

# Physician Assistants: From Pipeline to Practice

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## Abstract

For over four decades, physician assistants (PAs) have demonstrated that they are effective partners in a changing health care environment, readily adaptable to the needs of an evolving delivery system. With increased expectations of physician shortages, especially in primary care, PAs will be called on to fill provider gaps and new roles in interprofessional team-based delivery systems. There are over 90,000 certified PAs in the workforce and 173 accredited programs yielding an estimated 6,545 graduates annually, with an estimated 65 new programs

seeking provisional accreditation by the end of 2016. New data on the PA pipeline and practice provide key information about the potential of this workforce; however, the overall impact of the PA pipeline on projected shortages remains unclear. Barriers exist to optimal deployment, including faculty shortages, scope-of-practice regulations, and a lack of clinical placement sites.

This paper brings together data from the Physician Assistant Education Association and the National Commission on

Certification of Physician Assistants and its supporting organization, the nccPA Health Foundation. Primary sources include PA candidates, educational programs, students, and certified PAs. Collectively, these data provide a comprehensive picture of PAs' contributions to the health care workforce. Armed with pipeline and graduate practice data, policy makers and workforce planners will be equipped to design new models of practice that maximize the potential contributions of this growing PA workforce on health care teams.

**A**s reflected in recent health care reforms, primary care is the platform for delivering high-quality, patient-centered care. However, fewer physicians are entering the primary care workforce.<sup>1,2</sup> To address predicted shortages of primary care providers, attention has turned to physician assistants (PAs), who require shorter training and can readily adapt to new work environments.<sup>3</sup> With the quality of PAs' services and satisfaction of their patients well established,<sup>4,5</sup> the focus is now on moving them through the education pipeline and engaging them in partnerships with physicians.<sup>6,7</sup>

PA practice and education have historically emphasized primary care in medically underserved or rural

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communities. According to the Agency for Health Care Research and Quality, PAs and nurse practitioners represent approximately 30% of all primary care providers.<sup>8,9</sup> Primary care physicians are more likely to work with PAs, nurse practitioners, and certified nurse midwives than are physicians in other specialties, especially in those practices that received more revenue from Medicaid (53% versus 45.2%).<sup>10</sup> Family medicine practice nearly doubled the use of nurse practitioners or PAs from 1999 to 2009, and, as of 2011, nearly 60% reported working routinely with PAs, nurse practitioners, or certified nurse midwives.<sup>11</sup> A recent study in the United States Veterans Health Administration facilities demonstrated that PAs and nurse practitioners provide over one-quarter of primary care visits, and these visits are similar to those of physicians with respect to encounter and patient characteristics.<sup>12</sup>

PAs also now fill roles formerly held by resident physicians, largely the result of a restriction in residency training hours designed to decrease medical errors due to fatigue.<sup>13,14</sup> PAs filling housestaff-like roles were shown to improve patients' safety, enhance continuity of care, reduce residents' nonessential tasks, and increase both residents' and PAs' satisfaction in the work setting.<sup>15,16</sup> Because of their adaptability, PAs now fill gaps in nearly all physician specialties.<sup>17</sup>

The Health Resources and Services Administration reports that 16,000 additional primary care practitioners are necessary just to meet today's needs, a need most acutely felt in rural and low-income urban communities.<sup>18</sup> Nearly 57 million people live in areas without adequate access to primary health care.<sup>19</sup> As to the future, Petterson and colleagues<sup>20</sup> predict the nation will face a shortage of 52,000 primary care physicians by 2025. This large deficit will be due, in part, to three additional challenges the nation faces: (1) the Patient Protection and Affordable Care Act, (2) aging baby boomers, and (3) changes in physicians' practice patterns. The first two will increase demand; the last will decrease supply.

