By Nengliang Yao, Justin B. Mutter, James D. Berry, Takashi Yamanaka, Denise T. Mohess, and Thomas Cornwell

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In Traditional Medicare, Modest Growth In The Home Care Workforce Largely Driven By Nurse Practitioners

Nengliang (Aaron) Yao (ayao@virginia.edu) is the Cheeloo Scholar Professor in Healthcare Management and Nursing at Shandong University, in Jinan, Shandong, China. He is also the part-time research director of the Home Centered Care Institute, in Schaumburg, Illinois, and a part-time research scientist for the Section of Geriatric Medicine at the University of Virginia, in Charlottesville, Virginia.

Justin B. Mutter is section head of geriatric medicine at the University of Virginia School of Medicine and a fellow at the Institute for Advanced Studies in Culture, University of Virginia.

James D. Berry is the chief of the Division of ALS and Motor Neuron Diseases and director of the Neurological Clinical Research Institute at Massachusetts General Hospital, in Boston, Massachusetts.

Takashi Yamanaka is the chair of the Department of Home Care Medicine at the University of Tokyo, in Bunkyo City, Tokyo, Japan.

Denise T. Mohess is the medical director and section chief of Geriatrics in the Inova Health System, in Fairfax, Virginia.

Thomas Cornwell is the executive chairman of the Home Centered Care Institute and is the senior medical director of Village Medical at Home, in Chicago, Illinois.

ABSTRACT Little is known about the characteristics of the workforce providing home-based medical care for traditional (fee-for-service) Medicare beneficiaries. We found that the number of participating home care providers in traditional Medicare increased from about 14,100 in 2012 to around 16,600 in 2016. Approximately 4,000 providers joined or reentered that workforce annually, and 3,000 stopped or paused participation. The number of home visits that most participants provided each year remained below 200. Only 0.7 percent of physicians in Medicare provided fifty or more home visits annually, with little change over the course of five years. In contrast, the number of home-visiting nurse practitioners almost doubled, and the average number of home visits they made increased each year. Despite generally low overall participation of traditional Medicare providers in home-based care, the workforce has seen modest but steady growth, driven primarily by increasing nurse practitioner participation. Additional stimuli may be necessary to ensure workforce adequacy and stability.

At the turn of the twentieth century, most medical services were delivered in the home,[1] and home-based medical care was the primary modality by which all practitioners learned and provided health care. More than a century later, the landscape of health care has been markedly transformed as specialization, medical technologies, and the financing of medical services have created a facility-centric axis around which nearly all care revolves. As a result, the "home visit" as a distinct form of service has, at times, been on the verge of extinction within many health care systems.[2] In the 1980s, however, modern home care medicine started to emerge in the United States and health care systems in other countries.[3–5] Nevertheless, after more than three decades of advancement in home care medicine,[6,7] there exists limited knowledge about the US workforce that provides home-based medical care.[8,9] In this article we explore recent trends in the US home-based medical care workforce serving traditional (fee-for-service) Medicare beneficiaries.

Background

In modern home-based medical care, patients receive comprehensive, longitudinal medical care at home from physicians, nurse practitioners, physician assistants, and other health professionals.[10] In particular, it often fills the gaps in health care services for older frail patients, homebound younger adults, and sole caregivers to homebound patients.[10] More than 85 percent of home visits in traditional Medicare were received by older adults in 2014, most of whom were frail.[11] Millions of Medicare beneficiaries may benefit from modern home care.[10–13] The needs of these patients are poorly met by the

current office- and hospital-centered model of health care.[8,10] Many Medicare beneficiaries cannot easily access a medical office, and they rely on expensive emergency services to address sometimes-preventable medical crises.[8,10,13]

By reorienting comprehensive generalist and some specialty care from the inpatient or office setting to home and community settings, modern home-based medical care can deliver high-quality care to patients while reducing overall medical costs.[14–18] For example, the Independence at Home demonstration of the Center for Medicare and Medicaid Innovation is testing a home-based primary care model for frail beneficiaries enrolled in traditional Medicare. At the level of the individual Medicare beneficiary, Independence at Home's first-year savings were ten times greater, on average, than those realized by Pioneer accountable care organizations during their initial two years.[19] Prospective risk-adjusted comparisons have shown a 17 percent or more reduction in total care costs for participants in home-based medical care programs.[15] Similar cost savings of 13.4 percent were found in a prospective study at the Department of Veterans Affairs.[16] Despite these promising findings, only an estimated 11–16 percent of frail patients in traditional Medicare received medical care at home during 2011–17.[11,13]

