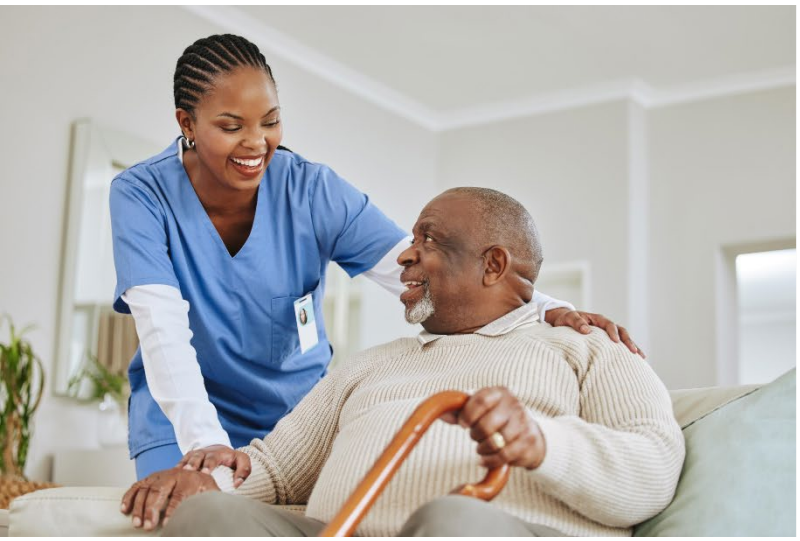
2023 Technical Expert Panel Meetings

Expanded Home Health Value-Based Purchasing Model Summary Report



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Glossary of Acronyms

ADI	Area Deprivation Index
APR	Annual Performance Report
HHCAHPS	Home Health Consumer Assessment of Healthcare Providers and Systems
CMS	Centers for Medicare and Medicaid Services
CY	Calendar Year
DES	Dual eligible status
DC	Discharge
DTC	Discharge to Community
ED	Emergency department
FFS	Fee-for-service
HARP	Health Care Quality Information Systems (HCQIS) Access Roles and Profile
HEA	Health Equity Adjustment
HHA	Home health agency
HHVBP	Home Health Value-Based Purchasing
IPR	Interim Performance Report
iQIES	Internet Quality Improvement & Evaluation System
MA	Medicare Advantage
OASIS	Outcome and Assessment Information Set
PAC	Post-acute care
PPH	Potentially preventable hospitalization
QRP	Quality Reporting Program
SNF	Skilled nursing facility
RUCA	Rural-Urban Community Area
SVI	Social Vulnerability Index
TEP	Technical Expert Panel
TPS	Total Performance Score
VBP	Value-Based Payment

1. Background

Introduction

The Centers for Medicare & Medicaid Services (CMS) contracted with Abt Associates (Abt) to support the implementation of the Home Health Value-Based Purchasing (HHVBP) Model, including the development of refinements to the measures and scoring methodology, first for the original Model, which ran from 2016-2020[1], and now for the expanded HHVBP Model, which started in calendar year (CY) 2022.[2] The original HHVBP Model operated in nine states (Arizona, Florida, Iowa, Massachusetts, Maryland, Nebraska, North Carolina, Tennessee, and Washington), while the expanded Model includes HHAs nationwide.

The contract name is Research, Measurement, Assessment, Design and Analysis: Home Health Value-Based Purchasing – Implementation/Monitoring. The contract number is HHSM-500-2014-00026I, Task Order number HHSM-500-T0002. The expanded HHVBP Model Technical Expert Panel (TEP) included experts from the home health setting specializing in quality assurance, patient advocacy, clinical work, and measure development. Abt convened the TEP for an introductory teleconference and a separate one-day virtual meeting in fall 2023. The virtual meeting covered health equity approaches, performance measures (including a review of current measures and discussion of potential new measures), measure weights, and performance reporting. This report provides an overview of the topics discussed over these two meetings and a summary of feedback from the TEP members.

TEP Responsibilities

The TEP was convened to provide expert input regarding the needs of the home health populations, especially those that have traditionally been underserved in these settings. Specifically, the TEP was charged with the following:

- Review relevant materials (e.g., a summary of findings from analyses of measures, a summary of public comments in response to a Notice of Proposed Rulemaking).
- Provide input and advice to the implementation contractor on potential measures and scoring methodology refinements under consideration for the expanded HHVBP model.
    - Discuss quality measure concerns, such as face validity and feasibility.
    - Provide input on measure concepts and scoring methodology refinements and potential alternatives.
- Collaboratively consider previously gathered relevant information and public comments to assess the validity and feasibility of proposed refinements to the expanded HHVBP Model.
- Provide input with an equity lens, helping to ensure that refinements to the expanded HHVBP Model reduce inequities in access and quality of care.

[1] The original HHVBP Model ended one year early, as CMS did not use data from calendar year 2020 to calculate a payment adjustment for calendar year (CY) 2022.

[2] During CY 2022, CMS provided HHAs with resources and training, to allow HHAs time to prepare and learn about the expectations and requirements of the expanded HHVBP Model without risk to payments. The first full performance year for the expanded HHVBP Model is CY 2023.

- Ensure that refinements to the measures and scoring methodology used in the expanded HHVBP Model are meaningful for the home health populations and transparent to providers in these settings.

The TEP is expected to continue meeting in the future to provide input on potential refinements to the expanded HHVBP Model, with one in-person meeting and up to four teleconferences anticipated each year.

TEP Composition

Abt followed the Measures Management System Blueprint to form the TEP. Recruitment began in August 2023 with a 4-week call for potential members to submit nominations. CMS disseminated the call for TEP members through their webpage and various stakeholder listservs to solicit nominations from a diverse group of experts, including home health clinicians and staff, patient advocates, caregivers, methodologists, and researchers. Among the nominees, Abt selected 14 individuals from diverse backgrounds, reflecting a range of perspectives and expertise. All selected nominees agreed to serve on the TEP. The final TEP included members from 11 states and the District of Columbia. Members bring experience in clinical work, patient advocacy, quality improvement, and research. Four TEP members have current or past experience as a family caregiver to patients receiving home health. Additionally, at least one TEP member has personally received home health. Table 1 presents the name and a brief profile of each TEP member. For a detailed background of each TEP member, please see Appendix A.

