

### Outcomes of Patients Discharged to Skilled Nursing Facilities After Acute Care Hospitalization

#### Take Away Points

- This study documents that a significant proportion (41%) of patients do not return home after admission to a SNF and the 1- and 3-year risk of death is higher than in the general population.
- With an increasing number of patients discharged to SNFs for PAC, further research is needed to identify interventions and facility-level factors that alter the proportion of patients successfully discharged to home.

#### The Issue

Older patients with acute health care crises often require prolonged recovery beyond hospitalization. As such, an increasing number of older patients are discharged to skilled nursing facilities (SNFs) for post-acute care (PAC), with \$180 to \$200 billion spent on SNF care in 2011. Little is known about patient outcomes or factors that predict a return to independent living following SNF stays. In addition, nearly one quarter of PAC admissions to SNFs result in unplanned 30-day hospital readmissions. Prior research showed worse survival among patients with intensive care unit (ICU), surgical, or trauma care discharged to SNFs compared with those discharged home. Though these data may relate to underlying health conditions, they may also represent opportunities for quality improvement.

The objectives of this study were to: (1) describe the features and outcomes of previously independent elderly patients discharged from an acute care facility to a SNF; (2) identify risk factors associated with failure to discharge home and long-term mortality; (3) develop and test a predictive tool for discharge home, readmission, and 1-year mortality that might be used to inform discussions with patients.

#### Study Methods and Design

Retrospective cohort study of all Medicare beneficiaries who were treated in acute care hospitals for non-trauma surgical, trauma, or CVA diagnoses and subsequently discharged to a SNF between Jan. 2007 and Dec. 2009 in the states of California, Florida, New York, Texas, and Washington. States were selected for their combination of population size, diversity, and geographic distribution. All data obtained through the Research Data Assistance Center (ResDAC, University of Minnesota, MN) from CMS. Claimant master beneficiary summary files were linked to the minimum data set (MDS) assessments from SNF stays and to the National Death Index.

MDS assessments are completed by licensed health care providers and contain approximately 400 clinical items. They are completed at the time of admission, after any clinically significant event, quarterly, and at the time of discharge. The MDS is intended to be a comprehensive assessment of each SNF resident's demographic information, baseline functional capacity, and the individual care and progress throughout the SNF stay.

#### Source

Hakkarainen, T.W. et. al (2015). Outcomes of Patients Discharged to Skilled Nursing Facilities After Acute Care Hospitalization. *Annals of Surgery*.  
<http://ovidsp.tx.ovid.com.ezproxy.uky.edu/sp-3.18.0b/ovidweb.cgi>

Patient exclusions included prior recent stay in a SNF, receiving hospice care either as an inpatient or within 7 days of admission to SNF, and terminal disease with less than 6 months life expectancy. Three primary analyses were performed: (1) first discharge disposition after SNF admission for PAC; (2) post-discharge survival after SNF admission in relationship to diagnosis group and first discharge disposition from SNF; (3) comparison of long-term survival in relationship to clinical and patient characteristics upon admission to SNF. Mortality was confined to 3 years after hospital discharge and includes both patients who died during the index SNF admission and those who died on subsequent readmission to SNF, regardless of first SNF discharge disposition. Analyses were adjusted for age, sex, Charlson comorbidity score, admission priority, length of stay, ICU stay, blood transfusion in hospital, MDS Activities of Daily Living score and cognitive impairment, use of parenteral nutrition at admission to SNF, and the presence of pressure ulcers at admission to SNF.

Washington, Texas, and Florida patient data were used to develop a predictive model, which was then validated using the data from the states of New York and California. Validation was performed by calculating the test statistic using analysis of receiver operating characteristic curves for prediction of 1-year mortality, readmission, and discharge home.

### Key Findings and Limitations

- 416,997 patients admitted to a SNF for the first time after admission to an acute care hospital. There were no differences between states in raw mortality rates, readmission rates, or discharge disposition. 26% of patients died within the first year and 32% within three years of hospital discharge to SNF.
- Among previously independent patients discharged to a SNF, 8% eventually died in a SNF, 29% were rehospitalized and 6% and went to assisted living facility; overall only 61% successfully went from hospital to SNF to home.
- Patients readmitted to an acute care hospital within 7 days had the highest adjusted risk of death over time, but interestingly, were typically younger with fewer comorbid conditions, had shorter hospital stays and better functional status than patients readmitted between 8 and 30 days or after 30 days.
- Patient and clinical characteristics associated with adverse outcome were used to develop a predictive algorithm tool to estimate the probability of discharge home, readmission, and 1-year mortality. Risk factors for mortality and failure to return home were increasing age, male sex, increasing comorbidities, decreased cognitive function, decreased functional status, parenteral nutrition, and pressure ulcers.
- Limitations: Utilization of a Medicare population and the limited data available regarding clinical characteristics and details of care delivery during the acute care hospitalization impact the translation of study findings. Data from the master beneficiary files and MDS assessments allows an assessment of patient conditions. There was no assessment of facility-level characteristics for SNFs such as size, staffing, or mix of payment sources included in the study.

*“An evidence gap related to the likelihood of transition to home or independent living and factors associated with worse outcomes has limited informed decisions by patients, families, and clinicians.”*

### Final Thoughts

- Given that half of all readmissions occurred early (within 7 days) and were associated with higher mortality and costs, quality improvement efforts targeted at reducing early readmissions may improve long-term outcomes.
- The role of SNFs in helping patients return to home has not been well-studied. With little evidence, counseling patients that discharge to a SNF as a step toward their recovery to home may result in unreasonable expectations for patients.