As data mount indicating that home-based medical care could be expanded to take on a central role in resolving the challenges of caring for an aging US population and easing Medicare's fiscal strain, the limited understanding of the number, characteristics, and trend of Medicare providers routinely delivering home-based medical care is thrown into sharp relief. In this study we systematically examined the US home-based medical care workforce serving adult traditional Medicare beneficiaries, evaluating the workforce trend over a five-year period (2012–16), analyzing the volume and types of home-based medical care providers, and investigating providers' participation in this care over time. Global data on home-based medical care in the Medicare Advantage population during this period were not available; however, there are focused reports of its penetration in Medicare Advantage models of care,[18,20] which served 36 percent of all Medicare beneficiaries nationally in 2018.[21]

Study Data And Methods

We used the Physician and Other Supplier Public Use File from the Medicare Provider Utilization and Payment Data. The data cover calendar years 2012–16 and contain information on services provided to traditional Medicare beneficiaries by physicians and other health care professionals. The file is organized by National Provider Identifier codes and Healthcare Common Procedure Coding System codes. Designations of physician specialty and nonphysician professions (for example, nurse practitioners and physician assistants) were reported in the file. Provider professions and specialties in this data set include primary care physicians (family practice, internal medicine, general practice, and geriatrics) and nonphysician providers, as well as providers in other specialties (for example, psychiatry and neurology). Given the unique nature of podiatry practice,[8] we provide a subtotal of nonpodiatry physicians when describing the traditional Medicare home-based medical care workforce and exclude podiatrists from our analysis.

ANALYSIS Other than podiatrists, all specialties and professions were included in the analysis. We used Healthcare Common Procedure Coding System codes 99341–5, 99347–50, 99324–8, and 99334–7 to identify private residence and domiciliary care visits provided to traditional Medicare beneficiaries.[8] Domiciliary care visits are visits made to beneficiaries in a non–nursing home licensed residential facility, such as a group home or an assisted living facility.

We totaled all home visits for each Medicare provider by calendar year. We defined those performing fifty or more home visits during a given year as regular home-based medical care providers that year. We ranked all specialties or professions by number of home visits in 2016. We also calculated the percentage of regular home-based medical care providers in each specialty or profession in 2016.

We conducted several trend analyses to evaluate how the workforce evolved during the study period. We counted the number of yearly home visits by each individual provider and categorized them by volume: fewer than 50, 50–199, 200–499, 500–999, and 1,000 or more. We performed a univariate frequency analysis to describe the mean, twenty-fifth percentile, median, and seventy-fifth percentile of the number of home visits by calendar year.

In addition, we performed a fixed-effects model regression of the number of regular home-based medical care providers with interaction terms. The provider specialty or profession has a significant interaction effect with the year variable. Therefore, the second set of trend analyses focused on seven primary care specialties or professions that accounted for 95 percent of all regular nonpodiatry[11,22] home-based medical care providers. We visualized the yearly trend of regular home visits by specialty or profession. We examined the average number of these visits by calendar year and specialty.

Last, we examined all providers' longitudinal participation patterns in home care medicine. We used a five-digit binary sequence to code the pattern across the five-year study period. The first digit represents 2012, the last digit 2016. If a provider performed fifty or more home visits in a study year, that year is coded as 1, and 0 if not. For example, the sequence 11111 indicates that a provider made regular home visits for all five years (2012–16), and the sequence 00111 indicates that a provider made regular home visits for the three final years of the study period. We also examined the median number of home visits by participation sequence.

LIMITATIONS Our study had some limitations. First, because only traditional Medicare beneficiaries were included in the data, the findings might not be representative of a provider or program's entire home-based medical care practice inclusive of Medicare Advantage, as the traditional Medicare population may account for only a portion of a provider's practice panel. Second, the Medicare data do not have information on health services that were provided for ten or fewer patients. Third, home hospice visits were not included because they are billed differently, and the data were not available in our Medicare files.