Table 1: List of TEP Members

Name	State	Relevant Experience and Areas of Expertise	Current or Past Experience as a Family Caregiver
Alicia Arbaje, MD, MPH, PhD	Maryland	Geriatrician, professor, and health services researcher; collaborated with academic- and community-based HHAs for 20+ years (as a researcher and as a practicing clinician); currently serves as Medical Director for HHA	Yes
Dawnita Brown, MA, MS, CCC, CCE, CCF	Maryland	Family caregiver with extensive experience; founder of several organizations focused on caregiving	Yes
April Coxon, RN	Texas	RN with 23 years of chronic disease management and performance improvement experience; Executive Vice President of Quality at HHA (Healing Hands Healthcare); Current Chair of the Education Committee for TAHC&H (Texas Association of Home Care & Hospice) and an active member of NAHC (National Association of Home Care & Hospice); PQM selected PRMR (Pre-Rulemaking Measure Review) Committee member for Post Acute Care	
Shekinah Fashaw-Walters, PhD, MSN	Minnesota	Health services researcher, professor, and consultant; expertise with health equity and structural racism in home health, post-acute, and long-term care	Yes
Kathleen Holt, MBA, JD	Connecticut	Associate Director, Center for Medicare Advocacy; Medicare patient advocate; legal expertise in Medicare coverage	

Name	State	Relevant Experience and Areas of Expertise	Current or Past Experience as a Family Caregiver
Cindy Krafft, PT, MS, HCS-O	Georgia	PT with 25+ years of home health experience; educator on OASIS data collection; expertise on stabilization of function	
Terri Lindsey, RN, BSN, CPHQ	Virginia	RN with 37 years' experience; Quality Outcomes Specialist at HHA (Bon Secours Mercy Health Home Health and Hospice, Richmond, VA)	Yes
Trudy Mallison, PhD, OTR/L, FACRM, FAOTA, NZROT	Washington, DC	Occupational Therapist, professor, and health services researcher; expertise in quality measures development in post-acute care	Yes
Tracy Mroz,, PhD, OTR/L, FAOTA	Washington	Occupational Therapist, professor, and health services researcher; expertise in access to and quality of home health care for Medicare beneficiaries, including in rural settings	
Dana Mukamel, PhD, MS	California	Professor and health services researcher; expertise in QMs for long-term care providers and investigating the impact in terms of behavior, quality, and cost	
Eugene Nuccio, PhD	Colorado	Health services researcher and retired professor; expertise in OASIS and QM development	
Zainab Osakwe, PhD, MSN, NP, RN	New York	PhD-trained nurse, health services researcher, and professor; experienced as a home health nurse, administrator, and leader, with expertise in OASIS	
Steven Pamer, PT, MPA, CGS	Ohio	HHA Administrator & Director of Rehabilitation Services (Cleveland Clinic Home Health Care)	
Madeline Sterling, MD, MPH, MS	New York	General internist and health services researcher; expertise in improving patient outcomes in HH; Director, Home Care and Home Health Care Workers Initiative, Cornell University, Ithaca, NY	

In fall of 2023, the TEP convened for an introductory teleconference and then a one-day virtual meeting. The subsequent sections of this report provide an overview of the topics discussed over the course of these meetings and a summary of feedback from the TEP members.

2. Health Equity

Background

Executive Order 13985 on "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government" calls for a comprehensive approach to advancing equity for all by embedding fairness into daily practices by which the Government serves its people. CMS defines health equity as the attainment of the highest level of health for all people. Given its goal of advancing health equity, CMS is working to advance health equity in three critical ways:

- Designing, implementing, and operationalizing policies and programs that support the health of all the people CMS serves.
- Eliminating avoidable differences in health outcomes experienced by people who are disadvantaged or underserved.
- Providing the care and support that enrollees need to thrive.

CMS may consider refinements to the expanded HHVBP Model that are designed to reduce differences in health outcomes for beneficiaries who are disadvantaged or underserved. The focus of the original HHVBP Model was on improving the quality of care, and it did not explicitly target health equity. While it is possible that improvements in quality resulting from the expanded HHVBP Model could be widespread across all types of beneficiaries, it is also possible that the Model may exacerbate disparities, for example by incentivizing HHAs to admit (or avoid admitting) certain types of patients. The evaluation of original HHVBP had mixed findings with respect to disparities.[3] The evaluation found modest growth in pre-existing disparities for patients with Medicaid coverage (higher unplanned hospitalizations and lower functional improvement). The original Model, however, was associated with larger gains in quality among Black beneficiaries compared to White non-Hispanic patients.

Several previous studies have found that historically underserved populations, including Medicare beneficiaries who are dually enrolled, live in a low-income neighborhood, or are Black receive lower quality home health care relative to populations not historically underserved. Previous studies have found that underserved populations have higher rates of hospital readmissions,[4] are more likely to be discharged without functional improvement,[5] are less likely to receive care from high-quality HHAs,[6] and have

[3] Arbor Research Collaborative for Health. (2023). *HHVBP Evaluation Final Report*. https://www.cms.gov/priorities/innovation/data-and-reports/2023/hhvbp-seventh-ann-rpt#:~:text=The%20evaluation%20suggests%2C%20despite%20a,beneficiaries%20requiring%20home%20health%20services.

[4] Joynt Maddox, K. E., Chen, L. M., Zuckerman, R., & Epstein, A. M. (2018). Association Between Race, Neighborhood, and Medicaid Enrollment and Outcomes in Medicare Home Health Care. *Journal of the American Geriatrics Society*, 66(2), 239–246. https://doi.org/10.1111/jgs.15082

[5] Fashaw-Walters, S. A., Rahman, M., Jarrín, O. F., Gee, G., Mor, V., Nkimbeng, M., & Thomas, K. S. (2023). Getting to the root: Examining within and between home health agency inequities in functional improvement. *Health Services Research*. https://doi.org/10.1111/1475-6773.14194

[6] Fashaw-Walters, S. A., Rahman, M., Gee, G., Mor, V., White, M., & Thomas, K. S. (2022). Out Of Reach: Inequities in the Use of High-Quality Home Health Agencies. *Health Affairs (Project Hope)*, 41(2), 247–255. https://doi.org/10.1377/hlthaff.2021.01408

worse reported care experiences.[7] Improving the quality of care for these underserved populations is an important target for quality improvement under the expanded HHVBP Model.

