



Home Health – Discharge to Community-Post Acute Care (DTC-PAC) Measure Update

**For Beneficiaries with Medicare Fee-For-
Service and Medicare Advantage Insurance**

Technical Specification Report

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Introduction

This report presents the technical measure specifications for the Home Health (HH) Updated Discharge to Community-Post Acute Care (DTC-PAC) measure for Medicare Fee-For-Service (FFS) and Medicare Advantage (MA) beneficiaries.¹

Section 1 provides an overview of the measure, including a measure description, a history of the original version of this measure and the rationale for and summary of the refinements in the current measure, and the purpose and rationale for the original and current versions of the measure.

Section 2 describes the measure specifications, including the construction of the denominator and numerator, data sources, measure observation window, the risk adjustment model, and steps for calculating the final measure result.

Section 3 discusses measure testing, including the measure's reportability, variability, reliability, and validity results.

¹ The reporting of quality data by home health agencies (HHAs) is mandated by Section 1895(b)(3)(B)(v)(II) of the Social Security Act ("the Act"). For more information on the statutory history of the HH Quality Reporting Program (QRP), please refer to <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Home-Health-Quality-Reporting-Requirements.html>.

1. Overview

This chapter provides an overview of the updated HH DTC-PAC measure, including a general description of the measure (Section 1.1), and the purpose and rationale for the measure and refinements to the original measure and their rationale (Section 1.2). A more detailed explanation of the measure specifications is available in Chapter 2.

1.1 Measure Description

The HH DTC-PAC measure assesses successful discharge to the community from HHA, with successful discharge to the community including no unplanned hospitalizations and no death in the 31 days following discharge. Specifically, this measure reports a HHA's risk-standardized rate of Medicare FFS and MA patients who are discharged to the community following a HH stay,² and who do **not** have any of the following events: an unplanned admission to an acute care hospital or LTCH in the 31 days following discharge to community; a skilled nursing facility (SNF) stay in the 31 days following discharge to community; a potentially preventable hospitalization or observation stay during the home health stay or one day after home health discharge; or death during the 31 days following discharge to community.

The post-acute care settings – home health (HH), inpatient rehabilitation facilities (IRF), skilled nursing facilities (SNF), and long-term care hospitals (LTCH) – conceptualize the DTC-PAC measure similarly, in terms of the definition of the discharge to community outcome, the approach to risk adjustment, and the measure calculation. Each measure is specific to the particular PAC setting; we do not pool PAC patients/residents across settings in the measure development and calculation.

The DTC-PAC measure calculates a standardized DTC rate for each HHA. This is derived by first calculating a standardized risk ratio – the predicted number of HH stays with successful discharge to the community divided by the expected number of HH stays with successful discharge to the community for the same patients if treated at the average HHA. The standardized risk ratio is then multiplied by the mean rate of HH stays with successful discharge to the community in the population (i.e., all HH stays for Medicare fee-for-service (FFS) and Medicare Advantage patients eligible for the measure) to generate the HHA-level standardized rate of discharge to community.

1.1.1 Updates to the DTC-PAC Measure to Include Medicare Advantage Beneficiaries

The original specification of the DTC-PAC measure included only beneficiaries enrolled in Medicare Parts A and B (Fee-For-Service). This update of the DTC-PAC measure includes several changes implemented to include Medicare Fee-For-Service and Medicare Advantage beneficiaries into the measure. As described in detail below, we made several updates to the measure specifications so discharges to community would be tracked in a similar manner for Medicare Fee-For-Service and Medicare Advantage beneficiaries. In brief, these changes included:

1. Used Medicare Advantage Encounter data to identify home health stays, numerator events, and denominator exclusions. See Section 2.1 for additional detail.

² A HH stay is a sequence of HH payment episodes separated from other HH payment episodes by at least two days.

2. Made two updates related to differences in documentation patterns between home health FFS claims and Medicare Advantage encounters:
 - a. Increasing the length of time allowed between payment episodes grouped into the same home health stay from two days to 14 days. See Section 2.2.1 for additional detail.
 - b. Changing home health discharge status codes of '30' – signifying that the home health agency considered the patient to be “still a patient” under home health care – from indicating a failed discharge to community to indicating a successful discharge to community. See Section 2.2.1 for additional detail.
3. Expanded the numerator definition to incorporate additional indicators that patients were **not** successfully discharged to the community, including admission to a SNF stay in the 31 days following discharge to community, and having a potentially preventable hospitalization or observation stay during the home health stay or within one day after home health discharge. See Section 2.4.1 for additional detail.
4. Added a risk adjustment factor to differentiate between stays starting with a HH FFS claim and stays starting with a HH MA encounter record. See Section 2.5.1 for additional detail.

All other aspects of the DTC-PAC measure specifications and intent will remain consistent through this update.

1.2 Purpose/Rationale for the Measure

Discharge to home or community is an important patient-centered outcome in post-acute care because it reflects higher functional abilities and effective care transitions, and is associated with lower mortality and costs.^{3,4} Across diverse patient populations, including patients with stroke, traumatic brain injury, hip fracture, cancer, and medically complex conditions, patients discharged to the community generally experience better outcomes than those discharged to institutional settings.^{5,6}

³ Patel, S. V., Arcidiacono, A., Austin, C. P., Imburgio, S., Heaton, J., DiSandro, K., Mathur, D., Besa, R., Angelo, E., Walch, B., Bakr, M., Buccellato, V., Frank, E., Hossain, M. A., & Asif, A. (2024). Improving Patient Outcomes Using Measures to Increase Discharge Rates to Home. *Cureus*, 16(5), e59738. <https://doi.org/10.7759/cureus.59738>

⁴ Bardenheier, B. H., Rahman, M., Kosar, C., Werner, R. M., & Mor, V. (2021). Successful Discharge to Community Gap of FFS Medicare Beneficiaries With and Without ADRD Narrowed. *Journal of the American Geriatrics Society*, 69(4), 972-978. <https://doi.org/10.1111/jgs.16965>

⁵ Singh, S., Eguchi, M., Min, S. J., & Fischer, S. (2020). Outcomes of Patients With Cancer Discharged to a Skilled Nursing Facility After Acute Care Hospitalization. *J Natl Compr Canc Netw*, 18(7), 856-865. <https://doi.org/10.6004/jnccn.2020.7534>

⁶ Augustine, M. R., Intrator, O., Li, J., Lubetsky, S., Ornstein, K. A., DeCherrie, L. V., Leff, B., & Siu, A. L. (2023). Effects of a Rehabilitation-at-Home Program Compared to Post-acute Skilled Nursing Facility Care on Safety, Readmission, and Community Dwelling Status: A Matched Cohort Analysis. *Med Care*, 61(11), 805-812. <https://doi.org/10.1097/mlr.0000000000001925>

There are clinical predictors of discharge to the community, including functional status at discharge, particularly mobility, transfers, and self-care ability.^{7,8,9} Greater functional improvement during post-acute care and higher rehabilitation intensity increase the likelihood of home discharge.^{10,11} Specific impairments, such as lower extremity impairments, cognitive deficits, dysphagia, and incontinence, reduce the likelihood of discharge home unless targeted during rehabilitation.^{12,13,14} Lower medical complexity, fewer comorbidities, and younger age are also consistently associated with better discharge outcomes.^{15,16}

Non-clinical factors are equally influential. For example, the presence of a caregiver is one of the strongest predictors of discharge home, often exceeding clinical factors.^{17,18} Social determinants, including housing stability, transportation access, and neighborhood vulnerability,

- ⁷ Andrews, A. W., & Bohannon, R. W. (2023). Functional Independence predicts patients with stroke more likely to be discharged to the community after inpatient rehabilitation. *Topics in Stroke Rehabilitation*, 30(4), 393-401. <https://doi.org/10.1080/10749357.2022.2038834>
- ⁸ Deutsch, A., Palmer, L., Vaughan, M., Schwartz, C., & McMullen, T. (2022). Inpatient Rehabilitation Facility Patients' Functional Abilities and Validity Testing of the Standardized Self-Care and Mobility Data Elements. *Arch Phys Med Rehabil*, 103(6), 1070-1084.e1073
- ⁹ Toth, M., Palmer, L., Marino, M. E., Smith, A., Schwartz, C., Deutsch, A., & McMullen, T. (2023). Validation of the Standardized Function Data Elements among Medicare Skilled Nursing Facility Residents. *J Am Med Dir Assoc*, 24(3), 307-313.e301. <https://doi.org/10.1016/j.jamda.2022.12.014>
- ¹⁰ Kumar, A., Roy, I., Warren, M., Shaibi, S. D., Fabricant, M., Falvey, J. R., Vashist, A., & Karmarkar, A. M. (2022). Impact of Hospital-Based Rehabilitation Services on Discharge to the Community by Value-Based Payment Programs After Joint Replacement Surgery. *PTJ: Physical Therapy & Rehabilitation Journal*, 102(4), 1-8. <https://doi.org/10.1093/ptj/pzab313>
- ¹¹ Kushner, D. S., Johnson-Greene, D., Felix, E. R., Miller, C., Cordero, M. K., & Thomashaw, S. A. (2023). Predictors of discharge to home/community following inpatient-rehabilitation in a US national sample of Guillain-Barre-Syndrome patients. *PLoS One*, 18(5), e0286296. <https://doi.org/10.1371/journal.pone.0286296>
- ¹² Ginex, V., Viganò, M., Gilardone, G., Monti, A., Gilardone, M., & Corbo, M. (2023). Predicting home discharge after inpatient rehabilitation of stroke patients with aphasia. *Neuropsychol Rehabil*, 33(3), 393-408. <https://doi.org/10.1080/09602011.2021.2021951>
- ¹³ Shogenji, M., Yoshida, M., Sumiya, K., Shimada, T., Ikenaga, Y., Ogawa, Y., Hirako, K., & Sai, Y. (2022). Relationship between Bowel/Bladder Function and Discharge in Older Stroke Patients in Convalescent Rehabilitation Wards: A Retrospective Cohort Study. *Prog Rehabil Med*, 7, 20220028.
- ¹⁴ Lee, S. W., Elsagr, C., Joung, K. M., & Ayutyanont, N. (2025). Outcomes after inpatient rehabilitation for older adults with hip fractures: A cross-sectional study. *Clinical Rehabilitation*, 39(1), 35-46. <https://doi.org/10.1177/02692155241300647>
- ¹⁵ Dubin, A., Zarreii, P., Shariffar, S., Nixon, R. M., Conic, R. R. Z., Pendem, K., & Vincent, H. K. (2025). The impact of body mass index on rehabilitation outcomes after lower limb amputation. *Pm r*, 17(5), 539-547. <https://doi.org/10.1002/pmrj.13292>
- ¹⁶ Porto, C. M., Wolman, D. N., Feler, J. R., Chuck, C. C., Karayi, G., Torabi, R., Moldovan, K., Furie, K. L., & Mahta, A. (2025). Predictors of Skilled Nursing Facility Length of Stay and Discharge After Aneurysmal Subarachnoid Hemorrhage. *Neurohospitalist*, 15(3), 257-265. <https://doi.org/10.1177/19418744251323639>
- ¹⁷ Herbold, J., Elmohsen, E., Gutierrez, G., Helgesen, M., & Babyar, S. (2023). Prediction of Discharge Destination After Inpatient Rehabilitation for Stroke Using Mobility and Self-Care Assessment in Section GG of the Inpatient Rehabilitation Facility - Patient Assessment Instrument. *Arch Rehabil Res Clin Transl*, 5(4), 100292. <https://doi.org/10.1016/j.arrct.2023.100292>
- ¹⁸ Li, T. K.-T., Ng, B. H.-P., Chan, D. Y.-L., Chung, R. S.-F., & Yu, K.-K. (2020). Factors predicting clinically significant functional gain and discharge to home in stroke in-patients after rehabilitation – A retrospective cohort study. *Hong Kong Journal of Occupational Therapy*, 33(2), 63-72. <https://doi.org/10.1177/1569186120979428>

significantly affect discharge outcomes.¹⁹ Care gaps remain, with differences in post-acute care access among Medicaid beneficiaries.²⁰ Organization-level factors, including patient safety culture and care coordination, also influence successful community discharge.²¹

Interventions that increase the likelihood of community discharge to home or community include:

- Increase rehabilitation intensity and focus on mobility/transfer training^{8,9}
- Provide caregiver training and support, enabling safe home transitions²²
- Enhance discharge planning and care coordination, including multidisciplinary programs and post-acute management^{1,23}

Discharge to home or community is a meaningful and multifactorial outcome. The evidence shows that improving this outcome requires integrated strategies that combine intensive, function-focused rehabilitation with caregiver support, coordinated transitions, and attention to social and structural barriers. Approaches that address both clinical recovery and non-clinical determinants are most effective in increasing safe and equitable discharge to home or community.

