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Quality of Home Health Agencies Serving Rural Medicare Beneficiaries

KEY FINDINGS

- Rural fee-for-service Medicare beneficiaries receive care from home health agencies (HHAs) located in both rural and urban communities; in 2018, 36.4% of all HHAs could be considered rural-serving, including HHAs located in rural communities (18.5% of all HHAs) and HHAs located in urban communities that had patient populations consisting of 10% or more rural beneficiaries (17.9% of all HHAs; 22.0% of urban HHAs).
- Quality of patient care star ratings from Home Health Compare are not significantly associated with rural-serving status after controlling for other HHA characteristics.
- In contrast, patient experience star ratings from Home Health Compare are significantly associated with rural-serving status. Urban HHAs with at least 10% rural patients are almost twice as likely to have high patient experience star ratings compared to urban HHAs with fewer than 10% rural patients. HHAs located in large, small, and isolated small rural communities are even more likely to have high patient experience star ratings compared to non-rural-serving urban HHAs, and the likelihood of high ratings increases as rurality increases: compared to urban HHAs with fewer than 10% rural patients, HHAs in isolated small rural communities are four times as likely to have high patient experience star ratings.

BACKGROUND

Over three million fee-for-service Medicare beneficiaries receive home health care services annually.[1] Home health agencies (HHAs) provide these services to Medicare beneficiaries to help them recover following a hospital stay or remain safely in the community following a change in health or functional status. Visits from nurses; physical, occupational, and speech therapists; medical social workers; and home health aides are covered under the Medicare home health benefit.

Rural beneficiaries can receive care from HHAs located in rural communities as well as HHAs located in urban communities whose service areas extend into rural communities. Thus, both rural and some urban HHAs can be considered rural-serving. HHAs serving rural beneficiaries face different challenges than HHAs serving urban beneficiaries, in part due to greater travel and time costs.[2,3] These challenges may contribute to rural beneficiaries utilizing home health services at a lower rate than urban beneficiaries: about 7% of all rural beneficiaries receive care from HHAs compared to almost 9% of urban beneficiaries.[4] Yet HHAs are the second most common post-acute discharge destination after skilled nursing facilities for hospitalized rural beneficiaries with one in 14 rural beneficiaries admitted to HHAs following hospitalization.[5] Thus, despite

the existence of rural/urban and other geographic disparities in access to and utilization of home health services,[4,6,7] HHAs remain important providers for rural communities.

While disparities in quality between rural and urban hospitals have been identified,[8-15] potential disparities in quality between rural and urban HHAs have been less well studied. Findings from prior research are mixed. Some studies suggest rural HHAs have lower rates of discharge to the community and higher rates of hospitalization,[1,16-17] while others suggest differences in individual quality indicators are either not significant or not clinically meaningful.[18,19] The introduction of star ratings for HHAs provides an opportunity to examine composite measures designed to represent overall provider quality. Quality of patient care star ratings were introduced in 2015 on Home Health Compare (HHC) to provide consumers, providers, and other stakeholders with a summary of performance across multiple indicators of care quality. Patient experience star ratings were added to HHC in 2016 to provide a summary of how patients rate their experience with HHAs. Therefore, the purpose of this study was to describe the overall quality of HHAs serving rural Medicare beneficiaries based on quality of patient care and patient experience star ratings.

METHODS

This study was a secondary analysis of administrative data on Medicare-certified HHAs operating in 2018. We used publicly available, provider-level data from the Centers for Medicare & Medicaid Services (CMS), including the 2018 Provider File from HHC and the 2018 Post-Acute Care and Hospice Utilization and Payment Public Use File (PAC PUF).

Our outcomes of interest were the two types of HHA star ratings reported on HHC: quality of patient care star rating and patient experience star rating. The quality of patient care star rating is calculated based on HHA performance on seven measures (see Box 1) over a four-quarter reporting period. The individual measures included in the quality of patient care star rating are derived from the Outcome and Assessment Information Set (OASIS) and Medicare claims, and are risk-adjusted. HHAs are awarded from 1 to 5 quality of patient care stars, including half-star increments, with 5 stars representing the highest quality. The patient experience star rating is based on the Home Health Consumer Assessment of Healthcare Providers and Systems (HHCAHPS) survey that is designed to capture the patient's experience of care provided by an HHA. The patient experience star rating is calculated from four HHCAHPS measures that are derived from 18 survey items (see Box 1) and adjusted to account for differences in patient mix that may affect survey responses. HHAs are awarded from 1 to 5 patient experience stars with 5 stars representing the highest rating. We used the quality of patient care and patient experience star ratings reported for the four-quarter period of 2018 to align with the 2018 PAC PUF data.

