

CBE ID

4555

Title

Days at Home for Patients with Complex, Chronic Conditions

Project

Cost and Efficiency

Endorsement Status

Endorsed with Conditions

E&M Committee Rationale/Justification

After the endorsement meeting, the developer of CBE #4555 submitted an appeal due to the following rationales:

- 1. Procedural error in the endorsement process.*
- 2. Misapplication of measure evaluation criteria, specifically risk adjustment.*

The appellant posited the:

- 1. Discussion focused on out-of-scope topics (broader population beyond Medicare FFS and ACO-REACH). Insufficient time for comprehensive discussion. Dominance of a few voices, limiting inclusive discussion.*
- 2. Measure meets risk adjustment criteria. Variables in the risk model influence the outcome and are present at the start of care. Model excludes unjustified factors associated with care inequities. Measure adjusts for dual eligibility, accounting for social risk factors. ACO REACH Model provides resources for coordinated care, supporting the measure's intent.*

The Appeals Committee voted to uphold the appeal based on both rationales above. Therefore, the measures' s endorsement decision was overturned to Endorsed with Conditions. When the measure returns for maintenance (5 years), the measure developer should have:

- Explored differences in scores for rural and urban settings and/or explore whether adjusting on these variables is needed.*
- Explored the impact of variation in attribution based on utilization (in the denominator).*

Is Under Review

No

Next Maintenance Cycle

Fall 2029

Previous Endorsement Cycle

Fall 2024

Initial Endorsement

Mon, 03/31/2025 - 18:39

Steward

Centers for Medicare & Medicaid Services

1.0 New or Maintenance

New

1.1 Measure Structure

Single Measure

1.3 Electronic Clinical Quality Measure (eCQM)

No

1.6 Measure Description

This is an ACO-level measure of days at home or in community settings (that is, not in acute care such as inpatient hospital or emergent care settings or post-acute skilled nursing) among adult Medicare Fee-for-Service (FFS) beneficiaries with complex, chronic conditions who are attributed to ACOs participating in the ACO REACH model. The measure includes risk adjustment for differences in patient mix across ACOs, with an additional adjustment based on patients' risk of death. A policy-based nursing home adjustment that accounts for patients' risk of transitioning to a long-term nursing home is also applied to incentivize community-based care. The performance period is one calendar year.

1.7 Composite Measure

No

1.7 Measure Type

Outcome

1.8 Level of Analysis

Accountable Care Organization

1.9 Care Setting

Behavioral Health: Inpatient (e.g., Inpatient Psychiatric Facility), Emergency Department, Hospital: Acute Care Facility, Hospital: Critical Access, Hospital: Inpatient, Hospital: Outpatient, Inpatient Rehabilitation Facility, Long-Term Acute Care Facility, Nursing Home/Skilled Nursing Facility

1.10 Measure Rationale

The goal of this outcome measure is to reduce unnecessary or excessive hospitalizations for Medicare patients with complex chronic conditions, thus increasing their "days at home." Through reporting this outcome measure, ACOs will be able to compare their performance in relation to others and use the results to identify the root causes of excess acute care utilization, including

insufficient or low-quality outpatient care. Improvements in this outcome mean that patients will spend fewer days in acute care settings, and more days at home or in the community, which often reflects patient preferences as well as cost savings to patients and providers.

1.11 Measure Webpage

<https://www.cms.gov/files/document/aco-reach-quality-msr-meth-py24.pdf>

1.13 Data Dictionary

Not attached. I attest that all information will be provided where codes and/or value sets are needed (1.14a - 1.15c).

1.13a Attach Data Dictionary

[Attachment A_CodeSet_Days at Home Measure CBE #4555_10162024.xlsx](#)

1.14 Numerator

The outcome measured for each eligible beneficiary is days spent “at home,” adjusted for clinical and social risk factors, risk of death, and risk of transitioning to a long-term nursing home. Days at home are defined as those days when a beneficiary is alive and not in care. A “day in care” is defined as any eligible patient day on which a patient receives care in one (or more) of the following specified care settings: inpatient acute and post-acute facilities (short term acute care hospitals, critical access hospitals (CAHs), inpatient rehabilitation facilities (IRFs), inpatient psychiatric facilities (IPFs), long-term care hospitals (LTCHs), and SNFs); emergency departments (ED); and observation stays. There are two exceptions: 1. A patient is always considered “at home” if they are enrolled in hospice, even if they receive care in settings normally counted as “days in care” (that is, if a patient enrolled in hospice is receiving care in an inpatient setting that will not count as a day in care) 2. Hospital admissions for childbirth, miscarriage, or termination are not counted as “days in care” A “day at home” is defined as any eligible day that is not considered a “day in care” based on the above definition. “Eligible days” are all days in the measurement year that the beneficiary is alive.

1.14a Numerator Details

“Days at home” are defined as those days when a beneficiary is alive and not in an acute or post-acute care setting.

A “day in care” is defined as any eligible patient day on which a patient receives care in one (or more) of the following specified care settings: inpatient acute and post-acute facilities (short-term acute care hospitals, critical access hospitals (CAHs), inpatient rehabilitation facilities (IRFs), inpatient psychiatric facilities (IPFs), long-term care hospitals (LTCHs), and SNFs); emergency departments (ED); and observation stays. There are two exceptions:

1. A patient is always considered “at home” if they are enrolled in hospice, even if they receive care in settings normally counted as “days in care” (that is, if a patient enrolled in hospice is receiving care in an inpatient setting that will not count as a day in care)

- Rationale: to promote effective and appropriate care for terminally ill patients

2. Hospital admissions for childbirth, miscarriage, or pregnancy termination are not counted as “days in care”

- Rationale: obstetric admissions may not indicate care quality; counting these admissions may create an inappropriate incentive to keep pregnant patients out of the hospital.

A “day at home” is defined as any eligible day that is not considered a “day in care” based on the above definition. “Eligible days” are all days in the measurement year that the beneficiary is alive.

Care in settings not listed above (including outpatient visits and procedures, hospice, residential psychiatric and substance abuse facilities, assisted living facilities and group homes, and home health and telehealth services) are not considered “days in care” in this measure; rather, they are treated as “days at home.”

Finally, days spent in a long-term or residential nursing home (except for SNF care) are not counted as “days in care” by this definition. However, as discussed in the “Measure Scoring” section, this measure includes an adjustment that accounts for patients’ risk of transitioning to a long-term nursing home, to encourage home- and community-based care in alignment with CMS’s policy goals.

1.15 Denominator

Eligible beneficiaries aligned with participating provider entities determined by the Innovation Center’s ACO REACH Model, including adults (age 18 or older); alive as of the first day of the performance year; continuously enrolled in Medicare FFS Parts A and B during the full performance year (up to date of death among patients who died) and one full year prior; and have an average Hierarchical Condition Category (HCC) composite risk score ≥ 2.0 in the year prior to the performance year.

1.15a Denominator Details

Eligible beneficiaries are characterized by a combination of older age, chronic health conditions, more frequent healthcare utilization, serious illness, disability or frailty, and/or financial hardship that places them at greater risk of negative health outcomes and makes them more likely to require complex medical care. For this measure:

- Adult (age 18 or older);
- Alive as of the first day of the performance year;
- Continuously enrolled in Medicare FFS parts A and B during the full performance year (up to date of death among patients who died) and one full year prior; and
- Patients with complex, chronic conditions, which are defined as patients with an average Hierarchical Condition Category (HCC) composite risk score $\geq 2.0^*$ in the year prior to the performance year.

The measure, as implemented, includes eligible beneficiaries who are aligned to an ACO participating in the ACO REACH model. Of note, this alignment is entirely prospective; the measure does not use any retrospective attribution of patients or outcomes to ACOs. These

criteria are consistent with the cohort of the ACO REACH model and with its objective of emphasizing care of patients meeting a broad definition of serious illness or complex chronic disease.

*CMS originally developed the HCC risk score for the purpose of payment adjustment in Medicare Advantage plans, but now calculates the score monthly for all Medicare patients.¹ The HCC score is calculated as a sum of values (“coefficients”) assigned to the following types of “risk:”

- Patient demographic characteristics:
 - Age;
 - Sex;
 - Dual enrollment in Medicaid (an indicator of financial hardship);
 - Disability-based Medicare eligibility;
- Long-term institutional (LTI) status, defined as living in a nursing home for 90 days or longer;
- Chronic conditions, such as heart failure or dementia

Patients with more risk factors or more serious conditions will have higher HCC risk scores than those with fewer or less serious risk factors. A risk score of 1.0 indicates a patient is expected to have average medical care costs; a risk scores greater than 1.0 indicates the patient is sicker and therefore at greater risk to need more expensive medical care. Higher costs of care are generally associated with more complex care delivery and more time in institutional health care settings.²

References

1. CMS. Medicare Managed Care Manual – Chapter 7, Risk Adjustment. 2014.
2. McCaffrey N, AgarM, Harlum J, Karnon J, Currow D, Eckermann S. Is home-based palliative care cost-effective? An economic evaluation of the Palliative Care Extended Packages at Home (PEACH) pilot. *BMJ Support Palliat Care*. 2013;3(4):431-435.

1.15b Denominator Exclusions

None. There are currently no denominator exclusions or exceptions for the measure. All patients meeting the denominator inclusion criteria are included.

1.15c Denominator Exclusions Details

None. There are currently no denominator exclusions or exceptions for the measure. All patients meeting the denominator inclusion criteria are included.

1.15d Age Group

Adults (18-64 years), Older Adults (65 years and older)

1.16 Type of Score

Continuous variable, e.g., average

1.17 Measure Score Interpretation

Better performance = Higher score

1.18 Calculation of Measure Score

At a high level, the measure result (adjusted days at home) is calculated based on three risk-adjusted statistical models. We use the first model to calculate “excess days in care” for each patient, which represents the risk-adjusted days in acute care settings or SNFs among days alive in the year. Two additional risk-adjusted models are used to calculate the risk of mortality and risk of transition to nursing home for each patient. Finally, “excess days in care” are updated based on risk of death and risk of transition to nursing home care and then averaged across each ACO to produce the final measure scores. The details of each of these steps are described below.

