

New Approaches for Delivering Primary Care Could Reduce Predicted Physician Shortage

Numerous forecasts have predicted shortages of physicians in the United States, particularly in light of the expected increase in demand from the Affordable Care Act (ACA). Such predictions, however, might be far from the mark. Several recent innovations are attempting to change the way primary care is delivered—by expanding who provides care (e.g., physicians, nurse practitioners, physician assistants) and how care is coordinated (e.g., through teams).

RAND researchers analyzed the potential impact of two emerging models of care—the *patient-centered medical home* (PCMH) and the *nurse-managed health center* (NMHC)—on future shortages of primary care physicians. The PCMH delivers primary care using a team of providers, including physicians, advanced practice and other nurses, physician assistants, pharmacists, nutritionists, social workers, educators, and care coordinators. NMHCs, also known as nursing centers or nurse-led clinics, are managed and operated by nurses, with nurse practitioners functioning as the primary providers.

The study found that projected shortages of primary care physicians could be substantially reduced by increasing the prevalence of these new models of care—without increasing the number of physicians. Researchers also developed an interactive online tool that allows users to change the assumptions used in this research and see the effect on future shortages or surpluses of physicians, nurse practitioners, and physician assistants.

Estimating the Supply and Demand for Primary Care Providers

Researchers used published estimates of supply and demand for primary care providers, accounting for expected increases in demand resulting from the ACA. To estimate supply and

Key findings:

- Numerous forecasts have predicted shortages of primary care providers, but these forecasts generally assume that no changes will occur in the way primary care is delivered.
- Two innovations, the patient-centered medical home (PCMH) and the nurse-managed health center (NMHC), use different mixes of providers than traditional, physician-based primary care.
- The RAND research team’s projection model shows that, if the prevalence of PCMHs increases from the current 15 percent to 45 percent, and if the prevalence of NMHCs grows from around 0.5 percent to 5 percent, then physician shortages can be cut in half by 2025 without training a single additional physician.
- If, in addition, the medical home can effectively handle 20 percent more patients, using technology, coordination, or other means, then the projected shortage can be nearly eliminated.

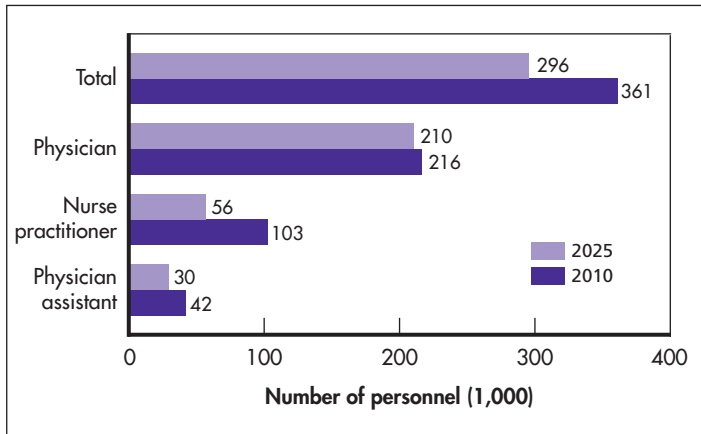
demand for providers under the alternative models of care, researchers combined published estimates with data from observing actual staffing at a number of practices.

The figure shows the projected supply of providers in each category in 2025. The share of primary care providers who are physicians is expected to shrink from 71 percent to 60 percent in 2025. In 2010, there were nearly four primary care physicians for every nurse practitioner in primary care, but the RAND team estimated that in 2025 there would be just over two physicians per nurse practitioner.

This research highlight summarizes RAND Health research reported in the following publication:

Auerbach DI, Chen PG, Friedberg MW, Reid RO, Lau C, and Mehrotra A, “Nurse-Managed Health Centers and Patient-Centered Medical Homes Could Mitigate Expected Primary Care Physician Shortage,” *Health Affairs*, Vol. 32, No. 11, November 2013, pp. 1933–1941.

Supply of Physicians, Nurse Practitioners, and Physician Assistants in Primary Care Clinical Practice in 2010 and 2025



The Effect of New Care Models on Provider Shortages

RAND researchers combined these supply estimates with published forecasts of demand for primary care providers to derive shortage estimates for the year 2025 under several alternative scenarios, as described below. As is standard practice, researchers assumed that supply and demand for providers were balanced in 2010. Results are shown in the table.