Disparities may result from differences within HHAs (e.g., patients from underserved groups are less likely to have good outcomes, such as functional improvement, discharge to community, avoiding readmission to a hospital). They may also result from differences across HHAs (e.g., patients from underserved groups are less likely to receive care from good quality HHAs and thus at higher risk of poor outcomes). The literature is mixed on source of disparities. One study found that differences in readmission rates for underserved populations were primarily within rather than across HHAs.[8] Another study found that both within- and between-HHA differences contribute to the overall disparities in functional improvement.[9] This same study found that roughly half of observed individual-level disparities in the use of high-quality home health agencies was attributable to neighborhood-level factors. Differences in care experience for underserved populations were explained by both within- and between-HHA differences, but within-HHA variation more often accounted for a greater proportion of differences.[10]

The TEP discussed several potential approaches for integrating health equity that are being considered for the expanded HHVBP Model. Considerations for evaluating potential approaches include the following:

- ***Legal:*** Is the approach allowable by statute?
- ***Effective:*** Does the approach incentivize equity without undermining basic tenets of HHVBP? What would its impact on underserved populations be?
- ***Feasible:*** How long would it take to implement the approach? Are the necessary data currently being collected? How many HHAs would be included?
- ***Reliable:*** Does the approach allow for reliable measurement of health equity within HHAs?
- ***Aligned:*** Is this approach aligned with other Medicare quality and VBP Programs?

One of the approaches discussed by the TEP was the Health Equity Adjustment (HEA) that will begin in the Skilled Nursing Facility (SNF) VBP starting with the fiscal year 2027 program year. Under the HEA, providers could receive HEA bonus points that are added to the Total Performance Score (TPS) depending on their performance level and share of dually eligible beneficiaries. Abt presented analyses that showed that the average TPS was higher for HHAs in the highest decile in terms of share of dual eligible status (DES) than for any other decile. Similarly, the average TPS was higher for HHAs in the lowest Area Deprivation Index (ADI) decile. As a result, the simulation results suggest that the HEA would actually exacerbate disparities in the home health setting. A notable exception to this pattern was that HHAs in the highest ADI quintile and highest DES quintile had a lower TPS than any other group. This finding suggests a potential interaction between DES and ADI.

The TEP also discussed health equity measures that would more directly focus on disparities. This could be structured in several different ways:

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[7] RTI analysis of HHCAHPS data, July 2023.

[8] Joynt Maddox, K.E., Chen, L.M., Zuckerman, R. and Epstein *op cit*.

[9] Fashaw-Walters SA, Rahman M, Jarrín OF, Gee G, Mor V, Nkimbeng M, Thomas KS *op cit.*

[10] RTI analysis of HHCAHPS data, *op cit.*

- ***Measure for underserved population:*** Performance on one of more measures for underserved patients/patients with a social risk factor.
- ***Measure based on within-provider differences:*** Within-provider difference in performance for underserved patients/patients with a social risk factor. This type of measure could be based on a single outcome or multiple outcomes (i.e., a composite measure).

The TEP also discussed potential definitions to use for defining historically underserved populations. Abt's analyses focused on three potential definitions: DES, ADI, and Medicaid as sole payment source. Note that we did not discuss the use of race and ethnicity because of legal limitations on making Medicare payments dependent on race and ethnicity.

Summary of Feedback

TEP members offered multiple suggestions for ways CMS could refine health equity analyses, including recommendations related to defining and applying social risk factors, refinements to the HEA methodology, health equity composite measures, and CMS's overall approach to health equity.

Social risk factors

Several TEP members noted that DES, while correlated with some social risk factors, may not be a sufficient metric for defining underserved populations and social risk factors. The TEP recommended several alternate methods for identifying underserved populations. Some TEP members noted that caregiver availability is an important predictor of a patient's home health success. Therefore, a metric combining caregiver availability with the patient's level of cognitive or functional impairment could help identify a patient's risk factors. One TEP member cited a study that found that the mismatch between patient needs and caregiver availability was an important predictor of unplanned healthcare utilization. Such a metric would help to highlight whether patients' needs are met by their existing caregiver support; if those needs are not met, then patients should be considered higher risk. One TEP member noted that use of caregiver availability as a social risk factor may be less important given that this is included in the risk-adjustment model for at least some measures.

The TEP also noted the importance of defining patients' social risk factors – particularly minority race/ethnicity – in the context of the characteristics of the HHA's service area. Some TEP members pointed out the challenges of defining health equity measures for HHAs whose service area is not very diverse. If the local population of the service area contains little diversity, then it may not be appropriate to evaluate the HHA by the same standard as an HHA in a market with greater diversity. One TEP member suggested looking at the mix of patients that an HHA serves vs. the mix of patients that they could serve given the ethnic composition of their service area.

One TEP member also suggested using the Social Vulnerability Index (SVI) created by the Centers for Disease Control. The SVI uses 16 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters, Unlike DES, the SVI includes a racial composition component, which could be a valuable additional dimension for defining social risk factors. If there are legal reasons why race and ethnicity cannot be used, the TEP suggested that education level or ZIP code-level measures could be useful. One TEP member noted that comparison between the ADI and the SVI shows that they are not interchangeable measures of socioeconomic deprivation.

TEP members emphasized the importance of capturing disparities between rural and urban home health providers and patients when analyzing social risk factors. They encouraged using a more detailed measure of urban/rural status, noting that rural areas are not homogenous. One TEP member suggested using the rural-urban commuting area (RUCA) codes, which classify U.S. census tracts using measures of population density, urbanization, and daily commuting. These could be used, for example, to compare

frontier rural areas against other rural areas, or to compare metro-adjacent areas against non-metro-adjacent areas. The use of the RUCA codes may reveal and account for intra-rural variations that are not observed using a binary measure of urban/rural status. The TEP suggested that we examine the extent to which other social risk factors account for urban-rural disparities.

Refinements to HEA methodology

TEP members highlighted ways to improve the HEA methodology for the home health setting by adjusting the data sources used. For example, while Medicare claims are a robust data source, claims data are only available for Medicare fee-for-service (FFS) patients and not for Medicare Advantage (MA) patients. If MA enrollment continues to grow, FFS claims data could prove to be an inadequate data source for reflecting the total Medicare patient population. CMS calculates the HEA based on provider performance (through the "performance scaler") and the proportion of patients served by the provider are from the underserved population (the "underserved multiplier").

Some TEP members observed that, as currently designed for SNF VBP, the HEA may not do enough to elevate lower-performing agencies. To set the HEA, CMS multiplies the performance scaler by the underserved multiplier. With the performance scaler methodology used in SNF VBP, HHAs only receive a payment adjustment for measures on which their performance is in the top third. The TEP expressed concern that this is too high of a bar to use for home health given the relatively small HEA received by most HHAs. The size of the adjustment is relatively small unless the provider has a high share of underserved patients and thus has a high underserved multiplier.

