

From Simulation to Solution: Simulation-Driven Insights and Initial Outcomes of a Hospital at Home Program

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BACKGROUND

Hospital at Home (H@H) → equivalent or improved outcomes compared with traditional hospitalization^{1,2}

UChicago Medicine's H@H program enrolled its first patient in February 2023 following a multidisciplinary planning phase, which included simulations and iterative process design

- 1 Work sessions
- 2 Tabletop simulations
- 3 "Day in the life"

1. Caplan et al., 2012
2. Arsenault-Lapierre et al., 2021

AIMS

1. Outline planning process and major learnings from preparation and simulation of H@H
2. Compare initial H@H outcomes with those of traditional brick & mortar (B&M) patients

METHODS

- Issues identified during simulation and grouped by theme
- Medical, home, and caregiver criteria → H@H enrollment
- Demographics and outcomes collected in Epic as a part of routine care and subsequently queried
- Descriptive statistics, with t-test, Fisher's exact test, and Wilcoxon rank-sum as appropriate, in R



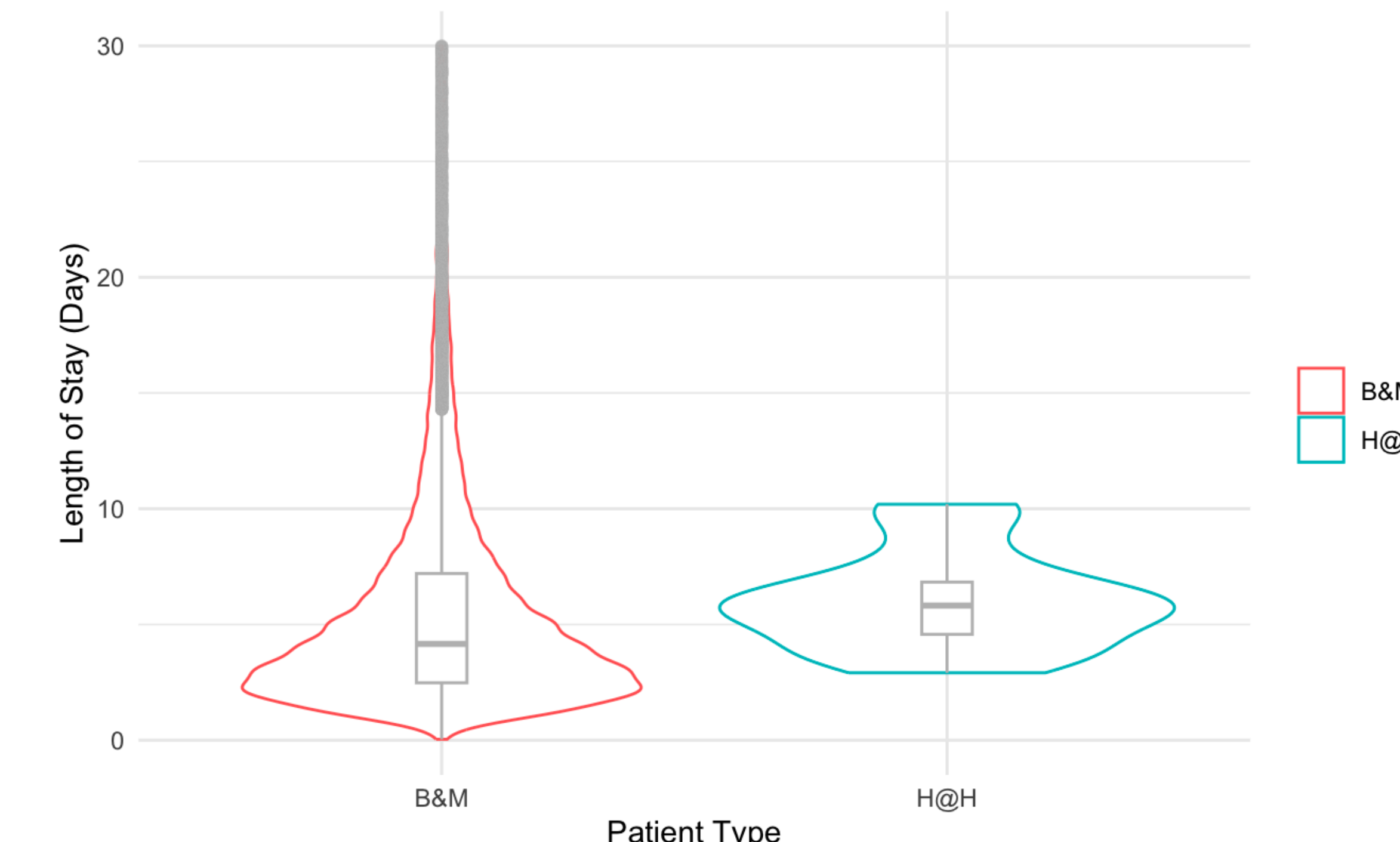
RESULTS

Table 1. H@H patient characteristics reflect those of brick & mortar (B&M) patients.