Box 1. Measures Included in Home Health Compare Star Ratings

Star Rating	Measures Included
Quality of Patient Care	• How often the agency initiated patient care in a timely manner • How often patients got better at walking or moving around • How often patients got better at getting in and out of bed • How often patients got better at bathing themselves • How often patients experienced less shortness of breath • How often patients got better at taking their medicines correctly by mouth • How often patients required acute care hospitalization

Box 1 continued on next page

Box 1 continued

Star Rating	Measures Included
Patient Experience	• **Care of patients - composite measure** o In the last 2 months of care, how often did home health providers from this agency seem informed and up-to-date about all the care or treatment you got at home? o In the last 2 months of care, how often did home health providers from this agency treat you as gently as possible? o In the last 2 months of care, how often did home health providers from this agency treat you with courtesy and respect? o In the last 2 months of care, did you have any problems with the care you got through this agency? • **Communication between providers and patients - composite measure** o When you first started getting home health care from this agency, did someone from the agency tell you what care and services you would get? o In the last 2 months of care, how often did home health providers from this agency keep you informed about when they would arrive at your home? o In the last 2 months of care, how often did home health providers from this agency explain things in a way that was easy to understand? o In the last 2 months of care, how often did the home health providers from this agency listen carefully to you? o In the last 2 months of care, when you contacted this agency's office did you get the help or advice you needed? o When you contacted this agency's office, how long did it take for you to get the help or advice you needed? • **Specific care issues - composite measure** o When you first started getting home health care from this agency, did someone from the agency talk with you about how to set up your home so you can move around safely? o When you started getting home health care from this agency, did someone from the agency talk with you about all of the prescription and over-the-counter medicines you were taking? o When you started getting home health care form this agency, did someone from the agency ask to see all of the prescription and over-the-counter medicines you were taking? o In the last 2 months of care, did you and a home health provider from this agency talk about pain? o In the last 2 months of care, did home health providers from this agency talk with you about the purpose for taking your new or changed prescription medicines? o In the last 2 months of care, did home health providers from this agency talk with you about when to take these medicines? o In the last 2 months of care, did home health providers from this agency talk with you about the side effects of these medicines? • **Overall rating of care provided by the home health agency - global item** o We want to know your rating of your care from this agency's home health providers. Using any number from 0 to 10, where 0 is the worst home health care possible and 10 is the best home health care possible, what number would you use to rate your care from this agency's home health providers?

Source: https://homehealthcahps.org/Portals/0/SurveyMaterials/HHCAHPS_Questionnaire_English.pdf;
https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/HHQIHomeHealthStarRatings

Our key independent variable was rural-serving status, which we specified using a two-step process to categorize HHAs based on rural-urban location and percent of patients served who are from rural communities. First, we classified HHAs by location using the ZIP code approximation of the 2010 Rural-Urban Commuting Area (RUCA) codes, which characterize the rural-urban status of areas based on U.S. Census Bureau definitions and work commuting information.[20,21] We used the 2010 RUCA codes to classify HHAs as located in urban (codes 1.0, 1.1, 2.0, 2.1, 3.0, 4.1, 5.1, 7.1, 8.1, 10.1), large rural (codes 4.0, 5.0, 6.0), small rural (codes 7.0, 7.2, 8.0, 8.2, 9.0), and isolated small rural (codes 10.0, 10.2, 10.3) communities. Second, we further classified HHAs located in urban areas based on whether the patients served by the HHA in 2018 consisted of 10% or more rural beneficiaries versus fewer than 10% of rural beneficiaries using PAC PUF data. The PAC PUF uses RUCA codes (primary digit 4 or higher) based on ZIP code of residence to designate beneficiaries as rural to provide percentage of beneficiaries served by an HHA that live in rural communities. We selected the threshold of 10% based on data distribution and the notion that urban HHAs serving at least 1 in 10 patients from a rural community would have more experience providing post-acute care services to meet the needs of rural patients than urban HHAs that rarely serve rural beneficiaries. The final categorization of HHAs was: (1) urban HHA serving fewer than 10% rural beneficiaries (non-rural-serving urban HHA), (2) urban HHA serving 10% or more rural beneficiaries (rural-serving urban HHA), (3) HHA located in large rural community, (4) HHA located in small rural community, and (5) HHA located in isolated small rural community. Thus, HHAs were considered rural-serving if they were located in rural communities or if they were located in urban communities with at least 10% of their patient population consisting of rural beneficiaries.

We used HHC and PAC PUF data to create control variables for provider characteristics. Profit status was categorized as for-profit, nonprofit, or governmental. We measured size as total number of home health episodes provided in 2018. We created an indicator for full-service (yes/no) based on whether an HHA offered all six services covered under the home health benefit, including nursing, physical therapy, occupational therapy, speech therapy, medical social work, and home health aide. We classified HHAs into three categories according to years of Medicare certification: certified before implementation of prospective payment in October 2001, certified after implementation of prospective payment but more than five years prior to December 2018, and certified within the most recent five-year period of the study. We used Census Division to indicate geographic location.

Our descriptive analysis compared quality of patient care and patient experience star ratings and other provider characteristics across our HHA rural-serving categorization. We used chi-square tests to compare categorical variables and ANOVA to compare continuous variables. We then used logistic regression models to examine the association between rural-serving category and high quality (4 or 5 stars) versus low to moderate quality (1 to 3 stars) for both types of star ratings, controlling for other provider characteristics described above. We accounted for clustering of HHAs within states using a generalized estimating equation (GEE) approach for our models. We also performed a sensitivity analysis by running the same regression models with a recategorization of our key independent variable where an urban HHA was considered rural-serving if it served any rural beneficiaries (versus 10% or more rural beneficiaries in the original categorization) and non-rural-serving if it served no rural beneficiaries (versus fewer than 10% in the original categorization).