The Affordable Care Act greatly increases access to health care services through the expansion and creation of health insurance exchanges. Medicaid, in particular, faces provider network challenges, with many physicians unwilling to accept significant numbers of Medicaid patients. In the future, PAs may be engaged to address these challenges as previous research indicates that a higher proportion of PAs than physicians provide services to individuals on Medicaid and those located in underserved areas.<sup>21,22</sup> The aging of the baby boomers will also increase demand, as the need for health care services increases significantly with age.<sup>23</sup> The

population of Americans who are 65 and older will grow from 40 million in 2010 to 72 million in 2030.<sup>24</sup> Medicare beneficiaries are already challenged to find physicians willing to accept them. Over 52% of physicians have reported that they plan to or already limit access to Medicare patients.<sup>25</sup>

Some researchers argue that these predictions of provider shortfalls are exaggerated because they fail to account for substitution by PAs and nurse practitioners, clinical practice efficiencies, and providers working to top of licenses.<sup>26</sup> Others remain more skeptical, suggesting that innovation alone cannot solve predicted patient access problems, even in the face of increased capacity of medical, osteopathic, and PA schools.<sup>27</sup> A large number of physicians retiring or cutting back hours could exacerbate the anticipated shortage of health care providers. A 2012 survey of over 13,000 physicians showed a concerning level of dissatisfaction with their professional career, with 22% indicating intent to cut back hours and over 13% intending to retire.<sup>25</sup> PAs, especially those working in primary care settings, may offset some of the predicted physician shortages, but is the capacity of PA educational programs sufficient to fully address these deficits, and how will other challenges to make the most of the PA workforce be addressed?

Although PAs have established themselves as a profession, obstacles continue to prevent their full utilization. For example, licensure laws and regulations (such as statutory physician-to-PA ratios) vary from state to state, at times restricting the number of PAs physicians may employ or not allowing PAs to work to their full scope or ability. One study found that PA supply increased in states considered to have more favorable practice statutes.<sup>28</sup> As practice models evolve, especially towards physician-led teams, physicians will seek new, creative ways to deliver care, and thus increasingly seek statutes and regulations that allow them flexibility to use their PA workforce in order to anticipate and respond to the unique needs of communities, practice models, and reimbursement systems.

With the passage of the Affordable Care Act, workforce planners are now charged with designing new systems of care that increase access, promote quality, and enhance the patients' overall experience.

These systems, which will be based on integrated, multidisciplinary teams that necessarily include PAs, require policies that promote the best use of a diverse workforce. And to inform their work, planners and policy makers will need measures of provider pipelines, productivity, and attrition.<sup>29</sup> This article highlights the initial steps of a strategic initiative by the National Commission on Certification of Physician Assistants (NCCPA) and the Physician Assistant Education Association (PAEA) to share new measures and data on PA education and practice.

## Physician Assistant Workforce

### Data sources

To provide a more comprehensive picture of the challenges and opportunities related to integrating PAs in the workforce pipeline, the PAEA and the nccPA Health Foundation (a supporting organization to the NCCPA) collaborated to share PA workforce data. Primary sources include PA candidates, educational programs, students, and certified PAs.

PAEA's candidate pipeline data (2011–2012) came from the Central Application Service for Physician Assistants, in which 150 (88%) of all accredited programs participate. PAEA's 27th Annual Report (2010–2011) is drawn from an annual survey of member programs.<sup>30</sup> The annual program survey, first conducted in 1984, is divided in six sections that profile PA educational programs' general, financial, personnel, applicant, matriculant, and graduate information.

All U.S. states and territories have chosen to rely on initial certification from NCCPA as a criterion for licensure. The NCCPA is the only certifying body for PAs in the United States and therefore provides oversight for initial certification, certification maintenance, and recertification. Comprehensive workforce data are collected from PAs completing their certification maintenance process through an online professional profile. As of December 31, 2012, a total of 54,982 (61%) certified PAs had completed their profiles.