1.2.1 Relevance of Cross-Setting Measure Development Work Under the IMPACT Act

The Improving Medicare Post-Acute Care Transformation Act of 2014 (IMPACT Act), enacted Oct. 6, 2014, directs the Secretary of Health and Human Services to “specify quality measures on which Post-Acute Care (PAC) providers are required under the applicable reporting provisions to submit standardized patient assessment data” in several domains, including medication reconciliation and resource use measures.²⁴ Measures developed to meet the requirements of the IMPACT Act include: Medicare spending per beneficiary, discharge to community and all-condition risk-adjusted potentially preventable readmission rates. The IMPACT Act requires the implementation of measures to address these measure domains in home health agencies (HHAs), skilled nursing facilities (SNFs), long-term care hospitals (LTCHs), and inpatient rehabilitation facilities (IRFs).

¹⁹ Bright, L., Baum, C. M., & Roberts, P. (2025). Impact of race on discharge location for stroke survivors: Associations with home discharge from a retrospective analysis. *Pm r*, 17(6), 638-645. <https://doi.org/10.1002/pmrj.13303>

²⁰ Strelko, O., Spiro, E., Lui, A., Tarapore, P. E., Huang, M. C., Manley, G. T., Yue, J. K., & DiGiorgio, A. M. (2026). Insurance-based disparities in traumatic brain injury length of stay and discharge dispositions: A retrospective cohort analysis of the national trauma data bank. *Injury*, 113358. <https://doi.org/10.1016/j.injury.2026.113358>

²¹ Guo, W., Li, Y., & Temkin-Greener, H. (2021). Community Discharge Among Post-Acute Nursing Home Residents: An Association With Patient Safety Culture? *J Am Med Dir Assoc*, 22(11), 2384-2388.e2381. <https://doi.org/10.1016/j.jamda.2021.04.022>

²² Smith, S., Wilson, C. M., Lipple, C., Avromov, M., Maltese, J., Siwa, E., Jr., Colombo, R., & Seidell, J. W. (2020). Managing Palliative Patients in Inpatient Rehabilitation Through a Short Stay Family Training Program. *Am J Hosp Palliat Care*, 37(3), 172-178. <https://doi.org/10.1177/1049909119867293>

²³ Armstrong, D., Agovi, A. M., Gehr, A. W., Cvitanovich, M., McNamara-Pittler, E., Goodier, N., Hasty, K., Govea, A., Woods, M., & Ojha, R. P. (2026). Effects of a post-acute care management program on subsequent acute care utilization for hospitalized patients discharged to skilled nursing facilities. *BMC Health Serv Res*, 26(1), 177. <https://doi.org/10.1186/s12913-025-13944-7>

²⁴ More information on the IMPACT Act is available at <https://www.govtrack.us/congress/bills/113/hr4994>.

The HH DTC-PAC measure was originally finalized for adoption in the HH Quality Reporting Program (QRP) through the calendar year (CY) 2017 HH PPS Final Rule.²⁵ Documentation for this measure – the Home Health Discharge to Community Post Acute Care (HH DTC-PAC) Measure – is available on the CMS Measures Inventory Tool website.²⁶

²⁵ <https://www.federalregister.gov/documents/2016/11/03/2016-26290/medicare-and-medicaid-programs-cy-2017-home-health-prospective-payment-system-rate-update-home>

²⁶ Discharge to Community - Post Acute Care (PAC) Home Health (HH) Quality Reporting Program (QRP). Additional information available at: <https://cmits.cms.gov/cmits/#/MeasureView?variantId=2107§ionNumber=1>

2. Measure Specifications

This section describes the methodology used to construct the updated HH DTC-PAC measure. Section 2.1 describes the data sources used. Section 2.2 describes HH stay construction and measure inclusion/exclusion criteria. Sections 2.3 and 2.4 describe the denominator and numerator, respectively. Section 2.5 describes the risk adjustment model and variables used for risk adjustment. Section 2.6 presents the steps involved in calculating the final measure result. Section 2.7 describes the measure results.

2.1 Data Sources

The DTC-PAC measure relies on data accessed via the CMS Centralized Data Repository (CDR) and the Integrated Data Repository (IDR) environments from Medicare's Enrollment Database, FFS claims from the home health, inpatient, outpatient, and physician office settings, and Medicare Advantage encounter data from the home health, inpatient, outpatient, and physician office settings.²⁷ The enrollment files provide beneficiary-level information such as date of birth, date of death, sex, reasons for Medicare eligibility, and enrollment histories in Medicare Parts A, B, and C. The FFS claims and Medicare Advantage encounter files provide information about each home health, hospital stay and observation stay, including dates of admission and discharge, diagnoses and procedures, and indicators for care received in the intensive care unit, coronary care unit, emergency department, skilled nursing facility, inpatient rehabilitation facility, and long-term care hospital. Furthermore, claims and encounters from all three settings are used to construct for each patient a complete history of care before the home health stay, which is used for constructing risk adjustment variables. Below are links to documentation for each of the specific files for the HH measure.

Documentation for the Medicare Fee-For-Service claims data, Medicare Advantage encounter data, and Medicare enrollment data is available on the Chronic Conditions Data Warehouse (CCW) website. Data dictionaries for all standard analytical files are available at: <https://www2.ccwdata.org/web/guest/data-dictionaries>.

2.2 Home Health Stay Construction and Measure Inclusion/Exclusion Criteria

2.2.1 Construct Home Health Stays

For the home health setting, CMS has developed three "claims-based measures" using claims and enrollment data from Original Medicare (fee-for-service) beneficiaries built on the basis of home health stays: the Home Health Potentially Preventable 30-Day Post-Discharge Readmission (HH PPR) Measure²⁸, the Home Health Discharge to Community - Post Acute Care (HH DTC-PAC) Measure,²⁹ and the Home Health Within-Stay Potentially Preventable Hospitalization (PPH) measure.³⁰ These measures all use home health stays as a basis of the

²⁷ For the Medicare Advantage encounter data, we identified encounters on the CMS IDR through claim type code mappings as follows: Home Health ('4032','4033','4034'), IP hospital ('4011','4041'); SNF ('4021','4022','4023','4024','4028','4018'); Outpatient ('4013','4071','4076','4077','4085'); and Physician ('4700').

²⁸ Potentially Preventable 30-Day Post-Discharge Readmission Measure (PPR) for HH Quality Reporting Program. Additional information available at: <https://cmis.cms.gov/cmim/#/MeasureView?variantId=2109§ionNumber=1>.

²⁹ Discharge to Community - Post Acute Care (PAC) Home Health (HH) Quality Reporting Program (QRP). Additional information available at: <https://cmis.cms.gov/cmim/#/MeasureView?variantId=2107§ionNumber=1>.

³⁰ Home Health Within Stay Potentially Preventable Hospitalization (PPH) Measure. Additional information available at: <https://cmis.cms.gov/cmim/#/MeasureView?variantId=5119§ionNumber=1>.

measure as a way of defining a period of time when patients were under continuous care of the same home health agency, during which it would be appropriate to attribute quality outcomes to that agency.

For beneficiaries enrolled in Medicare Parts A and B (i.e., Medicare FFS), home health stays have been defined as a sequence of HH payment episodes separated from other HH payment episodes by at least two days, where each payment episode is documented through a home health claim. Specifically, claims for the same home health provider and beneficiaries are defined as being on the same home health stay if the FROM_DT of a subsequent claim is ≤ 2 days from the THRU_DT of the previous claim. Otherwise, claims are considered to represent multiple, distinct home health stays.

In updating the DTC-PAC measure to incorporate Medicare Advantage beneficiaries, a revised definition for home health stays is necessary. Under Original Medicare, home health agencies submit claims for payment under Patient-Driven Groupings Model (PDGM) policy, where home health episodes last up to 30 days.³¹ Patients receiving ongoing care from home health agencies often have multiple sequential payment episodes submitted with a gap of two days or less that are grouped together into stays. In contrast, under Medicare Advantage (MA), encounter submission policies may vary across Medicare Advantage Organizations (MAOs) and home health agencies. Home health agencies may not submit MA encounters using a similar logic of 30-day payment episodes, and patients receiving ongoing care may often have gaps between encounters greater than two days.

Exhibit 1 shows summary statistics for the length of stay covered by home health Medicare FFS claims and MA encounters (calculated by subtracting the “from date” from the “thru date” on each claim or encounter). Length of stay varied more for MA claims than for FFS claims. Under PDGM, Medicare FFS claims have payment period of 30 days. Accordingly, most Medicare FFS claims have a 30 day length of stay, with an average length of stay of 28.4 days. In contrast, Medicare Advantage HH encounters have an average length of stay of 12.6 days, and roughly one third of MA claims are single-day-only, many of which are submitted in the context of ongoing care.

Exhibit 1. Distribution of Length of Stay (Thru Date - From Date) Based on Home Health Medicare FFS Claims and Medicare Advantage encounters

Payer Source	Mean	Standard Deviation	Distribution (Percentiles)				
			10th	25th	50th	75th	90th
Medicare FFS [a]	28.4	10.6	14	27	30	30	30
Medicare Advantage [b]	12.6	14.2	1	2	7	22	30

Source: Home health FFS claims and Medicare Advantage encounters with thru dates in 2023 or 2024.

Notes: [a] FFS claims include final action claims with REV_CNTR_CD of 0023; claims with zero payment (CLM_PMT_AMT=0) were excluded. [b] MA encounters include final action records flagged as latest transaction with a CLM_TYPE_CD of 4032, 4033, or 4034; encounters flagged as “notice of admission” (HIPPS code of 1A11A) are excluded.

Given these differences, in updating the DTC-PAC measure to incorporate Medicare Advantage beneficiaries, home health stays for the DTC-PAC measure will be defined as a sequence of home health Medicare FFS claims or Medicare Advantage encounters

³¹ For more information on the Home Health Patient-Driven Groupings Model, see:

<https://www.cms.gov/medicare/payment/prospective-payment-systems/home-health/home-health-patient-driven-groupings-model>.

separated from other home health claims or encounters by at least 14 days. Accordingly, home health Medicare FFS claims or Medicare Advantage encounters that are separated from other claims or encounters by less than 14 days will be combined into the same “stay.”

