Home Health Quality Reporting Program:
Specifications for the
Cross-Setting Quality Measure
Percent of Residents or Patients with
Pressure Ulcers that are New or
Worsened

Prepared for

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HOME HEALTH QUALITY REPORTING PROGRAM:
SPECIFICATIONS FOR THE CROSS-SETTING QUALITY MEASURE
PERCENT OF RESIDENTS OR PATIENTS WITH PRESSURE ULCERS
THAT ARE NEW OR WORSENED

Abt Associates

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TABLE OF CONTENTS

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SECTION 1
CROSS-SETTING MEASURES DEVELOPMENT WORK: AN INTRODUCTION

The Improving Medicare Post-Acute Care Transformation of 2014 (IMPACT Act), enacted in 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, which includes the domain of skin integrity. The IMPACT Act requires the implementation of quality measures to address this measure domain 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, this requirement refers to the Outcome and Assessment Information Set (OASIS) which is currently in use for the collection and submission of quality data to the Centers for Medicare & Medicaid Services (CMS) as part of the Home Health Quality Reporting Program (HH QRP). For a detailed discussion of the IMPACT Act as it pertains to the selection and the proposal of quality measures for the HH QRP, please review the calendar year (CY) 2016 HH PPS final rule.

In this document, we present final specifications for the following cross-setting quality measure for the HH QRP:

1. Outcome Measure: Percent of Residents or Patients with Pressure Ulcers That Are New or Worsened (application of NQF #0678).

SECTION 2
QUALITY MEASURES

2.2   Cross-Setting Pressure Ulcer Measure: Percent of Residents or Patients with Pressure Ulcers that are New or Worsened (application of NQF #0678)

2.2.1   Quality Measure Description

This quality measure reports the percent of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers present at discharge that are new or worsened since the beginning of the quality episode. Quality episodes are defined by pairing a Start or Resumption of Care assessment with an End of Care assessment. The measure is calculated using data from the OASIS. For home health patients, the measure is calculated by examining one OASIS item on the discharge assessment which reports the number of current Stage 2-4 pressure ulcers that are present at discharge, but that were not present or were at a lesser stage at the beginning of this quality episode.

2.2.2   Purpose/Rationale for Quality Measure

This quality measure has been finalized as a cross-setting quality measure to meet the requirements of the IMPACT Act addressing the domain of skin integrity and changes in skin integrity. This quality measure is intended to encourage home health agencies (HHAs) to prevent pressure ulcer development or worsening, and to closely monitor and appropriately treat existing pressure ulcers. Data reporting for this measure would affect the payment determination for the CY 2019 and subsequent years for the HH QRP.

This measure has previously been successfully adopted in other PAC settings such as IRF, SNF, and LTCH settings. For example, this quality measure was implemented in the Long-term Care Hospital and Inpatient Rehabilitation Facility Quality Reporting Programs in October of 2012 with public reporting planned for fall of 2016. This quality measure has also been implemented in the CMS Nursing Home Quality Initiative with data collection beginning in 2010, and is currently publicly reported on CMS' Nursing Home Compare at: http://www.medicare.gov/nursinghomecompare/search.html.

Regardless of setting or provider type, pressure ulcers are recognized as a serious medical condition. Considerable evidence exists regarding the seriousness of pressure ulcers, and the relationship between pressure ulcers and pain, decreased quality of life, and increased mortality in aging populations.[1,2,3,4] Pressure ulcers interfere with activities of daily living and functional gains made during rehabilitation, predispose patients to osteomyelitis and septicemia, and are strongly associated with longer hospital stays, longer IRF stays, and mortality.[5,6,7] Additionally,

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[1]   Casey, G. (2013). "Pressure ulcers reflect quality of nursing care." Nurs N Z 19(10): 20-24.

[2]   Gorzoni, M. L. and S. L. Pires (2011). "Deaths in nursing homes." Rev Assoc Med Bras 57(3): 327-331.

[3]   Thomas, J. M., et al. (2013). "Systematic review: health-related characteristics of elderly hospitalized adults and nursing home residents associated with short-term mortality." J Am Geriatr Soc 61(6): 902-911.

