Hospitalizations for Acute Stroke in New Jersey: Trends in Volume, Mortality and Patient Demographics

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Background

- This study is part of the ongoing health care quality assessment activities that the New Jersey Department of Health performs to provide information related to Stroke patients in New Jersey.
- The Office of Health Care Quality Assessment of the New Jersey Department of Health (DOH) has been monitoring hospital-level Acute Stroke Mortality levels as part of its annual hospital performance assessment for over 10 years.
- This presentation shows trends in volume of hospitalized acute stroke patients, their demographic characteristics by age, sex and race/ethnicity, and includes in-hospital mortality rates classified by race/ethnicity and sex. It also examines trends in the average length of hospitalizations for acute stroke patients.

Objective

- The objective of the study is to examine trends in volume of acute stroke hospitalizations, acute stroke-related mortality, and patterns of hospitalizations by demographic characteristics of acute stroke patients to help assess implications for healthcare planning.
- The presentation also shows the importance of accurate discharge diagnosis codes to improving stroke surveillance as well as for assessing stroke-related healthcare planning.

Data and Methods

- This study focuses on acute stroke as defined by the Agency for Healthcare Research and Quality (AHRQ). AHRQ's tools are used to help hospitals identify potential problem areas that might need further study and also to provide the opportunity to assess quality of care inside the hospital using administrative data found in the typical discharge record.
- Data for the analysis was obtained from the New Jersey Hospital Discharge Data Collection System (NJDDCS), also commonly known as the Uniform Billing (UB) database.
- Acute stroke refers to patients 18 years and older with principal diagnosis codes of subarachnoid, hemorrhagic, or ischemic strokes as specified by ICD-9-CM codes.

Primary Diagnosis Codes (ICD-9-CM) for Acute Stroke

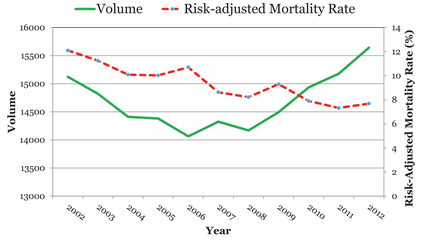
Diagnosis Codes	Description
430	Subarachnoid Hemorrhage
431	Intracerebral Hemorrhage
4320	Nontraumatic Extradural Hemorrhage
4321	Subdural Hemorrhage
4329	Unspecified Intracranial Hemorrhage
43301	Basilar Artery Occlusion with Cerebral Infarction
43311	Carotid Artery Occlusion with Cerebral Infarction
43321	Vertebral Artery Occlusion with Cerebral Infarction
43331	Multiple and Bilateral Precerebral Occlusion with Infarction
43381	Other Specified Precerebral Occlusion with Cerebral Infarction
43391	Unspecified Precerebral Occlusion with Cerebral Infarction
43401	Cerebral Thrombosis with Cerebral Infarction
43411	Cerebral Embolism with Cerebral Infarction
43491	Unspecified Cerebral Artery Occlusion with Cerebral Infarction
436*	Acute, but Ill-defined Cerebrovascular Disease

*Only for discharges before September 30, 2004 (FY2004).

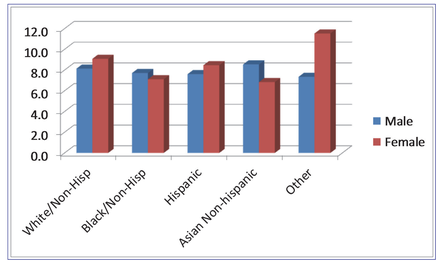
Specifications of Acute Stroke Volume and Mortality Rate

