Consensus Acute Stroke Performance Measures

Supported by CDC's Paul Coverdell National Acute Stroke Registry, The Joint Commission, and the American Heart Association/American Stroke Association

Performance Measure Name: Deep Vein Thrombosis (DVT) Prophylaxis

Patients with an ischemic stroke or a hemorrhagic stroke and who are non-ambulatory should start receiving DVT prophylaxis by end of hospital day two.

Rationale:
Patients experiencing a stroke that involves a paretic or paralyzed lower extremity are at increased risk of developing deep vein thrombosis (DVT). One study noted proximal deep vein thrombosis in more than a third of patients with moderately severe stroke. Reported rates of occurrence vary depending on the type of screening used. Prevention of DVT, through the use of prophylactic strategies, in at risk patients is a noted recommendation in numerous clinical practice guidelines. Non-pharmacologic approaches include early mobilization and use of intermittent pneumatic compression stockings. Pharmacologic approaches involve early anticoagulant therapy including the administration of subcutaneous unfractionated heparin, low-molecular-weight (LMW) heparins and heparinoids if there are no contraindications. Aspirin alone is not recommended as an agent to prevent DVT.

Performance Measure Name: Discharged on Antithrombotic Therapy

Patients with an ischemic stroke prescribed antithrombotic therapy at discharge

Rationale: The effectiveness of antithrombotic agents in reducing stroke mortality, stroke-related morbidity and recurrence rates has been studied in several large clinical trials. While the use of these agents for patients with acute ischemic stroke and transient ischemic attacks continues to be the subject of study, substantial evidence is available from completed studies. Data at this time suggest that antithrombotic therapy should be prescribed at discharge following acute ischemic stroke to reduce stroke mortality and morbidity as long as no contraindications exist. For patients with a stroke due to a cardioembolic source (e.g., atrial fibrillation, mechanical heart valve), warfarin is recommended unless contraindicated. Warfarin is not generally recommended for secondary stroke prevention in patients presumed to have a non-cardioembolic stroke.

Anticoagulants at doses to prevent deep vein thrombosis are insufficient antithrombotic therapy to prevent recurrent ischemic stroke or TIA.

Performance Measure Name: Patients with Atrial Fibrillation Receiving Anticoagulation Therapy

Patients with an ischemic stroke with atrial fibrillation discharged on anticoagulation therapy.

Rationale: Nonvalvular atrial fibrillation (NVAF) is a common arrhythmia and an important risk factor for stroke. It is one of several conditions and lifestyle factors that have been identified as risk factors for stroke. It has been estimated that over 2 million adults in the United States have NVAF. While the median age of patients with atrial fibrillation is 75 years, the incidence increases with advancing age. For example, The Framingham Heart Study noted a dramatic increase in stroke risk associated with atrial fibrillation with advancing age, from 1.5% for those 50 to 59 years of age to 23.5% for those 80 to 89 years of age. Furthermore, a prior stroke or transient ischemic attack (TIA) are among a limited number of predictors of high stroke risk within the population of patients with atrial fibrillation. Therefore, much emphasis has been placed on identifying methods for preventing recurrent ischemic stroke as well as preventing first stroke. Prevention strategies focus on the modifiable risk factors such as hypertension, smoking, and atrial fibrillation. Analysis of five placebo-controlled clinical trials investigating the efficacy of warfarin in the primary prevention of thromboembolic stroke, found the relative risk of thromboembolic stroke was reduced by 68% for atrial fibrillation patients treated with warfarin. The administration of antithrombotic therapy, unless there are contraindications, is an established effective strategy in preventing recurrent stroke in high stroke risk-atrial fibrillation patients with TIA or prior stroke.

Performance Measure Name: Acute ischemic stroke patients who arrive at the hospital within 120 minutes (2 hours) of time last known well and for whom IV t-PA was initiated at this hospital within 180 minutes (3 hours) of time last known well.

Rationale: The administration of thrombolytic agents to carefully screened, eligible patients with acute ischemic stroke has been shown to be beneficial in several clinical trials. These included two positive randomized controlled trials in the United States; The National Institute of Neurological Disorders and Stroke (NINDS) Studies, Part I and Part II. Based on the results of these studies, the Food and Drug Administration approved the use of intravenous recombinant tissue plasminogen activator (IV r-TPA or t-PA) for the treatment of acute ischemic stroke when given within 3 hours of stroke symptom onset. A large meta-analysis controlling for factors associated with stroke outcome confirmed the benefit of IV tPA in patients treated within 3 hours of symptom onset. While controversy still exists among some specialists, the major society practice guidelines developed in the United States all recommend the use of IV t-PA for eligible patients. Physicians with experience and skill in stroke management and the interpretation of CT scans should supervise treatment.

Performance Measure Name: Antithrombotic Therapy By End of Hospital Day Two

Patients with ischemic stroke who receive antithrombotic therapy by the end of hospital day two.

Rationale: The effectiveness of antithrombotic agents in reducing stroke mortality, stroke-related morbidity and recurrence rates has been studied in several large clinical trials. While the use of these agents for patients with acute ischemic stroke and transient ischemic attacks continues to be the subject of study, substantial evidence is available from completed studies. Data at this time suggest that antithrombotic therapy should be initiated within 48 hours of symptom onset in acute ischemic stroke patients to reduce stroke mortality and morbidity as long as no contraindications exist.

Anticoagulants at doses to prevent deep vein thrombosis are insufficient antithrombotic therapy to prevent recurrent ischemic stroke or TIA.

