

Assessing the Size and Scope of the Pharmacist Workforce in the U.S.

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KEY FINDINGS

Pharmacists are increasingly recognized as crucial members of the health care team. The role of pharmacists varies depending on the setting and state scope-of-practice laws. Despite the growing body of evidence demonstrating the effectiveness of engaging pharmacists as part of the direct patient care team, many pharmacists primarily dispense medications given the current landscape of job opportunities and restrictions in insurance reimbursement. Not using pharmacists at the top of their license may be a missed opportunity to leverage a workforce to manage disease burden especially among a growing aging population. To date, no single source of information exists that best characterizes the increasingly complex nature of the pharmacist workforce. In this study, we reviewed the literature and conducted interviews with key stakeholders from national pharmacy professional organizations. This study aimed to identify the many different settings where pharmacists work, their current and emerging roles, and the barriers and facilitators to greater involvement of pharmacists in patient care. Key findings include:

- There is not a single, agreed upon categorization that captures the full range of pharmacists' roles and functions.
- The most frequently mentioned roles for pharmacists identified from the literature and stakeholder interviews included medication dispensing, medication therapy management, chronic disease management, transition of care, and patient education, health promotion, and disease prevention.
- There were about 387,000 licensed pharmacists in the U.S. as of October 2019 and 42,710 licensed pharmacists with active specialty certifications as of July 2019.
- Pharmacists' engagement in patient care ranges from a consultative role whereby pharmacists fill in gaps in clinicians' knowledge, to the collaborative and integrative roles pharmacists can play in settings such as patient centered medical homes. Improving awareness of the potential roles of pharmacists would help to more effectively incorporate them into the health care team.
- Pharmacist scope-of-practice laws and regulations vary by state with most states allowing prescriptive authority. Policy mechanisms such as collaborative practice agreements, statewide protocols, and standing orders further define the services and circumstances under which pharmacists can practice.

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KEY FINDINGS *continued*

- Pharmacists have limited ability to bill as independent providers under Medicare and Medicaid because Medicare does not recognize them as eligible providers and their Medicaid eligibility varies among states.

As the pharmacist workforce expands its role in health care delivery, simultaneous changes in policies and financing are important to optimize the use of pharmacists to improve care.

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INTRODUCTION

Pharmacists are increasingly recognized as crucial members of the health care team. Their involvement in patient care has been shown to lead to improved health outcomes for patients with diabetes, hypertension, and cardiovascular disease.¹⁻³ A systematic review of 298 studies showed that patient outcomes (e.g., hemoglobin A1c, cholesterol, blood pressure, adverse drug events) significantly improved in response to pharmacist-provided direct patient care when compared to conventional or alternative care.⁴ Despite the growing body of evidence demonstrating the effectiveness of engaging pharmacists as part of the direct patient care team, many pharmacists primarily dispense medications because of the current landscape of job opportunities and restrictions in insurance reimbursement. There is concern that students completing a four-year doctoral degree in pharmacy (i.e., PharmD) are overeducated for dispensing-only roles and underused in delivery of care.⁵ Not using pharmacists at the top of their license may be a missed opportunity to leverage a workforce to manage disease burden especially among a growing aging population. This study describes the evolving role of pharmacists as well as the barriers and facilitators to engaging pharmacists as part of the direct patient care team.

Many patients and health care professionals are familiar with pharmacists' roles of dispensing, reconciling, and generally ensuring safe and effective use of medications within the community (i.e., in chain pharmacies, supermarkets, independent pharmacies) and/or in hospitals and clinics (i.e., inpatient or outpatient). Fewer may be familiar with pharmacists' roles in providing medication therapy and engaging patients in health promotion and disease prevention.^{6,7} The role of pharmacists varies depending on the setting and state scope-of-practice laws. Adding to the variability in roles are changes to the health care system that may impact the way in which pharmacists practice and where they are employed, including mergers between pharmacy and insurance companies, the rise of telehealth as a health care modality, and the closure of independently owned pharmacies in rural America.⁸ To date, no single source of information exists that best characterizes the increasingly complex nature of the pharmacist workforce. Without clarity, leaders in the field of pharmacy face challenges in educating health system leaders about the ways pharmacists can help transform care and advocating for ways to strengthen the pharmacist workforce.

In this study, we reviewed the literature and conducted interviews with key stakeholders from national pharmacy professional organizations. This study aimed to identify the many different health care settings and roles that pharmacists may hold, the emerging roles of the pharmacist workforce, and the barriers that prevent them from expanding their role in improving patients' health, as well as the facilitators that allow expanded roles.

APPROACH

Data collection through web-searching and a literature review were completed between November 2018 and August 2019. Websites consulted for information included those of U.S. national pharmacy professional organizations, academic pharmacy programs, and state pharmacy boards. Key informant interviews were conducted in May and June 2019. This study was reviewed by the University of Washington Human Subjects Division and approved as human subjects exempt research.

Executive leadership of sixteen national pharmacy organizations were identified and contacted for a phone interview via email. At least one follow-up email was sent to non-respondents. These efforts resulted in ten telephone interviews with key stakeholders in the pharmacy workforce (**Box 1**). Interviews lasted about one hour, with response notes taken by hand while interviews were audio-recorded. Structured interview questions addressed the effect of the transitioning health care system on changing pharmacist roles, how changing business and practice models have affected the pharmacist workforce, and how policy and scope-of-practice regulations influence the expanding role of the pharmacist in health care (**Box 2**). A team of three researchers with expertise in health workforce, health education, and health services analyzed the interview notes and recordings for key themes, which are integrated with findings from the web-search and literature review.

Box 1. Interviewed Stakeholder Organizations

- American College of Clinical Pharmacy
- American Society of Consultant Pharmacists
- Hematology/Oncology Pharmacy Association
- National Community Pharmacists Association
- National Alliance of State Pharmacy Associations
- Board of Pharmacy Specialties
- American Association of Colleges of Pharmacy
- College of Psychiatric and Neurologic Pharmacists
- Academy of Managed Care Pharmacy
- National Association of Specialty Pharmacy

Box 2. Key Topics Addressed in Stakeholder Interviews

1. Effect of Transitioning Health Care System on Changing Pharmacist Roles
 - a. What policies or programs do you see as having the biggest/most important effect on the roles of pharmacists?
 - b. In what ways have these policies/programs been changing the role of the pharmacist?
2. Changing Business and Practice Models
 - a. How are you seeing these changes in business models affecting the skills and roles of pharmacists?
 - b. What is lost/gained in the pharmacist profession by shifts in business and practice models, e.g., from retail and/or clinic pharmacies to merging the two with insurance and drug store mergers?
 - c. What are the implications of these transformations on the pipeline of pharmacists into the workforce, and how do they affect the current supply of pharmacists?
3. Scope of Practice
 - a. How do you see pharmacist scope of practice affected by the health care transformations we have talked about thus far?
 - b. What do you think are the main sources of variation across states in the expansion of pharmacist scope of practice?
 - c. What are the facilitators and barriers to expanding pharmacist scope of practice?
4. Other Policy Factors
 - a. Are there other drivers of change to pharmacist roles and skills, e.g. team-based care, supervisor relationships, billing/reimbursement, education models?