The public data we used furnish information at the provider level only. The Medicare provider payments data did not have provider group Taxpayer Identification Numbers or any patient characteristics.[23] We were therefore not able to categorize traditional recipients of home-based medical care by important characteristics such as age and frailty level.[11] However, our prior and ongoing work showed that about 86 percent and 54 percent of home visits in traditional Medicare were received by older adults and frail beneficiaries, respectively.[11] Future work may need to focus on team- or practice-level data and patient-level Medicare claims to address some of these limitations.

Study Results

Exhibit 1 shows that home-based medical care participation was low among traditional Medicare providers during 2012–16. In 2016 about 5.8 million home visits were made. A total of 12,808 providers made fifty or more home visits to Medicare beneficiaries. Nurse practitioners, internists, family physicians, physician assistants, general practice physicians, geriatricians, and psychiatrists accounted for 95 percent of all regular nonpodiatry home-based medical care providers. Among providers who made at least fifty home visits in 2016, 5,690 (44.4 percent) were nonpodiatry physicians. These providers accounted for only 0.7 percent of providers seeing traditional Medicare patients. About 18 percent (n = 330) of geriatricians made regular Medicare home visits in 2016, followed by general practice physicians (5.5 percent, n = 288), nurse practitioners (4.7 percent, n = 4,247), internists (2.5 percent, n = 2,407), family physicians (2.2 percent, n = 1,761), psychiatrists (2.0 percent, n = 425), and physician assistants (1.1 percent, n = 683). A total of 479 specialists also made regular Medicare home visits in 2016, including forty-nine optometrists, forty-seven emergency physicians, forty general surgeons, thirty-nine cardiologists, twenty-four pulmonologists, and twenty-four neurologists, among others.

The increasing role of nurse practitioners in home-based medical care will help address known access issues for the frail elderly.

The overall number of home-based medical care providers increased steadily, from about 14,100 in 2012 to around 16,600 in 2016 (exhibit 2). There was also a steady increase during this period in all five groups by volume of annual visits. For example, a total of 1,306 Medicare providers made 1,000 or more home visits in 2012. The number then gradually increased to 1,555 providers in 2016, representing a 19 percent increase in five years. Similar increases were observed for other volume groups (for example, 25 percent for the 500–999 group, 18 percent for the 200–499 group, and 17 percent for the 50–199 group). However, most home-based medical care providers made fewer than 200 home visits annually during the study period. The median number of home visits per provider was around 142 during 2012–16, and the average number was about 350. Online appendix table 1 shows that the number of home visits per provider stayed stable during the study period.[24]

Thousands of nurse practitioners were added to the workforce of home care medicine during the study period, whereas the number of physician home-based medical care providers (that is, internists, family physicians, general practice physicians, and geriatricians) did not increase

EXHIBIT 1

Traditional Medicare providers delivering home-based medical care (HBMC), by profession or specialty and number of home visits made, 2016

Professions/specialties	No. of providers delivering HBMC who made <50 home visits	No. of providers delivering HBMC who made 50+ home visits	No. of traditional Medicare providers in category	Traditional Medicare providers in category who made 50+ home visits (%)
All traditional Medicare providers	3,775	12,808	1,000,924	1.3
PHYSICIANS				
Internal medicine	706	2,407	98,053	2.5
Family medicine	605	1,761	81,553	2.2
Psychiatry	125	425	21,435	2.0
Geriatric medicine	94	330	1,820	18.1
General practice physician	49	288	5,262	5.5
Optometry	41	49	27,540	0.2
Emergency medicine	16	47	41,700	0.1
General surgery	15	40	18,881	0.2
Cardiology	16	39	20,273	0.2
Pulmonary disease	6	24	9,634	0.2
Neurology	9	24	13,630	0.2
Dermatology	7	23	11,271	0.2
Nephrology	2	23	8,298	0.3
Physical medicine and rehabilitation	5	20	7,602	0.3
Hospice and palliative care	24	19	905	2.1
Geriatric psychiatry[a]	6	18	198	9.1
Ophthalmology	11	16	17,428	0.1
Obstetrics and gynecology	3	14	22,389	0.1
Other specialist physicians	43	123	425,346	0.0
Subtotal of all nonpodiatry physicians	1,783	5,690	833,218	0.7
Podiatry physicians[b]	825	2,101	14,941	14.1
NONPHYSICIANS				
Nurse practitioner	1,008	4,247	91,093	4.7
Physician assistant	141	683	59,685	1.1
Certified clinical nurse specialist	18	87	1,987	4.4

