

Unfulfilled Home Health Referrals Lead to Higher Mortality Among Medicare Advantage Members

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The number of Medicare beneficiaries is projected to grow to more than 80 million by 2030, up from 54 million in 2015.¹ Meanwhile, the percentage of total Medicare beneficiaries enrolled in a Medicare Advantage (MA) plan increased steadily from 19% in 2007 to 51% in 2023.² To deliver high-quality member-centered care while controlling costs, MA plans need to optimize treatment of their members in the home setting.³⁻⁵

There may be a role for home health during the posthospital period to provide continuity of care in the home. To qualify for home health services according to CMS, members must be certified by the referring physician as homebound and possess an intermittent, skilled need to be addressed by a home health clinician such as a nurse or therapist.⁶ Based on these criteria, members referred to home health may experience more barriers to full recovery than nonreferred members discharged home.

Not every member who is referred to home health ultimately receives home health services for a variety of member- and health care system–related reasons.^{7,8} Literature comparing the outcomes of home health–referred members who receive home health services with those who do not is sparse. It was previously shown in a Medicare fee-for-service population that receipt of home health services following hospitalization was associated with lower mortality and lower readmissions.⁹ Here, we hypothesize similar outcomes for a MA population.

METHODS

This investigation used a retrospective quasi-experimental design with a control group. Members were identified within a medical claims database consisting of a convenience sample of MA beneficiaries in 2-sided risk plans residing in 1 state and seen in practices that are part of a nationwide health care delivery organization. The deidentified data were extracted from the claims database provided by the health care delivery organization. Members were included if they had an acute admission to the hospital with a discharge disposition of home health on the inpatient claim from January 2021 to October 2022 (index event). Members were excluded if

ABSTRACT

OBJECTIVES: Medicare Advantage (MA) members referred to home health after inpatient hospitalization may or may not receive these services for a variety of member- and health care system–related reasons. Our objective was to compare outcomes among MA members referred to home health following hospitalization who receive home health services vs those who do not.

STUDY DESIGN: Retrospective quasi-experimental study.

METHODS: Following acute hospitalization, members with discharge orders to receive home health services between January 2021 and October 2022 were identified in a medical claims database consisting of MA beneficiaries. Members who received services within 30 days of discharge were balanced using inverse propensity score weighting on member- and admission-related covariates with a comparator group of members who did not receive services. Primary outcomes included mortality and readmissions in the ensuing 30, 90, and 180 days. Secondary outcomes included emergency department visits, primary care visits, and per-member per-month costs.

RESULTS: The home health–treated group consisted of 2115 discharges, and the untreated group consisted of 761 discharges. The treated group experienced lower mortality at 30 days (2% vs 3%, respectively; OR, 0.58; 95% CI, 0.36-0.92), 90 days (8% vs 10%; OR, 0.77; 95% CI, 0.60-0.98), and 180 days (11% vs 14%; OR, 0.81; 95% CI, 0.65-0.99). The treated group also experienced higher readmissions at 30 days (13% vs 10%; OR, 1.26; 95% CI, 1.01-1.60), 90 days (24% vs 16%; OR, 1.69; 95% CI, 1.39-2.05), and 180 days (33% vs 24%; OR, 1.52; 95% CI, 1.29-1.79).

CONCLUSION: MA members referred to home health after acute hospitalization who did not receive home health services had higher mortality.

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they were admitted directly to intensive care or admitted electively, if they were not in value-based compensation programs with providers taking on full risk, if they were not continuously enrolled in an MA program for the duration of the study period, if they were enrolled in a special needs plan, if they had end-stage kidney disease, if they were enrolled in hospice, or if they had incomplete data. Home health–treated and untreated assignment was based on the use of home health services within 30 days following discharge or lack thereof. Members who were referred to home health and received home health services were assigned to the treated group (home health care [HHC]), and members who were referred to home health but did not receive home health services were assigned to the untreated group (no HHC) (Figure 1).