First, “excess days in care” for each patient are modeled using a hierarchical negative binomial regression with an offset for days alive. “Excess days in care” is defined as predicted minus expected days in care, where “predicted” includes clinical and social risk adjustment, survival offset, and an ACO-specific effect, and “expected” includes only clinical and social risk adjustment and survival offset. More “excess days in care” indicates a patient spent more time in care than expected due to their ACO’s performance.

Second, mortality is modeled using a hierarchical logistic regression model with adjustment for the patient case-mix, to calculate a standardized mortality ratio (SMR) at the patient level. SMR is defined as predicted divided by expected risk of death, where “predicted” includes clinical risk adjustment and an ACO-specific effect, and “expected” includes only clinical risk adjustment. A high SMR indicates a patient at greater-than-expected risk of death due to their ACO’s performance.

Third, a patient’s risk of transitioning to a residential nursing home is modeled using a hierarchical logistic regression model with adjustment for patient case-mix and Medicaid dual-eligibility status, to calculate a standardized “nursing home ratio” (NHR) which is scaled to have the same mean and standard deviation as the SMR. NHR is defined as predicted divided by expected risk of transitioning to a nursing home during the performance year, where “predicted” includes clinical and social risk adjustment and an ACO-specific effect, and “expected” includes only clinical and social risk adjustment. A higher NHR indicates a patient at greater-than-expected risk of transitioning to a nursing home due to their ACO’s performance.

For the mortality adjustment for each patient, “excess days in care” is multiplied by SMR (if excess days ≥ 0) or divided by SMR (if excess days < 0), such that a greater SMR results in an absolute increase of “excess days in care” (that is, ACOs are rewarded for lower mortality than expected and penalized for greater mortality than expected given their case mix). Similarly, for the nursing home adjustment for each patient, “excess days in care” is multiplied by $[0.5 \times \text{NHR}]$ (if excess days < 0) or divided by $[0.5 \times \text{NHR}]$ (if excess days ≥ 0) so that ACOs are rewarded for lower rates of transition to the nursing home than expected given their case mix.

The SMR and NHR adjustments are combined additively to give a “mortality- and nursing home transition risk-adjusted excess days in care,” which is subtracted from the patient-level national

average of days alive, resulting in a risk-, mortality-, and nursing home transition-adjusted measure of “days at home” for that patient.

Finally, the adjusted days at home are averaged over all patients of each ACO to summarize the ACO’s measure performance as the “ACO-level adjusted days at home.”

1.18a Attach measure score calculation diagram

[Attachment B_tables_figures_supplemental_Days at Home Measure CBE #4555_10162024.pdf](#)

1.19 Measure Stratification Details

The measure, as specified, is not a stratified measure; ACOs overall scores are based on analysis of all patients pooled together. However, in implementation, the ACO REACH Model does include stratification of results, with both confidential reporting of stratified results and an equity-based payment adjustment (as described in Section 5.1). We include a similar stratification analysis here.

To promote improvements in disparities in care for patients with social risk factors, REACH ACO measure scores are stratified by three social risk factors: (1) dual-eligible status (DE); (2) low socioeconomic status (SES) as defined by the Area Deprivation Index (ADI); and (3) race/ethnicity other than white (i.e., non-white). As of the 2022 model performance year (Calendar Year 2022), CMS provides the stratified results to ACOs quarterly, in Quarterly Quality Reports (QQRs), and annually, in Annual Quality Reports (AQRs). The stratified results are provided to ACOs confidentially.

The three social risk factors used in stratified reporting are defined as:

1. Medicare-Medicaid dual-eligible status: Full-benefit dual-eligible status for at least 1 month during the performance period.
2. Living in a low-SES neighborhood: Defined as a neighborhood with an ADI percentile value of 81 or higher. We continue to use the 2022 version of ADI data due to differences between 2010 and 2020 Census boundaries and the limited prevalence of the 2020 boundaries among addresses within claims data. For beneficiaries with addresses that have no ADI match, we impute a county-level average ADI. More information about the ADI is available [here](#).
3. Non-white: Race/ethnicity other than white based on RTI_RACE_CD variable from the IDR.

The Days at Home measure specifications include Dual-Eligibility as a risk factor. However, for the confidential stratified reporting of the Days in Care component of Days at Home involving dual-eligible beneficiaries only, dual-eligible status is removed as a risk factor from the statistical model (as both stratifying and risk adjusting for the same variable is not statistically appropriate).

The stratified results are calculated through the following steps:

1. The finder file, which is the first file created and used for building analytic files for each quality measure, creates the health equity indicator variables that are used for stratified reporting.

2. Once the finder file is created, the health equity indicator variables are used to calculate the Days at Home measure for the ACOs included in the ACO REACH model as well as the benchmark population, which are non-ACO REACH ACOs.
3. Summary statistics for each of the stratified populations are provided to ACOs in the QQRs. Values are not reported if the denominator volume (acute events) is less than 20.

Final risk factor coefficients are on tab “Final RF Coefficients” of the attached Code Set File.

1.20 Types of Data Sources

Claims Data

1.25 Data Source Details

The measure uses CMS beneficiary enrollment and claims data for a given year accessed via the CMS Integrated Data Repository (IDR) and Chronic Conditions Data Warehouse Virtual Research Data Center (VRDC):

- Medicare inpatient claims
- Medicare outpatient claims
- Medicare SNF claims
- Medicare beneficiary enrollment data

The ACO-beneficiary alignment/attribution file is determined prospectively based on the requirements of the program; for testing, we used the 2018 Shared Savings Program ACO attribution file used by that program for its other claims-based measures and the 2022 ACO REACH alignment file furnished by CMS.

1.26 Minimum Sample Size

There is no minimum sample size.

2.1 Attach Logic Model

[DAH CBE Form Logic Model Description_103124.pdf](#)

2.2 Evidence of Measure Importance

The Days at Home measure seeks to support the preference of most patients with complex, chronic conditions to remain at home.¹ The measure disincentivizes excessive care in acute inpatient or outpatient settings such as emergency departments (EDs), or post-acute settings such as SNFs, since prolonged or frequent utilization of these care settings often represents sub-optimal ambulatory care and worse quality of life for the patient. The Days at Home measure intends to encourage ACO Realizing Equity, Access, and Community Health (REACH) participants to improve quality of care, while reducing healthcare utilization among Medicare patients with complex, chronic conditions. Several recent studies have demonstrated an association between days spent at home with positive clinical outcomes, such as reduced disability^{1,2,3} and cost savings to patients and providers.^{4,5} One study found an inpatient and outpatient cost savings of \$99 for

each additional day at home during the first three months after stroke.⁴ Additionally, the measure intends to encourage better coordination of care between various providers and patients, which is associated with improved health outcomes such as healthy days at home. Evidence from the literature has shown that delivery of appropriate and timely primary and end-of-life care services⁶⁻⁹ and improved care coordination and care transitions¹⁰⁻¹² can increase the number of days patients spend at home. For example, one study examined the association of frailty with intensity of end-of-life care (EOLC) for older adults with and without frailty who undergo emergency general surgery (EGS) but die within one year. Their findings suggest that many older EGS decedents, and particularly those who are frail, received worse quality of EOLC, spending a significant amount of time hospitalized and away from home, and few days in hospice. Their findings indicate an urgent need for in-hospital and post discharge interventions directed toward this vulnerable population to reduce hospital use and align treatments with patient preferences at the end of life.¹⁵

Several studies demonstrate that time spent at home differs substantially among older patients, which suggests that there is potential for improving the quality of care and resulting days at home for the elderly population.^{13,14} While the majority of patients spend all or most days at home, one study noted that patients aged 65 and older with multiple chronic conditions spend fewer days at home, with patients having three or more chronic conditions spending an average of 12.3 fewer days at home (mean 336.6 days, SD 3.0) in a one-year period than do all patients ages 65 and older (mean 348.9 days, SD 1.7).¹³

References

1. Lee H, Shi SM, Kim DH. Home Time as a Patient-Centered Outcome in Administrative Claims Data. *Journal of the American Geriatrics Society*. 2019;67(2):347-351.
2. Yu AYY, Fang J, Kapral MK. One-Year Home-Time and Mortality After Thrombolysis Compared With Nontreated Patients in a Propensity-Matched Analysis. *Stroke*. 2019;Strokeaha119026922.
3. Ringden O, Remberger M, Holmberg K, et al. Many days at home during neutropenia after allogeneic hematopoietic stem cell transplantation correlates with low incidence of acute graft-versus-host disease. *Biology of blood and marrow transplantation : journal of the American Society for Blood and Marrow Transplantation*. 2013;19(2):314-320.
4. Dewilde S, Annemans L, Peeters A, et al. The relationship between Home-time, quality of life and costs after ischemic stroke: the impact of the need for mobility aids, home and car modifications on Home-time. *Disabil Rehabil*. 2020;42(3):419-425.
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6. Totten AM, White-Chu EF, Wasson N, et al. AHRQ Comparative Effectiveness Reviews. Home-Based Primary Care Interventions. Rockville (MD): Agency for Healthcare Research and Quality (US); 2016.
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10. Harrison JD, Auerbach AD, Quinn K, Kynoch E, Mourad M. Assessing the impact of nurse post-discharge telephone calls on 30-day hospital readmission rates. *J Gen Intern Med*. 2014;29(11):1519-1525.
11. Hoyer EH, Brotman DJ, Apfel A, et al. Improving Outcomes After Hospitalization: A Prospective Observational Multicenter Evaluation of Care Coordination Strategies for Reducing 30-Day Readmissions to Maryland Hospitals. *J Gen Intern Med*. 2018;33(5):621-627.
12. Wilson DM, Birch S. Moving from place to place in the last year of life: A qualitative study identifying care setting transition issues and solutions in Ontario. *Health & social care in the community*. 2018;26(2):232-239.
13. Burke LG, Orav EJ, Zheng J, Jha AK. Healthy Days at home: A novel population-based outcome measure. *Healthcare (Amsterdam, Netherlands)*. 2019:100378.
14. YNHSC/CORE. Condition-Specific Excess Days in Acute Care Measures Updates and Specifications Report. 2019.
15. Sokas C, Lee KC, Sturgeon D, et al. Preoperative Frailty Status and Intensity of End-of-Life Care Among Older Adults After Emergency Surgery. *Journal of pain and symptom management*. 2021; 62 (1): 66-74.e3

2.3 Anticipated Impact

Most patients and families prefer spending time at home and in the community (“days at home”) rather than in the hospital,¹⁻⁶ and more days at home are associated with both positive clinical outcomes and lower costs for patients and providers.^{2-4,6-9} Poor care coordination can lead to unnecessary and preventable hospital visits for patients.¹⁰⁻¹¹ Given that patients with complex, chronic conditions often receive care from several clinicians and sites of care, this patient population may particularly benefit from improved care coordination.⁶

The Days at Home measure is intended to assess the extent to which provider entities such as Accountable Care Organizations (ACOs) help their patients living with complex, chronic conditions spend more time at home or in community settings, rather than acute or post-acute settings (such as hospitals or skilled nursing facilities [SNFs]). By capturing the days in which a patient is at home or in a community setting, the measure is intended to encourage healthcare use that supports:

- Maintenance of home- and community-based care;
- Prevention of health decline;
- Decreases in acute care use;
- Use of primary and preventive care; and
- Decreases in overuse of long-term institutional care, as feasible.

