Home Health Value-Based Purchasing Model Composite Outcome Measures

Last updated: October 20, 2021

This update re-runs the prior risk adjustment models for the Home Health Value-based Purchasing (HHVBP) composite outcome measures after removing the items below, aligning with the update to the risk adjustment models made for OASIS outcome measures under the [Home Health Quality Reporting Program](#):[1]

- M1030 (Therapies)
- M1242 (Frequency of Pain Interfering)
- M2030 (Management of Injectable Medications)
- M2200 (Therapy Need)

All other risk factors remain the same as those published in the October 2019 release. Table 1, *TNC Change in Mobility,* and Table 2, *TNC Change in Self-Care,* describe the technical steps for calculating each home health agency-level observed composite outcome measure, respectively. Appendix A displays the updated risk factor coefficients. The specifications for each of the risk factors used in the risk adjustment models and the risk adjustment formula for risk-adjusting the composite outcome measures align with those used for the OASIS outcome measures under the [Home Health Quality Reporting Program](#)[1] and are therefore not further discussed in this document.

The next major update to the risk adjustment models is planned for the release of OASIS-E. During that update, the risk adjustment models will be based on refreshed data and all risk factors will be re-tested for inclusion.

This risk adjustment update is applicable to home health quality episodes that begin January 1, 2021. We note that HHA performance on the Total Normalized Composite Change in Self Care and TNC in Mobility will not be assessed in the CY 2022 pre-implementation year.

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[1]   https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Home-Health-Quality-Measures

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Table 1. Total Normalized Composite (TNC) Change in Mobility

Measure Description
This measure captures the change in home health patients' mobility between start or resumption of care (SOC/ROC) and the end of care (EOC). It is a composite of three OASIS items related to mobility (i.e., M1840, M1850, and M1860).

Measure Specifications
The Total Normalized Composite Change in Mobility (TNC Change in Mobility) is calculated from the observed difference in patient mobility between SOC/ROC (designated as [1]) and the EOC (designated as [2]) in eligible home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria. The following process describes how the measure is computed:
1)   Compute the raw change for each applicable OASIS item at the episode level: *M1840 Raw Change* = M1840[1] - M1840[2]   *M1850 Raw Change* = M1850[1] - M1850[2]   *M1860 Raw Change* = M1860[1] - M1860[2]
2)   Compute the normalized change for each applicable OASIS item at the episode level: *M1840 Normalized Change* = M1840 Raw Change / M1840 Maximum Change Value(4)   *M1850 Normalized Change* = M1850 Raw Change / M1850 Maximum Change Value(5)   *M1860 Normalized Change* = M1860 Raw Change / M1860 Maximum Change Value(6)
3)   Sum the normalized change for all applicable OASIS items at the episode level: *Sum Normalized Change in Mobility* = M1840 Normalized Change + M1850 Normalized Change + M1860 Normalized Change
4)   At the agency level, sum the Sum Normalized Change in Mobility (calculated in previous step) for all eligible home health quality episodes and divide by the number of total eligible home health quality episodes: *TNC Change in Mobility* = sum of Sum Normalized Change Mobility / Agency total number of eligible home health quality episodes
Exclusions
Home health quality episodes for which the patient was nonresponsive at SOC/ROC: M1700[1] = 04, or M1710[1] = NA, or M1720[1] = NA.
Home health agencies for which the count of home health quality episodes is less than 20.

Measure Type	
End Result Outcome – Functional	
OASIS Items Used	
(M0100) Reason for Assessment	(M1840) Toilet Transferring
(M1700) Cognitive Functioning	(M1850) Bed Transferring
(M1710) When Confused	(M1860) Ambulation
(M1720) When Anxious	
Covariates	
See the Risk Adjustment Technical Specifications in Appendix A below.	

