the public and hospital and health system leaders. Formal credentialing and privileging of pharmacists will become an organizational requirement for hospitals and health systems and a requirement in Medicare Conditions of Participation. 	<ul style="list-style-type: none"> Professional development will be focused on developing application-based skills, credentialing and privileging, obtaining board certification and professional certificates, and engaging with ASHP. Pharmacists will continue to retool and reinvent themselves to stay relevant with advances in therapeutics and technology through continuing professional development. 	<ul style="list-style-type: none"> Pharmacy leadership will adapt to changes in healthcare delivery and financing by focusing on demonstration of value, stronger matrixed relationships, data-driven decisions, succession planning, and management of the multigenerational workforce. Pharmacy leaders gain visibility and credibility as leaders among other executive leaders in managing medication expenditures and utilization.

Vision for Pharmacy Technicians

Pharmacy Technician Roles	Pharmacy Technician Education	Pharmacy Technician Certification
<ul style="list-style-type: none"> Pharmacy technicians, from a standardized foundation of education and training, will expand into advanced roles, clinical roles, and quality improvement roles. New credentials will allow pharmacy technicians to interact with the public to a higher degree and complement the evolution of pharmacist roles. 	<ul style="list-style-type: none"> Minimum credentials for entry-level pharmacy technicians will expand to include a 2-year degree, ASHP/Accreditation Council for Pharmacy Education-accredited technician training, Pharmacy Technician Certification Board certification, and state licensure. 	<ul style="list-style-type: none"> For advanced-level pharmacy technicians, minimum credentials will also include advanced certification in an area of specialty based on practice setting and professional certificates pertaining to area of specialty.

Vision for Contributory Pharmacy Staff

Vision for Well-being and Resilience	Vision for a Diverse and Inclusive Work Environment
<ul style="list-style-type: none"> Pharmacy staff will support individual efforts to develop and demonstrate coping skills and create systems to address risk factors known to cause burnout in healthcare, such as excessive workload, lack of autonomy, lack of reward, lack of community, and job-individual incongruence. 	<ul style="list-style-type: none"> Pharmacy departments in hospitals and health systems will embrace and rely on differing demographics in the pharmacy workforce, striving to achieve equity and diversity in all clinical, technical, and leadership roles.

CMM and MMS as leverage to influence decisions related to the strategic direction of their institutions. Leadership that is visionary, strategic, resilient, and relational will be essential for hospital and health-system pharmacy in times of change, both anticipated and unforeseen.

Pharmacy department goals will continue to align with the goals of the institution and the patients they serve while existing in and adapting to ambiguity, chaos, and increasing rates of healthcare changes. The foundational functions that the pharmacy workforce in hospitals and health systems will continue to provide are consistent with those listed in the previous long-range vision report (Table 1).¹ Flexible and innovative pharmacy departments, prepared to embrace roles and responsibilities that do not yet exist and may be beyond the scope of medication distribution, will be most effective.

Innovations in supply chain synergies, pharmacy shared services, specialty pharmacy, stewardship over medication therapies, specialization in clinical pharmacy, collaborative practice, and reliance on technicians will spread beyond early adopters and become standards of practice in hospitals and health systems. Strategies and the

pace in which pharmacy practice advances will depend on institutional size and access to resources. Combining the skill set of pharmacy technicians with the potential of technology and automation will expedite the medication preparation and dispensing process, further enabling the pharmacist to be directly engaged in medication-use decisions in hospitals and health systems. Medications may not be dispensed or delivered at the same location as where care is provided; however, ensuring a safe and secure medication supply chain and distribution system will remain under the authority of pharmacy departments.

Anticipated domains of change. This section outlines some anticipated domains of change that will impact healthcare in hospitals and health systems and, therefore, the opportunities for the future pharmacy workforce. The following topics are recognized as broad yet interconnected and dynamic forces behind perpetual change in healthcare. They are categorized as trends, risks, and opportunities and will be discussed briefly; however, each domain deserves consideration and understanding by leaders.

Trends. Important drivers of change will include the following trends:

- Patient-centered care—The U.S. National Quality Strategy emphasizes patient-centered care as a priority and seeks to “ensure that each person and family is engaged as partners” in care decisions.⁵ Patients will increasingly prioritize personalization of care as a healthcare expectation, and patient engagement will be a dominant focus in healthcare delivery.⁶
- Social determinants of health (SDH)—Globally, there will be a shift from improving healthcare to achievement of health and from prioritizing hospital and health-system care delivery to placing more emphasis on care for the community.⁷ SDH influences health outcomes to a greater extent than medical care.⁸⁻¹⁰ In light of this influence, hospitals and health systems will seek to better understand the contexts of a patient’s SDH and integrate SDH considerations into patient care decisions.¹¹
- The continuous care model—Patient care delivery models are shifting from episodic to longitudinal. Continuous care models, staffed by interprofessional care teams, enabled by interoperable health information systems, and reimbursed by health-care payers reduce care fragmentation

Table 1. Pharmacy Functions In Hospitals and Health Systems Expected to Continue

- Leading the interprofessional and collaborative development of medication-use policies and procedures within the setting, including pharmacy and therapeutics committee policies and therapeutic protocols;
- Reviewing patients’ medication orders for safety and effectiveness;
- Collaboratively managing medication therapy for individual patients;
- Educating patients and caregivers about medications and their use;
- Leading continuous improvements in the quality of medication-use processes;
- Acquiring quality medication products from trusted supply sources;
- Preparing medications in the doses and dosage forms needed;
- Distributing medications to inpatients and outpatients;
- Integrating the work of staff in clinical and other functions to ensure coordinated attention to safe, effective, and appropriate care;
- Functioning as a gatekeeper with respect to the quality of medication information available to caregivers throughout the setting as a means to support relevant and timely evidence-based care;
- Influencing medication administration policies and procedures and the use of related devices;
- Conducting quality reviews of medication utilization in the hospital or health system’s population of patients; and
- Leading and influencing decisions about medication-related informatics, other technology (including medication administration devices), medication administration, and automated medication-use processes.

and manage the health of patients between hospitals, rehabilitation centers, nursing facilities, ambulatory care clinics, and community settings.

