



Minnesota Stroke Registry Stroke Performance Measure Guide

Version 2.1

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www.mnstrokeregistry.org

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Introduction

This Minnesota Stroke Registry (MSR) Stroke Performance Measure Guide describes the **background, rationale, and selected literature** references supporting the performance measures used in the Minnesota Stroke Registry and the Centers for Disease Control and Prevention (CDC) Paul Coverdell National Acute Stroke Registry (PCNASR, aka “Coverdell”) programs. For each measure, we have included a summary section describing where differences exist between PCNASR, The Joint Commission (TJC) (i.e., reporting for accreditation and Primary Stroke Center certification), and the American Heart Association Get With The Guidelines-Stroke (GWTG-S) program. A summary of updates is also included.

This guide also provides **tables** which describe the specific data element components (and applicable response options) that are utilized for each measure calculation. We have also included **flow charts** which provide a visual depiction of the algorithm used for calculating each performance measure. A particular note of caution should be given when examining the flow charts: An *initial patient population identification* flow chart for stroke performance measures and the TIA performance measures are on pages 4 and 5. These charts precede each measure-specific calculation flow chart, including key patient population inclusions and exclusions necessary in order to accurately calculate the measures.

New or revised items for Version 2.0 of this Stroke Performance Measure Guide will be highlighted in blue font and underlined or striken out. The changes in Version 2.0 are effective for all cases discharged after September 30, 2010. All measure calculations will be conducted under the Version 1.0 algorithms for cases discharged through September 30, 2010.

Measures Updates

Previous Changes to Measures. In January 2010, The PCNASR made several changes to both data elements and measure algorithms effective with discharges beginning January 1, 2010, with the intent on harmonizing with TJC as well as GWTG-Stroke. Key changes included:

1. Patients who are admitted for elective carotid endarterectomy are excluded from all measure populations.
2. Patients who are participating in a stroke clinical trial are excluded from all measure populations.
3. Patients with a length of stay > 120 days are excluded from all measure populations.
4. In general, if required data elements are missing for a measure, the patient is excluded from the measure – this may lead to lower denominators than were seen previously.
5. The Comfort Measures Only data element is now one question with four response options.



Updates to performance measures, effective October 1, 2010:

1. The data elements “Admitted for elective carotid endarterectomy” and “Clinical Trial” will no longer be used in PCNASR measure calculations for exclusions. Our experience has been that in over 99% of cases, these data elements were either not answered or were “no.” Therefore removing these two data elements from the measure calculation will have virtually no impact on overall performance in most cases. For the PCNASR, hospitals are advised to exclude cases where the primary reason for admission was elective carotid intervention from their case identification list.

Note: **The Joint Commission** did *not* remove these data elements from their measure algorithms, so the Minnesota Stroke Registry Tool will keep these data elements (as optional elements), so hospitals may obtain accurate numerators and denominators for reporting core measure data to The Joint Commission.

2. The measure “Discharged on cholesterol reducing medication” was retired.
3. STK-6: Discharged on statin medication no longer utilizes the data element “Evidence for Atherosclerosis” in the measure calculation (that is, this variable will not exist in data entry forms, nor will be used to include patients into an eligible population; please refer to the STK-6 measure description for a list of the updated patient population inclusion/exclusion criteria). If a statin was *not* provided to a patient, in order for this patient to be excluded from the eligible population (i.e., denominator), hospitals are required to document in the medical record why statins were not provided.

Discrepancies that remain between this document and the Specifications Manual (used by TJC) and the PMT Coding Instructions (used by GWTG-Stroke) may be real – but they may be editing errors. Please contact our staff with questions or if you find possible errors of any kind.

Key Differences Across Programs, For All Measures

Since 2007, significant efforts have been made to harmonize data elements, coding instructions (e.g., data definitions, notes, and examples), and measure algorithms across the programs conducted by CDC, The Joint Commission, and the American Heart Association: specific data element *definitions* have been harmonized across the programs. Beginning in January 2010, CDC adopted the language in the TJC Specifications Manual and the GWTG-S Patient Management Tool Coding Instructions for abstraction *notes and guidance*. The significant components of performance measure *algorithms* are essentially identical across programs. A few differences still remained in 2010 and most of these differences persist in this current version. Measure-specific differences are described within each performance measure section, but the following differences are global in nature – that is, they apply towards all programs and all measures.

1. **Performance Measures:** Effective October 1, 2010, the PCNASR collects data and utilizes [ten \(10\)](#) performance measures for its program. The GWTG-S program utilizes seven (7) measures for its *Achievement Award* program. Also available to GWTG-S participants are reports on *Reporting Measures* and *Quality Measures*, in which some the measures overlap with the remaining three PCNASR performance measures.

TJC currently requires reporting on eight (8) measures (which are often referred to as “core measures” or the “stroke core measure set”). In 2009, for the reporting period beginning 10/1/09, TJC adopted the eight measures which were formally endorsed by the National Quality Forum. Two measures, “STK-7 Dysphagia Screening” and “STK-9 Smoking Cessation”, were temporarily retired until these measures could be redesigned. These eight measures continue to be used effective 10/1/10 going forward.

2. **Measure Population Definition:** The PCNASR and GWTG-S uses the *final clinical hospital diagnosis related to stroke that was ultimately responsible for the admission* (MN 12.3) to define the patient populations used for measure calculation. In contrast, TJC uses stroke patient populations defined by ICD-9-CM discharge codes. As a result, the calculation for an identical measure may use a different numerator and denominator when using the clinical diagnosis definition versus ICD-9-CM coding definition.
3. **TIA Patients:** The PCNASR currently collects data on transient ischemic attack patients. Please note that the performance measure data on these patients are calculated and reported separately from stroke patients.

GWTG-S also asks hospitals to collect data on TIA patients. In contrast to PCNASR, TIA patients are included in the following GWTG-S Achievement Measures (the corresponding PCNASR measure number is listed in parentheses):

- a. Early Antithrombotics (STK-5)
- b. Antithrombotics (STK-2)
- c. Anticoag for Afib/Aflutter (STK-3)
- d. LDL 100 or ND–Statin (STK-6)
- e. Smoking Cessation (STK-9)

TJC does not ask hospitals to include any TIA patients in their initial patient population for abstraction, and hospitals are not to include TIA patients – based on ICD-9-CM principal discharge code – in any of its performance measure calculations.

4. **Inpatient Strokes:** The PCNASR excludes patients from measure calculations whose strokes occurred while they were already admitted in the hospital (inpatient strokes). GWTG-S also excludes inpatient stroke cases from measure calculations. TJC makes no specific exclusion on inpatient strokes. However, rarely would such patients be discharged with a principal diagnosis of stroke (which is the basis on which cases are abstracted and measures calculated for TJC).

Exclusions to Eligible Patient Population: [TJC explicitly excludes patients from the eligible population who a\) were admitted for elective carotid endarterectomy as the primary reason for the admission and b\) were in a stroke-related clinical trial during the admission. Effective September 1, 2010, CDC does NOT use these data elements as specific exclusion criteria for measure calculation. However, hospitals may either exclude these patients from their case identification list, or answer these data elements in the Minnesota Stroke Registry case report form \(or the PMT case report form if applicable\). These cases will then be excluded in the measure algorithm for core measure \(The Joint Commission\) calculations.](#)



