

DEVELOPMENT AND IMPLEMENTATION OF A PROTOCOL FOR TREATMENT
OF IN-PATIENT ISCHEMIC STROKE PATIENTS

by

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ABSTRACT

“Stroke continues to be a significant cause of mortality and morbidity in the United States. Approximately 700,000 Americans have a new or recurrent stroke each year, and stroke remains the third leading cause of death in the United States when considered independently from other cardiovascular diseases. Stroke also remains a leading cause of serious, long-term disability in the United States.” (Schwamm, 2005, p.690)

The purpose of this project was to develop an evidence based care management protocol for persons admitted to a small rural hospital with the symptoms or diagnosis of Ischemic Stroke. A committee was formed, evidence based best practices were identified, tools were developed and the protocol was implemented. The protocol was based on the Core Measures established by the Joint Commission and adopted by the centers for Medicare and Medicaid as a basis for validating quality and setting reimbursement. The protocol was successfully implemented; a process for the Quality Department of the facility was put in place to insure continued success.

CHAPTER 1

INTRODUCTION

Statement of Problem

This small rural hospital did not have a medical staff-approved protocol for use in the treatment of Ischemic Stroke patients. Some patients admitted to the hospital with the signs, symptoms, and diagnosis of ischemic stroke may not have been treated according to the evidence-based current recommendations and standards of care developed and published by The Joint Commission in collaboration with the American Heart Association/American Stroke Association. The absence of an evidence based clinical guideline for the management of Ischemic Stroke at the very least led to inconsistent care and possibly to less than positive patient outcomes.

Purpose of the Project

This project focused on a comprehensive review of literature to identify evidence-based current recommendations developed by The Joint Commission in collaboration with the American Heart Association/American Stroke Association for care of patients with the signs, symptoms, and diagnosis of ischemic stroke. Information from the literature review was used by a committee of physicians and registered nurses to develop a protocol for treatment and discharge planning that is consistent with the national standards and established guidelines for a small rural hospital. The protocol was utilized with patients presenting to this hospital with signs, symptoms, and the diagnosis of ischemic stroke. The protocol included standing orders,

clinical care guidelines and patient educational tools developed to improve patient outcomes and to meet the criteria set forth by The Joint Commission for the Core Measure Set for Ischemic Stroke.

The Core Measure Set for Acute Ischemic Stroke addresses eight elements of care: 1) Venous Thromboembolism (VTE) Prophylaxis begun the day of or the day after hospital admission; 2) Discharged on Antithrombotic Therapy; 3) Patients with Atrial Fibrillation/Flutter receive anticoagulation therapy at discharge; 4) Thrombolytic Therapy administered within 1 hour of arrival and within 3 hours of time last known well; 5) Antithrombotic Therapy begun by end of hospital day 2; 6) Discharged on Statin Medication; 7) Stroke Education; 8) Assessed for Rehabilitation. These elements are designed to standardize care of the ischemic stroke patient and to improve patient outcomes (The Joint Commission, 2011).

Background

The community and area served by this small rural hospital has a population of approximately 33,000 people. Seventeen per cent of this population is aged 65 or older. Medicare covers the health care costs of twenty per cent of this population, and Medicaid covers the health care costs of another fifteen per cent of the population. Medicare is the largest third-party payer for this hospital. Heart disease is the leading cause of death in this population (Butte-Silver Bow, 2010). Stroke and heart disease both result from vascular disease.

Not only will an evidence based clinical guide allow for consistent care and hopefully improved patient outcomes, it will also address hospital reimbursement

concerns. The reimbursement procedures for Centers for Medicare and Medicaid are moving toward a pay for performance or value-based purchasing program. At this time Centers for Medicare and Medicaid plans to base its reimbursements on the quality performance scores and/or improvement during a baseline period (Centers for Medicare, 2011). These scores will be determined by performance assessed according to the Core Measure Initiatives developed collaboratively by Centers for Medicare and Medicaid and The Joint Commission (Centers for Medicare, 2011).

Delivery of current evidence-based, best practice standard of care, consistent with the Core Measure initiatives is not only the right thing to do for the community served by this hospital but it is also necessary for the fiscal survival of the institution.

Project Description

The focus of this project was to develop and assess a protocol consistent with the established guidelines of the Joint Commission's Core Measure for In-Patients with Ischemic Stroke for a small rural hospital. The hospital administrator identified a team of physicians and nurses to develop the protocol. The protocol was designed for use with patients presenting to this hospital with signs, symptoms, and/or the diagnosis of ischemic stroke. The protocol consisted of several elements, standing orders, clinical care guidelines and patient educational tools.

CHAPTER 2

LITERATURE REVIEW

Impact and Consequences of Stroke

Stroke is the third leading cause of death and the leading cause of serious, long-term adult disability in the United States. At least 700,000 new stroke cases occur every year. Approximately 85% of strokes are ischemic in nature. (Benavente, 1999) It has been estimated that 33% of stroke survivors need help with activities of daily living, 20% need help walking, 70% cannot return to their previous jobs, 51% are unable to return to any type of work after stroke. (The Stroke Network, 2008) The estimated direct and indirect cost of stroke in 2007 is \$62.7 billion. (The Joint Commission, 2008)

Development of the Stroke Core Measure

Healthy People 2010 established objectives for the United States to reduce stroke deaths and to increase to 83% the proportion of adults who are aware of the early warning symptoms and signs of a stroke and the importance of accessing rapid emergency care by calling 911. (Office of Disease Prevention & Health Promotion, 2010) Data from an optional module of the 2005 Behavioral Risk Factor Surveillance System survey (completed in thirteen states and the District of Columbia), analyzed by the Center for Disease Control and Prevention, revealed that the percentages of respondents who recognized all five correct symptoms of stroke, identified an incorrect

symptom, and recognized the need to telephone 911 was 16.4%. (Corporate Authors: US Centers for Disease Control & Prevention, 2008)

It is important to note that The Institute of Medicine of the National Academy of Science concluded that the fragmentation of the delivery of healthcare services frequently results in suboptimal treatment, safety concerns, and inefficient use of healthcare resources. To ensure that scientific knowledge is translated into practice, the Institute of Medicine recommended the establishment of coordinated systems of care that integrate preventive and treatment services and promote patient access to evidence-based care. (Schwamm, 2005)

Decades ago, The Joint Commission initiated a course of action designed to develop and include standardized core performance measures in their accreditation process. (The Joint Commission, 2008) The Joint Commission utilized a systematic process to identify standardized measures. The steps of this process follow: 1) an expert panel is identified to assist in establishing the framework and scope of the initial measure set. This panel will recommend the initial measures comprising the set. The framework is “designed to identify delivery of care settings, key domains or aspects of care, and outcomes of care”; 2) the expert panel then evaluates and prioritizes the measures for “importance, scientific acceptability, usability/interpretability and feasibility”; 3) a draft set of measures is pilot-tested and 4) the standardized measure set is finalized for implementation in the accredited facilities. (The Joint Commission, 2008, p.1-2)

The development of primary stroke centers greatly enhanced stroke care. These centers standardize care and demonstrate improved patient outcomes (Adams, 2007). In 2003, The Joint Commission collaborated with the American Heart Association/American Stroke Association to develop performance measures for Disease-Specific Care Certification for Primary Stroke Centers. The stroke certification process of The Joint Commission provides centers of specialized stroke care "...with the expertise and resources to provide modern stroke care," which in turn leads to improved patient outcomes. (Adams, 2007, p. 1658)

An outcome of the collaboration of The Joint Commission and the American Heart Association/American Stroke Association was the first advanced-level certification program designed to recognize primary stroke centers that made exceptional efforts to foster better care outcomes for stroke patients. This program outlined additional clinical requirements and expectations based on recommendations for Primary Stroke Centers from the Brain Attack Coalition as well as the American Heart Association/American Stroke Association evidence-based guidelines. (Schwamm, 2005)

The Joint Commission/American Heart Association/American Stroke Association guidelines developed by this collaboration provided the foundation for the identification of areas for performance measurement and the development of detailed measure specifications. Reliability of individual data elements, measure specifications and the measurement set was established following a twelve month testing period. The Joint

Commission finalized a standardized set of ten clinical care guidelines for stroke patient care.

