Real-World Quality, Safety, and Utilization Outcomes of >7000 Home Hospitalizations Compared to Brick-and-Mortar:
A Target Trial Emulation

Nancy Anoruo MD MPH[1,2], Henry Ssemaganda MD MS[2,3], Saheba Shaikh MPH[2,3], David Levine MD MPH[1,2]

1. Brigham & Women's Hospital. 2. Harvard Medical School. 3. Mass General Brigham Health System.

A 5-year study found HH was associated with fewer iatrogenic complications and lower post-discharge hospital utilization, but higher rates of AKI and longer length of stay.

These findings support the overall safety and effectiveness of HH, but also suggest HH may not be uniformly beneficial across all clinical domains.

Background

Evidence comparing Home Hospital (HH) with brick-and-mortar (BAM) hospitalization has largely derived from small, single-site trials.[1,2] We used target trial emulation to **compare outcomes across multiple domains of quality, safety, and healthcare utilization for >7,000 HH hospitalizations spanning five hospitals.**[3]

Methods

- We emulated a randomized controlled trial of HH versus BAM hospitalization using electronic health record data from ten Mass General Brigham hospitals 2020-2025.
- HH eligibility was assessed at presentation and re-assessed each hospital day.
- Eligible HH episodes were matched to BAM hospitalizations by site, condition, age (±5 years), and calendar quarter.
- Propensity scores were estimated using gradient boosting with 14 clinical and demographic covariates, and inverse probability of treatment weighting was applied.

Results

7,401 HH admissions vs 54,043 BAM admissions, HH was associated with:

Lower

Opioid-related adverse events
OR 0.44, 95% CI 0.34-0.57

Catheter-associated UTI
OR 0.46, 95% CI 0.22-0.93

Delirium
OR 0.42, 95% CI 0.33-0.53

72-hour post-discharge mortality
OR 0.11, 95% CI 0.018-0.40

30-day ED visits
OR 0.82, 95% CI 0.73-0.93

30-day readmissions
OR 0.89, 95% CI 0.81-0.98

Higher

Acute kidney injury
OR 2.24, 95% CI 1.52-3.37

Length of stay
6.81 versus 5.91 days; p<0.001

References (1) Edgar K, Iliffe S, Doll HA, Clarke MJ, Gonçalves-Bradley DC, Wong E, Shepperd S. Admission avoidance hospital at home. Cochrane Database of Systematic Reviews 2024. (2) Shepperd S, Doll H, Angus RM, et al. Avoiding hospital admission through provision of hospital care at home: a systematic review and meta-analysis of individual patient data. CMAJ. 2009. (3) Ren Y, Jia Y, Liu L, Lyv H, Tao L, Li Y, Zhao P, Xiong Y, Li G, Xu J, Liu C, Lu Y, Zou K, Tan J, Sun X. Design and Implementation of Observational Studies Emulating a Target Trial. JAMA Netw Open. 2026.

Acknowledgements | Special thanks to **Dr. Jocelyn Carter** of Massachusetts General Hospital & **Ariadne Labs** of Brigham & Women's Hospital and Harvard T.H. Chan School of Public Health.

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