The PCNASR Stroke Performance Measure Set

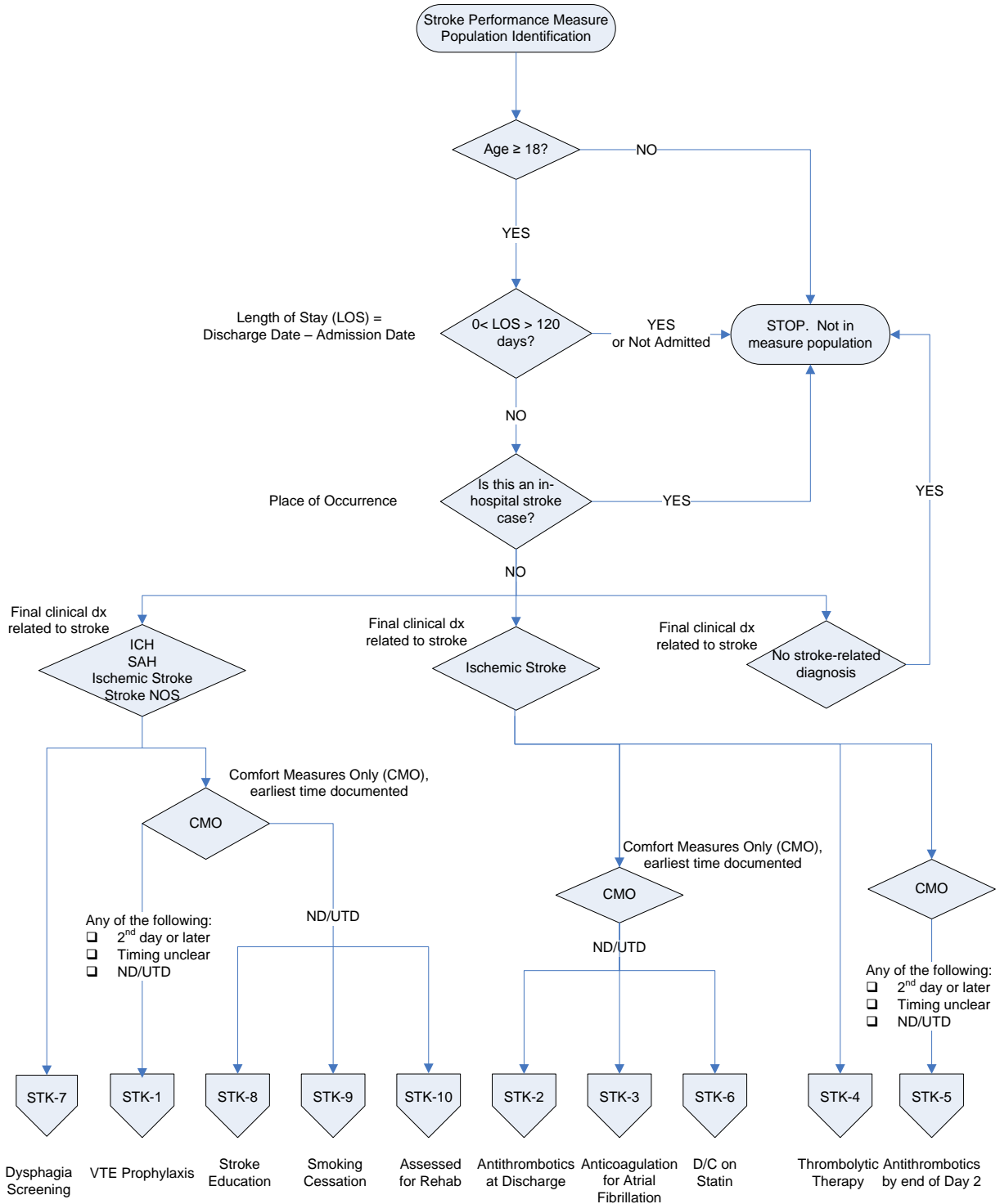
The PCNASR Stroke Performance Measure Set is applicable to patients with diagnoses of ischemic stroke, and hemorrhagic stroke, and transient ischemic attack (TIA). The final clinical diagnosis is used to identify the measure population used for each performance measure. Measures may include patients from more than one category of stroke. For MSR quality improvement analyses, the measures are calculated and reported separately for TIA patients. That is, we generally will separate and report results on TIA patients from stroke patients for measures 2, 3, 5, 6, 8, and 9. The measure algorithms are identical for stroke patients and TIA patients.

[NOTE: Effective for all discharges on and after January 1, 2011, “Discharged on cholesterol reducing medication” previously numbered Performance Measure \(6\) has been retired. A new set of labels for measures has been developed. This labeling scheme is now consistent with the *Stroke National Hospital Inpatient Quality Measures* used by The Joint Commission and the Centers for Medicare and Medicaid Services.](#)

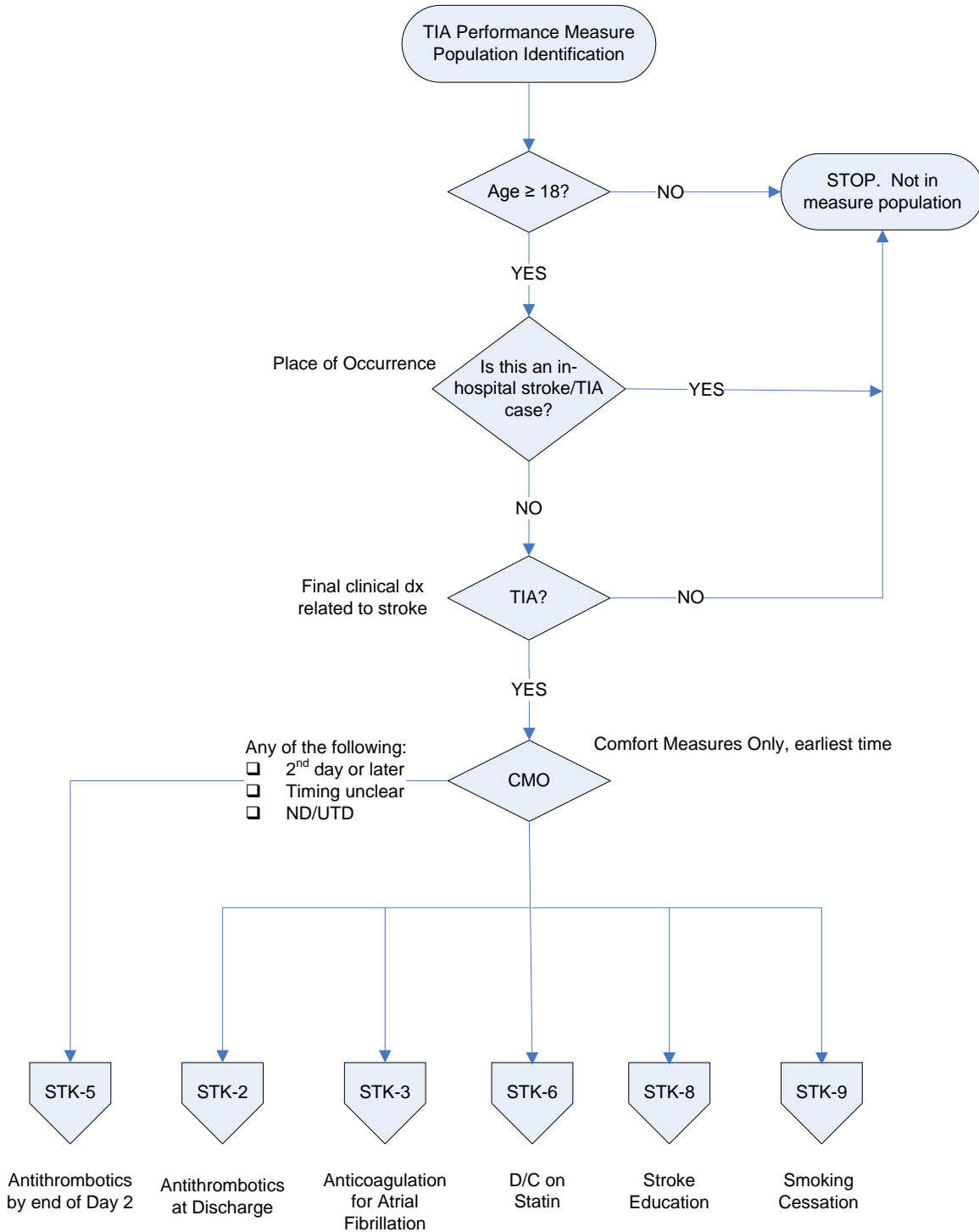
The following table identifies the populations included in each measure:

Measure Number	Measure Name	Ischemic Stroke	TIA	Hemorrhagic Stroke	Ill-Defined Stroke
STK-1	VTE prophylaxis	X		X	X
STK-2	Discharged on antithrombotic therapy	X	X		
STK-3	Anticoagulation for atrial fibrillation	X	X		
STK-4	Thrombolytic therapy administered	X			
STK-5	Antithrombotic therapy by end of day 2	X	X		
STK-6	Discharged on statin medication	X	X		
STK-7	Dysphagia screening	X		X	X
STK-8	Stroke education	X	X	X	X
STK-9	Smoking cessation counseling	X	X	X	X
STK-10	Assessed for rehabilitation	X		X	X

Initial Patient Population Flow Chart (Stroke)



Initial Patient Population Flow Chart (TIA)



Venous Thromboembolism (VTE) Prophylaxis (STK-1)

Patients with an ischemic stroke or a hemorrhagic stroke who received VTE prophylaxis or have documentation why no VTE prophylaxis was given the day of or the day after hospital admission.

Rationale:

Stroke patients are at increased risk of developing venous thromboembolism (VTE). 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 VTE, through the use of prophylactic therapies, in at risk patients is a noted recommendation in numerous clinical practice guidelines. For acutely ill stroke patients who are confined to bed, thromboprophylaxis with low-molecular-weight heparin (LMWH), low-dose unfractionated heparin (LDUH), or fondaparinux is recommended if there are no contraindications. Aspirin alone is not recommended as an agent to prevent VTE.

Clinical Practice Guidelines Supporting Measure:

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. *Stroke*. 2006; 37:577.