### Programs and students

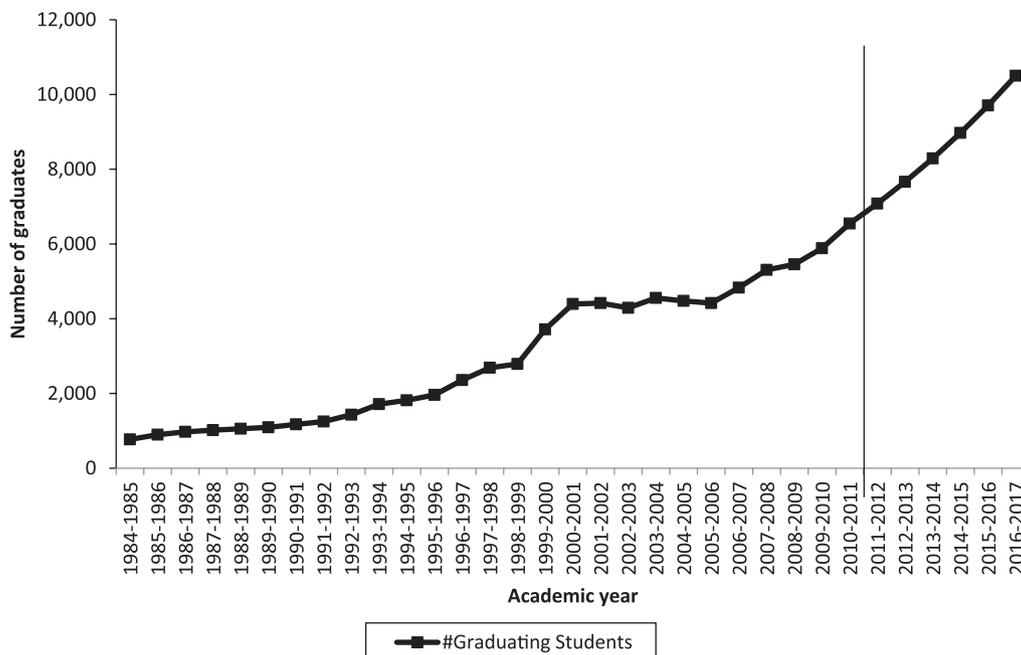
The PA pipeline is determined by the general interest in the profession (applicant pool) as constrained by the capacity of educational programs. The PA

applicant pool has grown significantly, with annual increases ranging from 11% to 20% since 2007. The applicant pool for 2013 reached 19,786, an increase of only 6% over 2012, suggesting that the growth may not continue as vigorously as in previous years.<sup>31,32</sup> Regardless, the current applicant pool yields a well-qualified pool of candidates, with 3.5 candidates for each seat in existing PA programs. The average first-year student is 26 years old, with an overall undergraduate grade point average (GPA) of 3.49 and science GPA of 3.43. Most (73%) are female.<sup>30</sup> This contrasts with the typical first-year medical school student, who is 23 years old, with an overall GPA of 3.67 and science GPA of 3.61. Of the students entering medical schools in 2010, 53% were male.<sup>33</sup>

Currently, there are 173 accredited entry-level educational programs; at least 65 other programs are expected to seek provisional accreditation by 2016.<sup>34,35</sup> Over the past five years, 32 new PA programs began accepting students, and the maximum capacity of all programs has increased on average by 17%. Programs typically take 26 months and offer a master's degree. Program enrollment and capacity have steadily climbed; unfilled capacity remains under 10%. Some unfilled capacity represents attrition, which averaged 2.6% for 2010–2011.<sup>30</sup>

The number of graduates has also steadily climbed: approximately 6,545 PAs entering the workforce in 2011. Some researchers predict a 72% increase in the PA supply by 2025.<sup>36</sup> Figure 1 illustrates a trend line for PA program output from 1984 with estimates of future growth through 2017. On the basis of a growth rate of 8.2% over the past five years, it is estimated that, by 2017, graduates will reach 10,500. However, these estimates do not factor the rapid expansion of PA programs expected over the same time.

Although the number and capacity of PA programs has steadily grown, concerns have emerged regarding whether growth is sustainable in the face of shortages of faculty and clinical training sites. Increasing numbers of students across the health professions have pushed demand and competition for a limited number of existing clinical slots. Some of these programs have begun paying for clinical rotations, often disrupting long-standing



**Figure 1** Graduates, by year, from physician assistant educational programs, with prediction of future growth. Source: Physician Assistant Education Association. Twenty-Seventh Annual Report on Physician Assistant Educational Programs in the United States, 2010–2011. Alexandria, Va: Physician Assistant Education Association; May 2013.

educational partnerships between other PA programs and practice sites. Between 2010 and 2011, programs also lost approximately 7% of their faculty, primarily to return to clinical practice. Typically it took over three months to replace faculty positions. Faculty shortages will be exacerbated as many within the education workforce approach retirement age. As of 2011, the average age