This change to using a gap of 14 days allows for home health Medicare Advantage encounters to be grouped into coherent stays without substantially altering the number of home health stays created from the Medicare FFS claims data. Exhibit 2 provides counts of FFS and MA-based stays in CY2024 by the gap allowed between claims/encounters. The number of FFS-based stays decreased only slightly when increasing the allowed gap between claims within a stay from a gap of two days (n=6,296,498) to 14 days (n=6,144,702, a 2.4% reduction). In contrast, MA encounter-based stays decreased substantially, from 13,826,649 for a 2-day gap to 5,970,824 for a 14-day gap, a 56.9% reduction. When using a 14-day gap, MA-based stays comprised 49% of all stays, which is roughly consistent with the proportion of unique beneficiaries with FFS and MA enrollment (analysis not shown). We selected a gap of 14 days rather than a gap of 30 days to strike a balance between grouping claims and encounters that were part of the same stay with potentially grouping together claims and encounters that represented distinct episodes of care. Additionally, the number of home health stays for Medicare Advantage beneficiaries using the 14-day gap approximated the number of quality episodes for Medicare Advantage beneficiaries in 2023-2024 found in the Outcome and Assessment Information Set (OASIS) data (analysis not shown).³²

Exhibit 2. Number of Stays by gap allowed between claims/encounters

Gap allowed between claims or encounters included in same stay	FFS Claims		MA Encounters		Total	
	N Stays	% of Total	N Stays	% of Total	Count	% of Total
2 days*	6,296,498	31.3%	13,826,649	68.7%	20,123,147	100%
7 days	6,237,566	44.8%	7,697,901	55.2%	13,935,467	100%
14 days**	6,144,702	50.7%	5,970,824	49.3%	12,115,526	100%
30 days	5,942,375	53.2%	5,233,224	46.8%	11,175,599	100%

Source: Home health stays ending in 2023 or 2024.

Note: *Policy for the original HH DTC-PAC measure produced only for FFS beneficiaries.

**Policy for the updated DTC-PAC measure including FFS and MA beneficiaries.

Abbreviations: DTC, discharge to community; FFS, fee-for-service; MA, Medicare Advantage; PAC, post-acute care.

2.2.2 Measure Time Window

The measure will be calculated using two years of data. For measure windows ending in the middle of the calendar year, the measure will be calculated using eight consecutive quarters of data. All HH stays ending during the measure window, except those that meet the exclusion criteria, will be included in the measure.

2.2.3 Home Health Stay Exclusion Criteria

The following stays are excluded from the measure:

³² For additional information about how quality episodes are constructed using the Outcome and Assessment Information Set (OASIS) data, see the Home Health Quality Reporting Program Quality Measures (QM) Manual available at the CMS Home Health Quality Measures website: <https://www.cms.gov/medicare/quality/home-health/home-health-quality-measures>.

- 1) Stays where the patients are less than 18 years old.

Rationale: There is limited literature on discharge destination outcomes for patients under 18 years old; patients in this age group represent a different cohort, likely living with their parents, and may be expected to have higher discharge to community rates compared with the rest of the Medicare population; and patients/residents in this age group represent a small proportion of the post-acute Medicare population.

- 2) Discharges against medical advice

Rationale: Patients who discharge themselves against medical advice are excluded, because their care plan may not have been fully implemented, and the discharge destination may not reflect the agency's discharge recommendation. Additionally, patients discharged against medical advice may potentially be at higher risk of post-discharge admissions or death, depending on their medical condition, or due to potential non-adherence or non-compliance with care recommendations.

- 3) Discharges to a psychiatric hospital

Rationale: Patients discharged to a psychiatric hospital are excluded from the measure, because community living at the time of discharge may be potentially inappropriate or unsafe for them due to their mental health or psychiatric condition.

- 4) Discharges to disaster alternative care sites or federal hospitals

Rationale: Patients discharged to disaster alternative care sites are excluded, because these discharges are likely influenced by external emergency conditions, and may not represent discretionary discharges by the PAC provider. Discharges to federal hospitals are also excluded.

- 5) Discharges to court/law enforcement

Rationale: Patients who are discharged to court or law enforcement are likely ineligible for discharge to the community due to legal restrictions.

- 6) Patients discharged to hospice or enrolled in hospice during the post-discharge observation window

Rationale: Patients discharged to hospice care and those with a hospice benefit in the post-discharge observation window are terminally ill and have very different goals of care compared with non-hospice patients. For non-hospice patients, the primary goal of the PAC provider is to return to baseline, independent living in the community; death is an undesirable outcome in the non-hospice population. For patients discharged to hospice, the goal is to provide them the opportunity to die comfortably, at home or in a hospice facility. A large proportion of patients discharged to hospice care die in the 31-day window following discharge from the post-acute setting. The hospice agency, not the PAC provider, makes the final decision of discharge to hospice-home or hospice-facility.

- 7) Patients not continuously enrolled in Parts A and B Medicare FFS, in Part C Medicare Advantage, or in a combination of Parts A and B and Part C for the 90 days prior to the post-acute admission date and at least 31 days after post-acute discharge date.

Rationale: Patients not continuously enrolled in Parts A and B Medicare FFS or Part C Medicare Advantage for the 90 days prior to the PAC admission date are excluded because risk adjustment for certain comorbidities requires information on acute inpatient, outpatient, and physician office bills for one year prior to post-acute admission. Patients not continuously enrolled in Medicare for at least 31 days after post-acute discharge are excluded, because admissions must be observable in the 31-day post-discharge period. Patients without continuous Medicare coverage during the pre- and post-PAC periods will not have complete claims in the system.

- 8) Patients who have a short-term acute care stay or psychiatric stay for non-surgical treatment of cancer in the 30 days prior to PAC admission.

Rationale: Patients with a prior short-term acute care stay for non-surgical treatment of cancer are excluded because they have a different trajectory for recovery after discharge, with a high mortality rate.

- 9) Home health stays that end with a transfer to another home health agency

Rationale: Home health stays that end in transfer to another home health agency are excluded from the measure because their post-acute episode has not ended. For a home health stay that involves transfer to the same level of care, only the final home health agency is included in the measure.

- 10) Post-acute stays with claims data that are problematic (e.g., anomalous records for stays that overlap wholly or in part, or are otherwise erroneous or contradictory)

Rationale: This measure requires accurate information from the post-acute stay and prior short-term acute care stay in the elements used for risk adjustment.

- 11) The beneficiary received home health care outside the 50 states, District of Columbia, Puerto Rico, and U.S. Territories (determined via the CCN of the provider rendering care, using the SOM CCN-to-U.S. state mappings).

Rationale: Patients/residents who received care from foreign facilities may not have complete claims in the system, and these facilities may not be subject to policy decisions related to this quality measure.

- 12) The beneficiary had a long-term nursing home stay (identified via NH MDS Omnibus Budget Reconciliation Act [OBRA] assessments) in the 180 days preceding a prior proximal hospitalization³³ and was not discharged to community from that stay prior to the hospitalization.

Rationale: For baseline nursing facility residents, the goal of care is successful discharge back to their residence at the nursing facility, which is considered an unsuccessful outcome in this measure, rather than a discharge to the community (defined as

³³ Prior proximal hospitalizations for this measure are defined as inpatient stays within 30 days prior to home health admission.

home/self-care without HH services).³⁴ For this reason, patients with long-term nursing home stays are excluded from the HH DTC-PAC measure.

- 13) Stays where the patient receives service from multiple agencies during the home health stay.

Rationale: These home health stays are excluded because it is unclear that the initial HHA had an opportunity to impact the patient's health outcomes.

2.3 Denominator

The measure denominator is the risk-adjusted “expected” number of HH stays with a discharge to community. This estimate includes risk adjustment for stay-level characteristics, with the HHA-level random effect removed. The “expected” number of HH stays with a discharge to community is projected as if the same patients had been treated at the average HHA.

The regression model used to calculate the denominator is developed using all non-excluded HH stays in the national data. The denominator is computed in the same way as the numerator, but the HHA effect is set at the average. The descriptions of the discharge to community outcome, patient stays included in the measure, and numerator calculation are provided below.

2.4 Numerator

The measure numerator is the risk-adjusted “predicted” number of HH stays ending with a discharge to the community. This estimate includes risk adjustment for stay-level characteristics and for the HHA-level random effect.

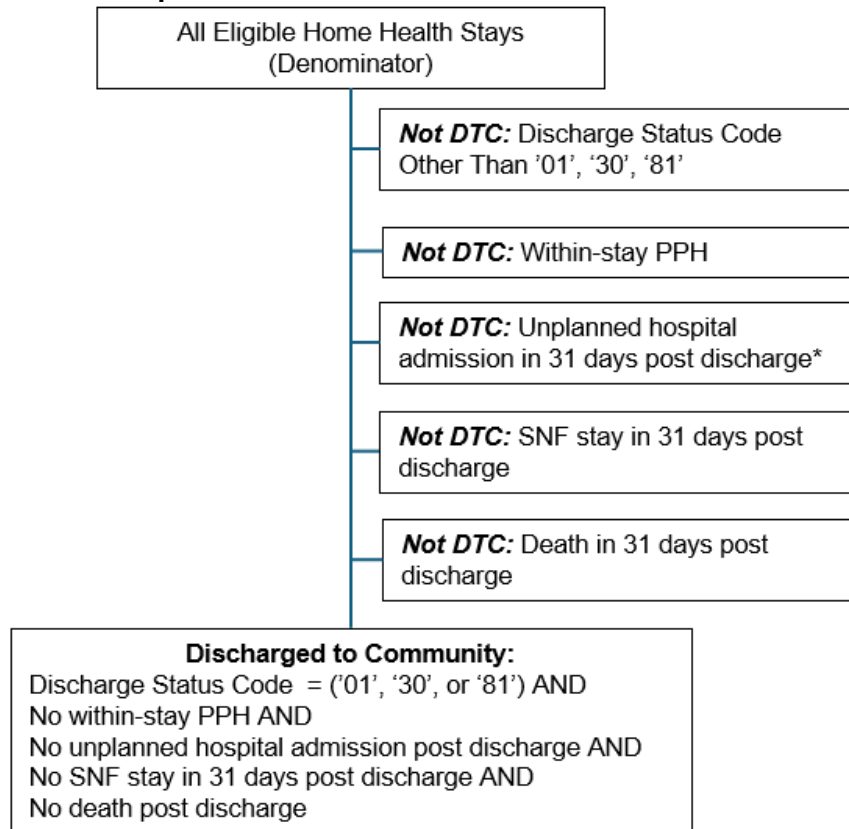
The numerator uses a model estimated on full national data specific to the post-acute setting; it is applied to the HHA's patient stays included in the measure and includes the estimated effect of that HHA. The prediction equation is based on a logistic statistical model with a two-level hierarchical structure. The home health stays in the model have an indicator of the HHA they are discharged from; the effect of the HHA is measured as a positive or negative shift in the intercept term of the equation. The HHA effects are modeled as belonging to a normal (Gaussian) distribution centered at 0 and are estimated along with the effects of patient characteristics in the model.

2.4.1 Identifying Numerator Events

The discharge to community measure is determined through multiple factors indicating that patients were or were not successfully discharged to community following the end of their home health stay (Exhibit 3).

³⁴ [Federal Register: Medicare and Medicaid Programs; CY 2020 Home Health Prospective Payment System Rate Update; Home Health Value-Based Purchasing Model; Home Health Quality Reporting Requirements; and Home Infusion Therapy Requirements.](#)

Exhibit 3. Updated HH DTC-PAC measure numerator definition



Note: *Unplanned hospital admissions include admissions to STHs or LTCHs.

Abbreviations: DTC, discharge to community; LTCH, long-term care hospital; PAC, post-acute care; PPH, potentially preventable hospitalization or observation stay; SNF, skilled nursing facility; STH, short-term hospital.

