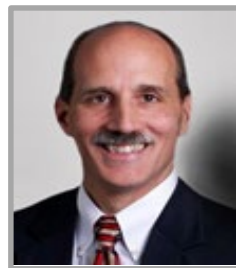# Demystifying Home Health Risk Adjustment: OASIS-D1 Update

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Winning Wednesday Webinar Series

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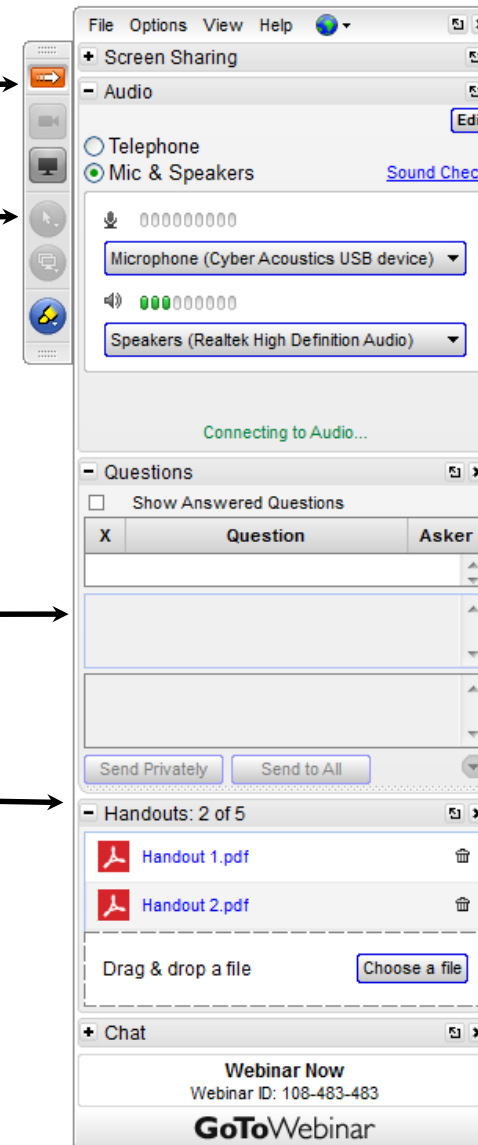
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Objectives

❖ Review of Risk-Adjustment Basics and Terms

❖ Changes to the Risk Model for OASIS-D1

❖ Top and Bottom Covariates in the OASIS-D1 Risk Model for Star-Rated Outcomes

❖ Impact Analysis and Insights on the OASIS-D1 Risk Model

❖ Question & Answers

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Risk Adjustment – Why is it done?

- The basic purpose of risk adjustment is to ensure a fair comparison of outcomes by taking into consideration patient characteristics at the start of a home care quality episode that may **affect the likelihood of specific outcomes** during this episode

- Used for OBQI improvement outcomes and the OASIS-based *Discharged to Community* utilization measure

- Not used for process measures

- Each outcome has a unique risk model

- Outcomes scores include Medicare, Medicare Advantage, Medicaid and Medicaid HMOs payers

  - *The only exception is claim-based measures, which only include Medicare patients*

Risk-Adjustment: How Is It Done?

1. Observed outcome rate is calculated for all eligible patients

   Agency(observed) = (# achieving outcome)/(# eligible for outcome)

2. For each of the same patients, a predicted outcome is calculated based on statistical risk model and patient condition at SOC/ROC

3. Predicted outcomes are averaged across all the patients served in a 12 month period (*Note: The Jan 2022 posting will use a 9 month period*)

   Agency(predicted) = (Sum of predicted probability)/(# eligible for outcome)

4. National predicted rates are calculated aggregating across all eligible patients served by any HHA

5. Agency rate is risk adjusted by adding to the observed rate the difference between the national predicted rate and agency predicted

   Agency(risk adjusted) = Agency(observed) + (National(predicted) – Agency(predicted))

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Terms: Risk Factors and Covariates

- OASIS **risk factors** are patient characteristics identified at SOC or ROC

- Each risk factor has multiple **covariates**, each with an associated **coefficient** value that that can either **raise** or **lower** the likelihood of the patient improving for the outcome in question

  - *Note: We will be presenting the coefficients as **probabilities** so that it's easier to interpret the potential impact of each covariate.*

- The **higher** the **probability** value for a risk factor (e.g. – over 50%), the **more** likely the patient is to improve if the risk factor is present, whereas a **lower** value (e.g. - below 50%), indicates that the specified risk factor makes the patient **less** likely to improve

