

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

Executive Summary

The ASHP Vision for the Pharmacy Workforce in Hospitals and Health Systems expresses a vision for building the workforce capacity of pharmacy departments in hospitals and health systems to meet the growing challenges related to optimizing the use of medicines in those settings.

Challenges

The scientific knowledge about drugs and the professional knowledge about pharmacy service delivery expand continuously. Many patients in hospitals and health systems in the United States have serious, complex, and urgent health problems that require advanced diagnostic evaluations, intricate medical procedures, and aggressive care. Medication use in hospitals and health systems is a prominent therapy for virtually all patients, and it is inherently complex and dangerous.

Pharmacy Functions

The objective of the overall pharmacy function in hospitals and health systems is to support sound patient care through the safe, evidence-based, and cost-beneficial use of medicines. Hospitals and health systems—in part because of demands by the government and external quality bodies—will require that pharmacists and pharmacy technicians possess and maintain sound credentials attesting to their competence to handle the tasks assigned to them. The overall pharmacy function in hospitals and health systems includes:

- Reviewing individual patients' medication orders for safety and effectiveness and taking corrective action as indicated.
- Collaboratively managing medication therapy for individual patients.
- Educating patients and caregivers about medications and their use.
- Leading continuous improvements in the medication-use process.
- Leading the interdisciplinary and collaborative development of medication-use policies and procedures.
- Acquiring quality drug products from trusted supply sources.
- Preparing medications in the doses and dosage forms needed.
- Distribution of medications to inpatients and outpatients.
- Ensuring the availability of quality drug information.
- Influencing drug administration policies, procedures, and the use of related devices.

- Conducting quality reviews of medication utilization in the hospital's or health system's population of patients and seeking improvements where indicated.
- Leading and influencing decisions about medication-related informatics, other technology (including drug administration devices), and automated processes in medication use.

The most effective pharmacy departments coordinate and integrate these functions into a cohesive whole, bringing together a team of pharmacists, pharmacy technicians, and others that have differentiated roles in management, patient care, medication-use policy, quality improvement, informatics, and drug product preparation and distribution.

Vision for Teamwork. Overall medication-use processes (which include prescribing, order review, dispensing, administration, monitoring, and adjusting therapy based on patient response) will be carried out by interdisciplinary teams, and pharmacists will continue to be the only health professionals with the depth and breadth of knowledge about, and the interest to focus their full time leadership attention on, the use of medicines.

Vision for Technology. Hospitals and health systems will continue to be technology-intensive environments. Shortages of pharmacists and pharmacy technicians qualified for work in hospitals and health systems are expected to be chronic. Technology will not eliminate these shortages. The use of technology will remain incomplete and nonstandardized (an important safety issue in itself) for some time.

Vision for Pharmacists' Responsibilities. Increasingly, pharmacists will apply their time to direct, interdisciplinary patient care to ensure the best use of medicines by individual patients. A growing number of pharmacists will work in highly specialized therapeutic areas. The expanded use of uniformly educated and certified pharmacy technicians will permit a larger portion of a pharmacy department's pharmacist staff to focus on direct patient care activities.

Credentials

Licensure alone will be insufficient for pharmacy practice in hospitals and health systems.

Vision for Residencies. Hospital and health-system employers will expect all entry-level pharmacists to have completed an ASHP-accredited first-year postgraduate pharmacy residency. First-year residency programs in hospitals and health systems concentrate on developing pharmacists that understand the organizational environment, can work in that environment to provide clinical care to individual patients, are capable of interdisciplinary professional work at both

an organizational and clinical level, understand the internal and external standards of quality that apply, and are adept at measuring and documenting metrics of success to manage quality.

Vision for Specialty Certification. Second-year ASHP-accredited postgraduate residencies will be required for pharmacists caring for highly specialized and complex patients. These programs prepare pharmacists to effectively interface with specialized physicians and nurses and manage pharmacy services and informatics. Pharmacists who provide services in an area in which specialty certification exists will be expected to be certified in that specialty.

Vision for Leadership. All hospital and health-system pharmacists will be required to refresh their credentials continuously and to engage actively in personal continuing professional development. Strong leadership will be required to provide and sustain comprehensive professional vision for pharmacy departments. Pharmacy managers will possess credentials appropriate to the scope of services and the size and complexity of the setting, including, in many cases, advanced graduate degrees in pharmacy or nonpharmacy disciplines. Pharmacy departments will be headed by pharmacists; nonpharmacist managers will handle many tasks that do not require the expertise or judgment of a pharmacist.

Vision for Pharmacy Technicians. Pharmacy technicians eventually will be defined in laws and regulations as those individuals working under a pharmacist's responsibility that (a) have completed an ASHP-accredited pharmacy technician training program, (b) are certified by the Pharmacy Technician Certification Board, and (c) are registered with state boards of pharmacy.

Achieving the Vision

ASHP is assessing what it and others need to do to achieve this vision for the pharmacy workforce in hospitals and health systems. Future programs and advocacy of ASHP will be based on this assessment.

Introduction

Medication use in hospitals and health systems is complex and inherently risky. The American Society of Health-System Pharmacists (ASHP) believes it is inevitable that public policymakers, hospital and health-system administrators, and others will seek to modify the roles and required credentials for the pharmacy work force in those settings to ensure that medication use is safe, effective, and appropriate. ASHP believes the decisions will be best guided by a long-range vision about the pharmacy work force for those settings.