	HaH patients (n=16)	B&M patients on Medicare and Medicaid (n=29578)	P
Age at admission, mean (SD)	60.9 (23.6)	60.0 (19.8)	0.74
Race, n			0.47
Non-Hispanic Black	14 (88%)	20719 (70%)	
Non-Hispanic White	1 (6%)	4830 (16%)	
Hispanic or Latino	1 (6%)	1584 (5%)	
Other and unknown	0 (0%)	2445 (8%)	
Marital status, n			0.88
Single, divorced, separated, or widowed	13 (81%)	21291 (72%)	
Married, civil union, or lifetime partner	3 (19%)	7180 (24%)	
Unknown	0 (0%)	1107 (4%)	
Primary language, n			0.49
English	15 (94%)	28352 (96%)	
Spanish	1 (6%)	662 (2%)	
Other	0 (0%)	303 (1%)	
Unknown	0 (0%)	261 (1%)	
Payer			0.61
Medicare	11 (69%)	17737 (60%)	
Medicaid	5 (31%)	11839 (40%)	
CMI (case mix index), median (IQR)	1.1735 (0.3606)	1.3872 (1.1825)	0.12

RESULTS (cont.)

Figure 1. Median length of stay in days is comparable in H@H and B&M patients (5.95 H@H vs. 4.44 B&M, p=0.08).

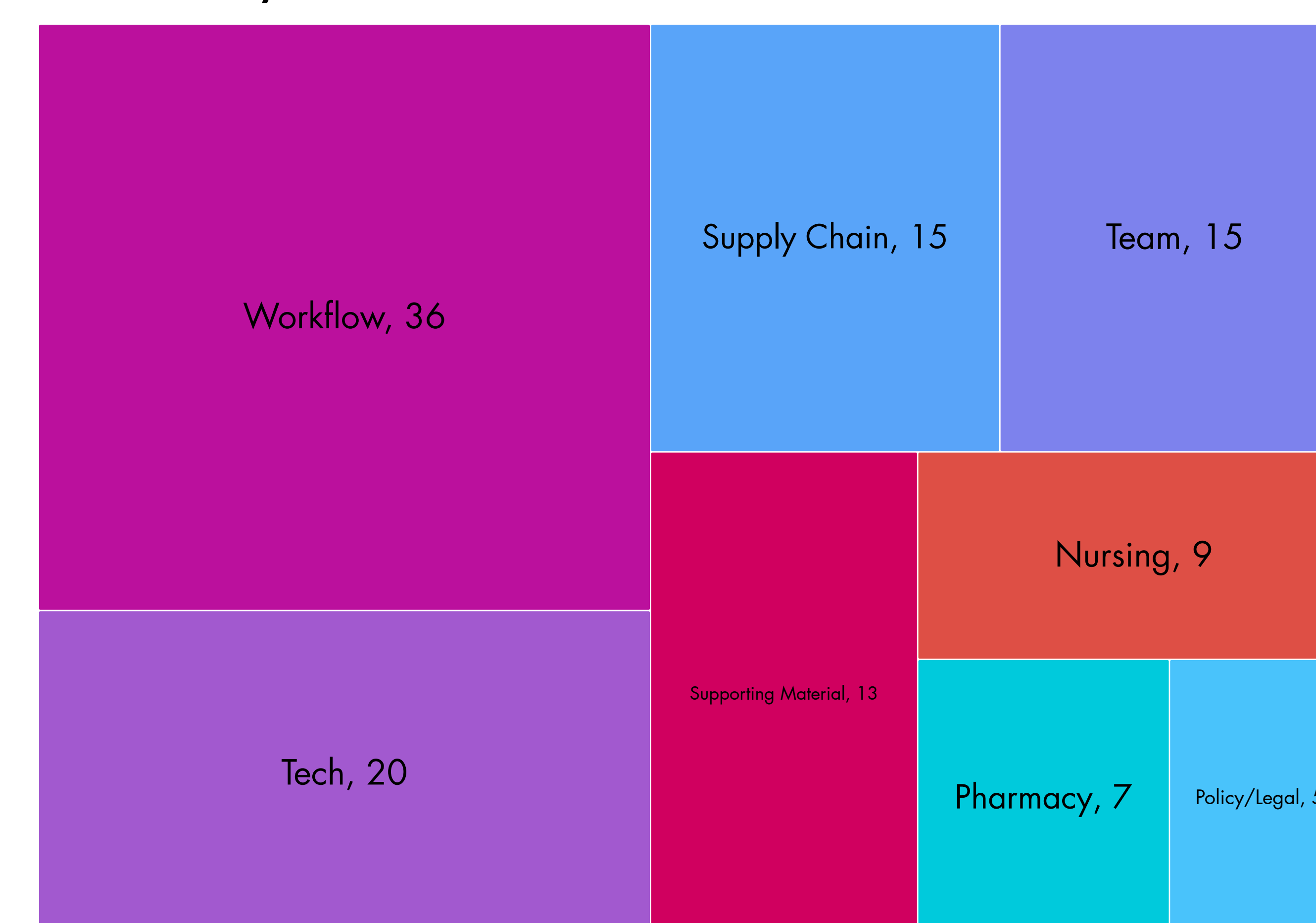


Outliers (more than 3 standard deviations from the mean) are not pictured.

H@H patients have a lower 30-day readmission rate, but the difference is not statistically significant (p=0.71).

6% vs. **13%**
H@H 30-day readmission rate vs. B&M 30-day readmission rate

Figure 2. Issue themes identified through tabletop and "day in the life" simulations.



CONCLUSIONS

- Simulation identified 120 process issues in 8 domains
- H@H enrolled 16 patients, saving over 50 bed days
- Initial H@H patient outcomes were noninferior to those of B&M patients

LIMITATIONS

- Small HaH sample size
- Limited to Medicare/Medicaid patients

NEXT STEPS

1. Incorporate additional outcomes data (e.g., Press-Ganey responses measuring patient experience) and additional H@H enrollees
2. Compare patient experience across socioeconomic status
3. Refine B&M comparison group

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