Inverse propensity score weighting was used to balance member and admission characteristics between groups.¹⁰⁻¹² The propensity score was derived by logistic regression to assign a probability to each member’s exposure using member demographics, medical conditions, utilization, and costs as well as admission characteristics including detailed diagnosis type, medical or surgical admission, and hospital of service as covariates. Additionally, prior enrollment in other home-based interventions, such as urgent care at home and palliative care, were included as covariates in the propensity scoring process. There were 64 distinct dimensions producing 319 covariates related to the patient and hospital admission, and balance was assessed using strictly standardized mean differences with a threshold of less than 0.10. Propensity scores were trimmed for weighting such that scores that were less than 0.05 were assigned a weight at the fifth percentile and scores greater than 0.95 were assigned a weight at the 95th percentile.

Each outcome was modeled according to its underlying probability distribution. Readmissions and mortality were modeled using logistic regression in the postindex period. Emergency department visits and primary care provider visits were modeled using negative binomial regression, and medical per-member per-month cost was modeled using a γ distribution, with a difference-in-difference estimation on the weighted sample with a significance level of $P < .05$. Model SEs were estimated using cluster-robust SEs to adjust for member-level correlation between preindex period and postindex period utilization for difference-in-difference estimation. Preindex period refers to 12 months before index event. Postindex period refers to the day of discharge and continues for 30, 90, or 180 days.

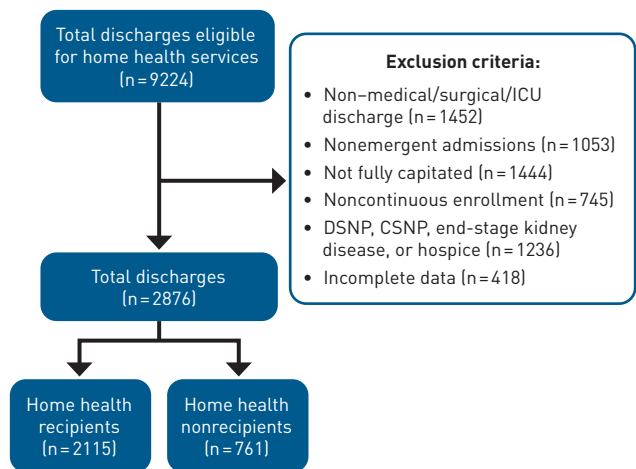
RESULTS

The home health–treated group consisted of 2115 discharges, and the untreated group consisted of 761 discharges. Covariates before (unweighted) and after (weighted) weighting are shown in Table 1.

TAKEAWAY POINTS

- ▶ Following acute hospitalization, Medicare Advantage members with orders to receive home health may not ultimately receive these services for member- and health care system–related reasons.
- ▶ Common reasons for unfulfilled home health referrals include member refusal of service and an inability to contact or locate the member.
- ▶ Among those with discharge orders to receive home health, those who did not receive service experienced significantly higher mortality at 30, 90, and 180 days.
- ▶ Because referring hospital physicians believe that their members will receive home health and may plan their discharges accordingly, it is highly important to address gaps in understanding, anticipate barriers to service, and strengthen communication between inpatient teams and home health agencies.

FIGURE 1. Inclusion and Exclusion Criteria



CSNP, Chronic Condition Special Needs Plan; DSNP, Dual Special Needs Plan; ICU, intensive care unit.

Because members must meet the CMS home health qualification criteria,⁶ covariates were generally balanced before weighting. Among the unweighted covariates, the most substantial differences between treated and untreated groups were seen in the percentage of members with surgical admissions (26% for HHC vs 19% for no HHC) and annualized hospital admissions per thousand (740 for HHC vs 810 for no HHC). After weighting, all covariates were balanced with a strictly standardized mean difference threshold of less than 0.10.