FINDINGS

A total of 8,304 HHAs operating in 2018 had data available in both HHC and the PAC PUF files and were eligible for the quality of patient care analysis. Of these HHAs, 18.5% were located in rural communities and 81.5% were located in urban communities. Of the urban HHAs, 22.0% were rural-serving urban HHAs (serving 10% or more rural beneficiaries). Table 1 presents HHA characteristics by rural-serving status. Although the overall HHA market, especially in urban areas, is dominated

by for-profit ownership, a higher percentage of rural-serving urban HHAs and HHAs located in rural communities were non-profit. As rurality increased, the percentage of governmental HHAs increased. A higher percentage of rural-serving urban HHAs and rural HHAs were Medicare-certified longer-term compared to non-rural-serving urban HHAs. Non-rural-serving urban HHAs were more likely to be full-service providers compared to rural-serving urban HHAs and rural HHAs. The percentage of HHAs that were full-service decreased as rurality increased for HHAs located in rural communities.

Table 1. Characteristics of Home Health Agencies (HHAs) in 2018 by Rural-Serving Status

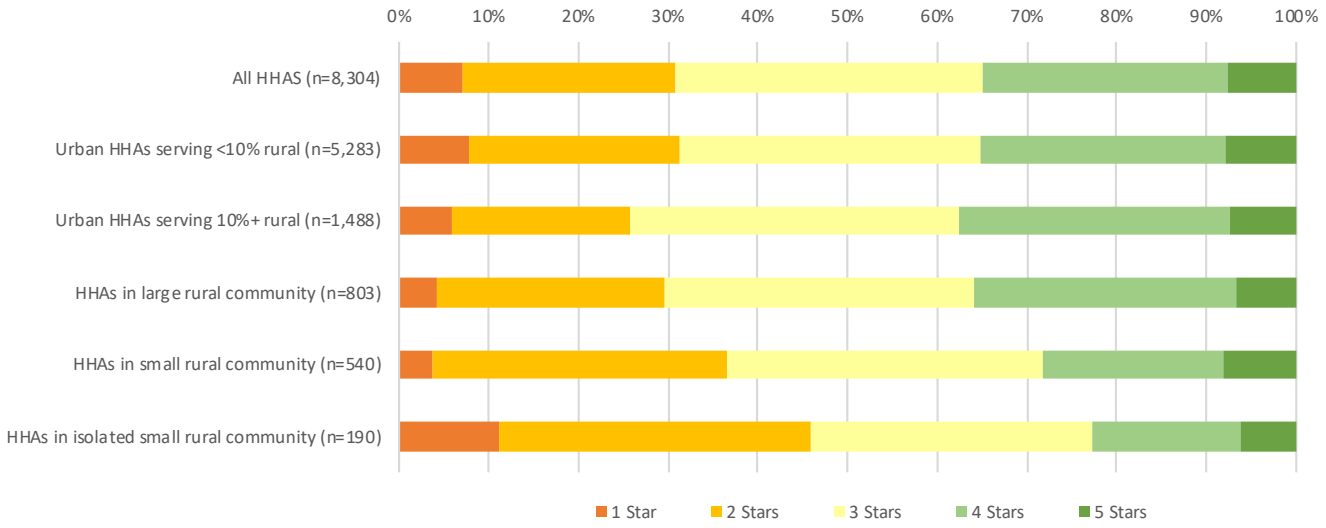
	All HHAs (n=8,304)	Urban HHAs serving <10% rural beneficiaries (n=5,283)	Urban HHAs serving 10%+ rural beneficiaries (n=1,488)	HHAs in large rural community (n=803)	HHAs in small rural community (n=540)	HHAs in isolated small rural community (n=190)
Profit Status*, %**						
For-profit	79.0%	86.3%	79.8%	59.2%	46.9%	46.3%
Non-profit	17.0%	12.8%	17.5%	31.0%	31.9%	30.5%
Governmental	4.0%	1.0%	2.7%	9.8%	21.3%	23.2%
Certification*, %**						
Before Oct 2001	41.2%	28.2%	53.5%	69.5%	78.9%	77.4%
Oct 2001-Dec 2013	51.1%	62.5%	39.8%	26.0%	19.3%	18.4%
Jan 2014-Dec 2018	7.8%	9.3%	6.7%	4.5%	1.9%	4.2%
Census Division*, %**						
New England	3.3%	4.1%	1.8%	1.4%	2.2%	3.2%
Middle Atlantic	4.9%	5.5%	4.3%	4.1%	2.6%	2.6%
East North Central	18.4%	20.0%	16.9%	15.8%	14.3%	11.1%
West North Central	6.7%	3.0%	8.1%	13.3%	22.2%	27.9%
South Atlantic	17.3%	19.5%	15.5%	12.2%	10.4%	12.1%
East South Central	4.5%	1.5%	8.5%	10.5%	11.3%	12.1%
West South Central	22.4%	18.7%	31.4%	27.9%	25.6%	19.5%
Mountain	7.1%	6.8%	5.9%	9.8%	8.2%	8.4%
Pacific	15.5%	20.9%	7.7%	5.0%	3.3%	3.2%
Full-Service*, %**						
Yes	81.1%	86.9%	81.5%	68.7%	55.0%	41.6%
No	18.9%	13.1%	18.5%	31.3%	45.0%	58.4%
Total Episodes*, mean (SD)**	736.6 (1,192.5)	672.2 (1,213.0)	1,088.5 (1,367.4)	745.1 (924.9)	476.0 (558.7)	476.0 (879.2)