- Technology and information systems—Technology advancements for use by hospitals and health systems will support operational and clinical improvements. The merging of talent and technology will support logistics and operations, accelerate telehealth care delivery, reinvent the infrastructure for health information exchange, and enable clinical decision support (CDS) and learning healthcare systems.¹²

Risks. Important risks include the following:

- Marketplace and organizational dynamism—Horizontal and vertical integration in the healthcare market will enable organizations to increase economies of scale and scope, standardization of processes, and coordination of services delivered, thereby increasing market share and strengthening pursuits to invest in supply chains, capital, technology, and therapies.¹³ Undertaken in an effort to lower costs over time, mergers and acquisitions introduce risks such as fragmenting of care delivery, organizational culture, and the medication distribution system, requiring careful alignment to achieve success.
- Health policy and regulatory complexity—The drive to improve patient care quality and safety has resulted in myriad policy, reimbursement, accreditation, and regulatory demands on hospitals and health systems. This complexity is expected to continue and challenge innovation and efficiency.¹⁴
- Finance and cost decisions—U.S. healthcare spending is projected to grow faster than our economy, reaching 25% of the gross domestic product by 2037.¹⁵ Expensive and complex emerging technologies will require difficult cost-of-care decisions. Added to these factors are expenditures and utilization increases associated with an aging population and lifestyle diseases

that become public health issues, such as diabetes and the current opioid crisis. Pharmacy departments will be forced to cope with increased budget pressures and financial stress due to increases in medication costs and medication supply fragmentation.¹⁶

Opportunities. Important opportunities will include the following:

- Machine learning and artificial intelligence (AI)—Combined with CDS, machine learning and AI will allow pharmacists and other clinicians in hospitals and health systems to focus less on retrospective data to guide decisions about patient care and more on prospective planning and personalized care for patients.² The field of AI offers promise in achieving care delivery efficiencies, risk mitigation, and cost savings.^{17,18}
- Clinical and therapeutic technology innovations—Advances in diagnosis and treatment support the management and curing of disease. Clinical and therapeutic technological innovation creates an opportunity for pharmacist expertise in addressing cost-effectiveness and ethical considerations prior to use in patients.^{19,20}
- Precision medicine and pharmacogenomics—Personalized medicine and reliance on pharmacogenomics for tailoring medication-use decisions and targeting therapies promise significant improvement in patient care delivery and outcomes.²¹⁻²³ Infrastructure to support optimal use and application in hospitals and health systems will be required and offers enormous potential for pharmacist involvement (e.g., product procurement, test interpretation, patient identification, therapeutic decisions, reimbursement considerations, ordering, and documentation).²⁴⁻²⁶
- Professional scope of practice transformation—Highly matrixed organizations demand collaboration. The totally self-sufficient clinician no longer exists; interprofessional

collaborative practice will continue to expand.^{27,28}

These are just a few trends, risks, and opportunities expected to impact hospitals and health systems by 2030. [Table 2](#) lists additional trends and opportunities identified by ASHP members and expected to influence pharmacy innovation. With astute awareness and strategic focus, the pharmacy workforce will be positioned to minimize risks and maximize opportunities to optimize patient health and secure hospital and health system viability.

Ensuring an engaged and empowered workforce

An engaged and empowered workforce is key to a high-performing workforce.²⁹ Strategic decisions related to ensuring an engaged, empowered, prepared, and sustainable workforce must address topics related to education, professional development, capacity building, performance, and professional culture. This section considers those topics for pharmacists, pharmacy technicians, and other pharmacy department contributory staff in hospitals and health systems. It ends with considerations for achieving a resilient workforce and an equitable organizational culture.

Vision for pharmacists

- *Pharmacy education will evolve to prepare graduates for future practice by individualized learning tracks, engagement in active learning models, dual degrees, and interprofessional activities.*
- *Certificate programs will play an important role in providing focused education and training to pharmacists, student pharmacists, and pharmacy technicians to enhance and demonstrate specific skill sets.*
- *Residency training will evolve to include more education around leadership, resiliency,*

Table 2. Trends and opportunities expected to impact the pharmacy workforce by 2030