SOURCE Authors' analysis of Medicare Provider Utilization and Payment Data, 2012–16. [a]Separate category from psychiatry. [b]Specialists in the diagnosis and treatment of conditions affecting the foot and ankle; markedly different from other physicians in medical education and practice patterns (Yao N, et al., Geographic concentration of home-based medical care providers [see note 8 in text]).

(exhibit 3). For example, the number of home-based medical care nurse practitioners almost doubled in five years (a 92 percent increase). A smaller but substantial increase was observed in physician assistants performing home visits (34 percent). The trend of home-based medical care psychiatrists has its own unique pattern, with a spike seen in 2013. Appendix table 2 shows that nurse practitioners also gradually increased the average number of home visits per provider during 2012–16, from 339 to 362.[24] In contrast, the number of visits per provider among geriatricians declined from 438 to 299. A similar decrease was found among general practice physicians.

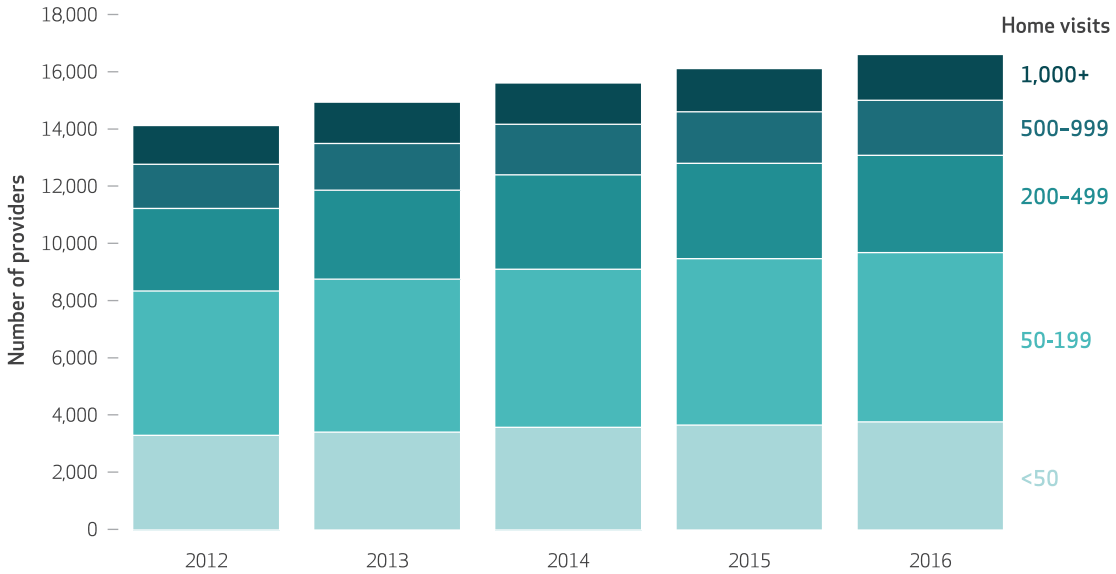
Exhibit 4 shows providers' home-based medical care participation by year and participation pattern. A total of 28,093 individual Medicare providers made 50 or more home visits in at least one year between 2012 and 2016. Only 6,723, or 24 percent of them, made regular home visits in all five years. Every year 2,900–3,600 providers (more than 20 percent) stopped or paused their participation in the home-based medical care workforce. However, 3,700–4,100 additional providers joined or reentered the workforce yearly. Appendix table 3 shows that those providing home-based medical care in all five years had higher annual median home visits.[24] For those who eventually stopped or paused providing home-based medical care, the median number of home visits typically declined during their last year of that practice.