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Risk Factors and Covariates: Example

- **Example**: Below are the top and bottom risk-factor covariates (converted to probabilities) for the Ambulation outcome that have the largest **positive** and **negative** impact on how likely a particular patient is to improve in Ambulation:

Measure Name	Covariate Name	Covariate Detail	Coefficient	Probability
Improvement in Ambulation	AMB3	Ambulation = 3 (Walks only with supervision or assist)	2.3051	90.93%
Improvement in Ambulation	AGE_95PLUS	Age = 95+	-0.6414	34.49%

- **Translation**: A rating of "3" for Ambulation at SOC/ROC would significantly **increase** the probability of the patient improving, whereas a patient being aged 95 or older would significantly **lessen** their likelihood of improving in Ambulation

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Predicted Improvement Scores

- The values for each risk factor that is present for a specific patient are aggregated and contribute to a single **predicted improvement** score for the patient

- The higher the **predicted improvement** score, the **more likely** that the patient is to improve, and vice versa

- The predicted improvement scores for each individual patient are used to calculate your **agency predicted** score

- Therefore, having a large population of patients with patient predicted values that are **higher** than the **national predicted score** will result in your risk-adjusted score being **lower** than your observed score, and vice-versa

Measure Name	Notes	Covariate Detail	Predicted Improvement Value
Improvement in Ambulation	Reflects the same exact patient with only M1860 changed from a 1 to a 3 at SOC	Ambulation = 1 (One- handed device on all surfaces)	81.07%
		Ambulation = 3 (Walks only with supervision or assist)	97.72%

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Changes to the Risk Model for OASIS-D1

CMS Activities to Update Models

- Reviewed model risk adjustment factor (covariate) definitions to identify those not supported by OASIS-D1

- Refined additional risk adjustment factors as needed, based on statistical, clinical and other input

- Recalibrated risk adjustment model parameters using revised risk factors

- Conducted clinical and technical reviews to retain risk adjustment factors that were statistically and clinically meaningful

- Tested new risk adjustment model performance against current models

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Risk Factor Overview: 2019 vs. 2021

- The total number of risk factors used for each risk model declined slightly for every risk-adjusted outcome as shown in the table below.

Measure Name	Risk Factors Not Used for 2019 But Added for 2021	Risk Factors Used for 2019 but Removed for 2021	Risk Factors Retired for 2021	Overall Change (+/-)
Improvement in Ambulation	1	2	9	-10
Improvement in Bathing	0	2	8	-10
Improvement in Bed Transferring	5	3	8	-6
Improvement in Bowel Incontinence	1	2	7	-8
Improvement in Confusion Frequency	2	2	9	-9
Improvement in Dyspnea	1	3	8	-10
Improvement in Lower Body Dressing	2	0	8	-6
Improvement in Upper Body Dressing	2	5	8	-11
Improvement in Management of Oral Medications	0	1	8	-9
Improvement in Toilet Transferring	4	7	8	-11
Discharge to Community	1	6	9	-14

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OASIS-D1: Outcome & Risk Factors Deprecated

- Two outcomes are no longer risk-adjusted by CMS**:

  - *Improvement in Surgical Wound Status*

  - *Improvement in Pain Interfering with Activity*

- Four OASIS Items are no longer required under OASIS-D1 and have been completely removed from the all risk models:

  - *M1030: Therapies patient receives at home*

  - *M1242: Frequency of Pain Interfering with patient's activity or movement*

  - *M2030: Management of Injectable Medications (Excludes injectable and IV medications)*

  - *M2200: Therapy Need (# visits)*

**Note: SHP will continue to risk adjust and report these two outcomes

OASIS-D1: Additional Risk Factors Removed

- Besides the risk factors that were completely removed from all risk-models, a number of outcomes no longer use risk factors that were previously used in the 2019 OASIS-D model.

Measure Name	Risk Factors Used for 2019 But Removed for 2021
Improvement in Ambulation	2
Improvement in Bathing	2
Improvement in Bed Transferring	3
Improvement in Bowel Incontinence	2
Improvement in Confusion Frequency	2
Improvement in Dyspnea	3
Improvement in Lower Body Dressing	0
Improvement in Upper Body Dressing	5
Improvement in Management of Oral Medications	1
Improvement in Toilet Transferring	7
Discharge to Community	6

OASIS-D1: Additional Risk Factors Added

- With the removal/deprecation of the risk factors highlighted on the previous slides, CMS also started using a number risk factors that were present in the 2019 model but that were not used on some outcomes as shown in the table below.