First, the discharge status code on the final claim or encounter in each home health stay describes the discharge status for each stay, indicating whether patients were successfully discharged to home or self-care, were considered to be “still a patient,” were discharged to an institutional facility such as a hospital or skilled nursing facility (a “failure” for the measure), to hospice (a measure exclusion), or died during the home health stay (another measure failure criterion).³⁵

Exhibit 4 shows the discharge status codes found on HH stays eligible for the updated DTC-PAC measure ending in 2023-2024. Although discharge status codes of ‘30’ (indicating “still a patient”) were not considered to represent successful discharges to community in the original version of the measure developed for only Medicare FFS beneficiaries, discharge status codes of ‘30’ are considered to represent successful discharges to community in the updated version. As also demonstrated above in Exhibits 1 and 2, documentation patterns differ for FFS and MA home health stays, where MA-enrolled beneficiaries were much more likely to have a final discharge status code of ‘30’ (29%) than FFS-enrolled beneficiaries (8%). This difference in documentation patterns, along with consideration that having a discharge status code of ‘30’ does not explicitly indicate that patients are no longer in the community, led CMS to determine

³⁵ Further description of patient discharge status codes can be found, for example, at the following website: <https://med.noridianmedicare.com/web/jfa/topics/claim-submission/patient-discharge-status-codes>.

that discharge status codes of '30' should be considered successful DTC events for the updated home health DTC-PAC measure.

Exhibit 4. Last Discharge Status Code on Home Health Stays

Last Discharge Status Code		Indication	FFS, n (%) N=5,476,513	MA, n (%) N=5,405,984
01	Home or self-care	DTC	4,606,134(84.3%)	3,679,251 (68.1%)
30	Still a patient	DTC	454,272 (8.3%)	1,548,817 (28.7%)
81	Home or self-care with planned acute care hospital readmission	DTC	0 (0.0)	37 (0.0%)
02	Acute Care Hospital	Not DTC	279,353 (5.1%)	114,865 (2.1%)
03	Skilled Nursing Facility (SNF)	Not DTC	54,579 (1.0%)	21,038 (0.4%)
20	Died	Not DTC	46,166 (0.8%)	19,981 (0.4%)
70	Other health care institution	Not DTC	13,580(0.2%)	7,896(0.1%)
04	Intermediate Care Facility (ICF)	Not DTC	7,956 (0.1%)	4,670 (0.1%)
62	Inpatient Rehabilitation Facility (IRF)	Not DTC	7,697 (0.1%)	2,074 (0.0%)
05	Designated cancer center or children's hospital	Not DTC	3,614 (0.1%)	3,621 (0.1%)
61	Hospital-based Medicare approved swing bed	Not DTC	0 (0.0%)	114 (0.0%)
63	Long term care hospital (LTCH)	Not DTC	2,161 (0.0%)	628 (0.0%)
66	Critical access hospital (CAH)	Not DTC	985 (0.0%)	458 (0.0%)
09	Admitted as an inpatient to this hospital	Not DTC	< 11(0.0)	1,218 (0.0%)
40	Died at home	Not DTC	< 11 (0.0)	570 (0.0%)
41	Died in a medical facility	Not DTC	<11 (0.0)	293 (0.0%)
82	Acute Care Hospital with planned acute care hospital readmission	Not DTC	< 11 (0.0)	184 (0.0%)
64	Nursing Facility	Not DTC	0 (0.0)	151(0.0%)
61	Hospital-based swing bed	Not DTC	0 (0.0)	114 (0.0%)
83	Skilled nursing facility (SNF) with planned acute care hospital readmission	Not DTC	0 (0.0)	44 (0.0%)
90	Inpatient rehabilitation facility (IRF) with planned acute care hospital readmission	Not DTC	0 (0.0)	< 11 (0.0%)
91	Medicare certified long term care hospital (LTCH) with planned acute care hospital readmission	Not DTC	0 (0.0%)	< 11 (0.0%)
92	Medicaid-certified nursing facility with planned acute care hospital readmission	Not DTC	0 (0.0%)	< 11 (0.0%)
42	Died, place unknown	Not DTC	0 (0.0)	28 (0.0%)
95	Other health care institution with planned acute care hospital readmission	Not DTC	< 11 (0.0)	19 (0.0%)

Source: Home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024.

Note: The FFS column represents statistics for stays that started with a Medicare FFS claim. The MA column represents statistics for stays that started with a Medicare Advantage encounter. Abbreviations: DTC, discharge to community; FFS, fee-for-service; MA, Medicare Advantage.

Other factors used to identify DTC measure failures include having a within-stay potentially preventable hospitalization, having an unplanned hospital admission in the 31 days post

discharge, having a SNF stay in the 31 days post discharge, and death in the 31 days post discharge. These factors are described in additional detail below:

- Patients who are discharged to the community are considered to have an unfavorable outcome if they have a subsequent unplanned admission to an acute care hospital or LTCH in the post-discharge observation window, which includes the day of discharge and the 31 days following day of discharge. We identify unplanned admissions based on the planned readmissions algorithm used in the Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) and the Home Health Potentially Preventable 30-Day Post-Discharge Readmission (HH PPR) Measure.^{36,37} These readmission measures are based on the Hospital-Wide All-Cause Readmission Measure (HWR),³⁸ with some additions made for PAC settings. The planned admission definition is based on the claim from the admission having a code for a procedure that is frequently planned; however, if a principal diagnosis in a specified list of acute diagnoses is present, the admission is reclassified as unplanned. Admissions to psychiatric hospitals or units are classified as planned admissions. Detailed information for identifying unplanned admissions can be found in the “HH-PPR-DTC-PPH Code Lists” files accessed through the CMS Home Health Quality Measures site.³⁹
- Patients who are discharged to the community are considered to have unfavorable outcomes if they have a subsequent admission to a skilled nursing facility during the post-discharge observation window, which includes the day of discharge and the 31 days following day of discharge.
- Patients who are discharged to the community are considered to have an unfavorable outcome if they have a potentially-preventable hospitalization or observation stay during the home health stay or in the day following. We identify potentially-preventable hospitalizations and observation stays based on the logic used for the Home Health Within-Stay Potentially Preventable Hospitalization (PPH) Measure.⁴⁰ Detailed information for identifying potentially-preventable hospitalizations and observation stays can be found in the “HH-PPR-DTC-PPH Code Lists” files accessed through the CMS Home Health Quality Measures site.⁴¹
- Patients who are discharged to the community are also considered to have an unfavorable outcome if they die in the post-discharge window, which includes the day of

³⁶ Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM). Additional information available at: <https://cmit.cms.gov/cmit/#/FamilyView?familyId=679>.

³⁷ Potentially Preventable 30-Day Post-Discharge Readmission Measure (PPR) for HH Quality Reporting Program. Additional information available at: <https://cmit.cms.gov/cmit/#/MeasureView?variantId=2109§ionNumber=1>.

³⁸ Hospital-Wide All-Cause Unplanned Readmission Measure (HWR). Additional information available at: <https://cmit.cms.gov/cmit/#/FamilyView?familyId=356>.

³⁹ Centers for Medicare and Medicaid Services (CMS). Home Health Quality Reporting Program. Available at: <https://www.cms.gov/medicare/quality/home-health>.

⁴⁰ Home Health Within Stay Potentially Preventable Hospitalization (PPH) Measure. Additional information available at: <https://cmit.cms.gov/cmit/#/MeasureView?variantId=5119§ionNumber=1>.

⁴¹ Centers for Medicare and Medicaid Services (CMS). Home Health Quality Reporting Program. Available at: <https://www.cms.gov/medicare/quality/home-health>.

discharge and the 31 days following day of discharge. Death in the post-discharge window is identified based on date of death from Medicare eligibility files.

Exhibit 5 presents the prevalence of each of the events included in the updated DTC-PAC measure numerator definition.

Exhibit 5. Prevalence of Events Included in the DTC-PAC Measure Numerator Definition

Measure	FFS, n (%) N=5,476,513	MA, n (%) N=5,405,984	Total, n (%) N=10,882,497
Indicators that patients <u>were</u> discharged to community			
Last Discharge Status Code of '01', '30', or '81'	5,060,406 (92%)	5,228,105 (97%)	10,288,511 (95%)
Indicators that patients <u>were not</u> discharged to community			
Unplanned STH or LTCH admission in 31 days post discharge	538,312 (10%)	646,006 (12%)	1,184,318 (11%)
Within-stay PPH	519,431 (9%)	282,486 (5%)	801,917 (7%)
SNF stay in 31 days post discharge	270,199 (5%)	246,584 (5%)	516,783 (5%)
Death within-stay	46,172 (1%)	20,872 (0%)	67,044 (1%)
Death in 31 days post discharge	155,510 (3%)	114,694 (2%)	270,204 (2%)

Source: Events associated with home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024.

Note: The FFS column represents statistics for stays that started with a Medicare FFS claim. The MA column represents statistics for stays that started with a Medicare Advantage encounter. Abbreviations: DTC, discharge to community; FFS, fee-for-service; LTCH, long-term care hospital; MA, Medicare Advantage; PAC, post-acute care; PPH, potentially preventable hospitalization or observation stay; SNF, skilled nursing facility; STH, short-term hospital.

2.5 Statistical Risk Model and Risk Adjustment Covariates

2.5.1 Risk Adjustment Covariates

To account for beneficiary characteristics that may affect the risk of potentially preventable hospitalizations and observation stays, the risk adjustment model uses potential risk factors that fall into three categories: demographics, care received during a prior proximal hospitalization (if one occurred), and other care received within one year of the HH stay. The following sub-sections detail risk factors in each of these categories in turn.

Factor 1: Demographics

Demographic risk factors included in the risk adjustment model are age and sex, enrollment status, and functional impairment scores.

Age and Sex: The risk adjustment model includes age and sex as covariates. Age-sex interactions allow the model to account for the differing effects of age on the outcomes for each sex. Age is subdivided into 12 bins for each sex: ages 18-34, 35-44, 45-54, five-year age bins from 55 to 94, and one bin for ages over 95. The reference group is Male, age 65-69.

Enrollment Status: The model employs aged (reference), end stage renal disease (ESRD), and disability as covariates for the original reason for Medicare entitlement. The model also controls for whether beneficiaries were enrolled in Medicare FFS (Parts A and B) or Medicare Advantage (Part C) at the start of the HH stay.

Functional Impairment Levels: The Home Health Patient-Driven Groupings Model (PDGM)⁴² calculates a functional impairment score and level by summing the points assigned to responses from eight Outcome and Assessment Information Set (OASIS) fields. Within each of the 12 PDGM clinical groups, functional impairment scores are categorized into one of three functional impairment levels (low/medium/high) based on group-specific point thresholds. This impairment level, as represented within the coding of the five-character HIPPS code, is included in the risk adjustment model.

Factor 2: Care Received during the Prior Proximal Hospitalization

Beneficiaries who enter home health care from prior proximal hospitalizations⁴³ may have different health statuses, so this model considers beneficiaries' immediate prior care setting, principal diagnoses, and procedures.

Length of Prior Proximal Hospitalization: The length of the prior proximal hospitalization is included in the model as a binary variable: 0-30 days (reference) and greater than or equal to 31 days.

Clinical Classification Software (CCS) during Prior Proximal Hospitalization: The risk model relies on CCS diagnosis and procedure groups to adjust for beneficiary health status during a prior proximal hospitalization, if a prior proximal hospitalization occurred. CCS diagnosis groups are defined using principal diagnosis codes from the prior proximal hospitalization. CCS procedure groups are defined using procedure codes recorded during the prior proximal hospitalization.

Factor 3: Other Care Received Prior to Stay

To further account for beneficiaries who may have different health statuses entering into home health, this model adjusts for the beneficiaries' number of prior acute discharges, number of outpatient emergency department visits, number of skilled nursing facility visits, number of inpatient rehabilitation facility visits, number of long-term care hospital visits, and Hierarchical Condition Categories (HCC) comorbidities. For the DTC-PAC measure, a lookback window of 90 days is used to determine other care received prior to the home health stay.