This measure will directly benefit Medicare patients by reducing unnecessary hospitalizations and incentivizing days at home or in the community, which often reflect patient preferences and quality of life. There are no competing measures for Medicare beneficiaries. The measure may help to incentivize care coordination between healthcare providers. The measure developers have

reduced the risk of the measure having unintended negative consequences on patients through additional adjustment for risk of mortality and risk of transitioning to a nursing home; these adjustments would make it more difficult for providers to score well by reducing days in care in ways that lead to other poor outcomes. For example, measuring only days in acute care may create a perverse incentive for ACOs to more aggressively transfer patients to nursing homes (where they can be more easily supervised and receive constant unskilled nursing care) even though this is typically not what patients desire. Similarly, measuring only days in acute care may perversely incentivize providers to delay medically appropriate acute care resulting in worse outcomes overall, the most extreme of which is death. In short, while fewer days at home is generally an undesired outcome it has to be balanced against competing bad outcomes; in the absence of balancing quality measures, these adjustments still allow the Days at Home measure to account for this to some degree.

References

1. Barnato AE, Herndon MB, Anthony DL, et al. Are regional variations in end-of-life care intensity explained by patient preferences?: A Study of the US Medicare Population. *Medical care*. 2007;45(5):386.
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11. Valentijn PP, Schepman SM, Opheij W, Bruijnzeels MA. Understanding integrated care: a comprehensive conceptual framework based on the integrative functions of primary care. *Int J Integr Care*. 2013;13:e010.

2.4 Performance Gap

Using Medicare FFS administrative claims and enrollment information from CY 2021 in the pre-measure year and 2022 (January 1, 2021 – December 31, 2022) in the measure year, downloaded

from CMS's Integrated Data Repository and Virtual Research Data Center.

The mean ACO-level adjusted days at home was 323.04, ranging from 300.31 to 334.01 days.

Table 1. Performance Scores by Decile

	Performance Gap												
	Overall	Minimum	Decile_1	Decile_2	Decile_3	Decile_4	Decile_5	Decile_6	Decile_7	Decile_8	Decile_9	Decile_10	Maximum
Mean Performance Score	323.04	300.31	315.19	320.24	321.66	322.46	323.06	323.76	324.41	325.21	325.79	327.84	334.01
N of Entities	99	1	9	10	10	10	10	10	10	10	10	10	1
N of Persons / Encounters / Episodes	169,324	1,220	21,647	22,900	13,128	21,641	11,620	12,713	15,143	17,766	13,377	19,389	361

2.5 Health Care Quality Landscape

There are no competing measures for Medicare beneficiaries, so the Days at Home measure for patients with complex, chronic conditions fills an important gap in measurement. The Days at Home measure fills this measurement gap with the intention to incentivize providers to improve care coordination, reduce unnecessary, excessive and/or preventable emergency, hospital, and skilled nursing facility care, and keep patients in their home and community. The measure further supports CMS's Meaningful Measures Initiative to promote effective prevention and treatment of chronic disease in the areas of preventative care and management of chronic conditions. As noted by Burke et al (2019), while many quality measures capture outcomes (such as mortality or readmissions) related to specific episodes of care (for example a condition-specific hospital admission or surgical procedure), there are relatively few population-based outcome measures that focus on improving outcomes broadly; a measure like Days at Home that reflects how well healthcare organizations like ACOs keep their patients healthy and out of institutions altogether would help to fill this gap.¹

Reference

1. Burke LG, Orav EJ, Zheng J, Jha AK. Healthy Days at home: A novel population-based outcome measure. *Healthcare* (Amsterdam, Netherlands). 2019;100378.

2.6 Meaningfulness to Target Population

The Days at Home measure is a risk-adjusted population-based outcome measure that uses the outcome of days at home to assess care quality. A spectrum of institutional acute and post-acute care use, including emergency department (ED) visits, observation stays, or admissions to hospitals or skilled nursing facilities (SNFs) are reported as "days *not* at home," or "days in care." Remaining days during the measurement period that a patient is alive are considered "days at home," including days in which a patient utilizes outpatient procedures or services (other than ED visits and observation stays), institutional or home-based hospice, and residential treatment facilities.

The measure disincentivizes care in acute inpatient or outpatient settings such as emergency departments (EDs), or post-acute such as skilled nursing facilities (SNFs), since prolonged or

frequent utilization of these care settings often represents sub-optimal care and worse quality of life for the patient, which holds significant meaning for the target patient population.

Evidence demonstrates that generally, patients prefer to remain at home and avoid unnecessary hospitalizations or transitions to long-term care facilities¹⁻⁶. Lee, Shi, & Kim (2019) found that days at home are associated with other patient-centered outcomes, such as self-reported health status, social activity, and depression.⁴

One study evaluated short- and long-term measures of health care utilization (i.e., days in the emergency department (ED), inpatient (IP) care, and rehabilitation in a post-acute care (PAC) facility) to understand how home time (i.e., days alive and not in an acute or PAC setting) corresponds to quality of life (QoL). The results showed that the impact of receiving care in one setting is not equivalent to that in another setting. In the short term (6 months), PAC utilization emerged as the most salient predictor of decreased QoL, whereas no setting predominated in the long term (18 months). This study advances the science of home time measures by exploring how home time measures are associated with quality of life (QoL), which health care settings to include, and which time frames of utilization are important. This study indicates that patients with more DAH report higher quality of life and greater satisfaction with their care, reinforcing DAH as a meaningful measure for the patients.

In addition to condition- or procedure-specific articles, Lee et al. (2019) validated the days at home outcome against other patient-centered outcome measures among Medicare patients.⁴ For example, the incidence of poor self-rated health ranged from 2% to 21%, and days at home ranged from 365 days for those with the lowest self-rating of poor health (as in, patients with the best health) to less than 337 days for those with the highest self-rating of poor health (as in, patients with the poorest health). They found similar relationships between days at home and other patient-centered outcomes; participants with the highest ratings of mobility impairment, depression, limited social activity, and difficulty in self-care had the lowest ratings of days at home. As a result, Lee et al. (2019) determined days at home to be a valid, patient-centered outcome.

Moreover, the American population is living longer, and elderly patients have an increasing number of chronic conditions and comorbidities over time⁸; a measure focusing on improving primary care services for this high-risk cohort of patients is increasingly important and relevant.

As part of the development process, we convened a Technical Expert Panel (TEP) that included several patient and advocate representatives (who were themselves patients or caregivers of patients with complex chronic illness). The TEP as a whole, including these patient partners, broadly valued the concept of a Days at Home measure as one that logically reflects an ACO's ability to act in accord with patient preferences, with an emphasis on more comprehensive and patient-centered "whole-person care" over siloed approaches. The TEP and these patient representatives further noted the importance of such care to patients with complex chronic illness in particular, for whom navigating a fragmented care landscape is highly burdensome in its own right. Panelists noted that even hospitalizations that are planned or medically necessary are disruptive and can adversely affect patients' quality of life, and supported the concept of a Days at Home measure that would capture outcomes more holistically.

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3.1 Contributions Towards Closing Care Gaps

Reporting and reducing disparities are a key area of focus for quality measures and payment models. As described in Section 6.1.4 Program Details, this measure is used in the ACO REACH model, which has a primary goal of advancing health equity, by requiring participating ACOs to have a robust plan for meeting the needs of underserved communities and make measurable changes to address health disparities. The model supports this through a payment approach to better support care delivery and coordination for patients in underserved communities, including quality measures such as Days at Home.¹ The REACH model adopts a similar approach to SDOH adjustment as other CMS programs such as the Hospital Readmission Reduction Program (HRRP) by generally adjusting for social risk factors at the level of payment in the program, rather than at the quality measure level. This promotes fairness in calculating payments, so as not to penalize measured entities with a high proportion of patients with social risk, but still allows for transparency in terms of outcomes for patients with social risk factors. Specifically, the ACO REACH model, for 2024, adjusts payments based on dual-eligibility status and ADI, resulting in higher payments to ACOs serving higher proportions of underserved beneficiaries. The 2024 model will adjust ACO benchmarks by \$30 per-beneficiary, per-month (PBPM) for beneficiaries with equity scores in the top decile, \$20 PBPM for beneficiaries in the second decile, \$10 PBPM for the third decile, and \$0 PBPM for the next four deciles. For any aligned beneficiary in the bottom 50%, an ACO's benchmark will be reduced by \$6 PBPM.² The model also promotes reducing disparities through confidential stratified reporting of quality measure data to model participants.