TEP members expressed concern that the HEA methodology could exacerbate inequities by rewarding high performing HHAs that do not need assistance and reducing payment for lower performing HHAs that may provide care to a high share of the underserved population that could benefit more from increased payment. HHAs with a performance level in the top third for a measure are already performing better than average before accounting for their underserved patient population. Conversely, agencies with lower performance levels on a measure are not eligible for the HEA, regardless of the share of underserved patients that they serve or any efforts they may make to close health equity gaps. As such, the HEA methodology could have unintended consequences for underserved populations who are only served by lower-performing HHAs. Such HHAs would likely benefit more from the HEA but would not qualify for it with the approach used in SNF VBP.

One option suggested by the TEP would be to consider both performance level and improvement in calculating the measure performance scaler (e.g., reward HHAs that are in the top third in either performance level or improvement or base the adjustment on the care points received for the measure). Doing so would help to reward lower-performing HHAs that are improving, thus encouraging further improvement. Another suggestion was to redesign the HEA methodology to consider patient populations first. This way, only agencies already serving underserved patients would be considered for HEA, and the methodology could focus on how those agencies perform specifically for underserved patients. This approach might better incentivize HHAs to improve their performance for underserved patients.

Performance measure for underserved patients

The TEP also discussed considerations for how CMS could design a performance measure (perhaps a composite measure) that is focused on the underserved patients cared for by an HHA. This measure could reflect quality of care for underserved populations, or it could be based on within-provider difference in performance for underserved and other patients. The TEP provided input on the following:

- What should be the main goal(s) for performance measure(s) for underserved patients.
- What issues need to be addressed in exploring performance measure(s) for underserved patients.

- Whether the risk-adjustment model for these measures should be based on the overall patient population or only the underserved population.

Some TEP members reiterated data challenges associated with health equity and the implications they would have on a performance measure calculated for underserved patients. They felt that CMS should not address within-provider differences and penalize providers without using the best metrics available to define underserved populations and including in the risk adjustment model factors such as caregiver availability.

TEP members also noted that it makes sense that claims-based measures are most impacted for beneficiaries receiving high-quality care. A TEP member noted that state-funded caregivers and private duty care workers placing "eyes on the patient" several hours a day or even around the clock can significantly decrease many patient safety events that lead to unplanned hospital care such as falls, dehydration/ electrolyte imbalances related to proper nutrition, hypo/hyperglycemia, and medication issues in general. These are some of the most common reasons for unplanned hospital care.

The TEP suggested that CMS consider process measures such as measures of care coordination or quality of patient transitions. One option for doing this would be to use the Hospice Comprehensive Assessment Measure as a model for creating a health equity composite measure for home health. This composite measure uses seven individual endorsed process measures as its component measures. They also suggested considering process measures such as measures of care coordination or quality of patient transitions. Some TEP members suggested that CMS consider the "Hospital-to-Home-Health Transition Quality Index". This is a 12-item count of hospital-to-home health transitions best practices for safety that was developed through more than 180 hours of observations and more than 80 hours of interviews.

The TEP also noted concerns that process measures tend to be topped out, which may limit the usability of the measures. The Hospice Comprehensive Assessment Measure only gives credit to patient stays that meet all of the individual component measures applicable to the patient. This scoring approach is one way to increase variability in performance while using measures that are close to being topped out individually.

Other recommendations

The TEP also provided recommendations about the overall approach HHVBP, or CMS more broadly, should take toward health equity. The TEP briefly discussed the report from the May 2023 Hospice and Home Health Equity TEP, reviewing the process and report from that discussion.[11]

The TEP reiterated that caregiver availability, payer source, and history of missed visits are key drivers of patient success in home health and encouraged CMS to consider developing measures related to these factors.

One TEP member shared an article that proposed an equity weighting framework that "explicitly calibrates incentives to align with equity goals (e.g., reducing disparities, improving quality for underserved patients)."[12] The key idea in equity weighting is to specify equity parameters, or how much

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[11] Abt Associates Inc. (2023). *2022 Technical Expert Panel Meetings: Home Health & Hospice Health Equity Summary Report*. https://mmshub.cms.gov/sites/default/files/HomeHealth-Hospice-Health-Equity-TEP-Report-508c.pdf

[12] Agniel, D., Cabreros, I., Damberg, C. L., Elliott, M. N., & Rogers, R. (2023). A Formal Framework for Incorporating Equity into Health Care Quality Measurement. *Health Affairs (Project Hope)*, 42(10), 1383–1391. https://doi.org/10.1377/hlthaff.2022.01483

weight each patient group should receive in the quality calculation, to attempt to better balance the outcomes observed in various patient subgroups. This TEP member encouraged CMS to consider using this approach when developing health equity quality measures.

The TEP agreed that the HEA should incentivize both within and across-HHA improvement; both are important dimensions of health equity. However, the TEP cautioned that CMS should not focus solely on the subset of measures and the patients that are included in an equity measure, as this would risk incentivizing HHAs to focus on performance for those measures to the detriment of other patients or dimensions of care.

In terms of whether to look at within- or across-HHA differences, the TEP suggested that a better approach would be to look at patterns of HHAs that have disparities—how well do these HHAs perform with underserved populations? Analyses could include examining how well HHAs that have disparities perform on their patients from underserved groups or evaluating measure performance on the underserved population then adjusting those observations.

While TEP members raised concerns about MA payment rates, Abt pointed out that MA payment rates are set by contract and are not adjusted by HHVBP. As such, an equity adjustment for DES, for example, will not impact payment for MA enrollees.

3. Performance Measures

Background

The performance measure discussion included a review of the 2025 HHVBP applicable measure set, with a focus on identifying any measures that might be appropriate to remove. It also included a discussion of potential measures that CMS may wish to start using in HHVBP.

For potential removal of measures, TEP input was guided by the measure removal factors codified by CMS in the 2024 final rule:

- ***Factor 1*:** Measure performance among HHAs is so high and unvarying that meaningful distinctions in improvements in performance can no longer be made (that is, topped out).
- ***Factor 2*:** Performance or improvement on a measure does not result in better patient outcomes.
- ***Factor 3*:** A measure does not align with current clinical guidelines or practice.
- ***Factor 4*:** A more broadly applicable measure (across settings, populations, or conditions) for the particular topic is available.
- ***Factor 5*:** A measure that is more proximal in time to desired patient outcomes for the particular topic is available.
- ***Factor 6*:** A measure that is more strongly associated with desired patient outcomes for the particular topic is available.
- ***Factor 7*:** Collection or public reporting of a measure leads to negative unintended consequences other than patient harm.
- ***Factor 8*:** The costs associated with a measure outweigh the benefit of its continued use in the program.