- Advances in technology and artificial intelligence will fundamentally change traditional roles of pharmacists and pharmacy technicians, innovation will require new and different expertise, and traditional regulatory constructs will be challenged.
- Pharmacy personnel will integrate closed-loop analytics (quality, data management, outcomes, predictive analytics, and compliance), cost-effectiveness, and ethics into medication management decisions.
- Pharmacists will move into the virtual space and be more present in the day-to-day lives of patients through use and development of technology, including on-demand consultations and tele-rounding.
- Pharmacists will lead and influence decisions about medication-related informatics, adoption of novel technologies (e.g., clinical decision support tools), medication administration, and automated medication-use processes.
- Artificial intelligence and clinical decision support, with the design support of pharmacists, will allow pharmacists and other clinicians to focus less on retrospective data to guide decisions about patient care and more on prospective planning and personalized care for patients.
- Pharmacists will be the primary drivers of their destiny by demonstrating their value, securing compensation, and advocating for expanded roles in the pharmacy workforce (both within the health system and externally through payer negotiations).
- Pharmacy leaders will engage in advocacy and relationship building with appropriate regulatory bodies to successfully navigate the evolving regulatory reform.
- Strategic communication is critical to improve provider confidence and acceptance of pharmacists in direct patient care roles, to improve payer recognition, and to influence medication-related legislative and regulatory efforts.
- Pharmacists' patient care responsibilities will expand to direct, coordinated, and comprehensive care roles related to medication therapy, including diagnostics, prescribing authority, and well visits.
- Efforts to obtain a position of influence as an advanced practitioner, accountable for medication management services, processes, and outcomes (i.e., clinical, financial, safety outcomes), and complementarily positioned to be a necessary and integral part of the interprofessional direct patient care team will be realized.

interprofessional care delivery, population health, technology and data expertise, and soft skills.

- Residents will extend patient care and experiential education efforts in hospitals and health systems through the use of the layered learning practice model.
- Minimum credentials for new practitioners will expand to include board certification, specialized certificates or certifications, and postgraduate year 1 (PGY1) and/or postgraduate year 2 (PGY2) residency training along with state licensure.
- New board certification and professional certificate programs will adapt to the evolution of the profession of pharmacy in its entirety.

- The role of credentialing and privileging will gradually evolve as pharmacists continue to expand their roles and scope of practice to include more direct patient care, leading to greater recognition by the public and hospital and health-system leaders.
- Formal credentialing and privileging of pharmacists will become an organizational requirement for hospitals and health systems and a requirement in Medicare Conditions of Participation.
- Professional development will be focused on developing application-based skills, credentialing and privileging, obtaining board certification and professional certificates, and engaging with ASHP.
- Pharmacists will continue to retool and reinvent themselves

to stay relevant with advances in therapeutics and technology through continuing professional development.

- Pharmacy leadership will adapt to changes in healthcare delivery and financing by focusing on demonstration of value, stronger matrixed relationships, data-driven decisions, succession planning, and management of the multigenerational workforce.
- Pharmacy leaders gain visibility and credibility as leaders among other executive leaders in managing medication expenditures and utilization.

Pharmacy education. Increases in demand for and specialization of MMS in hospitals and health systems will be addressed in pharmacy education.³⁰ Pharmacy education will evolve to include both informative and transformative instruction, preparing graduates for future practice and to serve as

change agents for the profession.³¹ To achieve this end and align with anticipated changes in healthcare, the profile of student pharmacist applicants will change, placing increased emphasis on strategic thinking, problem solving, critical reasoning, executive decision-making, information retrieval skills, professionalism, and emotional intelligence.

Curricula content will continue to prepare students to be experts in medications and therapeutics. Students will exhibit essential skills in analysis and evaluation of new therapies and advances in technology. Direct patient care skills in assessment and monitoring will be engrained. In addition, curricula content will have greater emphasis on informatics and use of mega data analytics. Pharmacy students will be experts in merging their clinical skills with optimization of technology.

As pharmacy students and colleges of pharmacy seek to differentiate themselves, opportunities to specialize and gain advanced knowledge through advanced training will become mainstream. For example, in addition to the core doctor of pharmacy degree curriculum, colleges of pharmacy will provide certificate and dual-degree programs. Examples of potential certificates include informatics, data science and healthcare analytics, virtual care, rural and home health, operational management, human factors design, entrepreneurship, stewardship leadership, and precision medicine. Dual-degree emphases will include public health, population health, law and public policy, health and business administration, leadership, social sciences research, industrial engineering, clinical research, medicine, and pharmacoeconomics.

Pharmacy curricula will continue to incorporate interprofessional education (IPE) into didactic and experiential training to prepare learners for future team-based care delivery. Accrediting and standard-setting bodies for health professional education and clinical learning environments will continue to require IPE, and the financing and

logistics for delivering IPE will ensure that it becomes commonplace.^{32,33-35} Importantly, integration with IPE will instill and reinforce pharmacists' value with other disciplines.

Pharmacy education will be jointly developed and delivered by faculty and practice communities, as research shows that adult learners acquire knowledge and skills best in experiential settings.³⁶⁻³⁹ Add to this argument the mounting evidence in support of the layered learning practice model (LLPM) in improving learning, patient outcomes, and extending pharmacy services.⁴⁰⁻⁴³ As they embark on their careers, residents will transition into preceptor roles, further cementing and creating permanence of experiential education and the LLPM by incorporating learners as pharmacist extenders. As this occurs, technology availability will disrupt and destructure the traditional didactic experience and learning will be offered at alternative sites, creating more opportunities for pharmacy education to be jointly conducted by colleges of pharmacy and practice communities.