Table 2. Total Normalized Composite (TNC) Change in Self-Care

Measure Description
This measure captures the change in home health patients' self-care between start or resumption of care (SOC/ROC) and the end of care (EOC). It is a composite of six OASIS items related to self-care (i.e., M1800, M1810, M1820, M1830, M1845, and M1870).
Measure Specifications
The Total Normalized Composite Change in Self-Care (TNC Change in Self-Care) is calculated from the observed difference in patient self-care between SOC/ROC (designated as [1]) and EOC (designated as [2]) in home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria. The following process describes how the measure is computed:

1) Compute the raw change for each applicable OASIS item at the episode level:

M1800 Raw Change = M1800[1] - M1800[2]	*M1830 Raw Change* = M1830[1] - M1830[2]
M1810 Raw Change = M1810[1] - M1810[2]	*M1845 Raw Change* = M1845[1] - M1845[2]
M1820 Raw Change = M1820[1] - M1820[2]	*M1870 Raw Change* = M1870[1] - M1870[2]

2) Compute the normalized change for each applicable OASIS item at the episode level:

M1800 Normalized Change = M1800 Raw Change / M1800 Maximum Change Value(3)

M1810 Normalized Change = M1810 Raw Change / M1810 Maximum Change Value(3)

M1820 Normalized Change = M1820 Raw Change / M1820 Maximum Change Value(3)

M1830 Normalized Change = M1830 Raw Change / M1830 Maximum Change Value(6)
M1845 Normalized Change = M1845 Raw Change / M1845 Maximum Change Value(3)
M1870 Normalized Change = M1870 Raw Change / M1870 Maximum Change Value(5)

3) Sum the normalized change for all applicable OASIS items at the episode level:

Sum Normalized Change in Self Care = M1800 Normalized Change + M1810 Normalized Change + M1820 Normalized Change + M1830 Normalized Change + M1845 Normalized Change + M1870 Normalized Change

4) At the agency level, sum the Sum Normalized Change in Self-Care for all eligible home health quality episodes and divide by the number of total eligible home health quality episodes:

TNC Change in Self-Care = sum of Sum Normalized Change in Self-Care / Agency total number of eligible home health quality episodes

Exclusions

Home health quality episodes for which the patient was nonresponsive at
SOC/ROC: M1700[1] = 04, or M1710[1] = NA, or M1720[1] = NA.

Home health agencies for which the count of home health quality episodes is less than 20.

Measure Type

End Result Outcome – Functional

OASIS Items Used

(M0100) Reason for Assessment	(M1810) Dressing Upper Body
(M1700) Cognitive Functioning	(M1820) Dressing Lower Body
(M1710) When Confused	(M1830) Bathing
(M1720) When Anxious	(M1845) Toilet Hygiene
(M1800) Grooming	(M1870) Eating

Covariates

See the Risk Adjustment Technical Specifications in Appendix A below.

Appendix A. Risk Factors, Covariates, and Estimated Coefficients.

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
1	Age	AGE_0_54		1	-0.0136	1	-0.0365
		AGE_55_59		2	-0.0156	2	-0.0353
		AGE_60_64		3	-0.02	3	-0.0422
		AGE_65_69	Excluded category				
		AGE_70_74		4	-0.0018	4	-0.007
		AGE_75_79		5	-0.0123	5	-0.0339
		AGE_80_84		6	-0.0321	6	-0.0806
		AGE_85_89		7	-0.0596	7	-0.1444
		AGE_90_94		8	-0.0976	8	-0.2553
		AGE_95PLUS		9	-0.1413	9	-0.4083
2	Gender	GENDER_FEMALE	Excluded category				
		GENDER_MALE		10	0.0086	10	-0.014
3	Payment source	PAY_MCARE _FFS	Excluded category				
		PAY_MCARE_HMO		11	-0.0113	11	-0.0202
		PAY_MCAREANDMCAID		12	-0.049	12	-0.1692
		PAY_MCAID_ONLY		13	-0.0257	13	-0.0944
		PAY_OTHER_COMBO		14	0.0058	14	0.0275