RESULTS

1. BACKGROUND ON THE PROFESSION

Taxonomy of Pharmacists

The literature and web searches confirmed that many terms and definitions are used to describe pharmacists, and no single working taxonomy captures the full range of their roles and functions. The most frequently mentioned roles for pharmacists identified from the literature and stakeholder interviews included medication dispensing, medication therapy management, chronic disease management, transition of care, and patient education, health promotion, and disease prevention (see **Appendix**

A for details on roles). According to the U.S. Bureau of Labor Statistics (BLS), the largest employers and main work environments for pharmacists include community pharmacies/drug stores (43%), hospitals (26%), and commercial retail stores such as general merchandise and food and beverage stores (14%).⁹

Inconsistencies in classifying pharmacists were illustrated in our interviews with stakeholders, who used different terms to describe specific types of pharmacists. One stakeholder said that technically, all pharmacists are “clinical,” but with no clearly defined terms or taxonomy, terms such as “community pharmacist” have been used to refer to a pharmacist working for a national mass retailer. One stakeholder told us that a pharmacist specializing in cardiology who could practice in a hospital within a medical team of cardiologists, a community setting at a lipid management clinic, or at a physician’s office would be considered a specialty pharmacist but could also be referred to as a hospital pharmacist, clinical pharmacist, or community pharmacist depending on the setting in which they practice.

Appendix B details commonly used terms for pharmacists based on workplace setting. Because the majority of practicing pharmacists work in community settings,⁹ this setting offers the most opportunities for pharmacists to expand their roles in health care.

Growth of Schools and Graduates

The Bachelor of Pharmacy (BPharm) was the accepted entry-level degree until 2000. After years of debate, starting in 2000 the Accreditation Council on Pharmaceutical Education required schools to move to the Doctor of Pharmacy (PharmD) as the entry-level degree (see **Appendix C** for more detail on pharmacist education and training), which meant schools needed to modify their curriculum in order to maintain accreditation. Pharmacists with a bachelor’s degree conferred prior to the move to the PharmD may still practice as long as they have graduated from an accredited school of pharmacy. Spurred by changes in accreditation requirements

Box 3. Stakeholder Comments on Pharmacist Classification

- “It’s a struggle within and among ourselves because it’s hard to explain differences [between different types of pharmacists] and it’s hard to get pharmacy organizations that represent multiple types of pharmacists to advocate on behalf of one particular group without isolating other members.”
- “At the very basic, we consider [a pharmacist to be] a pharmacist. Period. It’s a pharmacist. They all have the same basic training. ... There are absolutely specialists, but there’s not any difference in the baseline education and training that an individual gets.”
- “When we talk about community pharmacies, we’re talking about our members of the non-publicly traded folks and the others are, in terms of the retail pharmacies, are the chain pharmacies.”
- “I think you’ll find a number of the chains want to call themselves community pharmacies, they want to give themselves a small-town feel and that they’re tied to their local community...”
- “There’s specialization, ... that by examination, credentials individual pharmacists in these various... specialization roles. And then there’s specialty pharmacy, which is that category of typically horrifically expensive medicine...”

Box 4. Stakeholder Comments on Education and Training

- “There has been...an explosion in the number of schools of pharmacy in the country over the last decade or so. And so we now are producing a lot more pharmacists into the workforce each year than we previously had.”
- “The establishment of residency programs for pharmacists has dramatically improved not only the competency of the pharmacists but also the respect from some of our medical colleagues.”
- “As the profession has evolved in the post-PharmD implementation period, pharmacists are being trained at a much higher level clinically.”
- “We have so many [students] that are now very highly clinically trained...[and] a large number going into post-graduate training programs, so they’re really coming out with significant capabilities to contribute to patient care and we should really be tapping into that.”
- “We believe that every pharmacist that is graduating and [is] practicing in any setting has the ability to do a much more expanded role in helping to manage individuals with chronic disease, address public health needs, and be able to diagnose and treat conditions that either don’t need a diagnosis or are easy to diagnose.”
- “... students [are] not at all interested in being the dispensers ... they want to be the clinician, they want to [have] a seat at the table around decision-making...”

along with concerns of a pharmacist shortage, the number of accredited pharmacy schools increased from 80 in 2000 to 143 accredited programs (including seven schools with candidate status and one school with pre-candidate status) by 2019.^{10,11} The number of new PharmD graduates entering the workforce grew from 11,736 in 2009/10 to 14,884 in 2018/19, or about 27% (**Appendix C, Table C-1**).¹²

With the growth of schools and thus graduates, the job market for pharmacists is increasingly competitive. As a result, students frequently seek optional one- to two-year residencies in order to increase their appeal as a new hire. Most commonly, the first post-graduate year (PGY1) of pharmacist education is a general residency, and the second post-graduate year (PGY2) is for those who wish to specialize.¹³ In 2019, over 5,000 pharmacists matched with 2,500 pharmacy residencies across the U.S., reflecting a 40% increase in the number of residency positions over the past five years.¹⁴ Pharmacy graduates may complete a residency after completing a PharmD program, and/or obtain a specialty certification (**Appendix C**). In some states where the scope of practice allows pharmacists to administer immunizations or vaccinations, this additional certification may be required.

Workforce Supply and Projections

The National Association of Boards of Pharmacy (NABP) estimates that there are about 387,000 licensed pharmacists in the U.S. as of October 2019.¹⁵ The Board of Pharmacy Specialists reported that there were 42,710 licensed pharmacists with active specialty certifications as of July 2019 (see **Appendix B** for details on specialty areas).¹⁶ According to 2017 American Community Survey data, over half of pharmacists were female (56.7%) and the median age was 41.9 years.¹⁷ Seventy percent of pharmacists are White, which is similar to the demographics of the U.S. population.¹⁸ There was only about half the representation of Black people among pharmacists compared to the U.S. population (7.2% versus 12.7%), and nearly four times greater representation of Asian people (20.2% versus 5.4%). Only 4.3% of pharmacists were Hispanic regardless of race compared to 17.6% in the U.S. population.