Number of Prior Acute Discharges: The model adjusts for the number of prior acute hospital discharges in the past year, excluding those that took place within 30 days prior to the start of home health or resumption of care. The number of prior acute discharges is classified in the model as 0 (i.e., no prior acute discharge; reference group), 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 or more discharges.

Number of Outpatient Emergency Department Visits: The model also considers whether or not an outpatient emergency department (ED) visit took place within one year of the HH stay (i.e., 0 ED visits [reference] or 1 or more ED visits).

⁴² More information on the HH PDGM software used in measure development, along with the current and prior versions of the software, are available at: <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HomeHealthPPS/HH-PDGM>.

⁴³ Prior proximal hospitalizations for this measure are defined as inpatient stays within 30 days prior to home health admission.

Number of Skilled Nursing Facility Visits: The model adjusts for whether a skilled nursing facility (SNF) visit took place within one year of the HH stay (i.e., 0 SNF visits [reference] or 1 or more SNF visits).

Number of Long-Term Care Hospital Visits: The model adjusts for whether a long-term care hospital (LTCH) visit took place within one year of the HH stay (i.e., 0 LTCH visits [reference] or 1 or more LTCH visits).

Hierarchical Condition Categories (HCC) Comorbidities: To account for beneficiary health status within one year of the HH stay, the risk adjustment model also relies on the HCC framework.⁴⁴ The risk adjustment model includes hierarchically ranked HCCs based on the V22 CMS-HCC risk adjustment model. HCC comorbidities are defined using secondary diagnoses from the prior proximal hospitalization (if a prior proximal hospitalization occurred) and all other diagnoses recorded in the inpatient, outpatient, and carrier settings during the year prior to the home health stay.

2.5.2 Statistical Risk Model

The following section summarizes the risk adjustment approach for the measure.

A hierarchical logistic regression to predict the probability of a countable discharge to community is used. The risk adjusters are predictor variables. The patient characteristics related to each discharge and a marker for the specific discharging HHA are included in the equation. The equation is hierarchical in that both individual stay-level characteristics are accounted for as well as the clustering of stays into HHAs. The statistical model estimates both the average predictive effect of the stay-level characteristics across all HHAs and the degree to which each provider has an effect on the rate of numerator events that differs from that of the average HHA. The HHA effects are assumed to be randomly distributed around the average (according to a normal distribution). When computing the HHA effect, hierarchical modeling accounts for predictors of numerator events, on average, such as demographic characteristics and other risk factors, the HHA-specific observed rate, and the HHA-specific number of stays eligible for the measure. The estimated HHA random effect is determined mostly by each HHA's own data if the number of stays is relatively large (as the estimate would be relatively precise) but is adjusted towards the national average if the number of HHA stays is small (as that would yield an estimate of lower precision).

We used the following model:

Let Y_{ij} denote the outcome (equal to 1 if the patient is discharged to the community following the HH stay i , and equal to zero otherwise) for HH stays at HH provider j ; Z_{ij} denotes a set of risk factors. We assume the outcome is related linearly to the covariates via a logit function with dispersion:

$$\text{logit}(P(Y_{ij} = 1 | Z_{ij}, \alpha_j)) = \log \left(\frac{P(Y_{ij} = 1 | Z_{ij}, \alpha_j)}{1 - P(Y_{ij} = 1 | Z_{ij}, \alpha_j)} \right) = \alpha_j + \beta * Z_{ij}$$

$$\alpha_j = \mu + \omega_j ; \omega_j \sim N(0, \tau^2)$$

⁴⁴ CMS-HCC Mappings of ICD-10 Codes: Mappings are included in the software at the following website: <http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html>.

where $Z_{ij} = (Z_1, Z_2, \dots, Z_k)$ is a set of k stay-level covariates; α_j represents the HH-specific intercept of the j -th HHA which is assumed to follow a normal distribution with mean μ and variance τ^2 , independent of Z_{ij} ; μ is the adjusted average outcome over all HHAs; and τ^2 is the between-HHA variance component.

The estimated equation is used twice in the measure. The sum of the probabilities of discharge to community across all HH stays in the measure, including both the effects of stay-level characteristics and the provider, is the “predicted number” of HH stays with a discharge to community after adjusting for the HHA’s case mix. The same equation is used without the HHA random effect to compute the “expected number” of HH stays with a discharge to community for the same HH stays at the average provider. Accordingly, the ratio of the predicted-to-expected number of HH stays with a discharge to community is a measure of the degree to which the rate of discharges to community are higher or lower than what would otherwise be expected. This standardized risk ratio is then multiplied by the unadjusted national average rate of numerator events across all HH stays included in the measure, yielding the risk-standardized rate for each HHA. This estimation procedure is recalculated for each measurement period. Estimating the equations for each measurement period allows the estimated effects of the HH stay-level characteristics to vary over time as medical treatment patterns change.

2.6 Measure Calculation Algorithm

The Medicare HH FFS claims and MA encounter data are matched to prior acute hospital stays, within-stay potentially preventable hospitalizations/observation stays, post-discharge inpatient admissions, and patient eligibility data to determine which stays remain in the measure (i.e., not excluded per the exclusions described above) and which have successful discharges to the community.

The measures are calculated according to the following steps:

Step 1: Identify HH stays meeting the denominator (measure inclusion) criteria.

Step 2: Identify patients HH stays meeting the numerator (DTC-PAC) criteria.

Step 3: Identify presence or absence of risk adjustment variables for each HH stays.

Step 4: Calculate the predicted and expected number of HH stays with a discharge to community for each HHA using hierarchical logistic regression model.

The predicted number of HH stays with a discharge to community for each HHA is calculated as the sum of the predicted probability discharge to community for each HH stay included in the measure, including the provider-specific effect. The expected number of HH stays with a discharge to community for each HHA is calculated as the sum of the predicted probability of discharge to community for each HH stay included in the measure, without the HHA-specific effect. The model specific risk standardized discharge to community ratio for each HHA is calculated as follows.

To calculate the predicted number of numerator events for each HHA (referred to below as pred_j) for HH stays at HHA_j , we used

$$\text{Predicted Value}_j = \sum \text{logit}(\mu + \omega_i + \beta * Z_{ij})$$

where the sum is over all stays in HHA_j , and ω_i is the random intercept. To calculate the expected number of numerator events for each HHA (referred to as exp_j) use

$$\text{Expected Value}_j = \sum \text{logit}(\mu + \beta \cdot Z_{ij})$$

Then, as a measure of excess or reduced numerator events among index stays at HHA_j, calculate the HH-wide standardized risk ratio, SRR_j, as

$$\text{SRR}_j = \frac{\text{Predicted Value}_j}{\text{Expected Value}_j}$$

Step 5: Calculate the risk-standardized HH discharge to community rate.

The value obtained from equation (5) above, the SRR_j, is the HH-wide standardized risk ratio for HHA_j. To aid interpretation, the HHA-specific standardized risk ratio, SRR_j, is then multiplied by the overall national raw (unadjusted) numerator rate for all HHA stays, $\bar{Y}$, to produce the provider-level risk-standardized discharge to community rate (RSDTCR_j).

$$\text{RSDTCR}_j = \text{SRR}_j * \bar{Y}$$

Step 6: For the purposes of public reporting, a minimum of 20 eligible stays is required.

2.7 Measure Results

At the stay level (before risk-adjustment), stays starting with a HH FFS claim had an observed DTC-PAC rate of 79.8% and stays starting with an MA encounter record had an observed DTC-PAC rate of 81.6% (Exhibit 6). These results demonstrate similar observed DTC rates, before risk adjustment, across beneficiaries with Medicare FFS and MA enrollment. Cumulatively, 80.7% of HH stays across both enrollment types had a successful discharge to community.

Exhibit 6. Stay-level observed DTC-PAC Rate

Measure	FFS, n (%) (N=5,476,513)	MA, n (%) (N=5,405,984)	Total, n (%) (N=10,882,497)
Stay-level Observed DTC-PAC rate	4,368,955 (79.8%)	4,410,192 (81.6%)	8,779,147 (80.7%)

Source: Home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024.

Note: The FFS column represents statistics for stays that started with a Medicare FFS claim. The MA column represents statistics for stays that started with a Medicare Advantage encounter. Abbreviations: DTC, discharge to community; FFS, fee-for-service; MA, Medicare Advantage; PAC, post-acute care.

At the HHA level, HHAs had an observed DTC-PAC rate of 80.75% and a risk-standardized DTC-PAC rate of 80.32% (Exhibit 7). Among HHAs with 20 or more HH stays, HHAs had an observed DTC-PAC rate of 80.66% and a risk-standardized DTC-PAC rate of 80.30%.

**Exhibit 7. HHA-level observed and risk standardized DTC-PAC Rate**

Measure	All HHAs N=10,859	HHAs with 20+ Stays N=9,222
Observed DTC-PAC rate	80.75	80.66
Risk standardized DTC-PAC rate	80.32	80.30

Source: Home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024.

Note: Limited to HHAs with 20+ stays.

Abbreviations: DTC, discharge to community; HHA, home health agency; PAC, post-acute care.

3. Measure Testing

We conducted measure testing, as described below, using home health stays that ended in calendar year from January 1, 2023 through December 31, 2024.

3.1 Reportability

Reportability testing examines the total number and proportion of HHAs and stays that were reportable stays for the DTC-PAC measure in the reporting period. For the HH DTC-PAC measure, HHAs with 20 or more stays were considered to have reportable measure values. Among all HHAs with at least one stay where DTC-PAC could be measured (n=10,859), 84.9% (n=9,222) met this threshold. This indicates high reportability and usability of the data.

Exhibit 8: Publicly Reportable HHAs

Number of Stays and HHAs	Number of Stays and HHAs with ≥ 20 stays	Percentage of Stays and HHAs with ≥ 20 stays
10,882,497 stays (10,859 HHAs)	10,698,606 stays (9,222 HHAs)	98.3% stays (84.9% HHAs)

Source: Home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024.

Abbreviations: DTC, discharge to community; HHA, home health agency; PAC, post-acute care.

3.2 Variability

Variability testing summarizes the distribution of the agency-level final DTC-PAC measure values. The mean DTC-PAC rate among HHAs with at least 20 stays was 80.30 (median: 81.07, IQR: 78.43 – 83.03). HH DTC-PAC rate ranged from a minimum rate of 75.03 to a maximum rate of 93.19. This wide variation indicates there may be a performance gap in DTC-PAC across HHAs.

Exhibit 9: HHA-Level Distribution of the Risk Standardized DTC-PAC Measure

N	Mean Score	STD Dev.	Minimum	25 th Percentile	50 th Percentile	75 th Percentile	Maximum
9,222	80.30	4.22	75.03	78.43	81.07	83.03	93.19

Source: Home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024.

Notes: Limited to HHAs with 20+ stays.

Abbreviations: DTC, discharge to community; HHA, home health agency; PAC, post-acute care.

3.3 Reliability

The split-half reliability test examined agreement between two DTC-PAC measure scores for a HHA based on randomly-split, independent subsets of stays in the same measurement period. Good agreement between the two performance measure scores calculated in this manner provides evidence that the measure is capturing an attribute of the HHA (quality of care) rather than the patient stay (case-mix). For HHAs with at least 20 eligible stays in the CY 2023-2024 measure window, each HHA's stays were randomly divided into halves, thus ensuring that patient stays were evenly distributed across the split-halves.

Provider measure scores for each split-half sample were calculated. The Shrout-Fleiss intraclass correlation coefficient (ICC (2, 1)) was calculated between the split-half scores to measure reliability, applying the Spearman-Brown correction.⁴⁵ The intraclass correlation coefficient for HHAs with more than 20 eligible stays was 0.716 which indicates moderate reliability for this test.