Residency training. Completion of an ASHP-accredited PGY1 or PGY1 and PGY2 residency will be a requirement for all recent pharmacy school graduates seeking employment in hospitals and health systems. Competency areas addressed during PGY1 residencies will continue to build upon the generalist level of education received in undergraduate curriculums and aim to ensure practice readiness to provide direct patient care in the hospital and health-system setting.⁴⁴ Most PGY2 residencies focus on clinical topics in specialized areas of practice, typically granting a higher likelihood of securing a clinical specialist position in a graduate's preferred specialty area.^{45,46} In addition, nontraditional residencies, such as those with an emphasis on pharmacy operation and administration, supply chains and distribution, informatics, public policy, managed care, health services research, population health, and management, will evolve.

Growth in both PGY1 and PGY2 residencies will be necessary to meet pharmacy graduate demand and employer needs. Expansion of residency programs and increased residency matching will allow for further incorporation of the LLPM to resemble that of the medical training model and transform pharmacy workforce efficiency, capacity, and impact. This evolution will be necessary to accommodate the anticipated increase in residents and residency offerings and overall pharmacy service expansion. Preceptor responsibilities, ratios, and planning are likely to be redesigned to adapt.⁴⁷ Residency recruiting will reflect the patient population being served. Recruiting for retention after residency completion will be prioritized to meet patient access needs in underserved and/or impoverished communities.

Residency training will build upon soft skill development initiated in undergraduate curriculums in areas such as emotional intelligence, problem solving and executive decision-making, negotiation and communication, professionalism, and leadership. In addition, residents will be adept at interprofessional care delivery, population health, consideration of SDH, and use of technology and data. Within residency programs, there will be increased availability of specialization and opportunities to pursue advanced degrees, certificates, and certifications. As care shifts more from acute and episodic to preventative and continuous, there will be more residency programs offered in non-acute care environments such as ambulatory care practices, rehabilitation centers, long-term care facilities, and community settings.

Certifications and credentials. Statistics show that the average person will change jobs 5–7 times during his or her working life and that approximately 30% of the labor workforce changes jobs every 12 months.⁴⁸ This transience requires a commitment and capacity to reinvent oneself.⁴⁹ Board certification and professional certificate programs will adapt to the evolution of pharmacy

in hospitals and health systems and provide a mechanism for practitioner reinvention.

Obtaining and maintaining specialty credentials will improve the quality of the pharmacist workforce.⁵⁰ With rigor and integrity, the Board of Pharmacy Specialties (BPS) will continue to serve as the pharmacy professions' board certification body. Pharmacists in hospitals and health systems will be expected to be board certified in the area(s) in which they practice. Board certification will ensure competence to employers and demonstrate expertise to other healthcare providers and administrators, regulatory bodies, and patients.

Board certification and the achievement of various certificates are not the same (see definitions). In addition to board certification, certificate programs will play an important role in providing focused education and training to pharmacists and other pharmacy personnel to increase knowledge and competency in specific topics or skill sets. Certificates can be used as a means to close an educational gap not covered in education or residency training, hone an area of expertise, or maintain a credential. Many of these certificate programs will confer interprofessional

certificates in the management of certain disease states (e.g., diabetes or pain management), specific patient populations (e.g., geriatric medicine patients), or task areas (e.g., healthcare quality or patient safety).

As the healthcare landscape evolves and pharmacists' learning needs adjust accordingly, new board certifications and certificate programs will be developed. ASHP emphasizes the need for board certification and certificate programs that are robust in nature, assessment based, and developed with expertise in content and instructional design.

In summary, pharmacist education and training is a crucial component of an engaged and thriving hospital and health-system pharmacy workforce. The following are achievements and credentials that all new pharmacist practitioners will be expected to achieve in order to practice in a hospital or health system (Figure 1):

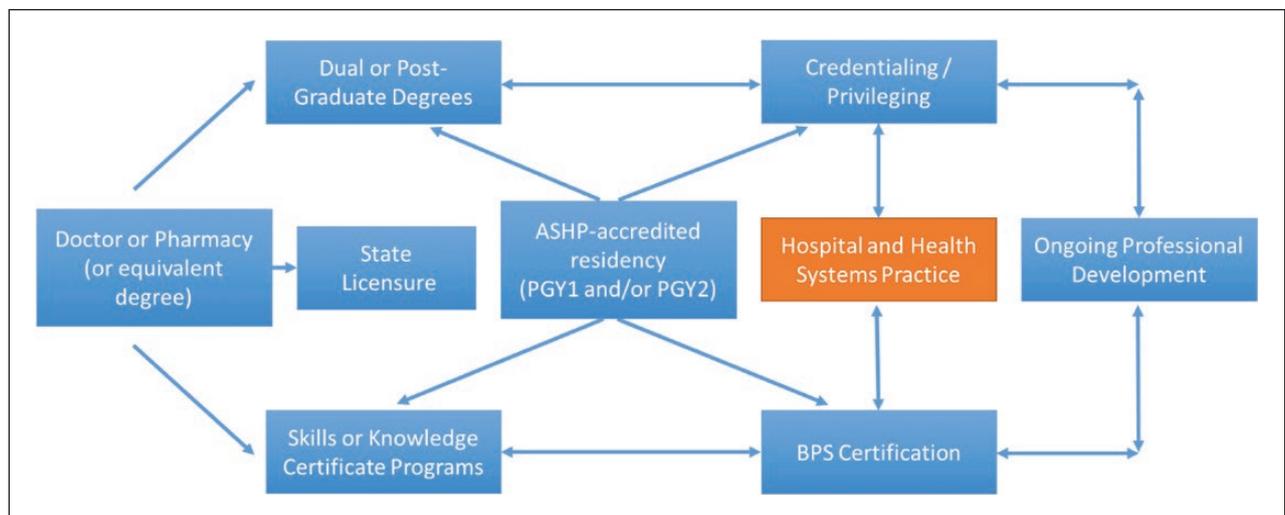
- Doctor of pharmacy or other undergraduate degree in pharmacy, conferred by a college of pharmacy accredited by the Accreditation Council for Pharmacy Education (ACPE);