***p=<.0001
Notes: Statistically significant differences in provider characteristics by rural-serving status were determined using chi-square tests for categorical variables and ANOVA for continuous variables. HHA location was determined using Rural-Urban Commuting Area (RUCA) codes. Percentage of rural beneficiaries served for urban HHAs was determined using the Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files. Full-service was determined based on whether the HHA offered all six services covered under the home health benefit, including nursing, physical therapy, occupational therapy, speech therapy, medical social work, and home health aide. N=8,304 home health agencies with available quality of patient care star ratings.
Source: 2018 Home Health Compare and Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files.

A total of 5,494 HHAs in the PAC PUF data set had patient experience stars available in HHC and were thus eligible for the patient experience analysis. Of these HHAs, 22.8% were located in rural communities, and 77.2% were located in urban communities. Of the urban HHAs, 28.8% served 10% or more rural beneficiaries. Compared to the HHAs included in the quality of patient care analysis, HHAs included in the patient experience analysis were higher-volume providers and a higher percentage were certified longer-term (54.2% versus 41.2% certified prior to implementation of prospective payment) and non-profit (22.3% versus 17.0%). Also, 100.0% of HHAs included in the patient experience analysis were full-service providers compared to 81.1% in the quality of patient care analysis.

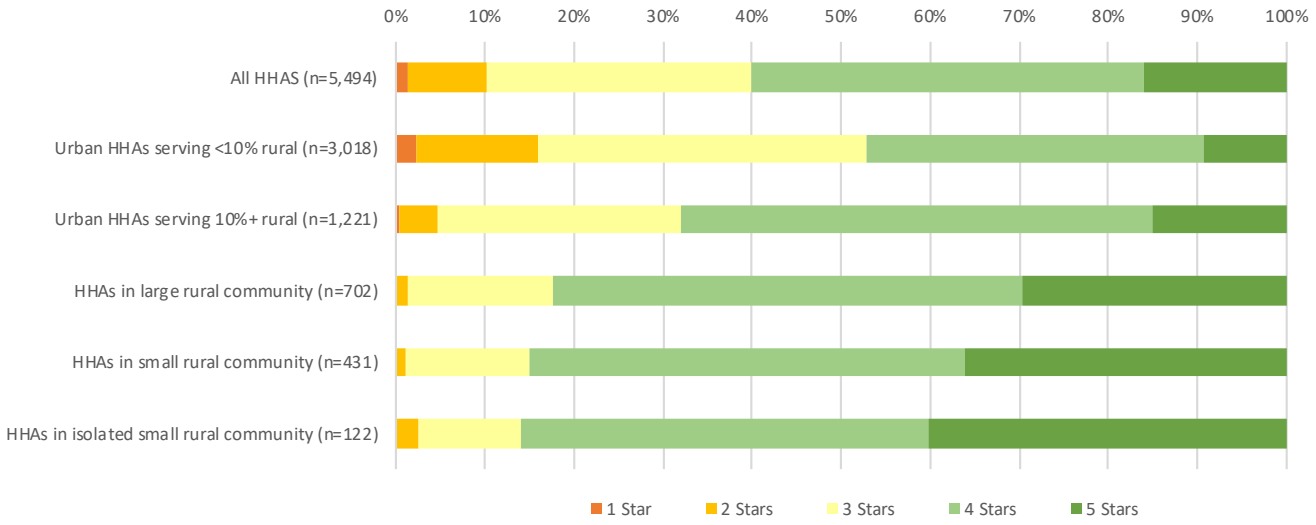
Figures 1 and 2 show the distribution of star ratings by rural-serving status for quality of patient care stars and patient experience stars, respectively. A greater percentage of all HHAs were highly rated (i.e., 4-5 stars) for patient experience compared to quality of patient care. Among rural HHAs, the percentage with high quality of patient care star ratings decreased as rurality increased. The opposite trend was observed for patient experience star ratings: the percentage of HHAs with high patient experience star ratings increased as rurality increased. Compared to non-rural-serving urban HHAs, a higher percentage of rural-serving urban HHAs had 4-5 stars for both types of star ratings.

Figure 1. Distribution of Quality of Patient Care Star Rating for Home Health Agencies (HHAs) in 2018 by Rural-Serving Status



*p=<.0001 comparing quality of patient care star rating category across rural-serving status using chi-square test.
Notes: Location of home health agency was determined using Rural-Urban Commuting Area (RUCA) codes. Percentage of rural beneficiaries served for urban HHAs was determined using the Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files. Quality of patient care star rating represents the four-quarter reporting period of CY2018.
Source: 2018 Home Health Compare and Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files.