Measure Name	Risk Factors Not Used for 2019 But Added for 2021
Improvement in Ambulation	1
Improvement in Bathing	0
Improvement in Bed Transferring	5
Improvement in Bowel Incontinence	1
Improvement in Confusion Frequency	2
Improvement in Dyspnea	1
Improvement in Lower Body Dressing	2
Improvement in Upper Body Dressing	2
Improvement in Management of Oral Medications	0
Improvement in Toilet Transferring	4
Discharge to Community	1

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Top and Bottom Covariates in the OASIS-D1 Risk Model for Star-Rated Outcomes

Top/Bottom Risk Factors: Ambulation

- The SOC/ROC rating for Ambulation and Surgical Wound Status are still the top risk factors

- **New** in the Top-10: HC DX Health Factors (Any primary or other diagnosis within the range Z00 to Z99)

- **Out** of the Top-10: Pain = 4

Top 10 Covariates
(making the patient MORE likely to improve)

Risk Factor	Covariate Name	Probability
Ambulation	AMB3	90.93%
Ambulation	AMB456	82.32%
Surgical Wound	SRG_WND_OBS_NOHEAL	63.10%
Ambulation	AMB2	60.76%
Surgical Wound	SRG_WND_OBS_EPI	57.64%
Surgical Wound	SRG_WND_OBS_GRAN	57.12%
Anxiety	ANX3	56.95%
Toilet Transferring	TLTTRN2	56.85%
Toilet Transferring	TLTTRN1	56.57%
Home Care Condition Codes	HC_DX_HLTH_FACTORS	55.45%

Bottom 10 Covariates
(making the patient LESS likely to improve)

Risk Factor	Covariate Name	Probability
Age	AGE_95PLUS	34.49%
Urinary Status	URINCONT_CATH	36.13%
Bathing	BATH6	37.94%
SOC/ROC and Admission Source	SOC_COMM	38.46%
SOC/ROC and Admission Source	ROC	38.67%
Age	AGE_90_94	38.69%
Pressure Ulcers	PU_STG2PLUS_UNSTG	39.37%
Stasis Ulcer	STAS_ULCR_OBS_2PLUS	41.18%
Transferring	TRNFR1	41.46%
Bowel Incontinence	BWL_FR345	41.72%

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Ambulation SOC/ROC Rating Trends

- The % of episodes rated a "2" for Ambulation at SOC/ROC has decreased consistently over time, while the % of episodes rated a "3" or "5" has increased

Ambulation Start Ratings Trended By Month
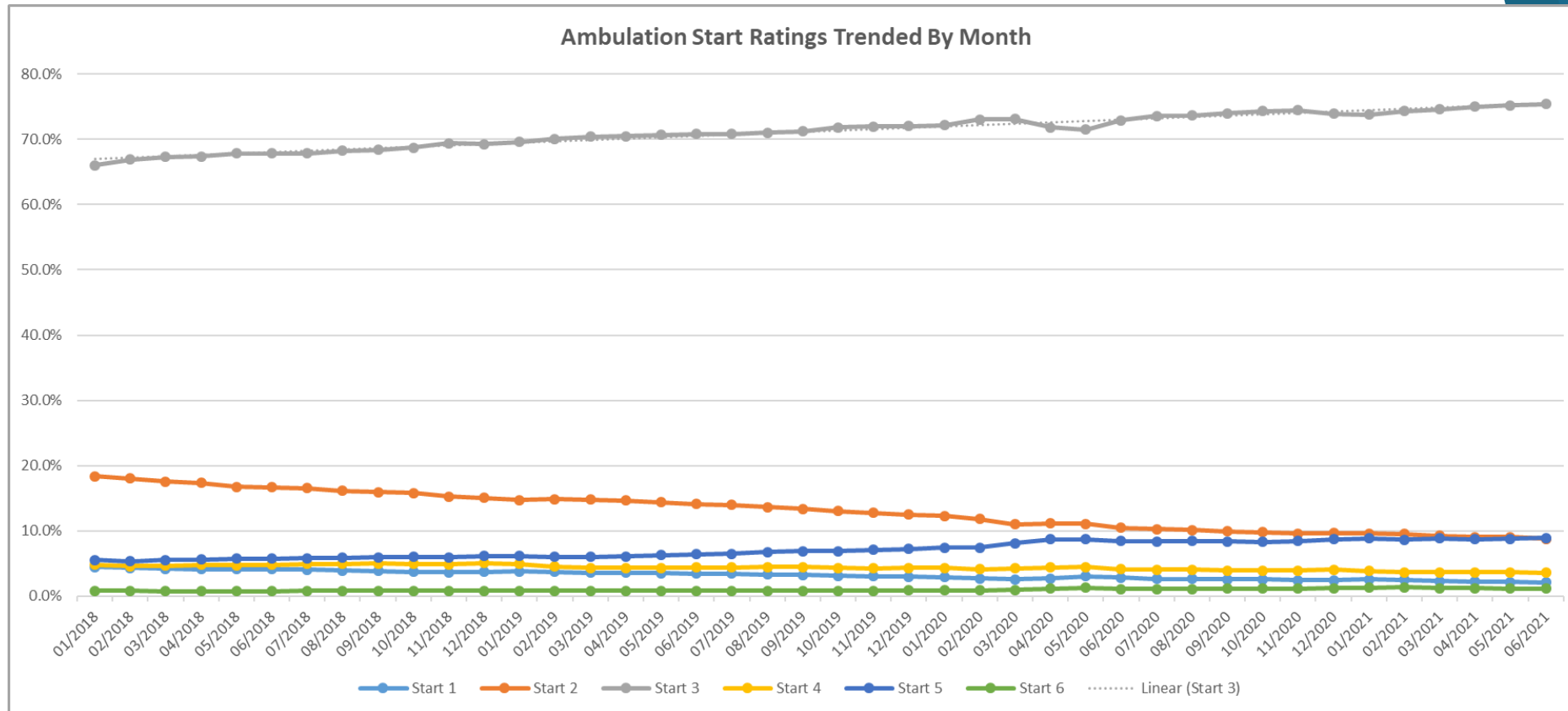
Top/Bottom Risk Factors: Bathing