The discussion focused on the measure set that will be used starting in CY 2025.Three measures will be added to the measure set:

- ***Discharge to Community-Post Acute Care (DTC-PAC):*** This claims-based measure will replace the current OASIS-based DTC measure.
- ***Within-Stay Potentially Preventable Hospitalization (PPH) measure:*** This claims-based measure will replace the claims-based Acute Care Hospitalization and Emergency Department (ED) Use measures.
- ***Discharge Function Score:*** This OASIS-based measure will replace the two OASIS-based Total Normalized Composite measures.

These changes will align the measures used in HHVBP with the measures in the Home Health Quality Reporting Program (QRP) and publicly reported on Home Health Care Compare, supporting comparisons of HHA quality. With these changes, there will be a total of ten performance measures used in HHVBP:

- ***OASIS-based measures (3):*** Improvement in Dyspnea, Improvement in Management of Oral Medications. Discharge Function (DC Function)
- ***Claims-based measures (2):*** DTC-PAC, PPH

- ***Home Health Consumer Assessment of Healthcare Providers and Systems (HHCAHPS) survey-based measures (5):*** Care of Patients, Communication Between Providers and Patients, Specific Care Issues, Overall Rating of Home Health Care, Willingness to Recommend the Agency

Note that the HHCAHPS survey-based measures are only used for the larger-volume cohort.

The discussion of potential measures included a review of measures in the Home Health QRP but not used in HHVBP. All of these measures except for one are topped out or (in the case of the flu vaccine measure were previously dropped from the original HHVBP Model). The exception is the Medicare Spending per Beneficiary measure. This is a risk-adjusted and payment-standardized measure of how much Medicare spends on an episode of care at an HHA compared to the national average.

Summary of Feedback

The TEP provided feedback on the calendar year (CY) 2025 applicable measure set, as well as potential development of a family caregiver measure.

CY 2025 Applicable Measure Set

- ***Improvement in Dyspnea:*** Several TEP members suggested that it is difficult for HHAs to make care changes to improve on this measure. Some TEP members raised concern about the focus on improvement, noting concern for what this motivates. The benchmarks for this measure are close to 100 percent, and TEP members expressed uncertainty if high values that some HHAs have for this measure are realistic, causing them to have concern about the accuracy of the OASIS items used to calculate the measure. Another TEP member pointed to the fairly wide range between the achievement thresholds and the benchmarks for the measure, noting that the range suggested potential differences in coding patterns across HHAs. Several TEP members recommended random or targeted audits of the data to address accuracy concerns. One TEP member felt that the measure performance should continue to be monitored, as the benchmarks are unattainable for many HHAs. A TEP member noted that, while the measure is quite important clinically for some patients, we would not expect to see much improvement for other patients, such as those with chronic conditions. A way to address this would be to change the measure exclusion criteria, for example, to exclude patients on oxygen at Start of Care. Other conditions that the TEP suggested that CMS consider as potential exclusion criteria included congestive heart failure, chronic obstructive pulmonary disorder, sepsis, certain cancers, anemia, pneumonia, and COVID. Changing the measure specifications is beyond the scope of the HHVBP implementation contract. Another TEP member noted that there is some representation of patient medical background in the risk factors. A TEP member suggested recalibrating (updating the achievement thresholds and benchmarks) if the measure specifications were changed.

  The concerns expressed by the TEP about the Improvement in Dyspnea measure did not lead them to support dropping the measure from the expanded HHVBP Model. Rather, several TEP members stated that they felt the measure of the weight of the measure should be decreased (with a corresponding increase in the weight of the claims and HHCAHPS survey-based measures). They suggested that CMS continue to monitor HHA performance on this measure to ensure that the benchmarks and achievement thresholds are consistent with clinical expectations about how well HHAs can perform on this measure.

- ***Improvement in Management of Oral Medications***: A TEP member commented that not all patients admitted to home health will have this kind of improvement. Another TEP member

flagged that renal or liver failure is particularly relevant to this measure. Additionally, a TEP member emphasized that this measure remains relevant, as management of oral medications is a main focus of chronic condition management and strategy to prevent hospitalizations and patient harm. The same TEP member suggested assessing the disease-specific and cognitive-level exclusion criteria for the measure, as well as caregiver availability.

As with the Improvement in Dyspnea measure, several TEP members supported reducing the weight of this measure.

- ***DC Function:*** Overall, TEP members were supportive of the DC Function measure. Several TEP members agreed that it is good that the measure is not focused on improvement, which reduces concern about upcoding. One TEP member noted that it is important to recognize that not all patients have the same potential to improve, which means that, for some patients, slowing decline or stabilizing is a positive outcome. Another TEP member cited the shift away from focus on change in mobility as another benefit of the DC Function measure. The DC function measure is about meeting or exceeding projected functional status at discharge. Several TEP members discussed a concern that the measure does not include the full self-care/activities of daily living elements (e.g., bathing, dressing), which they noted as critically important for patients and caregivers. Another TEP member indicated that patients often already have capacity to do things like roll and sit up when they enter home health care but may not be able to bathe or get dressed without assistance. Further, two TEP members emphasized the importance of functional cognition, which is included in OASIS item GG0100 as part of prior functional status but is not included as part of current functional status. Finally, a TEP member indicated it is beneficial to share relevant data (i.e., section GG data for DC Function) with HHAs before using the items for HHVBP performance measures.

- ***DTC-PAC:*** Several TEP members provided high-level suggestions regarding the measure. One TEP member noted that patients can be discharged from home health with or without their goals met, but the measure does not currently capture the nuance. Two other TEP members commented that the measure currently reflects Medicare FFS data and recommended adding MA data given the increased proportion of MA patients. Another TEP member noted that it is not sufficient for a patient to be discharged to the community—it is also important to consider whether or not patients' goals are met. This TEP member suggested that CMS explore looking at the DTC-PAC measure in combination with other measures so that the measure goes beyond just whether the patient is discharged to the community.

- ***PPH:*** The TEP expressed several concerns about the specifications of the PPH measure that are outside of the scope of the HHVBP implementation project. For example, there was discussion of the exclusion criteria (e.g., types of stays that should be excluded). Additionally, as with the DTC-PAC measure, there is concern about the exclusion of MA patients so that they can be held accountable for good patient outcomes. As with the DTC-PAC measure, the TEP encouraged CMS to focus on using encounter data for the measure. Given the increases in MA enrollment, the claims-based measures are at risk of becoming obsolete in a few years.

- ***HHCAHPS survey-based measures:*** Suggestions for the HHCAHPS survey-based measures included rewording questions on the surveys so that respondents understand they are rating their experience of the HHA. Another comment was to consider whether the right patients are targeted for the surveys.