During the pilot test of clinical care guidelines, it was discovered that several pilot site programs were currently participating in the American Stroke Association's *Get With The Guidelines-Stroke* program/patient management tool and/ or the Paul Coverdell National Acute Stroke Registry sponsored by the Division of Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention. (Centers for Disease, 2011) The organization successfully aligned the clinical care guidelines with the guidelines of the American Stroke Association, the Paul Coverdell Stroke Registry of the Centers for Disease Control and Prevention. As a result of this successful collaboration of multiple organizations the clinical care guidelines are available for use in all services and programs. (The Joint Commission, 2008, p. 1-3)

The ten clinical care guidelines of the Core Measure for In-Patient Ischemic Stroke, developed by The Joint Commission follow: 1) Deep Vein Thrombosis (DVT) Prophylaxis; 2) Discharged on Antithrombotics; 3) Patients with Atrial Fibrillation/Flutter receiving Anticoagulation Therapy; 4) Tissue Plasminogen Activator (t-PA) Considered; 5) Antithrombotic Medication within 48 Hours of Hospitalization; 6) Lipid Profile; 7) Screen for Dysphagia; 8) Stroke Education; 9) Smoking Cessation; 10) A Plan for Rehabilitation was considered. (Schwamm, 2005)

Pre-Hospital Care

Optimal care of the patient with the signs, symptoms and/or diagnosis of ischemic stroke begins with the recognition of signs and symptoms of stroke by the layperson and knowledge of what actions to take. An estimated 19% to 60% of persons with signs, symptoms and/or diagnosis of ischemic stroke present for initial medical care within three hours of the onset of symptoms. The immediate use of Emergency Medical Services (EMS) minimizes the interval preceding initial physical and neurologic examination and the performance of brain imaging, allowing earlier decisions regarding and initiation of treatment. Emergency Medical Services should be activated, and the Emergency Medical Technicians or other responding personnel will assess and stabilize the patient. (Panagos, 2008)

Schwamm, 2005, suggests a focal neurologic examination (such as the Los Angeles Prehospital Stroke Screen and /or the Cincinnati Prehospital Stroke Scale) be performed, and the receiving Emergency Department alerted prior to EMS arrival. Initial field management can also include administration of oxygen, cardiac monitoring and insertion of intravenous access. (Schwamm, 2005)

Elements of the medical history of the patient presenting with signs, symptoms and/or diagnosis of ischemic stroke that must be addressed include “the time of symptom onset or, if unknown, time of the patient’s last known normal and first time seen with symptoms,” (Granitto, 2008, p.40). Additionally, medication history, co-morbidities and recent events in the patient’s life should be reviewed. (Schwamm, 2005)

Hospital Care

On arrival in the Emergency Department, patients are reassessed and stabilized; the history is taken with emphasis on time of symptom onset or time last seen in usual state of health if patient has been sleeping or is otherwise unsure of onset time; medications and co-morbidities (Adams, 2007). It is recommended that The National Institute of Health's Stroke Scale (Appendix A) be administered and a score calculated and recorded. Immediate medical treatment includes continuous cardiac and oxygen monitoring. (Adams, 2007) Diagnostic studies including complete blood count with platelet count, prothrombin time, activated partial thromboplastin time, international normalized ratio, blood glucose, cardiac enzymes, electrolytes, renal function studies and an electrocardiogram should be initiated. Computed tomography of the head should be performed to rule out intracranial hemorrhage, as patients with hemorrhagic stroke are not eligible for thrombolytic therapy (Adams, 2007).

Core Measure for Ischemic Stroke

The clinical practice guidelines of the Core Measure for Ischemic Stroke were designed to improve outcomes for the ischemic stroke patient and are considered on admission and during the hospitalization of the patient with signs, symptoms and diagnosis of ischemic stroke (Adams, 2007). The clinical practice guidelines of the measure and supporting evidence follow.

Tissue Plasminogen Activator (t-PA) Considered

Khatri, 2008, reported the benefits of intravenous Recombinant Tissue Plasminogen Activator (rt-PA) are mixed. The primary determinant of poorer outcomes is associated with a time lag greater than five hours following the Ischemic stroke until the rt-PA is administered.

Intravenous Recombinant Tissue Plasminogen Activator (rt-PA), a thrombolytic agent approved for treatment of acute ischemic stroke in 1996, provides an efficacious and cost-effective medication for patients with acute ischemic stroke treated within three hours of onset of symptoms (Benavente, 1999). Krock, 2008, noted that the more quickly rt-PA is administered after onset of stroke symptoms, the more likely the patient may have an improved clinical outcome. It is important to minimize the time from arrival in the Emergency Department door to treatment. Kahtri, 2008, noted intravenous rt-PA was beneficial as 39% of rt-PA cases and 26% of placebo cases achieved minimal or no disability in part two of the National Institute of Neurological Disorders and Stroke trial. "Similar results have been seen in community cohorts that follow the National Institute of Neurological Disorders and Stroke (NINDS) rt-PA protocol." (Hart, 2008, p.655.)

Boysen, 1995, reported data from a randomized control trial by the European Cooperative Acute Stroke Study (ECASS) did not show a benefit of IV rt-PA for patients with acute ischemic stroke who presented up to six hours post ischemic attack and symptom onset at 24 hours post-stroke. However, Hacke, 1995, reported that in-

hospital stays were significantly shorter and neurologic recovery at 90 days was significantly better for rt-PA-treated patients. The inclusive criteria for this study was acute ischemic hemispheric stroke and moderate to severe neurologic deficit with onset of symptoms up to six hours prior to rt-PA administration and without major early infarct signs on initial computed tomography. (Hacke, 1995) Data from Parts I and II of the National Institute of Neurological Disorders and Stroke studies supported Hacke's, 1995, findings. (The National Institute of Neurological Disorders, 1995)

Adams, 2007, reported the major risk of treatment with rt-PA is symptomatic brain hemorrhage. The likelihood of favorable outcome is affected by the severity of defects and the patient's age. Patients with mild to moderate strokes and persons younger than 75 years of age had the greatest potential for a favorable response to treatment.

The National Institute of Neurological Disorders and Stroke developed eligibility criteria which have been revised and published in guidelines by the American Heart Association/American Stroke Association. The elements of these eligibility criteria include: diagnosis of ischemic stroke causing measurable neurologic deficit; onset of symptoms less than 3 hours before beginning treatment; no head trauma, prior stroke or myocardial infarction in the previous 3 months; patient and family members' understanding of the potential risks and benefits of treatment. Healthcare providers should at least consider therapy with IV rt-PA for patients presenting with ischemic stroke. (Adams, 2007)

Most patients with the signs, symptoms and/or diagnosis of ischemic stroke are admitted to the hospital for further care. Twenty-five percent of patients with signs, symptoms and/or diagnosis of ischemic stroke may have neurologic worsening over the first 24-48 hours. (Granitto, 2008) The goals of hospitalization and treatment are to: observe for changes in the patient's condition that may prompt treatment interventions; provide observation and treatment to reduce the possibility of bleeding complications after the use of rt-PA; facilitate medical or surgical procedures that may improve the patient's outcome; begin measures to prevent sub-acute complications; plan for long-term therapies to prevent recurrent stroke; and evaluate and initiate rehabilitation and supportive care in an effort to restore neurological function (Adams, 2007).

Anticoagulant Therapy Concomitant with Atrial Fibrillation

"The most common arrhythmia detected in the setting of stroke is atrial fibrillation, which may either be related to the cause of stroke or may be a complication of the stroke". (Adams, 2007, p. 1678) Sacco, 2008, reported that "atrial fibrillation is a potent predictor of a recurrent as well as a first stroke". (p. 587). "Patients who have suffered an ischemic stroke who have a high-risk source of cardiogenic embolism should generally be treated with anticoagulant drugs to prevent recurrence". (Sacco, 2006, p. 587) The relative risk for thromboembolic stroke is reduced by 68% for atrial fibrillation patients treated with warfarin. (Sacco, 2006)

Screen for Dysphagia

Adams, 2007, noted that it is estimated that approximately 50% of stroke patients will demonstrate clinically apparent dysphagia following a stroke. Of those patients with dysphagia, 43-54% will experience aspiration and of those who aspirate, 37% will develop pneumonia. Aspiration pneumonia increases the risk of death and lengthens the hospital stay. Persons hospitalized with an Ischemic Stroke should be maintained on a Nothing per Mouth (NPO) status until their medical condition has stabilized. The incidence of aspiration pneumonia may be decreased by withholding oral food and fluids until after a simple bedside swallow test and/or an evaluation by a speech therapist assures the safety of oral intake. This swallow evaluation should be performed as soon as the patient's condition allows. (Barrett, 2008)

Deep Vein Thrombosis (DVT) Prophylaxis

Bed rest is a common medical therapy for the first 24 hours following an ischemic stroke; patients with severe impairment may not become mobile for several days. "Deep Vein Thrombosis (DVT) prophylaxis should be initiated in patients with ischemic stroke and who are non-ambulatory by the end of the second hospital day". (Barrett, 2008, p. 62)

Barrett, (2008), recommends the routine use of antiembolic stockings and/or sequential pneumatic compression devices within the in the first 24 hours post-stroke hospitalization. Additionally, pharmacological approaches such as the use of

subcutaneous unfractionated heparin, low-molecular-weight heparins and heparinoids may be initiated if not contraindicated by the end of hospital day two.