Discussion

Although providers' overall participation in home-based medical care for traditional Medicare beneficiaries was low, their ranks increased during 2012–16, a trend driven mostly by increasing numbers of nurse practitioners. Every year about 4,000 providers joined or reentered the home-based medical care workforce, whereas about 3,000 stopped or paused home visits.

EXHIBIT 2

Number of home-based medical care providers participating in traditional Medicare, by annual volume of home visits, 2012–16



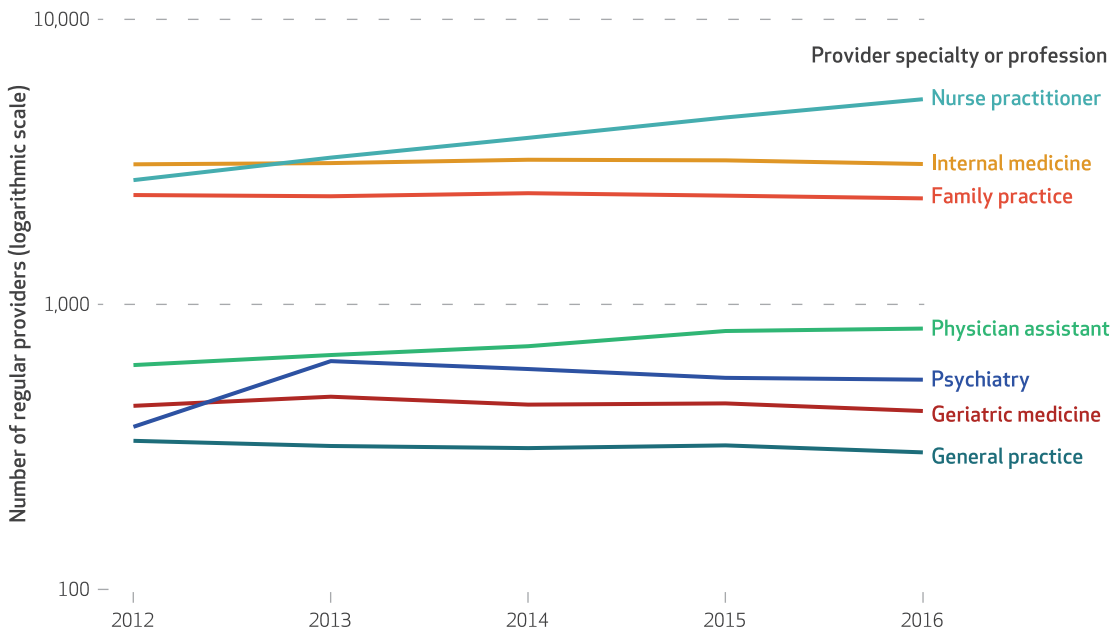
SOURCE Authors' analysis of Medicare Provider Utilization and Payment Data, 2012–16.

LOW AGGREGATE PARTICIPATION Participation in home-based medical care was low among traditional Medicare providers during 2012–16. Every year fewer than 20,000 providers practiced home-based medical care. Most home-based medical care providers made fewer than 200 home visits annually to traditional Medicare beneficiaries. Only about 0.7 percent of Medicare physicians provided home visits regularly.

Provision of home-based medical care in the

EXHIBIT 3

Number of regular home-based medical care providers in traditional Medicare, by specialty or profession, 2012–16



SOURCE Authors' analysis of Medicare Provider Utilization and Payment Data, 2012–16. **NOTE** We defined those performing fifty or more home visits in a year as regular home-based medical care providers.

