Cerebrovascular accidents, or strokes, are currently the third leading cause of death in the United States. Also a leading cause of long-term disability, they represent an enormous burden on health care costs. Opportunities to improve stroke prevention and acute care processes related to ischemic stroke (stroke), atrial fibrillation (AFib), and carotid endarterectomy (CEA) have been documented. Ischemic stroke, the predominant form of all strokes, occurs when blood flow to the brain is blocked; AFib is considered an independent risk factor for ischemic stroke; and CEA is a procedure performed to lower the risk of ischemic stroke. Transient ischemic attack (TIA), a brief episode of stroke symptoms, can be a warning of an impending stroke and is thus included in the analysis described in this report.

The report presents trends in hospitalizations for stroke from 1992 through 2001 among Medicare fee-for-service (FFS) beneficiaries. The results are based on an analysis of all Medicare claims for hospital discharges with stroke or TIA as the primary diagnosis, AFib as a primary or secondary diagnosis, or CEA procedures. We calculated age-sex adjusted rates of discharges, readmissions, and mortality and examined trends in rates over time and variation in rates across demographic groups.

**RESULTS**

**Evidence of Improvement**

Stroke/TIA hospitalizations fell recently. Although the stroke/TIA hospitalization rate in 2001 remained the same as in 1992, it fell by 10 percent from its peak in 1996 (see Figure 1).

Readmission rates for stroke declined for AFib and CEA. Thirty-day readmission rates for stroke following hospitalizations for AFib and CEA fell by 12 and 6 percent, respectively, from 1994 to 2001 while remaining the same for stroke/TIA (see Figure 2). The one-year readmission rates for stroke fell for all three conditions.

Mortality Rates Declined. Thirty-day mortality rates following hospitalizations for stroke/TIA and CEA fell by 14 and 35 percent, respectively, from 1992 to 2001 (see Figure 3). The one-year mortality rates also declined, although at a slower rate.

**Opportunities for Improvement**

Disparities Exist. In 2001, African Americans and those dually enrolled in Medicaid were hospitalized for stroke, readmitted for stroke, and died after stroke or CEA at higher rates than whites and those not enrolled in Medicaid, respectively (see Table 1). African Americans received CEA, a stroke prevention procedure, at a much lower rate than did whites.
The Medicare Quality Monitoring System (MQMS) is a data collection, analysis, and dissemination system through which the Centers for Medicare & Medicaid Services (CMS) monitors the quality of care delivered to Medicare fee-for-service (FFS) beneficiaries. Launched by CMS in 2003 in response to growing public concern about patient safety, patient choice, and provider accountability, MQMS provides national- and state-level statistics on the trends and variations in FFS beneficiaries’ use of health care, outcomes of that care, preventable hospitalizations, and patient safety. These MQMS measures of quality act as input for high-level policy making and program planning within CMS.

Specifically, MQMS quality measures include the following:

- Preventable hospitalizations
- Patient safety indicators
- Mortality and readmission rates, length of stay, and cost of hospitalizations for acute myocardial infarction, heart failure, and stroke
- Preventive services and rates of complications for diabetes
- Mortality and readmission rates following cancer- and cardiac-related high-risk surgical procedures

Most of the measures are based on 100 percent of hospital discharge data for FFS beneficiaries from 1992 through 2001. The diabetes measures are based on the 5% Standard Analytic File, and the patient safety measures are limited to 2000 and 2001. We adjusted the measures to a common distribution of age and sex. MQMS statistics are descriptive. Results do not indicate the causes of the observed trends and cross-sectional variation.

CMS disseminates MQMS results on its website, www.cms.hhs.gov, in the form of a summary of key findings for each clinical area (MQMS Highlights), full-length reports (MQMS Reports), detailed tables, and technical documentation.

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