Lipid Profile

All patients presenting with ischemic stroke should have serum lipid levels performed while hospitalized. (Granitto, 2008) Sacco, 2006, reports elevated serum lipid levels are a well-documented risk factor for coronary artery disease. Recent clinical trials have analyzed the association between lipids and ischemic stroke. The reduction of Low Density Lipid cholesterol (LDL) through lifestyle modification and drug therapy can reduce risk of second stroke and other vascular events. Therefore, reduction of LDL is recommended for patients with Coronary Artery Disease and elevated lipid levels in the National Cholesterol Education Program III Guidelines. (National Cholesterol, 2004)

Antithrombotic Medication Within 48 Hours of Hospitalization

Ischemic stroke is largely due to embolic or thrombotic arterial occlusion. The patient who has suffered a mild stroke or Transient Ischemic Attack (TIA) is at high risk for a stroke recurrence. (Sacco, 2006) Antithrombotic and antiplatelet drugs are recommended within 48 hours of hospitalization if not contraindicated. Panagos, 2008, conducted a meta-analysis comparing antiplatelet therapy with placebo in 18,270 patients with prior ischemic stroke or TIA. Risks for nonfatal and fatal stroke were reduced 28% and 16%, respectively, in patients receiving antiplatelet medications. (p. 811) Panagos, 2008, reported many patients are not eligible for thrombolysis because of

contraindications. The next most important intervention in these patients is initiating antithrombotic therapy (Panagos, 2008).

Discharged on Antithrombotics

Panagos, 2008, stated “First stroke is a significant risk factor for secondary stroke. Approximately 14% of patients who survive a stroke or transient ischemic attack die within the first year because of recurrent stroke.” (p. 808) Hart, 2008, noted antithrombotic agents (especially aspirin 50-325mg. daily, when not contraindicated) have demonstrated benefit for patients with mild signs, symptoms and/or diagnosis of ischemic stroke or transient ischemic attack and reducing stroke mortality and morbidity. Sacco, 2006, reported aspirin is an appropriate medical therapy after non-cardioembolic brain ischemia and should be prescribed at discharge.

Smoking Cessation

Sacco, 2006, reports effective pharmacological treatments as well as counseling and behavior modification therapies to assist with smoking cessation. These should be initiated during hospitalization with the patient’s cooperation.

Cigarette smoking nearly doubles the chance of ischemic stroke and is the risk factor for stroke that is the most alterable. Patients with ischemic stroke who smoke should receive advice and counseling regarding the cessation of that habit and cessation efforts should be initiated (Stroke-Disease, 2004).

Stroke Education

Education is an important part of the treatment and prevention of any disease process. Patients and families should be given information during the hospital stay and at discharge regarding risk factors and their modification, support resources available in the community and their specific treatment. Written instructions at discharge should address the need for follow-up care after discharge from the hospital; the medications prescribed, what they are for and signs and symptoms to watch for, the patient's personal risk factors for stroke, warning signs and symptoms of stroke and the activation of EMS if they develop stroke warning signs and symptoms. (The Joint Commission, 2008)

Assessed for Rehabilitation

Approximately 700,000 persons experience a new or recurrent stroke each year and nearly two-thirds of these individuals survive and require rehabilitation to reach the maximum level of function in their daily lives. (The Joint Commission, 2008) Stroke rehabilitation should begin as soon as the diagnosis of stroke is established and life-threatening problems are controlled. (Schwamm, 2005) Improved outcomes are realized in settings that include multidisciplinary, coordinated approaches to evaluation and rehabilitation services. The primary goals of rehabilitation are to prevent complications, minimize impairments and maximize function. (Bode, 2004)

CHAPTER 3

PROJECT DEVELOPMENT AND IMPLEMENTATION

Evidence Based Practice Committee for Ischemic Stroke

A committee entitled Stroke Project was formed at the request of the hospital administration. The purpose of the Stroke Project committee was to develop and implement a protocol for the treatment of patients presenting to the hospital with the signs, symptoms and/or diagnosis of ischemic stroke.

The committee membership included the author, a Performance Excellence Registered Nurse enrolled in the Family Nurse Practitioner option of the Master of Nursing Program at Montana State University, two neurologists practicing in the community and one internist employed by the hospital as a hospitalist.

The neurologists and the internist physicians were recruited by the author due to their interest and experience in managing the care of persons with Ischemic strokes. The Stroke Project committee met monthly for six months. The goal of the Stroke Project committee was to develop a protocol and tools for physicians and other health care providers to use when caring for patients hospitalized with an ischemic stroke.

Literature Search

The Stroke Project committee utilized journal articles focusing on meta-analyses regarding research studies focusing on Stroke Care. Such information is appropriate for this project as many of these meta-analyses were conducted by the American Heart Association/American Stroke Association and The Joint Commission. The committee understood the limitations of meta-analyses and where possible, the original study reports were obtained and reviewed. The following topics were addressed in the meta analysis: ischemic stroke treatment, administration of rt-PA, Deep Vein Thrombosis and antithrombotic therapy, anticoagulation for patients with atrial fibrillation, use of statin medication in patients with ischemic stroke, rehabilitation resources for the patient with ischemic stroke, smoking cessation protocols and education appropriate for patients with ischemic stroke and their families as well as the clinical guidelines developed by the American Heart Association/American Stroke Association and The Joint Commission for the Ischemic Stroke Core Measure.

The Ischemic Stroke clinical guidelines set forth by the American Heart Association/American Stroke Association and The Joint Commission were considered for implementation at this rural hospital. The clinical guidelines and evaluated individually to assess methods to implement them using resources available at this facility as well as what needed to be developed and obtained to successfully care for patients with ischemic stroke according to evidenced-based guidelines and practices. Those guidelines and considerations follow:

Tissue Plasminogen Activator (t-PA) Considered

CT techs were employed 24 hours a day, 7 days a week, therefore call-in time for CT scan was not an issue. The Radiology Department also contracted with an on-line radiologist company for out of hours reading of emergent and urgent radiological procedures. Average “turn-around” times for receiving an interpretation of a CT scan out of hours was 15 minutes. This hospital was able to meet the time frames of 25 minutes to initiate head CT and 45 minutes to interpretation of head CT set forth in the recommendations of The Joint Commission. (Adams, 2007).

The pharmacy provided a 24-hour service in this hospital. The approved t-PA dose was prepared and ready for administration in a timely manner when indicated. The laboratory developed order sets which were defined by consensus of physicians and facilitated rapid completion of needed lab tests. These order sets also assured the correct tests were requested according to the requirements developed for the Stroke Core Measure.

Deep Vein Thrombosis (DVT) Prophylaxis, Thrombolytic Therapy and Antithrombotic Therapy by End of Hospital Day Two

The pharmacy developed protocols for anticoagulation and antithrombotic therapy. These protocols were appropriate for use in the care of the ischemic stroke patient and were in place and successfully utilized to meet Core Measure criteria.

A DVT Prophylaxis protocol was developed by the pharmacy. It was used and deemed appropriate for the care of persons with the signs, symptoms and/or diagnosis

of ischemic stroke. Education regarding these protocols was provided to the medical staff during the Medical Staff Section meetings and performed by the physician champion and neurologists.

Patients with Atrial Fibrillation Receiving Anticoagulant Therapy

Patients with signs, symptoms and/or the diagnosis of ischemic stroke were admitted to the Intensive Care Unit and had continuous cardiac monitoring in place. Persons with atrial fibrillation received a consult with a cardiologist as standard practice. The protocol for anticoagulant therapy met this standard.

Discharged on Antithrombotic Therapy

Education of the medical community regarding antithrombotic therapy on discharge was held during the Medical Staff Section meetings and presented by the physician champion and neurologists.

Discharged on Statin Medication

Education of the medical community regarding lipid lowering therapy on discharge was held during the Medical Staff Section meetings and presented by the physician champion and neurologists.

Assessed for Rehabilitation

Physical, Occupational and Speech Therapy Departments were available in-house and included persons with specific interest in stroke and developing rehabilitative plans of care. Speech Therapists were available to perform Dysphagia Screening and utilized

routinely in the care of patients with signs, symptoms and/or diagnosis of ischemic stroke per developed protocol. As part of the rehabilitation process the Care Management staff was available six days per week and facilitated disposition planning and discharge.

Daily care planning meetings occurred and included the medical staff, the nursing coordinators, physical and occupational therapy staff and care management staff. Plans for rehabilitation of patients with signs, symptoms and/or diagnosis of ischemic stroke were developed and shared in these daily meetings.

Smoking Cessation

A smoking protocol had been developed and used with other Core Measures. This protocol was approved for utilization in the Stroke Core Measure.