Future measures

- ***Family caregiver measure:*** Generally, the TEP members were very supportive of future development of a family caregiver measure. One TEP member encouraged CMS to "think outside the box a bit" to find ways of including the caregiver's voice in quality reporting. The TEP discussed OASIS items that provide information related to the patient's caregiver status. Several TEP members noted that M2102 (which assesses the ability and willingness of non-agency caregivers to provide assistance) provided a more comprehensive assessment in prior versions of OASIS compared to in the current version. One TEP member noted an additional limitation of M2102 is that it reflects a clinician's one-time look at the patient and situation, which is very limited and subjective. Other TEP members noted that this item may be more appropriate to use in risk-adjustment models than for creating a caregiver-based performance measure. The caregiver items are only collected on start-of-care/resumption-of-care assessments, so it is not possible to measure how caregiver status changes over the course of an episode. Refinements to the OASIS instrument would be needed before this item could be used to develop a potential performance measure.

  A TEP member noted a challenge that the focus of the Medicare home health benefit is the patient, not the caregiver. However, CMS should consider the caregiver as a partner and should measure and assess the caregivers' needs (and not just the needs as they relate to the beneficiary). This type of focus would be needed if CMS wants to improve caregiver quality-of-life. The TEP member noted that the caregivers are often the reason patients are even able to be at home (vs. receiving care in the more costly nursing home setting).

  Additional feedback shared was the importance of information on caregiver needs and the importance of collecting this information from the caregivers themselves. A TEP member suggested checking to see if there are caregiver measures that have been created by states, as Medicaid in certain states provides financial support for caregivers. Finally, an additional suggestion was to review the Medicare Conditions of Participation to see if there is relevant guidance related to caregivers/family being part of the interdisciplinary team or any requirements for involving caregivers/family at certain time points.

- ***Falls with injury (claims-based):*** Several TEP members suggested that CMS explore a claims-based measure of falls with injury. One TEP member noted an Office of Inspector General (OIG) study that found that HHAs failed to report 55 percent of falls leading to major injuries and hospitalizations on their OASIS data.[13] A claims-based measure may be more accurate, although, as with other claims-based measures, data would only be available for FFS patients.

- ***Medicare spending per Beneficiary:*** The TEP also discussed potentially adding the Medicare Spending per Beneficiary measure to the HHVBP applicable measure set. Note that this measure is part of the home health QRP and is currently publicly reported on Care Compare. A TEP member expressed that this measure is a valid tool for measuring the value of the care that HHAs provide and suggested that CMS consider adding it to HHVBP. This TEP member noted that it would make sense for CMS to look at the efficiency of home health providers, as measured by Medicare payments for their patients.

[13] Office of Inspector General, U.S. Department of Health and Human Services. (2023). *Home Health Agencies Failed to Report Over Half of Falls with Major Injury and Hospitalization Among Their Medicare Patients*. https://oig.hhs.gov/oei/reports/OEI-05-22-00290.pdf

4. Measure Weights

Background

Applying changes to the measure weights can influence quality improvement efforts and shift focus areas (e.g., increasing the weight of the hospitalization measure may increase the incentive to reduce hospital admissions). The TEP provided input on whether CMS should make changes to the weights of individual measures and/or measure categories.

When the original HHVBP Model first started, all of the performance measures had the same weight. The original Model included 17 performance measures for HHAs in the larger-volume cohort and 12 for HHAs in the smaller-volume cohort (the five HHCAHPS survey-based measures were not used for the smaller-volume cohort). The motivation for equal weighting was to capture the multidimensional aspects of care that HHAs provide to encourage HHAs to approach quality improvement initiatives more broadly.

Beginning with the CY 2019 performance year, CMS revised the measure weights. With these revisions, the measure weights were as follows:

- ***Larger-volume cohort:*** The OASIS-based measure category and the claims-based measure category each count for 35 percent while the HHCAHPS survey-based measure category would count for 30 percent.

- ***Smaller-volume cohort:*** The OASIS-based measure category and the claims-based measure category count for 50 percent each.

Note that these weights exclude the 10 percent weight for the new measures that were part of the original Model.

The changes to weights included a large increase in the weight for the hospitalization measure. The weight for this measure increased to 26.25 percent for the larger-volume cohort and to 37.5 percent for the smaller-volume cohort. CMS's motivation for making these changes to the measure weights was to balance incentives to focus on measures that more heavily impact Medicare expenditures while ensuring that HHAs focus on quality improvement across various focus areas. The weight of the hospitalization measure was set to three times that of the ED measure because inpatient hospitalizations are more costly than ED visits and because HHAs were felt to have more control over hospitalizations than ED visits.

These changes were discussed with the TEP that was convened for the original HHVBP Model. Given improvements that had been observed for OASIS-based performance measures, the TEP supported increasing the weight for the claims-based measures. The TEP noted that these changes would increase the incentive for HHAs to focus on improving their performance on claims-based measures, which the TEP believed are generally more difficult to improve on than OASIS and HHCAHPS survey-based measures. The TEP supported the large increase in the weight of the hospitalization measure, noting that many readmissions are potentially avoidable and would not have occurred had certain care issues been addressed. TEP input suggested that the lack of improvement in claims-based measures may reflect low implementation of evidence-based care practices. While generally supportive of increasing the weight of the claims-based measures, the TEP did note two key limitations of claims-based measures: 1) Claims-based measures are not available for managed care patients (who account for more than 50 percent of Medicare enrollees in 2023, up from 33 percent in 2016 the first year of the original Model) and 2) HHAs are not able to see the claims data, which may make it more difficult for HHAs to develop strategies for improving on the claims-based measures.

With the CY 2025 changes to the HHVBP applicable measure set, there will be only five applicable measures for HHAs in the smaller-volume cohort, since HHCAHPS survey-based measures are not used

for this cohort. This raises the concern that many smaller-volume cohort HHAs will be excluded from the Model due to having insufficient performance measure data. Many of the HHAs that would be included with a lower minimum have insufficient data for the claims-based measures. One TEP member suggested that CMS expand the time frame used for the smaller-volume cohort to increase the percentage of small HHAs that have sufficient data to calculate a payment adjustment.

Summary of Feedback

The TEP offered several suggestions for revising the measure weights.