The signal-to-noise ratio (SNR) assesses how well the updated DTC-PAC measure distinguishes true differences in performance across HHAs. The "signal" represents real variation in HHA performance, while the "noise" reflects random variation or measurement error. A higher SNR indicates that most of the observed variation is meaningful rather than due to chance. To ensure a stable estimate, the SNR calculation was limited to HHAs with at least 20 stays in the CY 2023-2024 measure window. The resulting SNR was 0.860, which corresponds to strong reliability.

3.4 Validity

To evaluate the validity of measure scores, we assessed convergent validity with other HH QRP measures. Using Spearman's rank correlation, the DTC-PAC measure was compared to the following measures: PPH, the OASIS-based Discharge Function measure reflecting functional status at discharge for several functional status items, five individual OASIS-based quality measures tracking functional improvement (Improvement in Ambulation, Improvement in Bathing, Improvement in Bed Transferring, Improvement in Dyspnea, and Improvement in Management of Oral Medications), and Medicare Spending Per Beneficiary (MSPB). The analysis used CY 2024 data (or, for MSPB, data from 2023-2024) from providers with at least 20 quality episodes (for OASIS-based measures) or claims-based stays (for claims-based measures).

The Updated DTC-PAC measure correlates as anticipated with other measures publicly reported under HHQRP (Exhibit 10). Although PPH only included Medicare FFS beneficiaries, the updated DTC-PAC had a -0.63 Spearman's correlation coefficient with PPH ($p < 0.001$), a moderately strong negative correlation. This negative correlation was expected, because higher PPH measure values indicate higher hospitalization rates, whereas higher DTC-PAC measure values indicate higher rates of discharge to community, and hospitalizations are an indication that the patient was not discharged to community. The updated DTC-PAC measure also had weak but statistically significant positive correlations with the OASIS-based Discharge Function measure and the five OASIS-based functional improvement measures; these correlations indicate that patients who had improved functional status during their home health episode were more likely to be discharged to the community, as expected. Finally, the updated DTC-PAC measure had a weakly but statistically significant negative correlation with the MSPB Score. This was consistent with expectations, because greater inpatient utilization (including SNF stays and hospitalizations) would indicate higher Medicare spending but would preclude being discharged to the community. We were not surprised by the relatively weak magnitude of the correlation between the updated DTC-PAC measure and the MSPB Score, because the MSPB measure included only FFS beneficiaries (while updated DTC-PAC also includes Medicare Advantage beneficiaries), and because outpatient utilization and associated spending may add noise to the relationship between the DTC-PAC and MSPB measures.

⁴⁵ McGraw, K. O., & Wong, S. P. Forming inferences about some intraclass correlation coefficients. *Psychological methods*, 1996, 1(1), 30.

Exhibit 10: Correlations between DTC-PAC and Other Publicly Reported Measures

Measure	N HHAs	Spearman's Correlation Coefficient	p-value
Discharge to Community - original specification	8,051	0.690	< 0.001
Home Health Within-Stay Potentially Preventable Hospitalization (PPH)	7,329	-0.632	< 0.001
Discharge Function Score	7,857	0.243	< 0.001
Improvement in Ambulation	7,880	0.210	< 0.001
Improvement in Bathing	7,881	0.213	< 0.001
Improvement in Bed Transferring	7,860	0.189	< 0.001
Improvement in Dyspnea	7,676	0.164	< 0.001
Improvement in Management of Oral Medications	7,772	0.117	< 0.001
Medicare Spending Per Beneficiary (MSPB) Score	8,465	-0.174	< 0.001

Source: Home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024; publicly reported quality measure data for other Home Health Quality Reporting Program quality measures.

Note: Limited to HHAs with 20 or more quality episodes (for OASIS-based measures) or claims-based stays (for claims-based measures). Abbreviations: DTC, discharge to community; HHA, home health agency; PAC, post-acute care.

Appendix A. Risk Adjustment Model Coefficients

Exhibit 11 shows the prevalence of each risk factor for HH stays starting with a FFS claim, with an MA encounter, and combined, and also shows risk adjustment coefficients and standard errors for the pooled (FFS and MA) population.

Exhibit 11. Stay-level observed DTC-PAC Rate

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Male, age 18-34 Years	7,969	5,849	13,818	-0.028	0.024
Female, age 18-34 Years	6,722	5,640	12,362	-0.229	0.024
Male, age 35-44 Years	19,012	17,849	36,861	-0.112	0.014
Female, age 35-44 Years	18,139	21,124	39,263	-0.204	0.013
Male, age 45-54 Years	40,668	51,811	92,479	-0.111	0.009
Female, age 45-54 Years	41,613	71,766	113,379	-0.116	0.008
Male, age 55-59 Years	42,331	63,721	106,052	-0.080	0.009
Female, age 55-59 Years	44,329	85,519	129,848	-0.054	0.008
Male, age 60-64 Years	72,076	115,816	187,892	-0.066	0.007
Female, age 60-64 Years	78,359	158,531	236,890	-0.015	0.006
Female, age 65-69 Years	328,919	417,417	746,336	0.038	0.004
Male, age 70-74 Years	374,570	366,524	741,094	-0.023	0.004
Female, age 70-74 Years	498,516	542,056	1,040,572	0.057	0.003
Male, age 75-79 Years	418,541	373,042	791,583	-0.064	0.004
Female, age 75-79 Years	607,655	616,145	1,223,800	0.033	0.003
Male, age 80-84 Years	383,433	347,413	730,846	-0.111	0.004
Female, age 80-84 Years	614,533	579,388	1,193,921	0.002	0.003
Male, age 85-89 Years	304,037	254,654	558,691	-0.156	0.004
Female, age 85-89 Years	548,094	456,784	1,004,878	-0.035	0.003
Male, age 90-94 Years	172,017	134,611	306,628	-0.224	0.005
Female, age 90-94 Years	359,665	268,623	628,288	-0.091	0.004
Male, age 95+ Years	59,284	42,611	101,895	-0.340	0.009
Female, age 95+ Years	165,988	104,278	270,266	-0.171	0.006
Original reason for entitlement was disability	1,067,176	1,683,711	2,750,887	-0.136	0.002
Original reason for entitlement was ESRD	51,845	44,744	96,589	-0.288	0.009
Low Functional Score	1,524,416	1,678,463	3,202,879	0.185	0.002
High Functional Score	2,122,398	1,950,514	4,072,912	-0.258	0.002
≥ 31 Days: Prior Proximal Hospitalization	17,683	22,551	40,234	-0.168	0.012
≥ 1 Skilled Nursing Facility (SNF) Visits	528,573	474,328	1,002,901	-2.598	0.003
≥ 1 Long-Term Care Hospital (LTCH) Visits	20,073	6,294	26,367	-2.449	0.019
≥ 1 Outpatient Emergency Department Visits	1,969,259	2,492,353	4,461,612	-0.219	0.002
1 Prior Acute Discharge (Excluding Prior Proximal)	989,699	887,283	1,876,982	-0.162	0.002

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
2 Prior Acute Discharges (Excluding Prior Proximal)	310,691	359,807	670,498	-0.324	0.004
3 Prior Acute Discharges (Excluding Prior Proximal)	103,007	106,491	209,498	-0.475	0.006
4 Prior Acute Discharges (Excluding Prior Proximal)	37,212	95,829	133,041	-0.518	0.007
5 Prior Acute Discharges (Excluding Prior Proximal)	13,143	22,232	35,375	-0.747	0.012
6 Prior Acute Discharges (Excluding Prior Proximal)	5,607	39,485	45,092	-0.522	0.012
7 Prior Acute Discharges (Excluding Prior Proximal)	2,148	6,838	8,986	-0.862	0.024
8 Prior Acute Discharges (Excluding Prior Proximal)	1,592	36,122	37,714	-0.414	0.014
9 Prior Acute Discharges (Excluding Prior Proximal)	573	5,142	5,715	-0.720	0.031
10+ Prior Acute Discharges (Excluding Prior Proximal)	3,000	70,961	73,961	-0.609	0.009
Septicemia (except in labor) (CCS Diagnosis 2)	228,747	212,416	441,163	-0.311	0.005
Mycoses (CCS Diagnosis 4)	1,220	1,230	2,450	-0.495	0.048
HIV infection (CCS Diagnosis 5)	151	186	337	-0.652	0.125
Hepatitis (CCS Diagnosis 6)	611	599	1,210	-0.353	0.070
Viral infection (CCS Diagnosis 7)	2,455	1,788	4,243	-0.077	0.042
Other infections; including parasitic (CCS Diagnosis 8)	561	1,132	1,693	0.032	0.071
Other and unspecified benign neoplasm (CCS Diagnosis 47)	6,817	6,689	13,506	-0.107	0.027
Nutritional deficiencies (CCS Diagnosis 52)	1,525	2,317	3,842	-0.402	0.039
Gout and Other Crystal Arthropathies (CCS Diagnosis 54)	2,067	1,889	3,956	-0.016	0.045
Fluid and electrolyte disorders (CCS Diagnosis 55)	33,816	32,202	66,018	-0.399	0.010
Deficiency and other anemia (CCS Diagnosis 59)	9,115	9,193	18,308	-0.422	0.018
Sickle cell anemia (CCS Diagnosis 61)	353	546	899	-0.932	0.073
Coagulation and hemorrhagic disorders (CCS Diagnosis 62)	4,582	3,674	8,256	-0.250	0.028
Epilepsy, Convulsions (CCS Diagnosis 83)	12,946	13,058	26,004	-0.150	0.017
Conditions associated with dizziness or vertigo (CCS Diagnosis 93)	5,620	3,776	9,396	0.225	0.034
Other Nervous System Disorders (CCS Diagnosis 95)	34,404	32,579	66,983	-0.197	0.011
Heart valve disorders (CCS Diagnosis 96)	26,604	21,560	48,164	-0.313	0.021
Peri-, endo-, and myocarditis, cardiomyopathy (no TB or STDs) (CCS Diagnosis 97)	4,916	5,280	10,196	-0.289	0.025

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Essential hypertension (CCS Diagnosis 98)	337	11,245	11,582	-0.192	0.027
Hypertension with complications and secondary hypertension (CCS Diagnosis 99)	152,174	155,683	307,857	-0.521	0.005
Acute myocardial infarction (CCS Diagnosis 100)	37,594	41,263	78,857	-0.344	0.010
Coronary atherosclerosis and other heart disease (CCS Diagnosis 101)	36,474	37,776	74,250	-0.213	0.015
Pulmonary Heart Disease (CCS Diagnosis 103)	17,285	17,511	34,796	-0.123	0.015
Other and ill-defined heart disease (CCS Diagnosis 104)	1,123	1,150	2,273	-0.041	0.059
Conduction disorders (CCS Diagnosis 105)	9,358	9,089	18,447	0.002	0.024
Congestive Heart Failure (CCS Diagnosis 108)	8,364	9,574	17,938	-0.588	0.018
Acute Cerebrovascular Disease (CCS Diagnosis 109)	79,578	90,094	169,672	-0.111	0.008
Occlusion or Stenosis of Precerebral Arteries (CCS Diagnosis 110)	5,812	5,581	11,393	0.025	0.030
Transient Cerebral Ischemia (CCS Diagnosis 112)	9,901	7,820	17,721	-0.046	0.022
Peripheral and Visceral Atherosclerosis (CCS Diagnosis 114)	8,970	10,857	19,827	-0.331	0.019
Aortic, Peripheral, and Visceral Artery Aneurysms (CCS Diagnosis 115)	9,098	9,220	18,318	-0.164	0.023
Aortic and Peripheral Arterial Embolism or Thrombosis (CCS Diagnosis 116)	1,364	1,563	2,927	-0.273	0.048
Other Circulatory Disease (CCS Diagnosis 117)	17,053	15,081	32,134	-0.178	0.015
Phlebitis; thrombophlebitis and thromboembolism (CCS Diagnosis 118)	7,158	7,179	14,337	-0.280	0.022
Other diseases of veins and lymphatics (CCS Diagnosis 121)	1,846	1,909	3,755	-0.444	0.040
Pneumonia (except that caused by Tuberculosis or Sexually Transmitted Disease) (CCS Diagnosis 122)	124,125	108,923	233,048	-0.231	0.006
Influenza (CCS Diagnosis 123)	10,622	9,063	19,685	0.034	0.020
Acute bronchitis (CCS Diagnosis 125)	3,434	2,392	5,826	-0.039	0.037
Chronic obstructive pulmonary disease and bronchiectasis (CCS Diagnosis 127)	28,831	32,795	61,626	-0.576	0.010