Stroke Education

Stroke education tools were developed as part of the conversion to an Electronic Medical Record format. These tools addressed the need for follow-up care after release from the hospital, medications prescribed at discharge, personal risk factors for stroke, signs and symptoms of stroke to be alert for, and activation of the Emergency Medical System. Standards set forth by The Joint Commission for discharge education were met by these tools. The Stroke Project Committee reviewed these tools for completeness and suitability for use in this facility. The nursing staff utilized these tools in the ongoing education process during hospitalization. Written discharge instruction tools addressing

need for follow-up care after release from the hospital, medications prescribed, personal risk factors for stroke, signs and symptoms of stroke to be alert for, and activation of the Emergency Medical System also were developed. These were completed by medical and nursing staffs and given to patients for their home use in accordance with the Stroke Core Measure clinical care guideline. Medical and nursing staff received education regarding these tools during scheduled staff meetings.

Tool Development

The following tools were developed by the Stroke Project committee for physicians and other healthcare workers who provided direct care to persons hospitalized with ischemic stroke signs and symptoms. The tools included standardized physician orders for the Emergency Department and Admit physician. (Appendix C), an Emergency Department Acute Stroke Record (Appendix D), a standardized Nursing Care Plan (Appendix E), a Nursing Ischemic Stroke Checklist (Appendix F), and standardized Stroke Patient Education (Appendix G).

Implementation and Monitoring of Ischemic Stroke Core Measure Protocol

The physician committee members presented the protocols for care of the ischemic stroke patient and rationale for the clinical practice guidelines to the Medicine and Emergency Department sub-sections of the Medical Staff of this hospital on April 21 and April 23 of 2009. The protocol for physician orders was approved by these physician groups. Following approval by the physicians the protocol was presented to and

approved by the Medical Executive Committee on May 12, 2009. The protocol was then submitted to and approved by the Medical staff on May 18, 2009. The author presented education regarding the Stroke Core Measure, clinical care guidelines, the protocol and the tools developed for the nurses during scheduled nursing unit meetings on June 9, 2009. Following approval by the Nursing Administration, the finalized versions of the tools were distributed to the Emergency Department and the appropriate nursing units on June 29, 2009. The protocol was implemented July 1, 2009.

Monitoring of Success of Protocol Implementation

The Performance Improvement staff conducted concurrent review of records of care of patients with signs, symptoms and the diagnosis of ischemic stroke. Anonymous Quality Improvement Data from the reviews were communicated to the providers and nurses caring for the patient.

Abstraction of anonymous data from the medical records relating to compliance with the Stroke Core Measure was initiated in January, 2009 according to Accreditation Standards. The results were reported to a private consulting company who compiled and validated the data regarding compliance with the Stroke Core Measure. The anonymous data was reported to the Centers for Medicare and Medicaid and The Joint Commission as well as to this hospital per established hospital policy and procedures. Information gained in this manner was analyzed for compliance and patient outcomes. Trends and opportunities for improvement were identified and plans to meet the

standard of care and improve the care and outcomes of ischemic stroke patients were developed and implemented.

CHAPTER 4

PROJECT IMPLEMENTATION AND EVALUATION

Implementation

The protocol entitled Stroke National Hospital Inpatient Quality Measures for this rural hospital was formally implemented in July 2009. Tools were distributed to the appropriate hospital departments and nursing units. Concurrent anonymous abstraction of data via the Quality Assurance Program concerning ischemic stroke patients was also initiated in per plan in July.

Performance

Concurrent review of records to assess the compliance of Core Measure components was completed by the Quality Assurance department and performance data were provided to the nurses and physicians. This Quality Assurance process was repeated after validated scores were received from the vendor. The inspections and analysis of “missed opportunities”, (non-compliance with clinical practice guidelines of the Core Measure for the care of the patient with ischemic stroke), indicated a need for improvement in complete and/or accurate documentation of care and rationales. Educational follow-up for the physicians and nursing staff was based on data from the Quality Assurance department and the abstraction data. Remediation was needed in the area of use of appropriate terminology when documenting patient care.

Appropriate Care Scores

Appropriate Care Scores from January 2009 through December 2010 provided by the Quality Assurance Department are reflected in figure one Run Chart that follows. Appropriate care Score varied from 0 percent to 100 percent. The Health care System for this hospital established a target value for an Appropriate Care Score of 95 percent. Forty-eight patients with ischemic stroke diagnosis were admitted in 2009. The Appropriate Care Score for 2009 was 19.04 percent. Forty-four patients with ischemic stroke diagnosis were admitted in 2010. The Appropriate Care Score for these forty-four patients was 37.71 percent for the year. This was an important performance improvement from the data received in 2009. However, the finding demonstrated the continued need for education and reinforcement of documentation requirements. It is important to note that the hospital implemented an Electronic Medical Record in October, 2009 and that Traveler Registered Nurses were hired in August 2009, so that the primary nursing staff would be available for the staff education about implantation of the Electronic Medical Record. The Appropriate Care Score in August reflects that change of staffing. Assessment of the rationale for the Appropriate Care Score indicated that one-on-one education concerning the implementation of the Stroke Core Measure and tools was required for the Traveler nurses.

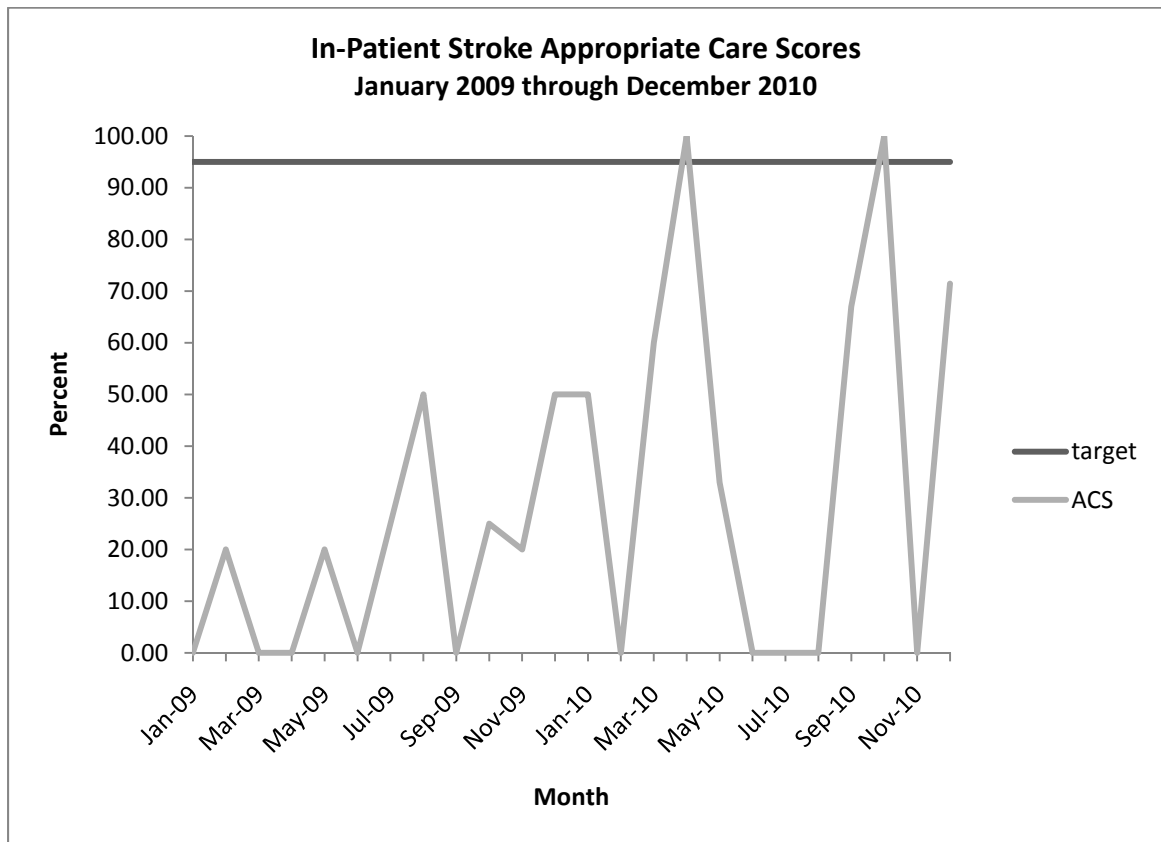


Figure 1 2009-2010 APPROPRIATE CARE SCORES February 2010 had no patients who met criteria for inclusion in the In-Patient Stroke Core Measure.

Implementation of the Electronic Medical Record in October 2009 resulted in another drop in Appropriate Care Scores; the rationale for the drop in the Appropriate Care Score was associated with the Electronic Medical Record software. The author provided one-on-one education of the patient care staff. Another drop in Appropriate Care Scores was noted in May and June of 2010. At this time education regarding the abstraction process and effective use of tools and documentation was again presented to physicians at the Medicine and Emergency Department subsection meetings and during unit meetings of the nursing staff.

The hospital did not have patients who met criteria for inclusion into the Stroke Core Measure in February 2010.