Mortality and readmissions results are shown in Table 2, and trends are shown in Figure 2. The HHC group experienced lower mortality than the no-HHC group at 30 days (2% vs 3%, respectively; OR, 0.58; 95% CI, 0.36-0.92), 90 days (8% vs 10%; OR, 0.77; 95% CI, 0.60-0.98), and 180 days (11% vs 14%; OR, 0.81; 95% CI, 0.65-0.99). The HHC group experienced higher readmissions than the no-HHC group at 30 days (13% vs 10%; OR, 1.26; 95% CI, 1.01-1.60), 90 days (24% vs 16%; OR, 1.69; 95% CI, 1.39-2.05), and 180 days (33% vs 24%; OR, 1.52; 95% CI, 1.29-1.79).

TABLE 1. Baseline Patient Characteristics Before and After Weighting, HHC vs No HHC

Characteristics	HHC unweighted (SD)	No HHC unweighted (SD)	HHC weighted (SD)	No HHC weighted (SD)
Demographics				
Age in years	76.4 (9.8)	75.0 (10.0)	76.2 (10)	76.1 (9.3)
% female	57% (49)	56% (50)	57% (49)	56% (50)
% non-White	24% (43)	28% (45)	24% (43)	26% (44)
% from surgical admission	26% (44)	19% (39)	24% (43)	21% (41)
% enrolled in palliative care	8.2% (27)	9.6% (29)	8.5% (28)	8.9% (28)
Number of chronic conditions	8.3 (3.9)	8.1 (3.9)	8.2 (3.8)	8.1 (4.0)
Discharges in study time frame	2115	761	2115	761
Distinct members	1818	695	1818	695
Preindex period utilization*				
Total medical costs per member per month	\$1986 (\$3259)	\$1960 (\$2912)	\$1951 (\$3117)	\$1912 (\$2882)
Primary care visits/1000 (annualized)	4250 (3480)	4240 (3645)	4270 (3480)	4180 (3660)
Acute hospitalizations/1000 (annualized)	740 (1270)	810 (1160)	750 (1250)	750 (1100)
Emergency department visits/1000 (annualized)	750 (1660)	740 (1850)	740 (1630)	690 (1750)

HHC, home health care.

*Preindex period refers to 12 months before index event.

TABLE 2. Readmission and Mortality at 30, 90, and 180 Days, HHC vs No HHC

Outcome	HHC	No HHC	OR (95% CI)	P	Significance
	(n = 2115)	(n = 761)			
Readmissions					
30 days	275 (13%)	76 (10%)	1.26 (1.01-1.60)	.048	*
90 days	508 (24%)	122 (16%)	1.69 (1.39-2.05)	< .001	*
180 days	698 (33%)	183 (24%)	1.52 (1.29-1.79)	< .001	*
Mortality					
30 days	42 (2%)	23 (3%)	0.58 (0.36-0.92)	.02	*
90 days	169 (8%)	76 (10%)	0.77 (0.60-0.98)	.03	*
180 days	233 (11%)	107(14%)	0.81 (0.65-0.99)	.04	*

HHC, home health care.

*P < .05.

Emergency department visits, primary care provider visits, and per-member per-month costs results are shown in **Table 3**. The HHC group had a greater increase in annualized emergency department visits (+680 visits/thousand), annualized primary care visits (+1613 visits/thousand), and per-member per-month costs (+\$787) at 30 days.

DISCUSSION

The results of this study demonstrate that among MA members referred to home health after acute hospitalization, those who did not receive home health services experienced higher mortality and lower readmissions than those who received these services.

