ENGELBERG CENTER for Health Care Reform at BROOKINGS

"Keeping the Promise: Site of Service Medicare Payment Reforms"

Supplemental Materials: Figures 1-6

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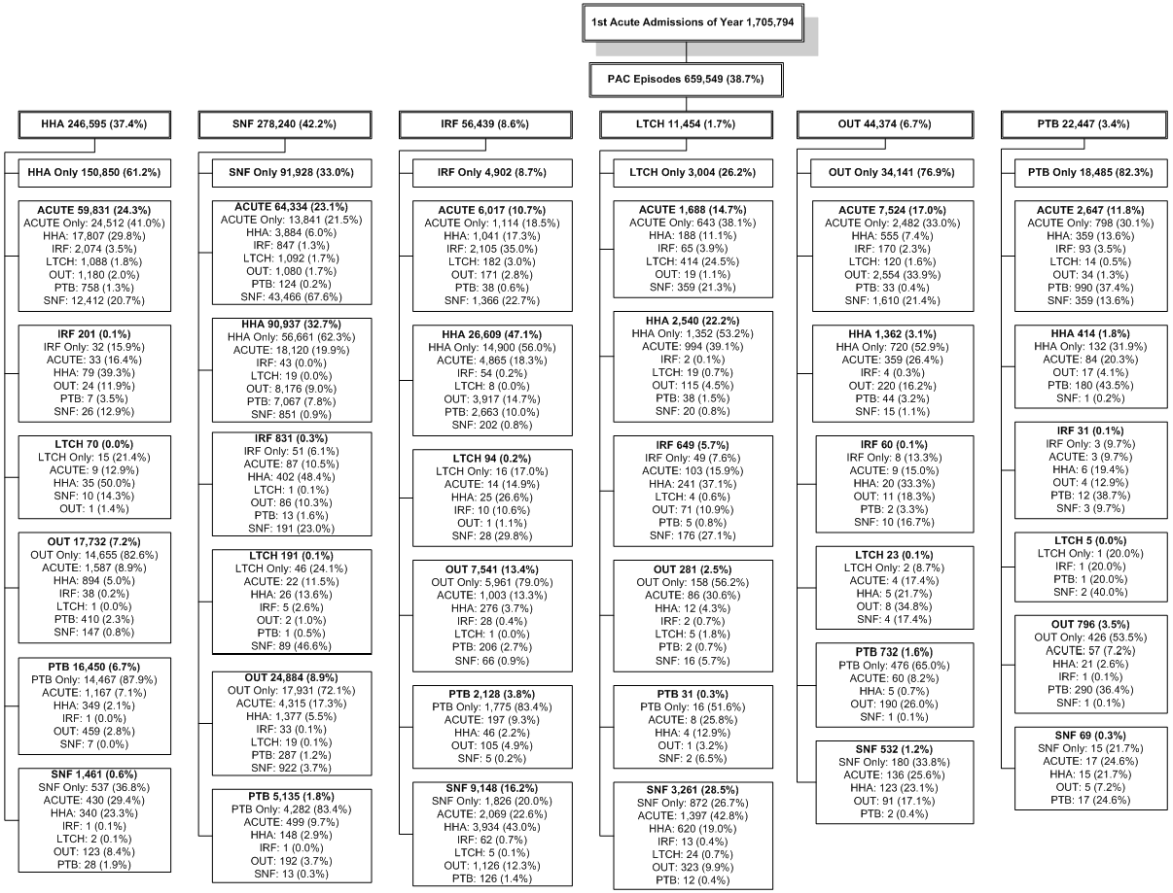
Figure 1: Post-acute care transitions after acute hospital discharge, 2008



Source: Post-Acute Care Payment Reform Demonstration Final Report, B. Gage, et al., March 2012, CMS Contract No. HHSM-500-2005-00029I