Use of stratified quality measures—that is, calculating and reporting quality measure results separately for persons with and without social risk factors—can illuminate gaps in quality of care within and across entities. The Days at Home measure, as a broad population-based outcome measure of primary care, care coordination, and post-acute case management among patients with complex chronic illness, provides a unique window to measure and address disparities. While most other CMS outcome measures are fairly narrow (for example, looking for death or readmission within 30 days after discharge for an acute care visit), Days at Home counts how much time a patient spends alive and out of acute care facilities over an entire year, accounting for person-time at risk and the duration of acute/inpatient visits in addition to case mix variation. Stratification of the Days at Home measure can illuminate differences in outcomes between different populations that other measures may not.

To address this, CORE assessed potential disparities in the Days at Home measure, comparing days in care at the patient and ACO levels by select SDOH factors. We used the CY 2022 ACO REACH model dataset.

Based on available data and to be consistent with the approach to stratified reporting adopted by the ACO REACH model, we identified three SDOH factors for analysis: Medicare-Medicaid dual-eligible (DE) status, University of Wisconsin Area Deprivation Index (ADI), and race.³

- DE status is an indicator of Medicare patients who are also enrolled in Medicaid, which is a commonly used indicator for conditions of financial hardship and related barriers to high-quality outcomes compared to non-DE patients (the reference group).⁴ DE status for all Medicare patients is included in the master beneficiary summary file (MBSF)
- ADI is an area-level indicator of deprivation that quantifies factors such as income, education, employment, and housing quality using variables from US Census data. ADI is scored at the census block-group level from 1 (indicating low deprivation and thus lowest risk) to 100 (indicating high deprivation and thus highest risk). Individuals experiencing deprivation are more likely to face barriers such as transportation or adequate housing that makes maintenance of health at home more difficult and may require special approaches by ACOs to receive the highest quality care. For this analysis we defined beneficiaries from areas with highest quintile ADI (at or above 80th percentile) as “high ADI” (the high-risk group) and compared to those from areas with ADI below the top quintile (“low ADI,” the reference group). ADI is linked to each patient record via ZIP code.
- Race is another commonly studied SDOH factor and can serve as a proxy indicator for discrimination and exposure to structural racism. We dichotomized race as “non-white” (the high-risk group) and white (the reference group), consolidating all non-white options to ensure sufficient sample size. Race is derived from the MBSF, which includes values imputed for those with missing data.

Methods

Because the full Days at Home measure is a combination of three separate risk adjustment models, it is not possible to stratify the full score while maintaining statistical rigor; instead, we report results here based on the Days in Care model only. As shown in **Table 15** of the supplemental document, the Days in Care model provides most of the quality signal, with the

nursing home and mortality adjustments mostly affecting those with more extreme outlying performance. The effect of including mortality and nursing home transitions yields a range of -5.02 to +2.22 “extra” days at home compared to using Days in Care only, but for the middle 80% of ACOs the difference is between -0.37 and +0.54, and the interquartile range (encompassing half of all ACOs) it is between just -0.07 and +0.19 days at home per person year. By comparison the interquartile range for the measure score itself is much greater, from 321.7 to 325.3, which suggests that for a large majority of ACOs the days in care model alone is a reasonable proxy for performance on the whole measure. Also, notably, dual-eligible status has been removed from the risk model for analyses stratifying by dual-eligible status (though retained in analyses stratified by ADI and race).

To accomplish this, we used the CMS Disparity Method (previously developed for the CMS Hospital Equity Index and subsequently expanding to use in other contexts) to estimate “within” differences at the ACO level.⁵ In brief, the “within” disparity method seeks to answer the question, “How does quality within this ACO differ between its patients with vs. without a given factor?” For example, an ACO with equivalent outcomes among both its dual and non-dual eligible patients would have a within-score of 0 days, while one with worse outcomes among dual-eligible patients would have a negative within-score.

First, we reported the patient-level distribution of each SDOH factor, the mean unadjusted Days in Care per person, and the mean unadjusted Days in Care rate (days per person-year) among each stratum.

Second, we report the ACO-level distribution of patient volume and number of patients with each SDOH factor, as well as the distribution of SDOH proportion across the ACOs.

Third, we use the CMS “Within” disparity method to calculate the relative rate (RR) of days in care (per person-year) by strata, and the adjusted rate difference (RD) for each SDOH factor. Results are reported for ACOs with at least 12 patients in each given stratum to minimize impact of low-volume outliers and ensure a more reliable result. Specifically, we use a two-stage approach to 1) calculate a patient-level risk score estimate using the 50+ clinical risk factors, then 2) calculate a provider-level score estimated for each ACO using the patient-level SDOH stratum as the only risk factor (with the stage 1 patient-level risk score as an offset). This yields a fixed-effect intercept and coefficient for the SDOH factor for each ACO (instead of the random intercept/random slope of the hierarchical model approach). The coefficient of the SDOH factor is then used to estimate the rate difference, with a difference of 0 indicating no disparity and a positive difference indicating more days in care (worse outcomes) for patients with the risk factor compared to the reference group, and a negative difference indicating fewer days in care (better).

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Results

Table 16 in the supplemental document reports the number of patients in each stratum, along with the mean observed days in care (per person) and days in care rate (per person-year) in the 2022 REACH dataset (N=169,324 patients). Dual-eligible patients comprise 23.2% of the population, non-white patients 16.2%, and high ADI patients 11.1%. On average, dual-eligible patients have more days in care per person than non-dual (20.9 to 9.7), non-white have more than white (13.6 to 12.1), and high ADI have more than low ADI (14.3 to 12.1). Before adjustment, on a rate basis, dual-eligible patients spend 13.6 days in care per person-year in excess of non-dual eligible (28.3 days vs. 14.7 days), non-white patients spend 2.1 days in care per person-year in excess of white patients (19.7 days vs. 17.6 days), and high ADI patients spend 3.2 days per person-year in excess of low ADI patients (20.7 days vs. 17.5). Please note, the scale of the Days in Care measure is such that a higher number [more days in care] indicates a worse outcome [fewer days at home].

Table 17 in the supplemental document reports the distribution of patient volume and SDOH proportion at the ACO level (n=99 REACH ACOs). The mean ACO has 1710.3 patients, ranging from 60 to 16,390 (median 971, interquartile range 478-2099). The average ACO has 397.4 dual-eligible patients (median 186, IQR 69-418, range 13-4,657), 276.6 non-White patients (median 116, IQR 67-287, range 8-2,660), and 190.0 high ADI patients (median 30, IQR 5-173, range 0-4,464). The average ACO has a dual eligible proportion of 27.8% (median 21.6%, IQR 10.1%-38.1%, range 2.7%-96.3%), a non-white proportion of 20.4% (median 14.1%, IQR 7.4%-26.0%, range 2.0%-94.0%), and a high ADI proportion of 9.9% (median 5.1%, IQR 0.6%-15.0%, range 0.0%-55.8%).

Table 18 in the supplemental document reports the distribution of mean adjusted days in care rate (per person-year) by stratum, as well as the adjusted rate difference between those with vs. without each SDOH factor, among ACOs with at least 12 cases in each strata. At the average ACO, dual-eligible patients spend 6.92 more days in care per person year than non-dual-eligible (median +6.85, IQR +5.53 to +8.14, range +2.38-+13.47). At the average ACO, non-white patients spend 0.74 *fewer* days in care (that is, -0.74 more days) per person year than white patients (median -0.78, IQR -1.30 to -0.054, range -4.77 to +1.21). At the average ACO, high ADI patients spend 0.84 more days in care per person than low-ADI patients (median +0.76, IQR +0.60 to +1.21, range -0.55 to +2.24).

Interpretation

In unadjusted analyses, it is evident that dual-eligible patients spend typically spend more days in care than non-dual eligible patients (28.3 days per person-year vs. 14.7, difference +13.6). The difference between non-white and white (19.7 days per person-year vs. 17.6 respectively, +2.1) and high and low ADI (20.7 days per person year vs. 17.5 respectively, +3.2) is modest by comparison, but still shows that on average non-white and high ADI patients tend to have more days in care.

At the ACO level, there is a skew in the distribution of volume and SDOH share, with a smaller group of ACOs having a disproportionately large share of patients overall and within strata – the median ACO has 971 patients, while the median by SDOH factor is 186 dual-eligible patients, 116 non-white patients, and just 30 high ADI patients. This skew is also observed in SDOH proportion, in which a majority of ACOs have a sparser SDOH patient population than average (the average SDOH proportions are 27.8% dual-eligible, 20.4% non-white, and 9.9% high ADI, while the median SDOH proportions are 21.6%, 14.5%, and 5.0% respectively). This suggests that some providers care for a disproportionately large population of patients with SDOH factors and so may have a much higher burden to provide high-quality equitable care, while a larger number of providers have relatively few patients with SDOH factors and may find providing equitable care less burdensome.

After adjustment, there remains a substantial disparity in care based on dual-eligible status. At all 98 ACOs for which a score could be calculated (those with at least 12 dual-eligible and 12 non-dual-eligible patients), the dual-eligible patients had a higher rate of days in care (mean +6.92, median +6.85). However, there is substantial variation among ACOs, with some nearly closing the gap (minimum +2.38, 10th percentile +4.58, Q1 +5.53) while others have a much greater disparity (Q3 +8.14, 90th percentile +9.50, max +13.47). This suggests there is meaningful opportunity for many ACOs to improve the quality of care delivered to their dual-eligible patients.

As noted previously, the Days in Care component model (as well as the Nursing Home Transition model) does include dual-eligible status as a risk factor in the final measure specifications, due mainly to systematic differences in the accessibility and ability to pay for different services among dual-eligible patients compared to non-dual eligible patients that lie outside ACO's control, and to avoid disincentivizing treatment of dual-eligible patients (as dual-eligible status remains a significant predictor of outcomes even after adjusting for clinical factors). In this sense dual-eligible status is not merely an SDOH factor or an indicator for some underlying difference in risk, it reflects a structural difference in patients' ability to access and pay for services, particularly home- and community-based options that are important to safely remaining at home. While mitigating disparities due to underlying SDOH factors that correlate with dual-eligible status is within the control of a large organization such as an ACO, the structural differences in payment and access for dual-eligible patients vs. non-dual-eligible are not

Note, because dual-eligible status is included in the Days in Care risk model, disparities in the final measure score related to dual-eligible status will be attenuated compared to those observed in the stratified Days in Care model analysis alone (for which dual-eligible status was removed as a risk factor).