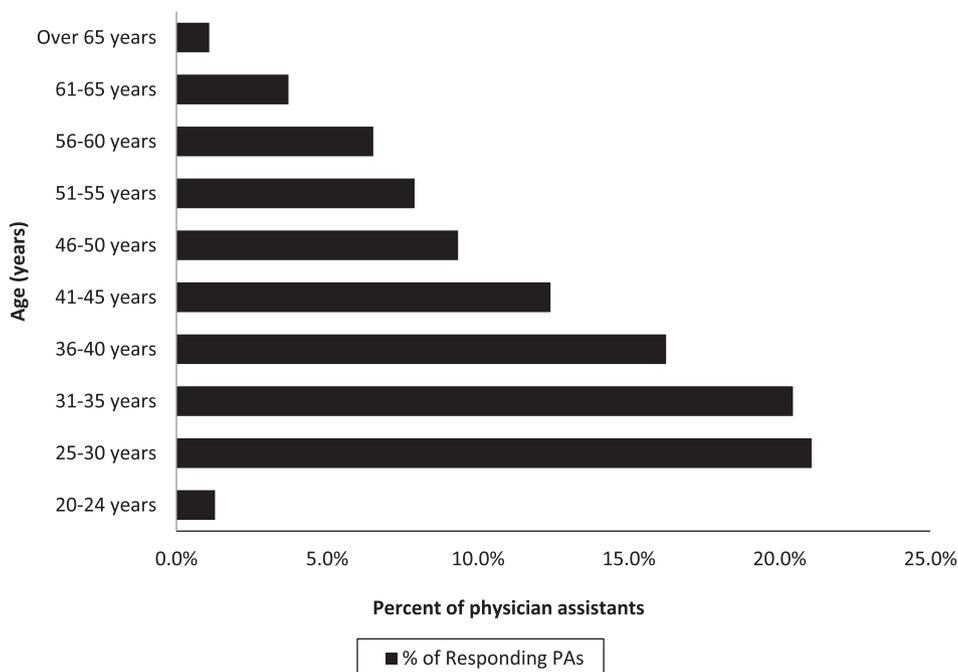
of PA faculty was 49.8 years, and nearly half of the nation’s PA faculty are 50 years or older.<sup>30</sup>

**The PA workforce**

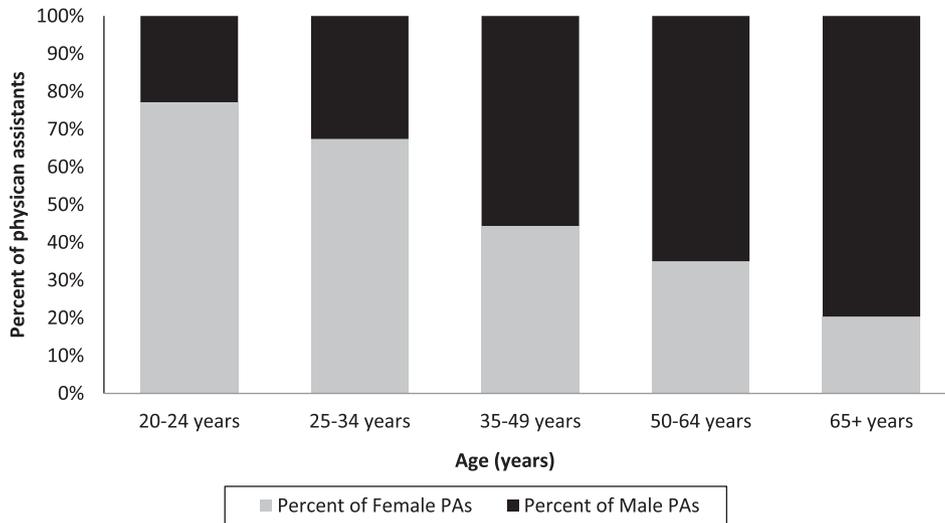
The PA profession was created in the mid-1960s and fed by an active pipeline of male medics recently returned from

the Vietnam War. However, today’s PA workforce tends to be younger (see Figure 2) and more female (65.2%). Among male PAs, 33.6% are 50 and older, whereas only 17.6% of female PAs are that old (see Figure 3).

PAs also tend to be white (82.4%) and, overall, are less diverse than the U.S.



**Figure 2** Age distribution of certified physician assistants (PAs) in 2012. Source: Physician Assistant Professional Profile. National Commission on Certification of Physician Assistants (NCCPA) 2012 Certified Physician Assistant unpublished data. The percentages are based on 54,982 PA responses.



