Background

- The Centers for Medicare & Medicaid Services (CMS) are considering site of death, such as hospice, as a quality metric for end-of-life care.
- For inpatient stroke, CMS recently introduced unadjusted mortality as a measure of hospital performance.
- Acute ischemic stroke accounts for ~4% of US inpatients discharged to hospice in recent years, and all stroke accounts for over 5% of all hospice enrollees in the U.S. (<0.01% patients annually). (Table 1)
- Little is known about current practices and trends in discharge to hospice for US stroke admisions.

Objectives

- We sought to determine trends in discharge to hospice for acute stroke and examine patient and regional characteristics associated with hospice discharge.

Methods

- Data Source: Adult acute ischemic stroke patients admitted to hospitals with greater than 50 stroke cases annually were selected from the 2002 through 2011 Agency for Healthcare Research & Quality, Nationwide Inpatient Sample. Regional patterns of care in the Dartmouth Atlas of Healthcare for Medicare beneficiaries in the last 6 months of life were linked by hospital referral region to the Nationwide Inpatient Sample.
- Selection: Only admissions within hospitals with available information on hospice discharge status were considered (78% of all hospitals in the sample) (Figure 3).
- Outcome measures: 1) Trends in discharge to hospice and inpatient death, and 2) the independent effects of patient characteristics and regional patterns of care on hospice discharge.

Statistical Analysis: Significance of trends were evaluated using the Cochran-Armitage test. Differences in categorical and continuous variables were examined using a chi-squared test and Student’s t-test, respectively. Multivariable logistic regression analysis was used to assess the independent effects of patient and regional patterns of care on hospice discharge.

Results

- There were 3,664 hospitals with ≥50 annual stroke admissions from 2002 to 2011:
  - 63% of hospitals were in urban areas, 36% were teaching hospitals, and the average annual stroke volume was 186 (IQR=2-21).
- There were 608,704 stroke admissions from 2002 to 2011:
  - Average age was 71 years (IQR=62-82), 54% were female, 67% were insured by Medicare. Of those with known race, 72% were white.

- Discharge to hospice increased from 0.8% to 6.6% of all admissions, and inpatient deaths declined from 6.7% to 4.3% of all admissions from 2002 to 2011 (Figure 2).
- Approximately 70% of stroke inpatients are discharged to a hospice facility medical facility and the proportion remained unchanged over the time period (P=0.15).
- Increases were greatest among those 85 years of age (23% vs. 18% per year compound annual growth compared to those <85 years, P=0.001) and white patients (24% vs. 18% per year compound annual growth compared to those black patients, P=0.001).

Conclusions

- Utilization of hospice services for stroke inpatients increased over the last decade, with more than quadruple increase in the average hospice discharge rate – while inpatient mortality simultaneously declined.
- Increases in inpatient discharge to hospice were most pronounced among the oldest old and white patients.
- Regional patterns of care, including hospital and ICU utilization and measures, for all Medicare beneficiaries in the last 6 months of life, yet had decreased odds of hospice discharge (1st vs. 4th quartile) (Table 1).

References