- The SOC/ROC rating for Bathing still comprises the top 5 risk factors
- **New** in the Top-10: Disruptive Behavior Frequency = 1, 2
- **Out** of the Top-10: Therapy > 13, Pain = 4

Top 10 Covariates
(making the patient MORE likely to improve)

Risk Factor	Covariate Name	Probability
Bathing	BATH6	95.46%
Bathing	BATH5	94.46%
Bathing	BATH4	91.94%
Bathing	BATH3	87.08%
Bathing	BATH2	76.91%
Surgical Wound	SRG_WND_OBS_NOHEAL	62.56%
Surgical Wound	SRG_WND_OBS_GRAN	58.19%
Surgical Wound	SRG_WND_OBS_EPI	58.17%
Toilet Transferring	TLTTRN2	58.11%
Disruptive Behavior Frequency	BEHPFR12	56.39%

Bottom 10 Covariates
(making the patient LESS likely to improve)

Risk Factor	Covariate Name	Probability
Ambulation	AMB456	22.06%
Age	AGE_95PLUS	33.65%
Feeding or Eating	EAT345	35.47%
Urinary Status	URINCONT_CATH	37.53%
Age	AGE_90_94	38.49%
Confusion	CONF4	38.54%
Ambulation	AMB2	38.59%
Stasis Ulcer	STAS_ULCR_OBS_2PLUS	39.63%
SOC/ROC and Admission Source	SOC_COMM	39.66%
Bowel Incontinence	BWL_FR345	39.83%

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Top/Bottom Risk Factors: Bed Transferring

- The SOC/ROC rating still comprises the top risk factors, followed by Surgical Wound Status and Anxiety

- **New** in the Top-10: External causes of morbidity (Any primary or other diagnosis within the range V00 to Y99), Disruptive Behavior Frequency = 4

- **Out** of the Top-10: Therapy 5-13 and > 13

Top 10 Covariates
(making the patient MORE likely to improve)

Risk Factor	Covariate Name	Probability
Transferring	TRNFR345	95.62%
Transferring	TRNFR2	91.98%
Surgical Wound	SRG_WND_OBS_NOHEAL	61.51%
Surgical Wound	SRG_WND_OBS_EPI	56.42%
Anxiety	ANX3	56.21%
Surgical Wound	SRG_WND_OBS_GRAN	56.04%
Home Care Condition Codes	HC_DX_HLTH_FACTORS	55.74%
Disruptive Behavior Frequency	BEHPFR5	54.98%
Disruptive Behavior Frequency	BEHPFR4	53.72%
Home Care Condition Codes	HC_DX_EXT_MORB	53.64%

Bottom 10 Covariates
(making the patient LESS likely to improve)