**Figure 3** Age distribution, by gender, of certified physician assistants (PAs) in 2012. Source: Physician Assistant Professional Profile. National Commission on Certification of Physician Assistants (NCCPA) 2012 Certified Physician Assistant unpublished data. The percentages are based on 54,982 PA responses.

population, which is 50.8% female and 78.1% white.<sup>17</sup> There is a notable disparity in the proportion of Hispanic PAs (5.8%) compared with the U.S. population (16.4%).<sup>37</sup>

The PA profession was created to expand the primary care workforce and address the shift of more physicians to specialty care. Hooker and Cawley<sup>38</sup> estimated that in 1974, 68.8% of PAs were practicing in primary care. However, as physician practice trends shifted from primary care to specialty and subspecialty practice, PAs assumed new roles alongside their physician colleagues. Given the partnership model of delegated autonomy within which PAs practice, it is not surprising that the specialty practice patterns of PAs are now similar to those of physicians. Slightly less than one-third of U.S. physicians who spend the majority of their time in direct patient care specialize in primary care (defined as family medicine, general internal medicine, general pediatrics, and geriatric medicine).<sup>39</sup> Just over 33% of PAs reported primary care as their current area of practice.

Unlike those of their physician counterparts, however, PAs’ practice patterns are relatively flexible. In fact, nearly one-half of PAs reported that they worked in a primary care specialty at some point during their career. PAs tend to practice in a variety of specialty areas over the course of their career; almost half (46.5%) report practicing in two to three areas.<sup>17</sup> Approximately

39% have practiced in only one specialty area; however, nearly half of those PAs have practiced less than five years. It is possible that they may switch specialties later in their careers. The capacity for flexibility, a characteristic of PA practice, creates the potential for shifting the PA workforce towards areas of greatest need through favorable statewide regulatory environments and other incentives.

Increased flexibility is also supported by the fact that, unlike physicians, postgraduate residency training is optional for PAs. Currently, there are 41 PA residency program members of the Association of Postgraduate Physician Assistant Programs. Most of these are in the areas of emergency medicine, general surgery, and surgical subspecialties. They average 12 months in duration, and most have small class sizes, with an enrollment of two residents being the most common.<sup>40</sup> In March 2006, the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) voted to begin providing optional accreditation services for clinical postgraduate PA programs; the ARC-PA Web site currently lists eight programs.<sup>41</sup> The growth of postgraduate programs has remained relatively stable and class sizes remain small, so the impact on workforce is limited.

Similarly, in 2011, the NCCPA launched a program for certified PAs wishing to document additional knowledge and skills in several practice areas. PAs who meet specific prerequisites

and pass an examination are awarded a certificate of added qualifications (CAQ). Currently, CAQs are offered in cardiovascular and thoracic surgery, emergency medicine, nephrology, orthopedic surgery, and psychiatry.<sup>42</sup> In 2014, pediatrics and hospital medicine will be added. Postgraduate PA training and/or CAQs are generally not required for employment, but it could potentially affect the workforce pipeline and distribution if this were to change.

PA retention in clinical practice remains high. Only 5.2% indicated that they are not currently employed in a clinical PA position. The most common reason for not practicing clinically was family responsibilities (33.5%). It is unclear how many have stopped temporarily and intend to return. Of those not practicing clinically, many are still using their PA training: 11.9% are employed in PA education and 15.6% are working in the health care industry. Of the clinically active PAs, 9% plan to leave their current principal clinical position within a year. Although this number may appear large, most of these individuals are not leaving the profession. The most common reason provided was to seek another clinical PA position.<sup>17</sup>

**Practice characteristics**

Although many PAs (14.3%) reported having two or more clinical positions at once, we based the data that follow only on their principal clinical positions.<sup>17</sup> PAs see a mean number of 70 patients per week, with almost 14% seeing over

100 patients per week. PAs now have prescriptive privileges in all states, and approximately 98% report that they prescribe medications for patients with acute and chronic illness. acute and chronic illness. On average, PAs work 40.6 hours weekly. Male PAs work 11% more hours per week (43.4) than do female PAs (39.1). Only 6.2% of certified PAs worked 20 hours or less per week. Of those working fewer than 30 hours per week, 82.9% are female.