Duncan et al, Stroke Rehabilitation Clinical Practice Guidelines. *Stroke*. 2005;36:e100-e143.

Geerts WH, Pineo GF, Heit JA, et al. Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. *Chest*. Sep 2004; 126(3Suppl):338S-400S.

Post-Stroke Rehabilitation Guideline No.16, Agency for Healthcare Policy and Research (Now known as Agency for Healthcare Research and Quality), 1995.

Type of Measure: Process

Numerator Statement: Ischemic or hemorrhagic stroke patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given on the day of or the day after hospital admission.

Denominator Statement: Ischemic or hemorrhagic stroke patients

Included Populations: Patients with a diagnosis of ischemic or hemorrhagic stroke

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay < 2 days
- Patients who have a length of stay > 120 days
- Patients with comfort measures only documented on day of or day after hospital admission
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient

Selected References:

Gregory W. Albers, Pierre Amarenco, J. Donald Easton, Ralph L. Sacco, and Philip Teal Antithrombotic and Thrombolytic Therapy for Ischemic Stroke. *Chest* Vol. 119, 2001: 300-320.

Coull BM, Williams LS, Goldstein LB, et al. Anticoagulants and Antiplatelet Agents in Acute Ischemic Stroke. Report of the Joint Stroke Guideline Development Committee of the American Academy of Neurology and the American Stroke Association (a Division of the American Heart Association) *Stroke*. 2002; 33:1934 -1942.

Desmukh M., Bisignami M, Landau P, Orchard TJ. Deep vein thrombosis in rehabilitating stroke patients: incidence, risk factors and prophylaxis. *American Journal Physical Medicine Rehabilitation*. 1991; 70:313-316.

Measure Differences:

TJC: TJC does not explicitly exclude inpatient strokes, while PCNASR (and GWTG-S) do explicitly exclude inpatient strokes.

GWTG-Stroke: As of January 2010, GWTG-S retained the DVT Prophylaxis measure, while TJC and CDC replaced the DVT Prophylaxis measure with the VTE Prophylaxis measure. Differences:

- (1) GWTG-Stroke includes TIA patients in measure population.
- (2) DVT Prophylaxis measure requires prophylaxis to be given by hospital day two, with day one being the date of arrival, while VTE Prophylaxis measure requires patients to be given prophylaxis by the end of the day after admission date (which could be different than the date of arrival).
- (3) VTE prophylaxis includes patients in the numerator if a documented reason for not giving prophylaxis was given; DVT prophylaxis excludes these patients from the entire measure.
- (4) DVT prophylaxis excludes patients ambulatory by the end of hospital day two, while VTE prophylaxis does not exclude these patients.

January 2010 Update Notes:

This measure, previously “DVT Prophylaxis,” is now “Venous Thromboembolism (VTE) Prophylaxis.” This measure has been modified in order to be in harmony with the new TJC VTE measure set.

Key updates:

1. This measure no longer asks whether the patient was ambulatory at the end of the second day.
2. You must document the type of VTE prophylaxis provided (there are several options which include low dose unfractionated heparin, low molecular weight heparin, intermittent pneumatic compression device, Factor Xa Inhibitor, warfarin, venous foot pumps, oral Factor Xa Inhibitor, none documented, and graduated compression stockings.)
3. There is a question asking if there were documented reasons for not giving VTE prophylaxis.
4. A new item, different from all other stroke measures, is that if VTE prophylaxis is not provided AND there IS documentation as to why not, the patient is included in the numerator of the measure – that is, credit is given for documenting why this was not done. This convention is not true of other stroke measures.
5. As before, if graduated compression stockings are the only item in the list provided, this does not count as VTE prophylaxis, and a reason for no VTE prophylaxis must be provided to include the patient in the numerator.
6. VTE prophylaxis must be provided the day of or the day after admission. You will note that for the performance measure *Antithrombotic Therapy by Hospital Day 2*, it must be given the day of or the day after hospital arrival. Arrival date and admission date may not always be the same.

Measure Inclusions and Exclusions Table

VTE Prophylaxis (STK-1)

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of: (any):		
<ul style="list-style-type: none"> Intracerebral hemorrhage Subarachnoid hemorrhage Ischemic stroke Stroke not otherwise specified 	ICH=Yes SAH=Yes IS=Yes SNS=Yes	Final clinical diagnosis related to stroke Final clinical diagnosis related to stroke Final clinical diagnosis related to stroke Final clinical diagnosis related to stroke
Exclusions	Response Values	GWTG Form Field
(Any of the following)		
Age < 18 years	0-18	Age
Patient not admitted to hospital		
Length of Stay <2 days or >120 days	<2 or >120	Admit Date, Discharge Date
Comfort Measures Only on day of or day after arrival	Day of arrival or first day after arrival	When is the earliest documentation of CMO?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid endarterectomy	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital=Yes	Patient location when stroke symptoms discovered

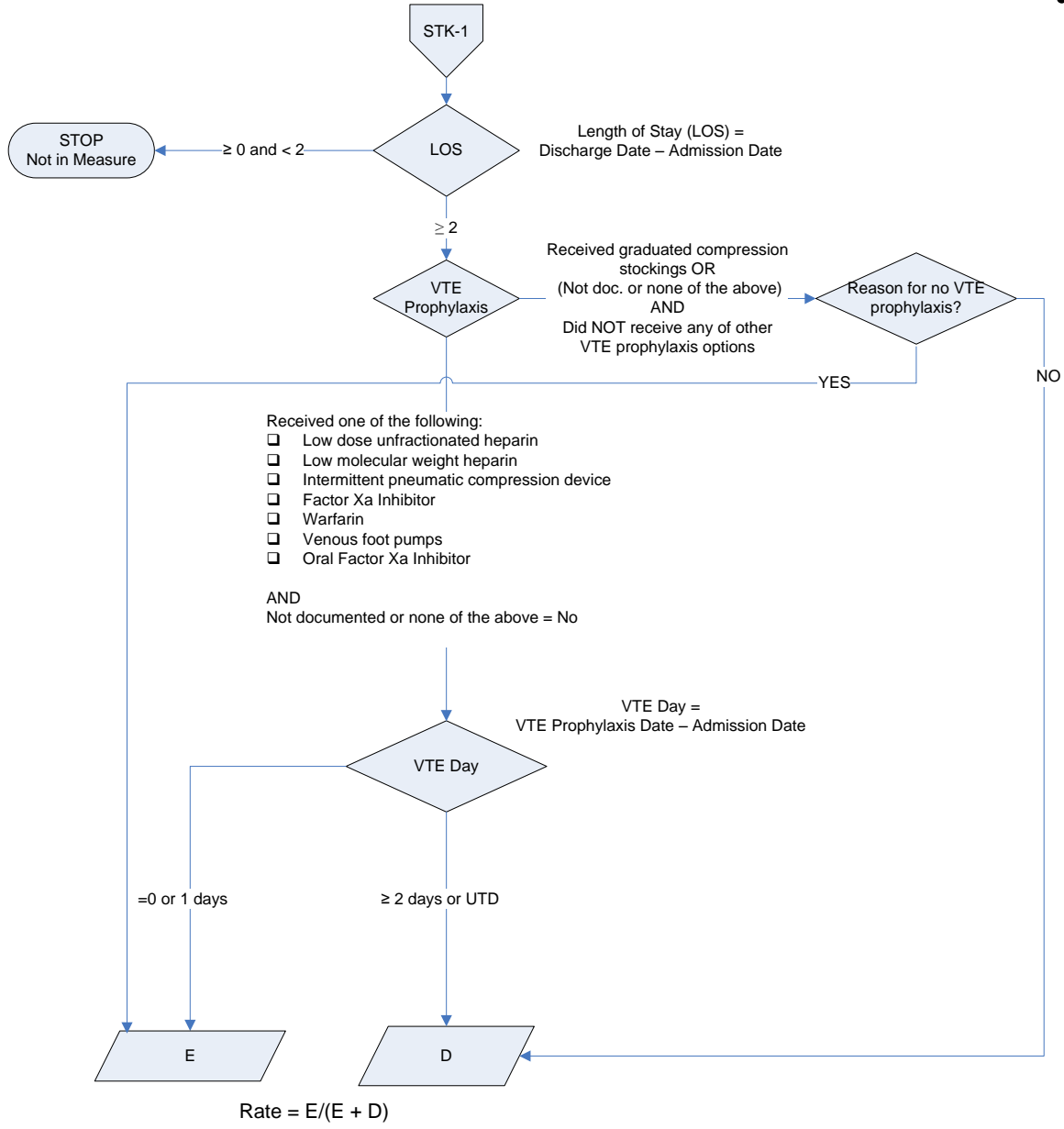
Numerator		
Inclusions	Response Values	GWTG Form Field
Received VTE prophylaxis (any of the following)		DVT Prophylaxis
<ul style="list-style-type: none"> Low dose unfractionated heparin Low molecular weight heparin Intermittent pneumatic compression device Factor Xa Inhibitor Warfarin Venous foot pumps Oral Factor Xa Inhibitor 	LDUH = Yes LMWH = Yes IPCD = Yes FXaI = Yes Warfarin = Yes VFP = Yes Oral FactorXa = Yes	
AND		
Length of Stay ≥ 2 days	≥2 days	Admission Date, Discharge Date
AND		
Received VTE prophylaxis on day of or day after admission	VTE Date – Admission Date = 0 or 1	What date was the initial VTE prophylaxis administered? Admission Date
OR		
Received ONLY Graduated Compression Stockings	GCS=1 or ND/None of above=1 and all others = 0	DVT Prophylaxis
AND		
Did NOT receive any other VTE prophylaxis		
AND documented reason exists	Documentation = Yes	DVT Prophylaxis = ND

Flow Chart: VTE Prophylaxis

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011
VTE Prophylaxis

● STK-1



Discharged on Antithrombotic Therapy (STK-2)

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

Clinical Practice Guidelines Supporting Measure:

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. Stroke. 2006; 37:577.