Risk Factor	Covariate Name	Probability
Ambulation	AMB456	14.38%
Ambulation	AMB2	28.91%
Ambulation	AMB3	33.84%
Age	AGE_95PLUS	35.96%
Urinary Status	URINCONT_CATH	36.07%
Ambulation	AMB1	37.11%
SOC/ROC and Admission Source	SOC_COMM	38.19%
SOC/ROC and Admission Source	ROC	38.58%
Feeding or Eating	EAT345	38.85%
Bathing	BATH6	39.43%

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Top/Bottom Risk Factors: Dyspnea

- The SOC/ROC rating still comprises the top risk factors
- **New** in the Top-10: Bathing = 4, External causes of morbidity (Any primary or other diagnosis within the range V00 to Y99)
- **Out** of the Top-10: Therapy 5-13 and > 13

Top 10 Covariates
(making the patient MORE likely to improve)

Risk Factor	Covariate Name	Probability
Dyspnea	DYSP34	81.82%
Dyspnea	DYSP2	72.07%
Surgical Wound	SRG_WND_OBS_NOHEAL	59.75%
Home Care Condition Codes	HC_DX_HLTH_FACTORS	56.37%
Surgical Wound	SRG_WND_OBS_EPI	55.58%
Bathing	BATH4	55.16%
Home Care Condition Codes	HC_DX_EXT_MORB	54.89%
Disruptive Behavior Frequency	BEHPFR5	54.70%
Disruptive Behavior Frequency	BEHPFR3	54.60%
Risk of Hospitalization	RISK_NONE	54.47%

Bottom 10 Covariates
(making the patient LESS likely to improve)

Risk Factor	Covariate Name	Probability
SOC/ROC and Admission Source	ROC	39.70%
SOC/ROC and Admission Source	SOC_COMM	40.74%
Home Care Condition Codes	HC_DX_RESPIRATORY	41.02%
Urinary Status	URINCONT_CATH	42.99%
Home Care Condition Codes	HC_DX_NEOPLASM	43.16%
Ambulation	AMB456	43.62%
Stasis Ulcer	STAS_ULCR_OBS_2PLUS	43.96%
Age	AGE_95PLUS	44.06%
Urinary Status	URINCONT_INCONT	45.41%
Depression Screening	PHQ2_SCOR_3PLUS	45.70%

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Top/Bottom Risk Factors: Oral Meds

- The SOC/ROC rating still comprises the top risk factors

- **New** in the Top-10: Behavioral Symptoms (M1740) = None and Transferring = 3, 4, 5

- **Out** of the Top-10: Pain = 3, 4

Top 10 Covariates
(making the patient **MORE** likely to improve)

Risk Factor	Covariate Name	Probability
Oral Medication Management	ORMED3	77.93%
Oral Medication Management	ORMED2	75.27%
Surgical Wound	SRG_WND_OBS_NOHEAL	64.09%
Anxiety	ANX3	59.95%
Surgical Wound	SRG_WND_OBS_EPI	58.13%
Dyspnea	DYSP34	58.11%
Living Arrangement	LIV_ALONE	57.55%
Surgical Wound	SRG_WND_OBS_GRAN	57.33%
Behavioral Symptoms	BEHAV_NONE	56.92%
Transferring	TRNFR345	56.58%

Bottom 10 Covariates
(making the patient **LESS** likely to improve)

Risk Factor	Covariate Name	Probability
Living Arrangement	LIV_CONGREGATE	26.63%
Age	AGE_95PLUS	28.62%
Confusion	CONF4	30.20%
Age	AGE_90_94	33.04%
Feeding or Eating	EAT345	33.10%
Cognitive function	COGN34	33.73%
Age	AGE_85_89	36.89%
Confusion	CONF23	37.90%
SOC/ROC and Admission Source	SOC_COMM	39.05%
Bathing	BATH6	39.40%

Impact Analysis and Insights on the OASIS-D1 Risk Model

Patient Predicted Analysis

▸ To demonstrate the effect of the new risk model, the comparison below looks the average patient predicted rates for SOC/ROC assessments from the second half of 2020 vs. SOC/ROC assessments from the first 6 months of 2021.

▸ As noted in the last column, there was very little change in the average predicted rates with the implementation of the new risk model.