CHAPTER 5

SUMMARY AND DISCUSSION

Data support that the protocol developed by the Stroke Project Committee did improve documentation and record compliance. Concurrent review data as well as data compiled by the third-party vendor demonstrated a significant improvement in record compliance as well as documentation regarding the care of the patient with signs, symptoms and/or diagnosis of ischemic stroke following implementation of the Stroke Project Protocol.

Appropriate tools for use with the .Stroke Project Protocol were developed and implemented. Concurrent review of compliance with the In-Patient Stroke Core Measure facilitated delivery of evidence based best practices and improved the documentation of the care and, presumably, patient outcomes.

Further reinforcement of this education was accomplished when results from the vendor abstraction were reviewed. The monthly target scores of 95% were met and exceeded twice within the first year following implementation of the Stroke Project Protocol. The Appropriate Care Score trend was toward delivery of appropriate care for this patient population, as well as more complete and accurate documentation.

Issues with the abstraction software and the process were identified. Hospital administration recognized that the Appropriate Care Scores did not tell the whole story of quality patient care, nor did the Appropriate Care Scores accurately reflect actual care

delivered to the patients with Ischemic Stroke at this hospital. Additional measures of quality must be considered in conjunction with the Appropriate Care Scores.

CHAPTER 6

FUTURE DIRECTIONS

The process of continuing improvement by implementing a best practice standard of care for persons with Ischemic Stroke will include continuous, concurrent review of care delivered and documented according to the Stroke Project Protocol and hospital policies and procedures. One-on-one education of staff will be ongoing as determined by results of concurrent reviews.

Validated scores and missed opportunities noted by abstraction from the vendor will be communicated to the physicians, health care providers and hospital administrators. Performance Improvement staff will review data, note trends, plan and implement education and procedures to sustain progress.

Information from The Joint Commission and Centers for Medicare and Medicaid will be reviewed routinely to note changes to the Stroke Core Measure and develop procedures to ensure continued successful performance.

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APPENDICES

APPENDIX A

STROKE NATIONAL HOSPITAL INPATIENT MEASURES

Set Measure ID#	Measure Short Name
STK-1	<p>Venous Thromboembolism (VTE) Prophylaxis</p> <p>Start day after admission, ASA alone not recommended, (LMWH, LDFH)</p>
STK-2	<p>Discharged on Antithrombotic Therapy</p> <p>Cardioembolic ischemic stroke patients need warfarin, VTE prophylaxis is not enough</p>
STK-3	<p>Anticoagulation Therapy for Atrial Fibrillation/Flutter</p> <p>Ischemic stroke patients need warfarin if have atrial fib/flutter</p>
STK-4	<p>Thrombolytic Therapy</p> <p>Initiate IV t-PA if arrive within 3 hours of time last known well and no contraindications, must at least consider IV t-PA</p>
STK-5	<p>Antithrombotic Therapy By End of Hospital Day 2</p> <p>VTE doses insufficient patients receiving t-PA excluded</p>
STK-6	<p>Discharged on Statin Medication</p> <p>Patients with LDL \geq 100, with evidence of atherosclerosis, on lipid-lowering meds on admit, prescribed statin on discharge</p>
STK-8	<p>Stroke Education</p> <p>Must address activation of EMS; Signs and Symptoms of stroke; risk factors of stroke; medications at discharge and need for follow-up medical care</p>
STK-10	<p>Assessed for Rehabilitation</p> <p>Physical, occupational and speech therapy assessments completed and plan for discharge disposition</p> <p>(The Joint Commission, 2011)</p>

APPENDIX B

NATIONAL INSTITUTES OF HEALTH STROKE SCALE

**National Institutes of Health
Stroke Scale (NIHSS)**

<u>NIHSS Assessment Items</u>		
1a. Level of Consciousness	0	= Alert
	1	= Not alert, arouseable
	2	= Not alert
	3	= Unresponsive
1b. Level of Consciousness Questions	0	= Answers both questions correctly
	1	= Answers one question correctly
	2	= Answers neither correctly
1c. Level of Consciousness Commands	0	= Performs both tasks correctly
	1	= Performs one task correctly
	2	= Performs neither task
2. Gaze	0	= Normal
	1	= Partial gaze palsy
	2	= Total gaze paresis
3. Visual Fields	0	= No visual loss
	1	= Partial hemianopia
	2	= Complete hemianopia
4. Facial Palsy	3	= Bilateral hemianopia
	0	= Normal
	1	= Minor paralysis
5. Motor Arm	2	= Partial paralysis
	3	= Complete paralysis
	0	= No drift
	1	= Drift before 10 sec.
6. Motor Leg	2	= Falls before 10 sec.
	3	= No effort against gravity
	4	= No movement
	9	= Amputation, joint fusion
	0	= No drift
7. Limb Ataxia	1	= Drift before 5 sec.
	2	= Falls before 5 sec.
	3	= No effort against gravity
	4	= No movement
	9	= Amputation, joint fusion
8. Sensory	0	= Absent
	1	= One limb
	2	= Two limbs
9. Language	9	= Amputation, joint fusion
	0	= Normal
	1	= Mild to moderate loss
10. Dysarthria	2	= Severe to total loss
	0	= Normal
	1	= Mild aphasia
	2	= Severe aphasia
11. Extinction and Inattention	3	= Mute or global aphasia
	0	= Normal
	1	= Mild to moderate slurring
	2	= Severe, unintelligible
12. Distal Motor Function	9	= Intubated or other physical barriers
	0	= Normal
	1	= Mild
	2	= Severe
	0	= Normal
	1	= Some extension after 5 sec.
	2	= No voluntary extension after 5 sec.

APPENDIX C

EMERGENCY DEPARTMENT PHYSICIAN ORDERS

DATE	TIME	PHYSICIAN'S ORDERS
		<ol style="list-style-type: none"> 1. Admit to ICU. 2. CT of the head to rule out cerebral hemorrhage, edema, and/or midline shift. 3. IV hepllock, four sites if possible. 4. Stroke Panel, including: STAT CBC, PTT and PT, Fibrinogen, and Type and Screen. 5. O₂ Saturation, B/P, P, R and neuro assessment every 15 min. x 1 hour, then every 1 hour x 8 hours, then every 4 hours and PRN. Notify physician if BP $\geq 185/\geq 110$ mmHg. 6. STAT EKG. 7. Cardiac monitoring. 8. TPA administration: Total dose = _____mg. 0.9 mg/kg; maximum dose ≤ 90 mg. Bolus dose = _____mg. 10% of the total dose IV bolus over 1 minute. Remaining dose = _____mg. Remaining 90% infused over 60 minutes. 9. No anticoagulant or antiplatelet therapy for 24 hours. 10. Avoid nasogastric tube, blood draws, and invasive lines/procedures for 24 hours, if possible. 11. NPO until Swallow Evaluation Complete. 12. Swallow Evaluation by Speech Therapy. 13. Bedrest. 14. Physical Therapy Consult. 15. Occupational Therapy Consult. 16. Care Management Consult.
		<div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div data-bbox="540 1224 735 1251">_____ Physician Signature</div> <div data-bbox="938 1224 995 1251">_____ Date</div> <div data-bbox="1211 1224 1273 1251">_____ Time</div> </div>

APPENDIX D

EMERGENCY DEPARTMENT ACUTE STROKE RECORD

Presentation		Major Inclusion Criteria	
Date _____	ED Admit Time _____	<input type="checkbox"/> Screening NIHSS ≥ 4	<input type="checkbox"/> Onset <3 hours before treatment starts
Age _____ Sex _____	Time Pain Started _____	<input checked="" type="checkbox"/> CT: no hemorrhage or early stroke changes	<input type="checkbox"/> Consent of patient and/or next of kin
EKG Time _____	CT Time _____	Exclusion Criteria	
Time of Chest X-Rays _____	Oxygen _____ Weight _____	<input type="checkbox"/> Rapidly improving or minor symptoms	<input type="checkbox"/> Glucose < 50 mg/dL or > 400 mg/dL
Allergies: <input type="checkbox"/> NKA List: _____	Allergies: <input type="checkbox"/> NSAIDs	<input type="checkbox"/> CT scan showing evidence of intracranial hemorrhage	<input type="checkbox"/> Symptoms of subarachnoid hemorrhage
Current Medication: <input type="checkbox"/> Coumadin	<input type="checkbox"/> ASA <input type="checkbox"/> Other: _____	<input type="checkbox"/> History of intracranial hemorrhage	<input type="checkbox"/> Arterial puncture at non-compressible site or lumbar puncture # 1 week
Medical History: _____	<input type="checkbox"/> Seizure at stroke onset	<input type="checkbox"/> Stroke or serious head trauma # 3 months	<input type="checkbox"/> Platelet count < 100,000/mm ³
	<input type="checkbox"/> Major surgery or other serious trauma # 2 weeks	<input type="checkbox"/> GI or UT hemorrhage # 3 weeks	<input type="checkbox"/> Heparin # 48 hours associated w/elevated PTT
	<input type="checkbox"/> SBP > 185 mm Hg; DBP > 110 mm Hg	<input type="checkbox"/> Aggressive treatment to lower BP	<input type="checkbox"/> Pregnant or lactating female
			<input type="checkbox"/> Currently taking oral anticoagulants with prothrombin time > 15 sec