Gregory W. Albers, Pierre Amarenco, J. Donald Easton, Ralph L. Sacco, and Philip Teal Antithrombotic and Thrombolytic Therapy for Ischemic Stroke. Chest. 2001; 119:300-320.

Harold Adams, Robert Adams, Gregory Del Zoppo and Larry B. Goldstein. Guidelines for the Early Management of Patients With Ischemic Stroke: Guidelines Update A Scientific Statement From the Stroke Council of the American Heart Association/American Stroke Association. Stroke. 2005; 36: 916-923.

Coull BM, Williams LS, Goldstein LB, et al. Anticoagulants and Antiplatelet Agents in Acute Ischemic Stroke. Report of the Joint Stroke Guideline Development Committee of the American Academy of Neurology and the American Stroke Association (a Division of the American Heart Association) Stroke. 2002; 33:1934 -1942.

Guideline on the Use of Aspirin as Secondary Prophylaxis for Vascular Disease in Primary Care, Centre for Health Services Research University of Newcastle upon Tyne, & Centre for Health Economics of York, 1998.

Type of Measure: Process

Numerator Statement: Ischemic stroke (or TIA) patients prescribed antithrombotic therapy at hospital discharge

Denominator Statement: Ischemic stroke (or TIA) patients

Included Populations: Ischemic stroke (or TIA) patients

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- Patients with comfort measures only documented
- ~~[Patients enrolled in clinical trials](#)~~
- ~~[Patients admitted for elective carotid intervention](#)~~
- Patients in whom stroke occurred as an inpatient
- Patients discharged/transferred to another short term general hospital for inpatient care
- Patients who left against medical advice or discontinued care
- Patients who expired
- Patients discharged/transferred to hospice
- Patients discharged/transferred to a federal health care facility
- Patients discharged to a critical access hospital
- Patients with a documented reason for not prescribing antithrombotic therapy at discharge
- [Patients with missing value for “Antithrombotic medication prescribed at hospital discharge” who would otherwise be included in the measure](#)

Selected References:

Harold Adams, Robert Adams, Gregory Del Zoppo and Larry B. Goldstein. Guidelines for the Early Management of Patients With Ischemic Stroke: Guidelines Update A Scientific Statement From the Stroke Council of the American Heart Association/ American Stroke Association. Stroke. Vol. 36, 2005: 916:923.

Brott TG, Clark WM, Grotta JC, et al. Stroke the first hours. Guidelines for acute treatment. Consensus Statement. National Stroke Association. 2000.

Chen ZM, Sandercock P, Pan HC, et al. Indications for early aspirin use in acute ischemic stroke: a combined analysis of 40,000 randomized patients from the Chinese acute stroke trial and the international stroke trial. On behalf of the CAST and IST collaborative groups, Stroke. 2000;31:1240-1249.

Coull BM, Williams LS, Goldstein LB, et al. Anticoagulants and Antiplatelet Agents in Acute Ischemic Stroke. Report of the Joint Stroke Guideline Development Committee of the American Academy of Neurology and the American Stroke Association (a Division of the American Heart Association) Stroke. 2002;33:1934 -1942.

Measure Differences:

TJC: TJC does not explicitly exclude inpatient strokes, while Coverdell (and GWTG-S) do explicitly exclude inpatient strokes.

GWTG-Stroke: Includes TIA patients in measure population. Excludes patients transferred to another acute care facility.

January 2010 Update Notes:

1. The NC option is no longer present. You are asked if the patient received antithrombotic therapy at discharge; if not, another question asks if there was documentation for not prescribing antithrombotic therapy at discharge. If there was documentation, then the patient is excluded from the measure.

Measure Inclusions and Exclusions Table
Antithrombotic Therapy at Discharge (STK-2)

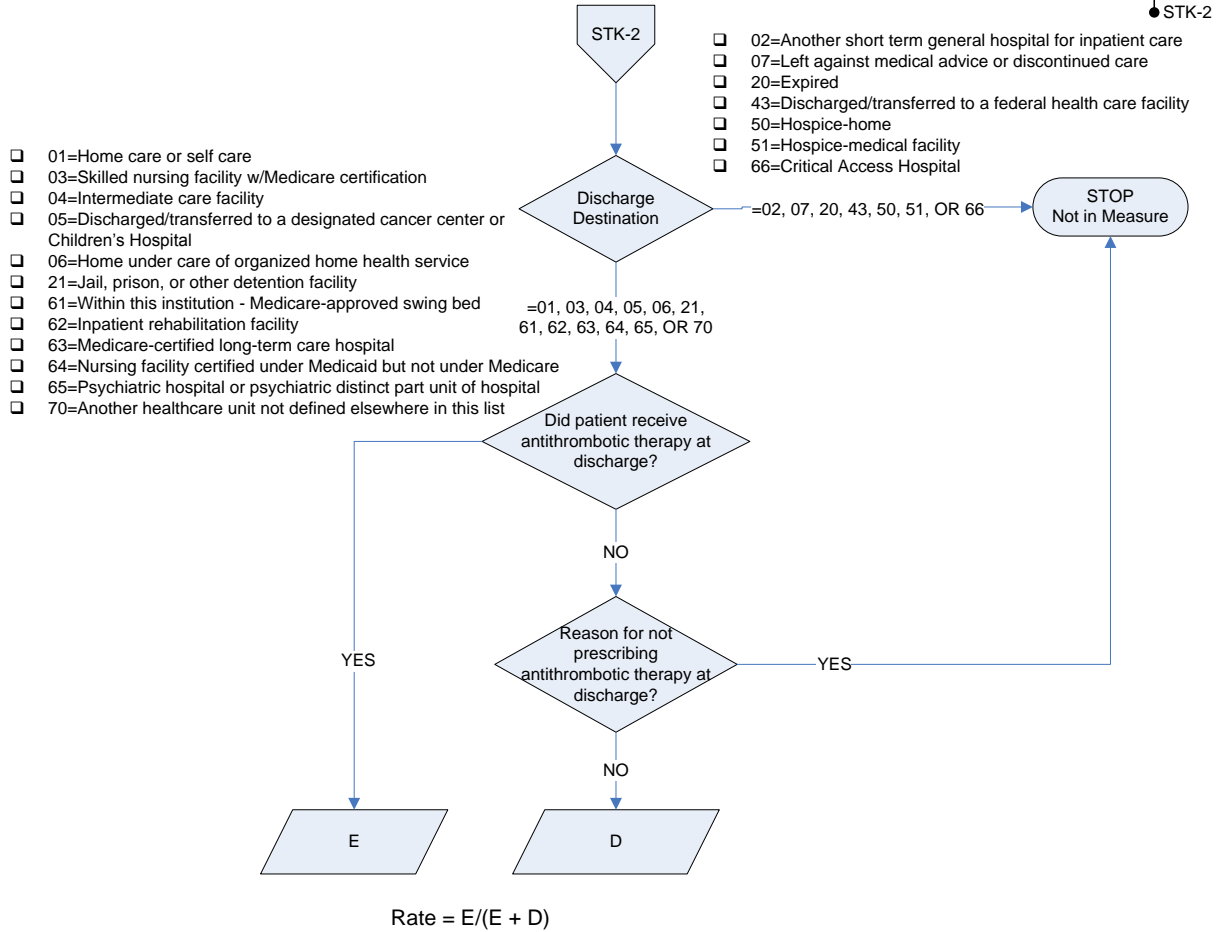
Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of ischemic stroke (or TIA)	IS=Yes (or TIA=Yes)	Final clinical diagnosis related to stroke
Exclusions	Response Values	GWTG Form Field
(Any of the following)		
Age < 18 years	0-18	Age
0 < Length of Stay > 120 days	>120	Admission Date, Discharge Date
<u>Patient not admitted to hospital</u>		
Comfort Measures Only (CMO)	Any response but ND/UTD	When is the earliest documentation of comfort measures only?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid intervention	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital	Patient location when stroke symptoms discovered
Discharge destination = another hospital; left against medical advice; expired; federal health care facility; hospice; or critical access hospital	02, 07, 20, 43, 50, 51, 66	Discharge Status
Documented reason for not prescribing antithrombotic therapy at discharge	No	Documented reasons for no antithrombotic therapy at discharge
Numerator		
Inclusions	Response Values	GWTG Form Field
Ischemic stroke (or TIA) patients receiving antithrombotic therapy at discharge	Yes	Antithrombotic medication(s) at discharge

Flow Chart: Antithrombotic Therapy at Discharge

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

Antithrombotic Therapy at Discharge



Patients with Atrial Fibrillation/Flutter Receiving Anticoagulation Therapy (STK-3)

Patients with an ischemic stroke with atrial fibrillation/flutter 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 anticoagulation 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.