EXHIBIT 4

Patterns of annual provision of regular home-based medical care in traditional Medicare, 2012–16

Pattern of regular participation[a]	Regular providers during the study period: Number	Percent
Participating provider made regular home visits in all 5 years		
11111	6,723	23.9
Participating provider made regular home visits in 4 of 5 years		
11110	1,102	3.9
01111	1,390	5.0
11101	183	0.7
10111	161	0.6
11011	150	0.5
Participating provider made regular home visits in 3 of 5 years		
00111	1,583	5.6
11100	1,272	4.5
01110	402	1.4
10011	98	0.4
11001	101	0.4
11010	81	0.3
01101	73	0.3
01011	77	0.3
10110	51	0.2
10101	14	0.1
Participating provider made regular home visits in 2 of 5 years		
00011	2,320	8.3
11000	1,570	5.6
00110	762	2.7
01100	686	2.4
10100	106	0.4
00101	101	0.4
10001	93	0.3
01001	70	0.3
10010	55	0.2
01010	52	0.2
Participating provider made regular home visits in 1 of 5 years		
00001	3,446	12.3
10000	2,334	8.3
00010	1,079	3.8
00100	972	3.5
01000	986	3.5

SOURCE Authors' analysis of Medicare Provider Utilization and Payment Data (2012–16). **NOTE** $N = 28,093$ providers. [a]We used a five-digit binary sequence to code the pattern of regular home visit provision (defined as 50 or more home visits annually). The first digit represents 2012 and the last digit 2016. If a provider performed 50 or more home visits in a given study year, the year is coded as 1; if not, the year is coded as 0. See the text for further details.

US faces many stressors[25] that underlie these participation levels. Reimbursement and cost constraints remain barriers to the wide readoption of home care medicine, although this is changing with increasing use of value-based payment. The traditional Medicare payment system rewards volume of services over value. Although home visits are remunerated by traditional Medicare at modestly higher rates than are office-based visits, challenges intrinsic to home-based medical care—chiefly driving time and the significant medical and psychosocial complexity of the needs of homebound patients[12]—limit the volume of home visits that providers can perform in a single day. Whereas a family physician may see twenty patients in a workday, on average,[26] a home-based medical care provider may at best achieve less than half that volume. Home-based medical care thus has been described as a low-volume, high-value service that is not easily rewarded by fee-for-service payment.[15] For this reason, integrating value-based payment options within traditional Medicare for homebound older adults—for example, as in the proposed Independence at Home Act—may be essential to the growth of home-based medical care.[13] Others have looked to home-based medical care as a primary modality for achieving im-

proved quality and decreased costs through the Seriously Ill Population Option participation value-based approach recently launched by the Centers for Medicare and Medicaid Services (CMS) Primary Care First demonstration.[27]

STEADY WORKFORCE GROWTH Despite the challenges, multiple drivers likely are fueling the steady growth of home-based medical care within traditional Medicare. The number of home-based medical care providers increased steadily from about 14,100 in 2012 to around 16,600 in 2016. An aging population, an increase in the incidence of dementia, patient and family preferences for aging in place, the growth of informal caregiving, and increased nursing home costs have been drivers of home-based medical care growth.[10,13,28] Technological advances have also facilitated this growth. Throughout the latter half of the twentieth century, medical technology helped centralize care in hospitals and medical offices. Now, modern technology enables mobile diagnostic testing (for example, electrocardiograms, ultrasounds, X-rays, and laboratory tests) in the home. This high-tech equipment coupled with high-touch home care medicine can lead to outcomes consistent with the Triple Aim of "improving the experience of care, improving the health of populations, and reducing per capita costs of health care."[29,30] Evidence of the value of home-based medical care is a third driver, including Medicare's Independence at Home demonstration, which, per CMS, generated more than $100 million in savings ($1,840 per patient per year demonstration-wide), thereby outperforming accountable care organizations.[31] The program scored high on quality indicators such as reduced hospital and emergency department use, improved medication reconciliation, improved hospital follow-up at forty-eight hours, and increased documentation of patient preferences.

INCREASING ROLE OF NURSE PRACTITIONERS As home visits of the past experience a resurgence in the form of modern home-based medical care, they are fueling change within the ranks of primary care providers,[11] especially among nurse practitioners. The extent of nurse practitioners' home-based medical care workforce involvement increased with respect to both the number of participating providers and the number of visits per provider, whereas geriatricians and general practitioners showed little net growth with respect to both measures. The Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020 could accelerate this trend by authorizing nurse practitioners to certify home health care for Medicare beneficiaries, further supporting their work in home-based medical care. Many of the successful practices in the Independence at Home demonstration were substantially reliant on nurse practitioners providing the majority of the care.[9] Home-based medical care aligns with nurse practitioners' clinical skills, the model of nurse practitioner–physician collaboration, the philosophy of holistic care, and the focus on family caregiver support to benefit patient health. The increasing role of nurse practitioners in home-based medical care will help address known access issues for the frail elderly. Additional growth of the nurse practitioner role also may require efforts to expand exposure to home-based medical care during educational preparation.

