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Proposed Measure Specifications for Measures Proposed in the CY 2017 HH QRP NPRM

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SECTION 1
CROSS-SETTING MEASURES DEVELOPMENT WORK: AN INTRODUCTION

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, including 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).

The IMPACT Act also requires, to the extent possible, the submission of such quality measure data through the use of a PAC assessment instrument and the modification of such instrument as necessary to enable such use; for HHAs, the Outcome and Assessment Information Set (OASIS)-C2 will be used.

The reporting of quality data by 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 QRP, please refer to https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Home-Health-Quality-Reporting-Requirements.html. . More information on the IMPACT Act is available at https://www.govtrack.us/congress/bills/113/hr4994.

In this document, we present specifications for the following three (3) measures proposed for adoption for the HH QRP through the CY 2017 HH PPS Final Rule:

1. Discharge to Community- Post Acute Care (PAC) Home Health Quality Reporting Program;

2. Potentially Preventable 30-Days Post-Discharge Readmission Measure for Home Health Quality Reporting Program;

3. Drug Regimen Review Conducted with Follow-Up for Identified Issues- Post Acute Care (PAC) Home Health Quality Reporting Program.

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SECTION 2
MEASURES AFFECTING THE FY 2018 PAYMENT DETERMINATION AND SUBSEQUENT YEARS

2.1 Discharge to Community-Post Acute Care (PAC) Home Health (HH) Quality Reporting Program (QRP)

2.1.1 Measure Description

Sections 1899B(d)(1)(B) and 1899B(a)(2)(E)(ii) of the Act require the Secretary to specify a measure to address the resource use and other measures domain of discharge to community by SNFs, LTCHs, and IRFs by October 1, 2016, and HHAs by January 1, 2017. We are proposing to adopt the measure, Discharge to Community-Post Acute Care (PAC) Home Health (HH) Quality Reporting Program (QRP) for the HH QRP as a Medicare FFS claims-based measure to meet this requirement.

This proposed measure assesses successful discharge to the community from HHA, with successful discharge to the community including no unplanned rehospitalizations and no death in the 31 days following discharge. Specifically, this proposed measure reports a HHA's risk-standardized rate of Medicare FFS patients who are discharged to the community following a HH episode, and do not have an unplanned readmission to an acute care hospital or LTCH in the 31 days following discharge to community, and who remain alive during the 31 days following discharge to community. Community, for this measure, is defined as home/self-care without HH services, based on Patient Discharge Status Codes 01 and 81 on the Medicare FFS claim.[1,2]

We have developed a discharge to community measure for the HH setting. This measure is conceptualized uniformly across the PAC settings, in terms of the definition of the discharge to community outcome, the approach to risk adjustment, and the measure calculation. It is important to note, though, that each measure is specific to the particular PAC setting (i.e., HH, IRF, SNF, or LTCH); we do not pool PAC patients/residents across settings in the measure development and calculation.

2.1.2 Purpose/Rationale for the Measure

Discharge to a community setting is an important health care outcome for many patients for whom the overall goals of post-acute care include optimizing functional improvement, returning to a previous level of independence, and avoiding institutionalization. Returning to the community is also an important outcome for many patients who are not expected to make functional improvement during their HH stay, and for patients who may be expected to decline functionally due to their medical condition. The discharge to community outcome offers a multi-

[1] Further description of patient discharge status codes can be found, for example, at the following Web page: https://med.noridianmedicare.com/web/jea/topics/claim-submission/patient-status-codes.

[2] This definition is not intended to suggest that board and care homes, assisted living facilities, or other settings included in the definition of "community" for the purpose of this measure are the most integrated setting for any particular individual or group of individuals under the Americans with Disabilities Act (ADA) and Section 504.

dimensional view of preparation for community life, including the cognitive, physical, and psychosocial elements involved in a discharge to the community.[3,4]

In addition to being an important outcome from a patient and family perspective, patients discharged to community settings, on average, incur lower costs over the recovery episode, compared with those discharged to institutional settings.[5,6] Given the high costs of care in institutional settings, encouraging PAC providers to prepare patients for discharge to community, when clinically appropriate, may have cost-saving implications for the Medicare program.[7] Also, providers have found that successful discharge to community was a major driver of their ability to achieve savings, where capitated payments for PAC were in place.[8] For patients who require long-term care due to persistent disability, discharge to community could result in lower long-term care costs for Medicaid and for patients' out-of-pocket expenditures.[9]

Analyses conducted for the Assistant Secretary for Planning and Evaluation (ASPE) on PAC episodes, using a 5 percent sample of 2006 Medicare claims, revealed that relatively high average, unadjusted Medicare payments are associated with discharge to institutional settings from HHAs, as compared with payments associated with discharge to community settings.[10] Average, unadjusted Medicare payments associated with discharge to community settings ranged from $0 to $992 for HHA discharges. In contrast, payments associated with discharge to non-community settings were considerably higher, ranging from $7,981 to $35,192 for HHA discharges per episode of care.[11]

Measuring and comparing HH-level discharge to community rates is expected to help differentiate among HHAs with varying performance in this important domain, and to help avoid disparities in care across patient groups. Variation in discharge to community rates has been reported within and across PAC settings; across a variety of HH-level characteristics, such as geographic location (for example, regional location, urban or rural location), ownership (for example, for-profit or nonprofit), and freestanding or hospital-based units; and across patient-

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3 El-Solh AA, Saltzman SK, Ramadan FH, Naughton BJ. Validity of an artificial neural network in predicting discharge destination from a postacute geriatric rehabilitation unit. Archives of physical medicine and rehabilitation. 2000;81(10):1388-1393.

4 Tanwir S, Montgomery K, Chari V, Nesathurai S. Stroke rehabilitation: availability of a family member as caregiver and discharge destination. *European journal of physical and rehabilitation medicine.* 2014;50(3):355-362.

5 Dobrez D, Heinemann AW, Deutsch A, Manheim L, Mallinson T. Impact of Medicare's prospective payment system for inpatient rehabilitation facilities on stroke patient outcomes. *American journal of physical medicine & rehabilitation / Association of Academic Physiatrists.* 2010;89(3):198-204.

6 Gage B, Morley M, Spain P, Ingber M. Examining Post Acute Care Relationships in an Integrated Hospital System. Final Report. RTI International;2009.

7 *Ibid.*

8 Doran JP, Zabinski SJ. Bundled payment initiatives for Medicare and non-Medicare total joint arthroplasty patients at a community hospital: bundles in the real world. The Journal of arthroplasty. 2015;30(3):353-355.

9 Newcomer RJ, Ko M, Kang T, Harrington C, Hulett D, Bindman AB. Health Care Expenditures After Initiating Long-term Services and Supports in the Community Versus in a Nursing Facility. Med Care. 2016 Jan 12. *Epub ahead of print.*

10 Gage B, Morley M, Spain P, Ingber M. Examining Post Acute Care Relationships in an Integrated Hospital System. Final Report. RTI International;2009.

11 *Ibid.*

level characteristics, such as race and gender.[12,13,14,15,16,17] Discharge to community rates in the IRF setting have been reported to range from about 60 to 80 percent.[18,19,20,21,22,23] Longer-term studies show that rates of discharge to community from IRFs have decreased over time as IRF length of stay has decreased.[24,25] Greater variation in discharge to community rates is seen in the SNF setting, with rates ranging from 31 to 65 percent.[26,27,28,29] In the HH Medicare FFS population, using CY 2013 national claims data, we found that approximately 82 percent of

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12 Reistetter TA, Karmarkar AM, Graham JE, et al. Regional variation in stroke rehabilitation outcomes. *Archives of physical medicine and rehabilitation.* 2014;95(1):29-38.

13 El-Solh AA, Saltzman SK, Ramadan FH, Naughton BJ. Validity of an artificial neural network in predicting discharge destination from a postacute geriatric rehabilitation unit. Archives of physical medicine and rehabilitation. 2000;81(10):1388-1393.

14 March 2015 Report to the Congress: Medicare Payment Policy. Medicare Payment Advisory Commission;2015.

15 Bhandari VK, Kushel M, Price L, Schillinger D. Racial disparities in outcomes of inpatient stroke rehabilitation. *Archives of physical medicine and rehabilitation.* 2005;86(11):2081-2086.

16 Chang PF, Ostir GV, Kuo YF, Granger CV, Ottenbacher KJ. Ethnic differences in discharge destination among older patients with traumatic brain injury. *Archives of physical medicine and rehabilitation.* 2008;89(2):231-236.

17 Berges IM, Kuo YF, Ostir GV, Granger CV, Graham JE, Ottenbacher KJ. Gender and ethnic differences in rehabilitation outcomes after hip-replacement surgery. *American journal of physical medicine & rehabilitation / Association of Academic Physiatrists.* 2008;87(7):567-572.

18 Galloway RV, Granger CV, Karmarkar AM, et al. The Uniform Data System for Medical Rehabilitation: report of patients with debility discharged from inpatient rehabilitation programs in 2000-2010. *American journal of physical medicine & rehabilitation / Association of Academic Physiatrists.* 2013;92(1):14-27.

19 Morley MA, Coots LA, Forgues AL, Gage BJ. Inpatient rehabilitation utilization for Medicare beneficiaries with multiple sclerosis. *Archives of physical medicine and rehabilitation.* 2012;93(8):1377-1383.

20 Reistetter TA, Graham JE, Deutsch A, Granger CV, Markello S, Ottenbacher KJ. Utility of functional status for classifying community versus institutional discharges after inpatient rehabilitation for stroke. *Archives of physical medicine and rehabilitation.* 2010;91(3):345-350.

21 Gagnon D, Nadeau S, Tam V. Clinical and administrative outcomes during publicly-funded inpatient stroke rehabilitation based on a case-mix group classification model. *Journal of rehabilitation medicine.* 2005;37(1):45-52.

22 DaVanzo J, El-Gamil A, Li J, Shimer M, Manolov N, Dobson A. *Assessment of patient outcomes of rehabilitative care provided in inpatient rehabilitation facilities (IRFs) and after discharge.* Vienna, VA: Dobson DaVanzo & Associates, LLC;2014.

23 Kushner DS, Peters KM, Johnson-Greene D. Evaluating Siebens Domain Management Model for Inpatient Rehabilitation to Increase Functional Independence and Discharge Rate to Home in Geriatric Patients. *Archives of physical medicine and rehabilitation.* 2015;96(7):1310-1318.

24 Galloway RV, Granger CV, Karmarkar AM, et al. The Uniform Data System for Medical Rehabilitation: report of patients with debility discharged from inpatient rehabilitation programs in 2000-2010. *American journal of physical medicine & rehabilitation / Association of Academic Physiatrists.* 2013;92(1):14-27.

25 Mallinson T, Deutsch A, Bateman J, et al. Comparison of discharge functional status after rehabilitation in skilled nursing, home health, and medical rehabilitation settings for patients after hip fracture repair. *Archives of physical medicine and rehabilitation.* 2014;95(2):209-217.

26 El-Solh AA, Saltzman SK, Ramadan FH, Naughton BJ. Validity of an artificial neural network in predicting discharge destination from a postacute geriatric rehabilitation unit. *Archives of physical medicine and rehabilitation.* 2000;81(10):1388-1393.

27 Hall RK, Toles M, Massing M, et al. Utilization of acute care among patients with ESRD discharged home from skilled nursing facilities. *Clinical journal of the American Society of Nephrology : CJASN.* 2015;10(3):428-434.

28 Stearns SC, Dalton K, Holmes GM, Seagrave SM. Using propensity stratification to compare patient outcomes in hospital-based versus freestanding skilled-nursing facilities. *Medical care research and review : MCRR.* 2006;63(5):599-622.

29 Wodchis WP, Teare GF, Naglie G, et al. Skilled nursing facility rehabilitation and discharge to home after stroke. *Archives of physical medicine and rehabilitation.* 2005;86(3):442-448.

episodes ended with a discharge to the community. A multi-center study of 23 LTCHs demonstrated that 28.8 percent of 1,061 patients who were ventilator-dependent on admission were discharged to home.[30] A single-center study found that 31 percent of LTCH hemodialysis patients were discharged to home.[31] One study noted that 64 percent of beneficiaries who were discharged from the HH episode did not use any other acute or post-acute services paid by Medicare in the 30 days after discharge[32] and a second study noted that between 58 percent and 63 percent of beneficiaries were discharged to home with rates varying by admission site.[33] However, significant numbers of patients were admitted to hospitals (29 percent) and lesser numbers to SNFs (7.6 percent), IRFs (1.5 percent), HH (7.2 percent) or hospice (3.3 percent).[34]

Discharge to community is an actionable health care outcome, as targeted interventions have been shown to successfully increase discharge to community rates in a variety of post-acute settings.[35,36,37,38] Many of these interventions involve discharge planning or specific rehabilitation strategies, such as addressing discharge barriers and improving medical and functional status.[39,40,41,42] The effectiveness of these interventions suggests that improvement in discharge to community rates among PAC patients is possible through modifying provider-led processes and interventions.

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30 Scheinhorn DJ, Hassenpflug MS, Votto JJ, et al. Post-ICU mechanical ventilation at 23 long-term care hospitals: a multicenter outcomes study. *Chest.* 2007;131(1):85-93.

31 Thakar CV, Quate-Operacz M, Leonard AC, Eckman MH. Outcomes of hemodialysis patients in a long-term care hospital setting: a single-center study. *American journal of kidney diseases: the official journal of the National Kidney Foundation.* 2010;55(2):300-306.

32 Wolff JL, Meadow A, Weiss CO, Boyd CM, Leff B. Medicare home health patients' transitions through acute and post-acute care settings. *Medical care.* 2008;46(11):1188-1193.

33 Riggs JS, Madigan EA. Describing Variation in Home Health Care Episodes for Patients with Heart Failure. *Home Health Care Management & Practice* 2012; 24(3) 146-152.

34 *Ibid.*

35 Kushner DS, Peters KM, Johnson-Greene D. Evaluating Siebens Domain Management Model for Inpatient Rehabilitation to Increase Functional Independence and Discharge Rate to Home in Geriatric Patients. *Archives of physical medicine and rehabilitation.* 2015;96(7):1310-1318.

36 Wodchis WP, Teare GF, Naglie G, et al. Skilled nursing facility rehabilitation and discharge to home after stroke. *Archives of physical medicine and rehabilitation.* 2005;86(3):442-448.

37 Berkowitz RE, Jones RN, Rieder R, et al. Improving disposition outcomes for patients in a geriatric skilled nursing facility. *Journal of the American Geriatrics Society.* 2011;59(6):1130-1136.

38 Kushner DS, Peters KM, Johnson-Greene D. Evaluating use of the Siebens Domain Management Model during inpatient rehabilitation to increase functional independence and discharge rate to home in stroke patients. *PM & R : the journal of injury, function, and rehabilitation.* 2015;7(4):354-364.

39 Kushner DS, Peters KM, Johnson-Greene D. Evaluating Siebens Domain Management Model for Inpatient Rehabilitation to Increase Functional Independence and Discharge Rate to Home in Geriatric Patients. *Archives of physical medicine and rehabilitation.* 2015;96(7):1310-1318.

40 Wodchis WP, Teare GF, Naglie G, et al. Skilled nursing facility rehabilitation and discharge to home after stroke. *Archives of physical medicine and rehabilitation.* 2005;86(3):442-448.

41 Berkowitz RE, Jones RN, Rieder R, et al. Improving disposition outcomes for patients in a geriatric skilled nursing facility. *Journal of the American Geriatrics Society.* 2011;59(6):1130-1136.

42 Kushner DS, Peters KM, Johnson-Greene D. Evaluating use of the Siebens Domain Management Model during inpatient rehabilitation to increase functional independence and discharge rate to home in stroke patients. *PM & R : the journal of injury, function, and rehabilitation.* 2015;7(4):354-364.

2.1.3 Denominator

The denominator for the discharge to community measure is the risk-adjusted expected number of discharges to community. This estimate includes risk adjustment for patient characteristics with the HHA effect removed. The "expected" number of discharges to community is the predicted number of risk-adjusted discharges to community if the same patients were treated at the average HHA appropriate to the measure.

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.

2.1.4 Numerator

The measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method does not make the *observed* number of community discharges the numerator, and a *predicted* number the denominator. The measure numerator is the *risk-adjusted estimate* of the number of patients who are discharged to the community, do not have an unplanned readmission to an acute care hospital or LTCH in the 31-day post-discharge observation window, and who remain alive during the post-discharge observation window. This estimate starts with the observed discharges to community, and is risk adjusted for patient characteristics and a statistical estimate of the HHA effect beyond case mix.

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 patient 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. Numerator details are provided below.

Numerator Details: Discharge to Community

Discharge to community is determined based on the "Patient Discharge Status Code" from the PAC claim. Discharge to community is defined as discharge to home/self-care with or without home health services.[43] Table 1 below lists the Patient Discharge Status Codes used to define community.

[43] Further description of patient discharge status codes can be found, for example, at the following Web page: https://med.noridianmedicare.com/web/jea/topics/claim-submission/patient-status-codes.

Table 1
Patient Discharge Status Codes Used to Determine Discharge to Community

Discharge Status Codes Indicating Community Discharge	
01	Discharged to home/self-care (routine discharge)
81	Discharged to home or self-care with a planned acute care hospital readmission

Numerator Details: Unplanned Readmissions in the 31-Day Post-Discharge Observation Window

A patient who is discharged to the community is considered to have an unfavorable outcome if they have a subsequent unplanned readmission 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 readmissions based on the planned readmissions algorithm used in the following post-acute care readmission measures, endorsed by the National Quality Forum (NQF): (i) NQF #2510: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM); (ii) NQF #2502: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities; (iii) NQF #2512: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long Term Care Hospitals; and (iv) NQF #2380: Rehospitalization During the First 30 Days of Home Health.[44,45,46,47] These readmission measures are based on the Hospital-Wide All-Cause Readmission Measure (HWR) (CMS/Yale) (NQF #1789),[48] with some additions made for PAC settings. The planned readmission definition is based on the claim from the readmission 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 readmission is reclassified as unplanned. Readmissions to psychiatric hospitals or units are classified as planned readmissions.

Please note that this measure has been developed with ICD-9 procedure and diagnosis codes. The measure will be revised using the ICD-9 to ICD-10 cross-walk.

[44] NQF #2510: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM). www.qualityforum.org/QPS/2510

[45] NQF #2502: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities. www.qualityforum.org/QPS/2502

[46] NQF #2512: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long Term Care Hospitals. www.qualityforum.org/QPS/2512

[47] NQF #2380: Rehospitalization During the First 30 Days of Home Health www.qualityforum.org/QPS/2380

[48] NQF #1789: Hospital-Wide All-Cause Readmission Measure (HWR) (CMS/Yale). www.qualityforum.org/QPS/1789

Numerator Details: Death in the 31-Day Post-Discharge Observation Window

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 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.

2.1.5 Target Population and Measure Exclusions

The target population for the measure is the group of Medicare FFS patients who are not excluded for the reasons listed below.

Measure Exclusions

Exclusions for the discharge to community measure are listed below, along with the rationale for each exclusion. The measure exclusion criteria are determined by processing Medicare claims and eligibility data to determine whether the individual exclusion criteria are met. All measure exclusion criteria are based on administrative data. Stays ending in transfers to the same level of care are excluded.

1) Age under 18 years

Rationale:

a. There is limited literature on discharge destination outcomes in this age group;
b. 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
c. Patients in this age group represent a small proportion of the post-acute Medicare FFS population.

2) 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.

3) 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 readmissions or death, depending on their medical condition, or due to potential non-adherence or non-compliance with care recommendations.

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*

Rationale:

a. Patients discharged to hospice care 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.

b. A large proportion of patients discharged to hospice care die in the 31-day window following discharge from the post-acute setting.

c. 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 FFS Medicare (or those enrolled in Part C Medicare Advantage) for the 12 months 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 FFS Medicare for the 12 months 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 Part A FFS Medicare for at least 31 days after post-acute discharge are excluded because readmissions must be observable in the 31-day post-discharge period. Patients without continuous Part A and B coverage, or those who are ever enrolled in a Part C Medicare Advantage plan during the pre- or post-PAC periods will not have complete claims in the system.

8) *Patients who have a short term acute care 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.[49] Exclusion of these patients is consistent with the hospital-wide and post-acute readmission measures.

9) *Post-acute stays that end in transfer to the same level of care*

Rationale: Post-acute stays that end in transfer to the same level of care are excluded from the measure because their post-acute episode has not ended. For a post-acute episode that involves transfer to the same level of care, only the final post-acute provider 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) *Patients who received care from an agency located outside of the United States, Puerto Rico or a U.S. territory*

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

2.1.6 Data Sources

This measure relies on data from Medicare's eligibility database as well as fee-for-service (FFS) claims from the home health, inpatient, outpatient, and physician office settings. The eligibility 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 and B. The FFS claims files provide information about each home health and PAC stay, including dates of admission and discharge, diagnoses and procedures, and indicators for care received in the intensive care unit, coronary care unit, and emergency department. Furthermore, claims from all three file settings are used to construct for each patient a complete history of care before the index home health stay, which is used for constructing risk adjustment variables. No data beyond the bills submitted in the normal course of business are required from providers for the calculation of this measure. Below are links to documentation for each of the specific files for this measure.

[49] NQF #1789: Hospital-Wide All-Cause Readmission Measure (HWR) (CMS/Yale). www.qualityforum.org/QPS/1789

HH Measure Data Sources

- Information about the Medicare enrollment database is available online at: https://aspe.hhs.gov/centers-medicare-medicaid-services
- Documentation for the Medicare claims data is provided online by ResDAC. Data dictionaries are available for all three standard analytical files:
    - Home Health RIF: http://www.resdac.org/cms-data/files/hha-rif
    - Inpatient RIF: http://www.resdac.org/cms-data/files/ip-rif
    - Outpatient RIF: http://www.resdac.org/cms-data/files/op-rif
    - Carrier (Physician Office) RIF: http://www.resdac.org/cms-data/files/carrier-rif

2.1.7 Measure Time Window

HH Time Window: In the HH setting, the measure is calculated using two years of data. HH episodes during the two-year time window, except those that meet the exclusion criteria, are included in the measure. For patients with multiple HH episodes during the two-year time window, each episode is eligible for inclusion in the measure. Data from CY 2012-2013 were used to develop this measure.

2.1.8 Statistical Risk Model and Risk Adjustment Covariates

We used a hierarchical logistic regression method to predict the probability of discharge to community. Patient characteristics related to discharge and a marker for the specific discharging HHA are included in the equation. The equation is hierarchical in that both individual patient characteristics are accounted for, as well as the clustering of patient characteristics by HHA. The statistical model estimates both the average predictive effect of the patient characteristics across all HHAs, and the degree to which each HHA has an effect on discharge to community 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 the known predictors of discharge to community, on average, such as patient characteristics, the observed HH rate, and the number of HH stays eligible for inclusion in the measure. The estimated HHA effect is determined mostly by the HHA's own data if the number of patient discharges is relatively large (as the estimate would be relatively precise), but is adjusted toward the average if the number of patient discharges is small (as that would yield a less precise estimate).

We used the following model:

Let Y_{ij}, denote the outcome (equal to 1 if patient *i* is discharged to community, 0 otherwise) for a patient *i* at HHA *j*; Z_{ij} denotes a set of risk adjustment variables. We assume the outcome is related to the risk adjusters via a logit function with dispersion:

$$\text{logit}(\text{Prob}(Y_{ij}=1)) = \alpha_j + \beta * Z_{ij} + \varepsilon_{ij} \quad (1)$$
$$\alpha_j = \mu + \omega_j ; \ \omega_j \sim N(0, \tau^2)$$

where $Z_{ij} = (Z_1, Z_2, ... Z_k)$ is a set of *k* patient -level risk adjustment variables; α_j represents the HH -specific intercept; μ is the adjusted average outcome across all HHAs; τ^2 is the between- HHA variance component; and $\varepsilon \sim N(0,\sigma^2)$ is the error term. The hierarchical logistic regression model is estimated using SAS software (PROC GLIMMIX: SAS/STAT User's Guide, SAS Institute Inc.).

The estimated equation is used twice in the measure. The sum of the probabilities of discharge to community of all patients in the HH measure, including both the effects of patient characteristics and the HHA, is the "predicted number" of discharges to community after adjusting for the HH case mix. The same equation is used without the HHA effect to compute the "expected number" of discharges to community for the same patients at the average HHA. The ratio of the predicted-to-expected number of discharges to community is a measure of the degree to which discharges to community are higher or lower than what would otherwise be expected. This standardized risk ratio is then multiplied by the mean discharge to community rate for all HH stays for the measure, yielding the risk-standardized discharge to community rate for each HHA. Please note that the estimation procedure is recalculated for each measurement period. Re-estimating the models for each measurement period allows the estimated effects of the patient characteristics to vary over time as patient case-mix and medical treatment patterns change.

Risk adjustment variables include demographic and eligibility characteristics; principal diagnoses; types of surgery or procedures from a prior short-term acute care stay where applicable; comorbidities; length of stay and intensive care utilization from a prior short-term acute care stay; dialysis in the prior acute stay; and number of prior hospitalizations in the year preceding the PAC admission. Risk adjustment variable descriptions are provided below. See Appendix Table 1 for the full list of variables in the risk adjustment models.