This vision is consistent with the ASHP Vision Statement for Pharmacy Practice in Hospitals and Health Systems,¹ the ASHP Health-System Pharmacy 2015 Initiative,² and the future vision of pharmacy practice³ developed by the Joint Commission of Pharmacy Practitioners. This document serves as

- An expression of ASHP's continuing aim to support the development of competence building, sound credentials, and credentialing and privileging processes for pharmacists and pharmacy technicians in hospitals and health systems,
- A guide for ASHP in its long-term development of policies, education, publications, and activities to help pharmacists and pharmacy technicians develop and maintain the competence and credentials needed to work in hospitals and health systems, and
- An advocacy tool to stimulate public policymakers, external quality standards groups, hospital and health-system trustees and administrators, hospital and health-system pharmacy directors, and leaders in other collaborative health professions to ensure that the pharmacy work force in hospitals and health systems is appropriately competent, has the appropriate credentials, and is appropriately privileged on the basis of credentialing processes.

Hospitals and Health Systems

Hospitals and health systems include individual hospitals, multiple-hospital systems, health maintenance organization clinics, hospital-affiliated predischARGE and postdischarge clinics, hospital-based ambulatory care pharmacies, home care services, rehabilitation facilities, skilled-nursing facilities, and assisted-living facilities. Common to all of these settings are the health-system characteristics of (1) an interdependent and interdisciplinary work force, (2) collaboratively developed and evidence-based medication-use processes, (3) a governance structure that is accountable for safe, effective, and appropriate patient care, (4) multiple levels of care with continuity of care among these levels, and (5) an ongoing assessment of performance using externally established quality standards and accreditation requirements.

The Overall Pharmacy Function in Hospitals and Health Systems. Pharmacists and pharmacy departments bear professional and legal responsibility for all medication-use activities in hospitals and health systems. That responsibility is abundantly clear in professional standards, statutes, regulations, court precedents, and external quality standards. The overall pharmacy function in hospitals and health systems will continue to include

- Leading the interdisciplinary 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 drug 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 drug information available to caregivers throughout the setting as a means to support up-to-date, evidence-based care,
- Influencing drug 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 drug administration devices), drug administration, and automated medication-use processes.

Differentiation and Teamwork. In hospitals and health systems, the overall pharmacy function will be accomplished via a differentiated pharmacy work force that includes managers, pharmacists practicing in direct inpatient and outpatient clinical roles, pharmacists and pharmacy technicians in inpatient and outpatient drug preparation and logistical distribution, pharmacists leading informatics and other technology activities, pharmacy technicians, business and operations managers, and other personnel, including informatics assistants, secretarial and administrative assistants, clerks, stock-handling personnel, and couriers. Differentiation in the pharmacy work force will increase with the size and scope of hospitals and health systems. Differentiation will be most pronounced in academic health centers where there are additional missions of education and research. Overall medication-use processes will be conducted by interdisciplinary teams. Pharmacists will continue to be the only health professionals with the depth and breadth of knowledge about—and the interest to focus their full-time leadership attention on—the safe, effective, and appropriate use of medicines.

Technology. Hospitals and health systems will continue to be technology-intensive environments. Many of the technologies, including those for automated medication delivery, pharmaceutical compounding, pharmaceutical packaging and labeling, automated distribution and vending, bedside verification, drug administration (e.g., infusion pumps), electronic drug information, electronic communications, and electronic patient records, will influence medication use. Automation and information technology will be increasingly integrated into medication-use processes. Pharmacists with technology and informatics expertise will influence the choice and use of technologies to ensure patient safety, effectiveness of care, and efficiency.⁴ As new technologies evolve, pharmacists will ensure that these preserve and enhance medication-use safety, effectiveness, and appropriateness.

Leadership. Ongoing pharmacy leadership and management will be required to provide and sustain a comprehensive professional vision and evidence-based medication use via an integrated and interdisciplinary work force and to apply limited resources to activities that will be the most effective. Leadership and management will be required

at all levels, including clinical practice, to ensure that the overall pharmacy function successfully influences the care of patients. In successful pharmacy departments, middle management positions will exist, and qualified personnel at all levels will be mentored for leadership and advanced-level positions. Hospitals and health systems in which this does not occur will be vulnerable to lapses in quality when inevitable turnover occurs in top management positions. Therefore, ongoing investment in succession planning will be essential. In large hospitals and multiple-facility systems, some pharmacists will be corporate-level directors (e.g., vice presidents). Some will have responsibility for departments in addition to pharmacy.

Pharmacies and pharmacy departments in hospitals and health systems will continue to be headed by pharmacists. In most cases, major positions below the department head level are currently occupied by pharmacists. However, it is likely that nonpharmacists will increasingly be employed below the department head level to handle various tasks that do not require the expertise or judgment of a pharmacist. These tasks may include secondary management, finance, personnel administration, quality assurance, informatics and technology, and supply and distribution logistics. Nonpharmacist positions of these types may be more common in large, complex hospitals and health systems where a differentiated work force is more necessary and possible.

Experiential Learning. Hospital and health-system pharmacists and pharmacy technicians will attain their knowledge, skills, and abilities in various ways. All pharmacists and pharmacy technicians will receive on-the-job orientation, training, and experiences that hone their knowledge and skills necessary for specific workplaces. New pharmacy college graduates will continue to be prepared primarily to deliver individual patient care. They will have in-depth knowledge about medications, their pharmacology, and their therapeutic uses. The Accreditation Council for Pharmacy Education's (ACPE's) accreditation standards for doctor of pharmacy degree programs require colleges to include experiential education in community pharmacy, ambulatory care, a hospital or health-system pharmacy, and inpatient or acute care general medicine.⁵ These learning experiences are expected primarily to involve direct patient care rather than learning to navigate and fully influence the interdisciplinary and multidisciplinary aspects of medication use within hospitals and health systems. Concerns exist about the capacity of hospitals and health systems to accommodate the growing volume of pharmacy students needing this experiential education. Most new graduates entering hospital and health-system practice will continue to require substantial further education in order to fully function in those settings. As a means to achieve that education, they should—at minimum—complete an ASHP-accredited pharmacy residency. Some hospitals and health systems may create mechanisms for existing staff to enroll in such residencies.