Figure 2. Distribution of Patient Experience Star Ratings for Home Health Agencies (HHAs) in 2018 by Rural-Serving Status



*p=<.0001 comparing patient experience star rating category across rural-serving status using chi-square test.
Notes: Location of home health agency was determined using Rural-Urban Commuting Area (RUCA) codes. Percentage of rural beneficiaries served for urban HHAs was determined using the Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files. Patient experience star rating represents the four-quarter reporting period of CY2018.
Source: 2018 Home Health Compare and Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files.

Table 2 presents the relationships between star ratings and rural-serving status, controlling for other provider characteristics. There were no significant differences in quality of patient care star ratings by rural-serving status. However, rural-serving urban HHAs and HHAs located in all types of rural communities were significantly more likely to have 4-5 patient experience stars compared to non-rural-serving HHAs. As rurality of HHAs increased, the likelihood of high patient experience star ratings increased in magnitude, with HHAs in isolated small rural communities four times as likely to have 4-5 patient experience stars compared to non-rural-serving urban HHAs.

Table 2. Adjusted Relationships between Star Ratings and Rural-Serving Status for Home Health Agencies (HHAs) in 2018

	Quality of Patient Care Stars – High versus Low-Moderate Quality (n=8,304)		Patient Experience Stars – High versus Low-Moderate Quality (n=5,494)	
	AOR (95% CI)	p	AOR (95% CI)	p
Urban HHA serving <10% rural beneficiaries	(Reference)		(Reference)	
Urban HHA serving 10%+ rural beneficiaries	1.08 (0.87, 1.34)	.51	1.92 (1.60, 2.30)	<.0001
HHA in large rural community	1.25 (0.94, 1.65)	.13	3.60 (3.01, 4.70)	<.0001
HHA in small rural community	1.03 (0.76, 1.40)	.83	3.82 (2.63, 5.54)	<.0001
HHA in isolated small rural community	0.73 (0.41, 1.30)	.28	4.01 (2.19, 7.33)	<.0001

Notes: Adjusted odds ratios (AORs) represent adjusted odds that HHAs in each rural-serving category have a high star rating (4-5 stars) versus a low-moderate star rating (1-3 stars) compared to non-rural-serving urban HHAs (reference group). Models are adjusted for profit status, number of episodes, length of certification, Census Division, and whether the HHA provides all six covered services under the home health benefit (i.e., full-service HHA). Standard errors are clustered by state. Location of HHA was determined using Rural-Urban Commuting Area (RUCA) codes. Percentage of rural beneficiaries served for urban HHAs was determined using the Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files. Sample sizes differ between the two models due to differences in availability of each type of star rating.
Source: 2018 Home Health Compare and Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files.

Results of the sensitivity analysis for which we recategorized rural-serving urban HHAs as serving any rural beneficiaries versus at least 10% rural beneficiaries were generally consistent with the primary results. The number of urban HHAs considered rural-serving increased to 4,726 HHAs (69.8% of urban HHAs) for the quality of patient care sensitivity analysis and 3,505 HHAs for the patient experience sensitivity analysis (82.7% of urban HHAs). There remained no significant differences in quality of patient care star ratings based on rural-serving status. HHAs located in all types of rural communities continued to be significantly more likely to have 4-5 patient experience stars compared to non-rural-serving urban HHAs and the magnitudes of the odds ratios remained very high. However, rural-serving urban HHAs were no longer significantly more likely to have 4-5 patient experience stars compared to non-rural-serving urban HHAs.

LIMITATIONS

This study has several limitations that are important for interpretation of results. First, not all HHAs operating in 2018 were included in the analysis. There were approximately 11,500 HHAs active at some point during 2018,[1] but data were not available on all HHAs in our data sources. The 2018 PAC PUF data set included 9,367 HHAs. HHAs missing from the PAC PUF data set include HHAs with suppressed data due to delivery of services to 10 or fewer fee-for-service beneficiaries in the calendar year (e.g., HHAs that closed in early 2018, opened in late 2018, or served primarily Medicare Advantage beneficiaries). In addition, star ratings were not available for all HHAs included in the PAC PUF. HHAs must have at least 20 complete quality home health episodes for five of the seven quality of patient care measures to receive a star rating. HHAs must have at least 40 completed HHCAHPS surveys over a four-quarter reporting period to receive a patient experience star rating. Thus, results are not generalizable to all HHAs, particularly lower-volume HHAs that did not have enough quality episodes and/or HHCAHPS surveys to receive star ratings, which may be more likely among small rural HHAs. Results for patient experience star ratings especially must be interpreted with caution since less than half of all HHAs were able to be included in the patient experience analysis and higher-volume and full-service HHAs were overrepresented in this sample. Second, star ratings provide an overall, easy to understand metric of HHA quality by design, but star ratings are therefore limited in their ability to show differences in individual quality measures that may be important to specific consumers or other stakeholders. Individual measures included in the star ratings and many others that are not included in the star ratings are available on HHC and may be used as a supplement to or replacement for star ratings as needed. Star ratings are also limited in their utility if they are not used during the HHA selection process.[22] Third, while we controlled for other agency characteristics in our analysis and both types of star ratings already include adjustments for patient case-mix, there may be other factors not included in our models or the star ratings adjustments that influence results.[23] Finally, star ratings of rural-serving urban HHAs represent ratings for all beneficiaries served (rural plus urban beneficiaries) and ratings may be more heavily weighted towards care provided to urban beneficiaries. Research using patient-level data is needed to determine whether rural beneficiaries being served by urban HHAs have similar outcomes to urban beneficiaries within those same HHAs.