Based on the roughly 300,000 active pharmacists in the workforce, the Health Resources and Services Administration (HRSA) projected that the supply of active pharmacists will increase by 36% to about 410,000 by 2030.¹⁹ HRSA projects that this supply will be sufficient to meet patient demand.¹⁹ These projections, however, largely rely on the assumption that pharmacists primarily dispense.²⁰ As more pharmacy graduates acquire higher levels of education and residency training, researchers as well as our stakeholders see opportunities for pharmacists to expand their scope of practice beyond dispensing and take on expanded roles in health care delivery, which were not taken into account in the most recent projection models.^{5,21,22}

2. EXPANDING ROLES FOR PHARMACISTS

Improved Integration of Pharmacists into the Health Care Team

Our key informants indicated that pharmacists need to be better integrated into health care teams and that doing so would allow pharmacists to practice at the top of their license and result in better outcomes for patients: “In an ideal environment, pharmacists would be part of the patient care teams providing these value-added services and helping patients improve their medication use, improve outcomes, reduce their overall utilization of health care resources, and for that the pharmacist would be recognized and paid for that participation [on] the health care team.” The literature supports these statements, showing that pharmacists can optimize medication use and ensure safety as well as close medication-related care gaps by working as partners on the health care team with patients and providers, an approach that can lower medication-related care costs and improve overall practice efficiency.^{23,24} For example, one study examining recently hospitalized patients taking at least ten medications found that patients who saw a pharmacist after being discharged had a lower risk of readmission compared to those who did not.²⁵ Another study highlighted several examples across the country of how pharmacists have been shown to be effective members of patient-centered medical home models by optimizing medication use through medication therapy management (MTM).⁵ In addition to MTM, pharmacists have been identified as valuable members of integrated care teams, particularly under Accountable Care Organizations, by helping the team coordinate patient care across providers and settings.²² In a more intensive form of MTM, a comprehensive medication management model, pharmacists help identify and resolve any drug therapy problems so that patients have

the optimal medications to meet their mental and physical needs.^{26,27} While pharmacists may have typically dispensed a medication based on a physician's prescription, or consulted with the physician on a suitable drug, pharmacist involvement in team-based care requires their explicit collaboration with the provider and patient, and a more direct patient care role.²⁸

"I think we are in the midst of a major transformation of the profession of pharmacy...I know that...members...feel an extreme sense of urgency to make sure that the pharmacy workforce is proactive in embracing and going after opportunities to improve outcomes in quality and access for patients along the continuum of where their skills and training are, and not limit themselves to the more traditional distribution role."

While pharmacists commonly review a patient's drug list and recommend changes in dosage, timing, and drug type as part of a long-term care team, their consulting role has been expanding to settings such as primary care practices, Accountable Care Organizations, and patient-centered medical homes.²⁹ Consultant pharmacists play a large role in de-prescribing inappropriate medications due to polypharmacy (simultaneous use of multiple drugs to treat the same condition) in older adults, in order to reduce adverse drug reactions and prevent hospitalization and death.³⁰ A key component of the de-prescribing process—completion of a comprehensive medication history by a pharmacist rather than a general practitioner or during hospital admission—is associated with fewer medication errors, fewer adverse drug reactions, and reduced hospital stays.³⁰ Similarly, specialty pharmacists may fill in gaps in patient care that physicians may not otherwise have time to do; for example, board-certified oncology pharmacists can adjust and assess chemotherapy, manage symptoms, counsel and educate patients, and manage pain.³¹

New modalities of health care delivery have contributed to the expanding roles for pharmacists on health care teams. An example of one such modality is telehealth, which employs telephone, video, and remote patient monitoring to provide care for hard-to-reach patients.³² In the specific area of telehealth called telepharmacy, pharmacists provide patient care such as MTM, chronic care management (CCM), transition of care, and medication dispensing.³² However, the widespread use of telepharmacy is constrained by limited license reciprocity across states and restrictions around which facilities are allowed to operate as remote pharmacy locations.⁵

Stakeholders expressed enthusiasm for integrating pharmacists as part of the health care team. One stated, "I see this as a super-exciting time for pharmacists if they position themselves right to be a resource and to really be an integral member of that health care team." Another noted that, "There could be greater adoption of team-based care and the role of the pharmacist through how health systems are organized and how care is paid for." A challenge is to improve the education and awareness of providers to understand when and how to effectively incorporate pharmacists in the health care team. "Any [prescriber] that has worked with a pharmacist, they will always work with a pharmacist now after they've seen just the education and the critical thinking that a pharmacist can bring to the health care team, it really changes the dynamics of the team."

Box 5. Stakeholder Comments on Pharmacists as Members of the Health Care Team

- "We really need to function as a team to provide and to work at the top of our license, and make the most contribution as possible."
- "[It's important to integrate] the pharmacist as part of care teams, even the pharmacist who's standing in a traditional retail pharmacy...Getting everybody in the system, including the pharmacist, to understand the potential for their role in care management overall."
- "I think the best partnership for health care is [the arrangement where] the physician can diagnose, they can be part of the medication selection process, and the pharmacist can take-over and do dose adjustments appropriately."

Box 6. Role of Pharmacists in the Opioid Crisis

Pharmacists have a role to play in dispensing, patient education, and drug monitoring in response to the misuse of opioid drugs that has reached a crisis-level in the U.S.³³ As of January 2019, all states allow pharmacists to “dispense or distribute naloxone without a patient-specific prescription from another medical professional,” detailed in **Table 1**.³⁴ Fifty percent of people who misuse opioids get these drugs from family and friends who may have valid prescriptions.³⁵ When patients pick up their prescriptions, pharmacists have an opportunity to educate them about proper medication storage and disposal to prevent medication diversion from the patient to others, as well as signs of addiction.³⁵ As a part of Prescription Drug Monitoring Programs (PDMPs), pharmacists can influence the safe use of opioids by checking for certain red flags before dispensing opioids, such as checking if a patient is receiving multiple opioid prescriptions from different providers.³⁵ A key informant commented on the increased involvement of pharmacists as part of the care team related to opioid misuse treatment: “...pharmacists are beginning to be embedded in addiction clinics, in medication-assisted treatment clinics, where pharmacists there are helping to initiate suboxone, [and] also doing a lot of the monitoring of that process as well.” In addition to initiating and monitoring the process of opioid addiction treatments, as part of a patient care team pharmacists can also play a role in educating both the patient and other health care providers about non-opioid pain treatment options.³⁵

A key informant noted the promising role for pharmacists in treating patients with opioid addiction: “We’re hopeful to see more pharmacist integration into addiction treatment. Whereas before we may have only been the dispensers of medication, [now] we may begin to play more of an active role in the treatment of those [opioid] patients.” However, pharmacist involvement on the opioid addiction treatment team relies in part on legislation allowing pharmacists to take on this role and bill for services. Another informant noted that pharmacists “...are hopeful in the opioid legislation that there will be an including statement on pharmacists on the care treatment team, so that there will be funds available to pay for this because right now it’s a challenge for justification of a full-time person...because [they] can’t bill for [their] services.”