1) Age and sex groups.
2) End stage renal disease (ESRD) or disability as original reason for entitlement.
3) Principal diagnosis (Clinical Classifications Software (CCS) groups) when from a prior hospitalization, if that hospitalization took place during the 30 days before the HH start or resumption of care. The ICD-9 codes from the prior acute claim are grouped clinically using the CCS for ICD-9 diagnoses developed by the Agency for Healthcare Research and Quality (AHRQ).[50]
4) Surgical procedure categories from a prior hospitalization, if that hospitalization took place during the 30 days before HH start or resumption of care. The procedures are grouped using the CCS classes for ICD-9 procedures developed by AHRQ.
5) Dialysis in prior acute stay where ESRD not indicated.
6) Indicator for ESRD status.
7) Length of prior acute hospital stay in days, for patients whose prior acute stay was in a non-psychiatric hospital (categorical variables are used to account for

[50] AHRQ CCS groupings of ICD-9 codes - Documentation available at: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

nonlinearity); indicator of prior psychiatric hospital stay for patients whose prior acute stay was in a psychiatric hospital.

8) Indicator for if a prior hospitalization during the 30 days before HH start or resumption of care took place in the intensive/cardiac care units. Comorbidities (Hierarchical Condition Categories) recorded during the one year prior to HH start or resumption of care are clustered using the Hierarchical Condition Categories [HCC] groups used by CMS.[51]

9) Number of prior acute hospital discharges in the past year, not including those that took place during the 30 days prior to HH start or resumption of care .

10) Indicator for whether or not the patient had an outpatient emergency room visit during the year prior to HH start or resumption of care.

11) Activity of Daily Living (ADL) Severity Score, as calculated using responses on the patient's OASIS assessment .

2.1.9 Measure Calculation Algorithm

The following steps describe the calculation algorithm/measure logic for the discharge to community measure:

Step 1: Identify patients meeting the criteria for the target population, after applying measure exclusions.

Step 2: Identify patients meeting the numerator criteria, i.e., discharge to community, no unplanned readmissions on the day of discharge or in the 31 days following discharge, and no death on the day of discharge or in the 31 days following discharge.

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

Step 4: Calculate the predicted and expected number of discharges to community for each agency using the hierarchical logistic regression model.

The predicted number of discharges to community for each HHA is calculated as the sum of the predicted probability of discharge to community for each patient discharged from the HHA and is included in the measure, including the HH -specific effect.

To calculate the predicted number of discharges to community, $pred_j$, for index HH stays at HHA $_j$, we used the following equation:

$$pred_j = \Sigma logit^{-1}(\mu + \omega_i + \beta * Z_{ij}) \quad (2)$$

[51] CMS-HCC Mappings of ICD-9 Codes: Mappings are included in the software at the following website: http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html

where the sum is over all stays in HHA $_j$, and ω_i is the random intercept.

To calculate the expected number exp_j, we used the following equation:

$$exp_j = \Sigma logit^{-1} (\mu + \beta * Z_{ij}) \quad (3)$$

Step 5: Calculate the standardized risk ratio for each HHA, as the ratio of the predicted to expected number of discharges to community.

To calculate the HHA -wide standardized risk ratio, SRR_j, we used the following equation:

$$SRR_j = pred_j/exp_j \quad (4)$$

Step 6: Calculate the risk-standardized discharge to community rate for each HHA.

To aid interpretation, the HHA -wide standardized risk ratio, SRR_j, obtained from equation (4) is then multiplied by the overall national raw discharge to community rate for all HH stays, $\bar{Y}$, to produce the HHA -wide risk-standardized discharge to community rate (RSR_j).

To calculate the risk-standardized discharge to community rate for each HHA, we used the following equation:

$$RSR_j = SRR_j * \bar{Y} \quad (5)$$

NOTE: Because the statistic described in Step 6 is a complex function of parameter estimates, re-sampling and simulation techniques (e.g., bootstrapping) may be necessary to derive a confidence interval estimate for the final risk-standardized rate, to characterize the uncertainty of the estimate.

See **Appendix 1, Table 1-1** for risk adjustment model results. Distribution of HHA -level discharge to community rates is provided in **Appendix 1, Table 1-2** and **Appendix 1, Figure 1-1**.

2.2 Potentially Preventable 30-Day Post-Discharge Readmission Measure for Home Health (HH) Quality Reporting Program (QRP)

2.2.1 Measure Description

Sections 1899B(a)(2)(E)(ii) and 1899B(d)(1)(C) of the Act require the Secretary to specify measures to address the resource use and other measures domain of all-condition risk-adjusted potentially preventable hospital readmission rates for PAC providers – SNFs, LTCHs, and IRFs- by October 1, 2016 and HHAs by January 1, 2017. This potentially preventable readmission (PPR) measure for HHAs estimates the risk-standardized rate of unplanned, potentially preventable readmissions for patients (Medicare fee-for-service [FFS] beneficiaries) in the 30-days of a HH discharge. This measure is conceptualized uniformly across the PAC

settings, in terms of the definition of the PPR outcome, the approach to risk adjustment, and the measure calculation.

The HH admission must have occurred within up to 30 days of discharge from a prior proximal hospital stay, which is defined as an inpatient admission to an acute care hospital (including IPPS, CAH or a psychiatric hospital). Hospital readmissions include readmissions to a short-stay acute-care hospital or a LTCH, with a diagnosis considered to be unplanned and potentially preventable. This measure is claims-based, requiring no additional data collection or submission burden for HHAs. Because the measure denominator is based on HH admissions, each Medicare beneficiary may be included in the measure multiple times within the measurement period. Readmissions counted in this measure are identified by examining Medicare FFS claims data for readmissions to either acute care hospitals (IPPS or CAH) or LTCHs that occur during a 30-day window beginning two days after HH discharge.

This measure calculates a risk-adjusted PPR rate for each HHA. This is derived by first calculating a standardized risk ratio -- the predicted number of unplanned, potentially preventable hospital readmissions at the HHA divided by the expected number of readmissions for the same patients if treated at the average HHA. The standardized risk ratio is then multiplied by the mean readmission rate in the population (i.e., all Medicare FFS patients included in the measure) to generate the HHA-level standardized readmission rate of potentially preventable readmissions.

For this PPR measure, readmissions that are usually for planned procedures are not counted as potentially preventable (see details below).

2.2.2 Purpose/Rationale for the Measure

Hospital readmissions among the Medicare population are common, costly, and often preventable.[52,53] The Medicare Payment Advisory Commission (MedPAC) and a study by Jencks et al. estimated that 17-20 percent of Medicare beneficiaries discharged from the hospital were readmitted within 30 days. Among these hospital readmissions, MedPAC has estimated that 76 percent were considered potentially avoidable-- associated with $12 billion in Medicare expenditures.[54,55] An analysis of data from a nationally representative sample of Medicare FFS beneficiaries receiving HH services in 2004 show that HH patients receive significant amounts of acute and post-acute services after discharge from HH care. Within 30 days of discharge from HH, 29 percent of patients were admitted to a hospital.[56] Focusing on readmissions, Madigan and colleagues studied 74,580 Medicare HH patients and found that the 30-day rehospitalization rate was 26 percent, with the largest proportion related to a cardiac-related diagnosis (42

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[52] Friedman, B. and J. Basu, The rate and cost of hospital readmissions for preventable conditions. Med Care Res Rev, 2004. **61**(2): p. 225-40.

[53] Jencks, S.F., M.V. Williams, and E.A. Coleman, Rehospitalizations among Patients in the Medicare Fee-for-Service Program. New England Journal of Medicine, 2009. **360**(14): p. 1418-1428.

[54] *Ibid*.

[55] MedPAC, Payment policy for inpatient readmissions, in Report to the Congress: Promoting Greater Efficiency in Medicare. 2007: Washington D.C. p. 103-120.

[56] Wolff, J. L., Meadow, A., Weiss, C.O., Boyd, C.M., Leff, B. Medicare Home Health Patients' Transitions Through Acute And Post-Acute Care Settings." Medicare Care **11**(46) 2008; 1188-1193

percent).[57] Fewer studies have investigated potentially preventable readmission rates from other PAC settings.

The Centers for Medicare & Medicaid Services (CMS) has addressed the high rates of hospital readmissions for the acute care hospital setting and more recently, among PAC providers. For example, CMS developed the following all-cause readmission measures: All-Cause Unplanned Readmission Measure for 30 days Post Discharge from Inpatient Rehabilitation Facilities (IRFs), All-Cause Unplanned Readmission Measure for 30 days Post Discharge from Long-Term Care Hospitals (LTCHs), and the Skilled Nursing Facility (SNF) 30-Day All-Cause Readmission Measure (NQF #2380, #2502, #2512, and #2510, respectively).[58] These measures were endorsed by the National Quality Forum (NQF). The IRF and LTCH measures were adopted for their respective quality reporting programs for public reporting, and the SNF measure was adopted for value-based purchasing. The NQF-endorsed measures focus on all-cause readmissions and are not cross-setting in that the specifications differ by measure.

This current work is focused on the development of potentially preventable hospital readmission measures for post-acute care, as directed by Congress through the *Improving Medicare Post-Acute Care Transformation Act of 2014* (IMPACT Act). The IMPACT Act requires the development and submission of standardized data from PAC settings with the intent for cross-setting quality comparison to promote patient-centeredness.[59] This includes the requirement to develop and implement measures to reflect all-condition risk-adjusted potentially preventable hospital readmission rates.

2.2.3 Denominator

The denominator for the PPR measures is computed the same way as the numerator, but the HHA effect is set at the average. The details of the readmission types counted in the numerator and the patients who are included in the measures are below.

For the eligible HH stays at each HHA, the measure denominator is the risk-adjusted expected number of readmissions. This estimate includes risk adjustment for patient characteristics with the HHA effect removed. The "expected" number of readmissions is the predicted number of risk-adjusted readmissions if the same patients were treated at the average HHA appropriate to the measure.

This population, like that of the numerator, is the group of Medicare FFS PAC patients who are not excluded for the reasons below.

Denominator Exclusions: HH Post-Discharge Measure

The post-PAC discharge PPR measures are based on Medicare FFS claims data and include HH discharges to non-hospital post-acute levels of care or to the community. The observation window is 30-days after discharge from a HHA; this window of observation

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[57] Madigan, E. A., N. H. Gordon, et al. Rehospitalization in a national population of home health care patients with heart failure." Health Serv Res 47(6): 2013; 2316-2338

[58] National Quality Forum., All-Cause Admissions and Readmissions Measures. April 2015. p. 1-319.

[59] United States Congress., H.R. 4994. *IMPACT Act of 2014*. 2014: United States of America. p. 1-19

excludes the day of discharge and the day thereafter (i.e. the 30 days starts 2 days after the discharge date). Stays ending in transfers to the same level of care or acute hospitals are excluded. Only PAC stays where patients had a short-term acute care stay within 30 days prior to the PAC admission date are included in the measures. Prior proximal hospital stays are defined as an inpatient admission to an acute care hospital (including IPPS, CAH, or a psychiatric hospital).

1) *Patients who died during the HH stay.*

   Rationale: The PPR measures are not relevant for patients who died during their PAC stay because there is no post-PAC discharge period to observe.

2) *Patients less than 18 years old.*

   Rationale: Patients under 18 years old are not included in the target population for this measure. Pediatric patients are relatively few and may have different patterns of care than adults.

3) *Patients who were transferred at the end of a stay to another HHA or short-term acute care hospital.*

   Rationale: HH patients who were transferred to another HHA or short-term acute-care hospital are excluded from this measure because the transfer suggests that either their HH treatment has not been completed or that their condition worsened, requiring a transfer (i.e. readmission) back to the acute care setting. The intent of these measures is to follow patients deemed well enough to be discharged to a less intensive care setting (i.e., discharged to without HH care).

4) *Patients not continuously enrolled in Parts A and B FFS Medicare (or those enrolled in Part C Medicare Advantage) for the 12 months prior to the post-acute admission date, and at least 31 days after the post-acute discharge date.*

   Rationale: Patients not continuously enrolled in Parts A and B FFS Medicare for the 12 months 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 Part A FFS Medicare for at least 31 days after post-acute discharge are excluded because readmissions and death must be observable in the 31-day post-discharge period. Patients without continuous A/B coverage, or those who are ever enrolled in a Part C Medicare Advantage plan during the pre- and post-PAC periods will not have complete claims in the system.

5) *Patients who did not have a short-term acute-care stay within 30 days prior to a HH admission date.*

   Rationale: These measures require information from the prior short-term acute-care stay in the elements used for risk adjustment.

6) *Patients who are not discharged to the community.*

Rationale: As a post-discharge measure, this measure focuses on patients successfully discharged to the community.

7) *Patients/residents discharged against medical advice (AMA).*

Rationale: Patients discharged AMA are excluded because these patients have not completed their full course of treatment in the opinion of the HHA.

8) *Patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer.*

Rationale: Consistent with the Hospital Wide Readmission (HWR) Measure (NQF #1789), patients for whom the prior short-term acute-care stay was for nonsurgical treatment of cancer are excluded because these patients were identified as following a very different trajectory after discharge, with a particularly high mortality rate.

9) *Patients who were transferred to a federal hospital from the HHA.*

Rationale: Patients who are transferred to federal hospitals will not have complete inpatient claims in the system.

10) *Patients who received care from a provider located outside of the United States, Puerto Rico, or a U.S. territory.*

Rationale: Patients who received care from foreign providers may not have complete inpatient claims in the system, and these providers may not be subject to the same policy decisions related to readmissions.

2.2.4 Numerator

As described, the index PAC admission must have occurred within up to 30 days of discharge from a prior proximal hospital stay (including IPPS, CAH, or a psychiatric hospital). Hospital readmissions include readmissions to a short-stay acute-care hospital or an LTCH, with a diagnosis considered to be unplanned and potentially preventable. Note: Readmissions to inpatient psychiatric facilities are considered planned and not counted for the purposes of this measure.

The numerator of this measure is mathematically related to the number of patients in the target population who have the event of a potentially preventable, unplanned readmission (PPR definitions and planned readmissions are further described below) during the specific readmission window (i.e. 30-day post-PAC discharge).

The measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method does not make the observed number of readmissions the numerator, and a predicted number the denominator. Instead, the numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days of HH discharge. This

estimate starts with the observed readmissions, and is then risk-adjusted for patient characteristics and a statistical estimate of the HHA's effect, beyond patient case mix.

The prediction equations are based on a logistic statistical model with a 2-level hierarchical structure. The patient episodes in the model have an indicator as to which HHA they are discharged from and the effect of the provider 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.

The data are from Medicare FFS inpatient claims, and eligibility and enrollment data. Because this measure is claims-based, there is no additional data collection or submission burden for providers.

See below for more details on the data sources.

NOTE: This measure was developed with ICD-9 procedure and diagnosis codes. ICD-10 was implemented on October 1, 2015; when we calculate this measure using data from calendar year 2015, we will use ICD-10 codes. A preliminary list of the PPR definition using ICD-10 codes can be found in **Appendix 2, Table 2-2**.

Numerator Details: Readmissions Counted in Measures

PPR Definitions

Some general methods and algorithms have been developed to assess potentially avoidable or preventable hospitalizations and readmissions for the general Medicare population, such as the Agency for Healthcare Research and Quality's (AHRQ) Prevention Quality Indicators (PQI), approaches developed by and for MedPAC, and proprietary approaches, such as the 3M™ algorithm for Potentially Preventable Readmissions.[60,61,62] However, there is no consensus on how to define potentially avoidable or preventable readmissions, especially among Medicare beneficiaries who utilize PAC services including HH, SNF, IRF, and LTCH. Recent work led by Kramer et al. for MedPAC identified 13 conditions that were deemed potentially preventable among the SNF and IRF populations;[63,64] however, these conditions did not differ by PAC setting or readmission window (i.e. during the PAC stay or post-PAC discharge). To support the development of potentially preventable hospital readmission measures among patients/residents who use PAC, measure development contractors (RTI International and Abt

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60 Goldfield, N.M., Elizabeth; Hughes, John; Tang, Ana; Eastman, Beth; Rawlins, Lisa; Averill, Richard, *Identifying Potentially Preventable Readmissions.* Health Care Financing Review, 2008. **30**(1): p. 75-91.

61 Agency for Healthcare Research and Quality. *Prevention Quality Indicators Overview.* 2008.

62 MedPAC, *Online Appendix C: Medicare Ambulatory Care Indicators for the Elderly*, in *Report to the Congress: Medicare Payment Policy*. 2011. p. 7-11.

63 Kramer, A.L., Michael; Fish, Ron; Min, Sung-Joon, *Development of Potentially Avoidable Readmission and Functional Outcome SNF Quality Measures*. 2014. p. 1-75.

64 Kramer, A.L., Michael; Fish, Ron; Min, Sung-joon, *Development of Inpatient Rehabilitation Facility Quality Measures: Potentially Avoidable Readmissions, Community Discharge, and Functional Improvement*. 2014. p. 1-42.

Associates) have developed an approach to define potentially preventable readmissions, building on existing research in this area, and are developing measures to address this high priority area.

The literature shows that some hospital readmissions can be prevented, and that many of these readmissions occur in the context of PAC, including SNF, IRF, LTCH and HH.[65,66] For certain diagnoses, proper care and management of patients' or residents' conditions (in the HHA/facility or by primary care following discharge) along with appropriate, clearly explained and implemented discharge instructions and referrals, can often prevent a patient's or resident's readmission to the hospital. Identifying these PPR conditions will assist healthcare providers' efforts to improve quality of care and coordination across the care continuum.

In order to develop PPR definitions for PAC, we conducted a comprehensive environmental scan to identify studies and previously published methodologies related to potentially preventable hospitalizations and hospital readmissions. The evidence specific to PAC is limited, and we found substantial variation across methodologies for defining potentially preventable hospitalizations or readmissions. Based on this scan, we compiled a list of all PPR conditions described in the literature. This list had considerable overlap with the Ambulatory Care Sensitive Conditions (ACSC) / PQI, developed by the AHRQ.

We used the ACSC approach as the starting point for this work. Given clinical evidence that these conditions can be avoided with appropriate access to high quality ambulatory care, we found that a majority of these conditions reflect reasons for readmissions that would be considered potentially preventable.[67]

In addition, this PPR definition was informed by empirical analyses. Specifically, we analyzed Medicare claims data to identify the most frequent diagnoses associated with hospital readmissions among patients/residents that received post-acute care. We evaluated whether these common causes for readmission could also be considered potentially preventable, by applying the working conceptual definition for PPR explained above, to each of the diagnoses found in the claims analysis. Some conditions such as pressure ulcers, were not on either the ACSC list or in the preliminary data analyses. However, the literature strongly suggests that readmissions for these conditions can be prevented with close monitoring from healthcare providers and under appropriate ambulatory care.

In developing these sets of PPR conditions, we grouped them based on clinical rationale, as follows:

1) Inadequate management of chronic conditions

2) Inadequate management of infections

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65 Vest, J.R., et al., *Determinants of preventable readmissions in the United States: a systematic review.* Implement Sci, 2010. **5**: p. 88.

66 van Walraven, C., A. Jennings, and A.J. Forster, *A meta-analysis of hospital 30-day avoidable readmission rates.* J Eval Clin Pract, 2012. **18**(6): p. 1211-1218.

67 AHRQ Quality Indicators—Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions. Rockville, MD: Agency for Healthcare Research and Quality, 2001. AHRQ Pub. No. 02-R0203.

3) Inadequate management of other unplanned events

4) Inadequate injury prevention

We sought technical expert and detailed clinical input on these definitions and overall approach. The Technical Expert Panel's (TEP) consensus was that it is feasible to develop uniform definitions that may be applied to all PAC providers. Based on TEP feedback, we substantially revised the definitions to remove several proposed PPR conditions (for example, we excluded several chronic conditions included in the ACSC approach, such as readmissions for long-term complications of diabetes) and, in some cases, added new PPR conditions based on TEP input, such as influenza. In instances where no clear consensus was reached among TEP members (e.g., urinary tract infection, septicemia), we deferred to clinical expertise from the measure development team along with results from our environmental scan which suggested that these conditions were appropriate to consider as potentially preventable.

Appendix 2, Table 2-1 summarizes the set of conditions we considered potentially preventable for the 30-day post-PAC discharge readmission window based on TEP input. The list of PPR conditions is organized by the clinical rationale for each condition's inclusion on this list.

In order for a readmission to be considered potentially preventable, it must be coded as the principal diagnosis on the readmission claim. However, there are some exceptions based on the PQI specifications, as noted in the appendices (see dehydration conditions).

Planned Readmissions

These measures are focused on readmissions that are potentially preventable and *unplanned*. Thus, planned readmissions are not counted in the numerator—PPRs are only counted in the numerator if the readmission is considered unplanned. Planned readmissions are defined largely by the definition used for the HWR measure, and were revised to include additional procedures determined suitable for PAC, with input from a TEP convened by the CMS contractor, RTI International. Both are described in greater detail below. ICD-9 codes for these additional procedures were identified by a certified coder.

If a readmission claim contains a code for a procedure that is frequently a planned procedure, then that readmission is designated to be a planned readmission. However, the readmission is reclassified as unplanned if the claim also contains a code indicating one or more acute diagnoses from a specified list, which can be found in **Appendix 2, Table 2-6**.

Appendix 2, Table 2-7 presents the list of codes for procedures identified as "planned" for PAC, which were not included in the CMS Planned Readmission Algorithm at the time of its development. These procedures and diagnoses are currently defined by ICD-9 procedure and diagnosis codes grouped by the Clinical Classification Software (CCS), developed by the AHRQ. They are included as full CCS classes where appropriate, or by individual codes, if necessary. Readmissions to psychiatric hospitals or units are also classified as planned readmissions.

The Appendix includes details on the planned readmission definitions, including the CMS Planned Readmission Algorithm version 3.0 (**Appendix 2, Figure 2-1 and Tables 2-3 to 2-6**) and a table summarizing the additional planned readmissions added for PAC (**Appendix 2, Table 2-7**). Note this approach is consistent with that used for the NQF-endorsed SNF, IRF, LTCH, and HH all-cause readmission measures (NQF #2510, 2502, and 2512, 2380 respectively).

Readmission Time Frames

The readmission time frames for this measure is 30 days post-PAC discharge.

Other Documentation

AHRQ CCS groupings of ICD-9 codes: Documentation available at: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

CMS-HCC Mappings of ICD-9 Codes: Mappings are included in the software at the following website: http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html

2.2.5 Data Sources

This measure relies on data from Medicare's eligibility database as well as fee-for-service (FFS) claims from the home health, inpatient, outpatient, and physician office settings. The eligibility 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 and B. The FFS claims files provide information about each home health and PAC stay, including dates of admission and discharge, diagnoses and procedures, and indicators for care received in the intensive care unit, coronary care unit, and emergency department. Furthermore, claims from all three file settings are used to construct for each patient a complete history of care before the index home health stay, which is used for constructing risk adjustment variables. No data beyond the bills submitted in the normal course of business are required from providers for the calculation of this measure. Below are links to documentation for each of the specific files the HH measure.

- Information about the Medicare enrollment database is available online at: https://aspe.hhs.gov/centers-medicare-medicaid-services
- Documentation for the Medicare claims data is provided online by ResDAC. Data dictionaries are available for all three standard analytical files:
    - Home Health RIF: http://www.resdac.org/cms-data/files/hha-rif
    - Inpatient RIF: http://www.resdac.org/cms-data/files/ip-rif
    - Outpatient RIF: http://www.resdac.org/cms-data/files/op-rif
    - Carrier (Physician Office) RIF: http://www.resdac.org/cms-data/files/carrier-rif

2.2.6 Measure Time Window

HH Time Window: In the HH setting, the measure will be calculated using three years of data. All HH episodes during the three-year time window, except those that meet the exclusion criteria, will be included in the measure. For patients with multiple HH episodes during the three-year time window, each episode will be eligible for inclusion in the measure. Data from 2011 – 2013 was used for the HH measure development.

Rationale: Through the analytic work to develop these and previously developed measures, we found that one year of claims data provided a somewhat limited sample size at the provider level. In order to have a more sufficient sample size, we expanded the data to include three consecutive years of claims data. Pooling three years of data provides more reliable and stable estimates.

NOTE: For the purposes of public reporting, a minimum of 20 eligible stays is utilized.

2.2.7 Statistical Risk Model and Risk Adjustment Covariates

The statistical methods, including risk adjustment, were developed to harmonize with the HWR measure (NQF #1789) as well as the HH, SNF, IRF, and LTCH all-cause readmission measures. The following section summarizes the risk adjustment approach for all PPR measures.