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
4	SOC/ROC and Admission Source	SOC_INPT	Excluded category				
		SOC_COMM		15	-0.0926	15	-0.2531
		ROC		16	-0.0973	16	-0.2515
5	Post-acute facility admission source	INPT_POSTACUTE		17	-0.0403	17	-0.0546
		INPT_NOPOSTACUTE	Excluded category				
7	Risk of Hospitalization	RISK_HSTRY_FALLS		18	-0.0052		
		RISK_WEIGHTLOSS		19	-0.0047	18	-0.0226
		RISK_MLTPL_HOSPZTN		20	-0.0198	19	-0.0534
		RISK_ED				20	0.0113
		RISK_RCNT_DCLN		21	0.0058		
		RISK_COMPLY		22	0.0065	21	0.0267
		RISK_5PLUS_MDCTN					
		RISK_EXHAUST		23	0.0108	22	0.0383
		RISK_OTHR					
		RISK_NONE		24	0.0172	23	0.0306
8	Availability of Assistance	ASSIST_OCC_NONE	Excluded category				
		ASSIST_REGNITE		25	-0.0097	24	-0.0446
		ASSIST_REGDAY		26	-0.039	25	-0.1511
		ASSIST_ARND_CLOCK		27	-0.0345	26	-0.1243

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
8 (Cont'd)	Living Arrangement	LIV_ALONE		28	0.023	27	0.1193
		LIV_OTHERS	Excluded category				
		LIV_CONGREGATE		29	-0.0268	28	-0.0547
10	Pressure Ulcers	PU_NONE_STG1ONLY	Excluded category				
		PU_STG2PLUS_UNSTG		30	-0.1227	29	-0.2349
11	Stasis Ulcer	STAS_ULCR_NONE	Excluded category				
		STAS_ULCR_OBS_1		31	-0.0108	30	-0.0477
		STAS_ULCR_OBS_2PLUS		32	-0.0379	31	-0.1315
12	Surgical Wound	SRG_WND_OBS_NONE	Excluded category				
		SRG_WND_OBS_EPI		33	0.0501	32	0.1433
		SRG_WND_OBS_GRAN		34	0.0493	33	0.1333
		SRG_WND_OBS_NOHEAL		35	0.0775	34	0.2108
13	Dyspnea	DYSP0	Excluded category				
		DYSP1		36	0.0315	35	0.0754
		DYSP2		37	0.0232	36	0.0596
		DYSP34		38	0.0324	37	0.0752
14	Urinary Status	URINCONT_NONE	Excluded category				
		URINCONT_INCONT		39	-0.0524	38	-0.1356
		URINCONT_CATH		40	-0.1418	39	-0.2898

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
15	Bowel Incontinence	BWL_NONE_UK	Excluded category				
		BWL_FR1		41	-0.0345	40	-0.107
		BWL_FR2		42	-0.0715	41	-0.2053
		BWL_FR345		43	-0.173	42	-0.3949
		BWL_OSTOMY		44	-0.034	43	-0.1043
16	Cognitive function	COGN0	Excluded category				
		COGN1		45	-0.0194	44	-0.0824
		COGN2		46	-0.0358	45	-0.1892
		COGN34		47	-0.0839	46	-0.3913
17	Confusion	CONF0	Excluded category				
		CONF1		48	-0.0149	47	-0.0522
		CONF23		49	-0.0403	48	-0.1719
		CONF4		50	-0.0622	49	-0.3516
18	Anxiety	ANX0	Excluded category				
		ANX1		51	0.0027	50	0.0088
		ANX2		52	0.0219	51	0.0587
		ANX3		53	0.0661	52	0.1905

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
19	Depression Screening	PHQ2_SCOR_0	Excluded category				
		PHQ2_SCOR_12		54	-0.0166	53	-0.042
		PHQ2_SCOR_3PLUS		55	-0.0218	54	-0.0525
		PHQ2_NA		56	-0.0585	55	-0.2089
20	Behavioral Symptoms	BEHAV_NONE		57	0.0319	56	0.0799
		BEHAV_MEM_DEFICIT				57	-0.0716
		BEHAV_IMPR_DECISN				58	-0.0388
		BEHAV_OTHR		58	-0.0286	59	-0.1313
21	Disruptive Behavior Frequency	BEHPFR0	Excluded category				
		BEHPFR12		59	0.0223	60	0.0797
		BEHPFR3		60	0.0232	61	0.0807
		BEHPFR4		61	0.0281	62	0.1037
		BEHPFR5		62	0.0423	63	0.1336
22	Grooming	GROOM0	Excluded category				
		GROOM1		63	-0.0118	64	0.2523
		GROOM2		64	-0.0294	65	0.4366
		GROOM3		65	-0.0652	66	0.5552