- State licensure to practice pharmacy;
- Completion of an ASHP-accredited pharmacy residency program;
- Graduate degrees where specialized knowledge is required;
- Achieving and sustaining board certification by BPS where board certification exists for the topic area of the pharmacist's work; and
- Completion of skills or knowledge certificates applicable to the pharmacist's work.

Credentialing and privileging.

Formal credentialing and privileging of pharmacists will become an organizational requirement for hospitals and health systems and a requirement in Medicare Conditions of Participation (CoP). Credentialing involves evaluating the provider's licensure, current competency, education, training, and ability in order to determine the practitioner's qualifications to perform the clinical activities he or she seeks to provide.⁵¹ Hospitals and health systems will continue to be required to meet CoP credentialing criteria for character, competence, training, experience, and judgment. Some hospitals and health systems will create additional, more rigid expectations.⁵² In addition to credentialing

Figure 1. Entry-level and ongoing education and credentials required for pharmacists seeking employment in hospitals and health systems. PGY1 = postgraduate year 1, PGY2 = postgraduate year 2, BPS = Board of Pharmacy Specialties.



pharmacy personnel as they begin employment, hospitals and health systems will be responsible for ongoing verification and appraisals of pharmacy personnel as their employment assignments continue. Clinical privileging of pharmacists, granted by hospitals, health systems, and payers and within state scope of practice laws and regulations, will also increase.

Ongoing competency and continuing professional development. Continuing pharmacy education (CPE) provides a mechanism for disseminating new knowledge to pharmacists and meeting employer and licensing requirements. Completion of traditional CPE activities will continue to be an essential approach to ensuring professional competency in hospitals and health systems.

Continuing professional development (CPD) provides a framework for lifelong learning; it will continue to be a model to maintain, demonstrate, and document professional competency.⁵³ Hospital and health-system pharmacy departments will establish CPD requirements for pharmacy staff to plan for and sustain professional development and advancement.⁵⁴ The CPD requirements parallel those of a learning health system, defined in a 2007 report by the Institute of Medicine (since renamed the National Academy of Medicine) as a system in which “science, informatics, incentives, and culture are aligned for continuous improvement and innovation, with best practices seamlessly embedded in the delivery process and new knowledge captured as an integral by-product of the delivery experience.”⁵⁵ Leveraging electronic health record functionality and access to data, hospitals and health systems will systematically gather and create evidence to inform CDS and facilitate adoption of best practices while creating instant and relevant learning opportunities, thereby cultivating a learning health system.⁵⁵

Leadership. All pharmacists in hospitals and health systems are obligated to serve as leaders in the safe and effective use of medications.⁵⁶ Effective leadership skills will be critical for any pharmacist position, regardless of a formal leadership or management role.⁷⁴ Pharmacists will be recognized as leaders by the patients they serve, their pharmacy and interprofessional colleagues, and administrators.⁵⁷ Pharmacy departments in hospitals and health systems will continue to be led by pharmacist executives who empower managers and clinical leaders to excel in their assigned roles and responsibilities. Some pharmacist leaders also will be positioned to lead in executive roles outside of the pharmacy department. Those with formal leadership and management roles will work to close gaps between the vision for their department and its current performance.⁵⁸ Pharmacists leading at the hospital and health system executive and department levels will prepare and engage staff to influence medication-related decisions across the continuum of care and the healthcare enterprise. Numerous publications and resources outline the necessary traits and responsibilities of the pharmacy executive to provide leadership over all aspects of the medication management system.⁵⁹⁻⁶² Pharmacy executives will be expected to demonstrate the value of MMS and may have management responsibility for nonpharmacy service lines and business units in hospitals and health systems.²

Development of leadership skills for frontline leaders and executives will continue to be multimodal. From formal education to real-world experience, development and refinement of such skills will facilitate succession planning and prevent pharmacy leadership deficits in hospital and health-system pharmacy departments. Leaders will follow the same educational and training pathways outlined

earlier and supplement them with formal and informal leadership skill development opportunities.

Vision for pharmacy technicians

- *Pharmacy technicians, from a standardized foundation of education and training, will expand into advanced roles, clinical roles, and quality improvement roles.*
- *Minimum credentials for entry-level pharmacy technicians will expand to include a 2-year degree, ASHP/ACPE-accredited technician training, PTCB certification, and state licensure. These new credentials will allow pharmacy technicians to interact with the public to a higher degree and complement the evolution of pharmacist roles.*
- *For advanced-level pharmacy technicians, minimum credentials will also include advanced certification in an area of specialty based on practice setting and professional certificates pertaining to area of specialty.*

Technician roles. Pharmacy technicians will contribute to the success of hospitals and health systems by assisting pharmacists in efforts to improve patient safety and patient outcomes with medication use, create efficiencies in pharmacy department workflows, and enable overall pharmacy practice advancement. Pharmacy technicians, from a standardized foundation of education and training, will have advanced operational, clinical support, and quality improvement roles:

- Operational roles will include functions related to technology management, inventory control, distribution and logistics management, sterile

and nonsterile compounding, and dispensing.