- ***Weight of OASIS-based measures:*** As noted above, several TEP members suggested reducing the weight of the OASIS-based measures, although the TEP members did not all agree about this change. Some TEP members advised keeping the current weight for the Improvement in Dyspnea and Improvement in Management of Oral Medications measures. However, other TEP members cited the limitations of the Improvement in Dyspnea measure and ongoing challenges with the confusing nature of management of oral medications as justifications for lowering the weights of these measures. Some TEP members reported hearing anecdotal evidence that providers have difficulty with the Improvement in Dyspnea and Improvement in Management of Oral Medications measures. Some TEP members noted that concerns about the accuracy of the OASIS data are a justification for reducing the weight of the OASIS-based measures. Another TEP member, however, questioned the extent to which HHAs either misunderstand or change the data to improve their measure scores, stating that, overall, data from the OASIS-based measures makes sense, and it is not known how many HHAs report their data incorrectly.

- ***Weight of PPH measure:*** The TEP generally agreed that the weight of the PPH measure should be decreased. They further suggested decreasing the disparity between the weights for the two claims-based measures (PPH and DTC-PAC), either by decreasing the weight of PPH, increasing the weight of DTC-PAC, or both. Some TEP members observed that the PPH measure can be impacted by physician decisions outside the control of the HHA, further justifying reducing the weight of this measure. Several TEP members expressed concern at the inclusion of observation stays in the PPH measure, suggesting that these observation stays were often outside of the HHAs' control.

- ***Weight of HHCAHPS survey-based measures:*** TEP members suggested slightly increasing the weights of each of the HHCAHPS survey-based measures. Some TEP members also suggested that the HHCAHPS survey-based measures should not all have the same weight. They observed that both the OASIS-based and claims-based measures have different weights for each measure, and that it seems inconsistent for only the HHCAPS survey-based measures to receive equal weighting.

Several TEP members suggested that CMS consider excluding patients from the PPH measure if they have a hospice claim shortly after the hospital care, including emergency room, observation, and inpatient hospitalizations. Development of refinements to the specifications for this measure, however, is outside of the scope of the HHVBP implementation project.

Some TEP members also felt that HHVBP's current exclusion of HHCAHPS survey-based measures for the smaller-volume cohort misses out on an opportunity to gather patient and caregiver opinions and may skew measure results. They pointed out that, although many smaller-volume HHAs do not collect HHCAHPS surveys or do not collect enough HHCAHPS surveys to report HHCAHPS survey-based measures, those that do collect enough HHCAHPS surveys may have results worth reporting. For example, remote rural HHAs outperform urban agencies in terms of patient experience star ratings when they have enough survey responses to receive a star rating. Additionally, including smaller-volume HHAs

in HHVBP can provide a stronger incentive to improve performance. On the other hand, one TEP member noted that most small HHAs do not have sufficient performance measure data to be included in the Model, which might be insufficient for representing national performance for the cohort. If the smaller-volume cohort data does not accurately reflect the cohort's national performance, it might be more beneficial for small HHAs to be excluded from the Model.

The TEP also offered suggestions regarding the minimum number of measures that should be required for HHAs to be included in the expanded HHVBP Model. TEP members voiced concern that reducing the minimum number of measures required would make HHVBP performance reporting less stable across time periods. One TEP member suggested that CMS could increase the time frame for the measures to increase the number of HHAs with sufficient data. They also suggested that CMS analyze the impact of changes to the minimum number of measures and/or the time period would have on measure stability.

5. Performance Feedback Reports

Background

Interim Performance Reports (IPRs) contain information on interim quality measure performance for the 12 most recent months of data available. HHAs receive IPRs each quarter via iQIES. The IPRs include the following information:

- Achievement thresholds and benchmarks
- Baseline and performance year measure scores
- Whether sufficient data are available to calculate care points
- Improvement, achievement, and care points
- TPS
- Percentile ranking (quartile) with the HHA's cohort

IPRs provide HHAs with information on their performance on measures used in the Model, peer-ranking to competing HHAs, achievement thresholds and benchmarks, and their TPS. They are intended to support HHAs in assessing and tracking their performance relative to other HHAs in their cohort.

Annual Performance Reports (APRs) contain the same information that is in the IPRs and also include information on the Annual Payment Adjustment, including details on the adjustment calculation. The APRs report data for a performance year. The first preview APR will be issued in August 2024 and will reflect performance data for CY 2023.

The TEP was asked to provide input on the performance reports provided to HHAs, with a focus on identifying additional information that may be useful to include in the reports and potential changes that may make the reports easier to understand and more actionable for HHAs.

Summary of Feedback

The TEP encouraged CMS to make some changes to the format of the Performance Feedback Reports. Currently, Performance Feedback Reports rely heavily on text. TEP members suggested using more graphs or color-coded figures to make the data presentation more readable and accessible. They also suggested labeling tabs containing "background" information as appendices, to help HHAs quickly identify where to find their performance data.

Some TEP members felt that it is too difficult for HHAs to access their performance reports. They cited barriers such as the difficulty associated with getting a HARP ID, iQIES ease of use, and limits on the number of agency staff who can access performance reports. According to one TEP member, limits on the number of iQIES users that an HHA can have is a barrier to wider dissemination of performance reports.