Adjusted rate differences for both race and ADI were modest. The RD of negative-0.74 for non-white race suggests that at most ACOs non-white patients tend to have fewer days in care than white patients, although there again is variation with some ACOs having almost no gap while

others have a larger disparity in either direction. Interestingly, this reverses the observation in unadjusted results in which non-white patients had more days in care. The causes of this range in outcomes are unclear – for example, it could be that some ACOs are undertreating non-white patients for a given risk profile, but it is also possible that some ACOs are *overtreating* white patients (resulting in unnecessary extra days in care). When interpreting stratified results such as rate differences, it is important to interpret findings in the context of overall performance. Additionally, while not as extreme as the difference for dual-eligible status, the range of 5.99 days per person year difference (-4.77 to +1.21) is still meaningful in this context, where even a difference of one or two days per person year can correspond to a substantial number of total days across an ACO's entire population.

The ADI analysis is somewhat limited by sample size – only 64 ACOs had at least the 12 high ADI and 12 low ADI patients needed to receive a score. At the average ACO, high ADI patients tend to have slightly more days in care, with a range in disparity from -0.55 to +2.24. A limitation, particularly in interpretation of results stratified by ADI, is due to ACO REACH being a voluntary model that ACOs choose to participate in. This may lead to some self-selection bias if ACOs are less likely to participate if they serve a higher ADI footprint and limits the generalizability of these findings beyond the ACO REACH model. However, the findings remain valid within the ACO REACH population.

In conclusion, there is substantial evidence of disparities in days at home for dual-eligible patients, while disparities related to race or ADI appear less extreme but still exist to some extent. As noted before, dual-eligible status corresponds to structural difference in patients' ability to access and pay for certain services, so it may be difficult for ACOs to entirely mitigate these disparities – however, the extent of the disparity varies substantially by ACO, with some almost entirely eliminated, suggesting it can be addressed to at least some extent. While dual-eligible status is included in the measure risk model for this reason, the stratified Days at Home provides a powerful tool for ACOs and CMS to monitor this disparity, while also ensuring that continued disparity is not masked by its inclusion as a risk factor. By comparison, the data don't currently show a clear systemic disparity based on race or ADI, but there is still a gap in performance between ACOs that demonstrates opportunity to achieve more equitable outcomes. Furthermore, continued future monitoring to ensure new gaps don't open up and that ACOs are making progress in closing existing gaps (particularly as model participants join and depart, or if the measure is adopted for use in another model or setting) will help ensure more equitable outcomes for all.

4.1 Feasibility Assessment

The Days at Home measure uses routinely submitted claims data to identify the measure cohort, risk-adjustment variables, and outcome. Administrative claims are frequently used as data sources for quality measures to assess the quality of care delivered by ACOs. A major benefit of using claims data is that there are no additional costs for providers and the administrative burden is low since there is no need to submit additional data to support measure implementation.

4.3 Feasibility Informed Final Measure

Given the initial feasibility assessment, and implementation of the measure, no changes have been made to the measure specifications in response to the feasibility assessment. The measure still uses routinely submitted claims data to identify critical components of the measure specifications (cohort, risk-adjustment variables, and outcome), and there is no cost to providers and low administrative burden on clinician-groups, and their providers, and participating ACOs.

4.4 Proprietary Information

Not a proprietary measure and no proprietary components

5.1.1 Data Used for Testing

For initial development and validation of the measure in 2021, we used Medicare FFS administrative claims and enrollment information from CYs 2017 through 2018 (January 1, 2017 – December 31, 2018), downloaded from the CMS’s Integrated Data Repository (IDR) and Virtual Research Data Center (VRDC). The measure was initially tested on patients attributed to ACOs participating in the Medicare Shared Savings Program (SSP) for initial validation of the measure, using CY 2018 as a proxy for the performance year and CY 2017 as the pre-performance year (for risk adjustment lookback). This data used for initial development and validation of the measure 2021 was also used to test social risk factors from the following data sources:

- We derived Agency for Healthcare Research & Quality (AHRQ) Socioeconomic Status (SES) Index from the 2013-2017 American Community Survey (ACS)
- We derived Percentage of Residents Living Alone and Percentage of Residents Never Married from the 2014-2018 ACS
- We obtained Density of Primary Care Providers, Density of Specialists, and Density of Hospital Beds from the 2018 Health Resources & Services Administration Area Health Resources File (AHRF)
- We obtained Density of Nursing Home Beds from Nursing Home Compare from November 2020
- We identified Rural Residence (2013 data) from the United States Department of Agriculture Economic Research Service.

For updated testing and maintenance of the measure during 2023-2024, we used Medicare FFS administrative claims and enrollment information from CYs 2021 through 2022 (January 1, 2021 – December 31, 2022), downloaded from CMS’s IDR and CCW/VRDC. We tested the measure using CMMI/ACO REACH beneficiary alignment file in the CMMI/ACO REACH 2022 program, using CY 2022 as the performance year and CY 2021 as the pre-performance year (for risk adjustment lookback).

For the measure cohort, we used the monthly HCC risk scores in CY 2021 and the status of enrollment in Medicare Parts A and B for CYs 2021 and 2022 from the CMS Medicare Enrollment Database (EDB). For risk adjustment:

- We ascertained clinical comorbidities using Medicare FFS institutional inpatient and outpatient claims, as well as non-institutional carrier claims, from CY 2021.

- Frailty indicators were identified using 2021 durable medical equipment (DME) claims.
- The current reason for Medicare entitlement in 2021 came from the Medicare EDB.
- We derived Medicare/Medicaid dual-eligibility status from the 2022 Medicare Master Beneficiary Summary File (MBSF).

In addition, for model performance testing we derived two separate datasets (the “development sample” and the “validity sample”) by splitting the 2022 ACO REACH dataset cohort in half, randomly sampling patients into one of two groups.

5.1.2 Differences in Data

The updated testing results for testing and maintenance of the measure during 2023-2024 reflect final specifications that include data from the above-mentioned Medicare sources (Medicare FFS administrative claims and enrollment information from CY 2021-2022, using data from participants aligned in the CMMI/ACO REACH 2022 program. Both 2018 and 2022 data sets were used for analysis as described in the relevant sections; we have indicated which data source all analyses are derived from.

As described above, the initial measure development and validation used data from CY 2017-2018 to test social risk factors’ inclusion in the model. Ultimately, only dual-eligible status was retained as a risk factor in the final measure (Days in Care and Nursing Home Transition component models only). This testing was not duplicated using the 2022 ACO REACH dataset.

Additional testing (most prominently the empiric validity assessment and health equity assessment) was completed more recently using only the 2022 ACO REACH dataset.

Descriptive statistics for the 2022 development and validity samples were not substantially different from the full population and so are not additionally reported here; both samples are directly comparable to the full cohort with the only meaningful difference being the number of patients is halved in each.

5.1.3 Characteristics of Measured Entities

Measured entities included all ACO REACH innovation model ACOs active in 2022 (N=99) from a nationally representative geographic footprint.

The ACO Reach model consists of three “components” with slightly different requirements; each participating ACO belongs to one of these tracks. Of the 99 total participating ACOs 8 are in the High Needs component (“high needs ACOs”), 13 in the new entrant component, and the remaining 78 are in the standard component.

High needs ACOs serve beneficiaries with complex needs and are expected to use a model of coordinated care designed to serve these individuals similar to that employed by the Programs of All-Inclusive Care for the Elderly (PACE). To be aligned with a High Needs ACO, in addition to the eligibility criteria (enrolled in Medicare Parts A and B, not enrolled in Medicare Advantage or other Medicare health plan; have Medicare as the primary payer; be a resident of the United States; and reside in a county included in the ACO’s service area), an individual must also have

conditions that impair their mobility or neurological function, significant chronic or other serious illness, other chronic or serious illness with multiple unplanned hospitalizations in the past year, or signs of frailty.

Of note, the measure is only implemented for the High Needs component and is not used in performance scoring for Standard and New Entrant ACOs. For testing purposes, we have pooled ACOs from all components to ensure a sufficient population of patients and providers for reliable analysis.

5.1.4 Characteristics of Units of the Eligible Population

The measure cohort was not based on a sample and included all eligible patients aligned to participating ACOs.

Characteristics of the population in the initial 2018 development dataset (used for testing social drivers/determinants of health (SDOH) risk factors, reported here) are shown in **Table 2** of the supplemental document. The 2018 cohort was predominantly White (84.90%), and predominantly aged 65 years or older (84.04%). 22.78% of the cohort was dually eligible for Medicaid, indicating disability and/or low income. Patients also had evidence of serious illness and frailty (with 12.97 % using SNF care, and 40.54% having an HCC risk score ≥ 3.0 in 2021). Per the measure inclusion criteria, 100% of the cohort has an HCC score of ≥ 2.0 .

Characteristics of the 2022 ACO REACH dataset cohort are reported in **Table 3** of the supplemental document. The cohort was predominantly White (83.83%), and predominantly aged 65 years or older (90.08%). 22.5% of the cohort was dually eligible for Medicaid, indicating disability and/or low income. Patients also had evidence of serious illness and frailty (with 55.35% using DME care, 12.06 % using SNF care, and 38.43% having an HCC risk score ≥ 3.0 in 2021). Per the measure inclusion criteria, 100% of the cohort has an HCC score of ≥ 2.0 . While including a much smaller volume of patients, the characteristics of this cohort were extremely similar to those of the 2018 SSP ACO cohort.

5.2.1 Level(s) of Reliability Testing Conducted

Accountable entity level (i.e., measure score) (e.g., signal-to-noise analysis)

5.2.2 Method(s) of Reliability Testing

Measure score reliability testing of the Days at Home measure was performed using split-half methodology. We randomly divided the cohort in half at the patient level, calculated the ACO-level measure scores separately for each half, and compared the results between each half. A high level of agreement between the results for each “test” demonstrates greater reliability (that is, less sensitivity to chance variations in the underlying data) for the measure. We specifically compared the ACO-level intraclass correlation coefficient (ICC) for the final Days at Home outcome metric.¹

Because the measure score is calculated from three different models, it was not possible to apply signal-to-noise reliability and therefore we used the split-half approach. The split-half approach results in a single statistic that does not have a distribution.