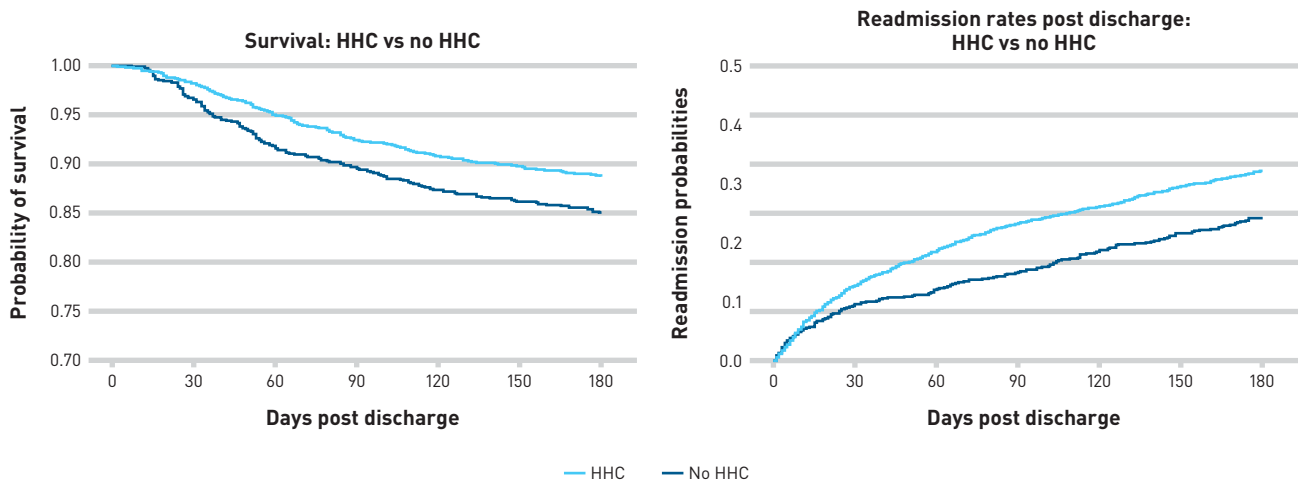
To qualify for home health services, members must be certified by the referring physician as homebound and possess an intermittent,

skilled need.⁶ For these reasons, members referred to home health may experience additional barriers to recovery, such as debility or complications that require closer following. Those members who receive home health services may benefit from additional attention and assistance from health care workers, who may in turn advocate for members and escalate situations that could be life-threatening. The former may involve identifying community resources to address nonacute concerns, and the latter may involve directly transferring a recently hospitalized patient to the emergency department, notifying a member’s surgeon or primary care provider of a decline in a member’s status, or when access presents a challenge, utilizing other network resources such as urgent care, in-home urgent care providers, or an after-hours provider line. Even after evaluation by any of these entities, an unstable member may still require rehospitalization to avoid life-threatening complications.

Members who are referred to home health but who do not receive services do not receive the same attention and care as their counterparts, and this could have grave consequences. In line with other studies, approximately one-third of members fell into this group.^{9,13,14} Home health agencies may attempt to ascertain why members did not receive home health services (**eAppendix Table** [available at [ajmc.com](#)]). A top reason for not receiving services in our study was member refusal. Members may not fully understand home health services or may not be comfortable with letting clinicians into their homes, and in this case, further education of home health services and discussion at the hospital bedside can help prepare members for

what to expect after discharge.⁸ Another noteworthy reason for not receiving home health services was an inability to be contacted or located. Hospital case managers play an essential role in vetting members’ postdischarge needs, yet they may have excessive member loads and responsibilities.¹⁵ Moreover, there may be unanticipated issues that arise after discharge that may not be identified during hospitalization, such as unstable housing situations, financial stressors, or in some areas, connectivity problems that could complicate onboarding with home health. Because referring hospital physicians may believe that their members will receive home health and shape their care plans accordingly, it is highly important to address gaps in understanding, anticipate barriers to service, and strengthen communication between inpatient teams and home health agencies.

FIGURE 2. Survival and Readmission Rates, HHC vs No HHC



HHC, home health care.