- **Volume of acute stroke hospitalizations in this study refer to patients that the AHRQ module considers eligible to be counted in the denominator for acute stroke mortality rate calculations.**
- **The AHRQ specification excludes cases with missing discharge disposition; MDC 14 (pregnancy, childbirth, and puerperium); and MDC 15 (newborns and other neonates).**
- **Acute stroke mortality rate is defined as the number of deaths per 100 patients of ages 18 years and older who had a principal diagnosis code of acute stroke.**
- **The mortality rate is risk-adjusted. AHRQ analysis tools are known for their strength in risk-adjustment techniques.**

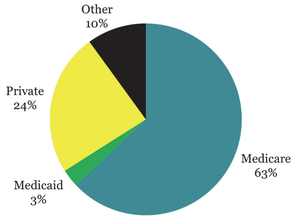
Acute Stroke Hospitalizations Vs. Acute Stroke Mortality, 2002-2012



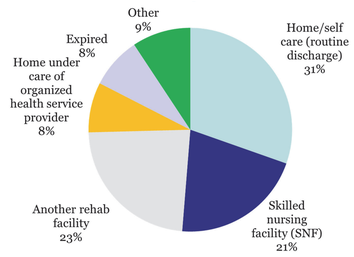
Risk-adjusted Acute Stroke Mortality Rate (%) by Sex and Race/ethnicity, New Jersey 2012



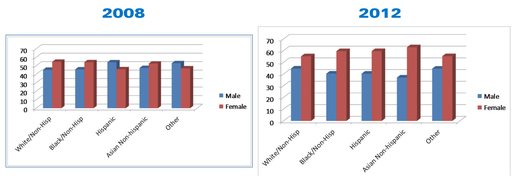
Hospitalized Acute Stroke Patients by Payer Type, 2012



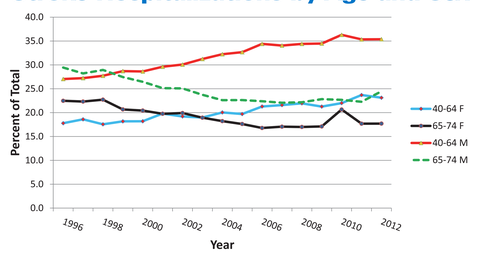
Discharge Status of Acute Stroke Patients, 2012



Acute Stroke Hospitalizations by Sex and Race/ethnicity



Trends in Percentage Shares of Acute Stroke Hospitalizations by Age and Sex



Results

- After declining between 2002 and 2006 , acute stroke hospitalizations in New Jersey have shown a rise from 2007 to 2012.
- While hospitalizations show a U-shaped pattern from 2002 to 2012, risk-adjusted acute stroke mortality declined from 12.1% in 2002 to 10.0% in 2005, 8.2% in 2008, and 7.7% in 2012. This decline is important given the ever increasing proportion of New Jerseyans in the older (65+) age groups.
- The data suggest that stroke affects all adults with the elderly (65+ years old) accounting for more than 70.0% of hospitalized stroke patients. Consistent with the distribution of acute stroke patients by age, more than 60.0% had Medicare for insurance with private insurance accounting for slightly more than 20%.
- The relative shares of patients by age appears to have changed in recent years with 40-64 year olds taking larger and larger shares of hospitalizations than 65-74 year olds. This pattern is true both for males and females in New Jersey and needs further study.
- The data also show that average length of hospital stay in days declined from 8 days in 2005 to 7 days in 2008 and 6 in 2012.

Policy Implications and Recommendations

- The continued decline in acute mortality is good news for New Jersey residents. However, stroke continues to be a major health hazard in the state that needs significant attention by policy makers, healthcare providers as well as the public.
- Further research that focuses on risk factors associated with stroke mortality needs to be made to help design target oriented policy measures.
- A study that explores the changing age patterns of stroke hospitalizations in the state will help further better understanding of the challenges faced by stroke in New Jersey.
- This study supplements the New Jersey Acute Stroke Registry (NJASR) that the Department of Health launched in 2010. The NJASR contains comprehensive clinical information along with patient demographics that are valuable for healthcare quality and outcomes assessment.

References

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