APPENDIX A. RISK ADJUSTMENT MODEL COEFFICIENTS

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Respiratory failure; insufficiency; arrest (adult) (CCS Diagnosis 131)	32,413	39,472	71,885	-0.521	0.009
Other lower respiratory disease (CCS Diagnosis 133)	6,701	6,261	12,962	-0.540	0.022
Appendicitis and Other Appendiceal Conditions (CCS Diagnosis 142)	2,502	2,288	4,790	0.031	0.051
Abdominal Hernia (CCS Diagnosis 143)	13,767	12,879	26,646	-0.040	0.023
Regional enteritis and ulcerative colitis (CCS Diagnosis 144)	2,747	2,232	4,979	-0.565	0.035
Intestinal obstruction without hernia (CCS Diagnosis 145)	21,970	20,659	42,629	-0.193	0.014
Diverticulosis and diverticulitis (CCS Diagnosis 146)	21,165	19,272	40,437	-0.215	0.014
Anal and Rectal Conditions (CCS Diagnosis 147)	3,143	2,931	6,074	-0.187	0.035
Biliary Tract Disease (CCS Diagnosis 149)	16,860	16,155	33,015	-0.378	0.017
Other liver diseases (CCS Diagnosis 151)	8,653	9,584	18,237	-0.594	0.018
Gastrointestinal Hemorrhage (CCS Diagnosis 153)	19,707	18,346	38,053	-0.203	0.014
Other gastrointestinal disorders (CCS Diagnosis 155)	16,002	15,100	31,102	-0.238	0.015
Acute and unspecified renal failure (CCS Diagnosis 157)	52,327	54,414	106,741	-0.457	0.008
Urinary tract infections (CCS Diagnosis 159)	65,697	53,027	118,724	-0.401	0.008
Calculus of Urinary Tract (CCS Diagnosis 160)	1,221	998	2,219	-0.336	0.054
Hyperplasia of prostate (CCS Diagnosis 164)	2,263	1,897	4,160	-0.275	0.044
Inflammatory conditions of male genital organs (CCS Diagnosis 165)	1,509	1,597	3,106	-0.140	0.049
Nonmalignant breast conditions (CCS Diagnosis 167)	376	499	875	-0.033	0.099
Prolapse of female genital organs (CCS Diagnosis 170)	304	238	542	-0.183	0.147
Skin and subcutaneous tissue infections (CCS Diagnosis 197)	35,543	33,572	69,115	-0.366	0.010
Chronic Ulcer of Skin (CCS Diagnosis 199)	3,270	3,763	7,033	-0.599	0.028
Infective arthritis and osteomyelitis (except that caused by tuberculosis or sexually transmitted disease) (CCS Diagnosis 201)	8,799	8,905	17,704	-0.099	0.021
Osteoarthritis (CCS Diagnosis 203)	83,476	60,553	144,029	0.197	0.016

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Other non-traumatic joint disorders (CCS Diagnosis 204)	4,290	3,090	7,380	0.118	0.036
Spondylosis, Intervertebral Disc Disorders, Other Back Problems (CCS Diagnosis 205)	79,338	67,954	147,292	0.048	0.013
Acquired foot deformities (CCS Diagnosis 208)	371	270	641	0.249	0.136
Other acquired deformities (CCS Diagnosis 209)	9,334	7,301	16,635	0.051	0.032
Systemic lupus erythematosus and connective tissue disorders (CCS Diagnosis 210)	1,047	1,005	2,052	-0.579	0.053
Other connective tissue disease (CCS Diagnosis 211)	13,268	12,559	25,827	-0.031	0.018
Other bone disease and musculoskeletal deformities (CCS Diagnosis 212)	2,504	2,184	4,688	-0.046	0.046
Other congenital anomalies (CCS Diagnosis 217)	246	191	437	-0.105	0.146
Joint disorders and dislocations; trauma-related (CCS Diagnosis 225)	1,673	1,415	3,088	-0.079	0.056
Fracture of Neck of Femur (Hip) (CCS Diagnosis 226)	88,939	91,034	179,973	-0.076	0.013
Skull and face fractures (CCS Diagnosis 228)	2,330	1,869	4,199	0.114	0.049
Fracture of upper limb (CCS Diagnosis 229)	16,211	13,704	29,915	0.066	0.021
Fracture of lower limb (CCS Diagnosis 230)	29,947	30,950	60,897	-0.002	0.017
Other fractures (CCS Diagnosis 231)	53,524	43,315	96,839	0.066	0.010
Sprains and Strains (CCS Diagnosis 232)	2,857	1,941	4,798	0.225	0.047
Intracranial Injury (CCS Diagnosis 233)	25,940	23,715	49,655	-0.209	0.014
Crushing Injury or Internal Injury (CCS Diagnosis 234)	6,778	6,284	13,062	0.141	0.027
Complication of device; implant or graft (CCS Diagnosis 237)	93,012	85,615	178,627	-0.418	0.007
Complications of surgical procedures or medical care (CCS Diagnosis 238)	48,148	47,659	95,807	-0.197	0.009
Superficial Injury, Contusion (CCS Diagnosis 239)	7,088	4,888	11,976	-0.097	0.025
Burns (CCS Diagnosis 240)	1,234	1,615	2,849	0.012	0.054
Syncope (CCS Diagnosis 245)	9,012	7,031	16,043	-0.035	0.023
Fever of Unknown Origin (CCS Diagnosis 246)	789	577	1,366	-0.229	0.071
Gangrene (CCS Diagnosis 248)	2,677	3,355	6,032	-0.435	0.031



APPENDIX A. RISK ADJUSTMENT MODEL COEFFICIENTS

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Rehabilitation care; fitting of prostheses; and adjustment of devices (CCS Diagnosis 254)	46	44	90	0.287	0.319
Other Aftercare (CCS Diagnosis 257)	2,618	2,277	4,895	0.083	0.046
Delirium, dementia, and amnesic and other cognitive disorders (CCS Diagnosis 653)	10,540	8,561	19,101	-0.286	0.019
Mood Disorders (CCS Diagnosis 657)	5,682	5,200	10,882	-0.191	0.026
Schizophrenia and Other Psychotic Disorders (CCS Diagnosis 659)	3,314	2,422	5,736	-0.302	0.035
Miscellaneous Disorders (CCS Diagnosis 670)	357,807	358,407	716,214	-0.307	0.004
Incision and excision of CNS (CCS Procedural 1)	9,842	9,787	19,629	0.003	0.021
Insertion; replacement; or removal of extracranial ventricular shunt (CCS Procedural 2)	2,757	2,299	5,056	0.195	0.043
Laminectomy; excision intervertebral disc (CCS Procedural 3)	40,453	34,965	75,418	0.143	0.019
Diagnostic spinal tap (CCS Procedural 4)	12,202	13,022	25,224	0.120	0.017
Other OR therapeutic nervous system procedures (CCS Procedural 9)	43,092	39,730	82,822	0.087	0.013
Other non-OR therapeutic procedures on nose; mouth and pharynx (CCS Procedural 32)	6,163	5,858	12,021	0.041	0.025
Other OR therapeutic procedures on nose; mouth and pharynx (CCS Procedural 33)	4,371	4,026	8,397	0.275	0.033
Tracheostomy; temporary and permanent (CCS Procedural 34)	4,084	4,683	8,767	0.054	0.030
Lobectomy or pneumonectomy (CCS Procedural 36)	7,655	7,309	14,964	0.531	0.027
Diagnostic bronchoscopy and biopsy of bronchus (CCS Procedural 37)	23,025	23,108	46,133	-0.038	0.012
Incision of pleura; thoracentesis; chest drainage (CCS Procedural 39)	52,325	49,268	101,593	-0.183	0.008
Other OR therapeutic procedures on respiratory system (CCS Procedural 42)	11,112	10,496	21,608	0.198	0.020
Heart valve procedures (CCS Procedural 43)	34,503	28,910	63,413	0.252	0.020
Coronary artery bypass graft (CABG) (CCS Procedural 44)	46,841	49,491	96,332	0.366	0.019



APPENDIX A. RISK ADJUSTMENT MODEL COEFFICIENTS

	Prevalence			Risk Adjustment Model Coefficients	
Risk Factor	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator (CCS Procedural 48)	34,981	32,382	67,363	0.187	0.012
Extracorporeal circulation auxiliary to open heart procedures (CCS Procedural 50)	64,249	61,527	125,776	0.153	0.015
Endarterectomy; vessel of head and neck (CCS Procedural 51)	8,541	9,645	18,186	0.006	0.024
Aortic resection; replacement or anastomosis (CCS Procedural 52)	556	650	1,206	0.351	0.091
Other vascular catheterization; not heart (CCS Procedural 54)	189,548	198,031	387,579	-0.089	0.005
Peripheral vascular bypass (CCS Procedural 55)	9,796	12,797	22,593	-0.025	0.018
Hemodialysis (CCS Procedural 58)	72,348	79,261	151,609	-0.028	0.008
Other OR procedures on vessels other than head and neck (CCS Procedural 61)	96,304	103,805	200,109	-0.006	0.009
Other diagnostic cardiovascular procedures (CCS Procedural 62)	37,444	39,319	76,763	0.041	0.011
Other non-OR therapeutic cardiovascular procedures (CCS Procedural 63)	46,980	47,299	94,279	-0.014	0.010
Bone marrow biopsy (CCS Procedural 65)	5,061	4,864	9,925	-0.288	0.024
Esophageal dilatation (CCS Procedural 69)	4,744	4,901	9,645	-0.083	0.025
Upper gastrointestinal endoscopy; biopsy (CCS Procedural 70)	70,460	73,961	144,421	-0.060	0.007
Gastrostomy; temporary and permanent (CCS Procedural 71)	12,287	13,422	25,709	-0.247	0.015
Ileostomy and other enterostomy (CCS Procedural 73)	11,318	10,827	22,145	-0.556	0.017
Gastrectomy; partial and total (CCS Procedural 74)	4,922	5,143	10,065	0.271	0.028
Small bowel resection (CCS Procedural 75)	3,209	3,108	6,317	0.011	0.036
Colorectal resection (CCS Procedural 78)	23,639	23,234	46,873	0.256	0.014
Appendectomy (CCS Procedural 80)	5,351	5,214	10,565	0.198	0.032
Cholecystectomy and common duct exploration (CCS Procedural 84)	17,431	16,936	34,367	0.437	0.018
Inguinal and femoral hernia repair (CCS Procedural 85)	3,449	2,967	6,416	0.146	0.041



