Innovative Home Visit Models Associated with Reductions in Costs, Hospitalizations, And Emergency Department Use

Take Away Points

- An evaluation of five practice-extender models (CAPABLE, DASH, ABC, Stroke Mobile, and AIM) showed that four of the five models produced significant reductions of Medicare expenses, hospitalizations, or emergency department visits relative to comparator groups.
- In particular, practice-extender models that included care coordination and patient/consumer engagement were associated with improved outcomes.
- Qualitative analyses of focus groups and interviews and direct observations of model implementation revealed improved quality of care across many themes including increased confidence in self-management (5 models), positive change in health behavior (4 models), improved communication (4 models), and reduced burdens of caregiving (3 models).

The Issue

Functional limitations affect many older adults, often delaying care, leading to increased risks of preventable visits to the emergency department, hospital admissions, or nursing home stays. In addition, barriers, such as lack of transportation, may prevent patients from seeking care. Home visits provide opportunities to reach patients with multiple chronic conditions before a change in condition necessitates a higher level of care.

Previous clinician-based home visit reviews indicate the potential for reductions in emergency department visits, hospitalizations, and improved patient satisfaction. However, most of these studies have focused on the delivery of physician-provided care rather than patient-extender models which utilize registered nurses or lay health workers and are organized around care coordination or patient/consumer engagement.

This study assesses the effectiveness of five different patient-extender home visit models using registered nurses or lay health workers as lead staff for home visits of Medicare fee-for-service patients. The models included Indiana University's Aging Brain Care (ABC), Ochsner Health System's Stroke Mobile, Johns Hopkins University School of Nursing's Community Aging in Place, Advancing Better Living for Elders (CAPABLE), Sutter Health's Advanced Illness Management (AIM) Palliative Care Consultants of Santa Barbara's Doctors Assisting Seniors at Home (DASH). Lead home visit staff for CAPABLE, DASH, and AIM were registered nurses; lead staff for Stroke Mobile and ABC were lay health workers.

Study Methods and Design
Two types of analyses were performed: claims-based quantitative analysis and qualitative analysis.

Claims Based Analysis (Quantitative): The sample was constructed of 5,861 subjects, consisting of participants enrolled in models for any part of the period July 2012–December 2015 and unenrolled comparators matched to each participant. Propensity score models were developed with consultation

with five research teams and the matching models included demographic characteristics, comorbidities, and previous cost and utilization. A difference-in-differences approach was used to evaluate four programs, ABC, CAPABLE, DASH, and Stroke Mobile and compare the average outcomes of the treatment versus comparator group. Model participants and matched comparators were followed for two years prior to enrollment and up to three years after enrollment in the program. The last model, AIM, was analyzed via retrospective time-series using claims data for the two years prior to death.

Qualitative Analysis: Qualitative data was obtained for each model from March 2014-December 2015. Data sources include telephone interviews with model leadership; site visits that include focus groups and interviews with staff, patients, and caregivers; and direct observation of home visits. Other relevant data includes models' self-reported documents and information. The data was analyzed based on CMS's evaluation design for home visit models and impacts on quality of care, using a theme-based coding scheme.

Key Findings and Limitations
Quantitative Analysis:
- CAPABLE: There was a reduction in total Medicare expenditures for model participants in contrast to comparators (-$2,765 per quarter, per patient; 95% CI [-$4,963, -$567]).
- DASH: There was a significant reduction in emergency department visits (-24 visits per quarter, per 1,000 patients; 95% CI [-36, -12]) and hospitalizations (-17 per quarter, per 1,000 patients; 95% CI [-25, -9]) for the model participants in relation to the comparator group.
- AIM: There were significant reductions in hospitalizations (-76 per quarter, per 1,000 patients; 95% CI [-100, -51]), and Medicare expenses (-$5,985 per quarter, per patient; 95% CI [-$7,010, -$4,959]) during the last thirty days of life for model participants relative to the comparator group. However, there was an increase in ED visits, 30 per quarter per 1,000 patients, (95% CI [11, 49]).
- Stroke Mobile: There were significant reductions in hospitalizations for model participants (-52 per quarter, per 1,000 episodes; 95% CI [-113, -8]).
- ABC: There were no significant findings.
Qualitative Analysis:
- Participants from all 5 models reported increased self-management confidence.
- Participants from four models (AIM, CAPABLE, DASH, and Stroke Mobile) improved self-management in health behavior.
- Participants from four models (ABC, AIM, DASH, and Stroke Mobile) reported improved physician communication.
- Participants from three models (ABC, AIM, and DASH) reported reduced caregiver burden (physical, social, emotional, and/or financial).

Limitations
- Covariates are limited to those that were available and reliable in Medicare claims data, therefore, measures such as disease severity or functional status were not included.
- Because of the evaluation included only Medicare fee-for-service beneficiaries, findings are only generalizable to Medicare population, and the evaluations of CAPABLE and Stroke Mobile model were underpowered with only a 10 percent chance of detecting significant differences

Final Thoughts
Though sharing key components related to care coordination and patient engagement, given the models' diversity in target populations, staffing, and set of components, it is important to consider each practice-extender home visit model on its own terms.