A hierarchical regression method using a logistic regression to predict the probability of a countable (potentially preventable, unplanned) readmission 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 patient characteristics are accounted for as well as the clustering of patients into HHAs. The statistical model estimates both the average predictive effect of the patient characteristics across all providers and the degree to which each provider has an effect on readmissions that differs from that of the average provider. The provider effects are assumed to be randomly distributed around the average (according to a normal distribution). When computing the HHA effect, hierarchical modeling accounts for the known predictors of readmissions, on average, such as patient characteristics, the observed provider rate, and the number of provider stays eligible for the measure. The estimated provider effect is determined mostly by the provider's own data if the number of patient discharges is relatively large (as the estimate would be relatively precise), but is adjusted toward the average if the number of patient discharges 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 patient *i* is readmitted within 30 days, zero otherwise) for a patient *i* at PAC *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:

$$\text{logit}(\text{Prob}(Y_{ij}=1)) = \alpha_j + \beta * Z_{ij} + \varepsilon_{ij} \qquad (5)$$
$$\alpha_j = \mu + \omega_j ; \ \omega_j \sim N(0, \tau^2)$$

where $Z_{ij} = (Z_1, Z_2, ... Z_k)$ is a set of *k* patient-level covariates; α_j represents the HH specific intercept; μ is the adjusted average outcome over all HHAs; τ^2 is the between HHA variance component; and $\varepsilon \sim N(0,\sigma^2)$ is the error term. The hierarchical logistic regression model is estimated using SAS software (PROC GLIMMIX: SAS/STAT User's Guide, SAS Institute Inc.)

The estimated equation is used twice in the measure. The sum of the probabilities of readmission of all patients in the measure, including both the effects of patient characteristics and the provider, is the "predicted number" of readmissions after adjusting for the provider's case mix. The same equation is used without the provider effect to compute the "expected number" of potentially preventable readmissions for the same patients at the average provider. The ratio of the predicted-to-expected number of readmissions is a measure of the degree to which the readmissions are higher or lower than what would otherwise be expected. This standardized risk ratio is then multiplied by the mean readmission rate for all provider stays for the measure, yielding the risk-standardized readmission rate for each provider. This estimation procedure is recalculated for each measurement period. Estimating the equations for each measurement period allows the estimated effects of the patient characteristics to vary over time as medical treatment patterns change.

Risk-adjustment variables include demographic and eligibility characteristics; principal diagnoses; types of surgery or procedure from the prior short-term stay; comorbidities; length of stay and ICU/CCU utilization from the immediately prior short-term stay; and number of admissions in the year preceding HH start or resumption of care.

The risk adjustment variables include the following:

1) Age/sex categories

2) Original reason for Medicare entitlement (age, disability or ESRD)

3) Surgery category if present (e.g., cardiothoracic, orthopedic), defined as in the HWR model software; the procedures are grouped using the CCS classes for ICD-9 procedures developed by AHRQ

4) 5) Principal diagnosis on prior short-term claim as in the HWR measure. The ICD-9 codes are grouped clinically using the CCS for ICD-9 diagnoses developed by AHRQ.

6) Comorbidities from secondary diagnoses on the prior short-term claim and diagnoses from earlier short-term stays up to one year before PAC admission (these are clustered using the Hierarchical Condition Categories [HCC] groups used by CMS)

Prior Utilization Measures (vary by measure):

1) Length of stay in the prior short-term hospital stay (categorical to account for nonlinearity)
2) Prior acute ICU/CCU utilization (days) (categorical)
3) Count of prior short-term discharges in the prior year

Risk Adjustment for Sociodemographic Status (SDS):

Based on recommendations of the Consensus Standards Approval Committee, the National Quality Forum (NQF) has recently called for adjusting performance measures for sociodemographic status (SDS) when appropriate. CMS is currently conducting empirical testing under an NQF trial period to construct specific variables that capture aspects of SDS in order to account for this factor in the risk-adjustment models for the NQF-endorsed PAC readmission measures. This issue is also relevant for the potentially preventable hospital readmission measures that are currently under development. In addition, work being conducted by the Assistant Secretary for Planning and Evaluation on SDS risk adjustment per the IMPACT Act may provide additional direction on this issue.

2.2.8 Measure Calculation Algorithm

The Medicare HH claims are matched to prior acute hospital stays, hospital stays post-PAC discharge, and patient eligibility data to determine which stays remain in the measure (i.e. not excluded per the exclusions described above) and which have potentially preventable, unplanned readmissions.

The measures are calculated according to the following steps:

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

Step 2: Identify patients meeting the numerator (unplanned PPR) criteria taking into account the planned readmission algorithm.

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

Step 4: Calculate the predicted and expected number of readmissions for each provider using hierarchical logistic regression model.

The predicted number of readmissions for each HHA is calculated as the sum of the predicted probability of readmission for each patient included in the measure discharged from the provider, including the provider-specific effect. The model specific risk standardized readmission ratio for each HHA is calculated as follows.

To calculate the predicted number of readmissions $pred_j$ for index HH episodes at HHA_j, we used

$$pred_j = \Sigma logit^{-1}(\mu + \omega_i + \beta * Z_{ij}) \quad (1)$$

where the sum is over all episodes in $provider_j$, and ω_i is the random intercept. To calculate the expected number exp_j use

$$exp_j = \Sigma logit^{-1}(\mu + \beta * Z_{ij}) \quad (2)$$

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

$$SRR_j = pred_j/exp_j \quad (3)$$

Step 5: Calculate the risk-standardized HH potentially preventable readmission rate.

The value obtained from equation (3) above, the SRR_j, is the HH-wide standardized risk ratio for HHA_j. To aid interpretation, the provider-wide standardized risk ratio, SRR_j, is then multiplied by the overall national raw readmission rate for all provider episodes, $\bar{Y}$, to produce the provider-wide risk-standardized readmission rate ($RSRR_j$).

$$RSRR_j = SRR_j * \bar{Y} \quad (4)$$

2.2.9 Measure Results

We present measure results for the HH PPR measure in the **Appendix 2, Table 2-8 and Figures 2-2 and 2-3**. These include the full risk adjustment model results along with distributions of the unadjusted and risk-standardized PPR rates for HHAs.

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2.3 Drug Regimen Review Conducted with Follow-Up for Identified Issues- Post Acute Care (PAC) Home Health (HH) Quality Reporting Program (QRP)

2.3.1 Measure Description

Sections 1899B(a)(2)(E)(i)(III) and 1899B(c)(1)(C) of the Act require the Secretary to specify a quality measure to address the medication reconciliation domain for IRFs, LTCHs and SNFs by October 1, 2018 and for HHAs by January 1, 2017. We are proposing to adopt the quality measure, Drug Regimen Review Conducted with Follow-Up for Identified Issues- Post Acute Care (PAC) Home Health (HH) Quality Reporting Program (QRP), for the HH QRP as a patient assessment-based, cross-setting quality measure to meet the IMPACT Act requirements with data collection beginning January 1, 2017 for FY 2018 payment determinations and subsequent years.

This proposed measure assesses whether HHAs are responsive to potential or actual clinically significant medication issue(s) when such issues were identified. Specifically, the proposed quality measure reports the percentage of episodes in which a drug regimen review was conducted at the start of care or resumption of care and timely follow-up with a physician occurred each time potential clinically significant medication issues were identified throughout that episode.

Additionally, for this proposed quality measure, drug regimen review is defined as the review of all medications or drugs the patient is taking to identify any potentially clinically significant medication issues. This proposed quality measure utilizes both the processes of medication reconciliation and a drug regimen review, in the event an actual or potential medication issue occurred. The proposed measure informs whether the HHA identified and addressed each clinically significant medication issue and if the agency responded or addressed the medication issue in a timely manner.[68] Of note, drug regimen review in PAC settings is generally considered to include medication reconciliation and review of the patient's drug regimen to identify potential clinically significant medication issues.[69] This measure will be applied uniformly across the PAC settings.

2.3.2 Purpose/Rationale for the Quality Measure

This proposed measure assesses whether HHAs were responsive to potential or actual clinically significant medication issue(s) when such issues were identified. Specifically, the proposed quality measure reports the percentage of patient care episodes in which a drug regimen review was conducted at the time of start of care or resumption of care and timely follow-up with a physician occurred each time potential clinically significant medication issues were identified throughout that care episode.

The performance of timely medication reconciliation is valuable to the process of drug regimen review. Preventing and responding to adverse drug events (ADEs) is of critical importance as ADEs account for significant increases in health services utilization and

[68] Institute of Medicine. Preventing Medication Errors. Washington DC: National Academies Press; 2006.
[69] *Ibid.*

costs, [70, 71 ,72] including subsequent emergency room visits and re-hospitalizations.[73] ADEs are associated with an estimated $3.5 billion in annual health care costs and 7,000 deaths annually. [74]

Medication reconciliation is a process of reviewing an individual's complete and current medication list and drug regimen review is included in that process. Medication reconciliation is a recognized process for reducing the occurrence of medication discrepancies that may lead to ADEs.[75] Medication discrepancies occur when there is conflicting information documented in the medical records. The World Health Organization regards medication reconciliation as a standard operating protocol necessary to reduce the potential for ADEs that cause harm to patients. Medication reconciliation is an important patient safety process that addresses medication accuracy during transitions in patient care and in identifying preventable ADEs.[76] The Joint Commission added medication reconciliation to its list of National Patient Safety Goals (2005), suggesting that medication reconciliation is an integral component of medication safety.[77] The Society of Hospital Medicine published a statement in agreement of the Joint Commission's emphasis and value of medication reconciliation as a patient safety goal.[78] There is universal agreement that medication reconciliation directly addresses patient safety issues that can result from medication miscommunication and unavailable or incorrect information.[79,80,81]

Medication errors include the duplication of medications, delivery of an incorrect drug, inappropriate drug omissions, or errors in the dosage, route, frequency, and duration of medications. Medication errors are one of the most common types of medical error and can occur at any point in the process of ordering and delivering a medication. Medication errors

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70 Institute of Medicine. Preventing Medication Errors. Washington DC: National Academies Press; 2006.

71 Jha AK, Kuperman GJ, Rittenberg E, et al. Identifying hospital admissions due to adverse drug events using a computer-based monitor. Pharmacoepidemiol Drug Saf. 2001;10(2):113-119.

72 Hohl CM, Nosyk B, Kuramoto L, et al. Outcomes of emergency department patients presenting with adverse drug events. Ann Emerg Med. 2011;58:270–279.

73 Kohn LT, Corrigan JM, Donaldson MS. To Err Is Human: Building a Safer Health System Washington, DC: National Academies Press; 1999.

74 Ibid

75 Institute of Medicine. Preventing Medication Errors. Washington DC: National Academies Press; 2006.

76 Leotsakos A., et al. Standardization in patient safety: the WHO High 5s project. Int J Qual Health Care. 2014:26(2):109-116.

77 The Joint Commission. 2016 Long Term Care: National Patient Safety Goals Medicare/Medicaid Certification-based Option. (NPSG.03.06.01).

78 Greenwald, J. L., Halasyamani, L., Greene, J., LaCivita, C., et al. (2010). Making inpatient medication reconciliation patient centered, clinically relevant and implementable: a consensus statement on key principles and necessary first steps. Journal of Hospital Medicine, 5(8), 477-485.

79 Leotsakos A., et al. Standardization in patient safety: the WHO High 5s project. Int J Qual Health Care. 2014:26(2):109-116.

80 The Joint Commission. 2016 Long Term Care: National Patient Safety Goals Medicare/Medicaid Certification-based Option. (NPSG.03.06.01).

81 IHI. Medication Reconciliation to Prevent Adverse Drug Events [Internet]. Cambridge, MA: Institute for Healthcare Improvement; [cited 2016 Jan 11]. Available from: http://www.ihi.org/topics/adesmedicationreconciliation/Pages/default.aspx.

have the potential to result in an ADE.[82,83,84,85,86, 87] Inappropriately prescribed medications are also considered a major healthcare concern in the United States for the elderly population, with costs of roughly $7.2 billion annually.[88]

There is strong evidence that medication discrepancies occur during transfers from acute care facilities to post-acute care facilities. Discrepancies occur when there is conflicting information documented in the medical records. Almost one-third of medication discrepancies have the potential to cause patient harm.[89] An estimated fifty percent of patients experienced a clinically important medication error after hospital discharge in an analysis of two tertiary care academic hospitals.[90]

Medication reconciliation has been identified as an area for improvement during transfer from the acute care facility to the receiving post-acute care facility. Post-acute care facilities report gaps in medication information between the acute care hospital and the receiving post-acute care setting when performing medication reconciliation.[91,92] Hospital discharge has been identified as a particularly high risk point in time , with evidence that medication reconciliation identifies high levels of discrepancy.[93,94,95,96,97,98] Also, there is evidence that medication

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82 Institute of Medicine. To err is human: building a safer health system. Washington, DC: National Academies Press; 2000.

83 Lesar TS, Briceland L, Stein DS. Factors related to errors in medication prescribing. JAMA. 1997:277(4): 312-317.

84 Bond CA, Raehl CL, & Franke T. Clinical pharmacy services, hospital pharmacy staffing, and medication errors in United States hospitals. Pharmacotherapy. 2002:22(2): 134-147.

85 Bates DW, Cullen DJ, Laird N, Petersen LA, Small SD, et al. Incidence of adverse drug events and potential adverse drug events. Implications for prevention. JAMA. 1995:274(1): 29-34.

86 Barker KN, Flynn EA, Pepper GA, Bates DW, & Mikeal RL. Medication errors observed in 36 health care facilities. JAMA. 2002: 162(16):1897-1903.

87 Bates DW, Boyle DL, Vander Vliet MB, Schneider J, & Leape L. Relationship between medication errors and adverse drug events. J Gen Intern Med. 1995:10(4): 199-205.

88 Fu, Alex Z., et al. “Potentially inappropriate medication use and healthcare expenditures in the US community-dwelling elderly.” Medical care 45.5 (2007): 472-476.

89 Wong, Jacqueline D., et al. "Medication reconciliation at hospital discharge: evaluating discrepancies." Annals of Pharmacotherapy 42.10 (2008): 1373-1379.

90 Kripalani S, Roumie CL, Dalal AK, et al. Effect of a pharmacist intervention on clinically important medication errors after hospital discharge: A randomized controlled trial. Ann Intern Med. 2012:157(1):1-10.

91 Gandara, Esteban, et al. "Communication and information deficits in patients discharged to rehabilitation facilities: an evaluation of five acute care hospitals." Journal of Hospital Medicine 4.8 (2009): E28-E33.

92 Gandara, Esteban, et al. "Deficits in discharge documentation in patients transferred to rehabilitation facilities on anticoagulation: results of a system wide evaluation." Joint Commission Journal on Quality and Patient Safety 34.8 (2008): 460-463.

93 Coleman EA, Smith JD, Raha D, Min SJ. Post hospital medication discrepancies: prevalence and contributing factors. Arch Intern Med. 2005 165(16):1842–1847.

94 Wong JD, Bajcar JM, Wong GG, et al. Medication reconciliation at hospital discharge: evaluating discrepancies. Ann Pharmacother. 2008 42(10):1373–1379.

95 Hawes EM, Maxwell WD, White SF, Mangun J, Lin FC. Impact of an outpatient pharmacist intervention on medication discrepancies and health care resource utilization in post hospitalization care transitions. Journal of Primary Care & Community Health. 2014; 5(1):14-18.

96 Foust JB, Naylor MD, Bixby MB, Ratcliffe SJ. Medication problems occurring at hospital discharge among older adults with heart failure. Research in Gerontological Nursing. 2012, 5(1): 25-33.

reconciliation discrepancies occur throughout the patient stay.[99],[100] For older patients, who may have multiple comorbid conditions and thus multiple medications, transitions between acute and post-acute care settings can be further complicated,[101] and medication reconciliation and patient knowledge (medication literacy) can be inadequate post-discharge.[102] The proposed quality measure, Drug Regimen Review Conducted with Follow-Up for Identified Issues-HH QRP, provides an important component of care coordination for HH settings and would affect a large proportion of the Medicare population who transfer from hospitals into HH services each year. For example, in 2014, more than 3.6 million Medicare FFS beneficiaries used HH services.[103]

2.3.3 Denominator

The denominator is the number of episodes during the HH reporting period.

HH Denominator: The denominator is the number of patient care episodes with a discharge, transfer or death at home assessment during the reporting period.

Denominator Exclusions

This measure has no denominator exclusions.

3.1.4 Numerator

Number of episodes in the denominator where the medical record contains documentation of a drug regimen review conducted at start of care or resumption of care with all potential clinically significant medication issues identified during the course of care and followed-up with a physician or physician designee.

HH Numerator: The numerator is the number of episodes with an OASIS assessment during the selected time window for which all of the following are each true:

1) The agency conducted a drug regimen review at the start of care or resumption of care (M2001= [0,1]) or the patient is not taking any medications (M2001= [9]); and

2) If potential clinically significant medication issues were identified at the start of care (M2001 = [1]), then the HHA contacted a physician (or physician-designee) by

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97 Pherson EC, Shermock KM, Efird LE, et al. Development and implementation of a post discharge home-based medication management service. Am J Health Syst Pharm. 2014; 71(18): 1576-1583.

98 Pronovosta P, Weasta B, Scwarza M, et al. Medication reconciliation: a practical tool to reduce the risk of medication errors. J Crit Care. 2003; 18(4): 201-205.

99 Bates DW, Cullen DJ, Laird N, Petersen LA, Small SD, et al. Incidence of adverse drug events and potential adverse drug events. Implications for prevention. JAMA. 1995:274(1): 29-34.

100 Himmel, W., M. Tabache, and M. M. Kochen. "What happens to long-term medication when general practice patients are referred to hospital? "European journal of clinical pharmacology 50.4 (1996): 253-257.

101 Chhabra, P. T., et al. (2012). “Medication reconciliation during the transition to and from long-term care settings: a systematic review.” Res Social Adm Pharm 8(1): 60-75.

102 Kripalani S, Roumie CL, Dalal AK, et al. Effect of a pharmacist intervention on clinically important medication errors after hospital discharge: A randomized controlled trial. Ann Intern Med. 2012:157(1):1-10.

103 Center for Medicare and Medicaid Services, "Research-Statistics-Data-and-Systems," 2014. [Online]. Available: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/CMS-Statistics-Reference-Booklet/Downloads/CMS_Stats_2014_final.pdf.

midnight of the next calendar day and completed prescribed/recommended actions in response to the identified issues (M2003= [1]); and

3) The HHA contacted a physician (or physician-designee) and completed prescribed/recommended actions by midnight of the next calendar day each time potential clinically significant medication issues were identified since the start of care or resumption of care (M2005 = [1]) or no potential clinically significant medications issues were identified since the start of care or resumption of care (M2005 = [9]). This condition is evaluated at discharge.

Please note that if data is missing on any of the three items used to calculate the numerator of the measure (specifically, (M2001= [-] or M2003= [-] or M2005= [-])), the patient will not be included in the numerator count though they will continue to be counted in the denominator, assuming all denominator criteria for that patient have been met.

3.1.5 Items Included in the Quality Measure

M2001. Drug Regimen Review Item

Did a complete drug regimen review identify potential clinically significant medication issues?

0. No - No issues found during review

1. Yes - Issues found during review

9. NA - Patient is not taking any medications

M2003Medication Follow-up Item

Did the HHA contact a physician (or physician-designee) by midnight of the next calendar day and complete prescribed/recommended actions in response to the identified potential clinically significant medication issues?

0. No

1. Yes

M2005. Medication Intervention Item

Did the HHA contact and complete physician (or physician-designee) prescribed/recommended actions by midnight of the next calendar day each time potential clinically significant medication issues were identified since the start of care/resumption of care?

0. No

1. Yes

9. NA - There were no potential clinically significant medication issues identified since start of care/resumption of care or patient is not taking any medications.

3.1.6 Risk Adjustment

This measure is not risk-adjusted or stratified.

3.1.7 Quality Measure Calculation Algorithm

The following steps are used to calculate the measure:

Step 1: Calculate the denominator count (see Section 3.1.3 for details):

In the HH setting, calculate the number of episodes with a discharge, transfer or death at home assessment.

Step 2: Calculate the numerator count (see Section 3.1.4 for details):

In the HH setting, calculate the total number of episodes in the denominator where the medical record contains documentation of a drug regimen review conducted at: (1) start of care/resumption of care, and (2) discharge with a look back through the entire episode with all potential clinically significant medication issues identified during the course of care and followed up with a physician or physician designee by midnight of the next calendar day.

Step 3: Calculate the HHA observed score:

Divide the HHAs' numerator count by its denominator count to obtain the HHAs' observed score; that is, divide the result of step 2 by the result of step 1.

APPENDIX 1
DISCHARGE TO COMMUNITY- POST ACUTE CARE (PAC) HOME HEALTH (HH) QUALITY REPORTING PROGRAM (QRP)

- Table 1-1. Preliminary Logistic Regression Model Results for Discharge to Community-Post Acute Care (PAC) Home Health Quality Reporting Program, 2012-2013
- Table 1-2. Home Health: Agency-Level Observed and Risk-Standardized Discharge to Community Rates, 2012-2013
- Figure 1-1. Home Health: Agency-Level Observed and Risk-Standardized Discharge to Community Rates, 2012- 2013

Table 1-1. Preliminary Logistic Regression Model Results for Discharge to Community-Post Acute Care (PAC) Home Health Quality Reporting Program, 2012–2013

Number of stays included in the model = 6,325,578
Observed number (percentage) of stays that resulted in a discharge to the community = 4,954,906 (78.3%)
Model c-statistic = 0.741

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
Age-Sex Groups (Reference group: Male 65-69)									
age_18_34_f	18-34, Female	16,057	0.3	-0.024	0.021	0.2355	0.98	0.94	1.02
age_18_34_m	18-34, Male	15,671	0.2	0.091	0.021	<.0001	1.10	1.05	1.14
age_35_44_f	35-44, Female	41,289	0.7	0.034	0.014	0.0140	1.03	1.01	1.06
age_35_44_m	35-44, Male	36,514	0.6	0.067	0.014	<.0001	1.07	1.04	1.10
age_45_54_f	45-54, Female	122,663	1.9	0.056	0.009	<.0001	1.06	1.04	1.08
age_45_54_m	45-54, Male	108,304	1.7	0.022	0.010	0.0200	1.02	1.00	1.04
age_55_59_f	55-59, Female	113,158	1.8	0.032	0.009	0.0007	1.03	1.01	1.05
age_55_59_m	55-59, Male	91,873	1.5	0.003	0.010	0.7683	1.00	0.98	1.02
age_60_64_f	60-64, Female	146,476	2.3	0.032	0.009	0.0002	1.03	1.02	1.05
age_60_64_m	60-64, Male	109,694	1.7	0.008	0.009	0.3956	1.01	0.99	1.03
age_65_69_f	65-69, Female	395,410	6.3	0.027	0.007	<.0001	1.03	1.01	1.04
age_65_69_m	65-69, Male (Reference)	272,322	4.3	-	-	-	-	-	-
age_70_74_f	70-74, Female	530,436	8.4	0.012	0.007	0.0753	1.01	1.00	1.02
age_70_74_m	70-74, Male	343,284	5.4	-0.043	0.007	<.0001	0.96	0.94	0.97
age_75_79_f	75-79, Female	621,830	9.8	-0.023	0.006	0.0004	0.98	0.97	0.99
age_75_79_m	75-79, Male	369,320	5.8	-0.093	0.007	<.0001	0.91	0.90	0.92
age_80_84_f	80-84, Female	739,781	11.7	-0.069	0.006	<.0001	0.93	0.92	0.95
age_80_84_m	80-84, Male	399,155	6.3	-0.153	0.007	<.0001	0.86	0.85	0.87
age_85_89_f	85-89, Female	734,322	11.6	-0.125	0.006	<.0001	0.88	0.87	0.89
age_85_89_m	85-89, Male	342,655	5.4	-0.236	0.007	<.0001	0.79	0.78	0.80
age_90_94_f	90-94, Female	427,177	6.8	-0.186	0.007	<.0001	0.83	0.82	0.84
age_90_94_m	90-94, Male	172,711	2.7	-0.339	0.008	<.0001	0.71	0.70	0.72