Measure Name	Jul 2020 to Dec 2020	Jan 2021 to Jun 2021	Change (+/-)
Improvement in Ambulation	78.35%	78.71%	0.35%
Improvement in Bathing	77.71%	78.07%	0.36%
Improvement in Bed Transferring	80.99%	81.34%	0.35%
Improvement in Dyspnea	76.79%	76.71%	-0.08%
Improvement in Management of Oral Medications	71.84%	71.96%	0.12%
Discharged to Community	68.39%	67.79%	-0.60%

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Impact on Scores by Provider

- Distribution of score changes from 7/2020 – 6/2021:

| Jul 2020 to Jun 2021	% of Providers Eligible (>=100 Episodes)	Eligible Providers	Providers with >=0.5 Decrease in Score	Providers with >=1.0 Decrease in Score	Providers with >= 0.5 Increase in Score	Providers with >= 1.0 Increase in Score
Ambulation	92.0%	3,131	4.3%	0.3%	1.9%	0.0%
Bathing	92.1%	3,135	7.8%	0.9%	3.2%	0.0%
Bed Transferring	91.8%	3,125	6.3%	0.5%	2.3%	0.0%
Dyspnea	90.4%	3,072	8.0%	2.3%	3.1%	0.2%
Oral Meds	91.2%	3,101	3.9%	0.2%	2.7%	0.2%
Discharged to Community	94.5%	3,220	7.5%	0.7%	3.2%	0.2%

- Distribution of score changes from 1/2021 – 6/2021:

Jan 2021 to Jun 2021	% of Providers Eligible (>=100 Episodes)	Eligible Providers	Providers with >=0.5 Decrease in Score	Providers with >=1.0 Decrease in Score	Providers with >= 0.5 Increase in Score	Providers with >= 1.0 Increase in Score
Ambulation	84.6%	2,855	14.6%	4.3%	16.8%	1.9%
Bathing	84.9%	2,867	19.7%	8.2%	19.1%	3.6%
Bed Transferring	84.2%	2,842	16.7%	6.3%	15.3%	2.4%
Dyspnea	81.7%	2,755	17.3%	7.2%	21.5%	4.1%
Oral Meds	83.2%	2,808	11.6%	2.5%	20.1%	4.3%
Discharged to Community	89.9%	3,039	16.7%	6.0%	24.4%	6.0%

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Risk Adjusted Ranking under OASIS-D1

▸ Tracking your **observed** score trends will be important

▸ Comparing your **percentile rank** for both observed **and** risk adjusted scores will reflect performance against your peers

▸ **Reminder**: Risk adjustment is calculated the same way for all providers

SHP Clinical Executive Advantage
Superior Outcomes Demo 1: Region 1
Standard: 07/01/2020 - 06/30/2021, Offset: 05/01/2020 - 04/30/2021
Report Date: 8/5/2021

Outcome: **Dyspnea**

	Improved				Declined			Your % Ranking	
	Episodes	#	%	Risk Adjusted	Episodes	#	%	Observed	Risk Adjusted
Division	5,536	4,835	87.3%	85.7%	6,260	118	1.9%	51%	47%
SHP National Database			86.9%				1.8%		
Superior Outcomes HHA 139	657	603	91.8%	91.8%	745	14	1.9%	72%	82%
Superior Outcomes HHA 161	361	341	94.5%	97.6%	428	5	1.2%	84%	96%
Superior Outcomes HHA 165	819	732	89.4%	86.2%	917	17	1.9%	61%	49%
Division (AR)	1,837	1,676	91.2%	90.4%	2,090	36	1.7%	69%	75%
SHP Database (AR)			88.2%				1.9%		
Superior Outcomes HHA 140	1,852	1,601	86.4%	83.4%	2,069	46	2.2%	48%	36%
Division (IA)	1,852	1,601	86.4%	83.4%	2,069	46	2.2%	48%	36%
SHP Database (IA)			82.9%				1.9%		
Superior Outcomes HHA 101	891	769	86.3%	82.6%	1,004	19	1.9%	47%	33%
Superior Outcomes HHA 107	417	338	81.1%	87.3%	501	14	2.8%	28%	56%
Superior Outcomes HHA 145	539	451	83.7%	81.6%	596	3	0.5%	37%	29%
Division (NE)	1,847	1,558	84.4%	83.4%	2,101	36	1.7%	40%	36%
SHP Database (NE)			84.9%				2.0%		

<10%	10-20%	20%-40%	40-60%	60-80%	80-90%	>90%

Questions?

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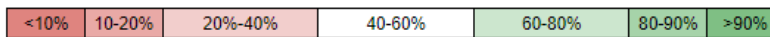
Thank You for Attending!

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Demystifying Home Health Risk Adjustment: OASIS-D1 Update

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