- Clinical support roles will be patient-focused, including involvement in medication histories, delivery and administration, immunization services, medication stewardship support, patient access to medication, patient counseling, home visits and delivery, and research support.
- Quality improvement roles will include optimizing prior authorization and insurance issues, real-time productivity management, revenue cycle integrity, patient and medication safety projects, emergency preparedness and response, and performance measurement benchmarking.

Supervisory pharmacy technicians responsible for medication preparation and distribution will be licensed and have formal certificate (or higher) training in quality assurance and will routinely engage in quality assessments and system modifications with respect to the safety of those processes.

Nonclinical decision-making activities of pharmacy technicians will continue to evolve, including resolution of missing medication doses, use of automation and technology, automated dispensing cabinet barcode-scanned

fills, purchasing and procurement, distribution, and inventory management. Pharmacy technicians will be accountable for the majority of tasks regarding medication preparation and distribution, without direct or immediate supervision by pharmacists. Independent product validation and verification will continue to expand through barcode (or similar technology) checking and tech-check-tech processes.

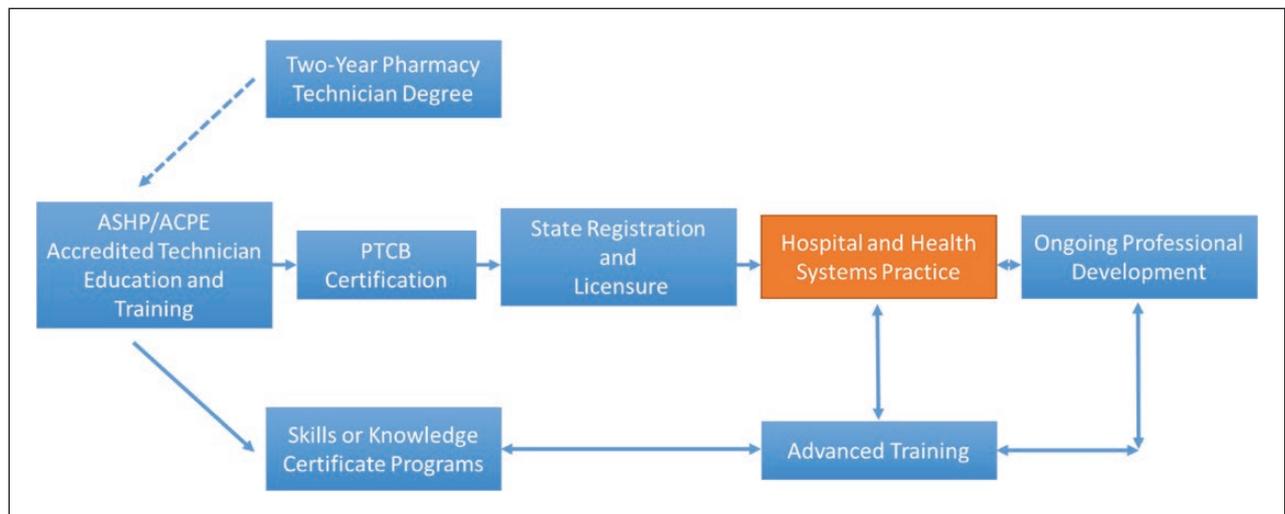
Advancement and maturation of all these activities have been incremental to date due to variation among state laws and regulations, lack of public awareness of the technician role, and disparate expectations and responsibilities among different pharmacy practice locations.⁶³ Achieving profession-wide common ground in defining pharmacy technicians, agreeing on pharmacy technician education, identifying entry-level knowledge, skills, and abilities, requiring pharmacy technician certification, minimizing variability in state laws and rules, and advancing pharmacy technician career pathways will eventually gain uniform acceptance and agreement.⁶⁴ Until that occurs, however, it is likely that regulatory or organizational allowances for pharmacy technician utilization in those settings will expand first in hospital

and health-system settings. To enable significant gains in formalization of pharmacy technician role delineation, ASHP will continue to work toward consensus within the profession.^{39,64,65} Profession-wide adoption of uniform state requirements for registration and certification of pharmacy technicians will be the foremost goal. As the pharmacy technician profile shifts and creates supply and demand challenges in the labor market, there may be differing requirements depending on practice sector (i.e., community, long-term care, or hospital and health system) and tiered requirements for entry-level and advanced roles. In that evolution, entry requirements for pharmacy technicians seeking employment in hospitals and health systems will include (Figure 2):

- Completion of ASHP/ACPE-accredited technician education and training, with or without a 2-year degree;
- Pharmacy Technician Certification Board (PTCB) certification; and
- State registration and state licensure.