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5.2.3 Reliability Testing Results

After splitting the cohort randomly in half and calculating the measure independently in each half, the intraclass correlation coefficient for each ACO's score is 0.7893, indicating very good agreement in score between the two samples. This indicates that the measure is highly consistent and not greatly sensitive to chance variations in the underlying data. The reliability results for this measure meet Battelle's threshold for split-half reliability (>0.6).

5.2.4 Interpretation of Reliability Results

The intraclass correlation coefficient for each ACO's score is 0.7893, indicating very good agreement in ACO-level score between the two samples. This indicates that the measure is highly consistent and not greatly sensitive to chance variations in the underlying data. The reliability results for this measure surpass Battelle's minimum threshold for split-half reliability (>0.6).

5.3.1 Level(s) of Validity Testing Conducted

Accountable entity level (i.e., measure score) (e.g., criterion validity)

5.3.3 Method(s) of Validity Testing

Face Validity: We engaged a large national technical expert panel (TEP) comprising a diverse group of clinicians, quality measurement and performance improvement experts, and patient advocates (including patients and family caregivers) to provide input on the measure concept and the developing specifications throughout the measure development process. Following presentation of final measure specifications and testing results, CORE asked members of the TEP to respond to a survey assessing the face validity of the Days at Home measure specifications. Each member was asked if they "strongly agree", "agree," "somewhat agree," "somewhat disagree," "disagree," or "strongly disagree" with the statement, "The Days at Home measure, as specified, can be used to distinguish between better or worse performance at ACOs or provider groups," and to provide a rationale for their response.

Construct Validity: To empirically evaluate the measure's construct validity, we correlated performance on the Days at Home measure among 99 REACH ACOs in CY 2022 to their performance on select other quality measures used by ACO REACH in the same period. We identified the candidate measures as those that might capture quality constructs related to the Days at Home measure including care coordination, avoidance of acute care, and prevention of health decline. The Pearson correlation was calculated for each relating measure. The measures are:

- All-cause unplanned admissions for patients w/ multiple chronic conditions;
- Risk-standardized all condition readmission;
- Timely Follow-up after Acute Exacerbations of Chronic Conditions;
- Consumer Assessment of Healthcare Providers and Systems (CAHPS): Getting Timely Appointments, Care, and Information Summary Survey Measure (SSM);
- CAHPS: Care Coordination SSM;
- CAHPS: Shared Decision-Making SSM;
- CAHPS: Patient Rating of Provider SSM;
- CAHPS: Courteous and Helpful Office Staff SSM; and
- CAHPS: Health Promotion and Education SSM

As claims-based risk-adjusted outcomes measures of similar constructs, we expected strong inverse correlation with the all-cause unplanned admissions and all-condition readmission measures. Higher scores on these measures are a signal that an ACO is not successfully preventing acute exacerbations, which could result from inadequate preventive services and post-acute follow-up care aimed at maintaining health. While the cohort and outcome of these measures differ, there is strong conceptual alignment with the Days at Home measure that we expect to result in strong empirical correlation in ACO performance.

We also expect weak positive correlation with the Timely Follow-up process measure, for which a higher score indicates a higher (better) rate of qualifying follow-up visits following an acute exacerbation of one of six chronic conditions. The empiric association with Days at Home may be attenuated because a) the timely follow-up measure is not risk-adjusted and so may not fully reflect differences in clinical need between ACOs and b) only captures the process of follow-up after acute events but does not measure any other processes or factors that affect patients' days at home.

The CAHPS measures are a family of patient reported outcome (PRO)-based performance measures that measure patient experiences with healthcare services, which can be used for assessing satisfaction with the quality of care and healthcare services delivery from the patients' perspective. We anticipated weak positive correlations with the Timely Appointments, Care and Information measure, the Care Coordination measure, the Courteous and Helpful Staff measure, and the Patient Rating. We would expect that patient satisfaction with the coordination timeliness of their care, the engagement of their care staff would reflect ACOs that more proactively and effectively engage these patients, and we would expect this to correspond with improved clinical outcomes including more days at home for patients with complex chronic illness. The association may be limited because a) patient satisfaction with a service or process does not guarantee the quality and will not track perfectly with clinical outcomes, and b) the cohort for these measures is much broader than just patients with complex chronic conditions (that is, they will only partially reflect the experience of those patients in the Days at Home cohort).

We also assessed two other CAHPS measures (Shared Decision-making, and Health Promotion & Education) but did not expect a substantial correlation with Days at Home. In addition to the limitations of the other HCAHPS measures listed above (particularly that they include a broader cohort than just chronically ill patients in the Days at Home target population), patient satisfaction with these concepts is likely further removed from the Days at Home outcome. For example, some patients may be very satisfied with shared decision-making that results in days in care, while others may be dissatisfied with inadequate shared decision-making even if they have more days at

home as a result. Similarly, patients may be satisfied with education they feel helps them better manage their condition during their time at home, but which does not reflect the level of engagement and coordination that is really needed to prevent acute events.

5.3.4 Validity Testing Results

Face Validity: Following completion of the measure specifications, CORE surveyed the measure development TEP to assess the face validity of the measure. Of the 21 TEP members, 19 responded to the survey, of whom all 19 (100%) agreed with the given statement. Specifically, 2 members indicated “strongly agree,” 15 indicated “agree,” and 2 indicated “somewhat agree.” No TEP members disagreed that the specified Days at Home measure can be used to distinguish performance among provider groups such as ACOs.

Several TEP members agreed that the measure reflects an important outcome and would incentivize care coordination and home-based care, noting this is currently a gap in measurement. They noted that to perform well on the measure, providers will have to implement practices and interventions across multiple aspects or systems of care to prevent acute care use and support days at home, which will improve the patient experience as well as reduce overall spending.

Several TEP members also expressed support for the measure methodology (particularly the definition to count “days at home”) and risk adjustment approach, suggesting that the measure fairly captures the outcome of interest.

Construct Validity: The Pearson correlation and p-value of ACO performance between Days at Home and each relating measure are as follows, and reported in **Table 4** of the supplemental document:

- All-cause unplanned admissions for patients w/ multiple chronic conditions was -0.51 (<0.0001);
- Risk-standardized all condition readmission was -0.39 (<0.0001);
- Timely Follow-up after Acute Exacerbations of Chronic Conditions was 0.15 (0.16);
- CAHPS: Getting Timely Appointments, Care, and Information SSM was 0.36 (0.0003);
- CAHPS: Care Coordination SSM was 0.28 (0.005);
- CAHPS: Shared Decision-Making SSM was 0.07 (0.50);
- CAHPS: Patient Rating of Provider SSM was 0.20 (0.05);
- CAHPS: Courteous and Helpful Office Staff SSM was 0.28 (0.007), and
- CAHPS: Health Promotion and Education SSM was -0.14 (0.17).

5.3.4a Attach Additional Validity Testing Results

[Attachment B_tables_figures_supplemental_Days at Home Measure CBE #4555_10162024_1.pdf](#)

5.3.5 Interpretation of Validity Results

The feedback from the TEP demonstrated that the Days at Home measure concept and specifications are sensible to a diverse range of stakeholders with interest in chronic condition

management and treatment, and that the measure can fairly represent quality of different ACOs.

In general, the empiric validity testing results were consistent with our hypothesized relationships. Both risk-adjusted outcome measures for which we expected a strong inverse correlation indeed demonstrated a substantial inverse correlation. In addition, three of the four patient satisfaction measures for which we hypothesized a weak positive correlation demonstrated a statistically significant positive correlation, while the two for which we expected no correlation demonstrated no significant correlation. Finally, the timely follow-up process measure for which we expected weak positive correlation demonstrated subtle positive (though not statistically significant) correlation.

These results demonstrate that outcomes of the Days at Home measure indeed track with other related measures of quality while still maintaining independence and capturing a dimension of quality not reflected elsewhere.

5.3.2 Type of Accountable Entity Level Validity Testing Conducted (derived)

Empirical validity testing at the accountable entity-level (e.g., criterion validity, construct validity, known groups analysis), Systematic assessment of face validity of the measure's performance score as an indicator of quality or resource use

5.4.1 Methods Used to Address Risk Factors

Statistical risk adjustment model with risk factors, Stratification by risk factor category

5.4.2 Conceptual Model Rationale

The goal of risk adjustment is to account for differences across provider entities in patient demographic and clinical characteristics that might be related to the outcome but are unrelated to quality of care. Patients' ability to remain at home and avoid acute care may be influenced by degree of illness, financial capacity to receive quality care in home settings, access to healthcare facilities and services, as well as the quality of care they receive. We therefore considered patient demographic factors, comorbidities, and social risk factors to develop our candidate risk variables to better isolate the impact of care quality and decisions in modelling the outcome.

To select risk variables during initial measure development in 2018, we leveraged the final list of candidate risk variables that a fully developed similar measure: the All-Cause Unplanned Admission Rate for Patients with Multiple Chronic Conditions (MCC), referred to here as "the UAMCC measure." The UAMCC measure is elsewhere used in the Medicare SSP and the CMS Merit-based Incentive Payment System (MIPS). The UAMCC measure assesses the number of acute, unplanned hospital admissions per 100 person-years for patients aged 65 or older with MCCs attributed to participating provider entities. The UAMCC measure patient population is clinically similar to the Days at Home measure cohort of patients with complex, chronic conditions and has a comparable diversity of severity of illness, socioeconomic status, and geographical access to care, despite differences in age eligibility for the cohorts (that is, age 18 or older for Days at Home but 65 or older for the UAMCC measure).

The UAMCC measure development team used a rigorous methodology to select and group candidate risk variables that were strongly predictive of patients' likelihood of having unplanned

hospital visits, such as patient frailty. Therefore, original measure specification adapted the UAMCC measure's candidate risk variables, including 37 clinical comorbidity variables (defined using hierarchical Condition Categories [CCs] and/or standalone ICD-10-CM codes), 9 cohort-qualifying chronic conditions (defined by CMS's Chronic Conditions Warehouse [CCW]), 6 variables related to frailty or disability (for example, walking aids, durable medical equipment, and reason for current Medicare entitlement), and age as our list of candidate risk variables for further consideration.