Table 1: States Allowing Pharmacists to Dispense Naloxone (as of January 2019)

Policy Type	States
Statewide Protocol or Collaborative Practice Agreement*	18 – CA, CT, DC, HI, IA, ID, KS, ME, MA, ND, NJ, NM, OK, OR, TN, VT, WV, WY
Standing Order	17 – AR, CO, DE, FL, KY, LA, MN, MS, MT, NV, NH, NY, OH, RI, SD, UT, WA
Statewide Standing Order	12 – AL, GA, IL, IN, MD, MI, MO, NC, PA, TX, VA, WI
Direct Legislative Authorization to Dispense without a Prescription	4 – AK, AZ, NE, SC

*Naloxone-specific

Source: National Alliance of State Pharmacy Associations.

3. POLICIES AND PRACTICES AFFECTING EXPANSION OF PHARMACIST ROLES

Variation in State Scope-of-Practice Laws

One key informant summarized how the changing policy landscape is shaping the role of the pharmacist: “The big thing across all settings that has had a tremendous impact on the evolution of the role of pharmacists [are] changes in state laws in terms of what pharmacists can do, things like allowing pharmacists to immunize patients, collaborative practice agreements that allow pharmacists to monitor and in some cases change and even... initiate certain drug therapies...to expand the clinical services that they provide to patients.” Considerable variation in policies across states results in variation in what pharmacists are able to do. While almost all states allow pharmacist prescriptive authority, policies around the formal or informal collaboration between pharmacists and providers through statewide protocols, standing orders, or collaborative practice agreements are constantly in flux.³⁶ As one key informant told us, “In 2019 alone, there were over 100 pieces of legislation [across 34 states] that, if passed, would affect the pharmacist scope of practice.” We briefly describe the various arrangements under which pharmacists can have prescriptive authority.

Statewide protocols allow qualified pharmacists to dispense certain medications and medical tests without a formalized prescriber relationship. These protocols are usually enacted in response to public health concerns, such as the opioid crisis or an influenza outbreak, and focus on medications or classes of medications for conditions that do not require a specific diagnosis.³⁶ The protocol parameters are decided by the state governing body and/or the state board of health, and therefore apply to all licensed pharmacists within the state. Twenty-five states have at least one statewide protocol, most of which allow for provision of immunizations such as the flu vaccine by a pharmacist.³⁸

Table 2 details the states with statewide protocols in place for a few popular medication types.

Statewide orders authorize health care workers to carry out a physician or prescriber’s order for a specific population, but without a prescription.³⁹ Such orders are not patient-specific, but instead apply to any person who meets predefined criteria. Standing orders require an individual prescriber to issue the initial order under their license, but a **statewide standing order** can supersede an individual standing order. Statewide standing orders are issued by the state’s Physician General, allowing pharmacists across a whole state to be able to distribute a specific drug.⁴⁰ Statewide standing orders have been enacted in over 40 states to allow for the provision of naloxone by pharmacists without a patient-specific prescription (**Table 1**).⁴⁰

Box 7. Definition of Collaborative Practice Agreement

Collaborative practice agreements (CPAs) create a formal practice relationship between a pharmacist and a prescriber (usually a physician, but could be a nurse practitioner or other prescriber). CPAs specify what functions (in addition to the pharmacist’s typical scope of practice) can be delegated to the pharmacist by the collaborating prescriber. The terms used and the functions provided under a CPA vary from state-to-state based on the pharmacist’s and prescriber’s scope of practice and the state’s collaborative practice laws. Most often, the functions delegated to pharmacists by prescribers include initiating, modifying, or discontinuing medication therapy.³⁷

Table 2: Examples of States in Which Pharmacists Can Dispense Medications under a Statewide Protocol (without a CPA)

Medication	States
Influenza Vaccine	18 – SD, WV, MT, SC, MD, LA, ME, OR, TX, WY, ID, WI, AZ, CA, VA, AK, NH, NM
Hormonal Contraception	10 – CA, CO, DC, HI, ID, MD, NM, OR, UT, WV
Tobacco Cessation	7 – AZ, CA, CO, ID, IN, ME, NM

Source: National Alliance of State Pharmacy Association and the National Association of Boards of Pharmacy. Pharmacist-Administered Vaccines. June 2020. <https://naspa.us/wp-content/uploads/2019/04/Pharmacist-Administered-Vaccines-June-2020-Final.pdf>; Kooner M, Joseph H, Griffin B, et al. Hormonal contraception prescribing by pharmacists: 2019 update [published online ahead of print, 2020 Mar 3]. *J Am Pharm Assoc* (2003). 2020;S1544-3191(20)30020-0. doi:10.1016/j.japh.2020.01.015; Adams AJ, Hudmon KS. Pharmacist prescriptive authority for smoking cessation medications in the United States. *J Am Pharm Assoc* (2003). 2018;58(3):253-257. doi:10.1016/j.japh.2017.12.015.

Category-specific unrestricted policies allow for the provision of drugs for which no specific diagnosis needed—fluoride supplements, opioid antagonists, etc. Such policies do not place explicit restrictions on patients or populations as compared to state protocols and standing orders, and instead usually reference existing clinical guidelines. For example, pharmacists in Idaho may prescribe patients fluoride supplements in accordance with the American Dental Association’s recommendations.³⁶

Collaborative Practice Agreements (CPAs) between a pharmacist and a licensed provider confirm that the provider “makes a diagnosis, supervises patient care, and refers patients to a pharmacist under a protocol that allows the pharmacist to perform specific patient care functions.”⁴¹ These formal, often legal, agreements can include 1) a scope of agreement that outlines patient inclusion criteria or the patient care functions authorized, 2) legal language that covers liability, and 3) administrative language outlining communication and documentation norms between the pharmacists and providers in the CPA.³⁷ Entering into a CPA with a prescriber grants greater autonomy and expanded scope of practice to the pharmacist and reduces the need for physician approval for patient care services such as making referrals, performing patient assessments, ordering lab tests, and initiating, administering and adjusting drug therapy.⁴²

Box 8. Stakeholder Comments on Collaborative Practice Agreements

- “[Collaborative Practice Agreements (CPAs)] allow the pharmacist to carry out certain activities in terms of drug selection, monitoring, etc. that might not otherwise be included in their scope of practice.”
- “They [CPAs] need to be accompanied...by some credentialing and privileging mechanism. ...there needs to be some assurance from a patient safety perspective that [the] other practitioner is credentialed to carry out the activities that are included in that collaborative practice agreement.”
- “When you think about it [a CPA] from a health plan perspective, it makes total sense, right? You’re helping them [patients] navigate the formulary and what’s covered and what’s not, and helping to educate the prescriber about the most cost-effective choice, and the most clinically appropriate choice, and who better to know that, right, than a pharmacist.”
- “Hopefully fewer things will require [CPAs] and they can just be done by the pharmacist straight-up.”
- “We went from more of being in the consult role where some [prescribers] may ask for what would you do or what would you think or how would you fix this to becoming that actual provider with either scope of practice or a collaborative practice agreement. ... Hopefully we’ll continue to see that shift where pharmacists are becoming more early-providers...they’re becoming that first-line provider where there may not be enough providers in struggling areas.”