Candidate for Thrombolytic Therapy: Yes No Time Thrombolytic Ordered: _____

Time	Monitor	BP	P	R	O ₂ Sat	NIHSS	Nursing Notes

Medication	Dose	Time	RN's Signature	Laboratory	Time
TPA bolus 10% of dose over 1 minute, then 90% of dose over 60 min				Initial STAT Stroke Panel	
				Other:	
				Other:	
				Other:	
				Other:	
				ED Physician:	
				Personal Physician	
				Time Notified	
				Transferred to	
				Admitted to Room	Time to Room
				Report to:	

APPENDIX E

IN-PATIENT PHYSICIAN ORDERS

DATE	TIME	PHYSICIAN'S ORDERS
		<p align="center">Post-IV Tissue Plasminogen Activator (r-tPA)</p> <p>Admit to ICU Condition: Critical Patient diagnosis: Stroke <input type="checkbox"/> Service: _____ Attending: _____</p> <p align="center">No Heparin, No Lovenox, No Aspirin until 24 hours after infusion of r-tPA.</p> <p>Date/Time when t-PA was given/finished _____</p> <p>Allergies: Drug: _____ Other: _____ Code status: _____ Weight upon admission: _____</p> <p><input type="checkbox"/> Telemetry monitoring</p> <p><input type="checkbox"/> Vital signs: (BP, HR, T, R, SaO2) every 15 minutes x 1 hour after admission; then every 30 minutes X 1 hour, then every 1 hour X 24 hours</p> <p><input type="checkbox"/> Vital Sign parameters: If BP > 185/100 for 2 minutes, call physician and proceed with protocol below:</p> <ul style="list-style-type: none"> • <u>If SPB 185-230 mm Hg and/or DBP 105-120 mm Hg on two readings 5 to 10 minutes apart:</u> Give labetalol 20 mg intravenously over 1-2 minutes. May repeat or double labetalol every 10 to 20 minutes to a maximum dose of 300 mg or give the initial labetalol bolus and then start a labetalol drip at 2 to 8 mg/min. • <u>If SPB > 230 mm Hg or DBP 121-140 mm Hg:</u> Give labetalol 10 mg intravenously over 1-2 minutes. The dose may be repeated or double labetalol every 10 minutes to a maximum dose of 300 mg or give the initial labetalol bolus and then start a labetalol drip at 2 to 8 mg/min <p align="center">OR</p> <p>Nicardipine 5 mg/hour intravenous infusion as initial dose; titrate to desired effect by increasing 2.5 mg/hour every 5 minutes to maximum of 15 mg/hour. If BP is not controlled by labetalol, consider sodium nitroprusside.</p> <ul style="list-style-type: none"> • <u>If DBP > 140 mm Hg:</u> Start intravenous sodium nitroprusside 0.5 mcg/kg/minute infusion as initial dose and titrate to desired blood pressure • <u>Monitor BP every 15 minutes for 2 hours, then every 30 minutes for 6 hours, then every hour for 16 hours. Observe for hypotension</u> <p><input type="checkbox"/> Neuro checks: every 30 minutes X 4; then every 1 hour x 24 hours Call physician immediately for any change in neurological status</p> <p><input type="checkbox"/> Oxygen - titrate to keep Oxygen sat > 92%</p> <p><input type="checkbox"/> Daily weights (record on nursing flow sheet)</p> <p><input type="checkbox"/> I&O: Indwelling foley catheter placed prior to thrombolytic administration</p> <p><input type="checkbox"/> Incentive spirometry every 2 hours while awake (if patient able to perform)</p> <p><input type="checkbox"/> If intracranial hemorrhage suspected (neurologic deterioration, new headache, acute hypertension, nausea, vomiting) :</p> <ul style="list-style-type: none"> • Discontinue r-tPA infusion • Obtain an immediate CT scan • Draw blood: PT, aPTT, platelet count, fibrinogen • Prepare to give fibrinogen 6-8 units and cryoprecipitate containing Factor VIII • Prepare to give platelets 6-8 Units <p><input type="checkbox"/> If intracranial hemorrhage is present on CT Scan:</p> <ul style="list-style-type: none"> • Evaluate laboratory results: fibrinogen, PT, aPTT • Consider alerting and consulting neurosurgeon • Consider alerting and consulting hematologist • Consider second CT scan to assess size change

DATE	TIME	PHYSICIAN'S ORDERS
		<p><input type="checkbox"/> I.V. fluids: <u>Normal Saline with 20 mEq Potassium Chloride @ _____</u> /hour</p> <p><input type="checkbox"/> Diet:</p> <ul style="list-style-type: none"> • NPO • No NG tube placement <p><u>Consults:</u></p> <p><input type="checkbox"/> Speech therapy for clinical bedside swallow evaluation (Dysphagia Screening)</p> <p><input type="checkbox"/> Bedside swallowing assessment (MD/Nursing)</p> <p><input type="checkbox"/> Nutrition</p> <p><input type="checkbox"/> Care Management</p> <p><input type="checkbox"/> Physical Therapy (include assessment for Rehabilitation)</p> <p><input type="checkbox"/> Occupational Therapy</p> <p><input type="checkbox"/> Rehabilitation consult</p> <p><u>Activity:</u></p> <p><input type="checkbox"/> Bedrest with HOB at 30°</p> <p><input type="checkbox"/> Other: _____</p> <p><u>Precautions:</u></p> <p><input type="checkbox"/> Aspiration</p> <p><input type="checkbox"/> Seizures</p> <p><input type="checkbox"/> Falls</p> <p><u>Medications:</u></p> <p><input type="checkbox"/> Aspirin 325mg PO or 300 mg PR daily</p> <p><input type="checkbox"/> Aggrenox 1 Cap PO daily for 10 days then BID Start date _____</p> <p><input type="checkbox"/> Plavix 75 mg PO daily</p> <p><input type="checkbox"/> Simvastatin 20 mg PO nightly</p> <p><input type="checkbox"/> Famotidine 20 mg IV Q12 OR Famotidine 20 mg PO BID</p> <p><input type="checkbox"/> Docusate 100 mg PO BID</p> <p><input type="checkbox"/> Acetaminophen 650 mg PO every 4 hours prn pain or temp. >38.5</p> <p><input type="checkbox"/> Blood glucose finger sticks (circle one) every 4 hours every 6 hours.</p> <p><input type="checkbox"/> Insulin (see attached sliding scale protocol)</p> <p><input type="checkbox"/> Other: 1) _____ 2) _____</p> <p style="padding-left: 40px;">3) _____ 4) _____</p> <p><input type="checkbox"/> See attached order sheets for additional medications</p> <p><u>Deep Vein Thrombosis (DVT) Prophylaxis:</u></p> <p><input type="checkbox"/> Ted hose</p> <p><input type="checkbox"/> Compression boots (while in bed)</p> <p><input type="checkbox"/> Heparin 5000 units subcutaneously BID or TID SubQ (circle which schedule). Start 24 hours after r-tPA infusion.</p> <p><input type="checkbox"/> DVT prophylaxis not indicated</p>