CONCLUSIONS

HHAs located in rural communities and rural-serving urban HHAs are as likely to have high quality of patient care star ratings as non-rural-serving urban HHAs after taking other agency characteristics into account. However, HHAs located in rural communities and rural-serving urban HHAs are much more likely to have high patient experience star ratings compared to non-rural-serving urban HHAs. The divergent findings for patient quality of care star ratings and patient experience star ratings align with prior research suggesting the two types of star ratings are weakly correlated and reflect measurement of distinct domains of quality.[24] Our findings are also consistent with a prior study using earlier data that found no association between rural-urban location of HHAs and quality of patient care stars, but increased patient experience stars on average for HHAs located in rural and super-rural communities compared to urban communities using a CMS designation for rural.[25]

When we recategorized rural-serving status for urban HHAs as serving any rural beneficiaries (versus 10% or more rural beneficiaries) for the sensitivity analysis, rural-serving urban HHAs were no longer more likely to have higher patient experience star ratings compared to non-rural-serving urban HHAs. This result indicates a difference in patient experience between urban HHAs that serve greater percentages of rural beneficiaries and urban HHAs that rarely serve rural beneficiaries. For rural beneficiaries with a choice of urban HHAs serving their community, our findings suggest beneficiaries may have a better experience of care from an urban HHA that has more familiarity serving rural communities even when quality of patient care outcomes are similar.

However, though rural-serving urban HHAs outperformed non-rural-serving urban HHAs on patient experience star ratings, HHAs located in rural communities were even more likely to have high patient experience star ratings. While the reasons behind these differences in patient experience cannot be ascertained from the data in this study, it is possible the higher patient experience ratings in rural communities may reflect a greater feeling of community among HHA staff and beneficiaries. There was also increased representation of HHAs located in rural communities in the patient experience analysis compared to the quality of patient care analysis, which may imply a bias in response to HHCAHPS favoring rural HHAs. However, the number of HHAs with a quality of patient care star rating was much higher than the number of HHAs with a patient experience star rating, so many beneficiaries will not be able to take full advantage of these complementary measures of HHA quality even if they have multiple HHAs serving their communities.

Finally, more research is needed to understand variation in HHA quality within and across specific types of rural communities. Although our analysis examined intra-rural variation and controlled for geographic region, we must consider that rural communities are not homogenous within these categories. Recent research suggests certain populations, like Native Americans and Alaska Natives and Hispanics, have worse access to high quality HHAs,[6,26,27] which highlights the need for research on quality of HHAs serving specific populations within rural communities.

IMPLICATIONS FOR POLICY AND PRACTICE

Since post-acute care is a key driver of geographic variation in Medicare spending,[28] three major policies have been implemented recently to address HHA spending, including the Home Health Value Based Purchasing (HHVBP) demonstration, Patient Driven Groupings Model (PDGM), and revised rural add-on payments. All three policies also have the potential to impact HHA quality, but only the HHVBP is tied directly to quality. CMS launched the HHVBP demonstration in 2016 in nine states, selected at random within geographic regions, to test whether adjusting Medicare payments based on HHA quality would incentivize higher quality and efficiency. Payments are adjusted up or down based on a composite score of an HHA's quality and improvement over time, starting with a maximum payment adjustment of up to 3% the first year and increasing annually so that the payment adjustment will reach up to 8% in the final year of the demonstration.

Results from the HHVBP demonstration so far seem promising in terms of access to high-quality HHAs, especially for rural beneficiaries. Overall, a higher percentage of beneficiaries received care from high-quality HHAs over the study period, with greater increases in HHVBP states.[6] The percentage of home health episodes delivered to rural beneficiaries by HHAs with 4-5 quality of patient care stars increased by 19.5% in HHVBP states compared to 7.8% in non-HHVBP states, helping to narrow the gap between access to high-quality HHAs for rural versus urban beneficiaries in participating states.[6] But the composite scores for the HHVBP are not equivalent to quality of care star ratings. While most items included in the quality of patient care star rating and all items included in the patient experience star rating are part of the HHVBP composite score, there are over a dozen additional items included in the HHVBP composite score that are excluded from star ratings determinations. Since the HHVBP composite score is used for payment adjustments, it will be important to assess how rural-serving HHAs fare in terms of HHVBP payment adjustments and resulting implications for quality. Reduced payments to rural-serving HHAs based on low HHVBP composite scores may lead to the unintended consequence of reduced resources for these HHAs to improve or maintain quality. In extreme cases, reduced payments may result in HHA closures. As the HHVBP program is expanded nationwide in 2022, it will be especially critical to monitor access to home health service for rural beneficiaries, particularly those whose communities do not have access to the high-quality HHAs that stand to benefit the most under the HHVBP program.