Box 9. State Variation in Collaborative Practice Agreements

Variations in Collaborative Practice Agreements (CPAs) across the U.S.³⁶

- **36** states allow pharmacists to initiate patient medications in outpatient settings via CPA
- **12** states limit pharmacist involvement with a CPA to inpatient settings only or prohibit pharmacist initiation of new medications, although modification of existing medication regimens may be allowed
- **19** states only allow patient-specific CPAs, written to restrict services to the patient named in the CPA

Prescriber types, pharmacist qualifications, and site restrictions for CPAs vary by state

- Some state boards of pharmacy require pharmacists to hold an advanced practice pharmacy designation to allow expanded scope of practice through a CPA⁶
 - California: Advanced practice pharmacist
 - New Mexico: Pharmacist clinician
 - North Carolina: Clinical pharmacist practitioner, allowed to initiate, modify, and discontinue medication under physician supervision within team-based care⁷
- **25** states allow nurse practitioners to partner with the pharmacist as the collaborating prescriber under a CPA⁴³

Example of CPA Application to Pharmacists' Practice

- Collaborative or coordinated drug therapy management (CDTM) refers to the initiation or modification of a patient's drug therapy. CDTM allows pharmacists to counsel and assess patients, make referrals, order lab tests, select, initiate, monitor, adjust, and administer drugs and drug regimens, all based on a defined protocol outlined with the collaborative providers.⁴⁴
 - Pharmacist-led CDTM for patients with high blood pressure, blood sugar, or cholesterol levels has been shown to improve treatment quality, increase medication adherence, and contribute to lowering these levels.⁴⁵
 - CDTM performed by a pharmacist under a CPA is allowed in all states EXCEPT Alabama, Delaware, and South Carolina
 - Policy language and additional requirements to perform CDTM vary by state: such requirements include additional trainings, credentialing, or certifications for pharmacists to participate in CDTM, and are required in 22 states.⁴⁶

Currently, CPAs are allowed in some form in all states except Delaware, but they can vary widely depending on state law and do not all grant the same level of authority to pharmacists (Box 9). Some states have more limiting CPA laws, while others allow for broader collaborative practice provisions. Other states allow population-specific CPAs that cover patient categories, not just an individual. A pharmacist with this type of CPA can treat anyone meeting the inclusion criteria. Population-specific CPAs allow pharmacists to practice a broader range of services, such as chronic disease management, acute care, preventative care, and public health services than is allowed with individual CPAs.

The use of CPAs to increase pharmacist integration in Accountable Care Organizations (ACOs) provides an example of how these agreements can apply within a specific care model. ACOs are networks of health care providers that coordinate care for patients, including primary care practices, hospitals, specialty clinics, nursing facilities. Increasing pharmacist involvement through CPAs in ACOs, especially those focused on primary care, allow pharmacists to fill many of the roles previously discussed: MTM, AWWs, chronic disease state management and chronic care management, and transitions of care.⁴⁷ A descriptive study of clinical pharmacists working within a medical group in Pennsylvania found that the strategies to best facilitate the implementation of their services into the group included working with the organization leadership, working with a provider/physician "champion" and building trust with the health care team.⁴⁸ CPAs can help change the traditional health care practice model and aid in expanding pharmacists' delivery of patient care services such as MTM and CDTM. Additionally, appropriate referrals to pharmacists for patient care, better integration of pharmacists into health care teams, consistent patient education about the role of pharmacists in providing care, and supportive business models allowing pharmacists to reimburse for services are all needed to further advance pharmacist delivery of patient care via CPAs.⁴¹

Box 10. Stakeholder Comments on Scope of Practice

- “People are much more in and out of their pharmacy, I think, than any other health care setting, so the more and more that we can have pharmacists allowed to do and expand their scope of practice, I think the more patients we’re going to reach and the more of an impact we’re going to have.”
- “[scope of practice] differences... are around four key domains: one is, can a pharmacist prescribe (...under a [CPA] or prescribing under a statewide protocol or some other authority); can a pharmacist administer medications, and if so by what route; can a pharmacist administer and interpret...common lab tests...that don’t need a lab approval; and can they then act on the results of that lab test, either by adjusting the dose of medication or referring a patient for additional care. They all fall under a pharmacist’s scope of practice, and I think the key to the acceleration of standardization is really to try to develop broad-based consensus elements of what pharmacist should and shouldn’t be able to do based on their training and expertise.”
- “State-wide protocols... [are needed] for pharmacists to do certain immunizations, to do hormonal contraceptives interventions, etc. Point-of-care testing is another area where state practice regulation does vary but is moving to the point where a pharmacist can administer a spot flu detection and certain other point-of-care tests for maybe monitoring chronic conditions.”
- “I think that there is a move afoot to try to make sure that the scope barriers are not discriminatory... it does not make sense that a pharmacist can administer an immunization but a pharmacist can’t administer other medications that are delivered via the same administration pathway.”

Table 3: Types of Policies Expanding Pharmacists’ Scope of Practice

Policy	How Policy Expands Scope	Who Gives Authorization	Patient Population	Collaborating Prescriber ^a
Collaborative Practice Agreement	Initiate or modify drug therapy, provide a broader range of patient care	Physician or other licensed provider (i.e. nurse practitioners)	Can be specific to an individual, or patient category	Yes
Statewide Protocols	Dispense/prescribe medications for health concerns that don’t require a specific diagnosis: naloxone, vaccines, hormonal contraception, tobacco cessation	State pharmacy board, health board or other state governing body	Parameters defined by health concern/ predetermined criteria that if met allows the pharmacist to decide how to treat	No
Standing Order	Dispense medication without a patient-specific prescription	Physician’s order/ licensed prescriber	Specifically defined	Yes
Statewide Standing Order	Dispense medication without a patient-specific prescription	State’s Physician General	Specifically defined, but applies statewide	No

^a Prescriber refers to: a health care provider allowed to initiate medication use per their practice license and scope of practice, including physicians, nurse practitioners, and physician assistants.

Health Insurance and Reimbursement

Pharmacists’ salaries typically have been based on dispensing of drugs rather than reimbursement for patient care services. As a result, the time taken by pharmacists to provide patient care or education is largely unreimbursed. For pharmacists to deliver services beyond their dispensing role, they would need to be recognized as eligible reimbursable providers.⁴⁹ Following is a description of how pharmacists are reimbursed under two major public health insurance programs, Medicare and Medicaid.