Clinical Practice Guidelines Supporting Measure:

Fuster et al., ACC/AHA/ESC Guidelines for the Management of Patients with Atrial Fibrillation, JACC. August 2001; 38:1231-6

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. Stroke. 2006; 37:577.

Larry B. Goldstein, Chair; Robert Adams; Mark J. Albert; Lawrence J. Appel; Lawrence M. Brass; Cheryl D. Bushnell; Antonio Culebras; Thomas J. DeGaba; Philip B. Gorelick; John R. Guyton; Robert G. Hart; George Howard; Margaret Kelly-Hayes; J.V. (Ian) Nixon; Ralph L. Sacco. Primary Prevention of Ischemic Stroke: A Guideline From the American Heart Association/American Stroke Association Stroke Council: Cosponsored by the Atherosclerotic Peripheral Vascular Disease Interdisciplinary Working Group; Cardiovascular Nursing Council; Clinical Cardiology Council; Nutrition, Physical Activity, and Metabolism Council; and the Quality of Care and Outcomes Research Interdisciplinary Working Group: The American Academy of Neurology affirms the value of this guideline. Stroke. 2006; 37:1583.

Type of Measure: Process

Numerator Statement: Ischemic stroke (or TIA) patients with history of atrial fibrillation/flutter discharged on anticoagulation therapy.

Denominator Statement: Ischemic stroke (or TIA) patients with documented atrial fibrillation/flutter.

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- Patients with comfort measures only documented
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient
- Patients discharged/transferred to another short term general hospital for inpatient care
- Patients who left against medical advice or discontinued care
- Patients who expired
- Patients discharged/transferred to hospice
- Patients discharged/transferred to a federal health care facility
- Patients discharged to a critical access hospital
- Patients for whom discharge destination cannot be determined or unknown
- Patients with a documented reason for not prescribing anticoagulation therapy
- [Patients with missing value for “Anticoagulation medication prescribed at discharge” who would otherwise be included in the measure](#)

Selected References:

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. *Stroke*. 2006; 37:577.

Prevention of a First Stroke: A Review of Guidelines and a Multidisciplinary Consensus Statement from the National Stroke Association. National Stroke Association. *JAMA*. 1999; 281:1112-1120.

Larry B. Goldstein, Chair; Robert Adams; Mark J. Albert; Lawrence J. Appel; Lawrence M. Brass; Cheryl D. Bushnell; Antonio Culebras; Thomas J. DeGraba; Philip B. Gorelick; John R. Guyton; Robert G. Hart; George Howard; Margaret Kelly-Hayes; J.V. (Ian) Nixon; Ralph L. Sacco. Primary Prevention of Ischemic Stroke: A Guideline From the American Heart Association/American Stroke Association Stroke Council: Cosponsored by the Atherosclerotic Peripheral Vascular Disease Interdisciplinary Working Group; Cardiovascular Nursing Council; Clinical Cardiology Council; Nutrition, Physical Activity, and Metabolism Council; and the Quality of Care and Outcomes Research Interdisciplinary Working Group: The American Academy of Neurology affirms the value of this guideline. *Stroke*. 2006; 37:1583.

Measure Differences:

TJC: TJC does not explicitly exclude inpatient strokes, while PCNASR (and GWTG-S) do explicitly exclude inpatient strokes.

GWTG-Stroke: Includes TIA patients in measure population.

January 2010 Update Notes:

1. The NC option is no longer present. You are asked if the patient received anticoagulation therapy at discharge; if not, another question asks if there was documentation for not prescribing anticoagulation therapy at discharge. If there was documentation, then the patient is excluded from the measure.

Measure Inclusions and Exclusions Table
Anticoagulation for Atrial Fibrillation (STK-3)

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of ischemic stroke (or TIA) AND History of AF, or AF present on this admission	IS=Yes (or TIA=Yes) Yes	Final clinical diagnosis related to stroke
Exclusions	Response Values	GWTG Form Field
(Any of the following) Age < 18 years	0-18	Age
0 < Length of Stay > 120 days	>120	Admission Date, Discharge Date
<u>Patient not admitted to hospital</u>		
Comfort Measures Only (CMO)	Any response but ND/UTD	When is the earliest documentation of comfort measures only?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid intervention	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital	Patient location when stroke symptoms discovered
Discharge destination = another hospital; left against medical advice; expired; federal health care facility; hospice; or critical access hospital	02, 07, 20, 43, 50, 51, 66	Discharge Status
Documented reason for not prescribing anticoagulation therapy	Yes	Documented reasons for no anticoagulation
Numerator		
Inclusions	Response Values	GWTG Form Field
History of atrial fibrillation (AF) or AF present on admission AND Ischemic stroke (or TIA) patients receiving anticoagulation therapy at discharge	Yes Yes	Persistent or paroxysmal atrial fibrillation/flutter If atrial fib/flutter or history of PAF documented, was patient discharged on anticoagulation?

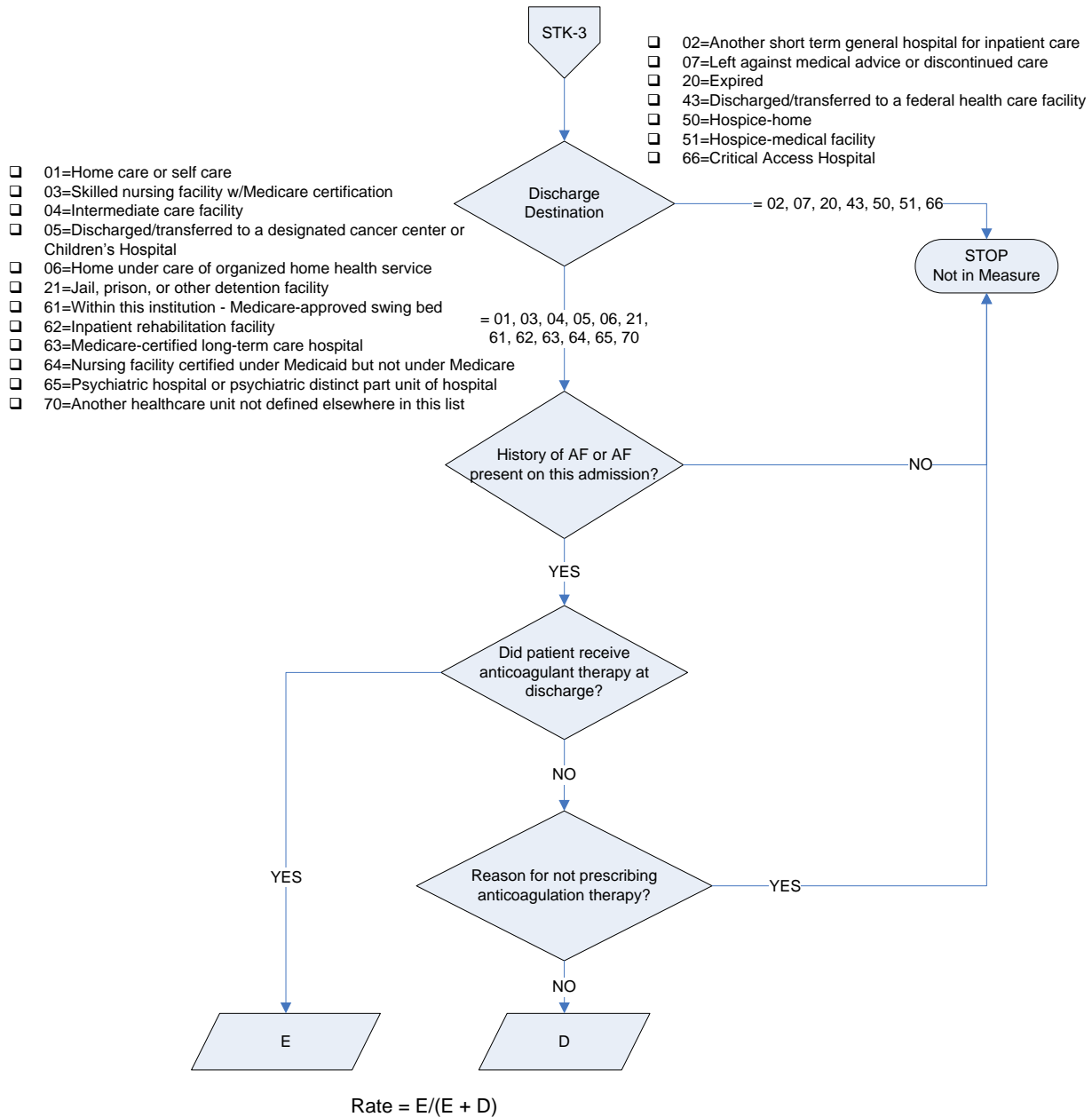
Flow Chart: Anticoagulation for Atrial Fibrillation