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
age_95_pl_f	95+, Female	134,441	2.1	-0.274	0.009	<.0001	0.76	0.75	0.77
age_95_pl_m	95+, Male	41,035	0.6	-0.441	0.013	<.0001	0.64	0.63	0.66
Original Reason for Medicare Enrollment (Reference group: Age)									
orig_aged	Age (Reference)	4,743,629	75.0	-	-	-	-	-	-
orig_disabled	Disability	1,525,287	24.1	-0.126	0.003	<.0001	0.88	0.88	0.89
orig_esrd	ESRD	56,662	0.9	-0.183	0.011	<.0001	0.83	0.81	0.85
Activities of Daily Living Score (Continuous, standardized variables)									
adl_1	ADL Score 1	6,325,578	100	0.014	0.012	0.2416	1.01	0.99	1.04
adl_2	ADL Score 2	6,325,578	100	-0.275	0.006	<.0001	0.76	0.75	0.77
adl_3	ADL Score 3	6,325,578	100	0.075	0.010	<.0001	1.08	1.06	1.10
adl_4	ADL Score 4	6,325,578	100	-0.033	0.004	<.0001	0.97	0.96	0.98
Length of Prior Proximal Hospitalization (Reference group: 0-30 Days)									
	0-30 Days (Reference)	6,308,321	99.7	-	-	-	-	-	-
prior_proximal_31_plus	≥ 31 Days	17,257	0.3	-0.274	0.018	<.0001	0.76	0.73	0.79
Number of Prior Acute Discharges within One Year of Stay (Excluding Prior Proximal) (Reference group: 0)									
n_priors_00	0 (Reference)	4,217,052	66.7	-	-	-	-	-	-
n_priors_01	1	1,088,654	17.2	-0.166	0.003	<.0001	0.85	0.84	0.85
n_priors_02	2	494,253	7.8	-0.320	0.004	<.0001	0.73	0.72	0.73
n_priors_03	3	241,309	3.8	-0.458	0.005	<.0001	0.63	0.63	0.64
n_priors_04	4	124,023	2.0	-0.595	0.007	<.0001	0.55	0.54	0.56
n_priors_05	5	66,223	1.0	-0.736	0.009	<.0001	0.48	0.47	0.49
n_priors_06	6	36,858	0.6	-0.877	0.012	<.0001	0.42	0.41	0.43
n_priors_07	7	21,378	0.3	-0.982	0.015	<.0001	0.37	0.36	0.39
n_priors_08	8	12,859	0.2	-1.135	0.019	<.0001	0.32	0.31	0.33
n_priors_09	9	7,869	0.1	-1.276	0.025	<.0001	0.28	0.27	0.29
n_priors_10	10+	15,100	0.2	-1.677	0.019	<.0001	0.19	0.18	0.19

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
Number of Outpatient Emergency Department Visits within One Year of Stay (Reference group: 0)									
	0 (Reference)	3,180,258	50.3	-	-	-	-	-	-
prior_er	≥ 1	3,145,320	49.7	-0.117	0.002	<.0001	0.89	0.89	0.89
Number of Skilled Nursing Home Visits within One Year of Stay (Reference group: 0)									
	0 (Reference)	4,512,399	71.3	-	-	-	-	-	-
prior_snf	≥ 1	1,813,179	28.7	-0.080	0.003	<.0001	0.92	0.92	0.93
Number of Long-Term Care Hospital Visits within One Year of Stay (Reference group: 0)									
	0 (Reference)	6,210,423	98.2	-	-	-	-	-	-
prior_ltch	≥ 1	115,155	1.8	-0.053	0.007	<.0001	0.95	0.94	0.96

Table 1-1. Preliminary Logistic Regression Model Results for Discharge to Community-Post Acute Care (PAC) Home Health Quality Reporting Program, 2012–2013 (continued)

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
CCS Procedure Groups (Reference group: Composite of all other CCS procedure groups)									
prc_001	1 - Incision and excision of CNS	8,411	0.1	0.132	0.033	<.0001	1.14	1.07	1.22
prc_002	2 - Insertion; replacement; or removal of extracranial ventricular shunt	3,144	0.0	0.180	0.050	0.0003	1.20	1.09	1.32
prc_003	3 - Laminectomy; excision intervertebral disc	58,724	0.9	0.354	0.020	<.0001	1.42	1.37	1.48
prc_004	4 - Diagnostic spinal tap	15,965	0.3	0.155	0.021	<.0001	1.17	1.12	1.22
prc_009	9 - Other OR therapeutic nervous system procedures	15,455	0.2	0.055	0.027	0.0398	1.06	1.00	1.11
prc_032	32 - Other non-OR therapeutic procedures on nose; mouth and pharynx	1,714	0.0	0.274	0.072	0.0001	1.32	1.14	1.51
prc_033	33 - Other OR therapeutic procedures on nose; mouth and pharynx	1,909	0.0	0.298	0.066	<.0001	1.35	1.18	1.53
prc_034	34 - Tracheostomy; temporary and permanent	4,593	0.1	0.188	0.038	<.0001	1.21	1.12	1.30
prc_036	36 - Lobectomy or pneumonectomy	3,517	0.1	0.500	0.050	<.0001	1.65	1.49	1.82
prc_037	37 - Diagnostic bronchoscopy and biopsy of bronchus	33,814	0.5	-0.054	0.014	<.0001	0.95	0.92	0.97
prc_039	39 - Incision of pleura; thoracentesis; chest drainage	54,871	0.9	-0.080	0.011	<.0001	0.92	0.90	0.94
prc_042	42 - Other OR Rx procedures on respiratory system and mediastinum	10,549	0.2	0.264	0.028	<.0001	1.30	1.23	1.38
prc_043	43 - Heart valve procedures	46,616	0.7	0.260	0.028	<.0001	1.30	1.23	1.37
prc_044	44 - Coronary artery bypass graft (CABG)	67,681	1.1	0.452	0.021	<.0001	1.57	1.51	1.64
prc_048	48 - Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator	54,507	0.9	0.253	0.013	<.0001	1.29	1.26	1.32
prc_050	50 - Extracorporeal circulation auxiliary to open heart procedures	87,610	1.4	0.368	0.021	<.0001	1.44	1.39	1.51
prc_051	51 - Endarterectomy; vessel of head and neck	9,388	0.1	0.244	0.044	<.0001	1.28	1.17	1.39
prc_052	52 - Aortic resection; replacement or anastomosis	8,969	0.1	0.278	0.046	<.0001	1.32	1.21	1.45
prc_054	54 - Other vascular catheterization; not heart	253,836	4.0	-0.047	0.006	<.0001	0.95	0.94	0.96
prc_055	55 - Peripheral vascular bypass	14,803	0.2	0.155	0.024	<.0001	1.17	1.11	1.22
prc_058	58 - Hemodialysis	100,074	1.6	-0.154	0.009	<.0001	0.86	0.84	0.87
prc_061	61 - Other OR procedures on vessels other than head and neck	109,036	1.7	0.014	0.010	0.1579	1.01	0.99	1.03
prc_062	62 - Other diagnostic cardiovascular procedures	9,465	0.1	0.098	0.027	0.0003	1.10	1.05	1.16

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
prc_063	63 - Other non-OR therapeutic cardiovascular procedures	61,581	1.0	0.102	0.012	<.0001	1.11	1.08	1.13
prc_065	65 - Bone marrow biopsy	5,623	0.1	-0.172	0.031	<.0001	0.84	0.79	0.90
prc_069	69 - Esophageal dilatation	6,104	0.1	-0.033	0.032	0.3008	0.97	0.91	1.03
prc_070	70 - Upper gastrointestinal endoscopy; biopsy	112,254	1.8	-0.038	0.008	<.0001	0.96	0.95	0.98
prc_071	71 - Gastrostomy; temporary and permanent	16,004	0.3	-0.210	0.019	<.0001	0.81	0.78	0.84
prc_073	73 - Ileostomy and other enterostomy	5,858	0.1	-0.300	0.033	<.0001	0.74	0.69	0.79
prc_074	74 - Gastrectomy; partial and total	1,654	0.0	0.241	0.071	0.0007	1.27	1.11	1.46
prc_075	75 - Small bowel resection	12,789	0.2	0.132	0.027	<.0001	1.14	1.08	1.20
prc_078	78 - Colorectal resection	28,480	0.5	0.134	0.019	<.0001	1.14	1.10	1.19
prc_080	80 - Appendectomy	6,910	0.1	0.144	0.047	0.0023	1.15	1.05	1.27
prc_084	84 - Cholecystectomy and common duct exploration	25,737	0.4	0.502	0.024	<.0001	1.65	1.58	1.73
prc_085	85 - Inguinal and femoral hernia repair	5,164	0.1	0.308	0.048	<.0001	1.36	1.24	1.50
prc_086	86 - Other hernia repair	23,197	0.4	0.233	0.028	<.0001	1.26	1.20	1.33
prc_087	87 - Laparoscopy (GI only)	2,427	0.0	0.160	0.059	0.0068	1.17	1.05	1.32
prc_088	88 - Abdominal paracentesis	18,719	0.3	-0.335	0.018	<.0001	0.72	0.69	0.74
prc_090	90 - Excision; lysis peritoneal adhesions	31,192	0.5	0.187	0.019	<.0001	1.21	1.16	1.25
prc_091	91 - Peritoneal dialysis	4,250	0.1	-0.438	0.034	<.0001	0.65	0.60	0.69
prc_094	94 - Other OR upper GI therapeutic procedures	7,801	0.1	0.271	0.034	<.0001	1.31	1.23	1.40
prc_096	96 - Other OR lower GI therapeutic procedures	27,073	0.4	0.130	0.020	<.0001	1.14	1.10	1.18
prc_097	97 - Other gastrointestinal diagnostic procedures	4,798	0.1	-0.233	0.037	<.0001	0.79	0.74	0.85
prc_098	98 - Other non-OR gastrointestinal therapeutic procedures	20,735	0.3	0.050	0.020	0.0124	1.05	1.01	1.09
prc_099	99 - Other OR gastrointestinal therapeutic procedures	17,199	0.3	0.097	0.022	<.0001	1.10	1.06	1.15
prc_103	103 - Nephrotomy and nephrostomy	5,375	0.1	-0.285	0.033	<.0001	0.75	0.70	0.80
prc_104	104 - Nephrectomy; partial or complete	1,211	0.0	0.330	0.078	<.0001	1.39	1.19	1.62
prc_110	110 - Other diagnostic procedures of urinary tract	2,948	0.0	-0.270	0.042	<.0001	0.76	0.70	0.83
prc_111	111 - Other non-OR therapeutic procedures of urinary tract	9,184	0.1	-0.211	0.025	<.0001	0.81	0.77	0.85
prc_113	113 - Transurethral resection of prostate (TURP)	3,477	0.1	0.295	0.052	<.0001	1.34	1.21	1.49
prc_114	114 - Open prostatectomy	562	0.0	0.977	0.166	<.0001	2.66	1.92	3.68
prc_117	117 - Other non-OR therapeutic procedures; male genital	1,725	0.0	0.215	0.068	0.0017	1.24	1.08	1.42

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
prc_119	119 - Oophorectomy; unilateral and bilateral	3,606	0.1	0.159	0.070	0.0239	1.17	1.02	1.35
prc_124	124 - Hysterectomy; abdominal and vaginal	2,725	0.0	0.358	0.090	<.0001	1.43	1.20	1.70
prc_129	129 - Repair of cystocele and rectocele; obliteration of vaginal vault	1,594	0.0	0.316	0.147	0.0313	1.37	1.03	1.83
prc_130	130 - Other diagnostic procedures; female organs	656	0.0	-0.298	0.094	0.0016	0.74	0.62	0.89
prc_132	132 - Other OR therapeutic procedures; female organs	3,521	0.1	0.171	0.059	0.0035	1.19	1.06	1.33
prc_142	142 - Partial excision bone	53,253	0.8	0.019	0.017	0.2632	1.02	0.99	1.05
prc_143	143 - Bunionectomy or repair of toe deformities	691	0.0	0.493	0.134	0.0002	1.64	1.26	2.13
prc_145	145 - Treatment; fracture or dislocation of radius and ulna	7,617	0.1	0.193	0.040	<.0001	1.21	1.12	1.31
prc_146	146 - Treatment; fracture or dislocation of hip and femur	68,683	1.1	0.404	0.018	<.0001	1.50	1.45	1.55
prc_147	147 - Treatment; fracture or dislocation of lower extremity (other than hip or femur)	22,163	0.4	0.335	0.028	<.0001	1.40	1.32	1.48
prc_148	148 - Other fracture and dislocation procedure	22,870	0.4	0.164	0.023	<.0001	1.18	1.12	1.23
prc_152	152 - Arthroplasty knee	291,705	4.6	0.672	0.016	<.0001	1.96	1.90	2.02
prc_153	153 - Hip replacement; total and partial	182,857	2.9	0.663	0.015	<.0001	1.94	1.88	2.00
prc_154	154 - Arthroplasty other than hip or knee	25,051	0.4	0.473	0.026	<.0001	1.60	1.53	1.69
prc_155	155 - Arthrocentesis	13,320	0.2	0.042	0.024	0.0729	1.04	1.00	1.09
prc_157	157 - Amputation of lower extremity	23,720	0.4	0.277	0.017	<.0001	1.32	1.27	1.36
prc_158	158 - Spinal fusion	66,508	1.1	0.439	0.022	<.0001	1.55	1.49	1.62
prc_160	160 - Other therapeutic procedures on muscles and tendons	39,072	0.6	0.049	0.015	0.0011	1.05	1.02	1.08
prc_162	162 - Other OR therapeutic procedures on joints	24,411	0.4	0.091	0.021	<.0001	1.10	1.05	1.14
prc_164	164 - Other OR therapeutic procedures on musculoskeletal system	3,293	0.1	0.247	0.044	<.0001	1.28	1.17	1.39
prc_168	168 - Incision and drainage; skin and subcutaneous tissue	28,504	0.5	0.227	0.017	<.0001	1.25	1.21	1.30
prc_170	170 - Excision of skin lesion	5,375	0.1	0.084	0.037	0.0225	1.09	1.01	1.17
prc_171	171 - Suture of skin and subcutaneous tissue	19,350	0.3	0.077	0.020	0.0001	1.08	1.04	1.12
prc_173	173 - Other diagnostic procedures on skin and subcutaneous tissue	3,385	0.1	-0.262	0.040	<.0001	0.77	0.71	0.83
prc_174	174 - Other non-OR therapeutic procedures on skin and breast	22,713	0.4	-0.087	0.016	<.0001	0.92	0.89	0.95
prc_175	175 - Other OR therapeutic procedures on skin and breast	3,949	0.1	0.146	0.049	0.0031	1.16	1.05	1.27
prc_176	176 - Organ transplantation (other than bone marrow, corneal or kidney)	1,541	0.0	0.392	0.064	<.0001	1.48	1.30	1.68

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
prc_177	177 - Computerized axial tomography (CT) scan head	27,512	0.4	0.014	0.017	0.3968	1.01	0.98	1.05
prc_190	190 - Contrast arteriogram of femoral and lower extremity arteries	25,747	0.4	-0.159	0.017	<.0001	0.85	0.83	0.88
prc_193	193 - Diagnostic ultrasound of heart (echocardiogram)	139,468	2.2	0.029	0.008	0.0002	1.03	1.01	1.05
prc_198	198 - Magnetic resonance imaging	23,978	0.4	0.037	0.018	0.0443	1.04	1.00	1.08
prc_199	199 - Electroencephalogram (EEG)	8,653	0.1	0.067	0.028	0.0173	1.07	1.01	1.13
prc_202	202 - Electrocardiogram	7,806	0.1	0.009	0.030	0.7521	1.01	0.95	1.07
prc_203	203 - Electrographic cardiac monitoring	8,272	0.1	-0.025	0.029	0.4005	0.98	0.92	1.03
prc_204	204 - Swan-Ganz catheterization for monitoring	10,242	0.2	-0.132	0.028	<.0001	0.88	0.83	0.93
prc_211	211 - Radiation therapy	2,846	0.0	-0.438	0.047	<.0001	0.65	0.59	0.71
prc_214	214 - Traction; splints; and other wound care	14,466	0.2	0.018	0.023	0.4197	1.02	0.97	1.06
prc_218	218 - Psychological and psychiatric evaluation and therapy	4,002	0.1	0.071	0.041	0.0821	1.07	0.99	1.16
prc_221	221 - Nasogastric tube	12,648	0.2	0.050	0.024	0.0381	1.05	1.00	1.10
prc_222	222 - Blood transfusion	383,923	6.1	-0.109	0.005	<.0001	0.90	0.89	0.91
prc_224	224 - Cancer chemotherapy	2,261	0.0	-0.531	0.046	<.0001	0.59	0.54	0.64
prc_227	227 - Other diagnostic procedures	41,170	0.7	0.016	0.013	0.2364	1.02	0.99	1.04
prc_231	231 - Other therapeutic procedures	160,499	2.5	-0.002	0.007	0.7405	1.00	0.98	1.01

Table 1-1. Preliminary Logistic Regression Model Results for Discharge to Community-Post Acute Care (PAC) Home Health Quality Reporting Program, 2012–2013 (continued)

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
HCC Comorbidities									
hcc_2	2 - Septicemia/Shock	616,672	9.7	0.010	0.004	<.0001	1.01	1.02	1.04
hcc_5	5 - Opportunistic Infections	70,460	1.1	-0.081	0.009	<.0001	0.92	1.02	1.07
hcc_7	7 - Metastatic Cancer and Acute Leukemia	178,814	2.8	-0.551	0.006	<.0001	0.58	0.89	0.90
hcc_8	8 - Lung, Upper Digestive Tract, and Other Severe Cancers	131,592	2.1	-0.255	0.007	<.0001	0.77	0.95	0.96
hcc_9	9 - Lymphatic, Head and Neck, Brain, and Other Major Cancers	185,596	2.9	-0.141	0.006	<.0001	0.87	0.74	0.86
hcc_10	10 - Breast, Prostate, Colorectal and Other Cancers and Tumors	665,679	10.5	0.029	0.004	<.0001	1.03	0.85	0.86
hcc_15	15 - Diabetes with Renal or Peripheral Circulatory Manifestation	758,357	12.0	-0.162	0.004	<.0001	0.85	1.02	1.05
hcc_16	16 - Diabetes with Neurologic or Other Specified Manifestation	563,175	8.9	-0.120	0.004	<.0001	0.89	0.93	0.96
hcc_18	18 - Diabetes with Ophthalmologic or Unspecified Manifestation	129,150	2.0	-0.069	0.007	<.0001	0.93	0.76	0.78
hcc_19	19 - Diabetes without Complication	1,412,823	22.3	-0.036	0.003	<.0001	0.96	0.86	0.87
hcc_21	21 - Protein-Calorie Malnutrition	570,416	9.0	-0.116	0.004	<.0001	0.89	0.75	0.76
hcc_25	25 - End-Stage Liver Disease	75,942	1.2	-0.272	0.009	<.0001	0.76	0.82	0.84
hcc_26	26 - Cirrhosis of Liver	68,733	1.1	-0.150	0.009	<.0001	0.86	0.84	0.86
hcc_27	27 - Chronic Hepatitis	51,118	0.8	-0.077	0.011	0.0566	0.93	1.00	1.16
hcc_31	31 - Intestinal Obstruction/Perforation	393,003	6.2	0.048	0.005	<.0001	1.05	1.03	1.06
hcc_38	38 - Rheumatoid Arthritis and Inflammatory Connective Tissue Disease	744,800	11.8	-0.030	0.003	<.0001	0.97	0.93	0.95
hcc_44	44 - Severe Hematological Disorders	125,317	2.0	-0.173	0.007	<.0001	0.84	1.17	1.19
hcc_45	45 - Disorders of Immunity	145,896	2.3	-0.093	0.007	<.0001	0.91	0.88	0.89
hcc_52	52 - Drug/Alcohol Dependence	187,084	3.0	-0.104	0.006	<.0001	0.90	1.10	1.14
hcc_54	54 - Schizophrenia	152,307	2.4	-0.144	0.007	<.0001	0.87	0.91	0.96
hcc_67	67 - Quadriplegia, Other Extensive Paralysis	61,915	1.0	-0.167	0.010	<.0001	0.85	0.87	0.89
hcc_68	68 - Paraplegia	54,000	0.9	-0.169	0.010	<.0001	0.84	0.93	0.96
hcc_70	70 - Muscular Dystrophy	9,293	0.1	0.039	0.026	<.0001	1.04	0.92	0.95
hcc_71	71 - Polyneuropathy	1,227,244	19.4	-0.022	0.003	<.0001	0.98	0.96	0.97
hcc_72	72 - Multiple Sclerosis	72,083	1.1	-0.117	0.009	0.0123	0.89	1.00	1.02

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
hcc_73	73 - Parkinsons and Huntingtons Diseases	294,613	4.7	-0.092	0.005	<.0001	0.91	0.88	0.90
hcc_74	74 - Seizure Disorders and Convulsions	483,024	7.6	-0.037	0.004	<.0001	0.96	0.75	0.78
hcc_77	77 - Respirator Dependence/Tracheostomy Status	87,002	1.4	0.036	0.009	<.0001	1.04	0.85	0.88
hcc_78	78 - Respiratory Arrest	22,117	0.3	-0.062	0.016	<.0001	0.94	0.91	0.95
hcc_79	79 - Cardio-Respiratory Failure and Shock	1,269,195	20.1	-0.076	0.003	<.0001	0.93	1.04	1.06
hcc_80	80 - Congestive Heart Failure	2,526,406	39.9	-0.206	0.003	<.0001	0.81	0.96	0.98
hcc_82	82 - Unstable Angina and Other Acute Ischemic Heart Disease	368,220	5.8	0.005	0.004	<.0001	1.00	0.83	0.85
hcc_92	92 - Specified Heart Arrhythmias	2,188,883	34.6	-0.106	0.002	<.0001	0.90	0.90	0.92
hcc_95	95 - Cerebral Hemorrhage	153,499	2.4	0.069	0.008	<.0001	1.07	0.91	0.94
hcc_96	96 - Ischemic or Unspecified Stroke	871,583	13.8	-0.005	0.003	<.0001	1.00	0.89	0.91
hcc_101	101 - Cerebral Palsy and Other Paralytic Syndromes	46,764	0.7	0.047	0.012	<.0001	1.05	0.85	0.88
hcc_104	104 - Vascular Disease with Complications	561,336	8.9	-0.111	0.004	<.0001	0.90	0.83	0.86
hcc_105	105 - Vascular Disease	2,128,556	33.6	-0.047	0.002	<.0001	0.95	0.83	0.86
hcc_107	107 - Cystic Fibrosis	3,965	0.1	-0.224	0.039	<.0001	0.80	0.57	0.58
hcc_108	108 - Chronic Obstructive Pulmonary Disease	2,205,324	34.9	-0.156	0.002	0.1332	0.86	0.99	1.09
hcc_112	112 - Pneumococcal Pneumonia, Emphysema, Lung Abscess	86,331	1.4	0.035	0.008	<.0001	1.04	0.97	0.98
hcc_119	119 - Proliferative Diabetic Retinopathy and Vitreous Hemorrhage	108,745	1.7	-0.057	0.008	<.0001	0.94	0.87	0.91
hcc_130	130 - Dialysis Status	149,414	2.4	-0.261	0.008	<.0001	0.77	0.90	0.92
hcc_131	131 - Renal Failure	2,059,048	32.6	-0.141	0.002	<.0001	0.87	0.96	0.97
hcc_148	148 - Decubitus Ulcer of Skin	464,596	7.3	-0.287	0.004	<.0001	0.75	1.02	1.05
hcc_149	149 - Chronic Ulcer of Skin, Except Decubitus	400,818	6.3	-0.186	0.004	<.0001	0.83	0.91	0.97
hcc_154	154 - Severe Head Injury	4,293	0.1	0.074	0.039	<.0001	1.08	0.92	0.93
hcc_155	155 - Major Head Injury	173,207	2.7	0.047	0.007	<.0001	1.05	0.76	0.79
hcc_157	157 - Vertebral Fractures without Spinal Cord Injury	331,489	5.2	-0.063	0.005	<.0001	0.94	0.81	0.82
hcc_158	158 - Hip Fracture/Dislocation	495,738	7.8	0.167	0.004	0.2630	1.18	1.00	1.01
hcc_161	161 - Traumatic Amputation	53,199	0.8	0.114	0.011	<.0001	1.12	0.86	0.88
hcc_174	174 - Major Organ Transplant Status	31,233	0.5	-0.071	0.014	<.0001	0.93	0.90	0.90
hcc_176	176 - Artificial Openings for Feeding or Elimination	211,522	3.3	-0.129	0.006	<.0001	0.88	1.06	1.09
hcc_177	177 - Amputation Status, Lower Limb/Amputation Complications	101,968	1.6	-0.053	0.008	0.1225	0.95	0.99	1.00

Table 1-2. Home Health: Agency-Level Observed and Risk-Standardized Discharge to Community Rates, 2012–2013

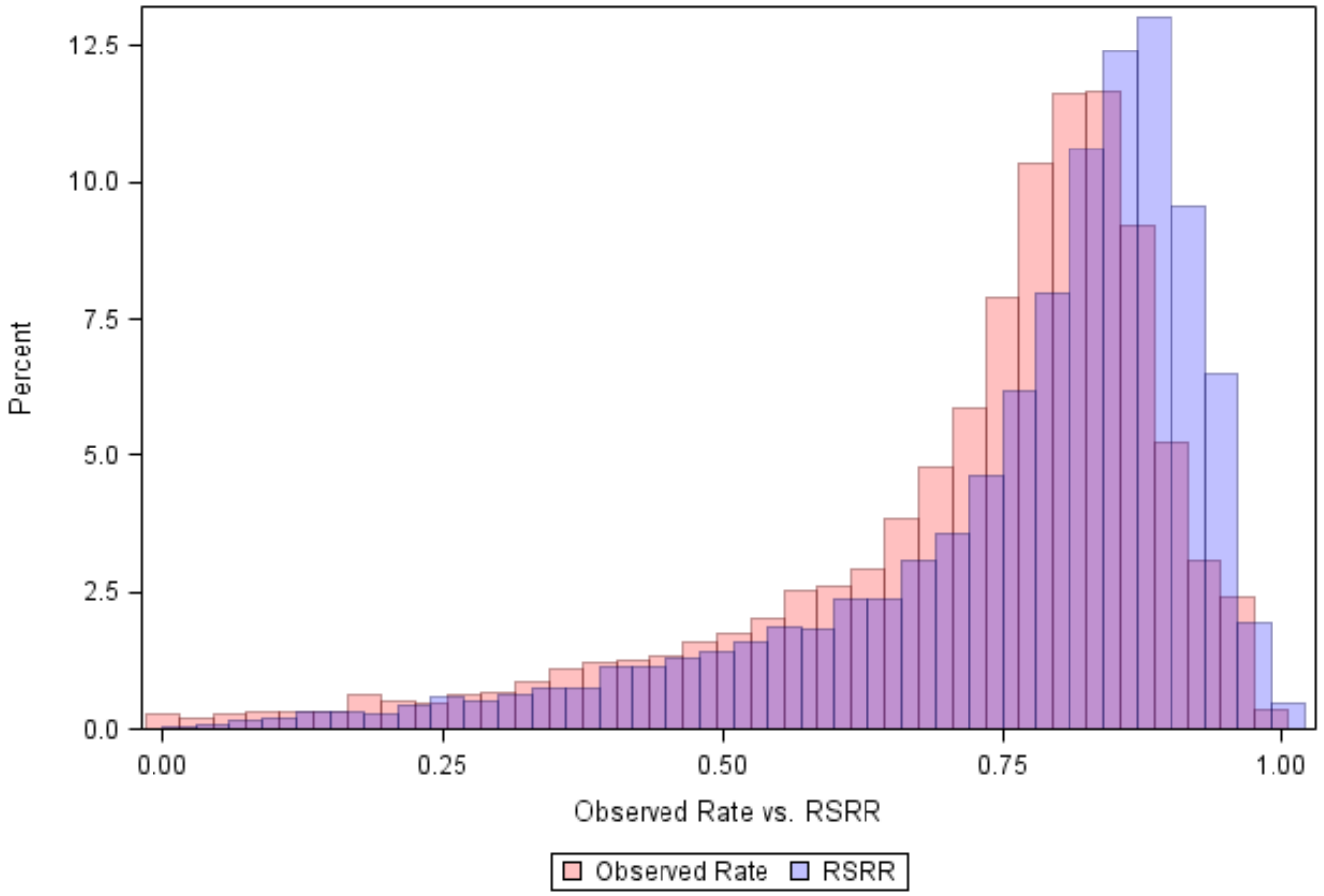
Discharge to Community Rate	Mean	SD	Min	1st pctl	5th pctl	10th pctl	25th pctl	50th pctl (Median)	75th pctl	90th pctl	95th pctl	99th pctl	Max
Observed	0.72	0.18	0.00	0.10	0.33	0.46	0.65	0.78	0.84	0.89	0.92	0.97	1.00
Risk-Standardized	0.77	0.17	0.01	0.17	0.39	0.51	0.71	0.82	0.88	0.93	0.95	0.97	1.00

NOTE: SD = standard deviation, pctl = percentile.