Although 19% of the U.S. population live in nonurban areas,<sup>43</sup> NCCPA data indicate that 14.4% of PA principal clinical positions are in such areas. With the increasing use of telemedicine and electronic health record technology, rural, frontier, and other communities that may lack resources to support a physician could benefit from remotely supervised PA practices. This would likely require changes in state regulations specifying guidelines for remote supervision. Although this may be a future trend, it does not frequently occur now. Only 3.4% of PAs report working in a practice where their physician supervisor is off-site.

### Future PA Contributions to the Workforce

PAs currently account for approximately 10% of the U.S. primary care workforce.<sup>44</sup> Allowed to work within their full scope of practice within a physician-led interprofessional team, PAs fill an important role in the provision of primary care and specialty services. PAs' education is shorter, which means they can enter practice more quickly with lower educational debt. Also, most programs have a generalist focus, which enables PAs to be more nimble, allowing them to move between primary care and specialty careers to meet evolving workforce demands. The capacity to respond quickly to new health care delivery systems is likely to become even more important as the need and demand for health care increases because of the aging population and expanding insurance coverage.

Given the projections related to the development of new PA programs, as well as increasing capacity of some existing programs, PAs are expected to continue to grow in number and be a major force in meeting the nation's

health care needs.<sup>45</sup> However, growth may be limited because of faculty shortages and decreasing availability of clinical training sites. It is important to note that these problems are not unique to the PA profession. Faculty shortages are well documented in the nursing profession,<sup>46</sup> and clinical training site shortages are emerging as a significant issue across the health professions, prompting a recent trend at some schools to provide payment for clinical training experiences and thereby creating a competitive environment across schools and programs.<sup>47,48</sup>

As noted above, three major factors will influence the ability of the PA workforce to contribute to the health care system. First, the applicant pool of quality candidates must continue to rise proportionally and in diversity as the overall capacity of educational programs increases. Second, educational programs are challenged by recruitment and retention of qualified faculty, as well as shortages of clinical preceptors and training sites. The PAEA currently has several initiatives underway to increase faculty development and clinical faculty recruitment, including providing incentives and recognition, such as continuing medical education credits, for clinical preceptors. An increasing number of programs have initiated compensation mechanisms to clinical training facilities and preceptors. It remains to be seen what the impact of payment will be on cost of the educational programs and student debt over time, in particular if payments rise over time. Third, effective use of PAs in the workforce will be enhanced as state health workforce planners, legislators, and regulators recognize the need to allow physicians more flexibility in determining how most effectively to supervise and delegate responsibilities to PAs. Some states such as Indiana have already seen some movement in this area.<sup>49</sup>

Currently, there is a significant body of workforce research regarding the supply and demand for physicians, but less so for PAs. This is due, in part, to the historic lack of consistent unique data on PAs, as well as the fact that PA scope of practice, regulated at the state level, varies widely. These factors and others have limited the ability to aggregate data and measures of national PA utilization and productivity. Consistent data collection measures,

such as those reported in this article, will be essential.

Collective findings from the PAEA and NCCPA data sets provide a new opportunity for PAs to contribute critical information to inform workforce planning. The data reported here, combined with data from other health professions, informs workforce planning and research such as the creation of a national minimum data set currently under development by the U.S. Health Resources and Services Administration's National Center for Health Workforce Analysis.<sup>50</sup> Data from these measures provide valuable information on workforce participation, including scope of practice, skill substitution, and interprofessional skill interarticulation. These data are critical to workforce planners at the national, state and local levels who are charged with creating an adequate and cost effective workforce.

Data resulting from collaboration of these two organizations are currently limited because of the lack of integrated longitudinal measures. With data collection now firmly embedded in the research agenda of both organizations, future data collection will allow us to track trends and dynamic changes as the PA pipeline and PA workforce roles change. Discussions have also been initiated to establish a unique identifier that will allow longitudinal tracking of PA student candidates through their education and lifetime of clinical practice. This will allow more precise assumptions of practice patterns in relationship to pre-PA program factors and influences of the educational experience (e.g., clinical training placement). As interprofessional team-based practice gains a foothold in the U.S. health care system, an opportunity exists for PAs to once again play a role in filling provider gaps. However, the overall impact of the PA pipeline, especially in primary care, will be subject to a number of barriers and challenges, many of which are common to other health professions.

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