Appendix A: TEP Member Bios

- **Alicia Arbaje, MD, MPH, PhD** is a geriatrician, health services researcher, and Associate Professor of Medicine/Director of Transitional Care Research at the Johns Hopkins University School of Medicine. She is also Medical Director for Johns Hopkins Care at Home, the HHA affiliated with Johns Hopkins Medicine. She applied to the TEP to bring attention to issues relevant to the needs of older adults, their caregivers, and the home-based providers that serve them.
- **Dawnita Brown, MA, MS, CCC** is a family caregiver in Maryland, Founder/CEO of Hey Caregiver!, host of the Selfull Caregiver Podcast and Founder of the Binti Circle, a supportive network for Black women caring for their parents. She applied to the TEP because of her dedication to advancing home health, health equity, and quality of care.**April Coxon, RN** is the Executive Vice President of Quality at an HHA, Healing Hands Healthcare, in Wichita Falls, Texas. She applied to the TEP because of her commitment to the improvement of healthcare payment models to ensure effective quality of patient care across all HHAs.
- **Shekinah Fashaw-Walters, PhD, MSN** is an Assistant Professor in the Division of Health Policy and Management at the University of Minnesota. She is a faculty affiliate with the Center for Antiracism Research for Health Equity (CARHE) and Center for Healthy Aging and Innovation (CHAI). As a health services researcher, she has a focus on equity in the home health setting. She applied to the TEP because it aligns with her goals to advance health equity for Medicare beneficiaries seeking services at home and in the community.
- **Kathleen Holt, MBA, JD** is the Associate Director of the Center for Medicare Advocacy, a nonprofit law firm that works with Medicare beneficiaries. She has experience with several TEPs, including panels on the patient driven grouping and unified payment models and home and community based services. She applied to the TEP because of her interest in fair implementation and monitoring of the HHVBP Model for patients living with chronic and longer-term impairments and advancing access to hospice and home health services for all Medicare beneficiaries.
- **Cindy Krafft, PT, MS, HCS-O** is a physical therapist with over 25 years of home health experience. She is the owner/founder of K&K Health Care Solutions. She applied to the TEP because of her interest in how functional outcomes are measured and supporting better alignment with patient performance for assessments of quality of care in home health.
- **Terri Lindsey, RN, BSN, CPHQ** is an RN with 37 years of experience. She is a Quality Outcomes Specialist at Bon Secours Mercy Health Home Health and Hospice in Richmond, Virginia. She applied to the TEP because of her clinical and quality improvement experiences, as well as because of the firsthand family caregiver perspective that she brings.
- **Trudy Mallison, PhD, OTR/L, FACRM, FAOTA, NZROT** is an occupational therapist and Associate Professor and Director of Doctoral Research at the School of Medicine & Health Sciences at George Washington University. As a health services researcher, she has expertise in quality measures development in post-acute care. She applied to the TEP because of her involvement as a member of the TEP for the original HHVBP Model, relevant research focuses, and personal experiences with family caregiving.
- **Tracy Mroz,, PhD, OTR/L, FAOTA** is an occupational therapist and Associate Professor in the Division of Occupational Therapy, Department of Rehabilitation Medicine, School of Medicine at the University of Washington. She applied to the TEP to contribute input on the expanded HHVBP Model, bringing perspectives from her research and as an occupational therapist.
- **Dana Mukamel, PhD, MS** is a Professor of Medicine, Public Health and Nursing and the Director of the iTEQC Research Program (Program of Research in Translational Technology Enabling High Quality Care) at the University of California, Irvine. She has expertise in quality measures for long-

term care providers and investigating the impact in terms of behavior, quality, and cost. She applied to the TEP because of her involvement as a member on the TEP for the original HHVBP Model, as well as on other relevant TEPs, and to contribute her expertise and experience.

- **Eugene Nuccio, PhD** is a health services researcher with extensive experience in QM development. He retired from his role as Assistant Professor at University of Colorado, Anschutz Medical Campus. He applied to the TEP to contribute his expertise and experience from working on refinements to the OASIS assessment instrument, development and maintenance of quality measures, risk adjustment, and participation in the implementation of the original HHVBP Model.
- **Zainab Osakwe, PhD, MSN, NP, RN** is a nurse practitioner and associate professor in the College of Nursing and Public Health at Adelphi University. Dr. Osakwe has an extensive background as a home healthcare nurse, and as the director of both a long-term home healthcare organization and a certified home healthcare program. Her research primarily focuses on developing clinical decision-support pathways that enable home healthcare nurses to improve the delivery of goal-concordant care. Her work is also dedicated to enhancing the care experiences of patients and caregivers. She applied to the TEP to provide input on potential refinements to the expanded HHVBP Model based on her background.
- **Steven Pamer, PT, MPA, CGS** is the Administrator and Director of Rehabilitation Services at Cleveland Clinic Home Health Care in Ohio. He applied to the TEP to provide input based on his experience with value-based care delivery, understanding of methods of evaluation of quality care, and exposure to health equity.
- **Madeline Sterling, MD, MPH, MS** is a general internist and Assistant Professor of Medicine at Weill Cornell Medicine in New York. She is also the Director of the Home Care and Home Health Care Workers Initiative at Cornell University in Ithaca, NY. She applied to the TEP to provide input based on her clinical experience in primary care, research expertise in home health care, and studies on HHVBP.

Appendix B: Articles Provided by TEP Members

Agniel, D., Cabreros, I., Damberg, C. L., Elliott, M. N., & Rogers, R. (2023). A Formal Framework for Incorporating Equity Into Health Care Quality Measurement. *Health Affairs (Project Hope)*, 42(10), 1383–1391. https://doi.org/10.1377/hlthaff.2022.01483

Arbaje, A. I., Hsu, Y.-J., Keita, M., Greyson, S., Wang, J., Werner, N. E., Carl, K., Hohl, D., Jones, K., Bowles, K. H., Chan, K. S., Marsteller, J. A., Gurses, A. P., & Leff, B. (2023). Development and Validation of the Hospital-to-Home-Health Transition Quality (H3TQ) Index: A Novel Measure to Engage Patients and Home Health Providers in Evaluating Hospital-to-Home Care Transition Quality. *Quality Management in Health Care*. https://doi.org/10.1097/QMH.0000000000000419

Arbaje, A. I., Wolff, J. L., Yu,Qilu, Powe, N. R., Anderson, G. F., & Boult, C. (2008). Postdischarge Environmental and Socioeconomic Factors and the Likelihood of Early Hospital Readmission among Community-Dwelling Medicare Beneficiaries. *Gerontologist*, 48(4), 495–504.

Burgdorf, J. G., Arbaje, A. I., Chase, J.-A., & Wolff, J. L. (2022). Current practices of family caregiver training during home health care: A qualitative study. *Journal of the American Geriatrics Society*, 70(1), 218–227. https://doi.org/10.1111/jgs.17492

Burgdorf, J. G., Arbaje, A. I., Stuart, E. A., & Wolff, J. L. (2021). Unmet family caregiver training needs associated with acute care utilization during home health care. *Journal of the American Geriatrics Society*, 69(7), 1887–1895. https://doi.org/10.1111/jgs.17138

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Jarrín, O. F., Nyandege, A. N., Grafova, I. B., Dong, X., & Lin, H. (2020). Validity of Race and Ethnicity Codes in Medicare Administrative Data Compared with Gold-standard Self-reported Race Collected During Routine Home Health Care Visits. *Medical Care*, 58(1), e1–e8. https://doi.org/10.1097/MLR.0000000000001216

Kahn, C. N., 3rd, Rhodes, K., Pal, S., McBride, T. J., May, D., DaVanzo, J. E., & Dobson, A. (2023). CMS Hospital Value-Based Programs: Refinements Are Needed to Reduce Health Disparities And Improve Outcomes. *Health Affairs (Project Hope)*, 42(7), 928–936. https://doi.org/10.1377/hlthaff.2022.00844

Rollings, K. A., Noppert, G. A., Griggs, J. J., Melendez, R. A., & Clarke, P. J. (2023). Comparison of two area-level socioeconomic deprivation indices: Implications for public health research, practice, and policy. *PloS One*, 18(10), e0292281. https://doi.org/10.1371/journal.pone.0292281