Medicare

Medicare, the federal insurance program for older (age 65+) and disabled populations, does not recognize pharmacists as eligible providers, so they are unable to directly bill for services with a few exceptions. Pharmacists are often considered auxiliary personnel if working under an eligible provider, and billing options for pharmacists vary by setting.⁵⁰ Under Medicare Part D but not Part B, pharmacists working at a community pharmacy can directly bill for selected Current Procedural Terminology (CPT) codes such as MTM.⁵¹ Services performed by a pharmacist at an independent physician office can use “incident to” billing. This arrangement results in the provider billing for the pharmacists’ services under a qualified billing provider (most often a physician) or clinic identifier as if they were the provider who performed the service.⁵² The qualified provider then reimburses the pharmacist once the payment is received. Medicare codes for billing pharmacist-based services fall under Evaluation & Management (E&M) codes 99211 through 99215. Since pharmacists are not technically a recognized provider under Medicare Part B, they can only submit a bill directly to Medicare for reimbursement using code 99211, which only applies to 5 minutes of simple clinical services.⁵²

Annual Wellness Visits (AWVs) are one non-dispensing service under Medicare that pharmacists are able to perform and for which they are able to bill. Under the Affordable Care Act, AWVs are covered for all Medicare beneficiaries under Medicare Part B who receive preventive check-ins and medical history and risk factor assessments. Medicare does not require AWVs to be completed by a physician, but any non-physician health professional performing an AWW is required to work under the direct supervision of a physician.⁵³ Under a CPA, pharmacists are considered a licensed practitioner working under the supervision of a physician, thus allowing them to perform and bill for AWVs.⁵⁴ Pharmacists can bill Medicare for services as “clinical staff” or “auxiliary personnel” (CMS) incident to the physician or other qualified health professional; this can serve as a source of revenue to cover the cost of a pharmacist salary in an inter-professional practice.⁵⁵ Pharmacist-led AWVs have been shown to “decrease risk of polypharmacy, under-prescribing, and adverse drug events.”⁶

Several bills have been introduced in the past to amend the Social Security Act and allow Medicare to cover pharmacist services in areas with shortages of health professionals or for services that would normally be covered by a physician. These bills include House bill HR4190 Federal Pharmacist Provider Bill introduced in 2014 and then reintroduced as HR592 in 2015, and S109 Pharmacy and Medically Underserved Areas Enhancement Act in 2017 in the Senate. None, however, have been passed into law.

Medicaid

Medicaid, the federal government’s state-administered, and jointly funded, health insurance for low-income and vulnerable populations, varies by state as to the types of services for which pharmacists can be reimbursed. In 14 states, Medicaid reimburses pharmacists for patient care services. Covered services include MTM, vaccine administration, counseling for smoking cessation, among others.⁵⁰ Case studies from seven states with Medicaid-supported medication management (MM) programs (CT, MA, ME, MN, NC, OH, WI) showed that when pharmacists provided MM services to Medicaid patients, patient treatment goals improved, medication-related problems were resolved, and patient drug and hospital costs were reduced.⁵⁶ MM services included comprehensive medication reviews and more targeted interventions delivered in person in various health care settings (community pharmacy, clinic, primary care practice, hospital, ER) as well as remotely by phone and video chat. In these case studies, eligible beneficiaries for MM services usually had to have multiple chronic diseases (2-3+) and be on multiple (4+) prescription medications.⁵⁶

Box 11. Stakeholder Comments on Reimbursement and Compensation

- “The policy change at both the state and federal level that has eluded the profession as we’ve moved toward value-based systems is meaningful reform of the financing of pharmacy practice. And that’s where the profession, in my opinion, is terribly stuck.”
- “Even if we can do these things, can we get paid for it? ...the answer is ‘no.’”
- “[Lack of compensation] is a barrier to incentivizing the practitioners to pursue those expanded scopes of practice.”
- “The problem [providing high-quality, team based care] is attributing exactly what those activities are to pharmacists and creating a payment mechanism whereby they can be reimbursed.”
- “...[There are problems with] the reimbursement and the economic drivers for what pharmacist services are compensated. Traditionally it has been a very product-based transactional kind of business model. Where we’re seeing with value-based purchasing and even providers, collectively, becoming more systematized (health systems, managed care organizations), there’s an emphasis on going at-risk for those patient populations, which really then changes when those reimbursement dollars are on the line—it changes the approach and the organization to work.”

DISCUSSION

Pharmacists are highly skilled professionals who play an important role in the delivery of high-quality care, whether they work independently in the dispensing of prescription drugs or as part of the care team. Pharmacists can be accessible to both patients and providers given the diverse settings in which they work. The range of pharmacists’ roles are expanding with growing recognition that pharmacists can be better integrated into the care team.

Variation in state scope-of-practice laws and regulations limits pharmacists’ ability to consistently practice at the top of their license and also make it confusing for other providers to know the extent to which pharmacists can be used on a care team. Pharmacists may be able to fill critical gaps in healthcare delivery, such as primary care, by providing wellness visits and immunizations in the community, which is within their training.^{57,58} Also, as the number of specialized pharmaceuticals appearing on the market increases, care teams may want to increase the extent to which pharmacists are involved in managing patient care. To realize the full potential of pharmacists, scope-of-practice laws and regulations should be reassessed to ensure that pharmacists are practicing at the top of their license and to reduce practice variability across the country.⁵⁹ Accompanying changes in scope-of-practice laws and regulations, reimbursement practices should be examined to ensure that pharmacists are able to be deployed effectively to meet patient needs in a variety of settings.

Expanding the role of pharmacists may be necessary to keep up with changes in the healthcare market and meet national goals. For example, pharmacists’ dispensing opportunities may be reduced by changes such as increased use of online and mail order pharmacies, Amazon’s entry into the pharmacy market, consolidation of retail chains, and greater employment of pharmacy technicians.⁷ With expanded roles, pharmacists can be better deployed to help the U.S. Department of Health and Human Services (HHS) meet the goal of providing affordable health care to the population by ensuring safe use of medications, reducing hospitalizations, and finding medication alternatives that result in lower out-of-pocket spending.⁶⁰ Given that currently, pharmacists are largely reimbursed based on volume (meaning that dispensing more drugs results in higher revenue for the pharmacy), shifting their roles to deliver more value-based and preventive care may contribute to reductions in health care spending. Also, although third-party pharmacy benefit managers (PBMs) primarily negotiate pharmaceutical prices between insurance companies and drug manufacturers,⁶¹ pharmacists could play a more active role in meeting HHS’ priority of lowering the price of drugs with expanded scope of practice and greater engagement in care delivery decisions.⁶⁰

The pharmacist workforce currently has varying and often restricted roles in health care delivery in the U.S. This workforce has the potential to help meet national goals and to help the health system meet critical gaps in care. The first step is understanding what pharmacists are trained to do compared with what policy and financing rules allow them to do. To ensure that this highly trained workforce is not underutilized, policy actions to update scope-of-practice laws and regulations and reimbursement/billing practices are warranted.

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APPENDIX A: PHARMACIST ROLES

The PharmD prepares pharmacists to perform many tasks and take on a breadth of roles. **Table A-1** highlights typical and emerging pharmacists' roles as identified in the literature and through stakeholder interviews.