Unlike the HHVBP program, PDGM and the sunset of the rural add-on payments are not tied directly to quality. However, they may also impact quality if payment changes impede or facilitate HHA investment in quality improvement or maintenance. The PDGM was implemented in January 2020 and marks a substantial change from the prior prospective payment system. An impact analysis by CMS shows that on average rural HHAs are expected to receive a 4.8% increase in payments under PDGM versus the prior prospective payment system,[29] but expected payment changes are not uniform across all HHAs. While 60% of rural HHAs are expected to receive increased payments under PDGM with a median percent increase of 10.9%, 40% of rural HHAs are expected to receive decreased payments under PDGM with the median percent decrease of 7.6%.[29] Rural add-on payments, a percentage-based increase in payments to HHAs for serving rural beneficiaries, have been provided at varying amounts intermittently since 2001 and were set at 3% from 2010 through 2018. Starting in 2019, rural add-on payments were revised so the amount of the percentage increase was tied to county-level utilization and population density, with higher amounts provided for serving beneficiaries in low-utilization, low-population density communities. Rural add-on payments have been reduced annually since the revisions were implemented and will be phased out by 2023. Without rural add-on payments, supply of rural-serving HHAs may decrease.[7]

It is not yet known how the overlap of the HHVBP, PDGM, and the sunset of rural add-on payments will affect quality of rural-serving HHAs. Some rural-serving HHAs may risk penalties under the HHVBP program, loss of rural add-on payments, and reduced payments under PDGM simultaneously while others may see increases under both the HHVBP program and PDGM, leading to disparities in resources to address quality. In addition, the COVID-19 pandemic has created additional challenges for rural health providers and rural communities in general.[30-32] While high-quality care must remain a key goal for all HHAs, it will be important to monitor access to home health services for rural beneficiaries and quality of rural-serving HHA, including both quality of patient care and patient experience.

REFERENCES

1. Medicare Payment Advisory Commission (MedPAC). Report to Congress: Medicare Payment Policy. Chapter 8. Home health care services. March 2021. Accessed June 1, 2021. https://www.medpac.gov/wp-content/uploads/import_data/scrape_files/docs/default-source/reports/mar21_medpac_report_to_the_congress_sec.pdf
2. Skillman S, Patterson D, Coulthard C, Mroz T. *Access to Rural Home Health Services: Views from the Field*. Final Report #152. WWAMI Rural Health Research Center, University of Washington; February 2016.
3. Nelson N, Gingerich BS. Rural health: access to care and services. *Home Health Care Management & Practice*. 2010;22(5):339-343. doi:10.1177/1084822309353552
4. Mroz TM, Garberson LA, Wong JL, Andrilla CHA, Skillman SM, Patterson DG, Larson EH. *Variation in Use of Home Health Care among Fee-for-Service Medicare Beneficiaries by Rural-Urban Status and Geographic Region: Assessing the Potential for Unmet Need.* Policy Brief #169. WWAMI Rural Health Research Center, University of Washington; February 2020.
5. Mroz TM, Garberson LA, Andrilla CHA, Skillman SM, Larson EH, Patterson DG. *Post-acute Care Trajectories for Rural Medicare Beneficiaries: Planned versus Actual Hospital Discharges to Skilled Nursing Facilities and Home Health Agencies.* Policy Brief. WWAMI Rural Health Research Center, University of Washington; March 2021.
6. Pozniak A, et al. Arbor Research Collaborative for Health and L&M Policy Research. Evaluation of the Home Health Value-Based Purchasing (HHVBP) Model. Third Annual Report. September 2020. Accessed January 5, 2021. https://innovation.cms.gov/data-and-reports/2020/hhvbp-thirdann-rpt
7. Mroz TM, Patterson DG, Frogner BK. The impact of Medicare's rural add-on payments on supply of home health agencies serving rural counties. *Health Aff (Millwood)*. 2020;39(6):949-957. doi:10.1377/hlthaff.2019.00952