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
23	Upper Body Dressing	UPPER0	Excluded category				
		UPPER1		66	0.0088	67	0.2809
		UPPER2		67	-0.0096	68	0.4516
		UPPER3		68	-0.0211	69	0.607
24	Lower Body Dressing	LOWER0	Excluded category				
		LOWER1		69	0.0098	70	0.2666
		LOWER2		70	-0.0217	71	0.4861
		LOWER3		71	-0.0367	72	0.7174
25	Bathing	BATH0	Excluded category				
		BATH1		72	-0.0079	73	0.1157
		BATH2		73	-0.0048	74	0.2349
		BATH3		74	-0.0265	75	0.3076
		BATH4		75	-0.0128	76	0.5143
		BATH5		76	-0.0248	77	0.5993
		BATH6		77	-0.1508	78	0.304
26	Toilet Transferring	TLTTRN0	Excluded category				
		TLTTRN1		78	0.2378	79	0.0326
		TLTTRN2		79	0.4505	80	0.0302
		TLTTRN34		80	0.7372	81	-0.0686

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
27	Toilet Hygiene	TLTHYG0	Excluded category				
		TLTHYG1		81	0.0049	82	0.2842
		TLTHYG2		82	-0.0131	83	0.513
		TLTHYG3		83	-0.0612	84	0.5686
28	Transferring	TRNFR0	Excluded category				
		TRNFR1		84	0.1189	85	-0.0189
		TRNFR2		85	0.2828	86	0.0194
		TRNFR345		86	0.3814	87	-0.0642
29	Ambulation	AMB0	Excluded category				
		AMB1		87	0.1125	88	-0.0122
		AMB2		88	0.1757	89	-0.0681
		AMB3		89	0.3327	90	0.0204
		AMB456		90	0.1737	91	-0.5816
30	Feeding or Eating	EAT0	Excluded category				
		EAT1		91	-0.0189	92	0.0895
		EAT2		92	-0.0737	93	0.0602
		EAT345		93	-0.1289	94	0.0161

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
31	Oral Medication Management	ORMED0	Excluded category				
		ORMED1		94	0.0114	95	0.0097
		ORMED2		95	0.0106	96	-0.0074
		ORMED3		96	0.0089	97	-0.045
33	Supervision and Safety Assistance	SPRVSN_NONE_NEEDED	Excluded category				
		SPRVSN_CG_PROVIDES		97	-0.0165	98	-0.0561
		SPRVSN_NEED_TRAINING		98	0.0151	99	0.0404
		SPRVSN_CG_UNCERTAIN_NONE		99	0.0078	100	0.0342
35	Home Care Condition Codes	HC_DX_INFECT		100	0.0137	101	0.0261
		HC_DX_NEOPLASM		101	-0.0371	102	-0.1477
		HC_DX_BLOOD		102	-0.0083		
		HC_DX_ENDOCRINE		103	-0.0134	103	-0.031
		HC_DX_MENTAL				104	-0.0414
		HC_DX_NERVOUS		104	-0.0459	105	-0.1051
		HC_DX_EYE				106	-0.0444
		HC_DX_EAR		105	0.0247	107	0.0782
		HC_DX_CIRCULATORY		106	0.0052	108	0.0166
		HC_DX_RESPIRATORY		107	-0.012	109	-0.0382
		HC_DX_DIGESTIVE		108	0.0124	110	0.0215
		HC_DX_SKIN		109	-0.0688	111	-0.1598

Risk Factor #	Risk Factor	Covariate Name	Excluded Category Indicator	TNC Change in Mobility		TNC Change in Self Care	
				Covariate #	Coefficient	Covariate #	Coefficient
35 (Cont'd)	Home Care Condition Codes (Cont'd)	HC_DX_ MUSCL_SKEL				112	0.0464
		HC_DX_GEN_URINARY		110	-0.0231	113	-0.0524
		HC_DX_INT_ ABNORM		111	-0.0046	114	-0.018
		HC_DX_EXT_INJURY		112	0.0167	115	0.0651
		HC_DX_EXT_MORB		113	0.0241	116	0.071
		HC_DX_HLTH_FACTORS		114	0.0372	117	0.1119
	CONSTANT	_CONS		115	0.0434	118	0.1790

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