Table A-1: Pharmacist Roles

Pharmacist Role	Description and Examples
Medication Dispensing	The preparation and packaging of medications for patients based on a prescription from a health care provider. Involves patient counseling on appropriate use and other relevant drug information, as well as interaction with the prescriber to confirm dosage, possible drug interactions, and drug choice. Occurs in many settings where pharmacists often work: retail, chain, clinic or hospital pharmacies. ⁶²
Medication Therapy Management (MTM)	MTM involves the continual monitoring of medications for patients with chronic illnesses such as diabetes, asthma, or high blood pressure. It includes medication therapy review, maintaining a personal medication record, and creating a medication action plan, in addition to documentation and follow-up plans. ⁶³
Chronic Disease Management	Medication management for chronic disease patients using evidence-based treatments. Involves medication monitoring, medication therapy review, and patient education on medication adherence and relevant lifestyle changes and disease self-care. Examples include management of asthma, cardiovascular diseases, diabetes, etc. ⁶⁴
Transition of Care	Transition of care refers to pharmacists' involvement in patient care when transitioning between settings, such as after surgery or hospitalization. It involves coordination of care between providers at different settings, discharge counseling, medication reconciliation, and involvement in medication adherence and assistance. ⁶⁵
Patient Education, Health Promotion, and Disease Prevention	Includes performing health screenings, immunizations, general education and medication counseling for patients. Pharmacists also may be able to provide tobacco cessation aids and other preventive services such as hormonal contraception depending on state regulations. ⁶⁶

Medication dispensing is the most common and still among the most important pharmacist roles. Dispensing involves a pharmacist fulfilling a drug prescription ordered by a licensed provider such as a medical doctor or nurse practitioner.

In **medication therapy management (MTM)**, pharmacists work with patients and their providers to identify the most effective drug therapy for their condition. The pharmacist reviews all medications prescribed to the patient, looking for duplications, use of unnecessary medications, and possible drug interactions.⁶⁷ The pharmacist then works with the patient and their prescriber to create an action plan addressing any medication-related problems identified during this comprehensive medication review. The goal of MTM is to improve medication adherence and misuse by patients and prevent adverse drug events.⁴⁷

Pharmacists can also provide **chronic disease management** to patients who may receive prescriptions from multiple providers. When managing multiple prescriptions, the pharmacist may serve as a central source of information and can look for contraindications across prescriptions. The role overlaps with MTM but expands beyond more than one disease.

As patients transition between care settings, such as at hospital discharge, pharmacists may be relied upon to assist in the **transition of care**, which may reduce fragmentation of care and increase continuity of care. Pharmacists can consult with patients and reinforce instructions regarding medication use when patients pick up prescriptions.

Pharmacists can provide **patient education** and **promote health to prevent disease**. They can educate patients on smoking cessation aids, deliver preventive care such as administering flu shots and providing hormonal contraception, and screen for disease through blood pressure tests and other point-of-care tests.

While not an explicit role, pharmacists often work with patients to manage costs and navigate health insurance coverage. Pharmacists may influence clinicians' and/or patients' decisions of which medications to use, suggesting a generic rather than a brand-name medication or an oral treatment rather than an intravenous method to lower out-of-pocket costs. When high-

priced specialty drugs are involved, they can identify lower-cost alternatives. Pharmacists can provide patients with information on out-of-pocket prices and help patients choose suitable over-the-counter (OTC) options when available.⁶⁸ They can also help reduce costs for both patients and the health system by anticipating future adverse drug events from use of a particular medication, leading to a preemptive change in medication that may reduce hospital admissions and length of hospital stays.²⁷

APPENDIX B: TYPES OF PHARMACISTS BY SETTING, AND COMMONLY USED TERMS

Because pharmacy practice can be based on setting or function, the framework described in [Table B-1](#) is just one way to categorize pharmacists. The taxonomy is most useful for understanding the pharmacist workforce in the context of this report. Since no single mutually exclusive taxonomy or framework exists, categories may overlap. We discuss these pharmacist types in further detail below.

Retail/community pharmacists are the most common type of pharmacist in the U.S. According to the American Pharmacy Association (APhA), 112,000 pharmacists work in retail settings (66,000 in chain pharmacies, and 46,000 in independent pharmacies).⁶⁹ As the APhA notes, retail pharmacies can include independent, chain, mass merchandiser and supermarket pharmacies. Although community and retail pharmacists are often grouped together, large retail/chain pharmacies commonly use the term “community pharmacy” when distinguishing their services from other pharmacies. Some key informants view the term “community pharmacy” as referring to an independent, non-publicly traded pharmacy as opposed to one affiliated with a large, publicly traded retail chain. In addition to dispensing medications, community pharmacists are particularly well-situated to promote health awareness and disease prevention by performing health screenings, immunizations, educating and counseling patients, and administering flu shots and point-of-care tests.⁷⁰

Hospital pharmacists work in inpatient care settings including acute care, specialty, and long-term care hospitals. These pharmacists are often directly involved in patient care and work closely with other providers. They are clinical pharmacists who can specialize in a specific area such as pediatrics, cardiology, or surgery. Hospital pharmacists play a large role in transition of care for hospitalized patients by helping to develop therapeutic plans and assessing medication needs as patients are discharged. These pharmacists also prepare medications for use in surgery, emergency, and other situations.⁷¹

Ambulatory care pharmacists work in a variety of outpatient settings including urgent care, emergency rooms, outpatient treatment centers, community health centers, and walk-in clinics in either hospital or community settings. Ambulatory care pharmacists assist in medication management, patient education and health promotion.⁷²

Long-term care and home health care pharmacists dispense, monitor, and adjust patient’s medication therapies as needed. Typical patients for these pharmacists include the elderly, chronically ill, and hospice patients that receive care at extended-care, rehab, assisted-living, or nursing home facilities, among others. Pharmacists often dispense IV antibiotics, pain management medications, and even chemotherapy drugs to patients in these settings. A large focus of medication therapy management (MTM) for these pharmacists is drug interactions, as patients in these settings are often on multiple medications, depending on their condition. Dosage requirements and changes in drug therapies are also closely monitored. Pharmacists in long term care and home health settings often partner with hospice organizations, social services, and nurses.^{73,74}

Pharmacists that work in the following settings may be less focused on direct patient care than the above described pharmacists, although they may still perform some of the patient care roles and have direct contact with patients.

