

Validation of an OASIS-Based Home Health 30-Day Readmission Measure with Medicare Claims Data

PRESENTED TO:

Alliance for Home Health Quality and Innovation

PREPARED BY:

Al Dobson, Ph.D., Audrey El-Gamil, Steven Heath, M.P.A., Joan E. DaVanzo, Ph.D., M.S.W.

June 19, 2013

Dobson | DaVanzo

Dobson DaVanzo & Associates, LLC Vienna, VA 703.260.1760 www.dobsondavanzo.com

Presentation Overview

- **Study Purpose**
- **Methodology**
 - 30-Day Readmission Definition
- **Summary of Findings**
- **30-Day Readmission Rate by Data Source**
- **Congruence Between Claims and OASIS-C Assessment Data: Medicare Claims as the Primary Data Source**
 - Readmission and Congruence Rates by Agency Characteristics
- **Congruence Between OASIS-C Assessments and Claims Data: OASIS-C as the Primary Data Source**
- **Conclusions**
- **Appendix A: Episode Inclusion and Exclusion Criteria**
- **Appendix B: Reason for Incongruence by Agency Characteristics**

Study Purpose

- **Dobson | DaVanzo was commissioned by the Alliance for Home Health Quality and Innovation (the “Alliance”) to:**
 - Compare 30-day home health readmission rates calculated from the Medicare claims to those reported in OASIS-C, and
 - Investigate the reason for the lack of congruence between the two data sources
- **The Alliance is exploring possible definitions for 30-day readmission rates in order to explore a standardized measure across all agencies, enhancing credibility within the healthcare system**
 - Alliance members currently experience challenges in communicating with other provider groups (settings) as no standardized measure exists

Research Question: To what extent do 30-day readmission rates calculated using OASIS-C differ from those calculated using the Medicare claims?

Methodology

- **The Alliance's Quality and Innovation Working Group participated in a Readmission Roundtable and developed the following 30-day readmission measure calculation:**

Home health episodes that contain an unplanned* hospital readmission (M2410=1; M2430≠19) within 30 days of the discharge from the index acute care hospital (M1005)

Completed home health episodes that were initiated within 14 days of a discharge from the index acute care hospital (M0100=06,07,08,or 09; M1000=3)

- **Using this defined measure, we analyzed the Medicare claims and OASIS-C assessments for a 5% sample of Medicare beneficiaries with an index hospitalization and subsequent home health admission occurring on or after January 1, 2010**

*Since this measure only captures unplanned hospitalizations, the OASIS-C results may not align with many of the other publicly available readmissions rates.

Methodology *(cont'd)*

- **Medicare claims and assessment data were analyzed independently and compared across all patients to determine the extent to which readmission rates were congruent across data sets**
 - Congruence rates were defined as the number of unique episodes with a readmission identified in both the claims and the assessment data divided by the total number of home health episodes
 - OASIS-C measure was designed to exclude scheduled rehospitalizations, while the claims measure includes all sources of rehospitalizations
- **Data cleaning was performed to ensure that only complete and accurate information was included in the episode (Appendix A)**
- **Results were analyzed to determine:**
 - What factors (i.e., elements of the measure definition) drive the differences between the readmission rates across datasets
 - To what extent do differences across datasets vary by urban/rural status and geographic region (CMS region)

Summary of Findings

- **Despite the different methodologies for identifying readmissions in the claims compared to the OASIS-C assessment data, both data sources independently produced similar 30-day aggregate readmission rates using the universe of available claims**
 - Claims = 13.7%
 - Assessments = 15.5%
- **However, there is considerable incongruence in readmissions reported in the claims compared to the assessment data for the same panel of home health episodes**
 - Only 60 percent of readmissions identified in the claims have corresponding assessments that capture the readmission
- **Slight differences exist in the readmission and congruence rates by agency characteristics including urban/rural status and geographic region**

30-Day Readmission Rates by Data Source

- Based only on the home health episodes that are preceded by an index acute care hospitalization, 13.7 percent of home health episodes captured in the Medicare claims, and 15.5 percent of episodes in OASIS-C assessments, contain a readmission

Reported Readmission Rate by Data Source

Data Source	Index Identified	Readmission Identified	Number of Episodes	Percent of Episodes
Claims	Yes	No	63,165	86.3%
	Yes	Yes	10,065	13.7%
	Total		73,230	100.0%
Assessments	Yes	No	56,598	84.5%
	Yes	Yes	10,347	15.5%
	Total		66,945	100.0%