DATE	TIME	PHYSICIAN'S ORDERS																																												
		<p>Admission Labs: (check those needed)</p> <table border="0"> <tr> <td><input type="checkbox"/> CBC w/diff</td> <td><input type="checkbox"/> VDRL</td> </tr> <tr> <td><input type="checkbox"/> ESR</td> <td><input type="checkbox"/> UA</td> </tr> <tr> <td><input type="checkbox"/> Basic metabolic panel</td> <td><input type="checkbox"/> Mg++</td> </tr> <tr> <td><input type="checkbox"/> Hepatic function panel</td> <td><input type="checkbox"/> Fibrinogen</td> </tr> <tr> <td><input type="checkbox"/> Renal function panel</td> <td><input type="checkbox"/> INR</td> </tr> <tr> <td><input type="checkbox"/> PT</td> <td><input type="checkbox"/> Other: _____</td> </tr> <tr> <td><input type="checkbox"/> PTT</td> <td></td> </tr> </table> <p>AM labs (for next day only):</p> <table border="0"> <tr> <td><input type="checkbox"/> CBC w/diff</td> <td><input type="checkbox"/> PT</td> </tr> <tr> <td><input type="checkbox"/> Basic metabolic panel</td> <td><input type="checkbox"/> PTT</td> </tr> <tr> <td><input type="checkbox"/> Hepatic function panel</td> <td><input type="checkbox"/> Lipid panel, fasting</td> </tr> <tr> <td><input type="checkbox"/> Lipoprotein (a), fasting</td> <td><input type="checkbox"/> Homocysteine, fasting</td> </tr> <tr> <td><input type="checkbox"/> Troponin I</td> <td><input type="checkbox"/> A₁C</td> </tr> </table> <p>Diagnostic tests:</p> <table border="0"> <tr> <td><input type="checkbox"/> MRI – indication: stroke (the following morning)</td> <td><input type="checkbox"/> CU/S – indication: R/O stenosis</td> </tr> <tr> <td><input type="checkbox"/> diffusion (at IMI)</td> <td><input type="checkbox"/> TTE – indication: R/O source of embolus</td> </tr> <tr> <td><input type="checkbox"/> MRA of head</td> <td><input type="checkbox"/> with bubble study</td> </tr> <tr> <td><input type="checkbox"/> MRA of neck down to arch</td> <td><input type="checkbox"/> r/o aortic arch atheroma</td> </tr> <tr> <td><input type="checkbox"/> 12-lead ECG</td> <td><input type="checkbox"/> TEE – indication: R/O source of embolus</td> </tr> <tr> <td><input type="checkbox"/> CXR – indication: r/o pulmonary disease</td> <td><input type="checkbox"/> without bubble</td> </tr> <tr> <td><input type="checkbox"/> Head CT</td> <td><input type="checkbox"/> WITH bubble</td> </tr> <tr> <td><input type="checkbox"/> Head CTA</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other: _____</td> <td></td> </tr> </table> <p><input type="checkbox"/> Education:</p> <table border="0"> <tr> <td><input type="checkbox"/> Stroke Education (ischemic/hemorrhagic, TIA)</td> <td><input type="checkbox"/> Smoking Cessation</td> </tr> </table>	<input type="checkbox"/> CBC w/diff	<input type="checkbox"/> VDRL	<input type="checkbox"/> ESR	<input type="checkbox"/> UA	<input type="checkbox"/> Basic metabolic panel	<input type="checkbox"/> Mg++	<input type="checkbox"/> Hepatic function panel	<input type="checkbox"/> Fibrinogen	<input type="checkbox"/> Renal function panel	<input type="checkbox"/> INR	<input type="checkbox"/> PT	<input type="checkbox"/> Other: _____	<input type="checkbox"/> PTT		<input type="checkbox"/> CBC w/diff	<input type="checkbox"/> PT	<input type="checkbox"/> Basic metabolic panel	<input type="checkbox"/> PTT	<input type="checkbox"/> Hepatic function panel	<input type="checkbox"/> Lipid panel, fasting	<input type="checkbox"/> Lipoprotein (a), fasting	<input type="checkbox"/> Homocysteine, fasting	<input type="checkbox"/> Troponin I	<input type="checkbox"/> A ₁ C	<input type="checkbox"/> MRI – indication: stroke (the following morning)	<input type="checkbox"/> CU/S – indication: R/O stenosis	<input type="checkbox"/> diffusion (at IMI)	<input type="checkbox"/> TTE – indication: R/O source of embolus	<input type="checkbox"/> MRA of head	<input type="checkbox"/> with bubble study	<input type="checkbox"/> MRA of neck down to arch	<input type="checkbox"/> r/o aortic arch atheroma	<input type="checkbox"/> 12-lead ECG	<input type="checkbox"/> TEE – indication: R/O source of embolus	<input type="checkbox"/> CXR – indication: r/o pulmonary disease	<input type="checkbox"/> without bubble	<input type="checkbox"/> Head CT	<input type="checkbox"/> WITH bubble	<input type="checkbox"/> Head CTA		<input type="checkbox"/> Other: _____		<input type="checkbox"/> Stroke Education (ischemic/hemorrhagic, TIA)	<input type="checkbox"/> Smoking Cessation
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APPENDIX F

NURSING CARE STANDARDS

Date							
07-19							
19-07							

Nursing Care Standards

Problem/Potential Problem	Desired Outcome
<p>Impaired physical mobility related to motor deficit secondary to CVA:</p> <p>A. <u>Dominant (left) hemisphere injury</u></p> <ul style="list-style-type: none"> • Usually normal awareness of body and spatial orientation • Possible lack of/ or decreased pain sensation, position sense, and visual field deficit on the right side of the body • Needs reminders to scan environment • Tends to be slow, cautious, and disorganized when approaching unfamiliar problems • Benefits from frequent, accurate, and immediate feedback on performance • Responds well to nonverbal encouragement • Short attention span, impaired logical reasoning, easily distracted • Requires short, simple messages or questions; step-by-step directions • May have difficulty recognizing items by touch and benefits from touching them and having caretaker name them <p>B. <u>Non-dominant (right) hemisphere</u></p> <ul style="list-style-type: none"> • Decreased pain sensation, pain sense, and visual field deficit • Typically unaware of or denies deficits or lost abilities • Tends to be impulsive and too quick with movements • Impaired judgment about and overestimates abilities • Needs to be encouraged to slow down and check each step or task as completed • At risk for burns, bruises, cuts and falls • Generally retains ability to think logically but sees specifics rather than the global picture • Take verbal communication literally • May also have impaired ability to recognize, associate, or interpret sound • May have visual-spatial misconception (i.e., underestimates distances, bumps into doors, or confuses inside and outside of objects, such as clothing; loses place when reading or adding • May have difficulty recognizing and associated familiar objects (i.e., not recognizing dangerous or hazardous objects because purpose is unknown); requires assistance with eating implements, monitoring of environment for safety hazards and removal of unsafe objects such as scissors. 	<p>Patient demonstrates optimal mobility:</p> <ul style="list-style-type: none"> • Absence of contractures • Demonstration of ability to move arms and legs within physiological • Participation in activities of daily living within physiologic limitations • Demonstration of correct technique for range-of-motion (ROM) exercises and use of assistive devices • Absence of complications of immobility, venous stasis, thrombus, and skin breakdown

Interventions:

1. Assess the patient's functional ability on admission, and monitor for change during every shift.
2. Turn and reposition the patient every 2 hours.
3. Provide impaired arm with sling to support anatomic position.
4. Perform ROM exercises BID.
5. Instruct the patient and family in ROM and exercise regimen.
6. Maintain proper body alignment using pillows, towel rolls, splints, and high-top sneakers.
7. Elevate affected arms and legs on pillows, unless contraindicated.
8. Use foot board, trapeze bar, and other assistive devices, as needed.
9. Teach the patient and family how to use assistive devices.
10. Monitor for complications of mobility.
11. Apply anti-embolism stockings to help prevent venous stasis if ordered by physician.
12. Collaborate with physical therapist to develop mobility plan. Reinforce instructions given by the physical therapist.

13. Teach the patient to support affected side with unaffected side.
14. Encourage participation in basic activities of daily living as soon as possible, using unaffected side.
15. General principles when transferring include:
 - Encourage weight bearing on patient's stronger side. Use a gait belt to safety support the patient during transfers without excessive stress on upper extremities.
 - Instruct patient to pivot on the stronger side and use the stronger arm for support.
 - Teach patient that transferring toward the unaffected side is usually the easiest and safest.
 - Instruct patient to place the unaffected side closest to the bed or chair patient is transferring to.
 - Explain that when transferring, the affected leg should be under the patient with the foot flat on the ground.
 - Position a braced chair or locked wheelchair close to patient's stronger side. If patient requires assistance from staff member, teach patient not to support self by pulling on or placing hands around assistant's neck. Staff members should use their own knees and feet to brace the feet and knees of patients who are very weak.

Problem/Potential Problem	Desired Outcome
Impaired verbal communication related to damage to cerebral speech center/aphasia. <ul style="list-style-type: none"> • Partial or complete inability to use or comprehend language and symbols • May occur with dominant (left) hemisphere damage • Not the result of impaired hearing or intelligence • Can be a combination of many different types, including: <ul style="list-style-type: none"> ▪ <i>Receptive (Wernicke's, sensory, or "nonfluent") aphasia</i> is characterized by inability to recognize or comprehend spoken words, as if a foreign language is being spoken or the patient has word deafness. The patient is often good at responding to nonverbal clues. ▪ <i>Expressive (Broca's, motor, or "fluent") aphasia</i> is characterized by difficulty expressing words or naming objects. Gestures, groans, swearing, or nonsense words may be used. 	Patient communicates needs effectively. <ul style="list-style-type: none"> • Uses alternative communication methods • Consistently communicates needs to staff • Demonstrates decreased frustration when communicating • Evidences satisfaction with chosen communication methods

Interventions:

1. Assess and document whether communication impairment is expressive, receptive, or both.
2. Approach and speak to patient from unaffected side. If you must approach from affected side, announce self to avoid startling patient. Perform activities on unaffected side, then proceed to affected side, and return to unaffected side.
 - Face patient and establish eye contact
 - Speak slowly and clearly
 - Give patient time to process your communication and answer
 - Keep messages short and simple
 - Stay with one clearly defined subject
 - Avoid questions with multiple choices; phrase questions that that they can be answered "yes" or "no"
 - Use the same words each time you repeat a statement or question (e.g., pill vs. medication, bathroom vs. toilet)
 - If patient does not understand after repetition, try different words
 - Use gestures, facial expressions, and pantomime to supplement and reinforce message
 - Give short, simple directions; repeat as needed to ensure understanding
 - Use concrete terms (e.g., water instead of fluid, leg instead of limb)
3. Explain communication impairment to patient and family, Encourage the family to support the patient.
4. Allow the patient to choose from various alternative communication methods, such as paper and pencil, picture board, and poster with common questions and phrases.
5. Teach the patient how to use chosen communication method. Include the family in teaching sessions.
6. Speak in short, simple phrases while standing within the patient's sight. Allow time for response.
7. Speak in normal tone; do not talk loudly or shout.
8. Anticipate the patient's hygiene, toileting, and ADL needs.
9. Collaborate with speech therapist to maximize the patient's ability to communicate.