Managed care pharmacists work for pharmacy benefit management (PBM) companies, commercial, and government health plans trying to find the best treatment and drug therapy for health insurance plans. Their goal is to find not only the most appropriate but also the most cost-effective and convenient drugs. The role of a managed care pharmacist in chronic care management is to monitor patient safety and perform drug use evaluations, but their main role is often in business operations and cost management. These pharmacists may also be involved in dispensing and distributing drugs, patient counseling, and developing clinical programs.⁷⁵

Pharmacists working in **academia** as a researcher or faculty contribute to pharmacy education, clinical practice, or research. They may be directly or indirectly involved in patient care depending on whether they practice their own clinical work, oversee pharmacy students or residents, or consult with other health care professionals. Other settings where academic pharmacists may work include various sectors of the federal government, including the Centers for Medicare and Medicaid Services (CMS), Veterans Affairs (VA), the military, the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), and others. Pharmacist roles in these settings could include administrative, clinical, or academic work.⁷⁶

Pharmacists working in the **pharmaceutical industry** can perform many different roles, including research and development, manufacturing, and health policy.⁷⁷ One common role is medical science liaison (MSL). MSLs consult for pharmaceutical or other health care companies, serving as scientific experts and maintaining relationships with health professionals outside of the company, including other pharmacists and physicians that hold clinical or academic positions.⁷⁸

Table B-1: Pharmacists' Settings of Care and Associated Roles

Setting	Setting Description and Examples	Range of Primary Roles and Services					
		Medication Therapy Management	Dispensing	Health Promotion/Disease Prevention	Chronic Disease Management	Transition of Care	Other
Retail/Community	Retail business outside of other health care delivery settings, where medication is dispensed to patients based on a prescription from a health care provider.	X	X	X	X		X
Hospital/Hospital System	Care provided to patients in an admitted/inpatient setting. Includes clinics, ER, hospital wards, ICU, ORs.	X	X	X	X	X	X
Ambulatory Care	Consult with patients in primary care and outpatient settings such as urgent care, community health centers, federally-qualified health centers, and walk-in clinics.	X	X	X	X		
Long-Term Care/ Home Health Care	Treatment of elderly, hospice, or chronically ill patients (i.e. w/ HIV or MS) within an extended care facility, nursing home, rehab center, hospice, assisted living, or patient home.	X	X	X	X	X	
Managed Care	Work for a HMO, health plan, or pharmacy benefit management company to optimize cost-effective treatments by evaluating therapies, reducing doctor visits, etc.	X	X		X		X
Academia	Faculty or researcher who may teach student pharmacists, conduct scientific research related to pharmacology and health care, etc. at a university or college.						X
Industry	Work in the pharmaceutical industry in the research and development of new drugs, toxicology, pharmacotherapy, and more.						X

APPENDIX C: EDUCATION AND TRAINING

All pharmacists must complete the same general education requirements to become a licensed pharmacist. The entry-level degree is a four-year doctoral program, the Doctor of Pharmacy degree (PharmD) that follows at least two years of undergraduate pre-requisite work.⁷⁹ Specific licensing requirements depend on the state, but most states require that licensure candidates receive their PharmD from an accredited program, and pass at least two licensing exams. The North American Pharmacist Licensure Exam (NAPLEX) and the Multistate Pharmacy Jurisprudence Exam (MJPE) are the required licensing exams for most of the state boards of pharmacy. Some states require a state-specific written and practical exam for licensure in addition to the NAPLEX and MJPE.⁸⁰

Beyond these initial education and licensure requirements, pharmacists may pursue additional education to become specialized or board-certified. Interviewed stakeholders indicated that newly graduated pharmacists frequently want to practice at a higher level, and so gravitate towards roles that may require additional specialized training or board certification. Board certification is offered by the Board of Pharmacy Specialties (BPS) in thirteen specialty areas, and is a designation indicating that a pharmacist has gained “additional knowledge, experience, and skills in a defined area of pharmacy practice,” above and beyond what is required by a state board of pharmacy to maintain licensure to practice.⁸¹ Applicants to BPS certification typically have additional post-grad training, and have either completed a residency or have comparable practice experience. **Table C-1** lists the specialty fields certified by BPS and the number of pharmacists with active specialty licenses (the thirteenth specialty, solid organ transplantation pharmacy, began in 2020).¹⁶

As of December 2019, the Board of Pharmacy Specialists reported 46,000 licensed pharmacists with active specialty certifications, which is roughly 13% of all licensed pharmacists in the U.S. (4,972 of these certifications are for pharmacists outside of the U.S.)⁸²

Pharmacists with specialty certifications should not be confused with the term “specialty pharmacist,” also known as a “clinical pharmacy specialist”. Specialty pharmacists have specialized skills and work with “specialized drugs” used to treat chronic, rare, and more complex illnesses. These pharmacists treat life-altering or life-threatening conditions such as immunologic disorders, HIV, Hepatitis C, multiple sclerosis, and cancer, by dispensing and monitoring the complex and high cost medications for these diseases. However, there is no universal definition of what constitutes a “specialty” drug since each health plan or insurer defines this differently.

Table C-2 shows the growth in the number of institutions and awarded PharmD degrees over the past ten years. The literature points to several possible factors for the decline in growth in recent years. These include decreasing class sizes, saturation of the job market and subsequent lack of job opportunities due to academic overgrowth, and increasing requirements for clinical

Table C-1: Number of Board-Certified Pharmacists, by Specialty, as awarded by the Board of Pharmacy Specialties (BPS), 2018

Pharmacy Specialty	No. of BPS board-certified pharmacists
Ambulatory Care	4,342
Cardiology	319
Compounded Sterile Preparations*	435
Critical Care	2,579
Geriatrics	4,674
Infectious Disease	854
Nuclear Pharmacy	400
Nutrition Support	672
Oncology	3,197
Pediatrics	1,182
Pharmacotherapy	26,077
Psychiatric	1,270
Total as of December 2019	46,001

*New specialty as of 2019

Source: Board of Pharmacy Specialties. Annual Report: BPS Board Certified Pharmacists. 2019. <https://board-of-pharmacy-specialties.dcatalog.com/v/2019-Annual-Report/>

positions, such as the completion of a residency year.^{15,83} The Occupational Employment Statistics collected by the U.S. Bureau of Labor Statistics and surveys employers reported almost 310,000 employed pharmacists as of May 2018; this number represents a growth of about 30% over the past decade.⁸⁴

Table C-2: Total Number of Doctor of Pharmacy Degrees Conferred 2010-2019

Year	No. of Institutions	Total Number of Degrees* Awarded	Percent Change from Previous Year
2009-2010	95	11,736	—
2010-2011	100	12,335	5.1%
2011-2012	107	13,007	5.4%
2012-2013	113	13,369	2.8%
2013-2014	117	13,884	3.9%
2014-2015	122	14,261	2.7%
2015-2016	126	14,664	2.8%
2016-2017	127	14,804	1.0%
2017-2018	132	14,934	0.9%
2018-2019	134	14,884	-0.3%

*Degree type: Doctor of Pharmacy (PharmD) degree awarded as first professional degree. Other types of pharmacy degrees (M.S. or PhD) not included.

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2009-10 to 2018-19, comparing institutions dataset. Accessed July 28, 2020. <https://nces.ed.gov/ipeds/>.

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