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010. Note, these samples are not matched by patient, therefore the differences do not necessarily reflect a lack of congruence between the datasets

- The rest of the analyses primarily focus on those episodes that contain a readmission within the claims (10,065 episodes)

***CONGRUENCE BETWEEN CLAIMS
AND OASIS-C ASSESSMENTS DATA:
Medicare Claims as Primary Data
Source***

Congruence Between Claims and OASIS-C Assessments Data

- In analyzing the difference in readmission rates, we investigated the congruence rate for the claims and assessments
 - Because payment is associated with claims data, they are considered to be the “gold standard” and a reflection of actual health care utilization
- For home health episodes identified as containing a readmission in the claims data, OASIS-C data only captured a readmission for 60 percent of the episodes
 - In 30 percent of episodes, OASIS-C did not capture the index or the readmission, and in 10 percent of episodes, the assessment captured the index admission but not the readmission

Claims Data		OASIS-C Assessment Data			
Index Reported	Readmission Reported	Index Reported	Readmission Reported	Number of Episodes	Percent of Episodes
Yes	Yes	No	No	3,032	30%
Yes	Yes	Yes	No	1,040	10%
Yes	Yes	Yes	Yes	5,993	60%
Total				10,065	100%

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.

Congruence Between Claims and OASIS-C Assessments Data *(cont'd)*

- More than half of the discrepancy is due to a missing index admission in the assessment data (37 percent) or no variable in the assessment to indicate that the home health episode was completed (24 percent)
- Inclusion of all readmissions (scheduled and unplanned) accounts for 7 percent of the difference in the congruence rates

Claims Data		Assessment Data		Reason for No Match	Number of Episodes	Percent Episodes	% of All Mismatch	% of Mismatch by Group
Index & Readmission Reported	Index Reported	Readmission Reported	Readmission Reported					
Yes	No	No	No	Index admission 14 days prior to an HHA admission not in assessment data	1,513	15%	37%	50%
Yes	No	No	No	HHA episode is complete but missing discharge date	99	1%	2%	3%
Yes	No	No	No	No assessment	381	4%	9%	13%
Yes	No	No	No	Not completed HHA Episodes	995	10%	24%	33%
Yes	No	No	No	Other	44	0%	1%	1%
Yes	Yes	No	No	Readmission not captured in assessment data	764	8%	19%	73%
Yes	Yes	No	No	Scheduled IP admissions are not treated as readmissions in Assessment	276	3%	7%	27%
Yes	Yes	Yes	Yes	Match	5,993	60%		
Total					10,065	100%		

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.

Dobson | DaVanzo

Readmission and Congruence Rates by Agency Characteristics

- **The readmission rate based on the claims data and the congruence rates between the claims and OASIS-C assessment data were analyzed by agency characteristics:**
 - Urban/rural status
 - Geographic region (CMS region)
- **Slight differences in the readmission and congruence rate exist, likely as a function of practice patterns**
 - Complete analysis of congruence rate by agency characteristics is contained in Appendix B

Urban/Rural: Readmission and Congruence Rates

- Based on the claims data, urban and rural home health agencies have similar readmission rates, calculated at 13.7 percent for urban agencies and 14.1 percent for rural agencies
- Urban and rural agencies have comparable congruence rates between the claims and assessment data
 - The primary reasons for incongruence are:
 - Missing index hospitalization in the assessment (15 percent of urban, 14 percent of rural)
 - Missing variable to indicate that the home health episode was completed (10 percent both urban and rural)

Agency Type	Claim Readmission Rate	Number of Congruent Episodes	Total Number of Episodes	Congruence Rate
Urban	13.7%	4,979	8,391	59%
Rural	14.1%	1,014	1,673	61%
Total	13.7%	5,993	10,064	60%

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.

Geographic Region: Readmission and Congruence Rates

- Based on the claims data, home health agencies have similar readmission rates by CMS region, ranging from 10.0 percent for Denver to 15.4 percent for New York
- The congruence rates vary by region and range from 54 percent for Dallas and Seattle region to 62 percent for Boston and Philadelphia
 - The primary reason for incongruence across regions is a missing index hospitalization in the assessment (12 percent of Kansas City to 21 percent of Seattle)

Geographic Region	Claim Readmission Rate	Number of Congruent Episodes	Total Number of Episodes	Congruence Rate
I: Boston	13.5%	446	723	62%
II: New York	15.4%	751	1,232	61%
III: Philadelphia	13.8%	744	1,192	62%
IV: Atlanta	13.9%	1,404	2,388	59%
V: Chicago	14.4%	1,137	1,851	61%
VI: Dallas	13.6%	522	971	54%
VII: Kansas City	12.4%	271	444	61%
VIII: Denver	10.0%	99	164	60%
IX: San Francisco	12.7%	524	922	57%
X: Seattle	11.0%	95	177	54%
Total	13.7%	5,993	10,064	60%

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.

