

COMPdata Monthly Monitor - Montana
August 2004
Stroke

Stroke is a disease of increasing focus due to the timely care interventions that hospital providers can deliver to have a positive outcome on the patient. Stroke is also a focus of public health concern as most people do not recognize the symptoms of a stroke and do not seek attention quickly enough to favorably impact their outcome. Additionally, there are preventive measurements that individuals can undertake that will dramatically reduce their risk factors for stroke.

In the United States stroke is the third leading cause of death, ranking behind heart disease and all forms of cancer. More than 160,000 people die each year from this devastating disease and one person in the U.S. suffers a stroke every 45 seconds. Stroke is also a leading cause of serious, long-term disability. The Centers for Disease Control and Prevention (CDC) reports that from 1990 to 1998 the number of deaths due to stroke (cerebrovascular diseases) in the U.S. rose from 144,088 to 158,448 or 10.0%, while the death rate per 100,000 population increased just 1.2%, from 57.9 to 58.6.1

Beginning in 1999 all death statistics reported from the states to the CDC have been based on the ICD-10 disease classification system. There are significant differences in the attribution of the cause of death between the ICD-9 and ICD-10 systems. Thus, it is important to examine trends in mortality separately based on the two systems

From 1999 to 2001, the number of deaths due to stroke in the U.S. declined from 167,366 to 163,538 or -0.02%. The rate per 100,000 population declined an even greater amount, -6.5%, from 61.4 to 57.4.2

In Montana, the number of stroke deaths declined from 595 in 1999 to 578 in 2001 or -2.9%. The death rate due to stroke declined a greater amount at 5.3%, from 67.4 to 63.8. It's important to note that approximately 50% of stroke deaths take place before the person reaches a hospital.

Hospital Diagnosis and Treatment

There are several key challenges to communities and hospitals regarding stroke:

- Individuals and their families must recognize the serious nature of symptoms and arrive at a hospital as quickly as possible.
- Evaluation and treatment by hospital staff must be immediate because some therapies for stroke, such as tissue plasminogen activator (t-PA) for ischemic stroke, should be administered within three hours of the onset of symptoms in order to receive maximum benefit.
- Differentiation among the various forms of stroke (i.e., ischemic vs. hemorrhagic vs. transient ischemic) must be established before most treatments can begin.

Because the timely and appropriate response to a presenting stroke patient is so critical,

hospitals must be organized and prepared to meet this need. Appropriate protocols must be in place so that the necessary personnel and services are available to every patient, even if that means transferring that patient to another facility. Many resources are available to hospitals to assist in this planning and preparation. (See “Resources for Additional Information” below.)

Among the more recent developments is the release by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), in cooperation with the American Stroke Association, of a standardized performance measurement set for primary stroke centers. Initial implementation will require use of four of the total of 10 identified measures. The four initial measures are:

- t-PA Considered
- Deep Vein Thrombosis Prophylaxis
- Discharged on Antithrombotics
- Patients with Atrial Fibrillation Receiving Anticoagulation Therapy

It is clear that community participation and education regarding stroke is also vital. Organizations such as the Brain Attack Coalition (BAC) are dedicated to reducing the occurrence, disabilities and death associated with stroke. See below for information on the BAC and other resources for hospitals and others to use in the community for patient and public education on stroke.

Stroke in Montana Inpatients

Like the U.S., in Montana stroke is the third leading cause of death, accounting for 2,557 deaths or more than 6% of the state’s deaths in 2001.² The attached Appendix has more detail and information sources on various topics related to stroke as well as an explanation of the different types of stroke and their impact on the patient and the resources needed to support them.

Montana hospitals in 2003 found that 5,022 or 4.9% of their inpatients were diagnosed with stroke (ICD-9 430-438) as either a primary or secondary diagnosis, including late effects of cerebrovascular disease. Excluding patients diagnosed with the late effects of cerebrovascular disease, there were 3,806 inpatients with a primary or secondary diagnosis of ischemic, transient ischemic, or hemorrhagic stroke. The remainder of the analyses of Montana patients will focus on this group of patients.