APPENDIX A. RISK ADJUSTMENT MODEL COEFFICIENTS

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Other hernia repair (CCS Procedural 86)	8,330	7,740	16,070	0.032	0.027
Laparoscopy (GI only) (CCS Procedural 87)	6,361	5,978	12,339	0.053	0.026
Abdominal paracentesis (CCS Procedural 88)	19,108	20,159	39,267	-0.309	0.013
Excision; lysis peritoneal adhesions (CCS Procedural 90)	24,663	23,658	48,321	0.156	0.014
Peritoneal dialysis (CCS Procedural 91)	5,437	4,906	10,343	-0.390	0.022
Other diagnostic procedures of urinary tract (CCS Procedural 110)	3,349	3,359	6,708	-0.176	0.029
Other non-OR therapeutic procedures of urinary tract (CCS Procedural 111)	18,634	17,355	35,989	-0.393	0.013
Transurethral resection of prostate (TURP) (CCS Procedural 113)	2,241	1,904	4,145	0.136	0.043
Open prostatectomy (CCS Procedural 114)	3,613	3,063	6,676	-0.372	0.032
Other non-OR therapeutic procedures; male genital (CCS Procedural 117)	1,014	977	1,991	0.206	0.061
Oophorectomy; unilateral and bilateral (CCS Procedural 119)	4,741	4,373	9,114	0.134	0.050
Hysterectomy; abdominal and vaginal (CCS Procedural 124)	3,691	3,301	6,992	0.083	0.057
Repair of cystocele and rectocele; obliteration of vaginal vault (CCS Procedural 129)	111	88	199	0.331	0.236
Other diagnostic procedures; female organs (CCS Procedural 130)	751	773	1,524	-0.213	0.066
Other OR therapeutic procedures; female organs (CCS Procedural 132)	2,692	2,561	5,253	0.016	0.040
Partial excision bone (CCS Procedural 142)	24,367	24,778	49,145	-0.032	0.013
Treatment; fracture or dislocation of radius and ulna (CCS Procedural 145)	5,646	5,262	10,908	0.269	0.036
Treatment; fracture or dislocation of hip and femur (CCS Procedural 146)	71,743	75,066	146,809	0.248	0.013
Treatment; fracture or dislocation of lower extremity (other than hip or femur) (CCS Procedural 147)	19,372	20,250	39,622	0.178	0.021
Other fracture and dislocation procedure (CCS Procedural 148)	31,921	27,164	59,085	0.068	0.014
Arthroplasty knee (CCS Procedural 152)	71,725	57,686	129,411	0.490	0.016

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Hip replacement; total and partial (CCS Procedural 153)	85,610	73,638	159,248	0.318	0.013
Arthroplasty other than hip or knee (CCS Procedural 154)	10,146	8,248	18,394	0.436	0.029
Arthrocentesis (CCS Procedural 155)	5,729	5,753	11,482	-0.026	0.026
Amputation of lower extremity (CCS Procedural 157)	25,528	36,492	62,020	0.171	0.011
Spinal fusion (CCS Procedural 158)	72,536	64,876	137,412	0.214	0.016
Other therapeutic procedures on muscles and tendons (CCS Procedural 160)	28,329	28,049	56,378	-0.030	0.012
Other OR therapeutic procedures on joints (CCS Procedural 162)	58,626	52,154	110,780	0.114	0.013
Other OR therapeutic procedures on musculoskeletal system (CCS Procedural 164)	4,862	4,866	9,728	0.055	0.029
Incision and drainage; skin and subcutaneous tissue (CCS Procedural 168)	13,911	16,054	29,965	0.053	0.015
Excision of skin lesion (CCS Procedural 170)	7,748	7,468	15,216	0.003	0.022
Suture of skin and subcutaneous tissue (CCS Procedural 171)	20,558	16,664	37,222	0.093	0.015
Other diagnostic procedures on skin and subcutaneous tissue (CCS Procedural 173)	8,327	9,082	17,409	-0.068	0.020
Other non-OR therapeutic procedures on skin and breast (CCS Procedural 174)	36,790	39,796	76,586	0.044	0.010
Other OR therapeutic procedures on skin and breast (CCS Procedural 175)	36,809	40,795	77,604	-0.083	0.010
Organ transplantation (other than bone marrow, corneal or kidney) (CCS Procedural 176)	2,379	1,457	3,836	0.249	0.039
Computerized axial tomography (CT) scan head (CCS Procedural 177)	5,919	9,012	14,931	-0.005	0.023
Contrast arteriogram of femoral and lower extremity arteries (CCS Procedural 190)	15,769	18,917	34,686	-0.140	0.014
Diagnostic ultrasound of heart (echocardiogram) (CCS Procedural 193)	99,156	99,559	198,715	-0.011	0.007
Magnetic resonance imaging (CCS Procedural 198)	5,539	6,648	12,187	0.042	0.026
Electroencephalogram (EEG) (CCS Procedural 199)	22,903	23,725	46,628	0.015	0.013
Electrocardiogram (CCS Procedural 202)	5,119	6,276	11,395	-0.033	0.024



APPENDIX A. RISK ADJUSTMENT MODEL COEFFICIENTS

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
Electrographic cardiac monitoring (CCS Procedural 203)	3,690	5,165	8,855	-0.031	0.028
Swan-Ganz catheterization for monitoring (CCS Procedural 204)	18,433	18,689	37,122	-0.015	0.015
Radiation therapy (CCS Procedural 211)	896	902	1,798	-0.317	0.055
Traction; splints; and other wound care (CCS Procedural 214)	10,791	10,714	21,505	-0.020	0.019
Psychological and psychiatric evaluation and therapy (CCS Procedural 218)	1,937	1,290	3,227	0.105	0.050
Nasogastric tube (CCS Procedural 221)	8,437	8,029	16,466	0.073	0.022
Blood transfusion (CCS Procedural 222)	151,362	148,280	299,642	-0.162	0.005
Cancer chemotherapy (CCS Procedural 224)	3,254	2,821	6,075	-0.225	0.030
Other diagnostic procedures (CCS Procedural 227)	44,631	38,947	83,578	0.014	0.012
Other therapeutic procedures (CCS Procedural 231)	201,387	179,210	380,597	0.070	0.005
HCC2: Septicemia/Shock	716,346	482,053	1,198,399	-0.051	0.003
HCC6: Opportunistic Infections	44,042	19,116	63,158	-0.095	0.010
HCC8: Metastatic Cancer and Acute Leukemia	183,082	91,944	275,026	-0.423	0.005
HCC9: Lung and Other Severe Cancers	210,927	93,053	303,980	-0.268	0.005
HCC10: Lymphoma and Other Cancers	193,692	59,671	253,363	-0.113	0.005
HCC11: Colorectal, Bladder, and Other Cancers; HCC12: Breast, Prostate, and Other Cancers and Tumors	236,321	69,632	305,953	-0.051	0.005
HCC18: Diabetes with Chronic Complications	1,678,524	1,108,775	2,787,299	-0.126	0.003
HCC19: Diabetes without Complication	1,812,440	857,480	2,669,920	-0.031	0.002
HCC21: Protein-Calorie Malnutrition	525,341	372,959	898,300	-0.185	0.003
HCC27: End-stage liver disease	65,493	48,521	114,014	-0.232	0.009
HCC28: Cirrhosis of Liver	132,571	99,465	232,036	-0.165	0.006
HCC29: Chronic Hepatitis	44,347	25,034	69,381	-0.032	0.010
HCC33: Intestinal Obstruction/Perforation	269,782	155,968	425,750	-0.001	0.004
HCC40: Rheumatoid Arthritis and Inflammatory Connective Tissue Disease	576,082	194,427	770,509	-0.033	0.003
HCC46: Severe Hematological Disorders	62,050	20,718	82,768	-0.224	0.009
HCC47: Disorders of Immunity	325,446	158,621	484,067	-0.097	0.004

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
HCC55: Drug/Alcohol Dependence	262,643	131,740	394,383	-0.058	0.004
HCC57: Schizophrenia	93,058	40,084	133,142	-0.077	0.008
HCC70: Quadriplegia; HCC72: Spinal Cord Disorders/Injuries	49,726	21,910	71,636	-0.331	0.009
HCC71: Paraplegia	45,872	23,071	68,943	-0.298	0.010
HCC75: Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy	117,204	28,844	146,048	-0.014	0.007
HCC76: Muscular Dystrophy	6,139	2,463	8,602	0.025	0.029
HCC77: Multiple Sclerosis	53,670	29,563	83,233	-0.120	0.009
HCC78: Parkinson's and Huntington's Diseases	236,715	78,946	315,661	-0.099	0.005
HCC79: Seizure Disorders and Convulsions	323,378	177,112	500,490	-0.060	0.004
HCC82: Respirator Dependence/Tracheostomy Status	72,450	18,487	90,937	0.034	0.009
HCC83: Respiratory Arrest	4,294	323	4,617	-0.027	0.035
HCC84: Cardio-Respiratory Failure and Shock	1,004,663	835,771	1,840,434	-0.176	0.003
HCC85: Congestive Heart Failure	1,843,299	1,188,200	3,031,499	-0.258	0.002
HCC86: Acute Myocardial Infarction	365,193	222,579	587,772	-0.043	0.004
HCC96: Specified Heart Arrhythmias	1,758,465	1,034,206	2,792,671	-0.143	0.002
HCC99: Cerebral Hemorrhage	126,298	34,546	160,844	0.008	0.008
HCC100: Ischemic or Unspecified Stroke	540,447	122,945	663,392	0.013	0.004
HCC74: Cerebral Palsy; HCC104: Monoplegia, Other Paralytic Syndromes	25,467	7,398	32,865	0.019	0.015
HCC106: Atherosclerosis of the Extremities with Ulceration or Gangrene; HCC107: Vascular Disease with Complications	133,390	82,257	215,647	-0.131	0.006
HCC108: Vascular Disease	1,966,934	637,079	2,604,013	-0.047	0.002
HCC110: Cystic Fibrosis	1,788	633	2,421	-0.086	0.051
HCC111: Chronic Obstructive Pulmonary Disease	1,223,432	837,432	2,060,864	-0.183	0.002
HCC115: Pneumococcal Pneumonia, Empyema, Lung Abscess	144,873	30,266	175,139	0.024	0.006
HCC122: Proliferative Diabetic Retinopathy and Vitreous Hemorrhage	66,637	10,714	77,351	-0.086	0.009
HCC134: Dialysis Status	162,467	125,806	288,273	-0.425	0.006

Risk Factor	Prevalence			Risk Adjustment Model Coefficients	
	FFS N=5,476,513	MA N=5,405,984	Total N=10,882,497	Coefficient	Std. Error
HCC135: Acute Renal Failure; HCC136: Chronic Kidney Disease (Stage 5); HCC137: Chronic Kidney Disease, Severe (Stage 4)	1,135,246	991,927	2,127,173	-0.163	0.002
HCC157: Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone; HCC158: Pressure Ulcer of Skin with Full Thickness Skin Loss	37,810	17,663	55,473	-0.622	0.010
HCC161: Chronic Ulcer of Skin, Except Pressure	475,296	180,235	655,531	-0.373	0.004
HCC166: Severe Head Injury	998	156	1,154	0.100	0.081
HCC167: Major Head Injury	129,429	45,588	175,017	0.072	0.008
HCC169: Vertebral Fractures without Spinal Cord Injury	293,784	103,381	397,165	0.008	0.005
HCC170: Hip Fracture/Dislocation	338,284	136,955	475,239	0.155	0.005
HCC173: Traumatic Amputations and Complications	64,508	20,588	85,096	0.135	0.009
HCC186: Major Organ Transplant or Replacement Status	45,293	20,292	65,585	-0.075	0.010
HCC188: Artificial Openings for Feeding or Elimination	187,037	91,830	278,867	-0.272	0.005
HCC189: Amputation Status, Lower Limb/Amputation Complications	121,647	93,233	214,880	-0.075	0.006
Source MA: MA coverage at start of stay	0	5,405,984	5,405,984	-0.010	0.002

Source: Home health stays eligible for the updated DTC-PAC measure ending in 2023 or 2024.

Notes: The TM column represents statistics for stays that started with a Medicare FFS claim. The MA column represents statistics for stays that started with a Medicare Advantage encounter. Abbreviations: DTC, discharge to community; FFS, fee-for-service; MA, Medicare Advantage; PAC, post-acute care.