[4]   White-Chu, E. F., et al. (2011). "Pressure ulcers in long-term care." Clin Geriatr Med 27(2): 241-258.

[5]   Bates-Jensen BM. Quality indicators for prevention and management of pressure ulcers in vulnerable elders. Ann Int Med. 2001;135 (8 Part 2), 744-51.

patients with acute care hospitalizations related to pressure ulcers are more likely to be discharged to long-term care facilities (e.g., a nursing facility, an intermediate care facility, or a nursing home) than hospitalizations for all other conditions.[8,9]

Pressure ulcers typically result from prolonged periods of uninterrupted pressure on the skin, soft tissue, muscle, or bone.[5,9,10] Elderly individuals receiving home health care have a wide range of impairments and/or medical conditions that increase their risk of developing pressure ulcers, including but not limited to, impaired mobility or sensation, malnutrition or under-nutrition, obesity, stroke, diabetes, dementia, cognitive impairments, circulatory diseases, and dehydration. The use of wheelchairs and medical devices (e.g., hearing aid, feeding tubes, tracheostomies), a history of pressure ulcers, or presence of a pressure ulcer at admission are additional factors that increase pressure ulcer risk in elderly patients.[1,5,6,8,11,12,1314,15,16,17·18]

Pressure ulcers are high-cost adverse events across the spectrum of health care settings, from acute hospitals to home health.[5,8,10] Pressure ulcer incidence rates vary considerably by clinical setting, ranging from 0.4% to 38% in acute care, 2.2% to 23.9% in skilled nursing facilities [SNFs] and nursing homes [NHs], and 0% to 17% in home health.[8,9] As reported in the Federal Register, in 2006 the average cost for a hospital stay related to pressure ulcers was

6   Park-Lee E, Caffrey C. Pressure ulcers among nursing home residents: United States, 2004 (NCHS Data Brief No. 14). Hyattsville, MD: National Center for Health Statistics, 2009. Available from http://www.cdc.gov/nchs/data/databriefs/db14.htm

7   Wang, H., et al. (2014). "Impact of pressure ulcers on outcomes in inpatient rehabilitation facilities." Am J Phys Med Rehabil 93(3): 207-216.

8   Hurd D, Moore T, Radley D, Williams C. Pressure ulcer prevalence and incidence across post-acute care settings. Home Health Quality Measures & Data Analysis Project, Report of Findings, prepared for CMS/OCSQ, Baltimore, MD, under Contract No. 500-2005-000181 TO 0002. 2010.

9   Institute for Healthcare Improvement (IHI). Relieve the pressure and reduce harm. May 21, 2007. Available from http://www.ihi.org/IHI/Topics/PatientSafety/SafetyGeneral/ImprovementStories/FSRelievethePressureandReduceHarm.htm

10 Russo CA, Steiner C, Spector W. Hospitalizations related to pressure ulcers among adults 18 years and older, 2006 (Healthcare Cost and Utilization Project Statistical Brief No. 64). December 2008. Available from http://www.hcup-us.ahrq.gov/reports/statbriefs/sb64.pdf

11 Agency for Healthcare Research and Quality (AHRQ). Agency news and notes: pressure ulcers are increasing among hospital patients. January 2009. Available from http://www.ahrq.gov/research/jan09/0109RA22.htm

12 Cai, S., et al. (2013). "Obesity and pressure ulcers among nursing home residents." Med Care 51(6): 478-486.

13 DeJong, G., et al. (2014). "Factors Associated with Pressure Ulcer Risk in Spinal Cord Injury Rehabilitation." Am J Phys Med Rehabil. 2014 May 29. [Epub ahead of print]

14 MacLean DS. Preventing & managing pressure sores. Caring for the Ages. March 2003;4(3):34-7. Available from http://www.amda.com/publications/caring/march2003/policies.cfm

15 Michel, J. M., et al. (2012). "As of 2012, what are the key predictive risk factors for pressure ulcers? Developing French guidelines for clinical practice." Ann Phys Rehabil Med 55(7): 454-465.