Pharmacists' Responsibilities

In hospitals and health systems, all pharmacists will be responsible for error prevention, patient safety, and patient outcomes related to medication therapy. Many will work at various supervisory and management levels in the acquisition, preparation, and dispensing of drug products, operating

facilities and equipment for those activities, ensuring the supply and integrity of drug products, providing evidence-based drug information to other professionals and patients, managing the technology applied to medication use, monitoring the quality of pharmacy services, and conducting medication-use-safety activities. Some pharmacists will be engaged in sterile compounding. Some will influence the selection and management of technology and information systems for medication use. Depending on the role of the hospital and health system in education, some pharmacists will educate and train pharmacy students, residents, and pharmacy technicians. All pharmacists will appropriately balance their roles as employees of the setting and their autonomous professional obligations on behalf of patients.

Increasingly, and dependent partly on the expanded use of uniformly trained and educated pharmacy technicians certified by the Pharmacy Technician Certification Board (PTCB), pharmacists will apply their time to direct, interdisciplinary, and collaborative drug therapy to ensure that the medication therapy of individual patients is effective, evidence based, safe, and cost-effective.⁶ Some pharmacists will work in highly specialized clinical areas. Specialists will train and support generalist pharmacists. To ensure a high level of coordination by all components of the pharmacy function in hospitals and health systems and appropriate medication use and safety, the work of clinical pharmacists will be integrated with other aspects of the overall medication-use process. Depending on the volume of clinical work required, most pharmacists will have some ongoing work assignments and responsibilities in medication distribution. Hospitals and health systems will require that all clinical pharmacists and faculty of colleges of pharmacy working in their facilities be credentialed through the routine processes used for all other pharmacy staff and be managed by the department of pharmacy.

Throughout the work setting, the acquisition of patient medication histories and the provision of discharge medication information to patients and downstream caregivers will be managed by pharmacists. This will facilitate continuity of care, reconciliation of medication regimens, and avoidance of medication-related problems. Pharmacists will ensure that necessary clinical monitoring of laboratory test values occurs pertinent to medication use for individual patients. They will engage in disease prevention activities on behalf of patients. Pharmacists will influence the selection of authoritative, evidence-based drug information that is made available to all caregivers in the workplace. They will engage in interdisciplinary development of systemwide policies, procedures, and therapeutic protocols about medication use. They will engage in medication-related public health activities on behalf of their communities.

Medication-Use Process. Pharmacists will continuously improve and collaboratively redesign medication-use processes to optimize patient safety and improve patients' health-related quality of life. They will ensure that medication-use processes incorporate system characteristics of interdependency, checks, and immediate safety feedback mechanisms. In addition to caring for individual patients, pharmacists will ensure that the outcomes of medication therapy are assessed and managed on both a systemwide and patient population basis.

Interpersonal Skills. Pharmacists in hospitals and health systems will possess exceptional interpersonal skills, work well in interdisciplinary teams, and lead the development of medication-use policies and procedures to meet patients' needs. They will possess competence in caring for and effectively interacting with patients from a variety of cultures. They will engage in behavior and activities that promote the pharmacy profession and will represent the profession in a positive light and promote its goals.

Proliferation of Potent and Complex Medications

The scientific knowledge about drugs and the professional and managerial knowledge about pharmacy service delivery expand continuously. Further, many patients in hospitals and health systems in the United States have serious, complex, and urgent health problems that require advanced diagnostic evaluations, intricate medical procedures, and aggressive care. Even for nonurgent care, medication use in hospitals and health systems is a prominent (or at least adjunct) therapy for virtually all patients, and it is inherently complex and dangerous. The medications used are among the most potent, and many require complex administration procedures. Many of these medications are injectable products that pose both inherent pharmacologic and infection-control challenges and must be handled by individuals in multiple disciplines, some of whom have little education and training about medications. Even more potent and riskier medications are anticipated in the future, and medication use in hospitals and health systems is expected to become even more intense and complex. Medications for patient groups with specific genomic characteristics will evolve.

Public Demand

Medication-use problems (particularly errors) are well documented,^{7–25} but the public is not yet sufficiently aware that there is available a professional (the pharmacist) with the expertise and interest to help prevent those problems and better ensure optimum medication therapy in hospitals and health systems.^{26–34} However, an increasing public awareness and debate is evolving about medication-use safety and costs, including the cost of preventable errors.^{35–44} This will ultimately function as an important driver of public demand that pharmacists and pharmacy technicians in hospitals and health systems be competent to achieve (and manage the achievement of) desired patient outcomes with respect to medication use.

Sound Credentials Required for Pharmacy Personnel in Hospitals and Health Systems

ASHP believes that every pharmacist and pharmacy technician working in hospitals and health systems will be required to possess and maintain sound credentials attesting to their competence. Hospitals and health systems will engage in ongoing systematic assessments of the credentials and experience of all pharmacists and pharmacy technicians.^{45,46} Some local policies may, with good reason, allow privileges

for some pharmacists and pharmacy technicians who lack specific formal credentials; some of these practitioners may have well-documented experience and competence. As an ongoing investment in the safety and evidence-based effectiveness of medication use, hospitals and health systems will develop incentives to stimulate pharmacy staff to obtain desired credentials. Mechanisms will exist for acquisition of necessary credentials by entry-level pharmacists and pharmacy technicians and those in practice that aspire to expand their roles.