INCREASE OF HIGH-VOLUME PROVIDERS The number of high-volume home care providers has steadily increased, which probably represents growth in both full-time home care providers and practices focused on home-based medical care. In today's climate of medical reimbursement, few physicians performing regular home visits are solo practitioners. An interdisciplinary team approach best serves the high-need, high-cost population. For example, hospice programs recently added home-based primary care for homebound patients, and academic centers have started geriatric home-based medical care programs. Although many interdisciplinary programs sit within academic centers, there are an increasing number of large entities in the private sector providing primary and palliative care at home (for example, VillageMD, Heal, Landmark, CityBlock, Clover, and DispatchHealth). In contrast to academic practices, where home visit program costs are supported by institutional funds and philanthropy, large private programs rely increasingly on value-based contracts and venture capital.

SPECIALISTS AND HOME-BASED MEDICAL CARE Even traditional acute care centers are beginning to reconsider which venue works best for specialty care. We found that a total of 479 nonprimary care specialists made regular home visits under traditional Medicare in 2016.

Specialist home-based medical care programs have been developed in the US. At Massachusetts General Hospital, the amyotrophic lateral sclerosis (ALS) clinic team launched a home-based medical care program in 2017. Home visits provide the ALS team with a deep understanding of patients' home environments, which can determine the course of medical care planning and improve quality of life. As another example, emergency department doctors make home visits in Walworth, Wisconsin. When a patient calls with a potential emergency, the emergency department physician goes to the patient's home to evaluate the patient without an automatic transport to the hospital. The physician and the pa-

A modern conception of home-based medical care as performed primarily by a focused group of providers is emerging.

tient or caregiver make a shared decision on whether the patient should be transported to the hospital or can be treated safely at home. In addition, Mount Sinai Visiting Doctors has developed a community paramedicine program. In this model, paramedics participate in real-time teleconsultation with a home-based medical care physician to care for and treat the patient.[32]

Future Policy Directions

With a mix of findings pointing to focused growth but overall low total home-based medical care participation of the US health care workforce for traditional Medicare beneficiaries, the results of this study suggest that although a nascent transformation is under way in home-based medical care in the United States, this transformation is small and inadequate relative to epidemiologic trends in the homebound population. For example, around 16 percent of completely homebound adults received medical care in their home environment in 2014.[11,12] A recent study found little to no change in this proportion receiving such care.[13] Although this study could not account for potentially corresponding trends in Medicare Advantage, the workforce supply does not yet exist to meet the home-based medical care demand from the approximately two-thirds of beneficiaries enrolled in traditional Medicare who may either desire or benefit from such care.[11–13] Furthermore, despite modest growth driven largely by nurse practitioner participation, this gap between supply and demand has persisted in a context of demonstrated value of home-based medical care to payers and health systems, with Triple Aim achievements from a myriad of models, including Independence at Home, Veterans Affairs home-based primary care programs, and the Community Aging in Place—Advancing Better Living for Elders (CAPABLE) program,[33] to name just a few. Considering the financial barriers to home-based medical care delivery inherent in traditional Medicare, we posit that the home-based medical care workforce is unlikely to witness growth commensurate with demographic and epidemiologic need in the older adult population dependent on traditional Medicare without substantial transformations in Medicare value-based payment policy.

Conclusion

After a marked decline in home visits by health care providers during the past century, a modern conception of home-based medical care as performed primarily by a focused group of providers is emerging. Although a growing body of evidence indicates that home-based care for traditional Medicare beneficiaries supports the Triple Aim, and our findings indicate that growth in the workforce providing it has been steady, this growth appears modest and limited by annual turnover. Absent targeted policy to support home care delivery to traditional Medicare beneficiaries, growth may be insufficient to meet potentially asymptotic demand for home visits in this predominantly aging, high-need, high-cost population. ■

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