Problem/Potential Problem	Desired outcome
High risk for impaired skin integrity	Patient's skin will remain intact: <ul style="list-style-type: none"> • Warm, dry skin • Adequate skin turgor • Normal skin color • Strong peripheral pulses • Adequate fluid intake and output • Absence of redness, blistering, or edema (signs of impending or actual skin breakdown) • Serum albumin and protein values within normal ranges

Interventions:

1. Assess skin integrity at least every shift.
2. Monitor skin turgor for evidence of dehydration at least every shift.
3. Palpate peripheral pulses at least every shift.
4. Assess skin temperature and capillary filling time at least every shift.
5. Document fluid intake and output carefully to evaluate fluid balance.
6. Turn and reposition the patient with pillows at least every 2 hours.
7. Keep skin clean and dry. Lubricate with lotion.
8. Avoid pulling on patient's shoulders and arms; use draw sheets to move the patient in bed.
9. Monitor serum albumin and protein values to help assess nutritional status.
10. Teach preventive skin care regimen to the patient and family.

Problem/Potential Problem	Desired Outcome
Altered cerebral tissue perfusion related to interrupted arterial flow	Patient exhibits signs of improved cerebral tissue perfusion: <ul style="list-style-type: none"> • Improving level of consciousness (LOC) • Orientation to person, place, and time • Vital signs within normal ranges • Arterial blood gas values within normal ranges • Absence of marked behavioral problems • Demonstration of ability to move arms and legs within physiologic limitations

Interventions:

1. Assess neurological status at least every shift, including LOS, ability to move arms and legs, and pupillary response.
2. Observe for behavioral changes, including increased agitation, uncooperativeness, and unusual behavior toward family members.
3. Remain calm if behavioral change occurs, and do not argue with the patient. Try to determine cause of behavioral change.
4. Maintain calm, quiet, environment.
5. Reorient the patient as needed. Place clock within patient's sight.
6. Encourage the family to discuss current events, family situations, and other topics of interest when visiting to help the patient stay alert and involved.
7. Monitor bowel activity. Implement bowel protocol to prevent straining at stool.
8. Monitor blood pressure. Administer antihypertensives, as prescribed and needed.
9. Monitor fluid balance and IV flow rates carefully to prevent fluid overload.

Problem/Potential Problem	Desired Outcome
High risk for impaired swallowing related to neuromuscular impairment secondary to CVA.	Patient demonstrates adequate swallowing: <ul style="list-style-type: none"> • Absence of signs of aspiration • Absence of coughing, choking, or food retention in mouth during meals • Intake oral mucous membranes • Adequate nutritional intake • Demonstration by family members of correct techniques for feeding the patient • Verbalization by family members of strategies to prevent aspiration

Interventions:

1. Consult the speech therapist for swallowing evaluation, as need.
2. Assess gag and cough reflexes before offering food or fluids.
3. Assess ability to swallow saliva and then water.
4. Position per recommendation of speech therapist for meds.
5. Place food on unaffected side of mouth if paralysis is present.
6. Assist during meals by placing food and utensils within patient's reach, opening cartons, and cutting food, as necessary.
7. Inspect mouth frequently to check for retained food, assess condition of mucous membranes, and provide oral care at least every shift.
8. Keep suction apparatus at bedside at all times.
9. Instruct family members to help feed the patient. Be available to observe and supervise, as needed.

Problem/Potential Problem	Desired Outcome
Self-care deficit; feeding, bathing, and/or toileting related to motor deficit secondary to CVA	Patient performs self-care activities with minimal assistance: <ul style="list-style-type: none"> • Participation in self-care activities within physiologic limitations • Verbalization of self-care needs • Verbalization of concerns and frustrations • Demonstration of decreased need for assistance with self-care activities • Progressive improvement of motor and cognitive skills needed to perform self-care activities

Interventions:

1. Discuss concerns and frustrations with patient and family. Reassure them that frustration is normal response to the situation.
2. Anticipate hygiene and toileting needs to help decrease frustration. Offer bedpan or commode every 2 to 4 hours.
3. Provide privacy during bathing and dressing. Do not rush the patient through these activities.
4. Note episodes of incontinence.
5. Keep call button within reach on the patient's unaffected side.
6. Support independence. Encourage the patient to participate in daily care, and offer assistance as needed, providing positive reinforcement for participation and progressive improvement in self-care.
7. Provide assistive devices to promote independence.
8. Encourage the family to bring clothing that the patient can put on and remove easily.
9. Teach patient and family about home care and correct use of assistive devices that will be needed after discharge.
10. Consult the occupational therapist for evaluation of the patient's ability to perform self-care.

Initials	Signature	Initials	Signature

APPENDIX G

ISCHEMIC STROKE CHECKLIST

Inpatient Stroke Core Measures Checklist

Sign and date when the following are complete:

- Appropriate orders (PO 22-A, PO 22-B) have been placed in chart.
Date_____ Time_____ Signature_____
- Screen for dysphagia completed.
Date_____ Time_____ Signature_____
- Smoking Cessation Protocol (PO-80) has been placed in chart and documentation is made that patient received the smoking cessation literature per Logicare.
Date_____ Time_____ Signature_____
- VTE prophylaxis prescribed day of or day after admission.
Date_____ Time_____ Signature_____
- Lipid Profile ordered within 48 hrs of admission for ischemic stroke patients.
Date_____ Time_____ Signature_____
- Ischemic Stroke Patients with Atrial Fibrillation/Flutter receiving anticoagulation therapy.
Date_____ Time_____ Signature_____
- Antithrombotic medication initiated within 48 hours of hospitalization for ischemic stroke patients who did not receive t-PA.
Date_____ Time_____ Signature_____
- Rehabilitation plan considered:
 - Physical Therapy consult initiated.
 - Speech Therapy consult initiated.
 - Occupational Therapy consult initiated.
 - Care Management consult initiated.Date_____ Time_____ Signature_____
- Ischemic Stroke patients discharged on antithrombotic and statin medications.
Date_____ Time_____ Signature_____
- Stroke Education information given to patient and/or family.
Date_____ Time_____ Signature_____
- At time of discharge the RN has reviewed physician's d/c instructions and the medication reconciliation form and the patient/caregiver has been given a copy.
Date_____ Time_____ Signature_____

Prior to discharge, two nurses must sign verifying all the above

1. _____ 2. _____

APPENDIX H

STROKE PATIENT EDUCATION

Guidelines to Follow at Home



Personal Risk Factors for Stroke Include:

- High blood pressure
- Elevated cholesterol
- Diabetes
- Overweight
- Physical Inactivity
- Excessive alcohol consumption
- Carotid artery stenosis
- Atrial fibrillation
- Smoking

Do Not Smoke!



If you develop signs and symptoms of stroke, call 911 IMMEDIATELY. The sooner treatment starts, the greater the chance of minimizing damage.

Signs and symptoms of stroke may include:

- Sudden numbness or weakness of the face, arm, or leg, especially on one side of the body.
- Sudden confusion, trouble speaking or understanding.
- Sudden trouble seeing in one or both eyes.
- Sudden trouble walking, dizziness, loss of balance or coordination.
- Sudden severe headache with no known cause.

You have received a list of medications prescribed for you by your physician. Take the medications as prescribed. Show the list to your primary care physician at your follow-up appointment.

You will need to see Dr. _____ in _____.
Please call _____ to make the appointment

Nurse's Signature _____

Date _____

Patient's Signature _____

Date _____

- Copy of instructions given to patient
- Copy of Medication Reconciliation given to patient
- Logicare Stroke Information given to patient

APPENDIX I

PERMISSION



Sisters of Charity of Leavenworth Health System

May 9, 2011

To Whom It May Concern:

Carla Campbell has permission to utilize data and tools developed for St. James Healthcare's stroke program, including core measure tracking system.

Sincerely,

A handwritten signature in cursive script that reads "Shannon Holland".

Shannon Holland, MSN, RN
Vice President, Patient Care Services