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

Anticoagulation for Atrial Fibrillation

● STK-3



Thrombolytic Therapy Administered (STK-4)

Acute ischemic stroke patients who arrive at the hospital within 120 minutes (2 hours) of time last known well and for whom IV tPA 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.

Clinical Practice Guidelines Supporting Measure:

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. *Stroke* Vol. 37, 2006:577.

Harold Adams, Robert Adams, Gregory Del Zoppo and Larry B. Goldstein. American Heart Association/American Stroke Association Guidelines Update A Scientific Statement From the Stroke Council of the Guidelines for the Early Management of Patients With Ischemic Stroke: 2005, *Stroke* 2005;36:916-923.

Diagnosis and Initial Treatment of Ischemic Stroke, Institute for Clinical Systems Improvement (ICSI), 2001. Management of Patients with Stroke. Assessment, investigation, immediate management and secondary prevention, Scottish Intercollegiate Guidelines Network, 1997.

STROKE the First Hours Guidelines for Acute Treatment, National Stroke Association, 2000. Antithrombotic and Thrombolytic Therapy for Ischemic Stroke The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Gregory W. Albers, MD, Chair; Pierre Amarenco, MD; J. Donald Easton, MD; Ralph L. Sacco, MD; and Philip Teal, MD (*CHEST* 2004; 126:483S–512S) 33.

Numerator Statement: Acute ischemic stroke patients for whom IV thrombolytic therapy was initiated at this hospital within 3 hours (\leq 180 minutes) of time last known well.

Denominator Statement: Acute ischemic stroke patients whose time of arrival is within 2 hours (\leq 120 minutes) of time last known well.

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay $>$ 120 days
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient
- Patients for whom IV thrombolytic was given at an outside hospital
- Patients in whom stroke symptoms had completely resolved upon presentation
- Time last known well to arrival in the emergency department greater than two hours or unknown
- Patients with a *documented* contraindication or warning* for not initiating IV thrombolytic OR patient/family refusal (with or without documentation) OR initiation of IV or IA thrombolytic therapy at transferring hospital (with or without documentation)

The following reasons are not allowable exclusions:

- Unable to diagnose or did not diagnose in 3-hour time frame
- Inhospital time delay
- Delay in patient arrival
- No IV access

Selected References:

Hacke W, Kaste M, Fieschi C, et al. Intravenous thrombolysis with recombinant tissue plasminogen activator for acute hemispheric stroke. The European Cooperative Acute Stroke Study (ECASS). JAMA. 1995; 274:1017-1025.

Marler JR, Tilley BC, Lu M, Brott TG, Lyden PC, Grotta JC, Broderick JP, Levine SR, Frankel MP, Horowitz SH, Haley EC, Lewandowski CA, Kwiatkowski TP. Early Stroke treatment associated with better outcome The NINDS rt-PA Stroke Study. Neurology. 2000; 55:1649- 1655.

The ATLANTIS, ECASS, and NINDS rt-PA Study Group Investigators. Association of Outcome with early stroke treatment: pooled analysis of ATLANTIS, ECASS, and NINDS rt-PA stroke Trials. Lancet 2004;363:768-774.

The National Institute of Neurological Disorders and Stroke rt-PA Stroke Study Group. Tissue plasminogen activator for acute ischemic stroke. The National Institute of Neurological Disorders and Stroke rt-PA Stroke Study Group. New England Journal of Medicine. 1995; 333:1581-1587.

Measure Differences:

TJC: 1) TJC does not explicitly exclude inpatient strokes, while PCNASR (and GWTG-S) do explicitly exclude inpatient strokes. 2) PCNASR excludes patients whose symptoms completely resolved upon presentation (MN 6.7), while TJC and GWTG-S do not. That said, typically this scenario would be documented as “rapid improvement” and thus such a patient would likely be excluded from the measure (as calculated for TJC or GWTG-S) anyway. 3) TJC uses the variable “ED Patient” (=yes) as an inclusion criteria for this measure; PNCASR and GWTG-S do not.

GWTG-Stroke: No differences with TJC.

January 2010 Update Notes:

1. The NC option is no longer present. You are asked if the patient received IV Thrombolytic therapy; if not, if there was documentation for not prescribing IV Thrombolytic. If there was documentation for approved reasons, then the patient is excluded from the measure. The PCNASR is not implementing an extended time window tPA measure at this time.
2. Missing values for any relevant date or time points (last known well, arrival, thrombolytic administration) will exclude the patient from the measure.

Measure Inclusions and Exclusions Table
Thrombolytic Therapy (STK-4)

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of ischemic stroke	IS=Yes	Final clinical diagnosis related to stroke
Exclusions (Any of the following)	Response Values	GWTG Form Field
Age < 18 years	0-18	Age
0 < Length of Stay > 120 days	>120	Admission Date, Discharge Date
Patient not admitted to hospital		
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid intervention	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital	Patient location when stroke symptoms discovered
IV thrombolytic given at outside hospital	Yes	IV tPA at an outside hospital?
Symptoms completely resolved on presentation	Yes	Had stroke symptoms resolved at time of presentation?
Missing or UTD for any date or time element: Last known well date, time Arrival date, time IV tPA treatment date, time	Missing or UTD Missing or UTD Missing or UTD	Date/Time patient last known to be well? Arrival Date/Time Date/Time IV tPA initiated
Time of ED arrival – time last known well > 2 hrs	>2 hours	Arrival Date/Time, Date/Time patient last known to be well
Documented contraindication/warning/refusal for not giving IV tPA	Yes	Documented contraindications or warnings for not initiating IV thrombolytic in the 0-3 hr treatment window?
Numerator		
Inclusions	Response Values	GWTG Form Field
Ischemic stroke patients receiving IV tPA at this hospital AND IV tPA administered less than or equal to three hours following time last known well	Yes ≤3 hours	IV thrombolytic therapy initiated at this hospital? Date/Time IV tPA initiated, Date/Time patient last known to be well