***CONGRUENCE BETWEEN OASIS-C
ASSESSMENTS DATA AND CLAIMS:
OASIS-C as Primary Data Source***

Congruence Between OASIS-C Assessments and Claims Data

- Using the assessment data as the primary data source we analyzed their congruence with the claims data
- When the assessments identified both an index admission prior to the home health episode and a readmission, the claims data captured a readmission in 58 percent of the episodes
 - In 32 percent of episodes, the claims did not capture the index or the readmission and in 10 percent of episodes, the claims captured the index admission but not the readmission

Claims Data		Assessment Data			
Index Reported	Readmission Reported	Index Reported	Readmission Reported	Number of Episodes	Percent of Episodes
No	No	Yes	Yes	3,291	32%
Yes	No	Yes	Yes	1,063	10%
Yes	Yes	Yes	Yes	5,993	58%
Total				10,347	100%

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.

Congruence Between OASIS-C Assessments and Claims Data

(cont'd)

- About 30 percent of the incongruence is due to our required 30-day clean period to ensure the home health admission was a new episode
- Another 24 percent of the incongruence is due an index admission that is not captured in the claims, likely due to admissions deemed as observation stays

Claims Data		Assessment Data		Reason for No Match	Number of Episodes	Percent Episodes	% of All Mismatch	% of Mismatch by Group
Index Reported	Readmission Reported	Index & Readmission Reported						
No	No	Yes		HHA Admission is missing in Medicare Claims Data	707	7%	16%	21%
No	No	Yes		IP Admission prior to HHA is missing in Medicare Claims Data	1,052	10%	24%	32%
No	No	Yes		Member do not have full coverage (Part A + Part B)	228	2%	5%	7%
No	No	Yes		Required 30 day clean period not satisfied	1,304	13%	30%	40%
Yes	No	Yes		Admission to provider other than Short Term or Critical Access Hospital	77	1%	2%	7%
Yes	No	Yes		More than one day gap between HHA discharge and IP readmission	403	4%	9%	38%
Yes	No	Yes		Readmission claim is not present in Medicare data (Other coverage?)	583	6%	13%	55%
Yes	Yes	Yes		Match	5,993	58%		
Total					10,347	100%		

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.

Congruence Between OASIS-C Assessments and Claims Data

(cont'd)

- **We investigated what factors could cause the assessments to capture index admissions or readmissions that do not appear in the claims**
 - Discussions with clinicians and operators suggest that the hospital observation stays may cause the home health agency to code a patient's hospitalization as an inpatient stay while the patient may have only remained in observation status while in the hospital
 - Since observation status is often determined once the patient enters the hospital (and often after discharge) the agency cannot validate whether the patient was admitted prior to completing the OASIS-C
- **As a sensitivity analysis, we extended the one day window between the home health discharge and inpatient admission to seven days and found that it had no impact on the results**
 - Patients who are captured in this category also had other reasons that would cause the data sources to remain incongruent

Conclusions

- **OASIS-C assessment data has a comparable readmission rate to the Medicare claims data overall, despite the inclusion of planned readmissions**
- **However, when matched by patient, the assessment data only aligns with claims for 60 percent of home health episodes**
 - The most common reason for the inconsistency is the lack of the index hospitalization within 14 days prior to the home health admission or the lack of an indicator representing a completed home health episode
- **Therefore, the OASIS-C assessment data may misrepresent the home health readmission rates for Medicare fee-for-service beneficiaries across all agency types**
 - Hospital observation stays appear to be a large driver of the discrepancy between hospitalizations and readmissions reported by home health agencies and in the Medicare claims

Conclusions (cont'd)