Residencies. ASHP believes that a variety of sound credentials will exist for pharmacists who practice in hospitals and health systems. ASHP-accredited postgraduate residency training exists to equip entry-level practitioners with the knowledge and skills they need to function safely and effectively and to successfully influence medication-use policies and procedures in their workplaces. First-year ASHP-accredited postgraduate residency programs in hospitals and health systems concentrate on developing pharmacists who (1) understand that organizational environment, (2) can work in that environment to provide clinical care to individual patients, (3) understand the academic health center environment (if the residency is conducted there), (4) are capable of interdisciplinary professional work at both an organizational and clinical level, (5) understand both the internal and external standards of quality that apply, and (6) are adept at measuring and documenting the metrics of success that are necessary for the management of quality in hospitals and health systems.^{47–49}

Second-year ASHP-accredited postgraduate residencies are of several types. Some develop pharmacists capable of the care of highly specialized and complex patients, capable of effectively interacting with specialized physicians and nurses and conducting collaborative research. Others focus on hospital and health-system pharmacy management or informatics.^{50,51,a}

Individuals enrolled in ASHP-accredited residency programs are licensed pharmacists. Similar to residencies in medicine, pharmacy residencies are intense, structured, “learn-by-doing” experiences that involve close work with preceptors and mentors. Pharmacy residents are fully accountable for the outcomes of their clinical and operational actions. Residencies are not “learn-by-observing” experiences, and they differ from internships, which are intended only to bring learners to a minimal competency for academic graduation or licensure. Among the benefits of residency training is the development of clinical skills and competency for work and leadership in hospitals and health systems. It is conceivable that future medication-use residencies may evolve that enroll pharmacists, physicians, and nurses and are conducted in an interdisciplinary fashion.

Hospital and health-system employers will expect new entry-level pharmacists in hospitals and health systems to have completed an ASHP-accredited first-year postgraduate pharmacy residency. ASHP believes that licensure alone will be insufficient for practice in hospitals and health systems.

Specialty Credentials. For some roles, pharmacists will be required to have completed ASHP-accredited second-year postgraduate pharmacy residencies for specialized clinical activities, informatics, and top management positions. Pharmacists who spend the majority of their time practicing

clinical specialties for which there is available certification by the Board of Pharmaceutical Specialties (BPS) or the American Society of Consultant Pharmacists (ASCP) Commission for Certification in Geriatric Pharmacy will be expected to be certified or to be working with appropriate promptness to become certified.^{52,b} They will be expected to maintain the certification. Other sound certification credentials may evolve.

Continuous Professional Development. Hospital and health-system administrators, public policymakers, and pharmacists will insist that up-to-date, evidence-based medication use occurs in hospitals and health systems. Effective, evidence-based interdisciplinary care of hospital and health-system patients requires currentness in professional knowledge and skills. Therefore, all pharmacists will be required to refresh their credentials continuously and to engage actively in personal continuing professional development. Professionally motivated pharmacists will seek out some of the updating of their knowledge and skills on their own. In order to sustain pharmacy work force competence, hospitals and health systems will financially support staff development and will allow paid work time for it. The extent to which pharmacists and pharmacy technicians engage in activities to sustain and expand their competence will be a factor in ongoing local assessments of their credentials and their continued employment.

Evolving Credentials. Additional competence-building mechanisms will evolve to educate and train pharmacists for specific tasks in hospitals and health systems, including those involving complex and high-risk services for which in-depth knowledge is necessary. Sound credentials will evolve for those tasks, and pharmacists will be expected to obtain those credentials to do that work. Examples of special certification roles include diabetes education, advanced cardiac life support, emergency department care, handling of biological products and products hazardous to workers, sterile compounding, distribution logistics, informatics, and clinical research.

Current sound credentials specific for pharmacists include the following:

- Doctor of pharmacy degrees awarded by colleges of pharmacy accredited by ACPE. The current entry-level degree awarded by all colleges of pharmacy is the Doctor of Pharmacy degree. Until recently, colleges of pharmacy awarded bachelor of science degrees as the entry-level degree, which also are sound credentials,
- Graduate degrees in pharmacy,
- National Association of Boards of Pharmacy License Examination for state board of pharmacy licensure,
- Certification by BPS,^b
- Certification by the ASCP Commission for Certification in Geriatric Pharmacy,^b and
- Graduation from an ASHP-accredited pharmacy residency program.

Parallel with these sound credentials there likely will be purported “credentials” that are based on unsound approaches lacking ensured validity and depth. ASHP supports only sound credentials. In their own quality and liability interests, hospitals and health systems will come to understand that there is a quality spectrum of pharmacy credentials and

will insist on sound credentials for their pharmacy staff. The multiorganizational Council on Credentialing in Pharmacy (CCP) has created guiding principles for sound certification programs in pharmacy.⁵³

Additional sound credentials in pharmacy may be recognized in the future, particularly for clinical specialties. BPS now certifies pharmacists in five specialties: pharmacotherapy (plus two “added qualifications” in infectious diseases and cardiology), nuclear pharmacy, nutrition support pharmacy, psychiatric pharmacy practice, and oncology pharmacy practice.^c More BPS added qualifications may evolve. Hospitals and health systems will require pharmacists working in those areas to attain them. The Department of Veterans Affairs has established a mechanism for credentialing and privileging pharmacists to perform some tasks, including medication prescribing.^{54–57} Privileging is defined as

*the process by which an oversight body of a health care organization or other appropriate provider body, having reviewed an individual health care provider's credentials and performance and found them satisfactory, authorizes that individual to perform a specific scope of patient care services within that setting.*⁴⁵

It is conceivable that legislatures and regulatory bodies may establish additional required pharmacist licenses for specific activities.

Leadership Credentials. All pharmacy managers (whether pharmacists or nonpharmacists) will possess credentials appropriate to the scope of services and the size and complexity of the setting. Some pharmacists, particularly in large and complex settings and multiple-facility organizations, will have corporate-level administrative appointments higher than the department head level. Individuals with that authority will have sufficient management experience to have developed the skills and talents for that role and will possess appropriate advanced credentials, which may include graduation from an ASHP-accredited second-year postgraduate residency in management or advanced graduate degrees in pharmacy or nonpharmacy disciplines. The ASHP Research and Education Foundation has created a Center on Health-System Pharmacy Leadership. It is possible that this may lead to an available certification for pharmacy leaders in hospitals and health systems.