To select variables for consideration in the Days at Home measure in original measure specification, first, we conducted descriptive analyses of the candidate risk variables to verify the conceptual validity of using them for the Days at Home measure. We also examined characteristics of patients in the Days at Home cohort who are eligible for the UAMCC cohort to those who are not eligible for the UAMCC measure cohort, and then compared the frequency of each candidate risk variable between patients in the days at home cohort who are eligible versus not eligible for the UAMCC measure cohort.

Next, we conducted empiric analyses with the candidate risk variables to verify their appropriateness as risk variables for preliminary Days at Home analyses. We calculated the frequencies and bivariate associations with the days in care (as in, days *not* at home), mortality, and nursing home transition outcomes in the Days at Home cohort. We also calculated the Pearson correlation coefficients between all risk factors. Finally, clinical experts reviewed the risk variables for clinical sensibility.

Finally, we selected final variables based on prevalence, bivariate associations between each risk factor and the measure outcomes, and clinical sensibility.

During measure reevaluation September 2023 – September 2024, we transitioned the measure from CMS's CCW-27 algorithms, which were used during original measure specification as described above, to the updated CCW-30 algorithm. There was much overlap in CCW-27 and -30 variables, but some factors had more substantial variations including multiple codes or clinical concepts added.

As noted by multiple TEP members and clinical experts in 2018, a patient's ability to remain safely at home is influenced by the patients' environment and available resources, known as social determinants/drivers of health (SDOH) factors. While provider entities may have some ability to address or mitigate SDOH factors in care of their patients, the TEP members and experts expressed concern that these factors may be largely out of a provider entity's control given the cohort and outcome of this measure, especially given concerns about a patient's ability to obtain adequate in-home support. Adjusting for SDOH factors may have the unintended consequence of establishing inequitable standards for outcomes and quality, while not adjusting for SDOH factors may adversely discourage providers from caring for patients at greater risk. While some stakeholders have advocated that this measure account for SDOH factors, a recent Office of the Assistant Secretary for Planning and Evaluation (ASPE) report has recommended that generally outcomes measures should not adjust for SDOH factors. The decision of which, if any, SDOH factors the measure should include requires considering the incentives and potential consequences for reducing inequities.

We conducted empiric analyses with the 53 candidate risk variables to verify their

appropriateness as risk variables for the Days at Home measure. We present the number of patients with each risk factor and the prevalence as a percentage of all patients eligible for the Days at Home measure (n=1,154,779). For each risk factor, we present the odds ratio of death for patients with that diagnosis during 2018, along with the p-value. (The odds ratio is the relative odds of death for patients with that risk factor compared to those without; an odds ratio > 1 indicates patients with that risk factor have greater risk of death). Similarly, we present the odds ratio for transition to a nursing home for a patient with that diagnosis in 2022, along with p-value. We also present the mean days in care for patients with each risk factor, along with the standard deviation and a p-value (obtained using a t-test) to examine if patients with that risk factor are likely to spend more days in care than those without.

We also calculated the Pearson correlation coefficient between each pair of risk variables to assess if any are highly correlated with each other (results not tabulated here). Only one pair of variables – age and current reason for Medicare entitlement – were highly correlated ($r = -0.73$).

We found that nearly all risk variables were significantly associated with days in care, mortality, and nursing home transitions in bivariate analyses. We included all candidate clinical risk variables, with two exceptions (leaving 50 variables total). We excluded pancreatic disease (pancreatitis) due to very low prevalence in the cohort (<1%), and current reason for Medicare entitlement which was highly correlated with age (correlation coefficient -0.73).

5.4.2a Attach Conceptual Model

[Attachment B_tables_figures_supplemental_Days at Home Measure CBE #4555_10162024_2.pdf](#)

5.4.3 Variable Distribution Across Measured Entities

To select risk variables for the Days at Home measure, we originally started with the set of risk factors used in a fully-developed related measure, the Risk-Standardized Unplanned Acute Admission Rate for Patients with Multiple Chronic Conditions (UAMCC). The measure is also currently implemented in the “High Needs Population ACOs” component of the CMS Innovation Center’s ACO REACH Model and elsewhere.

The UAMCC patient population is clinically similar to the Days at Home measure cohort of patients with complex, chronic conditions and has a comparable diversity of severity of illness, socioeconomic status, and geographical access to care. There is a difference in eligibility based on age for the measure cohorts: patients who are age 18 or older are eligible for Days at Home, but patients are required to be 65 or older for the UAMCC measure. The UAMCC measure assesses the number of admissions within the performance year and thus the risk variables selected and grouped by the UAMCC measure (such as patient frailty) were strongly predictive of patients’ likelihood of having unplanned hospital visits.

The Days at Home measure uses the candidate clinical risk variables of the UAMCC measure (defined by Condition Categories (CCs)) for each of the three component models. These consist of 37 clinical comorbidity variables, nine chronic conditions, six variables related to frailty or disability (for example, walking aids, durable medical equipment, and reason for current Medicare entitlement), and age. Two variables (pancreatic disease due to very low prevalence and reason for Medicare entitlement due to high collinearity with age) were originally excluded, and a third

(cardiomyopathy due to overlap with heart failure and non-ischemic heart disease) was excluded following testing with the 2022 data (which also supported continued exclusion of pancreatic disease and reason for Medicare entitlement) leaving 50 clinical risk variables. These same clinical risk variables are used in each of the three component risk models of the Days at Home measure.

In addition, beneficiaries' Medicare-Medicaid dual-eligibility status is included as a risk variable in the Days in Care and Nursing Home Transition component risk models. Dual-eligible patients have structurally different means to pay for various services and may have fewer resources and social support to remain safely at home compared to Medicare-only beneficiaries. Adjusting for dual-eligible status acknowledges that ACOs may have limited ability to address this risk factor and reduces any incentive for ACOs to select against dual-eligible patients. Dual-eligible status is not included in the Mortality risk model.

Table 5 in the supplemental document presents the number of patients with each risk factor and the prevalence as a percentage of all patients eligible for the Days at Home measure, in both the original development dataset (CY2018 SSP ACOs) and the updated ACO REACH testing dataset (CY2022).

In original measure development (tested using the 2018 dataset), upon finalizing the clinical risk model we considered several other potential social drivers/determinants of health (SDOH) as potential risk factors in addition to dual-eligible status – namely AHRQ SES index, urbanicity, specialist and PCP density, hospital and nursing home bed density, and density of individuals never married or living alone. We ultimately did not include other SDOH risk factors (SRFs) for several reasons: they are area-level indicators that may not represent the actual circumstance of each patient, the empirical support for inclusion is weaker, and they require abstraction of data from external sources which could present a problem in measure implementation. In addition, some of these risk factors (particularly physician density and density of hospital or nursing home beds) can be directly addressed and mitigated by DCEs, in which case statistical adjustment would be inappropriate. This testing was not repeated using the 2022 data as the chief concerns with these other variables remain unchanged. **Table 6** in the supplemental document lists each of these factors along with the adjusted risk ratio for reference, from the original 2018 development testing.

In 2022, we conducted additional analyses stratifying the measure by three SDOH factors: dual-eligible status (already discussed), local deprivation, and race. Using the Area Deprivation Index (ADI), we dichotomized deprivation as high (above 80th percentile, more deprived) or low (less deprived). We dichotomized race as White or non-White. **Table 7** in the supplemental document presents the prevalence of these characteristics in the 2022 ACO REACH cohort (n=169,324) used for this testing.¹

Reference

1. Neighborhood Atlas - home. (n.d.). Wisc.edu. Retrieved September 24, 2024, from <https://www.neighborhoodatlas.medicine.wisc.edu/>

5.4.4 Risk/Case-Mix Adjustment Modeling and/or Stratification Results

Table 8 in the supplemental document lists the Days in Care rate ratio and mortality and nursing home odds ratios (with 95% confidence intervals) in the final model used in original development testing with the 2018 SSP ACO dataset. **Table 9** in the supplemental document details the number of patients with each risk factor and the prevalence as a percentage of all patients eligible for the Days at Home measure, using CY 2022 data. The odds ratio (OR) and its 95% confidence interval (CI) lower and upper bounds are reported for the mortality and nursing home transition logistic regression models, while the rate ratio (RR) and its 95% CI bounds are reported for the days in care negative binomial model. Note in Table 9, due to updates in the underlying source codes available, some of the risk factors were modified slightly between 2018 and 2022 analyses.

Table 10 in the supplemental document reports the relationship between ACO-level Adjusted Days at Home and SDOH factors, listing the prevalence of individuals with each SDOH factor among patients aligned to ACOs by quartile of ACO overall performance score. Dual-eligible and non-White patients tend to make up a slightly higher proportion of patients at first- and fourth-quartile ACOs, while high ADI patients are disproportionately at first-quartile ACOs. Note that in all analyses stratifying the measure by dual-eligible status, dual-eligibility is removed as a risk factor from the statistical risk model, though it is retained in stratifications by race or ADI.

5.4.4a Attach Risk/Case-mix Adjustment Modeling and/or Stratification Specifications

[Attachment B_tables_figures_supplemental_Days at Home Measure CBE #4555_10162024_3.pdf](#)

5.4.5 Calibration and Discrimination

To test discrimination of the models, we computed the c-statistic (area under the ROC curve) for the Mortality and Nursing Home Transition logistic regression models. We evaluated the goodness-of-fit of the Days in Care negative binomial count model using the deviance R-squared and the Spearman rank correlation coefficient.

We assessed the calibration of the Days at Home component models using a split-half methodology. We split the cohort randomly in half, fit each model to the first half of data (the development sample), and then used those coefficients in the second half (the validation sample) to confirm the models are generalizable and well-calibrated. We also plotted the observed and expected proportion of days alive spent in care among deciles of expected days in care.

