

Title: The Next Frontier of Inpatient Care: A Comparative Analysis of Hospital at Home Program and Traditional Brick-and-Mortar Quality Outcomes

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Background & Objective: The Mayo Clinic in Arizona (MCA) set out to deploy a hospital at home program to decompress the unprecedented need for hospital beds pre-dating the demands of the COVID-19 pandemic by leveraging technology to create new programmatic offerings for inpatient status patients. This led to the creation of our Advanced Care at Home (ACH) program where we provide safe, high-quality, inpatient-level services to patients in their homes to reduce or avoid brick-and-mortar admissions. The program is designed to transition patients with diagnoses traditionally managed in a hospital to a home setting. Patients are carefully reviewed to determine their eligibility based on social assessment, clinical status, and distance from the hospital. ACH provides patients with 24/7 care team support through in-person and virtual visits, virtual monitoring, portable testing and treatments through service providers, supplies and medications delivered directly to their home. The in-home technology includes a tablet and phone to connect with their care team, an emergency response bracelet, vital sign monitoring devices, and a backup power supply. The ACH program aims to:

- Provide high-quality inpatient status patient care equivalent to or exceeding that of traditional brick-and-mortar hospitalizations
- Eliminate or shorten the duration of patient brick-and-mortar admissions
- Increase hospital capacity and efficiency, by transitioning appropriate patients to a home setting, while also reducing hospital readmissions
- Improve patient access, outcomes, and satisfaction by allowing patients to heal where they are most comfortable
- Decrease patient costs for preventable brick-and-mortar admissions

Methods: We compared quality outcomes for patients admitted to ACH and all of MCA between 2021 and 2023. Our analysis considered mortality and readmission rates, length-of-stay (LOS), and patient experience. Mortality, readmission, and LOS were compared among patients admitted with one of the top six Medicare Severity Diagnosis Related Groups (MS-DRGs) among ACH-admitted patients. Mortality and LOS metrics were risk-adjusted using the Vizient Risk-Adjustment Methodology. Readmissions were risk-standardized based on CMS methodology and include unplanned and planned readmissions, including readmissions for COVID-19. Patient experience was measured using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a national, standardized survey.

Results: By 9/30/23, there had been 324 admissions to ACH, saving 1,351 hospital bed days. Most quality outcomes for ACH patients are comparable to outcomes for brick-and-mortar patients. Zero mortalities occurred among ACH patients, while the percentage observed for all MCA inpatient units was 3.53%. The average expected mortality was 0.03 and 0.08 respectively, indicating higher complexity of patients in the latter group. In the first few quarters of the program's existence, readmissions were much higher than expected but observed/expected ratios have dropped significantly since then, from 7.69 (LCI: 5.51, UCI: 14.69) in Q4 2021 to 0.21 (LCI: 0.15, UCI: 0.40) in Q2 2023. The ratio for all MCA inpatient units during the same period remained steady, averaging at 1.15 (LCI: 0.85, UCI: 2.17). Patients also report satisfaction with ACH, with the quarterly top-box score for likelihood to recommend averaging at 92.7% since program inception. The inpatient likelihood to recommend top-box score has averaged at 91.4% in the same period. LOS provides an opportunity for improvement for ACH. The average LOS was 6.5 days for ACH patients and 5.4 days for all MCA inpatient units; the LOS observed/expected ratio was 1.2 and 0.8, respectively.

Next Steps: As hospital-at-home programs continue to gain prominence, measuring and improving quality of care will continue to be paramount. Trending data on mortality and patients returned to brick-and-mortar for escalation of care will be important for identifying opportunities and adjusting acuity of patients within the program. Hospitals looking to establish a hospital at home program should consider: 1) Establishing clear and consistent guidelines for patient eligibility, admission, discharge, and transfer, based on clinical evidence, patient preferences, and available resources, and 2) Developing standardized protocols and pathways for delivering evidence-based care in the home setting.

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