16 National Pressure Ulcer Advisory Panel (NPUAP) Board of Directors; Cuddigan J, Berlowitz DR, Ayello EA (Eds). Pressure ulcers in America: prevalence, incidence, and implications for the future. An executive summary of the National Pressure Ulcer Advisory Panel Monograph. Adv Skin Wound Care. 2001;14(4):208-15.

17 Reddy, M. (2011). "Pressure ulcers." Clin Evid (Online) 2011.

18 Teno, J. M., et al. (2012). "Feeding tubes and the prevention or healing of pressure ulcers." Arch Intern Med 172(9): 697-701.

$40,381[19] The Advancing Excellence in America's Nursing Homes Campaign reported that it can cost as much as $19,000 to treat a single Stage 4 pressure ulcer.[20] Using data from 2009 and 2010, severe (Stage 3 and 4) pressure ulcers acquired during a hospital stay were estimated to have increased CMS payments across 90-day episodes of care by at least $18.8 million a year.[21]

2.2.3 Denominator

The denominator is the number of quality episodes, except those that meet the exclusion criteria. HH quality episodes are defined by pairing assessments completed at the start or resumption of care with assessments completed at the end of care.

2.2.4 Denominator Exclusions

1. Episodes that end in a death at home are excluded from this measure as the Death at Home assessment does not contain the items needed to compute this measure.

2. Episodes without an assessment completed at the start or resumption of care and an assessment completed at the end of care are excluded.

3. Episodes are excluded if the discharge assessment does not have a usable response for M1313a, M1313b, or M1313c. A valid skip ("^"), when M1306 = "0" (no), is considered a usable response.

2.2.5 Numerator

The numerator is the number of completed quality episodes for patients whose assessment at the end of care indicates one or more new or worsened Stage 2-4 pressure ulcers compared to the start or resumption of care assessment.

Where on any assessment:

1. Stage 2 (M1313a) > [0], OR

2. Stage 3 (M1313b) > [0], OR

3. Stage 4 (M1313c) > [0].

2.2.6 Measure Time Window

The measure will be calculated quarterly using rolling 12 months of data. All complete quality episodes, except those that meet the exclusion criteria, during the 12 months will be included in the denominator and are eligible for inclusion in the numerator. For patients with multiple episodes during the 12-month time window, each episode is eligible for inclusion in the measure.

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[19] Centers for Medicare & Medicaid Services (CMS). Medicare program; changes to the hospital inpatient prospective payment system and fiscal year 2008 rates. Fed Register. August 22, 2007;72(162):47205.

[20] Advancing Excellence in America's Nursing Homes (AEANH).Explore our goals.. n.d. Available from https://www.nhqualitycampaign.org/goals.aspx

[21] Kandilov AMG, Coomer NM, Dalton K. (2014) The impact of hospital-acquired conditions on Medicare program payments. MMRR 4(4): E1-E23

2.2.7 Risk Adjustment Factors

1. Indicator of supervision/touching assistance or more at SOC/ROC for functional mobility item Lying to Sitting on Side of Bed (GG0170C):

   Covariate = [1] (yes) if GG0170C = [01, 02, 03, 04, 07, 09, 10[22], 88]

   Covariate = [0] (no) if GG0170C = [05, 06, -]

2. Indicator of bowel incontinence at least occasionally on the initial assessment (M1620):
   Covariate = [1] if M1620 = [2, 3, 4, 5]
   Covariate = [0] if M1620 = [0, 1, NA , UK]

3. Have diabetes mellitus, peripheral vascular disease or peripheral arterial disease:
   Covariate = [1] (yes) if any of the following are true: M1028 = [1] (checked) or M1028 = [2] (checked)

   Covariate = [0] (no) if M1028 = [3] [23] or M1028 = [^] (Valid skip) or M1028 = [-]

4. Indicator of Low Body Mass Index, based on Height (M1060a) and Weight (M1060b) on the SOC/ROC assessment:

   Covariate = [1] (yes) if BMI $\geq$ [12.0] AND $\leq$ [19.0]

   Covariate = [0] (no) if BMI > [19.0]

   Covariate = [0] (no) if M1060a = [-] OR M1060b = [-] OR BMI < [12.0], ('-'= No response available)

   Where: BMI = (weight * 703 / height2) = ((M1060b) * 703) / (M1060a2) and the resulting value is rounded to one decimal.

