Abstract: NBER Coordinating Center on the Economics of AD/ADRD Prevention, Treatment, and Care

Comparing Mortality of Skilled Nursing Facilities Versus Home Health for Medicare Beneficiaries – Stratified by Cognitive Impairment Status

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Research Objective:

Prior studies comparing post-acute care (PAC) in skilled nursing facilities (SNF) versus home health (HH) have reported no meaningful differences in mortality. However, these analyses rarely account for heterogeneity by cognitive impairment among older adults with Alzheimer's disease and related dementias (ADRD). Because older adults living with ADRD are more likely to receive institutional care and may respond differently to PAC intensity and care environments, failing to stratify by cognitive function may obscure meaningful differences in outcomes. Moreover, discharge destination represents not only a clinical decision but also an institutional allocation of Medicare-financed resources. This study evaluates whether 100-day mortality differs between hospital discharges to SNF and HH and whether these differences vary by cognitive impairment status at admission to PAC.

Study Design:

Because some hospital discharges are appropriate only for SNF while others are suitable for HH, direct comparisons may be confounded by selection. To approximate comparisons among Medicare beneficiaries for whom both discharge to SNF and HH were clinically feasible, we conducted a matched retrospective cohort study using Medicare claims from 2012 to 2017 linked to the Minimum Data Set (MDS), Outcome and Assessment Information Set (OASIS), and Health and Retirement Study (HRS). The study included Medicare beneficiaries aged 65 and older who were discharged from hospitals to either SNF or HH for any reason. Discharges with prior hospitalization, SNF, HH, or hospice use within 90 days were excluded. Beneficiaries were classified into two groups: cognitively intact and cognitively impaired, as determined by the first cognitive assessment recorded in MDS or OASIS at admission to SNF or HH. Within each stratum, we estimated propensity scores incorporating demographics, Medicare and Medicaid dual eligibility, functional status, Charlson Comorbidity Index using diagnoses from the index hospitalization, outpatient utilization in the 90 days prior to discharge, and whether beneficiaries reported having available informal caregiving support if needed. We performed a 1:1 nearest neighbor propensity score match and considered the absolute value of standardized mean differences greater than 0.1 as imbalance. We used χ^2 to estimate differences in all-cause 100-day mortality with a two-sided significance threshold of $p < 0.05$.

Population Studied:

Among 27721 hospital discharges, 3050 met the inclusion and exclusion criteria and were included in the analysis: 1536 (50.4%) to HH and 1514 (49.6%) to SNF. Among these discharges, 1806 (59.2%) were

cognitively intact at admission, 1094 (35.9%) had cognitive impairment, and 150 (4.9%) had missing cognitive data.

Principal Findings:

Among the overall matched beneficiaries (n = 1526), mortality was 7.2% for SNF discharges compared with HH discharges (5.0%; $p = 0.0869$). Among matched cognitively intact beneficiaries (n = 924), mortality was 4.8% for SNF discharges compared with HH discharges (3.9%; $p = 0.6277$). Among matched cognitively impaired beneficiaries (n = 544), mortality was 11.4% for SNF discharges and 5.9% for HH discharges ($p = 0.0326$).

Conclusions:

No mortality difference was observed in the overall matched (unstratified) sample or in the cognitively intact matched stratum. However, among beneficiaries with cognitive impairment, discharge to SNF was associated with higher 100-day mortality relative to HH counterparts. This suggests cognitive status is a key factor of heterogeneity in PAC mortality.

Implications for Policy or Practice:

These findings suggest lower observed mortality among beneficiaries with cognitive impairment receiving PAC at HH compared with SNF. Differential mortality by cognitive status indicates potential variation in outcomes across HH and SNF, highlighting the need to examine heterogeneity in causal treatment effects. These results also suggest that current discharge decisions may not fully account for cognitive status, emphasizing the importance of aligning allocation with patient outcomes. Future research should identify which patients benefit most from each setting and examine whether additional outcomes vary by cognitive impairment, including long-term nursing home residence, readmissions, and healthcare costs, to inform both clinical and economic implications of alternative PAC pathways.

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