We also assessed the calibration of the model for select patient subgroups (dual-eligible vs. non-dual-eligible, white vs. non-white, and high- vs. low-ADI) by comparing the observed days in care to deciles of predicted (model estimated among the full population).

5.4.5a Attach Calibration and Discrimination Testing Results

[Attachment B_tables_figures_supplemental_Days at Home Measure CBE #4555_10162024_4.pdf](#)

5.4.6 Interpretation of Risk/Case-mix Factor Findings

We conducted empiric analyses with the 53 candidate risk variables to verify their

appropriateness as risk variables for the Days at Home measure. We present an unadjusted bivariate analysis for each of the candidate risk factors with each of the three parts of the outcome – days in care, mortality, and transitioning to a nursing home. We present the number of patients with each risk factor and the prevalence as a percentage of all patients eligible for the Days at Home measure (n=169,324). For each risk factor, we present the odds ratio of death for patients with that diagnosis during 2022, along with the 95% confidence interval. (The odds ratio is the relative odds of death for patients with that risk factor compared to those without; an odds ratio > 1 indicates patients with that risk factor have greater risk of death). Similarly, we present the odds ratio for transition to a nursing home for a patient with that diagnosis in 2022, along with 95% confidence interval. We also describe the mean days in care for patients with each risk factor, along with the standard deviation and a p-value (obtained using a t-test) to examine if patients with that risk factor are likely to spend more days in care than those without.

During the measure development we also calculated the Pearson correlation coefficient between each pair of risk variables to assess if any are highly correlated with each other (results not tabulated here). Only one pair of variables – age and current reason for Medicare entitlement – were highly correlated ($r = -0.73$).

We found that nearly all risk variables were significantly associated with days in care, mortality, and nursing home transitions in bivariate analyses. We included all candidate clinical risk variables, with three exceptions (leaving 50 variables total). We excluded pancreatic disease (pancreatitis) due to very low prevalence in the cohort (<1%), cardiomyopathy due to its conceptual and empiric overlap with heart failure & non-ischemic heart disease, and current reason for Medicare entitlement which was highly correlated with age (correlation coefficient -0.73).

Using the 2022 ACO REACH test dataset, we evaluated the discrimination and goodness-of-fit of the Days at Home component models to assess their ability to differentiate outcomes.

- We found a C-statistic of 0.736 for the Mortality model, which indicates good classification of observed deaths using model predictions. We found a C-statistic of 0.753 for the Nursing Home Transition model, which indicates similarly good model performance. Potential values of the C-statistic range from 0, indicating perfectly poor classification to 0.5, meaning the model predictions are no better than chance, to 1.0, indicating perfect classification; “perfect classification” here implies that patients’ outcomes can be predicted by the specified risk factors alone and that no other factors, including performance of healthcare providers, play a role in patients’ outcomes.
- We evaluated the goodness-of-fit of the Days in Care count model using the deviance R-squared, which we computed to be 0.0183. It is important to note that the deviance R-squared is distinct from the “standard” R-squared definition that is often reported for linear regression models and should not be interpreted in the same way; deviance R-squared is a separate measure of fit applicable to count models estimated using maximum-likelihood methods (equal to one minus the ratio of the log-likelihoods of the final model and the null model).¹ Deviance R-squared values are typically lower than standard R-squared values; the deviance R-squared of 0.0183 for the Days in Care model is comparable to that observed in other similar count models used in CMS measures (specifically values of 0.060, 0.028, and 0.038 for the count models of the 30-day Excess Days in Acute Care measures for Acute

Myocardial Infarction, Heart Failure, and Pneumonia respectively).²

Using the split-half development and validation sample results, we computed discrimination and calibration metrics for each of the component models (Mortality, Nursing Home Transition, Days in Care). Overall, the models fitted in the development sample show very similar performance and results when applied to data in the validation sample.

- Of particular note, the overfitting indices (γ_0 , γ_1) in the validation sample of the mortality model (-0.044, 0.974) and nursing home transition model (-0.036, 0.978) are very close to the development sample (by definition: 0, 1), indicating that those models are generalizable and have high predictive ability.
- Furthermore, the C-statistics based on the validation sample (0.734 for Mortality, 0.752 for Nursing Home Transitions) are approximately equal to those based on the development sample (0.738 and 0.754), indicating that the model discrimination is maintained when applied to new data.
- Similarly, the deviance R-squared of the Days in Care model is similar between the development and validation sample results (both 0.0184 respectively), which indicates similar goodness-of-fit in both samples.

The calibration deciles plots of the Days in Care model for both the development and validation samples show close alignment between the observed and expected days in care (as proportion of days alive), with the only deviation being in the highest decile (in which the predicted values exceed the observed by about 20% in both plots). This demonstrates the generalizability of the risk model as its calibration is maintained even in data on which it was not fit.

Finally, calibration plots based on dual-eligible status, race, and ADI demonstrate that the model is well-calibrated among these populations of interest, and that there are not systemic differences between these populations that the model fails to capture. Similarly to the overall calibration plots among the development and validation samples, the observed days in care per survival day is very close to the predicted value in every decile except the highest, in which the predicted values exceed the observed by some margin. Among dual-eligible patients, both observed and predicted values are greater than those among non-dual-eligible, which is consistent with other observations that dual-eligible patients are at greater risk for days in care; however, the alignment between observed and predicted within each subgroup indicates that this difference in risk is well captured by the statistical model. There is a much more subtle difference in calibration plot between white and non-white patients; non-white patients have slightly more observed and predicted days in care by decile but good calibration within each subgroup. Only for ADI does calibration begin to deviate, with a tendency for the model to under-predict days in care among high ADI patients compared to observed; this could be related to potential disparities related to ADI as discussed further in Section 5.

References

1. Cameron AC, Windmeijer F. R-Squared Measures for Count Data Regression Models with Applications to Health-care Utilization. *Journal of Business & Economic Statistics*. 1996;14(2):209-220.
2. YNHHS/CORE. Condition-Specific Excess Days in Acute Care Measures Annual Updates and

Specifications Report. 2021.

5.4.7 Final Approach to Address Risk Factors

Statistical risk adjustment model with risk factors, Stratification by risk factor category

6.1.1 Current Status

In use

6.1.2 Current or Planned Use(s)

Payment Program, Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

6.1.3 Program Details

Name of the program and sponsor

CMS Innovation Center's ACO REACH Model

URL of the program

<https://www.cms.gov/priorities/innovation/innovation-models/aco-reach>

Purpose of the program

ACO REACH is a voluntary payment model with the purpose of encouraging health care providers to improve the quality of care and care coordination offered to people with traditional Medicare, especially those from underserved communities.

Geographic area and percentage of accountable entities and patients included

All geographic areas in the United States are eligible to participate. As of 2023 the ACO REACH model includes 122 ACOs in 28 states across all regions of the continental US.

Applicable level of analysis and care setting

ACO Level

6.2.1 Actions of Measured Entities to Improve Performance

Freed et al. (2022) evaluated the viability of using DAH as a quality measure for providers participating in Alternative Payment Models (APMs) such as ACO that focused on the care of seriously ill beneficiaries¹. The study found that ACOs with high DAH scores spent more on Durable Medical Equipment (DME) as a percentage of total spending than ACOs with low DAH scores. In other words, ACOs with high DAH scores prioritize or use more Durable Medical Equipment relative to their overall expenditures than those with lower DAH scores. This could indicate that high DAH score ACOs might have a greater reliance on or investment in such equipment as part of their care strategies. Similarly, Kaufman et al. (2021) tried to characterize spending on seriously ill beneficiaries in ACOs with Medicare Shared Savings program (MSSP) contracts and the association of spending with ACO shared savings². The results suggest that increased investment in serious illness spending may lead to a reduction in per capita expenditures overall for ACOs. Coupled with findings of Freed et al. (2022), these studies suggest that ACOs investments in supporting beneficiaries in their home or community setting by offering services such as home-based care (e.g., DME), preventive services, and post-acute follow-up may be associated with reduced utilization and related costs of acute services for both providers and beneficiaries.

References

1. Freed S, Kaufman BG, Harold C, Saunders RS. Using a home time measure to differentiate ACO performance for seriously ill populations. *Journal of the American Geriatrics Society*. 2022;70(9):2666-2676.
2. Kaufman BG, Anderson D, Bleser WK, et al. Association of ACO shared savings success and serious illness spending. *J Healthc Manag*. 2021; 66(3): 227-240.

6.2.2 Feedback on Measure Performance

The Days at Home measure was fully implemented beginning 2023, with only one measurement year completed. Without at least two full years of performance data, it is not possible to evaluate trends in performance. To date, no concerns have been raised from measured entities has been reported to the measure developers. ACOs participating in the REACH model have several opportunities to ask questions and provide feedback (such as through webinars, through a Q&A support tool, and the ACO REACH Helpdesk).

6.2.3 Consideration of Measure Feedback

During measure development, we convened a Technical Expert Panel (TEP) including among other members several ACO clinicians and quality improvement leaders. These individuals provided valuable feedback throughout the development process; for example, they agreed that the measure is patient-centered and easy to understand and promotes holistic patient care and can improve care coordination; on the measure cohort, they agreed with no diagnosis-related exclusion criteria, and supported risk adjustment for various clinical and social risk factors. TEP members also offered feedback to inform decisions to carefully consider the various clinical settings, such as Skilled Nursing Facilities, when defining the measure outcome of “days in care”. Along with that of the other TEP members, we carefully considered feedback provided by panelists who were clinicians and quality leaders in ACO settings. This feedback particularly informed our decisions to consider planned versus unplanned admissions and unintended consequences, leading to specifically counting all acute care use as whole days not at home, or “days in care”.

6.2.4 Progress on Improvement

The Days at Home measure was fully implemented beginning in 2023, with only one measurement year completed. Without at least two full years of performance data, it is not possible to evaluate trends in performance.

6.2.5 Unexpected Findings

We have no unexpected findings to report at this time.

7.1 Supplemental Attachment

[Attachment B_tables_figures_supplemental_Days at Home Measure CBE #4555_10162024.pdf](#)

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The measure developer is different from the measure steward

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