Figure 2: Type of PAC Used Varies by Reason for Hospitalization

Acute Index DRG[1]	Discharges for PAC Users	Percent Using PAC[2]	Percent of Beneficiaries Discharged to Each Setting[3] LTCH	IRF	SNF	HHA	Outpatient
544: Major Joint Replacement or Reattachment of Lower Extremity	16,281	87.3	0.3	19.4	37.3	35.7	7.4
014: Specific Cerebrovascular Disorders Except TIA	4,882	68.1	1.8	34.4	36.8	19.7	8.6
089: Simple Pneumonia & Pleurisy Age >17 w CC	4,876	33.8	1.2	1.8	47.3	37.4	12.2
127: Heart Failure & Shock	4,098	33.7	1.1	1.9	39.1	49.4	8.6
210: Hip & Femur Procedures except Major Joint Age >17 w CC	3,662	87.8	1.1	26.3	63.9	7.1	2.8
088: Chronic Obstructive Pulmonary Disease	2,439	25.3	1.8	2.3	32.4	52.2	11.3
320: Kidney & Urinary Tract Infections Age >17 w CC	2,396	42.3	0.7	2.0	63.6	25.1	8.7
416: Septicemia Age >17	1,996	40.1	3.5	3.0	57.8	26.0	9.8
316: Renal Failure	1,848	36.2	1.5	2.5	53.2	31.9	10.9
296: Nutritional & Misc Metabolic Disorders Age >17 w CC	1,757	35.5	0.7	3.0	53.7	32.5	10.1
243: Medical Back Problems	1,565	52.8	0.7	9.9	52.0	27.9	9.5
174: G.I. Hemorrhage w CC	1,455	22.6	0.7	2.3	48.0	37.9	11.2
182: Esophagitis, Gastroent & Misc Digest Disorders Age >17 w CC	1,445	17.9	0.8	2.8	42.2	41.6	12.7
148: Major Small & Large Bowel Procedures w CC	1,437	46.4	4.2	4.4	38.2	50.3	2.9
079: Respiratory Infections & Inflammations Age >17 w CC	1,370	46.2	2.8	1.9	61.8	26.0	8.6
121: Circulatory Disorders w Ami & Major Comp Disch Alive	1,363	45.8	1.8	4.3	50.6	38.7	4.6
138: Cardiac Arrhythmia & Conduction Disorders w CC	1,234	21.9	0.7	2.4	39.2	47.7	10.1
277: Cellulitis Age >17 w CC	1,205	38.7	1.9	1.5	38.8	46.2	11.6
209: Fractures of Hip & Pelvis	1,084	81.3	0.7	14.7	68.3	12.8	6.8
546: Revision of Hip or Knee Replacement	1,037	83.8	1.2	20.3	34.4	37.9	8.3

Source: Gage, et al. Examining post-acute care relationships in an integrated hospital system, ASPE.

Notes:

- Probability of using PAC varies by reason for hospitalization – rehabilitation cases have higher share using PAC, medical cases have lower share using PAC
- Same type of hospital cases may be discharged to more than one setting – rehabilitation cases have large shares discharged to IRF and SNF while medical cases have large shares discharged to SNF and HH

Figure 3: Readmission from PAC by Index DRG

	N PAC Users	Mean Episode Payments	Percent with Readmission	Mean Readmission Payments
Overall Sample of PAC Users	109,236	$30,028	30.5	$15,636
Index Acute Admission DRG[1] (Top 10 DRGs for PAC Users)				
544 Major Joint Replacement or Reattachment of Lower Extremity	15,261	$23,985	14.3	$12,952
014 Specific Cerebrovascular Disorders Except TIA	4,882	$33,484	32.6	$13,409
089 Simple Pneumonia & Pleurisy Age >17 w CC	4,675	$20,476	31.6	$13,023
127 Heart Failure & Shock	4,096	$26,076	43.1	$17,449
210 Hip & Femur Procedures except Major Joint Age >17 w CC	3,552	$36,882	30.6	$12,919
088 Chronic Obstructive Pulmonary Disease	2,439	$21,118	36.3	$14,888
320 Kidney & Urinary Tract Infections Age >17 w CC	2,396	$22,039	31.8	$12,994
416 Septicemia Age >17	1,996	$30,627	33.1	$16,956
316 Renal Failure	1,848	$28,729	38.4	$16,999
296 Nutritional & Misc Metabolic Disorders Age >17 w CC	1,757	$22,852	33.1	$15,078

Source: Gage, et al. Examining post acute care relationships in an integrated hospital system. ASPE.

Notes:

Probability of readmission varies by type of case – rehabilitation cases have lower share being readmitted within 30 days, medical cases have a higher share being readmitted within 30 days

Figure 4: Determinants of Resource Intensity

The importance of variables by setting – routine RII

(For the individuals setting models there are similarities and differences in the strongest variables. Motor scores, the comorbidity index and age are highly correlated with resource intensity in each setting, but additional factors vary by setting)

LTCH Model	Score
ICU Days	100.0
Ventilator	29.1
Prim dx: Vent/Trach	25.2
No Intake by Mouth	21.6
Rasch Self-Care Score	17.3
Rasch Mobility Score	12.1
Comorbidity Index	12.0
Age	8.2
Prim dx: Septicemia	6.9
Pressure Ulcer	3.8