Figure 1-1. Home Health: Agency-Level Observed and Risk-Standardized Discharge to Community Rates, 2012-2013

Observed N = 10,952; Mean (StD) = 0.722 (0.182)

RSRR N = 10,952; Mean (StD) = 0.767 (0.175)



APPENDIX 2
POTENTIALLY PREVENTABLE 30-DAY POST-DISCHARGE READMISSION MEASURE FOR HOME HEALTH (HH) QUALITY REPORTING PROGRAM (QRP)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
Adult asthma*	*Extrinsic asthma NOS	493.00	X	Inadequate management of chronic conditions
	*Ext asthma w/ status asth	493.01	X	
	*Ext asthma w(acute) exac	493.02	X	
	*Intrinsic asthma NOS	493.10	X	
	*Int asthma w status asth	493.11	X	
	*Int asthma w (ac) exac	493.12	X	
	*Chronic obst asthma NOS	493.20	X	
	*Ch ob asthma w stat asth	493.21	X	
	*Ch obst asth w (ac) exac	493.22	X	
	*Exercise ind bronchospasm	493.81	X	
	*Cough variant asthma	493.82	X	
	*Asthma NOS	493.90	X	
	*Asthma w status asth mat	493.91	X	
	*Asthma NOS w (ac) exac	493.92	X	
Chronic obstructive pulmonary disease (COPD)*	*Simple Chr Bronchitis	491.0	X	Inadequate management of chronic conditions
	*Mucopurul Chr Bronchitis	491.1	X	
	*Obs Chr Brnc w/o act exa	491.20	X	
	*Obs Chr Brnc w/ act exa	491.21	X	
	*Obs Chr Bronc w/ ac Bronc	491.22	X	
	*Chronic Bronchitis NEC	491.8	X	
	*Chronic Bronchitis NOS	491.9	X	
	*Emphysematous Bleb	492.0	X	
	*Emphysema NEC	492.8	X	
	*Bronchiectasis	494	X	
	*Bronchiectas w/o ac exac	494.0	X	
	*Bronchiectasis w/ ac exac	494.1	X	
	*Chr airway obstruct NEC	496	X	

(continued)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes (continued)

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
Congestive heart failure (CHF)*	*Rheumatic Heart Failure	398.91	X	Inadequate management of chronic conditions
	*Mal hypert hrt dis w/ CHF	402.01	X	
	*Benign hyp hrt dis w CHF	402.11	X	
	*Hyperten heart dis w CHF	402.91	X	
	*Mal hyper hrt/ren w/ CHF	404.01	X	
	*Mal hyp hrt/ren w CHF/RF	404.03	X	
	*Ben hyper hrt/ren w CHF	404.11	X	
	*Ben hyp hrt/ren w CHF/RF	404.13	X	
	*Hyper hrt/ren NOS w CHF	404.91	X	
	*Hyp Ht/Ren NOS w CHR	404.93	X	
	*Congestive Heart Failure	428.0	X	
	*Left heart failure	428.1	X	
	*Systolic hrt failure NOS	428.20	X	
	*AC systolic hrt failure	428.21	X	
	*Chr systolic hrt failure	428.22	X	
	*AC on chr syst hrt fail	428.23	X	
	*Diastolic hrt failure NOS	428.30	X	
	*AC diastolic hrt failure	428.31	X	
	*Chr diastolic hrt fail	428.32	X	
	*AC on chr diast hrt fail	428.33	X	
	*Syst/diast hrt fail NOS	428.40	X	
	*AC syst/diastole hrt fail	428.41	X	
	*Chr syst/diastl hrt fail	428.42	X	
	*AC/CHR syst/dia hrt fail	428.43	X	
	*Heart Failure NOS	428.9	X	
	Acute lung edema NOS	518.4	X	
Diabetes short-term complication*	Secondary diabetes mellitus with ketoacidosis	249.1X	X	Inadequate management of chronic conditions
	Secondary diabetes mellitus with hyperosmolarity	249.2X	X	
	Secondary diabetes mellitus with other coma	249.3X	X	

(continued)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes (continued)

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
	Secondary diabetes mellitus with other specified manifestations (hypoglycemia)	249.8X	X	
	Diabetes with other specified manifestations (hypoglycemia)	250.8X	X	
	*DM Keto T2, DM Cont	250.10	X	
	*DM Keto T1, DM Cont	250.11	X	
	*DM Keto T2, DM Uncont	250.12	X	
	*DM Keto T1, DM Uncont	250.13	X	
	*DM W/ Hyprosm T2, DM Cont	250.20	X	
	*DM W/ Hyprosm T1, DM Cont	250.21	X	
	*DM W/ Hyprosm T2, DM Uncnt	250.22	X	
	*DM W/ Hyprosm T1, DM Uncnt	250.23	X	
	*DM Coma Nec Typ Ii, DM Cnt	250.30	X	
	*DM Coma Nec T1, DM Cont	250.31	X	
	*DM Coma Nec T2, DM Uncont	250.32	X	
	*DM Coma Nec T1, DM Uncont	250.33	X	
	*Malignant Hypertension	401.0	X	Inadequate management of chronic conditions
	*Hypertension NOS	401.9	X	
	*Mal Hyperten hrt dis NOS	402.00	X	
	*Benign hyp ht dis w/o hf	402.10	X	
	*Hyp hrt dis NOS w/o hf	402.90	X	
	*Mal hyp ren w/o ren fail	403.00	X	
	*Ben hy kid w cr kid I-IV	403.10	X	
	*Hy kid NOS w cr kid I-IV	403.90	X	
	*Mal hy ht/ren w/o chf/rf	404.00	X	
	*Ben hy ht/ren w/o chf/rf	404.10	X	
	*Hy ht/ren NOS w/o chf/rf	404.90	X	
	Orthostatic hypotension	458.0	X	
	Chronic hypotension	458.1	X	
	Iatrogenic hypotension NEC	458.29	X	
	Hypotension NEC	458.8	X	
	Hypotension NOS	458.9	X	

(continued)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes (continued)

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
Influenza	Influenza	487.X	X	Inadequate management of infection
	Influenza due to identified avian influenza virus	488.X	X	
Bacterial pneumonia*	*Pneumococcal Pneumonia	481	X	Inadequate management of infection
	*H.Influenzae Pneumonia	482.2	X	
	*Strep Pneumonia Unspec	482.30	X	
	*Grp A Strep Pneumonia	482.31	X	
	*Grp B Strep Pneumonia	482.32	X	
	*Oth Strep Pneumonia	482.39	X	
	*Meth Sus Pneum D/T Staph	482.41	X	
	*Meth Res Pneu D/T Staph	482.42	X	
	*Bacterial Pneumonia Nos	482.9	X	
	*Mycoplasma Pneumonia	483.0	X	
	*Chlamydia Pneumonia	483.1	X	
	*Oth Spec Org Pneumonia	483.8	X	
	*Broncopneumonia Org Nos	485	X	
	*Pneumonia, Organism Nos	486	X	
Urinary tract infection*/Kidney infection	*Ac pyelonephritis NOS	590.10	X	Inadequate management of infection
	*Ac pyelonephr w med necr	590.11	X	
	*Renal/perirenal abscess	590.2	X	
	*Pyeloureteritis cystica	590.3	X	
	*Pyelonephritis NOS	590.80	X	
	*Pyelonephrit in oth dis	590.81	X	
	*Infection of kidney NOS	590.9	X	
	*Acute cystitis	595.0	X	
	Urethral abscess	597.0	X	
	*Urin tract infection NOS	599.0	X	
C. difficile infection [135 subset]	Intestinal infection due to Clostridium difficile	008.45	X	Inadequate management of infection

(continued)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes (continued)

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
Septicemia (except in labor) [2]	Salmonella septicemia	003.1	X	Inadequate management of infection
	Septicemic plague	020.2	X	
	Anthrax septicemia	022.3	X	
	Meningococcemia	036.2	X	
	Streptococcal septicemia	038.0	X	
	Staphylococcal septicemia	038.1	X	
	Staphylococcal septicemia, unspecified	038.10	X	
	Methicillin susceptible Staphylococcus aureus septicemia	038.11	X	
	Methicillin resistant Staphylococcus aureus septicemia	038.12	X	
	Other staphylococcal septicemia	038.19	X	
	Pneumococcal septicemia [Streptococcus pneumoniae septicemia]	038.2	X	
	Septicemia due to anaerobes	038.3	X	
	Septicemia due to gram-negative organism, unspecified	038.40	X	
	Septicemia due to hemophilus influenzae [H. influenzae]	038.41	X	
	Septicemia due to escherichia coli [E. coli]	038.42	X	
	Septicemia due to pseudomonas	038.43	X	
	Septicemia due to serratia	038.44	X	
	Other septicemia due to gram-negative organisms	038.49	X	
	Other specified septicemias	038.8	X	
	Unspecified septicemia	038.9	X	
	Herpetic septicemia	054.5	X	
	Septic arterial embolism	449	X	
	Sepsis	995.91	X	
	Severe sepsis	995.92	X	
	Septic shock	785.52	X	

(continued)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes (continued)

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
Skin and subcutaneous tissue infections [197]	Cellulitis and abscess of finger, unspecified	681.00	X	Inadequate management of infection
	Cellulitis and abscess of toe, unspecified	681.10	X	
	Cellulitis and abscess of unspecified digit	681.9	X	
	Cellulitis and abscess of face	682.0	X	
	Cellulitis and abscess of neck	682.1	X	
	Cellulitis and abscess of trunk	682.2	X	
	Cellulitis and abscess of upper arm and forearm	682.3	X	
	Cellulitis and abscess of hand, except fingers and thumb	682.4	X	
	Cellulitis and abscess of buttock	682.5	X	
	Cellulitis and abscess of leg, except foot	682.6	X	
	Cellulitis and abscess of foot, except toes	682.7	X	
	Cellulitis and abscess of other specified sites	682.8	X	
	Cellulitis and abscess of unspecified sites	682.9	X	
	Other specified local infections of skin and subcutaneous tissue	686.8	X	
	Unspecified local infection of skin and subcutaneous tissue	686.9	X	
Dehydration*/ Electrolyte imbalance [55]	**Hyperosmolality and/or hypernatremia	276.0	X	Inadequate management of other unplanned events
	Hyposmolality and/or hyponatremia	276.1	X	
	Acidosis	276.2	X	
	Alkalosis	276.3	X	
	Mixed acid-base balance disorder	276.4	X	
	*Volume depletion, unspecified	276.50	X	
	*Dehydration	276.51	X	

(continued)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes (continued)

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
	*Hypovolemia	276.52	X	
	Fluid overload disorder	276.6	X	
	Other fluid overload	276.69	X	
	Hyperpotassemia	276.7	X	
	Hypopotassemia	276.8	X	
	Electrolyte and fluid disorders not elsewhere classified	276.9	X	
	**Intes Infec Rotavirus	008.61	X	
	**Intes Infec Adenovirus	008.62	X	
	**Int Inf Norwalk Virus	008.63	X	
	**Int Inf Oth Sml Rnd Vrus	008.64	X	
	**Intes Infec Calcivirus	008.65	X	
	**Intes Infec Astrovirus	008.66	X	
	**Int Inf Enterovirus NEC	008.67	X	
	**Enteritis NOS	008.69	X	
	**Viral Enteritis NOS	008.8	X	
	**Infectious Enteritis NOS	009.0	X	
	**Enteritis of Infect Orig	009.1	X	
	**Infectious Diarrhea NOS	009.2	X	
	**Diarrhea of Infect Orig	009.3	X	
	**Noninf Gastroenterit NEC	558.9	X	
Aspiration pneumonitis; food/vomitus [129]	Pneumonitis due to inhalation of food or vomitus	507.0	X	Inadequate management of other unplanned events
Acute renal failure*	*Acute kidney failure with lesion of tubular necrosis	584.5	X	Inadequate management of other unplanned events
	*Acute kidney failure with lesion of renal cortical necrosis	584.6	X	
	*Acute kidney failure with lesion of renal medullary [papillary] necrosis	584.7	X	
	*Acute kidney failure with other specified pathological lesion in kidney	584.8	X	
	*Acute kidney failure, unspecified	584.9	X	
	*Renal Failure NOS	586	X	

(continued)

Table 2-1. List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-9 Codes (continued)

Note: These conditions will be used for the post-PAC discharge measures.

Conditions	Diagnosis	ICD-9- CM	30 day post-PAC discharge	Clinical Rationale
	*Surg Compl-Urinary Tract	997.5	X	
Arrhythmia	Atrial fibrillation	427.31	X	Inadequate management of other unplanned events
	Atrial flutter	427.32	X	
Intestinal impaction [145 subset]	Impaction of intestine, unspecified	560.30	X	Inadequate management of other unplanned events
	Fecal impaction	560.32	X	
	Other impaction of intestine	560.39	X	
Pressure ulcers	Chronic ulcer of skin	707.0X 707.2X	X	Inadequate management of other unplanned events

SOURCE: List of potentially preventable readmission conditions from RTI International with ICD-9-CM (version: April 2016).

NOTES: [###] indicates Clinical Classifications Software (CCS) code

To be considered a potentially preventable readmission, diagnosis codes must be the principal diagnosis on the readmission claim, except where noted.

*Ambulatory Care Sensitive Conditions (ACSCs)/Prevention Quality Indicators (PQIs)

** Primary diagnosis with dehydration (codes: 276.50, 276.51, 276.52) as secondary diagnosis

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
Adult Asthma*	Asthma* (PQI 05)	J4521	Mild intermittent asthma with (acute) exacerbation
		J4522	Mild intermittent asthma with status asthmaticus
		J4531	Mild persistent asthma with (acute) exacerbation
		J4532	Mild persistent asthma with status asthmaticus
		J4541	Moderate persistent asthma with (acute) exacerbation
		J4542	Moderate persistent asthma with status asthmaticus
		J4551	Severe persistent asthma with (acute) exacerbation
		J4552	Severe persistent asthma with status asthmaticus
		J45901	Unspecified asthma with (acute) exacerbation
		J45902	Unspecified asthma with status asthmaticus
		J45990	Exercise induced bronchospasm
		J45991	Cough variant asthma
		J45998	Other asthma
	Acute Bronchitis*^ (PQI 05)	J200	Acute bronchitis due to Mycoplasma pneumoniae
		J201	Acute bronchitis due to Hemophilus influenzae
		J202	Acute bronchitis due to streptococcus
		J203	Acute bronchitis due to coxsackievirus
		J204	Acute bronchitis due to parainfluenza virus
		J205	Acute bronchitis due to respiratory syncytial virus
		J206	Acute bronchitis due to rhinovirus
		J207	Acute bronchitis due to echovirus
		J208	Acute bronchitis due to other specified organisms
		J209	Acute bronchitis, unspecified
		J40	Bronchitis, not specified as acute or chronic
Chronic obstructive pulmonary disease (COPD)	COPD* (PQI 05)	J410	Simple chronic bronchitis
		J411	Mucopurulent chronic bronchitis
		J418	Mixed simple and mucopurulent chronic bronchitis

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		J42	Unspecified chronic bronchitis
		J430	Unilateral pulmonary emphysema [MacLeod's syndrome]
		J431	Panlobular emphysema
		J432	Centrilobular emphysema
		J438	Other emphysema
		J439	Emphysema, unspecified
		J440	Chronic obstructive pulmonary disease with acute lower respiratory infection
		J441	Chronic obstructive pulmonary disease with (acute) exacerbation
		J449	Chronic obstructive pulmonary disease, unspecified
		J470	Bronchiectasis with acute lower respiratory infection
		J471	Bronchiectasis with (acute) exacerbation
		J479	Bronchiectasis, uncomplicated
Congestive heart failure (CHF)		I09.81	Rheumatic heart failure
		I11.0	Hypertensive heart disease with heart failure
		I11.0	Hypertensive heart disease with heart failure
		I11.0	Hypertensive heart disease with heart failure
		I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease
		I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease
		I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease
		I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease
		I13.0	Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		I13.2	Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease
		I50.9	Heart failure, unspecified
		I50.1	Left ventricular failure
		I50.20	Unspecified systolic (congestive) heart failure
		I50.21	Acute systolic (congestive) heart failure
		I50.22	Chronic systolic (congestive) heart failure
		I50.23	Acute on chronic systolic (congestive) heart failure
		I50.30	Unspecified diastolic (congestive) heart failure
		I50.31	Acute diastolic (congestive) heart failure
		I50.32	Chronic diastolic (congestive) heart failure
		I50.33	Acute on chronic diastolic (congestive) heart failure
		I50.40	Unspecified combined systolic (congestive) and diastolic (congestive) heart failure
		I50.41	Acute combined systolic (congestive) and diastolic (congestive) heart failure
		I50.42	Chronic combined systolic (congestive) and diastolic (congestive) heart failure
		I50.43	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure
		I50.9	Heart failure, unspecified
		J81.0	Acute pulmonary edema
Diabetes short-term complication	**Diabetes short-term complication* (PQI 01)**	E1010	Type 1 diabetes mellitus with ketoacidosis without coma
		E1011	Type 1 diabetes mellitus with ketoacidosis with coma
		E10641	Type 1 diabetes mellitus with hypoglycemia with coma
		E1065	Type 1 diabetes mellitus with hyperglycemia
		E1100	Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		E1101	Type 2 diabetes mellitus with hyperosmolarity with coma
		E11641	Type 2 diabetes mellitus with hypoglycemia with coma
		E1165	Type 2 diabetes mellitus with hyperglycemia
		E08.10	Diabetes mellitus due to underlying condition with ketoacidosis without coma
		E09.10	Drug or chemical induced diabetes mellitus with ketoacidosis without coma
		E13.10	Other specified diabetes mellitus with ketoacidosis without coma
		E08.65	Diabetes mellitus due to underlying condition with hyperglycemia
		E08.01	Diabetes mellitus due to underlying condition with hyperosmolarity with coma
		E09.01	Drug or chemical induced diabetes mellitus with hyperosmolarity with coma
		E13.00	Other specified diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)
		E08.65	Diabetes mellitus due to underlying condition with hyperglycemia
		E08.11	Diabetes mellitus due to underlying condition with ketoacidosis with coma
		E08.641	Diabetes mellitus due to underlying condition with hypoglycemia with coma
		E09.11	Drug or chemical induced diabetes mellitus with ketoacidosis with coma
		E09.641	Drug or chemical induced diabetes mellitus with hypoglycemia with coma
		E13.11	Other specified diabetes mellitus with ketoacidosis with coma
		E13.641	Other specified diabetes mellitus with hypoglycemia with coma
		E09.65	Drug or chemical induced diabetes mellitus with hyperglycemia
		E08.618	Diabetes mellitus due to underlying condition with other diabetic arthropathy
		E08.620	Diabetes mellitus due to underlying condition with diabetic dermatitis

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		E08.621	Diabetes mellitus due to underlying condition with foot ulcer
		E08.622	Diabetes mellitus due to underlying condition with other skin ulcer
		E08.628	Diabetes mellitus due to underlying condition with other skin complications
		E08.630	Diabetes mellitus due to underlying condition with periodontal disease
		E08.638	Diabetes mellitus due to underlying condition with other oral complications
		E08.65	Diabetes mellitus due to underlying condition with hyperglycemia
		E08.69	Diabetes mellitus due to underlying condition with other specified complication
		E09.618	Drug or chemical induced diabetes mellitus with other diabetic arthropathy
		E09.621	Drug or chemical induced diabetes mellitus with foot ulcer
		E09.622	Drug or chemical induced diabetes mellitus with other skin ulcer
		E09.628	Drug or chemical induced diabetes mellitus with other skin complications
		E09.630	Drug or chemical induced diabetes mellitus with periodontal disease
		E09.638	Drug or chemical induced diabetes mellitus with other oral complications
		E09.649	Drug or chemical induced diabetes mellitus with hypoglycemia without coma
		E09.65	Drug or chemical induced diabetes mellitus with hyperglycemia
		E09.69	Drug or chemical induced diabetes mellitus with other specified complication
		E13.620	Other specified diabetes mellitus with diabetic dermatitis
		E13.621	Other specified diabetes mellitus with foot ulcer
		E13.622	Other specified diabetes mellitus with other skin ulcer
		E13.628	Other specified diabetes mellitus with other skin complications
		E13.638	Other specified diabetes mellitus with other oral complications

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		E13.649	Other specified diabetes mellitus with hypoglycemia without coma
		E13.65	Other specified diabetes mellitus with hyperglycemia
		E13.69	Other specified diabetes mellitus with other specified complication
		E09.69	Drug or chemical induced diabetes mellitus with other specified complication
		E11.618	Type 2 diabetes mellitus with other diabetic arthropathy
		E11.620	Type 2 diabetes mellitus with diabetic dermatitis
		E11.621	Type 2 diabetes mellitus with foot ulcer
		E11.622	Type 2 diabetes mellitus with other skin ulcer
		E11.628	Type 2 diabetes mellitus with other skin complications
		E11.630	Type 2 diabetes mellitus with periodontal disease
		E11.638	Type 2 diabetes mellitus with other oral complications
		E11.649	Type 2 diabetes mellitus with hypoglycemia without coma
		E11.65	Type 2 diabetes mellitus with hyperglycemia
		E11.69	Type 2 diabetes mellitus with other specified complication
		E10.618	Type 1 diabetes mellitus with other diabetic arthropathy
		E10.620	Type 1 diabetes mellitus with diabetic dermatitis
		E10.621	Type 1 diabetes mellitus with foot ulcer
		E10.622	Type 1 diabetes mellitus with other skin ulcer
		E10.628	Type 1 diabetes mellitus with other skin complications
		E10.630	Type 1 diabetes mellitus with periodontal disease
		E10.638	Type 1 diabetes mellitus with other oral complications
		E10.649	Type 1 diabetes mellitus with hypoglycemia without coma
		E10.65	Type 1 diabetes mellitus with hyperglycemia