For the 3,806 patients who had a stroke diagnosis (430-437), it was the primary diagnosis for 64.9% of them. Among those for whom it was the primary diagnosis, the majority, 67.6%, were found to have had an ischemic stroke (433-434, 436-437), while 19.6% had a transient ischemic attack or TIA (435), and 12.8% had a hemorrhagic stroke (430-432). Excluding children 17 years or younger and all obstetric patients, the percent of patients with a primary or secondary diagnosis of stroke decreased from 5.8% in 1999 to 5.0% in 2003.

General statistics. The following Montana hospital statistics illustrate the depth of the inpatient disease for patients discharged in calendar year 2003.

- Stroke was diagnosed as a primary or secondary condition in 3,806 inpatients or 3.7% of all inpatients.
- Of these patients, 56.4% were admitted through the emergency department compared

to 38.0% of all patients.

- More stroke patients are women, 52.6%. This is due chiefly to the fact that women live longer than men. Nationally the overall incidence rate of stroke among men is 1.25 greater than women's. However, the difference in incidence rates among the sexes is larger at younger ages but nonexistent at older ages (80 and older). 4
- Of the 3,806 patients with any diagnosis of stroke, 47.3% were discharged from other urban hospitals and 52.6% from rural hospitals.
- The average length of stay for this group was 4.7 days and the average total charge was \$13,596.
- Ischemic stroke (excluding TIA) was diagnosed as a principal or secondary condition in 2,890 or 75.9% of all stroke inpatients.
- More than one half (54.4%) of ischemic stroke patients are 75 years or older versus hemorrhagic patients who tend to be younger.
- While a relatively small percentage (5.4%) of ischemic patients die in the hospital, nearly 36% are discharged or transferred to another health care provider or facility, such as a skilled nursing facility (18.0%), home care (5.5%), or a rehabilitation facility (2.8%). More than one half (57.9%) of these patients are discharged home.
- Just over one half (51.8%) of ischemic patients were admitted to rural hospitals, while 48.1% were admitted to hospitals in other urban areas.
- Corresponding to the age of these patients, 71.4% were covered by Medicare.
- The average length of stay (4.7 days) and the average total charge (\$13,044) were similar to those for other adult, non-obstetric, non-stroke patients (4.2 days and \$13,353, respectively).
- Transient ischemic attack was diagnosed as a principal or secondary condition in 656 or 17.2% of all stroke inpatients.
- While fewer than 61% of ischemic and hemorrhagic stroke patients are admitted through the emergency room, TIA patients are admitted through the ER at a somewhat higher rate, 71.0%.
- Nearly the same percentage of TIA patients (54%) are 75 years or older as are ischemic stroke patients.
- The great majority of TIA patients are discharged home (80.8%). Another 7.8% are discharged or transferred to a skilled nursing facility.
- Among hospitals' urban/rural locations, rural hospitals admitted a greater percentage of all Montana TIA patients (56.7%) than for other types of stroke patients.
- Similar to ischemic stroke patients, TIA patients were most often covered by Medicare

(72.7%).

- Average length of stay (2.8 days) and average total charge (\$7,623) were much lower for TIA patients than for other stroke patients.
- Hemorrhagic stroke was diagnosed as a principal or secondary condition in 404 or 10.6% of all stroke inpatients.
- These patients tend to be younger than ischemic stroke and TIA patients. More than a quarter (27.5%) of hemorrhagic stroke patients are between the ages of 40 and 64.
- Only 31.7% of hemorrhagic patients are discharged home, while 22.8% die in the hospital. Many are discharged or transferred to a skilled nursing facility (19.8%).
- Nearly the same number of Montana hemorrhagic stroke patients were admitted to other urban hospitals (49.3%) as were admitted to rural hospitals (50.7%).
- Given that hemorrhagic stroke patients tend to be younger, more than 40% (40.4%) were self pay or covered by an insurer other than Medicare.
- Among stroke patients, hemorrhagic patients had the longest stays (7.5 days) and highest average charge (\$26,882) by far.

Montana Inpatient Statistics from COMPdata

All of the Montana inpatient statistics were derived from the Illinois Hospital Association's COMPdata. We encourage you to use COMPdata to examine your hospital community area(s) regarding stroke patients so that you might better understand the impact of stroke on your care and treatment of your changing patient population and the resources needed to diagnose, treat, and manage the stroke population.