Pharmacy Technicians

In the pharmacy profession and in laws and regulations, pharmacy technicians eventually will be defined as those individuals working under a pharmacist who (1) have completed an ASHP-accredited pharmacy technician training program,^{58–60} (2) are certified by PTCB, and (3) are registered with state boards of pharmacy. Other support staff will be employed in pharmacies in hospitals and health systems, but they will not be defined in laws and regulations as pharmacy technicians. All pharmacy technicians will be required to participate in continuing education offered by accredited providers of such continuing education. ACPE conducts a process to accredit such providers.

Role of Technicians. Most pharmacy technicians will be engaged in drug-product acquisition, preparation, dispensing,

and distribution under the physical supervision of pharmacists. Some pharmacy technicians will manage aspects of product acquisition and supply logistics. Some will manage the use of technology and quality assurance activities. Some will supervise other pharmacy technicians. Some will assist pharmacists in collecting and screening routine patient-specific clinical laboratory data and routine screening of clinical monitoring data to identify out-of-range findings that warrant pharmacist attention. Some will manage aspects of informatics.

Technician Credentials. Additional competence-building mechanisms will evolve to educate and train pharmacy technicians for specific tasks in hospitals and health systems, including those involving complex and high-risk services for which in-depth knowledge is necessary. Hospitals and health systems will require pharmacy technicians to obtain those credentials to do that work. Pharmacy technicians will continue to work under the supervision of pharmacists and will not be sanctioned to work independently. Although legislatures and regulatory bodies may establish licenses for pharmacy technicians, these will not be licenses for independent, unsupervised practice. Telepharmacy arrangements may evolve in which a supervising pharmacist may be physically remote from a pharmacy technician.

Sound credentials for pharmacy technicians currently include graduation from an ASHP-accredited pharmacy technician training program and certification by PTCB.

For pharmacy technicians, there also exists a spectrum in the quality of education and training available (some of which is unsound). Hospitals and health systems will be diligent in insisting on sound credentials. All pharmacy technicians will be registered with state boards of pharmacy.

Entry-Level Staff

Some entry-level staff will lack all the competencies and credentials needed to work fully in hospitals and health systems. Employers will require them to build competence and acquire appropriate credentials promptly. The initial work assignments of entry-level staff may be somewhat restricted until completion of the necessary competence building and acquisition of credentials.

Assumptions and Expectations

This vision is based on the following assumptions and expectations:

1. As scientific pharmacologic advances increase, mortality from various diseases will decrease. People will live longer and will have chronic conditions and more temporary acute conditions for which they will increasingly use hospital and health-system services. They will use more medications, necessitating greater numbers of qualified pharmacists and pharmacy technicians.
2. For reasons of quality assurance and compliance with accreditation requirements (such as Joint Commission standards⁶¹), hospitals and health systems will insist that pharmacists and pharmacy technicians demon-

strate that they are competent to perform the tasks set forth in their job descriptions.

3. Hospitals and health systems will establish systematic and ongoing processes to assess the competence and credentials of pharmacists and pharmacy technicians. Many hospitals and health systems will develop their own tools for assessing employee competence and credentials. Some will use external validation methods, such as BPS certification and graduation from an ASHP-accredited residency.
4. The quality of patient care in hospitals and health systems will be enhanced by pharmacists and pharmacy technicians with appropriate credentials.
5. To ensure safe, effective, and coordinated patient care, clinical and other pharmacy activities in hospitals and health systems will be staffed, conducted, and managed in an integrated fashion.
6. The public will increasingly wish to be able to distinguish pharmacists who are qualified to provide medication therapy management services from those who are not.
7. Governments and quality-standards organizations, such as the Joint Commission, will eventually insist on appropriate credentials for pharmacists and pharmacy technicians in hospitals and health systems.
8. Medicare provider status will evolve for pharmacists with appropriate credentials, enabling payment to hospitals and health systems for their medication therapy management. Medicare payments to hospitals and health system will be contingent on active local credentialing and privileging processes for all major health care workers in hospitals and health systems, including pharmacists.
9. Specialization will increase, and hospitals and health systems will look to sound credentials as indications of pharmacists' specialized competencies.
10. BPS will be urged to develop additional clinical credentialing processes in cooperation with professional associations.
11. In the face of shortages of qualified pharmacists and pharmacy technicians for hospital and health-system work, and in the face of the increasing need for qualified workers, accreditation bodies for hospitals and health systems will become increasingly insistent that the pharmacists and pharmacy technicians in those settings have appropriate credentials.
12. Compared with the chronic shortage of pharmacists across the entire pharmacy profession, the shortage of pharmacists competent to work in hospitals and health systems will continue to be more severe.^{62–68}
13. The demographics of the pharmacy work force in hospitals and health systems are changing, and hospital and health-system employers will need to respond resourcefully and creatively to adjust to those changes.⁶⁹
14. State laws and regulations will continue to require that pharmacists be graduates of colleges accredited by ACPE. However, some hospital and health-system employers in the United States will consider hiring graduates of foreign pharmacy schools. A process exists for foreign graduates to achieve a foreign pharmacy graduate equivalency certification.⁷⁰ Given that licensure alone will not be sufficient for successful work in hospitals and health systems, and given the advanced credentials needed for hospital and health-system work, this avenue for recruitment will not likely be very effective for those settings.
15. Graduation from an ASHP-accredited pharmacy residency will become a minimum requirement by employers for pharmacists to work in hospitals and health systems.^d
16. Graduation from an ASHP-accredited pharmacy technician training program, certification by PTCB, and registration with a state board of pharmacy will become minimum requirements for pharmacy technicians to practice in hospitals and health systems.^d
17. Greater quality and consistency in the education and training of pharmacy technicians will allow for expanded roles for pharmacy technicians, similar to those seen in U.S. military facilities and to the legal allowances for the work of pharmacy technicians in several European and Nordic countries.
18. The demand for qualified pharmacy technicians with appropriate credentials will increase in the United States. State requirements for the credentials of pharmacy technicians are advancing rapidly.
19. Hospital and health-system pharmacy departments will continue to employ supportive personnel who are not legally defined as pharmacy technicians and are not legally authorized to perform the same functions as pharmacy technicians.
20. Technology will not eliminate pharmacy work-force shortages in hospitals and health systems. Moreover, the use of technology will remain incomplete and non-standardized (an important safety issue in itself) for some time.
21. As health care becomes increasingly collaborative and multidisciplinary, pharmacists' knowledge about medications will continue to be different from and more complete than that of other health care professionals.