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		E10.69	Type 1 diabetes mellitus with other specified complication
Hypotension/ Hypertension	**Hypotension**	I95.1	Orthostatic hypotension
		I95.89	Other hypotension
		I95.2	Hypotension due to drugs
		I95.81	Postprocedural hypotension
		I95.89	Other hypotension
		I95.9	Hypotension, unspecified
	Hypertension* (PQI 07)	I10	Essential (primary) hypertension
		I119	Hypertensive heart disease without heart failure
		I129	Hypertensive chronic kidney disease with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease
		I1310	Hypertensive heart and chronic kidney disease without heart failure, with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease
Influenza		J11.00	Influenza due to unidentified influenza virus with unspecified type of pneumonia
		J12.9	Viral pneumonia, unspecified
		J10.1	Influenza due to other identified influenza virus with other respiratory manifestations
		J11.1	Influenza due to unidentified influenza virus with other respiratory manifestations
		J11.2	Influenza due to unidentified influenza virus with gastrointestinal manifestations
		J11.81	Influenza due to unidentified influenza virus with encephalopathy
		J11.89	Influenza due to unidentified influenza virus with other manifestations
		J09.X1	Influenza due to identified novel influenza A virus with pneumonia
		J09.X2	Influenza due to identified novel influenza A virus with other respiratory manifestations
		J09.X3	Influenza due to identified novel influenza A virus with gastrointestinal manifestations

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		J09.X9	Influenza due to identified novel influenza A virus with other manifestations
		J10.08	Influenza due to other identified influenza virus with other specified pneumonia
Bacterial pneumonia	**Bacterial pneumonia* (PQI 11)**	J13	Pneumonia due to Streptococcus pneumoniae
		J14	Pneumonia due to Hemophilus influenzae
		J15211	Pneumonia due to Methicillin susceptible Staphylococcus aureus
		J15212	Pneumonia due to Methicillin resistant Staphylococcus aureus
		J153	Pneumonia due to streptococcus, group B
		J154	Pneumonia due to other streptococci
		J157	Pneumonia due to Mycoplasma pneumoniae
		J159	Unspecified bacterial pneumonia
		J160	Chlamydial pneumonia
		J168	Pneumonia due to other specified infectious organisms
		J180	Bronchopneumonia, unspecified organism
		J181	Lobar pneumonia, unspecified organism
		J188	Other pneumonia, unspecified organism
		J189	Pneumonia, unspecified organism
Urinary tract infection / Kidney infection	**Urinary tract infection***	N10	Acute tubulo-interstitial nephritis
		N119	Chronic tubulo-interstitial nephritis, unspecified
		N12	Tubulo-interstitial nephritis, not specified as acute or
		N151	Renal and perinephric abscess
		N159	Renal tubulo-interstitial disease, unspecified
		N16	Renal tubulo-interstitial disorders in diseases classified elsewhere
		N2884	Pyelitis cystica
		N2885	Pyeloureteritis cystica
		N2886	Ureteritis cystica

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		N3000	Acute cystitis without hematuria
		N3001	Acute cystitis with hematuria
		N3090	Cystitis, unspecified without hematuria
		N3091	Cystitis, unspecified with hematuria
		N390	Urinary tract infection, site not specified
	Kidney infection	N30.10	Interstitial cystitis (chronic) without hematuria
		N30.11	Interstitial cystitis (chronic) with hematuria
		N30.20	Other chronic cystitis without hematuria
		N30.21	Other chronic cystitis with hematuria
		N30.80	Other cystitis without hematuria
		N30.81	Other cystitis with hematuria
		N34.0	Urethral abscess
C. difficile infection [135 subset]		A04.7	Enterocolitis due to Clostridium difficile
Septicemia (except in labor) [2]		A02.1	Salmonella sepsis
		A20.7	Septicemic plague
		A22.7	Anthrax sepsis
		A39.4	Meningococcemia, unspecified
		A40.9	Streptococcal sepsis, unspecified
		A41.2	Sepsis due to unspecified staphylococcus
		A41.01	Sepsis due to Methicillin susceptible Staphylococcus aureus
		A41.02	Sepsis due to Methicillin resistant Staphylococcus aureus
		A41.1	Sepsis due to other specified staphylococcus
		A40.3	Sepsis due to Streptococcus pneumoniae
		A41.4	Sepsis due to anaerobes
		A41.50	Gram-negative sepsis, unspecified
		A41.3	Sepsis due to Hemophilus influenzae
		A41.51	Sepsis due to Escherichia coli [E. coli]
		A41.52	Sepsis due to Pseudomonas
		A4153	Sepsis due to Serratia
		A41.59	Other Gram-negative sepsis
		A41.89	Other specified sepsis
		A41.9	Sepsis, unspecified organism
		B00.7	Disseminated herpesviral disease
		I76	Septic arterial embolism
		A41.9	Sepsis, unspecified organism

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		R65.20	Severe sepsis without septic shock
		R65.21	Severe sepsis with septic shock
Dehydration/ Electrolyte imbalance [55]	**Dehydration***	E860	Dehydration
		E861	Hypovolemia
		E869	Volume depletion, unspecified
	Hyperosmolality and/or hypernatremia~	E870	Hyperosmolality and hypernatremia
	Gastroenteritis~	A080	Rotaviral enteritis
		A0811	Acute gastroenteropathy due to Norwalk agent
		A0819	Acute gastroenteropathy due to other small round
		A082	Aidenoviral enteritis
		A0831	Calicivirus enteritis
		A0832	Astrovirus enteritis
		A0839	Other viral enteritis
		A084	Viral intestinal infection, unspecified
		A088	Other specified intestinal infections
		A09	Infectious gastroenteritis and colitis, unspecified
		K5289	Other specified noninfective gastroenteritis and colitis
		K529	Noninfective gastroenteritis and colitis, unspecified
	Acute kidney failure~	N170	Acute kidney failure with tubular necrosis
		N171	Acute kidney failure with acute cortical necrosis
		N172	Acute kidney failure with medullary necrosis
		N178	Other acute kidney failure
		N179	Acute kidney failure, unspecified
		N19	Unspecified kidney failure
		N990	Postprocedural (acute) (chronic) kidney failure
		E87.2	Acidosis
		E87.3	Alkalosis
		E87.4	Mixed disorder of acid-base balance
		E87.70	Fluid overload, unspecified
		E87.79	Other fluid overload
		E87.5	Hyperkalemia
		E87.6	Hypokalemia
		E87.8	Other disorders of electrolyte and fluid balance, not elsewhere classified

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
Skin and subcutaneous tissue infections [197]		L03.021	Acute lymphangitis of right finger
		L03.022	Acute lymphangitis of left finger
		L03.029	Acute lymphangitis of unspecified finger
		L03.041	Acute lymphangitis of right toe
		L03.042	Acute lymphangitis of left toe
		L03.049	Acute lymphangitis of unspecified toe
		L03.121	Acute lymphangitis of right axilla
		L03.122	Acute lymphangitis of left axilla
		L03.123	Acute lymphangitis of right upper limb
		L03.124	Acute lymphangitis of left upper limb
		L03.125	Acute lymphangitis of right lower limb
		L03.126	Acute lymphangitis of left lower limb
		L03.129	Acute lymphangitis of unspecified part of limb
		L03.212	Acute lymphangitis of face
		L03.222	Acute lymphangitis of neck
		L03.321	Acute lymphangitis of abdominal wall
		L03.322	Acute lymphangitis of back [any part except buttock]
		L03.323	Acute lymphangitis of chest wall
		L03.324	Acute lymphangitis of groin
		L03.325	Acute lymphangitis of perineum
		L03.326	Acute lymphangitis of umbilicus
		L03.327	Acute lymphangitis of buttock
		L03.329	Acute lymphangitis of trunk, unspecified
		L03.891	Acute lymphangitis of head [any part, except face]
		L03.898	Acute lymphangitis of other sites
		L03.91	Acute lymphangitis, unspecified
		L03.011	Cellulitis of right finger
		L03.012	Cellulitis of left finger
		L03.019	Cellulitis of unspecified finger
		L03.031	Cellulitis of right toe
		L03.032	Cellulitis of left toe
		L03.039	Cellulitis of unspecified toe
		L03.111	Cellulitis of right axilla
		L03.112	Cellulitis of left axilla
		L03.113	Cellulitis of right upper limb
		L03.114	Cellulitis of left upper limb
		L03.115	Cellulitis of right lower limb
		L03.116	Cellulitis of left lower limb
		L03.119	Cellulitis of unspecified part of limb

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		L03.211	Cellulitis of face
		L03.221	Cellulitis of neck
		L03.311	Cellulitis of abdominal wall
		L03.312	Cellulitis of back [any part except buttock]
		L03.313	Cellulitis of chest wall
		L03.314	Cellulitis of groin
		L03.315	Cellulitis of perineum
		L03.316	Cellulitis of umbilicus
		L03.317	Cellulitis of buttock
		L03.319	Cellulitis of trunk, unspecified
		L03.811	Cellulitis of head [any part, except face]
		L03.818	Cellulitis of other sites
		L03.90	Cellulitis, unspecified
		K12.2	Cellulitis and abscess of mouth
		L02.01	Cutaneous abscess of face
		L02.11	Cutaneous abscess of neck
		L02.211	Cutaneous abscess of abdominal wall
		L02.212	Cutaneous abscess of back [any part, except buttock]
		L02.213	Cutaneous abscess of chest wall
		L02.214	Cutaneous abscess of groin
		L02.215	Cutaneous abscess of perineum
		L02.216	Cutaneous abscess of umbilicus
		L02.219	Cutaneous abscess of trunk, unspecified
		L02.31	Cutaneous abscess of buttock
		L02.411	Cutaneous abscess of right axilla
		L02.412	Cutaneous abscess of left axilla
		L02.413	Cutaneous abscess of right upper limb
		L02.414	Cutaneous abscess of left upper limb
		L02.415	Cutaneous abscess of right lower limb
		L02.416	Cutaneous abscess of left lower limb
		L02.419	Cutaneous abscess of limb, unspecified
		L02.511	Cutaneous abscess of right hand
		L02.512	Cutaneous abscess of left hand
		L02.519	Cutaneous abscess of unspecified hand
		L02.611	Cutaneous abscess of right foot
		L02.612	Cutaneous abscess of left foot
		L02.619	Cutaneous abscess of unspecified foot
		L02.811	Cutaneous abscess of head [any part, except face]
		L02.818	Cutaneous abscess of other sites
		L02.91	Cutaneous abscess, unspecified
		L08.89	Other specified local infections of the skin and subcutaneous tissue

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		L08.9	Local infection of the skin and subcutaneous tissue, unspecified
Aspiration pneumonitis; food/vomitus [129]		J69.0	Pneumonitis due to inhalation of food and vomit
Arrhythmia		I48.91	Unspecified atrial fibrillation
		I48.92	Unspecified atrial flutter
		I48.0	Paroxysmal atrial fibrillation
		I48.1	Persistent atrial fibrillation
		I48.3	Typical atrial flutter
		I48.4	Atypical atrial flutter
Intestinal impaction		K56.49	Other impaction of intestine
		K56.41	Fecal impaction
Pressure ulcers		L89.90	Pressure ulcer of unspecified site, unspecified stage
		L89.009	Pressure ulcer of unspecified elbow, unspecified stage
		L89.119	Pressure ulcer of right upper back, unspecified stage
		L89.129	Pressure ulcer of left upper back, unspecified stage
		L89.139	Pressure ulcer of right lower back, unspecified stage
		L89.149	Pressure ulcer of left lower back, unspecified stage
		L89.159	Pressure ulcer of sacral region, unspecified stage
		L89.209	Pressure ulcer of unspecified hip, unspecified stage
		L89.309	Pressure ulcer of unspecified buttock, unspecified stage
		L89.509	Pressure ulcer of unspecified ankle, unspecified stage
		L89.609	Pressure ulcer of unspecified heel, unspecified stage
		L89.819	Pressure ulcer of head, unspecified stage
		L89.899	Pressure ulcer of other site, unspecified stage
		L89.000	Pressure ulcer of unspecified elbow, unstageable
		L89.003	Pressure ulcer of unspecified elbow, stage 3
		L89.004	Pressure ulcer of unspecified elbow, stage 4
		L89.010	Pressure ulcer of right elbow, unstageable

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		L89.013	Pressure ulcer of right elbow, stage 3
		L89.014	Pressure ulcer of right elbow, stage 4
		L89.019	Pressure ulcer of right elbow, unspecified stage
		L89.020	Pressure ulcer of left elbow, unstageable
		L89.023	Pressure ulcer of left elbow, stage 3
		L89.024	Pressure ulcer of left elbow, stage 4
		L89.029	Pressure ulcer of left elbow, unspecified stage
		L89.100	Pressure ulcer of unspecified part of back, unstageable
		L89.103	Pressure ulcer of unspecified part of back, stage 3
		L89.104	Pressure ulcer of unspecified part of back, stage 4
		L89.109	Pressure ulcer of unspecified part of back, unspecified stage
		L89.110	Pressure ulcer of right upper back, unstageable
		L89.113	Pressure ulcer of right upper back, stage 3
		L89.114	Pressure ulcer of right upper back, stage 4
		L89.120	Pressure ulcer of left upper back, unstageable
		L89.123	Pressure ulcer of left upper back, stage 3
		L89.124	Pressure ulcer of left upper back, stage 4
		L89.130	Pressure ulcer of right lower back, unstageable
		L89.133	Pressure ulcer of right lower back, stage 3
		L89.134	Pressure ulcer of right lower back, stage 4
		L89.140	Pressure ulcer of left lower back, unstageable
		L89.143	Pressure ulcer of left lower back, stage 3
		L89.144	Pressure ulcer of left lower back, stage 4
		L89.150	Pressure ulcer of sacral region, unstageable
		L89.153	Pressure ulcer of sacral region, stage 3
		L89.154	Pressure ulcer of sacral region, stage 4

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		L89.200	Pressure ulcer of unspecified hip, unstageable
		L89.203	Pressure ulcer of unspecified hip, stage 3
		L89.204	Pressure ulcer of unspecified hip, stage 4
		L89.210	Pressure ulcer of right hip, unstageable
		L89.213	Pressure ulcer of right hip, stage 3
		L89.214	Pressure ulcer of right hip, stage 4
		L89.219	Pressure ulcer of right hip, unspecified stage
		L89.220	Pressure ulcer of left hip, unstageable
		L89.223	Pressure ulcer of left hip, stage 3
		L89.224	Pressure ulcer of left hip, stage 4
		L89.229	Pressure ulcer of left hip, unspecified stage
		L89.300	Pressure ulcer of unspecified buttock, unstageable
		L89.303	Pressure ulcer of unspecified buttock, stage 3
		L89.304	Pressure ulcer of unspecified buttock, stage 4
		L89.309	Pressure ulcer of unspecified buttock, unspecified stage
		L89.310	Pressure ulcer of right buttock, unstageable
		L89.313	Pressure ulcer of right buttock, stage 3
		L89.314	Pressure ulcer of right buttock, stage 4
		L89.319	Pressure ulcer of right buttock, unspecified stage
		L89.320	Pressure ulcer of left buttock, unstageable
		L89.323	Pressure ulcer of left buttock, stage 3
		L89.324	Pressure ulcer of left buttock, stage 4
		L89.329	Pressure ulcer of left buttock, unspecified stage
		L89.40	Pressure ulcer of contiguous site of back, buttock and hip, unspecified stage
		L89.43	Pressure ulcer of contiguous site of back, buttock and hip, stage 3
		L89.44	Pressure ulcer of contiguous site of back, buttock and hip, stage 4
		L89.45	Pressure ulcer of contiguous site of back, buttock and hip, unstageable
		L89.500	Pressure ulcer of unspecified ankle, unstageable

(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		L89.503	Pressure ulcer of unspecified ankle, stage 3
		L89.504	Pressure ulcer of unspecified ankle, stage 4
		L89.509	Pressure ulcer of unspecified ankle, unspecified stage
		L89.510	Pressure ulcer of right ankle, unstageable
		L89.513	Pressure ulcer of right ankle, stage 3
		L89.514	Pressure ulcer of right ankle, stage 4
		L89.519	Pressure ulcer of right ankle, unspecified stage
		L89.520	Pressure ulcer of left ankle, unstageable
		L89.523	Pressure ulcer of left ankle, stage 3
		L89.524	Pressure ulcer of left ankle, stage 4
		L89.529	Pressure ulcer of left ankle, unspecified stage
		L89.600	Pressure ulcer of unspecified heel, unstageable
		L89.603	Pressure ulcer of unspecified heel, stage 3
		L89.604	Pressure ulcer of unspecified heel, stage 4
		L89.610	Pressure ulcer of right heel, unstageable
		L89.613	Pressure ulcer of right heel, stage 3
		L89.614	Pressure ulcer of right heel, stage 4
		L89.619	Pressure ulcer of right heel, unspecified stage
		L89.620	Pressure ulcer of left heel, unstageable
		L89.623	Pressure ulcer of left heel, stage 3
		L89.624	Pressure ulcer of left heel, stage 4
		L89.629	Pressure ulcer of left heel, unspecified stage
		L89.629	Pressure ulcer of left heel, unspecified stage
		L89.810	Pressure ulcer of head, unstageable
		L89.813	Pressure ulcer of head, stage 3
		L89.814	Pressure ulcer of head, stage 4
		L89.890	Pressure ulcer of other site, unstageable
		L89.893	Pressure ulcer of other site, stage 3
		L89.894	Pressure ulcer of other site, stage 4
		L89.90	Pressure ulcer of unspecified site, unspecified stage
		L89.93	Pressure ulcer of unspecified site, stage 3

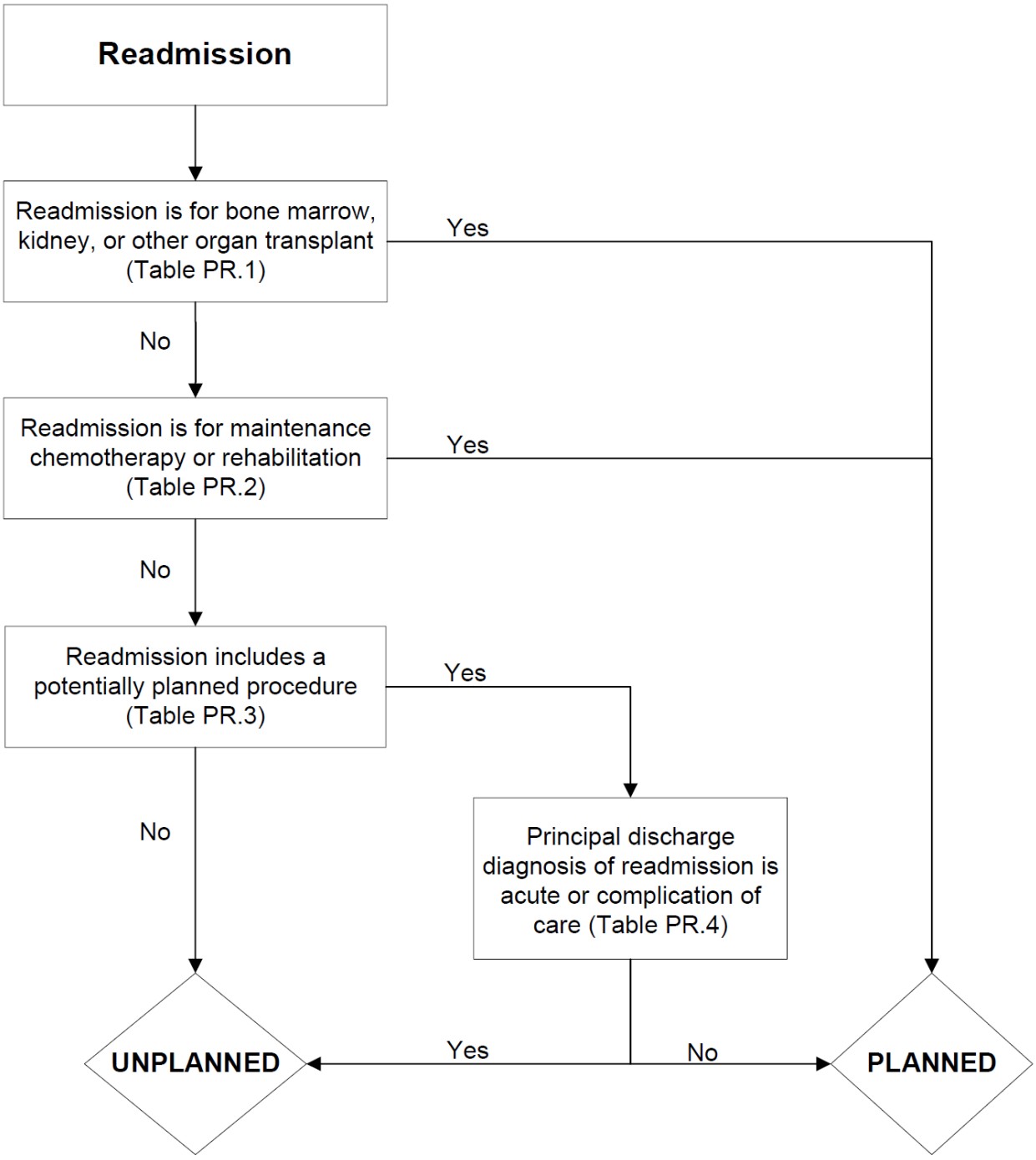
(continued)

Table 2-2. Preliminary List of Conditions for Defining Potentially Preventable Hospital Readmissions for 30-Days Post-PAC Discharge with ICD-10 Codes (continued)

Conditions	Subconditions	ICD-10-CM	ICD-10-CM Description
		L89.94	Pressure ulcer of unspecified site, stage 4
		L89.95	Pressure ulcer of unspecified site, unstageable

SOURCE: List of potentially preventable readmission conditions from RTI International with ICD-10-CM (version: April 2016).
NOTES: [###] indicates CCS code; *AHRQ PQI ICD-10 v5 specifications
To be considered a potentially preventable readmission, diagnosis codes must be the principal diagnosis on the readmission claim, except where noted.
^Principal of acute bronchitis AND secondary of subcondition COPD
~principal ICD-10-CM code with secondary ICD-10-CM code for subcondition dehydration

Figure 2-1. Planned Readmission Algorithm Version 3.0 Flowchart



Source: 2015 Version of the HWR Planned Readmission Algorithm

Planned Readmission Algorithm Version 3.0 Tables – Hospital Wide Readmission Measure

Table 2-3. Procedure Categories that are Always Planned (Version 3.0)*

Procedure CCS	Description
64	Bone marrow transplant
105	Kidney transplant
134	Cesarean section**
135	Forceps; vacuum; and breech delivery††
176	Other organ transplantation

*Corresponds to Table PR. 1, referenced in Figure 2-1

Table 2-4. Diagnosis Categories that are Always Planned (Version 3.0)*

Diagnosis CCS	Description
45	Maintenance chemotherapy
194	Forceps delivery‡‡
196	Normal pregnancy and/or delivery§§
254	Rehabilitation

*Corresponds to Table PR. 2, referenced in Figure 2-1

Table 2-5. Potentially Planned Procedure Categories (Version 3.0)*

Procedure CCS	Description
3	Laminectomy; excision intervertebral disc
5	Insertion of catheter or spinal stimulator and injection into spinal
9	Other OR therapeutic nervous system procedures
10	Thyroidectomy; partial or complete
12	Other therapeutic endocrine procedures
33	Other OR therapeutic procedures on nose; mouth and pharynx
36	Lobectomy or pneumonectomy
38	Other diagnostic procedures on lung and bronchus
40	Other diagnostic procedures of respiratory tract and mediastinum
43	Heart valve procedures
44	Coronary artery bypass graft (CABG)

(continued)

Table 2-5. Potentially Planned Procedure Categories (Version 3.0) (continued)

Procedure CCS	Description
45	Percutaneous transluminal coronary angioplasty (PTCA)
47	Diagnostic cardiac catheterization; coronary arteriography
48	Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator
49	Other OR heart procedures
51	Endarterectomy; vessel of head and neck
52	Aortic resection; replacement or anastomosis
53	Varicose vein stripping; lower limb
55	Peripheral vascular bypass
56	Other vascular bypass and shunt; not heart
59	Other OR procedures on vessels of head and neck
62	Other diagnostic cardiovascular procedures
66	Procedures on spleen
67	Other therapeutic procedures; hemic and lymphatic system
74	Gastrectomy; partial and total
78	Colorectal resection
79	Local excision of large intestine lesion (not endoscopic)
84	Cholecystectomy and common duct exploration
85	Inguinal and femoral hernia repair
86	Other hernia repair
99	Other OR gastrointestinal therapeutic procedures
104	Nephrectomy; partial or complete
106	Genitourinary incontinence procedures
107	Extracorporeal lithotripsy; urinary
109	Procedures on the urethra
112	Other OR therapeutic procedures of urinary tract
113	Transurethral resection of prostate (TURP)
114	Open prostatectomy
119	Oophorectomy; unilateral and bilateral
120	Other operations on ovary
124	Hysterectomy; abdominal and vaginal

(continued)

Table 2-5. Potentially Planned Procedure Categories (Version 3.0) (continued)