Status Quo. If primary care practices use the same mix and combinations of providers in 2025 as they did in 2010, these assumptions would lead to a forecast shortage of 45,000 primary care physicians in 2025 (i.e., 20 percent below demand), together with a *surplus* of 34,000 nurse prac-

tioners (48 percent above demand) and of 4,000 physician assistants (10 percent above demand).

Increasing the Prevalence of Alternative Models of Primary Care. Increasing the prevalence of alternative models of primary care reduced the projected shortage of primary care providers, especially when the prevalence of both alternatives increased.

Patient-Centered Medical Homes. In one scenario, the RAND research team assumed that PCMHs would provide 45 percent of the nation’s primary care in 2025, growing from 15 percent in 2010. That is a significant change, but it is possible given recent rapid growth in this model of care delivery. An increase in PCMHs would reduce the shortage of primary care physicians from 45,000 to 35,000, while demand for nonphysician providers would increase.

Nurse-Managed Health Centers. In another scenario, researchers assumed that NMHCs would provide 5 percent of U.S. primary care in 2025, up from 0.5 percent in 2010. Expanding the prevalence of this model by this amount was found to have almost the same effect on the projected shortage of primary care physicians as did the PCMH model. It also cut the surplus of nurse practitioners nearly in half, although the surplus of physician assistants, who are not used in this model of care delivery, increased.

Both Models in Combination. Researchers also considered the effects of increasing the prevalence of both the PCMH and the NMHC together—to cover a total of about 50 percent of primary care. These changes would cut the physician shortage nearly in half by 2025, and would also reduce the nurse practitioner surplus by two-thirds.

Projected Demand for, and Surpluses or Shortages of, Full-Time-Equivalent Providers in Various Scenarios, 2025

Scenario	Primary Care Physicians		Nurse Practitioners		Physician Assistants	
	Demand	Surplus or Shortage	Demand	Surplus or Shortage	Demand	Surplus or Shortage
Status quo	261,000	-45,000	69,000	34,000	38,000	4,000
Varying prevalence of patient-centered medical homes and nurse-managed health centers						
PCMH, 45%; NMHC, 0.5%	251,000	-35,000	75,000	28,000	45,000	-3,000
PCMH, 15%; NMHC, 5%	250,000	-34,000	84,000	19,000	36,000	6,000
PCMH, 45%; NMHC, 5%	240,000	-24,000	91,000	12,000	43,000	-1,000
Varying patient-centered medical home panel size						
PCMH, 45%; NMHC, 5%; PCMH panel size, +20%	223,000	-7,000	84,000	19,000	39,000	3,000
PCMH, 45%; NMHC, 5%; PCMH panel size, -20%	262,000	-46,000	98,000	5,000	48,000	-6,000

Varying the Number of Providers to Patients at Patient-Centered Medical Homes. There is considerable uncertainty regarding the number of providers per patient (“panel size”) in the PCMH model, and whether this model will allow each provider to serve more patients. Researchers found, not surprisingly, that provider surpluses and shortages were quite sensitive to the number of staff per patient at the medical home. When the panel size increased by 20 percent, the physician shortage was nearly eliminated. Conversely, when the panel size decreased by 20 percent, the physician shortage returned to high levels.

Interactive Online Tool

All these projections are necessarily sensitive to model assumptions—most notably, assumptions about the future prevalence of each type of primary care model—and uncertainty regarding the provider-to-patient ratio in the PCMH. Because of this uncertainty, RAND researchers developed an interactive online tool (at http://www.rand.org/pubs/research_briefs/RB9752/index1.html) to allow users to alter the assumptions made in this brief and see the resulting effect on shortages and surpluses of providers.

Conclusion

The RAND team’s study indicates that projected physician shortages can be substantially reduced by using new models of primary care, even without increases in the number of physicians.

However, additional changes may be required to support the alternative models explored in this brief. NMHCs currently serve only a small fraction of the population, and certain barriers may have to be overcome for this model to expand, including restrictive scope-of-practice laws that require physicians’ involvement in certain care processes, as well as patients’ perceptions of nurse practitioners and their preference for physician providers.

The PCMH model has been diffusing rapidly through the U.S. health care system. However, this model’s average provider-to-patient ratio will become a key issue in determining whether the model can successfully help avert physician shortages. Shared savings and other innovative payment models that reward providers for population health management and efficient care practices may be needed to support expansion of panel sizes.

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