- **If the home health industry is to explore a standardized 30-day readmission measure using either the OASIS-C assessment data or claims data, providers need to be informed of the relatively common issues that will cause it to be misaligned with the Medicare claims**
 - Observation stays and their relationship to readmission rates
 - Gaps in time between home health discharge (the last visit prior to the readmission) and the hospital admission
 - Identification of hospital admissions 14 days prior to the home health admission
- **Given that the home health community and individual providers are now learning about how the OASIS-C data could produce unreliable estimates of readmission rates, the community can then assess whether a standardized OASIS-C based measure is appropriate or even possible**
- **Caution should be used when assessing differences in readmission rates across agencies**

Appendix A: Episode Inclusion and Exclusion Criteria

- **OASIS-C assessment data inclusion criteria**

- Patients who were admitted to home health within 14 days of discharge from an inpatient hospital (M1000 = 1)
- Home health episodes that are “completed,” defined as episodes with an assessment reason (M0100) of 06, 07, 08 or 09 in their last assessment
- Discharges from home health to an inpatient hospital within 30 days of the index hospitalization are considered readmissions and counted in the measure numerator (M2410_INPAT_FAC = “1”)

- **OASIS-C assessment data exclusion criteria**

- Episodes with a missing “Most recent IP discharge date” (M1005)
- Episodes with a Start of Care data prior to the Inpatient Discharge Date Open-ended episodes, that is episodes with M0100 with a value other than 06, 07, 08, or 09) in their last assessment of the episode
- Episodes with scheduled admissions (M2430); therefore this measure only includes unplanned readmissions

Appendix A: Episode Inclusion and Exclusion Criteria

- **Claims data inclusion criteria**

- Admissions to home health within 14 days of discharge from an inpatient hospital, based in home health claim admit and index hospital discharge dates
- Our episode definition included a 30-day clean period prior to the first home health claim to ensure that the home health admission is a new episode
- Discharge from home health to an inpatient hospital within 30 days of the first inpatient discharge are considered readmissions and counted in the measure numerator; this measure includes scheduled and unplanned readmissions
 - The admission should be on the same or following day of the HHA end or discharge date; extending the window to 7 days following discharge had no significant impact on the results

- **Claims data exclusion criteria**

- Claims prior to January 1, 2010 are excluded except for use in the home health 30 day clean period
- Only short term hospital and critical access hospital admissions are considered for readmission

Appendix B: Reason for Incongruence by Agency Characteristics

- **In this appendix, we present the most common reasons for incongruence between the claims and the OASIS-C assessment data by facility characteristics:**
 - Urban/rural status
 - Geographic region (CMS region)

Appendix B: Congruence Between Claims Data and OASIS-C: Urban/Rural

Claims Data Index & Readmission Reported	Assessment Data		Reason for No Match	Percent of Episodes	
	Index Reported	Readmission Reported		Urban	Rural
Yes	No	No	Index admission 14 days prior to an HHA admission not in assessment	15%	14%
Yes	No	No	HHA episode is missing discharge date	1%	1%
Yes	No	No	No assessment	4%	4%
Yes	No	No	Not completed HHA Episodes	10%	10%
Yes	No	No	Other	0%	1%
Yes	Yes	No	Readmission not captured in assessment data	8%	6%
Yes	Yes	No	Scheduled IP admissions are not treated as readmissions in Assessment	3%	3%
Yes	Yes	Yes	Match	59%	61%
Total				100%	100%

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.

Appendix B: Congruence Between Claims Data and OASIS-C: Geographic Region

Match or Reason for No Match	Percent of Episodes									
	Boston	New York	Phila- delphia	Atlanta	Chicago	Dallas	Kansas City	Denver	San Fran.	Seattle
Index admission 14 days prior to an HHA admission not in assessment	14%	15%	14%	16%	14%	17%	12%	17%	15%	21%
HHA Episodes with missing discharge date	1%	1%	1%	1%	1%	1%	1%	0%	2%	1%
No assessment	5%	4%	4%	2%	3%	4%	4%	1%	7%	5%
Not completed HHA Episodes	9%	11%	9%	11%	9%	13%	9%	10%	8%	11%
Other	1%	0%	1%	0%	0%	1%	1%	1%	0%	0%
Inpatient readmission is not captured in Assessment data	7%	7%	7%	8%	8%	7%	8%	9%	8%	6%
Scheduled IP admissions are not treated as readmissions in Assessment	3%	2%	3%	3%	3%	4%	4%	2%	3%	2%
Match	62%	61%	62%	59%	61%	54%	61%	60%	57%	54%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Dobson | DaVanzo analysis of Medicare Claims data and OASIS-C for 2010.