Procedure CCS	Description
129	Repair of cystocele and rectocele; obliteration of vaginal vault
132	Other OR therapeutic procedures; female organs
142	Partial excision bone
152	Arthroplasty knee
153	Hip replacement; total and partial
154	Arthroplasty other than hip or knee
157	Amputation of lower extremity
158	Spinal fusion
159	Other diagnostic procedures on musculoskeletal system
166	Lumpectomy; quadrantectomy of breast
167	Mastectomy
169	Debridement of wound; infection or burn
170	Excision of skin lesion
172	Skin graft
ICD-9 Codes	Description
30.1, 30.29, 30.3, 30.4, 31.74, 34.6	Laryngectomy, revision of tracheostomy, scarification of pleura (from Proc CCS 42- Other OR Rx procedures on respiratory system and mediastinum)
38.18	Endarterectomy leg vessel (from Proc CCS 60- Embolectomy and endarterectomy of lower limbs)
55.03, 55.04	Percutaneous nephrostomy with and without fragmentation (from Proc CCS 103- Nephrotomy and nephrostomy)
94.26, 94.27	Electroshock therapy (from Proc CCS 218- Psychological and psychiatric evaluation and therapy)

*Corresponds to Table PR. 3, referenced in Figure 2-1

Table 2-6. Acute Diagnosis Categories (Version 3.0)*

Diagnosis CCS	Description
1	Tuberculosis
2	Septicemia (except in labor)
3	Bacterial infection; unspecified site
4	Mycoses
5	HIV infection
7	Viral infection
8	Other infections; including parasitic
9	Sexually transmitted infections (not HIV or hepatitis)
54	Gout and other crystal arthropathies
55	Fluid and electrolyte disorders
60	Acute posthemorrhagic anemia
61	Sickle cell anemia
63	Diseases of white blood cells
76	Meningitis (except that caused by tuberculosis or sexually transmitted disease)
77	Encephalitis (except that caused by tuberculosis or sexually transmitted disease)
78	Other CNS infection and poliomyelitis
82	Paralysis
83	Epilepsy; convulsions
84	Headache; including migraine
85	Coma; stupor; and brain damage
87	Retinal detachments; defects; vascular occlusion; and retinopathy
89	Blindness and vision defects
90	Inflammation; infection of eye (except that caused by tuberculosis or sexually transmitted disease)
91	Other eye disorders
92	Otitis media and related conditions
93	Conditions associated with dizziness or vertigo
99	Hypertension with complications
100	Acute myocardial infarction (with the exception of ICD-9 codes 410.x2)

(continued)

Table 2-6. Acute Diagnosis Categories (Version 3.0) (continued)

Diagnosis CCS	Description
102	Nonspecific chest pain
104	Other and ill-defined heart disease
107	Cardiac arrest and ventricular fibrillation
109	Acute cerebrovascular disease
112	Transient cerebral ischemia
116	Aortic and peripheral arterial embolism or thrombosis
118	Phlebitis; thrombophlebitis and thromboembolism
120	Hemorrhoids
122	Pneumonia (except that caused by TB or sexually transmitted disease)
123	Influenza
124	Acute and chronic tonsillitis
125	Acute bronchitis
126	Other upper respiratory infections
127	Chronic obstructive pulmonary disease and bronchiectasis
128	Asthma
129	Aspiration pneumonitis; food/vomitus
130	Pleurisy; pneumothorax; pulmonary collapse
131	Respiratory failure; insufficiency; arrest (adult)
135	Intestinal infection
137	Diseases of mouth; excluding dental
139	Gastroduodenal ulcer (except hemorrhage)
140	Gastritis and duodenitis
142	Appendicitis and other appendiceal conditions
145	Intestinal obstruction without hernia
146	Diverticulosis and diverticulitis
148	Peritonitis and intestinal abscess
153	Gastrointestinal hemorrhage
154	Noninfectious gastroenteritis
157	Acute and unspecified renal failure
159	Urinary tract infections
165	Inflammatory conditions of male genital organs

(continued)

Table 2-6. Acute Diagnosis Categories (Version 3.0) (continued)

Diagnosis CCS	Description
168	Inflammatory diseases of female pelvic organs
172	Ovarian cyst
197	Skin and subcutaneous tissue infections
198	Other inflammatory condition of skin
225	Joint disorders and dislocations; trauma-related
226	Fracture of neck of femur (hip)
227	Spinal cord injury
228	Skull and face fractures
229	Fracture of upper limb
230	Fracture of lower limb
232	Sprains and strains
233	Intracranial injury
234	Crushing injury or internal injury
235	Open wounds of head; neck; and trunk
237	Complication of device; implant or graft
238	Complications of surgical procedures or medical care
239	Superficial injury; contusion
240	Burns
241	Poisoning by psychotropic agents
242	Poisoning by other medications and drugs
243	Poisoning by nonmedicinal substances
244	Other injuries and conditions due to external causes
245	Syncope
246	Fever of unknown origin
247	Lymphadenitis
249	Shock
250	Nausea and vomiting
251	Abdominal pain
252	Malaise and fatigue
253	Allergic reactions
259	Residual codes; unclassified

(continued)

Table 2-6. Acute Diagnosis Categories (Version 3.0) (continued)

Diagnosis CCS	Description
650	Adjustment disorders
651	Anxiety disorders
652	Attention-deficit, conduct, and disruptive behavior disorders
653	Delirium, dementia, and amnestic and other cognitive disorders
656	Impulse control disorders, NEC
658	Personality disorders
660	Alcohol-related disorders
661	Substance-related disorders
662	Suicide and intentional self-inflicted injury
663	Screening and history of mental health and substance abuse codes
670	Miscellaneous disorders
ICD-9 Codes	Description
Acute ICD-9 codes within Dx CCS 97: Peri-; endo-; and myocarditis; cardiomyopathy	
03282	Diphtheritic myocarditis
03640	Meningococcal carditis nos
03641	Meningococcal pericarditis
03642	Meningococcal endocarditis
03643	Meningococcal myocarditis
07420	Coxsackie carditis nos
07421	Coxsackie pericarditis
07422	Coxsackie endocarditis
07423	Coxsackie myocarditis
11281	Candidal endocarditis
11503	Histoplasma capsulatum pericarditis
11504	Histoplasma capssulatum endocarditis
11513	Histoplasma duboisii pericarditis
11514	Histoplasma duboisii endocarditis
11593	Histoplasmosis pericarditis
11594	Histoplasmosis endocarditis
1303	Toxoplasma myocarditis
3910	Acute rheumatic pericarditis

(continued)

Table 2-6. Acute Diagnosis Categories (Version 3.0) (continued)

Diagnosis CCS	Description
3911	Acute rheumatic endocarditis
3912	Acute rheumatic myocarditis
3918	Acute rheumatic heart disease nec
3919	Acute rheumatic heart disease nos
3920	Rheumatic chorea w heart involvement
3980	Rheumatic myocarditis
39890	Rheumatic heart disease nos
39899	Rheumatic heart disease nec
4200	Acute pericarditis in other disease
42090	Acute pericarditis nos
42091	Acute idiopath pericarditis
42099	Acute pericarditis nec
4210	Acute/subacute bacterial endocarditis
4211	Acute endocarditis in other diseases
4219	Acute/subacute endocarditis nos
4220	Acute myocarditis in other diseases
42290	Acute myocarditis nos
42291	Idiopathic myocarditis
42292	Septic myocarditis
42293	Toxic myocarditis
42299	Acute myocarditis nec
4230	Hemopericardium
4231	Adhesive pericarditis
4232	Constrictive pericarditis
4233	Cardiac tamponade
4290	Myocarditis nos
Acute ICD-9 codes within Dx CCS 105: Conduction disorders	
4260	Atrioventricular
42610	Atrioventricular block nos
42611	Atrioventricular block-1st degree
42612	Atrioventricular block-mobitz ii

(continued)

Table 2-6. Acute Diagnosis Categories (Version 3.0) (continued)

Diagnosis CCS	Description
42613	Atrioventricular block-2nd degree nec
4262	Left bundle branch hemiblock
4263	Left bundle branch block nec
4264	Right bundle branch block
42650	Bundle branch block nos
42651	Right bundle branch block/left posterior fascicular block
42652	Right bundle branch block/left ant fascicular block
42653	Bilateral bundle branch block nec
42654	Trifascicular block
4266	Other heart block
4267	Anomalous atrioventricular excitation
42681	Lown-ganong-levine syndrome
42682	Long qt syn
4269	Conduction
Acute ICD-9 codes within Dx CCS 106: Dysrhythmia	
4272	Paroxysmal tachycardia nos
7850	Tachycardia nos
42789	Cardiac dysrhythmias nec
4279	Cardiac dysrhythmia noc
42769	Premature beats nec
Acute ICD-9 codes within Dx CCS 108: Congestive heart failure; nonhypertensive	
39891	Rheumatic heart failure
4280	Congestive heart failure
4281	Left heart failure
42820	Unspecified systolic heart failure
42821	Acute systolic heart failure
42823	Acute on chronic systolic heart failure
42830	Unspecified diastolic heart failure
42831	Acute diastolic heart failure
42833	Acute on chronic diastolic heart failure
42840	Unspec combined syst & dias heart failure

(continued)

Table 2-6. Acute Diagnosis Categories (Version 3.0) (continued)

Diagnosis CCS	Description
42841	Acute combined systolic & diastolic heart failure
42843	Acute on chronic combined systolic & diastolic heart failure
4289	Heart failure nos
Acute ICD-9 codes within Dx CCS 149: Biliary tract disease	
5740	Calculus of gallbladder with acute cholecystitis
57400	Calculus of gallbladder with acute cholecystitis without mention of obstruction
57401	Calculus of gallbladder with acute cholecystitis with obstruction
5743	Calculus of bile duct with acute cholecystitis
57430	Calculus of bile duct with acute cholecystitis without mention of obstruction
57431	Calculus of bile duct with acute cholecystitis with obstruction
5746	Calculus of gallbladder and bile duct with acute cholecystitis
57460	Calculus of gallbladder with acute cholecystitis without mention of obstruction
57461	Calculus of gallbladder and bile duct with acute cholecystitis with obstruction
5748	Calculus of gallbladder and bile duct with acute and chronic cholecystitis
57480	Calculus of gallbladder obstruction and bile duct with acute and chronic cholecystitis without mention of obstruction
57481	Calculus of gallbladder and bile duct with acute and chronic cholecystitis with obstruction
5750	Acute cholecystitis
57512	Acute and chronic cholecystitis
5761	Cholangitis
Acute ICD-9 codes with Dx CCS 152: Pancreatic disorders	
5770	Acute pancreatitis

*Corresponds to Table PR. 4, referenced in Figure 2-1

Source: 2015 Version of the HWR Planned Readmission Algorithm

Table 2-7. AHRQ CCS Single Level Procedure Codes and ICD-9 Procedure Codes Added to Yale's Planned Readmission Algorithm, for the Post-Acute Care Setting

AHRQ CCS Single Level Procedures Codes	Description	Comment
37	Diagnostic Bronchoscopy and Biopsy of Bronchus	
71	Gastrostomy: temporary and permanent	
82	Endoscopic retrograde cannulation of pancreases (ERCP)	
87	Laparoscopy (GI only)	
89	Exploratory Laparotomy	
160	Other therapeutic procedure on muscles and tendons	
164	Other OR therapeutic procedures on musculoskeletal system	
171	Suture of skin and subcutaneous tissue ICD-9	

ICD-9 Procedure Codes	Description	Comment
Topic: Amputation of Lower Extremity		
83.82	Graft of muscle or fascia	
86.87	Fat graft of skin and subcutaneous tissue	Required, Diagnosis V58.41, encounter for planned postoperative wound closure
Topic: Amputation of Upper Extremity		
84.1	Upper limb amputation, not otherwise specified	
84.2	Amputation and disarticulation of finger	
84.3	Amputation and disarticulation of thumb	
84.4	Amputation through hand	
84.5	Disarticulation of wrist	
84.6	Amputation through forearm	
84.7	Disarticulation of elbow	

(continued)

Table 2-7. AHRQ CCS Single Level Procedure Codes and ICD-9 Procedure Codes Added to Yale's Planned Readmission Algorithm, for the Post-Acute Care Setting (continued)

ICD-9 Procedure Codes	Description	Comment
84.8	Amputation through humerus	
84.9	Disarticulation of shoulder	
84.10	Interthoracoscapular amputation	
Topic: Removal of Vascular Obstruction, Non-Coronary		
38.18	Endarterectomy, lower limb vessels	
38.08	Embolectomy, lower limb arteries	
39.50	Angioplasty or atherectomy of other non- coronary vessels	
00.55	Insertion of drug-eluting stent(s) of other peripheral vessel(s)	
00.60	Insertion of drug-eluting stent(s) of superficial femoral artery	
39.90	Insertion of non-drug-eluting peripheral (non- coronary) vessel stent(s)	
Topic: Colon and Rectal Procedures, Selected		
46.85	Dilation of intestine (includes endosopic approach)	
96.8	Insertion of naso-intestinal tube (includes for decompression)	
96.9	Insertion of rectal tube	
46.50	Closure of intestinal stoma, not otherwise specified	Required, Diagnosis code V55.2, attention to ileostomy, and V55.3, attention to colostomy
46.51	Closure of stoma of small intestine	Required, Diagnosis code V55.2, attention to ileostomy, and V55.3, attention to colostomy
46.52	Closure of stoma of large intestine	Required, Diagnosis code V55.2, attention to ileostomy, and V55.3, attention to colostomy

(continued)

Table 2-7. AHRQ CCS Single Level Procedure Codes and ICD-9 Procedure Codes Added to Yale's Planned Readmission Algorithm, for the Post-Acute Care Setting (continued)

ICD-9 Procedure Codes	Description	Comment
46.86	Endoscopic insertion of colonic stent(s)	
46.87	Other insertion of colonic stent (s)	
Topic: Insertion of Feeding Tubes		
44.39	Other gastroenterostomy (GJ-tube)	
46.39	Other enterostomy (J-tube)	
Topic: Routine Device Replacement		
86.06	Insertion of totally implanted infusion pump	
Topic: Routine Removal of Devices		
84.57	Removal of (cement) spacer (includes antibiotic impregnated spacer)	
97.41	Removal of thoracotomy tube or pleural cavity drain (non-incisional)	
02.43	Removal of ventricular shunt	
97.37	Removal of tracheostomy tube (non-incisional)	
01.27	removal of catheter(s) from cranial cavity or tissue	
86.05	Incision with removal of foreign body or device from skin and subcutaneous tissue	
02.95	Removal of skull tongs or halo traction device	
78.60-78.69	Removal of implanted devices from bone (includes internal and external fixation	
80.00-80.09	Orthopedic implants arthrotomy for removal of prosthesis without replacement	
Topic: Pleurosclerosis		
34.6	Scarification of pleura	
34.92	Injection into thoracic cavity	
Topic: Colon and Rectal Procedures, Selected		
51.14	Other close (endoscopic) biopsy of biliary duct or sphincter of Oddi	
51.64	Endoscopic excision or destruction of lesion of biliary ducts or sphincter of Oddi	

(continued)

Table 2-7. AHRQ CCS Single Level Procedure Codes and ICD-9 Procedure Codes Added to Yale's Planned Readmission Algorithm, for the Post-Acute Care Setting (continued)

ICD-9 Procedure Codes	Description	Comment
51.84	Endoscopic dilation of ampulla and biliary duct	This code became available in CY 2010
51.85	Endoscopic sphincterotomy and papillotomy	
51.86	Endoscopic insertion of nasobiliary drainage tube	
51.87	Endoscopic insertion of stent (tube) into bile duct	
51.88	Endoscopic removal of stone(s)from biliary tract	
Topic: Fistula		
42.84	Repair of esophageal fistula, not elsewhere classified	
44.63	Closure of other gastric fistula (include gastrocolic, gastrojejunocolic fistula)	
46.72	Closure of fistula of duodenum	
46.74	Closure of fistula of small intestine, except duodenum (includes enterocutaneous)	
46.76	Closure of fistula of large intestine	
47.92	Closure of appendiceal fistula	
48.73	Closure of other rectal fistula	
48.93	Repair of perirectal fistula	
49.11	Anal fistulotomy	
49.12	Anal fistulectomy	
49.73	Closure of anal fistula	
19.9	Other repair of middle ear (includes closure of mastoid fistula	
20.93	Repair of oval and round windows (includes closure of fistula)	
21.82	Closure of nasal fistula	
31.62	Closure of fistula of larynx (includes laryngotracheal)	
31.73	Closure of other fistula of trachea (includes tracheoesophageal)	

(continued)

Table 2-7. AHRQ CCS Single Level Procedure Codes and ICD-9 Procedure Codes Added to Yale's Planned Readmission Algorithm, for the Post-Acute Care Setting (continued)

ICD-9 Procedure Codes	Description	Comment
33.42	Closure of bronchial fistula (includes bronchocutaneous, bronchoesophageal, bronchovisceral)	
34.73	Closure of other fistula of thorax (includes bronchopleural, bronchopleurocutaneous, bronchopleuromediastinal)	
34.83	Closure of fistula of diaphragm (includes thoracicoabdominal, thoracicogastric, thoracicointestinal)	
34.93	Repair of pleura (includes closure of unspecified pleural fistula)	
61.42	Repair of scrotal fistula	
Topic: Tendon Repair (eye)		
15.7	Repair of injury of extraocular muscle (includes repair of tendon)	
Topic: Aneurysm		
39.51	Clipping of aneurysm	

NOTE: December, 2012 Yale added several additional AHRQ CCS Single-Level Procedure Codes. Two of these codes 169 (Debridement of wound; infection or burn) and 172 (Skin graft) had been on the prior RTI developed list.

Preliminary Testing Results for the HH Setting

Table 2-8. Potentially Preventable Unplanned Readmission Measure for 30 Days Post Discharge from Home Health: Logistic Regression Model Results in 2011–2013

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
Age-Sex Groups (Reference group: Male 65-69)									
age_18_34_f	18-34, Female	10,405	0.3	0.053	0.051	0.2873	1.05	1.04	1.27
age_18_34_m	18-34, Male	9,486	0.2	0.142	0.050	0.0054	1.15	0.96	1.16
age_35_44_f	35-44, Female	25,571	0.6	0.059	0.035	0.0819	1.06	1.05	1.21
age_35_44_m	35-44, Male	21,825	0.5	0.120	0.034	0.0007	1.13	0.99	1.13
age_45_54_f	45-54, Female	76,773	1.9	0.081	0.023	0.0003	1.08	1.01	1.10
age_45_54_m	45-54, Male	65,260	1.6	0.052	0.022	0.0272	1.05	1.04	1.13
age_55_59_f	55-59, Female	70,943	1.7	0.089	0.024	<.0001	1.09	1.02	1.12
age_55_59_m	55-59, Male	54,857	1.3	0.067	0.023	0.0063	1.07	1.05	1.14
age_60_64_f	60-64, Female	94,705	2.3	0.071	0.023	0.0006	1.07	1.00	1.09
age_60_64_m	60-64, Male	68,734	1.7	0.043	0.021	0.0575	1.04	1.03	1.12
age_65_69_f	65-69, Female	301,939	7.4	0.042	0.017	0.0128	1.04	1.01	1.08
age_65_69_m	65-69, Male (Reference)	210,974	5.2	-	-	-	-	-	-
age_70_74_f	70-74, Female	391,445	9.6	0.044	0.017	0.0063	1.04	1.04	1.11
age_70_74_m	70-74, Male	268,310	6.6	0.069	0.016	<.0001	1.07	1.01	1.08
age_75_79_f	75-79, Female	427,208	10.4	0.073	0.017	<.0001	1.08	1.03	1.10
age_75_79_m	75-79, Male	278,047	6.8	0.065	0.016	0.0001	1.07	1.04	1.11
age_80_84_f	80-84, Female	458,312	11.2	0.074	0.016	<.0001	1.08	1.08	1.15
age_80_84_m	80-84, Male	277,485	6.8	0.110	0.016	<.0001	1.12	1.04	1.11
age_85_89_f	85-89, Female	396,670	9.7	0.125	0.017	<.0001	1.13	1.13	1.21
age_85_89_m	85-89, Male	210,008	5.1	0.160	0.016	<.0001	1.17	1.10	1.17
age_90_94_f	90-94, Female	204,257	5.0	0.166	0.021	<.0001	1.18	1.22	1.32
age_90_94_m	90-94, Male	91,989	2.2	0.237	0.018	<.0001	1.27	1.14	1.22
age_95_pl_f	95+, Female	58,985	1.4	0.263	0.035	<.0001	1.30	1.24	1.43

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratio	OR 95% Lower CL	OR 95% Upper CL
age_95_pl_m	95+, Male	20,073	0.5	0.286	0.024	<.0001	1.33	1.24	1.36
Original Reason for Medicare Enrollment (Reference group: Age)									
orig_aged	Age (Reference)	3,121,093	76.2	-	-	-	-	-	-
orig_disabled	Disability	933,769	22.8	0.134	0.008	<.0001	1.14	1.12	1.16
orig_esrd	ESRD	39,399	1.0	0.190	0.023	<.0001	1.21	1.16	1.27
Activities of Daily Living Score (Continuous, standardized variables)									
adl_1	ADL Score 1	4,094,261	100	-0.011	0.026	0.6675	0.99	0.94	1.04
adl_2	ADL Score 2	4,094,261	100	0.156	0.011	<.0001	1.17	1.14	1.19
adl_3	ADL Score 3	4,094,261	100	-0.058	0.026	0.0233	0.94	0.90	0.99
adl_4	ADL Score 4	4,094,261	100	0.019	0.011	0.0795	1.02	1.00	1.04
Length of Prior Proximal Hospitalization (Reference group: 1-7 Days)									
-	1-7 Days (Reference)	3,070,010	75.0	-	-	-	-	-	-
prior_proximal_8	≥ 8 Days	1,024,251	25.0	0.138	0.006	<.0001	1.15	1.13	1.16
Number of Prior Acute Discharges within One Year of Stay (Excluding Prior Proximal) (Reference group: 0)									
n_priors_00	0 (Reference)	2,230,680	54.5	-	-	-	-	-	-
n_priors_01	1	981,350	24.0	0.298	0.007	<.0001	1.35	1.33	1.37
n_priors_02	2	432,531	10.6	0.531	0.009	<.0001	1.70	1.67	1.73
n_priors_03	3	209,182	5.1	0.722	0.010	<.0001	2.06	2.02	2.10
n_priors_04	4	106,045	2.6	0.889	0.012	<.0001	2.43	2.37	2.49
n_priors_05	5	56,574	1.4	1.068	0.015	<.0001	2.91	2.83	3.00
n_priors_06	6	31,310	0.8	1.218	0.018	<.0001	3.38	3.26	3.50
n_priors_07	7	17,834	0.4	1.301	0.023	<.0001	3.67	3.51	3.84
n_priors_08	8	10,562	0.3	1.384	0.028	<.0001	3.99	3.78	4.22
n_priors_09	9	6,297	0.2	1.570	0.034	<.0001	4.81	4.50	5.14
n_priors_10	10+	11,896	0.3	1.774	0.024	<.0001	5.90	5.62	6.18
Number of Outpatient Emergency Department Visits within One Year of Stay (Reference group: 0)									
-	0 (Reference)	2,410,181	58.9	-	-	-	-	-	-
prior_er	≥ 1	1,684,080	41.1	0.120	0.006	<.0001	1.13	1.12	1.14

Table 2-8. Potentially Preventable Unplanned Readmission Measure for 30 Days Post Discharge from Home Health Agencies: Logistic Regression Model Results in 2011- 2013 (continued)

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratios	OR 95% Lower CL	OR 95% Upper CL
CCS Diagnosis Groups (Reference group: CCS 203: Osteoarthritis)									
dgn_002	2 - Septicemia (except in labor)	169,526	4.1	0.852	0.037	<.0001	2.34	2.18	2.52
dgn_004	4 - Mycoses	3,307	0.1	0.930	0.076	<.0001	2.53	2.18	2.94
dgn_047	47 - Other and unspecified benign neoplasm	13,334	0.3	0.285	0.078	0.0003	1.33	1.14	1.55
dgn_050	50 - Diabetes mellitus with complications	62,379	1.5	0.848	0.040	<.0001	2.33	2.16	2.53
dgn_055	55 - Fluid and electrolyte disorders	57,793	1.4	0.830	0.040	<.0001	2.29	2.12	2.48
dgn_059	59 - Deficiency and other anemia	23,343	0.6	0.725	0.046	<.0001	2.06	1.89	2.26
dgn_083	83 - Epilepsy; convulsions	21,281	0.5	0.341	0.054	<.0001	1.41	1.27	1.56
dgn_099	99 - Hypertension with complications and secondary hypertension	37,334	0.9	0.947	0.041	<.0001	2.58	2.38	2.79
dgn_100	100 - Acute myocardial infarction	88,284	2.2	0.819	0.039	<.0001	2.27	2.10	2.45
dgn_102	102 - Nonspecific chest pain	20,559	0.5	0.642	0.048	<.0001	1.90	1.73	2.09
dgn_106	106 - Cardiac dysrhythmias	117,725	2.9	0.871	0.038	<.0001	2.39	2.22	2.57
dgn_108	108 - Congestive heart failure; nonhypertensive	205,862	5.0	1.115	0.036	<.0001	3.05	2.84	3.28
dgn_109	109 - Acute cerebrovascular disease	128,999	3.2	0.451	0.040	<.0001	1.57	1.45	1.70
dgn_115	115 - Aortic; peripheral; and visceral artery aneurysms	18,001	0.4	0.368	0.062	<.0001	1.45	1.28	1.63
dgn_117	117 - Other circulatory disease	25,577	0.6	0.655	0.047	<.0001	1.92	1.75	2.11
dgn_122	122 - Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	171,852	4.2	0.839	0.037	<.0001	2.31	2.15	2.49
dgn_127	127 - Chronic obstructive pulmonary disease and bronchiectasis	126,843	3.1	1.210	0.037	<.0001	3.35	3.12	3.60
dgn_128	128 - Asthma	27,155	0.7	1.183	0.042	<.0001	3.26	3.01	3.54
dgn_129	129 - Aspiration pneumonitis; food/vomitus	26,381	0.6	0.919	0.044	<.0001	2.51	2.30	2.73
dgn_131	131 - Respiratory failure; insufficiency; arrest (adult)	53,781	1.3	0.913	0.039	<.0001	2.49	2.31	2.69
dgn_133	133 - Other lower respiratory disease	13,632	0.3	0.770	0.053	<.0001	2.16	1.95	2.40
dgn_135	135 - Intestinal infection	26,596	0.6	0.959	0.043	<.0001	2.61	2.40	2.84
dgn_143	143 - Abdominal hernia	29,097	0.7	0.329	0.066	<.0001	1.39	1.22	1.58