8. Alghanem F, Clements JM. Narrowing performance gap between rural and urban hospitals for acute myocardial infarction care. *Am J Emerg Med*. 2020;38(1):89-94. doi:10.1016/j.ajem.2019.04.030
9. Farley BJ, Shear BM, Lu V, et al. Rural, urban, and teaching hospital differences in hip fracture mortality. *J Orthop*. 2020;21:453-458. doi:10.1016/j.jor.2020.08.039
10. Baldwin LM, Chan L, Andrilla CHA, Huff ED, Hart LG. Quality of care for myocardial infarction in rural and urban hospitals. *J Rural Health*. 2010;26(1):51-7. doi:10.1111/j.1748-0361.2009.00265.x
11. Kang YS, Tzeng HM, Zhang T. Rural disparities in hospital patient satisfaction: multilevel analysis of the Massachusetts AHA, SID, and HCAHPS data. *J Patient Exp*. 2020;7(4):607-614. doi:10.1177/2374373519862933
12. Joynt KE, Orav EJ, Jha AK. Mortality rates for Medicare beneficiaries admitted to critical access and non-critical access hospitals, 2002-2010. *JAMA*. 2013;309(13):1379-87. doi:10.1001/jama.2013.2366
13. Joynt KE, Harris Y, Orav EJ, Jha AK. Quality of care and patient outcomes in critical access rural hospitals. *JAMA*. 2011;306(1):45-52. doi:10.1001/jama.2011.902
14. Nawal Lutfiyya M, Bhat DK, Gandhi SR, Nguyen C, Weidenbacher-Hoper VL, Lipsky MS. A comparison of quality of care indicators in urban acute care hospitals and rural critical access hospitals in the United States. *Int J Qual Health Care*. 2007;19(3):141-9. doi:10.1093/intqhc/mzm010
15. Gonzales S, Mullen MT, Skolarus L, Thibault DP, Udoeyo U, Willis AW. Progressive rural-urban disparity in acute stroke care. *Neurology*. 2017;88(5):441-448. doi:10.1212/WNL.0000000000003562
16. Mroz TM, Meadow A, Colantuoni E, Leff B, Wolff JL. Home health agency characteristics and quality outcomes for Medicare beneficiaries with rehabilitation-sensitive conditions. *Arch Phys Med Rehabil*. 2018;99(6):1090-1098.e4. doi:10.1016/j.apmr.2017.08.483
17. Ma C, Devoti A, O'Connor M. Rural and urban disparities in quality of home health care: a longitudinal cohort study (2014-2018). [published online ahead of print, 2022 Jan 5]. *J Rural Health*. 2022;10.1111/jrh.12642. doi:10.1111/jrh.12642
18. Sutton JP. Performance of rural and urban home health agencies in improving patient outcomes. Final Report. Bethesda, MD: NORC Walsh Center for Rural Health Analysis; 2006.
19. Chen HF, Landes RD, Schuldt RF, Tilford JM. Quality performance of rural and urban home health agencies: implications for rural add-on payment policies. *J Rural Health*. 2020;36(3):423-432. doi:10.1111/jrh.12415
20. Morrill R, Cromartie J, Hart L. Metropolitan, urban, and rural commuting areas: toward a better depiction of the U.S. settlement system. *Urban Geography*. 1999;20:727-748.
21. U.S. Department of Agriculture - Economic Research Services (USDA-ERS). 2010 Rural-Urban Commuting Area Codes. Updated August 17, 2020. Accessed January 29, 2021. https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes.aspx
22. Pozniak A, et al. Arbor Research Collaborative for Health and L&M Policy Research. Evaluation of the Home Health Value-Based Purchasing (HHVBP) Model. Second Annual Report. December 2019. Accessed February 1, 2020. https://innovation.cms.gov/files/reports/hhvbp-secann-rpt.pdf
23. Zikos D, Massaria K, Graziano M, DeLellis N. Multifactorial analysis to examine drivers of CMS summary star ratings in home health agencies. *Home Health Care Serv Q*. 2019 Apr-Jun 2019;38(2):43-60. doi:10.1080/01621424.2019.1604459
24. Schwartz ML, Mroz TM, Thomas KS. Are patient experience and outcomes for home health agencies related? *Med Care Res Rev*. 2020:1077558720968365. doi:10.1177/1077558720968365
25. Teshale SM, Schwartz ML, Thomas KS, Mroz TM. Early effects of home health value-based purchasing on quality star ratings. *Med Care Res Rev*. 2020:1077558720952298. doi:10.1177/1077558720952298
26. Towne SD, Probst JC, Mitchell J, Chen Z. Poorer quality outcomes of Medicare-certified home health care in areas with high levels of Native American/Alaska Native residents. *J Aging Health*. 2015;27(8):1339-57. doi:10.1177/0898264315583051

27. Wang Y, Spatz ES, Tariq M, Angraal S, Krumholz HM. Home health agency performance in the United States: 2011-15. *J Am Geriatr Soc.* 2017;65(12):2572-2579. doi:10.1111/jgs.14987
28. Newhouse JP, Garber AM. Geographic variation in Medicare services. *N Engl J Med.* 2013;368(16):1465-8. doi:10.1056/NEJMp1302981
29. Centers for Medicare & Medicaid Services (CMS). CY 2020 PDGM Agency Level Impacts file. Accessed December 1, 2020. https://www.cms.gov/medicare/home-health-pps/home-health-pps-and-home-infusion-therapy-archive
30. Mueller JT, McConnell K, Burrow PB, Pofahl K, Merdjanoff AA, Farrell J. Impacts of the COVID-19 pandemic on rural America. *Proc Natl Acad Sci U S A.* 2021;118 (1) 2019378118. doi:10.1073/pnas.2019378118
31. IDSA. COVID-19 Policy Brief: Disparities Among Rural Communities in the United States. December 22, 2020. Accessed January 31, 2021. https://www.idsociety.org/globalassets/idsa/public-health/covid-19/covid19-health-disparities-in-rural-communities_leadership-review_final_ab_clean.pdf
32. Bai G, Anderson G. COVID-19 and the financial viability of US rural hospitals. July 1, 2020 ed: Health Affairs Blog. Accessed January 31, 2021. https://www.healthaffairs.org/do/10.1377/hblog20200630.208205/full/

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