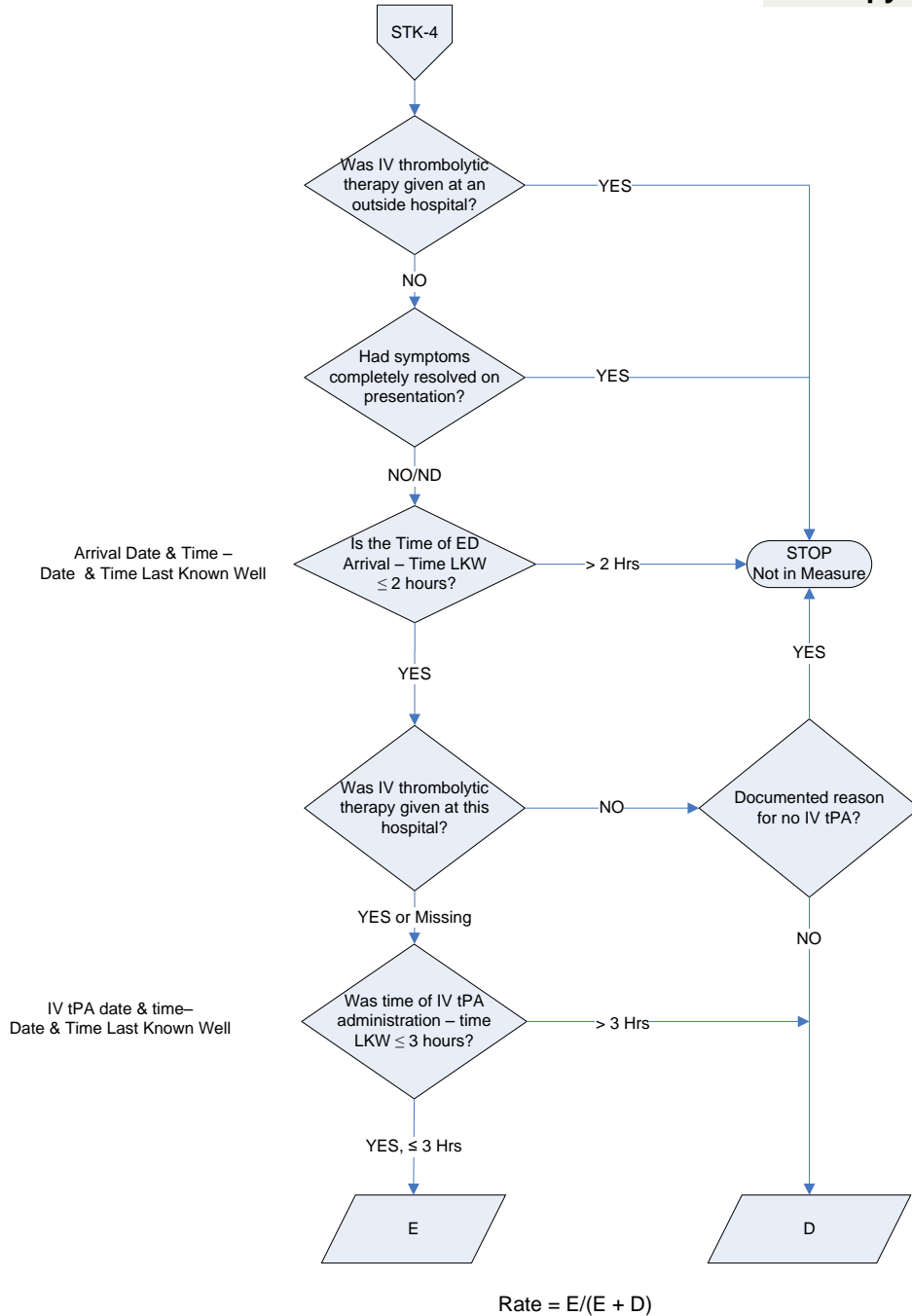
Flow Chart: Thrombolytic Therapy Administered

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

Thrombolytic Therapy Administered

●STK-4



Antithrombotic Therapy By End of Hospital Day Two (STK-5)

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.

Clinical Practice Guidelines Supporting Measure:

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. *Stroke*. 2006; 37:577.

Gregory W. Albers, Pierre Amarenco, J. Donald Easton, Ralph L. Sacco, and Philip Teal. Antithrombotic and Thrombolytic Therapy for Ischemic Stroke. *Chest*. 2001; 119:300-320.

Harold Adams, Robert Adams, Gregory Del Zoppo and Larry B. Goldstein. American Heart Association/American Stroke Association Guidelines Update A Scientific Statement From the Stroke Council of the Guidelines for the Early Management of Patients With Ischemic Stroke. *Stroke*. 2005; 36:916-923.

Coull BM, Williams LS, Goldstein LB, et al. Anticoagulants and Antiplatelet Agents in Acute Ischemic Stroke. Report of the Joint Stroke Guideline Development Committee of the American Academy of Neurology and the American Stroke Association (a Division of the American Heart Association) *Stroke*. 2002; 33:1934 -1942.

Guideline on the Use of Aspirin as Secondary Prophylaxis for Vascular Disease in Primary Care, Centre for Health Services Research University of Newcastle upon Tyne, & Centre for Health Economics of York, 1998.

Type of Measure: Process

Numerator Statement: Patients with ischemic stroke (or TIA) who receive antithrombotic therapy by end of hospital day two.

Denominator Statement: All patients with ischemic stroke (or TIA).

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- Patients with comfort measures only documented on day of or day after arrival
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient
- Patients discharged before the end of hospital day 2
- Patients who received IV or IA thrombolytic therapy at your hospital or within 24 hours prior to arrival
- Patients with a documented reason for not administering antithrombotic therapy by end of hospital day 2
- [Patients with missing value for “did this patient receive antithrombotic therapy by end of hospital day 2?” who would otherwise be included in the measure](#)

Selected References:

Harold Adams, Robert Adams, Gregory Del Zoppo and Larry B. Goldstein. Guidelines for the Early Management of Patients With Ischemic Stroke: Guidelines Update A Scientific Statement From the Stroke Council of the American Heart Association/American Stroke Association. Stroke. 2005; 36:916-923.

Brott TG, Clark WM, Grotta JC, et al. Stroke the first hours. Guidelines for acute treatment. Consensus Statement. National Stroke Association. 2000.

Chen ZM, Sandercock P, Pan HC, et al. Indications for early aspirin use in acute ischemic stroke: a combined analysis of 40,000 randomized patients from the Chinese acute stroke trial and the international stroke trial. On behalf of the CAST and IST collaborative groups, Stroke 2000; 31:1240-1249.

Coull BM, Williams LS, Goldstein LB, et al. Anticoagulants and Antiplatelet Agents in Acute Ischemic Stroke. Report of the Joint Stroke Guideline Development Committee of the American Academy of Neurology and the American Stroke Association (a Division of the American Heart Association) Stroke. 2002; 33:1934 -1942.

Measure Differences:

TJC: TJC does not explicitly exclude inpatient strokes, while PCNASR (and GWTG-S) does explicitly exclude inpatient strokes.

GWTG-Stroke: Excludes patients transferred to another acute care hospital from denominator.

January 2010 Update Notes:

1. Patients who receive IV or IA thrombolytic therapy at your hospital or within 24 hours prior to hospital arrival are excluded from the measure.
2. The NC option is no longer present. You are asked if the patient receive antithrombotic therapy; if not, if there was documentation for not prescribing antithrombotic therapy by end of hospital day 2. If there was documentation, then the patient is excluded from the measure. If documentation is missing, the patient is excluded from the measure.
3. In contrast to VTE prophylaxis, you do not need to record the date of antithrombotic therapy.
4. In contrast to VTE prophylaxis, “hospital day two” for this measure is the day after patient arrival. (For VTE Prophylaxis, day two is the day after patient admission.)

Measure Inclusions and Exclusions Table

Antithrombotic Therapy By End of Hospital Day Two (STK-5)

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of ischemic stroke (or TIA)	IS=Yes (or TIA=Yes)	Final clinical diagnosis related to stroke
Exclusions	Response Values	GWTG Form Field
(Any of the following)		
Age < 18 years	0-18	Age
Length of Stay <2 days or >120 days	>120 or Missing	Admission Date, Discharge Date
Patient not admitted to hospital		
Comfort Measures Only on day of or after arrival	Day of arrival or first day after arrival	When is the earliest documentation of CMO?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid intervention	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital	Patient location when stroke symptoms discovered
IV/IA thrombolytic given at this hospital or within 24 hours prior to arrival	Yes	IV thrombolytic therapy initiated at this hospital; IV tPA at an outside hospital; IA catheter-based reperfusion at this hospital; IA catheter-based reperfusion at outside hospital
Documented reason for not giving antithrombotic by end of day 2	Yes or Missing	Was antithrombotic therapy administered by the end of hospital day 2? (NC)

Numerator			
Inclusions	MSRT#	Response Values	GWTG Form Field
Ischemic stroke (or TIA) patients receiving antithrombotic therapy by the end of hospital day 2		Yes	Was antithrombotic therapy administered by the end of hospital day 2?