Performance Measure Name: Discharged on Cholesterol Reducing Medication

Ischemic stroke patients with LDL>100, or LDL not measured, or on cholesterol-reducer prior to admission, who are discharged on cholesterol reducing drugs.

Rationale: An elevated serum lipid level has been a well-documented risk factor for coronary artery disease (CAD). Recently, there has been an increased focus on examining the relationship between elevated lipid levels and the incidence of stroke. In particular, some recent clinical trials have analyzed the association between lipids and non-hemorrhagic stroke. The reduction of LDL cholesterol, through lifestyle modification and drug therapy, for the prevention of strokes and other vascular events is recommended for patients with CAD in the National Cholesterol Education Program III (NCEPIII) Guidelines. In addition, recent evidence from the Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) trial supports the use of statins to lower LDL cholesterol in stroke patients without prior CAD and a fasting LDL > 100 mg/dL.

Based on these guidelines, all patients with ischemic stroke should have lipid profile measurement performed within 48 hours of admission unless outpatient results are available from within the past 30 days. Treatment for secondary prevention should be initiated in the presence of LDL> 100 mg/dL, or continued for patients who were previously on lipid-lowering therapy an have an LDL< 100 mg/dL.

Performance Measure Name: Dysphagia Screening
Patients with ischemic or hemorrhagic stroke who undergo screening for dysphagia with a simple valid bedside testing protocol before being given any food, fluids, or medication by mouth.

Rationale: Dysphagia is a potentially serious complication of stroke. The importance of assessing a patient's ability to swallow, before approving the oral intake of fluids, food or medication, has been noted in multiple practice guidelines including the Agency for Healthcare Research and Quality (AHRQ) Post-Stroke Rehabilitation guideline. It has been estimated that 27-50% of stroke patients develop dysphagia. Furthermore, 43-54% of stroke patients with dysphagia will experience aspiration and of those patients 37% will develop pneumonia. Dysphagia may contribute to malnutrition and increased length of hospital stay. Most guidelines include a recommendation that all patients be screened for their ability to swallow and those with abnormal results be referred for a complete examination by a speech and language pathologist or other qualified individual. Recent evidence suggests that pneumonia rates in this population may be reduced when a systematic program of diagnosis and treatment of dysphagia is included in an ischemic stroke management plan.

Performance Measure Name: Stroke Education
Patients with ischemic or hemorrhagic stroke or their caregivers who were given education or educational materials during the hospital stay addressing **all** of the following: personal risk factors for stroke, warning signs for stroke, activation of emergency medical system, need for follow-up after discharge, and medications prescribed.

Rationale: There are many examples of how patient education programs for specific chronic conditions have increased healthful behaviors, improved health status, and/or decreased health care costs of their participants. Clinical practice guidelines include recommendations for patient and family education during hospitalization as well as information about resources for social support services. Some clinical trials have shown measurable benefits in patient and caregiver outcomes with the application of education and support strategies. The type of stroke experienced and the resulting outcomes will play a large role in determining not only the course of treatment but also what education will be required. Patient education should include information about the event (e.g., cause, treatment, and risk factors), the role of various medications or strategies, as well as desirable lifestyle modifications to reduce risk or improve outcomes. Family/caregivers will also need guidance in planning effective and realistic care strategies appropriate to the patient's prognosis and potential for rehabilitation.

Smoking Cessation Performance Measure Name: Smoking Cessation/ Advice/Counseling
Patients with ischemic or hemorrhagic stroke with a history of smoking cigarettes, who are, or whose caregivers are, given smoking cessation advice or counseling during hospital stay. For the purposes of this measure, a smoker is defined as someone who has smoked cigarettes anytime during the year prior to hospital arrival.

Rationale: Cigarette smoking is the single most alterable risk factor contributing to premature morbidity and mortality, accounting for approximately 430,000 deaths in the United States. Smoking nearly doubles the risk of ischemic stroke. Numerous prospective investigations have demonstrated substantial decrease in coronary heart disease mortality for former smokers, and similar rapid decreases in risk with smoking are seen for ischemic stroke. The Framingham Heart Study concluded that smoking made a significant independent contribution to the risk of stroke. Although no randomized controlled trials have been performed, there is very strong consensus that patients who smoke should be counseled to stop smoking to decrease the risk of stroke. Research indicates that patients who receive even brief smoking cessation advice from their physicians are more likely to quit than those receiving no counseling at all. Addressing smoking habits and initiating cessation efforts are reasonable interventions during hospitalization for acute stroke and may promote the patient's medical recovery.

Performance Measure Name: Assessed for Rehabilitation
Patients with an ischemic stroke or hemorrhagic stroke who were assessed for rehabilitation services.

Rationale: Each year about 700,000 people experience a new or recurrent stroke, which is the nation's third leading cause of death. Approximately two thirds of these individuals survive and require rehabilitation. Stroke is a leading cause of serious, long-term disability in the United States, with about 4.4 million stroke survivors alive today. Forty percent of stroke patients are left with moderate functional impairment and 15 to 30 percent with severe disability. More than 60% of those who have experienced stroke, serious injury, or a disabling disease have never received rehabilitation. Stroke rehabilitation should begin as soon as the diagnosis of stroke is established and life-threatening problems are under control. Among the high priorities for stroke are to mobilize the patient and encourage resumption of self-care activities as soon as possible. A considerable body of evidence indicates better clinical outcomes when patients with stroke are treated in a setting that provides coordinated, multidisciplinary stroke-related evaluation and services. Effective rehabilitation interventions initiated early following stroke can enhance the recovery process and minimize functional disability. The primary goal of rehabilitation is to prevent complications, minimize impairments, and maximize function.