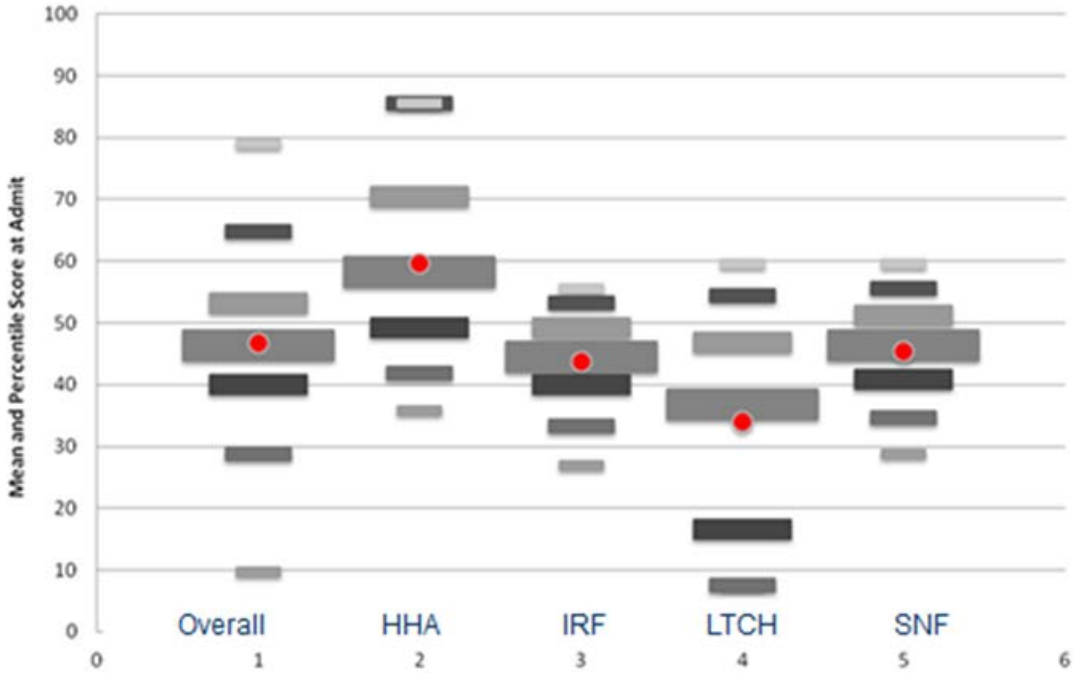
SNF Model	Score
Rasch Mobility Score	100.0
Rasch Self-Care Score	86.4
Comorbidity Index	80.9
Sitting Endurance	44.6
Cognitive Function	16.5
Expression	12.8
Age	11.2
Prim dx: Ortho Maj Med	7.8
Prim dx: Ortho Maj Surg	6.1
Comorb dx: Cellulitis	5.0
Bowel Incontinence	5.0
Prim dx: Kidney Med	5.0

IRF Model	`Score
Comorb dx: Hd/Spine	100.0
Rasch Self-Care Score	92.5
Rasch Mobility Score	77.6
Comorbidity Index	67.9
Age	59.3
No Intake by Mouth	51.2
Sitting Endurance	48.1
Bowel Incontinence	29.1
Prim dx: Neuro Surg	28.5
Expression	25.7
Bowel Catheter	24.2
Bladder Incontinence	16.9
Swallowing Symptoms	16.6

Notes:

- Function (self-care and mobility), comorbidity index, and age are highly correlated with resource need across all settings
- Other factors associated with resource need varied by setting in importance but some overlap also remained
    - LTCHs: infections/septicemia and pressure ulcers
    - SNFs: endurance, cognition affected resource intensity followed by certain medical conditions, incontinence
    - IRFs: endurance, bowel/bladder problems, swallowing symptoms

Figure 5: Unadjusted Self Care at Admit by Provider Type



Key
HHA: Home Health Agency
IRF: Inpatient Rehabilitation Facility
LTCH: Long term acute care hospital
SNF: Skilled nursing facility

Notes:

- Low Functioning = 0; High Functioning = 100
- Average functional status (red dot) at admission differs by setting with LTCHs admitting the lowest and HHA admitting the highest functioning cases. However, the variation in the range of function at admission overlaps across settings (gray bars)

Figure 6: Effect of Provider Type Adjusted for Case Mix

	Estimate for All Patients (n = 12,065)	Estimate for Musculoskeletal Patients (n = 3,492)	Estimate for Nervous System Patients (n = 1,756)
CHANGE IN SELF CARE			
HHA	4.02** (n = 3,190)	4.35** (n = 810)	2.80 (n = 361)
IRF	3.75** (n = 4,158)	3.10 (n = 1,463)	3.93** (n = 1,096)
LTCH	0.74 (n = 1,968)	-1.91 (n = 122)	0.67 (n = 86)
SNF (referent)	-- (n = 2,749)	-- (n = 1,097)	-- (n = 213)

Case mix variables included demographic factors, primary and comorbid diagnoses, impairments

Notes:

After controlling for medical conditions, comorbid diagnoses, impairments and demographics, the extent to which PAC patient's improved in their ability to do self care/ADL tasks varied by condition.

- While HHA orthopedic/musculoskeletal patients gained 25 % higher scores than SNF patients, the nervous system/stroke patients improvement was not different than the degree to which SNF patients' improved
- IRF patients' improvement was not significantly different than SNF patients' improvement in musculoskeletal populations but the nervous system populations' was almost 25 % greater than