Additional Information

If you would like to develop the COMPdata reports that will provide similar statistics for your hospital or community, a training tool is available to guide you through the process. Click here to obtain the tool: <http://www.ihatoday.org/compdata/mtstroketool.pdf>. For additional assistance on using the COMPdata system, contact the COMPdata Hotline at compdata@ihastaff.org or by telephone in Illinois at (630) 276-5851. (If you are calling from outside of Illinois use our new toll-free number of (866) 262-6222.)

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APPENDIX

As of 2001, an estimated 4.8 million people in the United States, 2.0 percent of the population, were stroke survivors. There are approximately 500,000 new and 200,000 recurrent attacks each year. The estimated number of non-institutionalized stroke survivors increased from 1.5 million in the 1970s to 2.4 million in the 1990s.⁴ Nearly 164,000 people in the U.S. died from stroke in 2001. Approximately 50% of stroke deaths take place before the person reaches a hospital. In Montana in 2001 stroke was the fourth leading cause of death representing 578 deaths or 7.0% of all deaths.²

Types of Stroke

There are four main types of stroke. Two of these are ischemic strokes and two are hemorrhagic. Ischemic strokes are caused by blood clots or other particles that plug an artery causing either a cerebral thrombosis or cerebral embolism. Approximately 80% of all strokes are ischemic. Ruptured blood vessels that cause either a cerebral or subarachnoid hemorrhage are more dangerous because of a much higher fatality rate.⁵

Another type of stroke is a transient ischemic attack (TIA) or "mini-stroke" that produces stroke-like symptoms but not permanent damage. The importance of recognizing that a TIA has occurred is that more than one third of people who experience a TIA will later have a stroke. The future disabling stroke may be prevented if the TIA is recognized and the patient receives prompt medical or surgical treatment.⁵

Risk Factors

Many of the risk factors for stroke can be controlled, treated, or modified. The key risk factors for stroke are:

Hypertension is the most important risk factor for stroke, especially for hemorrhagic strokes.

Tobacco use is the number 1 preventable risk factor. Smoking cessation reduces stroke risk significantly after two years and is at the level of non-smokers after five years.

Diabetes, especially since diabetics often have hypertension, high cholesterol and are obese.

High cholesterol and corresponding atherosclerosis.

Atrial fibrillation raises the risk of stroke due to the potential for blood clots to form and enter the bloodstream.

Other factors include physical inactivity, obesity, heart disease, certain blood disorders, sickle cell anemia, excessive alcohol use, and some illegal drugs.

In 2001, the Behavioral Risk Factor Surveillance System survey in Montana reported that 77% of adults had at least one of five key risk factors for stroke.⁴

Impact of Stroke

Up to 25% of the people who have an initial stroke die within a year. For those that survive, stroke is a leading cause of serious, long-term disability. More than 1.1 million adults report

difficulty in daily living as a result of having a stroke. In the Framingham Heart Study, among ischemic stroke survivors who were at least 65 years old, these disabilities were observed at 6 months post-stroke:

- 50% had some hemiparesis.
- 30% were unable to walk without some assistance.
- 26% were dependent in activities of daily living.
- 19% had aphasia.
- 35% had depressive symptoms.
- 26% were institutionalized in a nursing home.

Current and Future Activities

The Centers for Disease Control and Prevention (CDC) has several activities designed to reduce the stroke burden. Among these are the CDC Heart Disease and Stroke Prevention Program that funds health departments in 32 states to develop effective strategies that emphasize the need for policy and program changes that promote heart-healthy and stroke-free living and working conditions.

The American Heart Association (AHA) is committed to reducing coronary heart disease, stroke and risk by 25 percent by 2010. They funded more than \$1 billion in research over the past 10 years to seek better treatments for these diseases. AHA has worked to translate guidelines into programs for providers in hospitals and outpatient settings to implement. Two major initiatives using evidence-based guidelines are "Get With The Guidelines" and the "Heart and Stroke Recognition Program."