2.2.8 Quality Measure Calculation Algorithm

The following steps are used to calculate the measure:

A. Calculate the agency observed score (steps 1 through 3)

Step 1. Calculate the denominator count:

Calculate the total number of quality episodes with a selected target OASIS assessment in the measure time window that do not meet the exclusion criteria. Episodes where M1313 has been validly skipped (= "^") are included in the count.

Step 2. Calculate the numerator count:

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[22] OASIS-D only

[23] OASIS-D only

Calculate the total number of quality episodes in the denominator whose OASIS assessments indicates one or more new or worsened pressure ulcers at discharge compared to start or resumption of care.

Step 3. Calculate the agency's observed rate:

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

B. Calculate the predicted rate for each quality episode (steps 4 and 5)

Step 4. Determine presence or absence of the pressure ulcer risk factors for each patient:

If dichotomous risk factor covariates are used, assign covariate values, either '0' for covariate condition not present or '1' for covariate condition present, for each quality episode for each of the covariates as reported on the initial assessment, as described in the section above. In some cases the actual values for a risk factor covariate may be used, e.g. the number of pressure ulcers present at each level at SOC/ROC or the total number of pressure ulcers present across all levels or the number of unstageable pressure ulcers.

Step 5. Calculate the predicted rate for each quality episode with the following formula:

[1] Episode-level predicted QM rate = $1/[1+e^{-x}]$

Where e is the base of natural logarithms and X is a linear combination of the constant and the logistic regression coefficients times the covariate scores (from Formula [2], below).

[2] QM triggered (yes=1, no=0) = B0 + B1*COVA + B2*COVB + ... BN*COVN

Where B0 is the logistic regression constant, B1 is the logistic regression coefficient for the first covariate (where applicable), COVA is the episode-level rate for the first covariate, B2 is the logistic regression coefficient for the second covariate, and COVB is the episode-level rate for the second covariate (where applicable), etc. The regression constant and regression coefficients* are numbers obtained through statistical logistic regression analysis.

C. Calculate the agency predicted rate (step 6)
Step 6. Once a predicted QM rate has been calculated for all quality episodes, calculate the mean agency-level predicted QM rate by averaging all episode-level predicted values for that agency.

D. Calculate national predicted rate (step 7)

Step 7. Calculate the national predicted rate:

Once a predicted QM value has been calculated for all episodes, calculate the mean national-level predicted QM rate by averaging all episode-level predicted values. Note that the sample will include only those quality episodes with non-missing data for the component covariates.

E. Calculate the agency's risk-adjusted rate (step 8)

Step 8. Calculate the agency-level risk-adjusted rate based on the:

agency-level observed QM rate (step 3),

agency-level average predicted QM rate (step 6), and

*national average predicted QM rate (step 7), using the following formula:

Agency Risk Adjusted Rate = Agency Observed Rate + National Predicted Rate – Agency Predicted Rate

The national predicted QM rates are updated each reporting period.

APPENDIX A: HH QRP RISK MODEL PARAMETERS

Table A-1
CASPER QM Report Measure Calculation: Logistic Regression Coefficients for the Percent of Residents or Patients with Pressure Ulcers That Are New or Worsened (NQF #0678)

Calculation Date[1]	Constant (Intercept)	Covariate Regression Estimates[2]
April 18, 2018	-6.8033	1. Covariate 1 (Functional Limitation): 0.6917 2. Covariate 2 (Bowel Incontinence): 1.9024 3. Covariate 3 (Diabetes or PVD/PAD): 0.3120 4. Covariate 4 (Low BMI): 0.6495

[1] The calculation date indicates when the data was pulled from the QIES system and includes home health patient quality episodes from CY 2017 (January 1, 2017 through December 31, 2017).

[2] The regression constant (intercept) and coefficient values have been rounded to four decimal places. When applying these values to the equation to calculate HHA-level QM scores, these intercept and coefficient values should be used; do not round to fewer than four decimal places. This is to ensure consistency and accuracy of measure calculations.