Overview of Hospital LOC Modeling Exercise

The Department of Health Care Policy and Financing (Department) does not have a prospective and standardized methodology for establishing hospital level of care (H-LOC) criteria for its waivers that use this criterion. These waivers include Brain Injury (BI), Children's Home and Community Based Services (CHCBS), Children with Life Limiting Illnesses (CLLI), and Spinal Cord Injury (SCI). With the exception of CLLI, these waivers also use the nursing facility LOC (NF-LOC) for establishing eligibility. The Department currently establishes H-LOC for CLLI using subjective criteria applied by Department staff. H-LOC for other waivers is determined retrospectively based on service use.

Using pilot data, HCBS Strategies modeled H-LOC criteria to establish standardized and prospective H-LOC criteria that will classify sufficient numbers of participants with high costs as meeting H-LOC to allow the Department to meet both the H-LOC and NF-LOC budget neutrality requirements included on CMS Form 372.

This document describes the methodology and outcomes of this effort.

Methodology

Identifying Items Predictive of High Medicaid Expenditures

The first step was to identify the variables that had the strongest relationship to costs (both waiver and other Medicaid costs). These variables would be the focus of the model.

The Department provided HCBS Strategies with Medicaid waiver and other Medicaid expenditure data for each pilot participant. HCBS Strategies converted these numbers into average monthly costs to allow for more comparability regardless of length of stay within the waivers.

HCBS Strategies used regression analyses to calculate the coefficient of determination (R^2) between the assessment items and costs. The following items with an R^2 score greater than .20 were selected to include in the modeling exercise:

Variable	R^2
Tube feeding - usual	0.43
Tube feeding - dependent	0.38
Toilet hygiene - dependent	0.37
Toilet hygiene - usual	0.36
Bathing - dependent	0.30
Bathing - usual	0.30
Lower body dressing - usual	0.30
Eating - usual	0.29
Lower body dressing - dependent	0.29
Eating - dependent	0.28
Upper body dressing - usual	0.28
Upper body dressing - dependent	0.27
Car transfer - usual	0.27
Car transfer - dependent	0.26

Variable	R^2
Chair to bed transfer - dependent	0.25
Chair to bed transfer - usual	0.24
Footwear - usual	0.24
Footwear - dependent	0.22
Toilet transfer - dependent	0.20

Developing the H-LOC Modeling File

The H-LOC modeling file is similar to the NF-LOC modeling file, with the following differences:

- It contains far fewer levers from the new assessment (only items with an R^2 above .20)
- Items from the ULTC 100.2 were added as a parallel set of levers to determine if the criteria could also be used using only ULTC 100.2 data.
- The outcome tables were altered to show comparisons across the entire population, adults, children, and the waivers with H-LOC for the following:
  - The number, percent, and average daily cost of individuals who meet H-LOC, NF-LOC only, and neither H-LOC or NF-LOC
  - The daily threshold rate for Hospital and Nursing Facility in Colorado from the Fiscal Year (FY) 2017-2018 372 reports
  - The difference between the facility costs and corresponding LOC and identification of whether it meets the cost neutrality threshold

Note that CLLI does not have a NF Daily Threshold from the 372 reports because this waiver only has an H-LOC.

Outcomes

HCBS Strategies developed a draft H-LOC that resulted in meeting the budget neutrality thresholds using the smallest number of items necessary that included the criteria located within the table below (a participant would meet H-LOC if any of the items were met). Participants would also need to meet NF-LOC to be able to meet H-LOC. This is important to prevent the possibility of someone qualifying for services on the basis of only one ADL (although this is very unlikely).

New Assessment Variable Name	New Item Lever	100.2 Variable Name	100.2 Item Lever
Bathing- Usual	Substantial/maximal assistance	Bathing	3
Bathing- Most Dependent			
Dressing- Upper Body- Usual	Substantial/maximal assistance	Dressing	3
Dressing- Upper Body- Most Dependent			
Dressing- Lower Body- Usual	Substantial/maximal assistance		
Dressing- Lower Body- Most Dependent			
Dressing- Footwear- Usual			
Dressing- Footwear- Most Dependent			
Toileting- Toilet Hygiene- Usual	Substantial/maximal assistance	Toileting	3
Toileting- Toilet Hygiene- Most Dependent			
Toileting- Toilet Transfer- Most Dependent	Substantial/maximal assistance		
Transfer- Chair/Bed to Chair- Usual	Substantial/maximal assistance	Transferring	3
Transfer- Chair/Bed to Chair- Most Dependent			
Transfer- Car Transfer- Usual			
Transfer- Car Transfer- Most Dependent			
Eating- Eating- Usual	Substantial/maximal assistance	Eating	3
Eating- Eating- Most Dependent			
Eating- Tube Feeding- Usual	Substantial/maximal assistance		
Eating- Tube Feeding- Most Dependent			

The effect of the draft H-LOC on budget neutrality are presented in the tables below.