The Montana Department of Public Health and Human Services began receiving funds from CDC in 2000 to support a state heart disease and stroke prevention program. The program received increased funding for basic implementation beginning in 2003. Among its many activities the program is coordinating a statewide Cardiovascular Disease/Obesity Prevention Task Force and has completed statewide cardiovascular-related assessments for large worksites, health plan organizations, schools, physicians, and state agencies.

References

- 1 Centers for Disease Control and Prevention, Leading Causes of Death, 1900-1998. (<http://www.cdc.gov/nchs/datawh/statab/unpubd/mortabs/hist-tabs.htm>)
- 2 Centers for Disease Control and Prevention, Deaths, Percent of Total Deaths, and Death Rates for the 15 Leading Causes of Death: United States and Each State, 1999-2001 (http://www.cdc.gov/nchs/datawh/statab/unpubd/mortabs/lcwk9_10.htm)
- 3 Centers for Disease Control and Prevention, Cardiovascular Health, State Program-Montana (http://www.cdc.gov/cvh/state_program/mt.htm)
- 4 American Heart Association, Heart Disease and Stroke Statistics – 2004 Update. (<http://www.americanheart.org>) Click on "Publications & Resources - Statistics."
- 5 American Heart Association, Heart and Stroke Facts, 1992-2003.

(<http://www.americanheart.org>) Click on “Publications & Resources - Statistics.”

Resources for Additional Information

FOR HOSPITALS

“Get With The Guidelines-Stroke” is the American Stroke Association’s (ASA) process for continuous quality improvement in hospitals to improve acute stroke treatment. (See “Current and Future Activities” above.) The program focuses on care team protocols and is currently in the pilot phase. More information on this and all AHA/ASA programs and products can be found at <http://www.americanheart.org> and/or <http://www.strokeassociation.org>.

Also on the ASA website is online training, testing, and continuing education credit for the National Institutes of Health Stroke Scale (NIHSS). The July 2004 issue of Archives of Neurology found the NIHSS to be a good predictor of patient disposition after stroke. Early identification of patients in need of rehabilitation or long-term nursing care could improve patient care and reduce acute stays. The NIHSS can be downloaded at http://www.ninds.nih.gov/doctors/NIH_Stroke_Scale.pdf.

The “Acute Stroke Treatment Program” (ASTP) is an ASA initiative that complements guidelines created for hospitals to establish Primary Stroke Centers by the Brain Attack Coalition (BAC <http://www.stroke-site.org>) by providing a tool kit with detailed information for hospitals to implement those guidelines. The ASA web site includes details on the average cost for hospitals to implement the Primary Stroke Center recommendations.

In November 2003 the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) developed the Disease-Specific Certification Program for primary stroke centers based on the BAC/ASA initiatives. More details on the Certification Program and the list of the 10 candidate standardized measures addressing key aspects of stroke care can be found at <http://www.jcaho.org>.

For information on managing the care of stroke patients, evidence-based clinical practice guidelines are available from the National Guideline Clearinghouse of the Agency for Healthcare Research and Quality at <http://www.guideline.gov>.

A “Stroke Fact Sheet” and links to state and county-level statistics and maps can be found on the CDC web site at http://www.cdc.gov/cvh/library/fs_stroke.htm. More current and historic data from the CDC on mortality statistics for leading causes of death is found at <http://www.cdc.gov/nchs/fastats/deaths.htm>.

FOR PATIENTS AND THE COMMUNITY

The AHA “Heart and Stroke Facts” is a 75-page booklet designed for the public and is available to download at <http://www.americanheart.org>.

The BAC web site (<http://www.stroke-site.org>) has a “Checklist for Communities” to assess whether the community has access to the best treatment for stroke. Under the BAC “Patient Resources” section is page with links to BAC coalition member patient education web sites.

The National Institute of Neurological Disorders and Stroke (NINDS) “Stroke Information Page”

(http://www.ninds.nih.gov/health_and_medical/disorders/stroke.htm) has an exhaustive list of organizations and sources of information about stroke for patients, their families and others to access.

COMPdata is a product of the Illinois Hospital Association (IHA) and its affiliate AMR