Some Implications

Embedded in the following implications are numerous priorities that will influence ASHP's ongoing and long-term actions with respect to the pharmacy work force in hospitals and health systems. Other actions will evolve as well.

- Hospital and health-system trustees, administrators, and human resource, risk-management, and legal departments must be helped to understand that only qualified pharmacists and pharmacy technicians with appropriate credentials must comprise the pharmacy work force in hospitals and health systems.
- Mechanisms must be developed to help hospital and health-system employers readily discern sound pharmacy credentials from unsound ones.^{53,71}
- Model local credentialing and privileging processes must be developed and implemented to assist hospitals and health systems in assessing whether pharmacists and pharmacy technicians possess the necessary credentials for the functions assigned to them.
- Colleges of pharmacy and pharmacies in hospitals and health systems must better articulate and integrate their respective roles in preparing graduates for ASHP-accredited pharmacy practice residencies.
- Since patient care in hospitals and health systems is inherently interdisciplinary, the education of pharma-

cists must be conducted in a more interdisciplinary manner.

- Sound credentials are needed for various subdepartment-level activities within hospitals and health systems (e.g., sterile compounding). ASHP and CCP should lead a prompt identification of the primary activities and develop a time-certain call for the profession to develop corresponding training and credentials for those activities.
- Public policymakers must be helped to understand the need for qualified pharmacists and pharmacy technicians within hospitals and health systems and to support mechanisms to educate and train practitioners for those roles.
- In cooperation with professional associations, BPS should expand the credentials for pharmacy practice and the number of pharmacists certified.
- Pharmacy technicians must receive uniform education and training before becoming PTCB certified.
- Pharmacy technicians must be registered with state boards of pharmacy.
- The National Association of Boards of Pharmacy should establish model laws and regulations to support state requirements for uniform education and training for pharmacy technicians and for PTCB certification of all pharmacy technicians.

Definitions

In this document, the following definitions apply, as published in 2006 by CCP.⁷¹

- **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.
- **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/or 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/or experience.
- **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; R.Ph. 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 pharma-

cist's qualifications to provide patient care services. [Similarly, credentialing can be applied to pharmacy technicians.]

^aFederal funding is available to help support ASHP-accredited first-year residencies in hospitals caring for Medicare patients. To address the growing need in hospitals and health systems for pharmacists with advanced credentials, ASHP is seeking similar funding (which previously existed) for ASHP-accredited second-year residencies. ASHP is the accrediting body for pharmacy residencies. In early 2007, there were 714 ASHP-accredited postgraduate residency programs (481 first-year programs and 233 second-year programs). These programs graduate approximately 1400 residents per year. More ASHP-accredited residencies and residency graduates are needed to fulfill the work-force needs in hospitals and health systems.

^bThe processes used by BPS and ASCP for designating specialties and assessing the knowledge of individuals applying for certification are different.

^cAs of early 2007, BPS is engaged in a practice analysis in ambulatory care, which could lead to a sixth designation or “added qualifications.”

^dWhile this evolves to become a requirement by employers, a natural transition period will exist when pharmacists and pharmacy technicians who have achieved competence and successful experience in hospitals and health systems will continue to be employed.

References

1. American Society of Health-System Pharmacists. ASHP vision statement for pharmacy practice in hospitals and health systems. www.ashp.org/s_ashp?cat1c.asp?CID=2911&DID=4029 (accessed 2007 Mar 13).
2. American Society of Health-System Pharmacists. ASHP Health-System Pharmacy 2015 Initiative. www.ashp.org/s_ashp/quart1.asp?CID=218&DID=255 (accessed 2006 Dec 14).
3. Joint Commission of Pharmacy Practitioners. JCPP future vision of pharmacy practice, final version. www.aacp.org/Docs/MainNavigation/Resources/6725_JCPPFutureVisionofPharmacyPracticeFINAL.pdf (accessed 2006 Nov 28).
4. American Society of Health-System Pharmacists. ASHP statement on the pharmacist's role in informatics. *Am J Health-Syst Pharm.* 2007; 64:200–3.
5. Accreditation Council for Pharmacy Education. Accreditation standards and guidelines. www.acpe-accredit.org/standards/default.asp (accessed 2006 Dec 14).
6. Pharmacy Technician Certification Board. Pharmacy technician certification board (PTCB) announces milestone: 250,000 certified pharmacy technicians (CPhT). www.ptcb.org/AM/Template.cfm?Section=Home1&CONTENTID=2196&TEMPLATE=/CM/ContentDisplay.cfm (accessed 2007 Mar 13).
7. Leape LL, Bates DW, Cullen DJ, et al. Systems analysis of adverse drug events. *JAMA.* 1995; 274:35–43.
8. Bates DW, Boyle DL, Vander Vliet MB, et al. Relationship between medication errors and adverse drug events. *J Gen Intern Med.* 1995; 10:199–205.