Some advanced work roles will require completion of a 2-year

Figure 2. Entry-level and ongoing education and credentials required for pharmacy technicians seeking employment in hospitals and health systems. ACPE = Accreditation Council for Pharmacy Education, PTCB = Pharmacy Technician Certification Board.



degree, PTCB certification, completion of requirements for conferral of the PTCB Advanced Certified Pharmacy Technician credential, and an appropriate certificate program whose focus will depend on work assignments, such as medication history taking, technician product verification, remote dispensing, basic and advanced compounding, hazardous medication handling, inventory management (including controlled substance diversion prevention), billing and reimbursement, handling of hazardous medications, informatics, medication safety, and systems improvement.⁶⁵

Technician education. Direct experience and pharmacy technician apprenticeship approaches will continue to be important in pharmacy technician training. To elevate the knowledge base and skill set of pharmacy technicians and create consistent competency expectations in acute and ambulatory care settings, uniform education requirements eventually will be realized and accepted profession-wide. Standardizing pharmacy technician education and training requirements through accredited education programs mirrors the approach of other technical healthcare occupations such as laboratory technician, dental assistant, and physical therapy assistant. Training and education will have to ensure competencies needed for anticipated increases in responsibility as well as the development of interpersonal skills to foster trusted relationships with patients and interprofessional colleagues.

In collaboration with the Pharmacy Technician Accreditation Commission (PTAC), an effort between ASHP and ACPE to accredit pharmacy technician education programs and advance the pharmacy technician career path in hospitals and health systems is underway. Development of internal accredited pharmacy technician training programs and distance education programs will increase access to didactic and simulation course work, while experiential site offerings will develop greater capacity to absorb increased technician labor supply.

Technician certification. Similar to certification for pharmacists, certification for pharmacy technicians is a credential earned by demonstrating attainment of specific skills or knowledge. PTCB reports that certified pharmacy technicians tend to have higher earnings, more promotion opportunities, enhanced self-worth, improved job satisfaction, and increased knowledge.⁶⁶ In acute and ambulatory care settings, PTCB certification will be a requirement for promotion and advanced roles for pharmacy technicians in hospitals and health systems. Requiring successful completion of the PTCB Pharmacy Technician Certification Exam will foster growth in generalized knowledge and skills in the pharmacy technician staff, while specialty certifications in a particular area, such as sterile compounding, will begin to grow in offerings and completion.

Similar to CPE expectations for pharmacists, certified pharmacy technicians will continue to be expected to complete CPE activity hours within a routinely specified time interval. ASHP will continue to support pharmacy technician CPE that meets ACPE accreditation requirements that promote problem solving and critical thinking applicable to the safe and effective practice of pharmacy.⁶⁶ Pharmacy departments will promote access to accredited CPE programs for pharmacy technicians as a means to maintain ongoing competency, support professional development, and pursue opportunities for promotion.

Vision for contributory pharmacy staff

- *Contributory pharmacy staff will supplement pharmacy departments with expertise in finance, analytics, business management, quality assurance, informatics, prior authorization, and supply chain management.*

Within hospital and health-system pharmacy departments are staff that are essential to the responsibilities, operations, and objectives of the organization; however, they are not classified as a pharmacist or pharmacy technician. Contributory pharmacy staff will supplement pharmacy departments with expertise in finance, analytics, business management, quality assurance, informatics, prior authorization, and supply chain management. These staff members will be integrated into the activities of the department and be encouraged and enabled to function at the top of their education and expertise.

Vision for well-being and resilience

- *Pharmacy staff will support individual efforts to develop and demonstrate coping skills and create systems to address risk factors known to cause burnout in healthcare, such as excessive workload, lack of autonomy, lack of reward, lack of community, and job—individual incongruence.*

Patient safety and quality of care are compromised when the healthcare workforce is experiencing burnout.^{67,68} Well-being and resilience in the workforce promotes patient safety, patient-clinician relationships, and high-functioning care teams.⁶⁹ Evidence supports the well-being of care teams as a critical component of ensuring patient-centered care, optimal health of communities, and lower healthcare cost.⁷⁰ Healthcare well-being and resiliency will be acknowledged as a shared responsibility between individual pharmacy personnel and organizations. Interventions to improve and maintain it in hospitals and health systems will be aimed at supporting the individual and improving the system in which he or she works.^{69,71} The pharmacy workforce will be expected to

have resiliency in coping with ambiguity and uncertainty while operating in a work environment known to introduce unique stressors throughout education, training, and careers.^{2,71} Pharmacy staff in hospitals and health systems will support development and demonstration of coping skills and will create approaches to address risk factors known to cause burnout in health-care organizations, such as excessive workload, lack of autonomy, lack of reward, lack of community, and job-individual incongruence.⁷²

Vision for a diverse and inclusive work environment

- *Pharmacy departments in hospitals and health systems will embrace and rely on differing demographics in the pharmacy workforce, striving to achieve equity and diversity in all clinical, technical, and leadership roles.*

The healthcare workforce as a whole continues to grow at a steady rate, and roles are constantly changing and being created. Ensuring equity in hiring, training, and promoting talent in hospital and health-system pharmacy departments will help optimize patient health outcomes and strengthen the workforce. ASHP affirms this in policy stating that a diverse and inclusive workforce contributes to health equity and health outcomes.^{73,74} Just as healthcare providers and team members are obligated to mitigate biases in the delivery of patient care, so too must biases be mitigated in the culture of the workplace. Considerations in diversity include race and ethnicity, gender, gender identity, religious and cultural beliefs, and any other generational or experiential differences. Pharmacy departments in hospitals and health systems will embrace and rely on differing demographics in the pharmacy workforce, striving to achieve equity and diversity in all clinical, technical, and leadership roles. They will adopt zero tolerance policies for discrimination and biases to ensure an inclusive

environment and culture, which will improve the practice of respect across the care continuum and the pharmacy workforce.⁷⁵