Both NF-LOC and H-LOC fall well below the CMS Form 372 (using data from SFY 2017-2018) thresholds for all relevant waivers for both the criteria based on the new items and the ULTC 100.2 items.

The major concern is the small sample sizes for these waivers. This is somewhat allayed by the finding that the spending amounts for the entire sample was similar to that for the sample participants. However, we would recommend that the Department model the impact on current BI, SCI, and CHCBS participants by creating mock CMS Form 372 submissions using the draft ULTC 100.2 criteria. If these findings support the efficacy of the draft H-LOC, given how similar the ULTC 100.2 and new items version are, the Department could be confident that it will work for the criteria based on the new items as well.

This H-LOC will not work as the H-LOC for CLLI given that only 53% of the children meet this criterion. HCBS Strategies will conduct additional analyses for this waiver once more data are collected.

H-LOC Outcome Table 1: Analysis of H-LOC Eligibility and Costs Across BI, CHCBS, CLLI, and SCI Waivers for New Assessment Items

Waiver	# of Participants	Meet Hospital LOC			372 Hospital Daily Threshold				Meet NF-LOC Only			372 NF Daily Threshold				Do Not Meet NF-LOC		
		#	%	Avg. $/Day	Year	$/Day	Difference	Met	#	%	Avg. $/Day	Year	$/Day	Difference	Met	#	%	Avg. $/Day
Total	413	137	33%	$ 206.01					230	56%	$ 71.81					46	11%	$ 64.13
Total Adults	332	84	25%	$ 200.28					209	63%	$ 72.58					39	12%	$ 60.84
Total Children	81	53	65%	$ 215.09					21	26%	$ 64.21					7	9%	$ 82.45
BI	15	7	47%	$ 232.97	FY17-18	$478.93	$ 245.96	Y	6	40%	$ 123.71	FY17-18	$ 196.76	$ 73.05	Y	2	13%	$ 264.56
CHCBS	34	17	50%	$ 167.32	FY17-18	$863.98	$ 696.67	Y	11	32%	$ 42.07	FY17-18	$ 196.76	$ 154.69	Y	6	18%	$ 96.19
CLLI	17	9	53%	$ 292.56	FY17-18	$863.63	$ 571.07	Y	7	41%	$ 101.00					1	6%	$ -
SCI	15	10	67%	$ 258.64	FY17-18	$474.04	$ 215.41	Y	4	27%	$ 24.69	FY17-18	$ 196.76	$ 172.07	Y	1	7%	$ 47.95

H-LOC Outcome Table 2: Analysis of H-LOC Eligibility and Costs Across BI, CHCBS, CLLI, and SCI Waivers for 100.2 Items

Waiver	# of Participants	Meet Hospital LOC			372 Hospital Daily Threshold				Meet NF-LOC Only			372 NF Daily Threshold				Do Not Meet NF-LOC		
		#	%	Avg. $/Day	Year	$/Day	Difference	Met	#	%	Avg. $/Day	Year	$/Day	Difference	Met	#	%	Avg. $/Day
Total	413	63	15%	$ 267.93					327	79%	$ 91.64					23	6%	$ 64.13
Total Adults	332	34	10%	$ 267.72					278	84%	$ 88.38					20	6%	$ 60.84
Total Children	81	29	36%	$ 268.19					49	60%	$ 110.46					3	4%	$ 82.45
BI	15	2	13%	$ 300.87	FY17-18	$478.93	$ 178.06	Y	12	80%	$ 161.03	FY17-18	$ 196.76	$ 35.73	Y	1	7%	$ 264.56
CHCBS	34	4	12%	$ 250.97	FY17-18	$863.98	$ 613.02	Y	28	82%	$ 95.97	FY17-18	$ 196.76	$ 100.79	Y	2	6%	$ 96.19
CLLI	17	8	47%	$ 225.18	FY17-18	$863.63	$ 638.45	Y	8	47%	$ 192.33					1	6%	$ -
SCI	15	7	47%	$ 259.68	FY17-18	$474.04	$ 214.36	Y	5	33%	$ 123.91	FY17-18	$ 196.76	$ 72.85	Y	3	20%	$ 47.95