9. Johnson JA, Bootman JL. Drug-related morbidity and mortality and the economic impact of pharmaceutical care. *Am J Health-Syst Pharm.* 1997; 54:554–8.
10. Bootman JL, Harrison DL, Cox E. The health care cost of drug-related morbidity and mortality in nursing facilities. *Arch Intern Med.* 1997; 157:2089–96.
11. Johnson JA, Bootman JL. Drug-related morbidity and mortality. A cost-of-illness model. *Arch Intern Med.* 1995; 155:1949–56.
12. Classen DC, Pestotnik SL, Evans RS, et al. Adverse drug events in hospitalized patients. *JAMA.* 1997; 277:301–6.
13. Bates DW, Spell N, Cullen DJ, et al. The costs of adverse drug events in hospitalized patients. *JAMA.* 1997; 277:307–11.
14. Lesar TS, Briceland L, Stein DS. Factors related to errors in medication prescribing. *JAMA.* 1997; 277:312–7.
15. Allan EL, Barker KN. Fundamentals of medication error research. *Am J Hosp Pharm.* 1990; 47:555–71.
16. Lesar TS, Lomaestro BM, Pohl H. Medication-prescribing errors in a teaching hospital. A 9-year experience. *Arch Intern Med.* 1997; 157:1569–76.
17. Bates DW, Cullen DJ, Laird N, et al. Incidence of adverse drug events and potential adverse drug events. Implications for prevention. *JAMA.* 1995; 274:29–34.
18. Lazarou J, Pomeranz BH, Corey PN. Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. *JAMA.* 1998; 279:1200–5.
19. Cohen MR, Proulx SM, Crawford SY. Survey of hospital systems and common serious medication errors. *J Healthc Risk Manag.* 1998; 18(1):16–27.
20. Barker KN, Flynn EA, Pepper GA, et al. Medication errors observed in 36 health care facilities. *Arch Intern Med.* 2002; 162:1897–903.
21. Ernst FR, Grizzle AJ. Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc.* 2001; 41:192–9.
22. Budnitz DS, Pollock DA, Weidenbach KN, et al. National surveillance of emergency department visits for outpatient adverse drug events. *JAMA.* 2006; 296:1858–66.
23. Manasse HR Jr. Medication use in an imperfect world: drug misadventuring as an issue of public policy, part 1. *Am J Hosp Pharm.* 1989; 46:929–44.
24. Manasse HR Jr. Medication use in an imperfect world: drug misadventuring as an issue of public policy, part 2. *Am J Hosp Pharm.* 1989; 46:1141–52.
25. Davis TC, Wolf MS, Bass PF III, et al. Literacy and misunderstanding prescription drug labels. *Ann Intern Med.* 2006; 145:887–94.
26. American Society of Health-System Pharmacists. Understanding and preventing drug misadventures. A multidisciplinary invitational conference sponsored by the ASHP Research and Education Foundation in cooperation with the American Medical Association, the American Nurses Association, and the American Society of Hospital Pharmacists. *Am J Health-Syst Pharm.* 1995; 52:369–416.
27. American Society of Health-System Pharmacists. Top-priority actions for preventing adverse drug events in hospitals. Recommendations of an expert panel. *Am J Health-Syst Pharm.* 1996; 53:747–51.
28. American Society of Hospital Pharmacists. ASHP guidelines on preventing medication errors in hospitals. *Am J Hosp Pharm.* 1993; 50:305–14.
29. Leape LL, Cullen DJ, Clapp MD, et al. Pharmacist participation on physician rounds and adverse drug events in the intensive care unit. *JAMA.* 1999; 282:267–70. [Erratum, *JAMA.* 2000; 283:1293.]
30. Kucukarslan SN, Peters M, Mlynarek M, et al. Pharmacists on rounding teams reduce preventable adverse drug events in hospital general medicine units. *Arch Intern Med.* 2003; 163:2014–8.
31. Schnipper JL, Kirwin JL, Cotugno MC, et al. Role of pharmacist counseling in preventing adverse drug events after hospitalization. *Arch Intern Med.* 2006; 166: 565–71.
32. Pearlman MD. Patient safety in obstetrics and gynecology: an agenda for the future. *Obstet Gynecol.* 2006; 108:1266–71.
33. Kaboli PJ, Hoth AB, McClimon BJ, et al. Clinical pharmacists and inpatient medical care: a systematic review. *Arch Intern Med.* 2006; 166:955–64.
34. Manasse HR Jr, Thompson KK. Medication safety: a guide for health care facilities. Bethesda, MD: American Society of Health-System Pharmacists; 2006.
35. Kohn LT, Corrigan JM, Donaldson MS, eds. To err is human: building a safer health system. Washington, DC: National Academy Press; 1999.
36. Committee on Quality of Health Care in America. Crossing the quality chasm: a new health system for the 21st century. Washington, DC: National Academy Press; 2001.
37. Greiner AC, Knebel E, eds. Health professions education: a bridge to quality. Washington, DC: National Academies Press; 2003.
38. Aspden P, Wolcott JA, Bootman JL, et al., eds. Preventing medication errors: quality chasm series. Washington, DC: National Academies Press; 2006.
39. Food and Drug Administration. Strategies to reduce medication errors: working to improve medication safety. www.fda.gov/fdac/special/testtubetopatient/safety.html (accessed 2006 Dec 15).
40. Food and Drug Administration. FDA's new drug safety initiative. www.fda.gov/cder/drugSafety.htm (accessed 2006 Dec 15).
41. National Quality Forum. Safe practices for better healthcare. www.qualityforum.org/projects/completed/safe_practices (accessed 2006 Dec 15).
42. National Quality Forum. Improving use of prescription medications. www.qualityforum.org/projects/completed/medications.asp (accessed 2006 Dec 15).
43. Joint Commission on Accreditation of Healthcare Organizations. Patient safety practices. An online resource for improving patient safety. www.jointcommission.org/PatientSafety/PSP (accessed 2006 Dec 15).
44. Joint Commission on Accreditation of Healthcare Organizations. 2007 National Patient Safety Goals. www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals (accessed 2006 Dec 15).
45. American Society of Health-System Pharmacists. Policy: role of licensing, credentialing, and privileging in collaborative drug therapy management (0318).