Conflict among pharmacy personnel within hospitals and health systems and across the pharmacy profession as a whole compromises patient care and is divisive.⁷⁶ As the pharmacy workforce evolves and advances, it is essential to reinforce inter- and intraprofessional sensitivity and proactively address conflicts that may result from the diverse roles and contributions across the continuum of care, from acute care settings to community settings.⁷⁷ Different roles and practice settings may call for varying levels of education, certification, and specialization. These differences must be embraced and valued. By adopting and maintaining a patient-first mindset, inter- and intraprofessional collaboration can flourish.⁷⁸

Conclusion

Creating a vision for the pharmacy workforce in hospitals and health systems must account for the complexity of the healthcare landscape and anticipated changes to pharmacy practice. This document outlines some key influencers of change in healthcare and provides predictions envisioned for ensuring a prepared and engaged pharmacy workforce.

Glossary

- **Accreditation:** Process by which a private association, organization, or government agency, after initial and periodic evaluations, grants recognition to an organization, site, or program that has met certain established criteria.
- **Ambulatory care pharmacy practice:** Provision of integrated, accessible healthcare services, including telehealth, by pharmacists who are accountable for addressing medication needs, developing sustained partnerships with patients, and practicing in the context of family and community. This is provided through

direct patient care and medication management for ambulatory patients, creation and maintenance of long-term relationships, coordination of care, patient advocacy, wellness and health promotion, triage and referral, and patient education and self-management. The ambulatory care pharmacist may work in both an institutional and community-based clinic involved in direct care of a diverse patient population.

- **Certificate:** Document issued to an individual after the successful achievement of a predetermined level of performance in an educational or training program.⁷⁹
- **Certificate program:** Structured, systematic education and continuing education experience that is generally smaller in magnitude and shorter in duration than a degree program and that is designed to instill, expand, or enhance practice competencies through the systematic acquisition of specific knowledge, skills, attitudes, and performance behaviors.⁸⁰
- **Certification:** Voluntary process by which a nongovernmental agency or an association grants recognition to an individual who has met certain predetermined qualifications specified by that organization. This formal recognition is granted to designate to the public that the individual has attained the requisite level of knowledge, skill, and experience in a well-defined, often specialized, area of the total discipline. Certification usually requires initial assessment and periodic reassessments of the individual's knowledge, skills, and experience.
- **Comprehensive medication management:** the standard of care that ensures each patient's medications (whether they are prescription, non-prescription, alternative, traditional, vitamins, or nutritional supplements) are individually assessed to determine each medication is appropriate for the patient, effective for the medical condition, safe given the comorbidities and other medications being taken, and able to be taken by the patient as intended.⁸¹

- **Continuing professional development:** Self-directed, ongoing, systematic, and outcomes-focused approach to lifelong learning that is applied into practice.⁸²
- **Credential:** Documented evidence of qualifications. Pharmacist credentials include diplomas, licenses, certificates, and certifications. For pharmacy technicians, CPhT indicates certification by the Pharmacy Technician Certification Board. Credentials are reflected in a variety of abbreviations that pharmacists place after their names (e.g., Pharm.D. for “doctor of pharmacy,” an earned academic degree; RPh for “registered pharmacist,” which indicates state licensure; and acronyms such as BCNSP for “Board-Certified Nutrition Support Pharmacist,” which indicates that an individual has demonstrated advanced knowledge or skill in a specialized area of pharmacy).
- **Credentialing:** Process by which an organization or institution obtains, verifies, and assesses a pharmacist’s or pharmacy technician’s qualifications to provide patient care services.
- **Interprofessional collaborative practice:** Occurs when a number of health workers from different professional backgrounds work with patients, their families, caregivers, and communities to provide comprehensive service and deliver the highest practicable quality of care; accepted as an essential function of the care team.²⁷
- **Interprofessional education:** When members from 2 or more professions learn with, from, and about each other to enable effective collaboration and improve health outcomes.^{27,83}
- **Layered learning practice model:** A model of education in the clinical learning environment in which introductory and advanced experiential pharmacy students and residents are integrated into the care team.⁸⁴
- **Licensure:** The process by which an agency of government grants permission to an individual to engage in a

given occupation upon finding that the applicant has attained the minimal degree of competency necessary to ensure that the public health, safety, and welfare will be reasonably well protected.

- **Medication management services:** A spectrum of patient-centered, pharmacist-provided, collaborative services that focus on medication appropriateness, effectiveness, safety, and adherence with the goal of improving health outcomes.⁸⁵
- **Privileging:** The process used by healthcare organizations to grant to a specific practitioner the authorization to provide specific patient-care services.⁷⁹
- **Resilience:** The set of individual, organizational, and cultural skills, behaviors, and attitudes that contribute to personal physical, emotional, and social well-being, including the prevention of burnout. These can include self-care strategies, safety nets for crises, organizational support, peer support, financial management, life-needs support, and other forms of health promotion.⁸⁶
- **Social determinants of health:** Factors that contribute to a person’s current state of health that may be biological, socioeconomic, psychosocial, or behavioral.⁸⁷
- **Well-being:** An integrative concept that characterizes quality of life with respect to an individual’s health and work-related environmental, organizational, and psychosocial factors. It is the experience of positive perceptions and the presence of constructive conditions at work and in other areas of life that enables workers to thrive and achieve their full potential.^{88,89}
- **Workforce:** People engaged in a specific activity or enterprise.⁹⁰

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