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratios	OR 95% Lower CL	OR 95% Upper CL
dgn_146	146 - Diverticulosis and diverticulitis	38,014	0.9	0.434	0.049	<.0001	1.54	1.40	1.70
dgn_157	157 - Acute and unspecified renal failure	86,957	2.1	0.909	0.038	<.0001	2.48	2.30	2.67
dgn_159	159 - Urinary tract infections	101,243	2.5	0.937	0.038	<.0001	2.55	2.37	2.75
dgn_161	161 - Other diseases of kidney and ureters	3,759	0.1	0.805	0.082	<.0001	2.24	1.91	2.63
dgn_197	197 - Skin and subcutaneous tissue infections	87,978	2.1	0.907	0.039	<.0001	2.48	2.30	2.67
dgn_199	199 - Chronic ulcer of skin	7,806	0.2	0.938	0.061	<.0001	2.56	2.27	2.88
dgn_203	203 - Osteoarthritis (Reference)	568,390	13.9%	-	-	-	-	-	-
dgn_205	205 - Spondylosis; intervertebral disc disorders; other back problems	113,872	2.8	0.413	0.049	<.0001	1.51	1.37	1.66
dgn_229	229 - Fracture of upper limb	27,931	0.7	0.308	0.065	<.0001	1.36	1.20	1.55
dgn_230	230 - Fracture of lower limb	39,763	1.0	0.239	0.066	0.0003	1.27	1.12	1.44
dgn_231	231 - Other fractures	62,967	1.5	0.339	0.045	<.0001	1.40	1.28	1.53
dgn_238	238 - Complications of surgical procedures or medical care	69,918	1.7	0.284	0.042	<.0001	1.33	1.22	1.44
dgn_254	254 - Rehabilitation care; fitting of prostheses; and adjustment of devices	10,282	0.3	-0.260	0.082	0.0014	0.77	0.66	0.90
dgn_657	657 - Mood disorders	21,428	0.5	0.220	0.054	<.0001	1.25	1.12	1.38
dgn_659	659 - Schizophrenia and other psychotic disorders	13,541	0.3	0.098	0.064	0.1228	1.10	0.97	1.25
dgn_misc	Composite of all other CCS diagnosis groups	1,940,161	47.4	0.553	0.035	<.0001	1.74	1.62	1.86

(continued)

Table 2-8. Potentially Preventable Unplanned Readmission Measure for 30 Days Post Discharge from Home Health Agencies: Logistic Regression Model Results in 2011-2013 (continued)

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratios	OR 95% Lower CL	OR 95% Upper CL
CCS Procedure Groups (Reference group: Composite of all other CCS procedure groups)									
prc_001	1 - Incision and excision of CNS	11,318	0.3	-0.252	0.075	0.0008	0.78	0.67	0.90
prc_002	2 - Insertion; replacement; or removal of extracranial ventricular shunt	4,150	0.1	-0.674	0.136	<.0001	0.51	0.39	0.67
prc_003	3 - Laminectomy; excision intervertebral disc	81,809	2.0	-0.503	0.047	<.0001	0.60	0.55	0.66
prc_004	4 - Diagnostic spinal tap	20,654	0.5	-0.146	0.039	0.0002	0.86	0.80	0.93
prc_009	9 - Other OR therapeutic nervous system procedures	21,011	0.5	-0.268	0.068	<.0001	0.77	0.67	0.87
prc_036	36 - Lobectomy or pneumonectomy	4,846	0.1	-0.535	0.095	<.0001	0.59	0.49	0.71
prc_042	42 - Other OR Rx procedures on respiratory system and mediastinum	14,206	0.3	-0.223	0.050	<.0001	0.80	0.73	0.88
prc_044	44 - Coronary artery bypass graft (CABG)	97,103	2.4	-0.312	0.032	<.0001	0.73	0.69	0.78
prc_048	48 - Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator	74,246	1.8	-0.195	0.020	<.0001	0.82	0.79	0.86
prc_050	50 - Extracorporeal circulation auxiliary to open heart procedures	121,946	3.0	-0.348	0.028	<.0001	0.71	0.67	0.75
prc_051	51 - Endarterectomy; vessel of head and neck	13,036	0.3	-0.307	0.067	<.0001	0.74	0.65	0.84
prc_055	55 - Peripheral vascular bypass	19,588	0.5	-0.327	0.048	<.0001	0.72	0.66	0.79
prc_057	57 - Creation; revision and removal of arteriovenous fistula or vessel-to-vessel cannula for dialysis	8,133	0.2	-0.139	0.047	0.0032	0.87	0.79	0.95
prc_061	61 - Other OR procedures on vessels other than head and neck	141,417	3.5	-0.099	0.016	<.0001	0.91	0.88	0.94
prc_065	65 - Bone marrow biopsy	7,078	0.2	0.099	0.053	0.0596	1.10	1.00	1.22
prc_072	72 - Colostomy; temporary and permanent	13,187	0.3	-0.311	0.076	<.0001	0.73	0.63	0.85
prc_075	75 - Small bowel resection	17,177	0.4	-0.115	0.058	0.0470	0.89	0.80	1.00
prc_078	78 - Colorectal resection	38,869	0.9	-0.205	0.044	<.0001	0.81	0.75	0.89
prc_080	80 - Appendectomy	9,679	0.2	-0.580	0.090	<.0001	0.56	0.47	0.67
prc_084	84 - Cholecystectomy and common duct exploration	35,617	0.9	-0.436	0.039	<.0001	0.65	0.60	0.70
prc_086	86 - Other hernia repair	31,932	0.8	-0.336	0.057	<.0001	0.71	0.64	0.80
prc_090	90 - Excision; lysis peritoneal adhesions	42,446	1.0	-0.171	0.039	<.0001	0.84	0.78	0.91

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratios	OR 95% Lower CL	OR 95% Upper CL
prc_091	91 - Peritoneal dialysis	4,671	0.1	0.149	0.058	0.0100	1.16	1.04	1.30
prc_094	94 - Other OR upper GI therapeutic procedures	10,725	0.3	-0.357	0.073	<.0001	0.70	0.61	0.81
prc_096	96 - Other OR lower GI therapeutic procedures	36,818	0.9	-0.193	0.039	<.0001	0.82	0.76	0.89
prc_098	98 - Other non-OR gastrointestinal therapeutic procedures	27,182	0.7	-0.135	0.036	0.0002	0.87	0.81	0.94
prc_099	99 - Other OR gastrointestinal therapeutic procedures	23,004	0.6	-0.128	0.044	0.0036	0.88	0.81	0.96
prc_103	103 - Nephrotomy and nephrostomy	6,811	0.2	0.420	0.049	<.0001	1.52	1.38	1.68
prc_105	105 - Kidney transplant	4,140	0.1	-0.329	0.087	0.0001	0.72	0.61	0.85
prc_110	110 - Other diagnostic procedures of urinary tract	3,496	0.1	0.270	0.068	<.0001	1.31	1.14	1.50
prc_111	111 - Other non-OR therapeutic procedures of urinary tract	11,344	0.3	0.156	0.041	0.0002	1.17	1.08	1.27
prc_124	124 - Hysterectomy; abdominal and vaginal	4,058	0.1	-0.825	0.165	<.0001	0.44	0.32	0.61
prc_142	142 - Partial excision bone	70,504	1.7	-0.133	0.039	0.0006	0.88	0.81	0.94
prc_145	145 - Treatment; fracture or dislocation of radius and ulna	10,797	0.3	-0.445	0.095	<.0001	0.64	0.53	0.77
prc_146	146 - Treatment; fracture or dislocation of hip and femur	96,452	2.4	-0.400	0.030	<.0001	0.67	0.63	0.71
prc_147	147 - Treatment; fracture or dislocation of lower extremity (other than hip or femur)	31,283	0.8	-0.600	0.067	<.0001	0.55	0.48	0.63
prc_148	148 - Other fracture and dislocation procedure	31,484	0.8	-0.222	0.054	<.0001	0.80	0.72	0.89
prc_152	152 - Arthroplasty knee	416,453	10.2	-0.985	0.037	<.0001	0.37	0.35	0.40
prc_153	153 - Hip replacement; total and partial	258,714	6.3	-0.830	0.031	<.0001	0.44	0.41	0.46
prc_154	154 - Arthroplasty other than hip or knee	34,062	0.8	-0.739	0.065	<.0001	0.48	0.42	0.54
prc_157	157 - Amputation of lower extremity	27,716	0.7	-0.428	0.035	<.0001	0.65	0.61	0.70
prc_158	158 - Spinal fusion	91,410	2.2	-0.659	0.049	<.0001	0.52	0.47	0.57
prc_160	160 - Other therapeutic procedures on muscles and tendons	51,352	1.3	-0.152	0.031	<.0001	0.86	0.81	0.91
prc_162	162 - Other OR therapeutic procedures on joints	33,348	0.8	-0.307	0.047	<.0001	0.74	0.67	0.81
prc_168	168 - Incision and drainage; skin and subcutaneous tissue	37,627	0.9	-0.191	0.030	<.0001	0.83	0.78	0.88
prc_172	172 - Skin graft	12,303	0.3	-0.323	0.058	<.0001	0.72	0.65	0.81
prc_176	176 - Organ transplantation (other than bone marrow, corneal or kidney)	1,926	0.0	-0.486	0.127	0.0001	0.62	0.48	0.79
prc_193	193 - Diagnostic ultrasound of heart (echocardiogram)	181,185	4.4	-0.031	0.013	0.0181	0.97	0.94	0.99
prc_198	198 - Magnetic resonance imaging	33,099	0.8	-0.109	0.035	0.0017	0.90	0.84	0.96

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratios	OR 95% Lower CL	OR 95% Upper CL
prc_211	211 - Radiation therapy	4,097	0.1	0.236	0.077	0.0021	1.27	1.09	1.47
prc_214	214 - Traction; splints; and other wound care	19,085	0.5	-0.119	0.047	0.0114	0.89	0.81	0.97
prc_224	224 - Cancer chemotherapy	2,660	0.1	0.220	0.076	0.0039	1.25	1.07	1.45
prc_231	231 - Other therapeutic procedures	210,299	5.1	-0.001	0.013	0.9275	1.00	0.97	1.02

(continued)

Table 2-8. Potentially Preventable Unplanned Readmission Measure for 30 Days Post Discharge from Home Health Agencies: Logistic Regression Model Results in 2011–2013 (continued)

Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratios	OR 95% Lower CL	OR 95% Upper CL
HCC Comorbidities									
hcc_7	7 - Metastatic Cancer and Acute Leukemia	126,591	3.1	0.268	0.013	<.0001	1.31	1.27	1.34
hcc_8	8 - Lung, Upper Digestive Tract, and Other Severe Cancers	94,622	2.3	0.164	0.015	<.0001	1.18	1.15	1.21
hcc_9	9 - Lymphatic, Head and Neck, Brain, and Other Major Cancers	124,787	3.0	0.120	0.014	<.0001	1.13	1.10	1.16
hcc_15	15 - Diabetes with Renal or Peripheral Circulatory Manifestation	432,291	10.6	0.137	0.009	<.0001	1.15	1.13	1.17
hcc_16	16 - Diabetes with Neurologic or Other Specified Manifestation	326,691	8.0	0.125	0.009	<.0001	1.13	1.11	1.15
hcc_18	18 - Diabetes with Ophthalmologic or Unspecified Manifestation	78,403	1.9	0.105	0.019	<.0001	1.11	1.07	1.15
hcc_19	19 - Diabetes without Complication	906,205	22.1	0.050	0.007	<.0001	1.05	1.04	1.07
hcc_21	21 - Protein-Calorie Malnutrition	373,387	9.1	0.041	0.008	<.0001	1.04	1.02	1.06
hcc_26	26 - Cirrhosis of Liver	46,587	1.1	0.061	0.021	0.0029	1.06	1.02	1.11
hcc_31	31 - Intestinal Obstruction/Perforation	309,792	7.6	-0.155	0.010	<.0001	0.86	0.84	0.87
hcc_37	37 - Bone/Joint/Muscle Infections/Necrosis	199,623	4.9	-0.048	0.013	0.0002	0.95	0.93	0.98
hcc_44	44 - Severe Hematological Disorders	102,295	2.5	0.087	0.014	<.0001	1.09	1.06	1.12
hcc_45	45 - Disorders of Immunity	106,560	2.6	0.052	0.014	0.0003	1.05	1.02	1.08
hcc_51	51 - Drug/Alcohol Psychosis	103,178	2.5	-0.070	0.016	<.0001	0.93	0.90	0.96
hcc_52	52 - Drug/Alcohol Dependence	119,056	2.9	0.065	0.014	<.0001	1.07	1.04	1.10
hcc_73	73 - Parkinson's and Huntington's Diseases	134,918	3.3	0.056	0.014	<.0001	1.06	1.03	1.09
hcc_75	75 - Coma, Brain Compression/Anoxic Damage	53,420	1.3	-0.095	0.021	<.0001	0.91	0.87	0.95
hcc_79	79 - Cardio-Respiratory Failure and Shock	1,000,737	24.4	0.093	0.006	<.0001	1.10	1.08	1.11
hcc_80	80 - Congestive Heart Failure	1,726,889	42.2	0.290	0.007	<.0001	1.34	1.32	1.35
hcc_83	83 - Angina Pectoris/Old Myocardial Infarction	492,741	12.0	0.041	0.007	<.0001	1.04	1.03	1.06
hcc_92	92 - Specified Heart Arrhythmias	1,538,209	37.6	0.122	0.006	<.0001	1.13	1.12	1.14
hcc_95	95 - Cerebral Hemorrhage	103,915	2.5	-0.157	0.020	<.0001	0.86	0.82	0.89

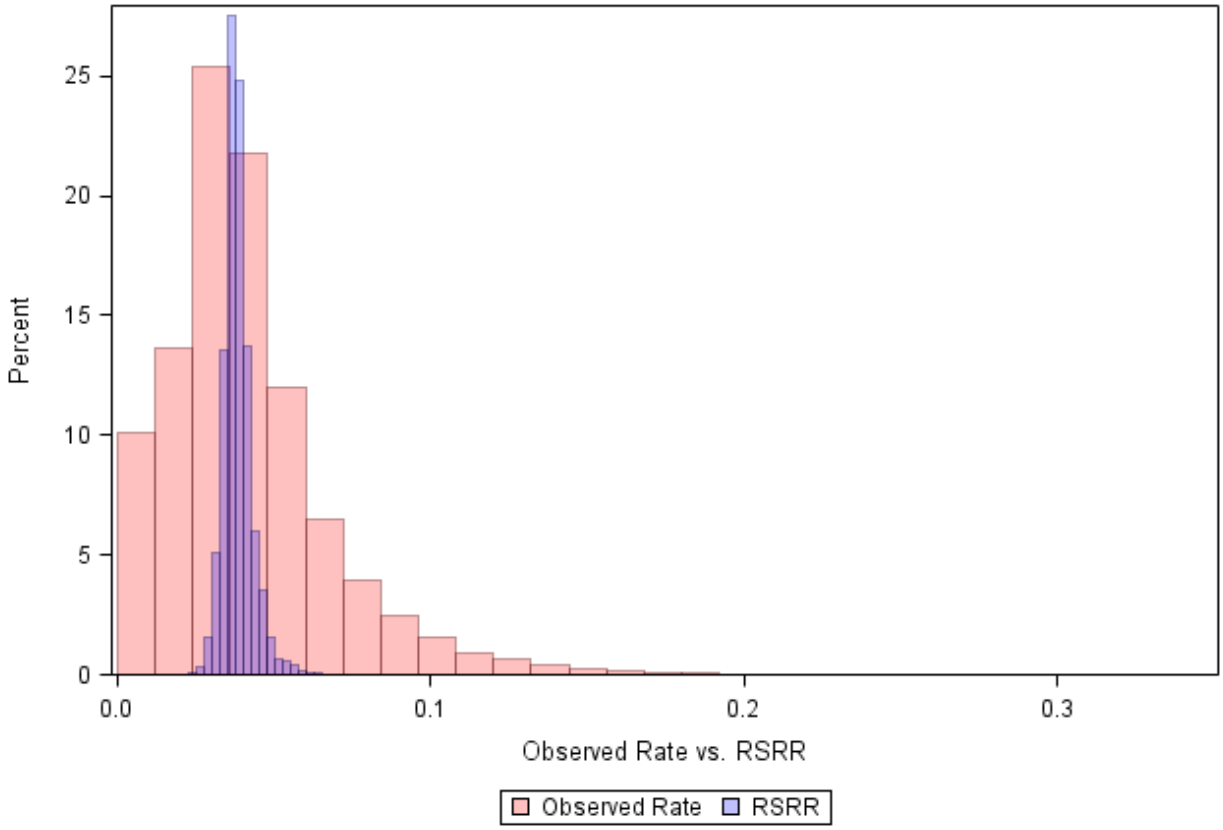
Variable Name in Model	Covariate	Count	Percent Total	Estimate	Std. Error	P value	Odds Ratios	OR 95% Lower CL	OR 95% Upper CL
hcc_96	96 - Ischemic or Unspecified Stroke	536,202	13.1	-0.071	0.008	<.0001	0.93	0.92	0.95
hcc_100	100 - Hemiplegia/Hemiparesis	202,324	4.9	-0.061	0.013	<.0001	0.94	0.92	0.96
hcc_105	105 - Vascular Disease	1,231,932	30.1	0.033	0.006	<.0001	1.03	1.02	1.05
hcc_108	108 - Chronic Obstructive Pulmonary Disease	1,491,517	36.4	0.236	0.006	<.0001	1.27	1.25	1.28
hcc_111	111 - Aspiration and Specified Bacterial Pneumonias	215,738	5.3	0.041	0.010	<.0001	1.04	1.02	1.06
hcc_119	119 - Proliferative Diabetic Retinopathy and Vitreous Hemorrhage	59,011	1.4	0.030	0.019	0.1102	1.03	0.99	1.07
hcc_130	130 - Dialysis Status	92,322	2.3	0.252	0.016	<.0001	1.29	1.25	1.33
hcc_131	131 - Renal Failure	1,440,388	35.2	0.215	0.006	<.0001	1.24	1.22	1.25
hcc_148	148 - Decubitus Ulcer of Skin	205,493	5.0	0.126	0.010	<.0001	1.13	1.11	1.16
hcc_149	149 - Chronic Ulcer of Skin, Except Decubitus	196,260	4.8	0.136	0.011	<.0001	1.15	1.12	1.17
hcc_155	155 - Major Head Injury	109,012	2.7	-0.103	0.019	<.0001	0.90	0.87	0.94
hcc_158	158 - Hip Fracture/Dislocation	310,691	7.6	-0.149	0.013	<.0001	0.86	0.84	0.88
hcc_161	161 - Traumatic Amputation	27,930	0.7	-0.076	0.027	0.0052	0.93	0.88	0.98
hcc_164	164 - Major Complications of Medical Care and Trauma	580,484	14.2	-0.081	0.008	<.0001	0.92	0.91	0.94
hcc_176	176 - Artificial Openings for Feeding or Elimination	132,042	3.2	0.101	0.013	<.0001	1.11	1.08	1.13
hcc_177	177 - Amputation Status, Lower Limb/Amputation Complications	63,566	1.6	0.057	0.018	0.0016	1.06	1.02	1.10

(continued)

Figure 2-2. Distribution of Observed and Risk Standardized Potentially Preventable Readmission Rates among HHAs with at Least 20 Index Stays

Observed N = 8,593; Mean (StD) = 0.041 (0.028)

RSRR N = 8,593; Mean (StD) = 0.038 (0.005)



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APPENDIX 3
DRUG REGIMEN REVIEW CONDUCTED WITH FOLLOW-UP FOR IDENTIFIED ISSUES- POST ACUTE CARE (PAC) HOME HEALTH (HH) QUALITY REPORTING PROGRAM (QRP)

Table 1 below summarizes the setting specific language used to describe the resident or patient within the PAC setting. There are no other differences in the content language within each Drug Regimen Review quality measure item.

Table 3-1
Drug Regimen Review Quality Measure Setting-Specific Language

HH	SNF	IRF	LTCH
Start or Resumption of Care	Beginning of stay	Beginning of stay	Beginning of stay
M2001 Drug Regimen Review: Did a complete drug regimen review identify potential clinically significant medication issues? ☐ 0 - No - No issues found during review ☐ 1 - Yes - Issues found during review ☐ 9 - NA – Patient is not taking any medications	**N2001 Drug Regimen Review: Did a complete drug regimen review identify potential clinically significant medication issues?** ☐ 0 - No - No issues found during review ☐ 1 - Yes - Issues found during review ☐ 9 - NA – Resident is not taking any medications	**N2001 Drug Regimen Review: Did a complete drug regimen review identify potential clinically significant medication issues?** ☐ 0 - No - No issues found during review ☐ 1 - Yes - Issues found during review ☐ 9 - NA – Patient is not taking any medications	**N2001 Drug Regimen Review: Did a complete drug regimen review identify potential clinically significant medication issues?** ☐ 0 - No - No issues found during review ☐ 1 - Yes - Issues found during review ☐ 9 - NA – Patient is not taking any medications
M2003 Medication Follow-up: Did the agency contact a physician (or physician-designee) by midnight of the next calendar day and complete prescribed/recommended actions in response to the identified potential clinically significant medication issues? ☐ 0 - No ☐ 1 - Yes	N. 2003 Medication Follow-up: Did the facility contact a physician (or physician-designee) by midnight of the next calendar day and complete prescribed/recommended actions in response to the identified potential clinically significant medication issues? ☐ 0 - No ☐ 1 - Yes	N. 2003 Medication Follow-up: Did the facility contact a physician (or physician-designee) by midnight of the next calendar day and complete prescribed/recommended actions in response to the identified potential clinically significant medication issues? ☐ 0 - No ☐ 1 - Yes	N. 2003 Medication Follow-up: Did the facility contact a physician (or physician-designee) by midnight of the next calendar day and complete prescribed/recommended actions in response to the identified potential clinically significant medication issues? ☐ 0 - No ☐ 1 - Yes

TABLE 3-1
DRUG REGIMEN REVIEW QUALITY MEASURE SETTING-SPECIFIC LANGUAGE (CONTINUED)

HH	SNF	IRF	LTCH
End of Care (Discharge, Transfer, Death at Home)	End of stay	End of stay	End of stay
M2005 Medication Intervention: Did the agency contact and complete physician (or physician-designee) prescribed/recommended actions by midnight of the next calendar day each time potential clinically significant medication issues were identified since the SOC/ROC? ☐ 0 - No ☐ 1 - Yes ☐ 9 - NA -There were no potential clinically significant medication issues identified since SOC/ROC or patient is not taking any medications.	N. 2005 Medication Intervention: Did the facility contact and complete physician (or physician-designee) prescribed/recommended actions by midnight of the next calendar day each time potential clinically significant medication issues were identified since the Admission? ☐ 0 - No ☐ 1 - Yes ☐ 9 - NA -There were no potential clinically significant medication issues identified since Admission or resident is not taking any medications.	N. 2005 Medication Intervention: Did the facility contact and complete physician (or physician-designee) prescribed/recommended actions by midnight of the next calendar day each time potential clinically significant medication issues were identified since the Admission? ☐ 0 - No ☐ 1 - Yes ☐ 9 - NA -There were no potential clinically significant medication issues identified since Admission or patient is not taking any medications.	N. 2005 Medication Intervention: Did the facility contact and complete physician (or physician-designee) prescribed/recommended actions by midnight of the next calendar day each time potential clinically significant medication issues were identified since the Admission? ☐ 0 - No ☐ 1 - Yes ☐ 9 - NA -There were no potential clinically significant medication issues identified since Admission or patient is not taking any medications.