TABLE 3. Annualized Differences From Baseline for Emergency Department Visits, Primary Care Provider Visits, and PMPM Costs at 30 and 90 Days, HHC vs No HHC*

Outcome	HHC (n = 2115)			No HHC (n = 761)			DID	P	Significance
	Preindex period	Postindex period	Pre-post difference	Preindex period	Postindex period	Pre-post difference			
Emergency department visits/1000 (annualized)									
30 days	740	1947	1207	690	1217	527	680	.02	*
90 days	740	1298	558	690	811	121	437	.01	*
Primary care provider visits/1000 (annualized)									
30 days	4270	12,045	7775	4180	10,342	6162	1613	.01	*
90 days	4270	7665	3395	4180	6773	2593	802	.01	*
Medical PMPM									
30 days	\$1951	\$4067	\$2116	\$1912	\$3241	\$1329	\$787	.08	
90 days	\$1951	\$3441	\$1490	\$1912	\$2470	\$558	\$932	< .001	*
180 days	\$1951	\$2887	\$936	\$1912	\$2126	\$214	\$722	.001	*

DID, difference in difference; HHC, home health care; PMPM, per member per month.

*P < .05.

*Preindex period refers to 12 months before index event. Postindex period refers to the day of discharge and continues for 30, 90, or 180 days. HHC members have the incremental cost of the home health episode, which is included in medical PMPM. The mean cost per home health episode for this study was approximately \$900.

There have been efforts to determine specific surgical aftercare situations and disease states for which the involvement of home health is beneficial or contrary to the aim of the referral source, and more research is needed in this area.¹⁶⁻²⁵ Referring providers may not have clear guidance on when a referral to home health is the best course of action.¹⁵ In some cases, addressing barriers to follow-up with providers in office or through the involvement of other postacute programs may offer a more direct solution to a member's needs, yet this may not always be possible because of a member's clinical condition, location, or social determinants of health. Home health can serve as an important

extension of the primary team because staff may perform a variety of functions in the home including, but not limited to, assessing and counseling members; reconciling medications; managing wounds, drains, tubes, lines, and drips; administering therapy; coordinating durable medical equipment; arranging follow-up appointments; and addressing social determinants of health needs. Stronger collaborations between referring and outpatient providers and home health, evidence-based protocols in disease and postoperative management, and a robust and consolidated network of posthospital and community resources can benefit home health as it renders care.

Limitations

First, this study focused on a group of MA members in a single region, so findings may not be representative of other areas of the country. In other studies, regional variations have been reported regarding the amount of home health services provided.^{7,26,27} Second, this study did not adjust for the home health agency, the discipline of home health service provided, the number of visits made by home health clinicians, or when within 30 days of discharge an initial visit was made. A follow-up study could involve analyzing home health outcomes based on when care is rendered or by whom. Third, we attempted to control for the involvement of all known transitions-of-care programs, but others could have been involved without being accounted for. Fourth, the scope of this study was members acutely admitted to a medical or surgical unit, yet members may be admitted to the hospital under different circumstances such as directly to intensive care or electively. Similarly, members may receive referrals from other sources such as skilled nursing or community providers, and outcomes for these members may vary from those presented in our work. Fifth, referrals to home health are ultimately at the discretion of referring physicians, and we could not account for factors influencing these decisions. Sixth, although inverse propensity weighting aims to reduce differences, it cannot eliminate all sources of bias. Material differences in unobserved member characteristics such as social determinants of health may exist that could influence the results. However, an important strength of this study was that it captured outcomes among members referred to home health rather than comparing this group with the general population of discharges.

CONCLUSIONS

This quasi-experimental study is the first to our knowledge to compare clinical outcomes among MA members with a disposition to home health to those with home health services vs those who did not. Our findings indicate that members who did not receive home health services experienced higher mortality. This study underscores the importance of clear guidance for clinicians on home health referral criteria, improved member education of home health services, improved assessment of social determinants of health, and improved care coordination. More research is needed to clarify the optimal role for home health following hospital discharge. ■

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eAppendix Table. Reasons Why Members Did Not Receive Home Health (no HHC)

Refusal Reason	Referrals	Percent
(No data listed)	262	34%
Refused service	240	32%
Unable to locate/contact	142	19%
Does not qualify	32	4%
Readmitted before service	16	2%
Other	69	9%
Total	761	100%