- www.ashp.org/s_ashp/bin.asp?CID=6&DID=4086&DOC=FILE.PDF (accessed 2006 Dec 14).
46. Galt KA. Credentialing and privileging for pharmacists. *Am J Health-Syst Pharm.* 2004; 61:661–70.
 47. American Society of Health-System Pharmacists. Accreditation standards: postgraduate year one (PGY1) pharmacy residency programs. www.ashp.org/rtp/starting/practice-residencies.cfm (accessed 2006 Nov 28).
 48. American Society of Health-System Pharmacists. PGY1 educational goals and objectives. www.ashp.org/rtp/starting/specialized-residencies.cfm (accessed 2006 Nov 28).
 49. Teeters JL, Brueckl M, Burns A, et al. Pharmacy residency training in the future: a stakeholder's roundtable discussion. *Am J Health-Syst Pharm.* 2005; 62:1817–20.
 50. American Society of Health-System Pharmacists. ASHP accreditation standard for postgraduate year two (PGY2) pharmacy residency programs. www.ashp.org/s_ashp/docs/files/RTP_PGY2AccredStandard.pdf (accessed 2007 Mar 13).
 51. American Society of Health-System Pharmacists. PGY2 educational goals and objectives. www.ashp.org/rtp/Starting/PGY2.cfm (accessed 2006 Nov 28).
 52. Board of Pharmaceutical Specialties. Recognized specialties. www.bpsweb.org (accessed 2006 Dec 14).
 53. Council on Credentialing in Pharmacy. Guiding principles for certification of individuals in pharmacy. www.pharmacycredentialing.org/ccp/Files/CCP%20Guiding%20Principles%20for%20Certification%20Adopted%20January%202006.pdf (accessed 2006 Nov 28).
 54. Department of Veterans Affairs. Credentialing and privileging. VHA handbook 1100.19. www1.va.gov/VHAPUBLICATIONS/ViewPublication.asp?pub_ID=357 (accessed 2006 Dec 15).
 55. Department of Veterans Affairs. VHA Directive 2001-022. Implementation of VEPRO, VHA's national credentials databank. www1.va.gov/vhapublications/ViewPublication.asp?pub_ID=87 (accessed 2006 Dec 15).
 56. American Society of Health-System Pharmacists. Medication prescribing authority for VA pharmacists to continue for 2 years. www.ashp.org/s_ashp/sec_news_article.asp?CID=167&DID=2024&id=2864 (accessed 2006 Dec 15).
 57. Clause S, Fudin J, Mergner A, et al. Prescribing privileges among pharmacists in Veterans Affairs medical centers. *Am J Health-Syst Pharm.* 2001; 58:1143–5.
 58. American Society of Health-System Pharmacists. ASHP accreditation standard for pharmacy technician training programs. www.ashp.org/emplibrary/Accreditation%20Standard%20for%20Pharmacy%20Technician%20Training%202005%20.pdf (accessed 2006 Nov 27).
 59. American Society of Health-System Pharmacists. ASHP-accredited technician training program directory. www.ashp.org/directories/technicians/directory-intro.cfm (accessed 2006 Nov 27).
 60. American Society of Health-System Pharmacists. Model curriculum for pharmacy technician training. 2nd ed. www.ashp.org/technician/model_curriculum/index.cfm (accessed 2006 Nov 28).
 61. Joint Commission on Accreditation of Healthcare Organizations. Standards. www.jointcommission.org/Standards (accessed 2006 Dec 14).
 62. American Hospital Association. The state of America's hospitals—taking the pulse. Findings from the 2006 AHA Survey of Hospital Leaders. www.aha.org/aha/content/2006/PowerPoint/StateHospitalsChartPack2006.PPT (accessed 2006 Dec 15).
 63. Department of Health and Human Services. The pharmacist workforce: a study of the supply and demand for pharmacists. http://bhpr.hrsa.gov/healthworkforce/reports/pharmacist.htm (accessed 2007 Mar 13).
 64. American Society of Health-System Pharmacists. 2004 ASHP Pharmacy Staffing Survey results. www.ashp.org/emplibrary/04ASHPRxStaffSurvey.pdf (accessed 2006 May 3).
 65. Knapp DA. Professionally determined need for pharmacy services in 2020. *Am J Pharm Educ.* 2002; 66:421–9.
 66. White SJ. Will there be a pharmacy leadership crisis? An ASHP Foundation Scholar-in-Residence report. *Am J Health-Syst Pharm.* 2005; 62:845–55.
 67. Mott DA, Doucette WR, Gaitner CA, et al. A ten-year trend analysis of pharmacist participation in the workforce. *Am J Pharm Educ.* 2002; 66:223–33.
 68. Speedie MK, Manasse HR Jr. Pharmacists, pharmaceuticals and policy issues related to the workforce in pharmacy. Submitted for publication.
 69. Report of the ASHP Task Force on Pharmacy's Changing Demographics. *Am J Health-Syst Pharm.* 2007; 64:1311–9.
 70. National Association of Boards of Pharmacy. Foreign Pharmacy Graduate Equivalency Examination. www.nabp.net/index.html?target=/competency/intro.asp& (accessed 2007 Jan 4).
 71. Council on Credentialing in Pharmacy. Credentialing in pharmacy. www.pharmacycredentialing.org/ccp/Files/CCPWhitePaper2006.pdf (accessed 2006 Nov 28).

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