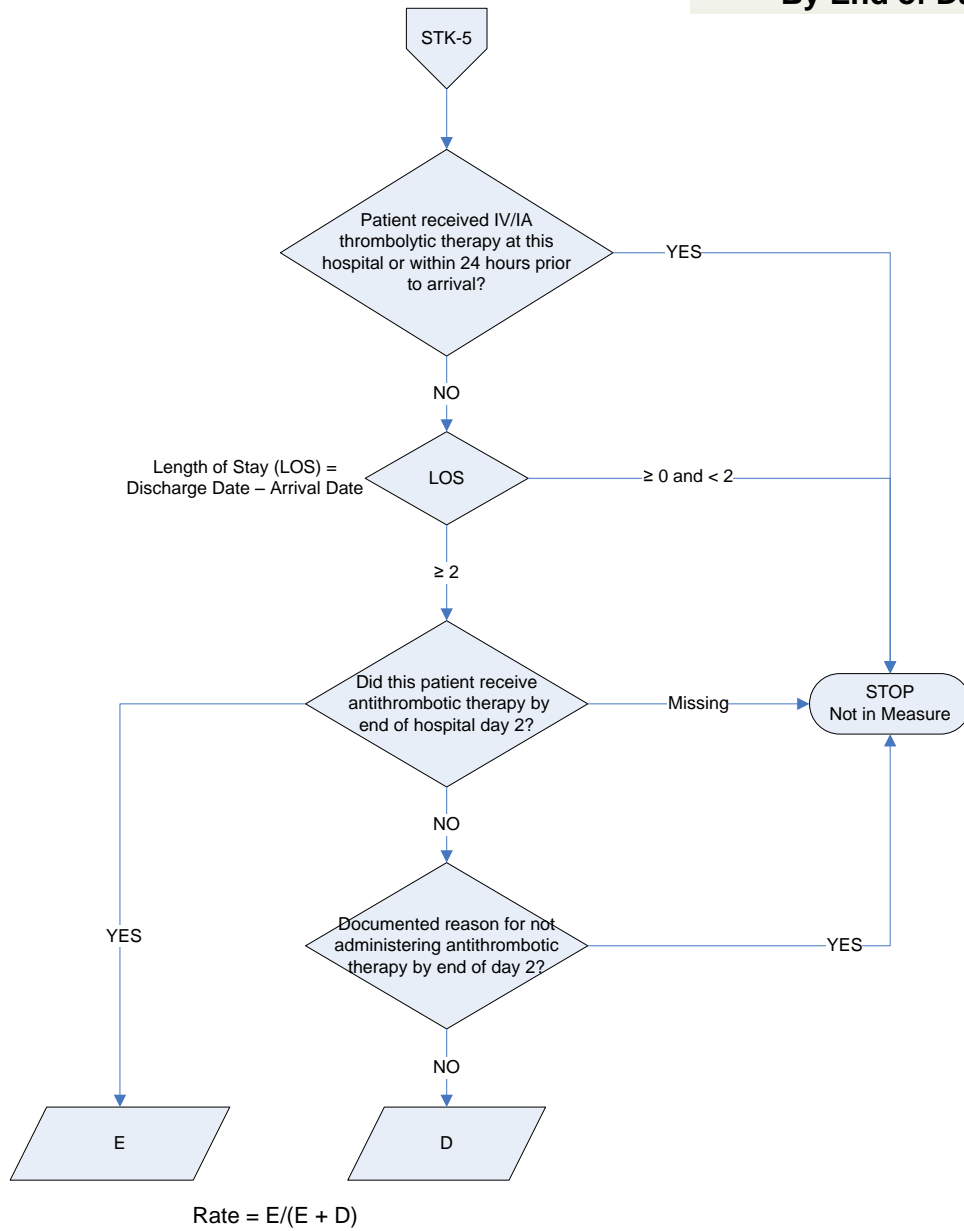
Flow Chart: Antithrombotic Therapy By End of Hospital Day Two

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

Antithrombotic Therapy By End of Day 2

● STK-5



Discharged on Statin Medication (STK-6)

Ischemic stroke patients with LDL \geq 100, or LDL not measured, or, who were on cholesterol reducing therapy prior to hospitalization are discharged on statin medication.

Rationale: An elevated serum lipid level has been a well-documented risk factor for coronary artery disease (CAD) and reflects an organ-specific manifestation of atherosclerosis which is a disease process that can affect the heart and the major and minor branches of the arterial tree. The reduction of LDL cholesterol, through lifestyle modification and drug therapy when appropriate, is recommended for the prevention of myocardial infarction and other major vascular events for patients with CAD (or coronary risk equivalent conditions) according to the National Cholesterol Education Program's Adult Treatment Panel III (NCEP ATP III) Guidelines. Recently, there has been an increased focus on the detection of patients with these risk factors when they present with other manifestations of atherosclerosis, and assuring that these patients are treated with lipid lowering medication if they meet NCEP ATP III guidelines. While symptomatic carotid artery disease is one of the recognized coronary disease risk equivalents that qualify patients for treatment under ATP III, there was little data until recently about the role of lipid lowering to prevent recurrent stroke or major vascular events in patients who presented with atherosclerotic stroke but did not otherwise qualify for treatment under ATP III. The Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) study examined the effects of statins to lower LDL cholesterol in patients with stroke or TIA of atherosclerotic origin who had no other reason for taking lipid lowering therapy (i.e., they were without prior CAD or risk equivalent conditions), and had a fasting LDL \geq 100 mg/dL. The trial convincingly demonstrated that intensive lipid lowering therapy using statin medication was associated with a dramatic reduction in the rate of recurrent ischemic stroke and major coronary events. The treatment was well tolerated and cost effective. As a result, intensive lipid lowering therapy through use of a statin medication is now recommended for all patients with stroke or TIA of atherosclerotic origin who have an LDL \geq 100 mg/dl (or with LDL $<$ 100 mg/dl due to being on lipid lowering therapy prior to admission). Based on these guidelines, all patients with ischemic stroke or TIA should have lipid profile measurement performed within 48 hours of admission unless outpatient results are available from within the past 30 days. A large body of evidence suggests that non-fasting lipid levels drawn in the first 48 hours after a major vascular event are reliable predictors of baseline lipid profiles, but after that time they may become unreliable. It is recommended that all patients with ischemic stroke or TIA with coronary heart disease or symptomatic atherosclerotic disease who have an LDL \geq 100 mg/dl (or with LDL $<$ 100 mg/dl due to being on lipid lowering therapy prior to admission) should be treated with a statin. The target goal for cholesterol lowering is an LDL-C level of $<$ 100 mg/dL. An LDL-C $<$ 70 mg/dL is recommended for very high-risk persons with multiple risk factors. For patients with stroke of atherosclerotic origin, intensive lipid lowering therapy with statins should be initiated in those who have an LDL \geq 100 mg/dl (or with LDL $<$ 100 mg/dl due to being on lipid lowering therapy prior to admission).

Clinical Practice Guideline Supporting Measure:

Robert J. Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Kenton EJ, Michael Marks, Ralph L. Sacco, Lee H. Schwamm. Update to the AHA/ASA recommendations for the prevention of stroke in patients with stroke and transient ischemic attack. *Stroke*. 2008; 39:5.

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. *Stroke*. 2006; 37:577.

Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Final Report. *Circulation*. 2002; 106:3143-3421

High-Dose Atorvastatin after Stroke or Transient Ischemic Attack. *New England Journal of Medicine*. 2006; 355:549-559.

Update to the AHA/ASA Recommendations for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack. *Stroke* 2008; 39.

Type of Measure: Process

Numerator Statement: Ischemic stroke (or TIA) patients who were prescribed statin medication at hospital discharge.

Denominator Statement: All ischemic stroke (or TIA) patients with an LDL \geq 100 mg/dL, OR LDL not measured, OR who were on lipid-lowering therapy prior to hospitalization.

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- Patients with comfort measures only documented
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient
- Patients discharged/transferred to another short term general hospital for inpatient care
- Patients who left against medical advice or discontinued care
- Patients who expired
- Patients discharged/transferred to hospice
- Patients discharged/transferred to a federal health care facility
- Patients discharged to a critical access hospital
- Patients for whom discharge destination cannot be determined or unknown
- ~~Patients without evidence of atherosclerosis~~
- Patients with spontaneous LDL < 100 mg/dL
- Patients without a medical history of any of the following: carotid stenosis, myocardial infarction (MI), coronary artery disease (CAD), or peripheral arterial disease (PAD)
- Patients with documented reasons for not receiving statins
- [Patients with missing value for “Was a statin medication prescribed at discharge?” who would otherwise be included in the measure](#)

Selected References:

Craig SR, Amin RV, Russell DW, Paradise NF. Blood cholesterol screening influence of fasting state on cholesterol results and management decisions. *J Gen Intern Med.* 2000 Jun;15(6):395-9.

Feinberg WM, Albers GW, Barnett HJM, et al. Guidelines for the Management of Transient Ischemic Attacks. From the Ad Hoc Committee on Guidelines for the Management of Transient Ischemic Attacks of the Stroke Council of the American Heart Association. 1994.

Gore JM, Goldberg RJ, Matsumoto AS, et al. Validity of serum total cholesterol level obtained within 24 hours of acute myocardial infarction. *Am J Cardiol.* 1984; 54:722-725.

National Institutes of Health. Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Final Report. National Cholesterol Education Program. National Heart, Lung, and Blood Institute National Institutes of Health. NIH Publication No. 12-5215. 2002.

Pitt B, Loscalzo, Ycas J, Raichlen JS. Lipid Levels After Acute Coronary Syndromes. *J Am Coll Cardiol* 2008;51:1440-1445.

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, ; Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. *Stroke.* 2006; 37:577.

Robert J. Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Kenton EJ, Michael Marks, Ralph L. Sacco, Lee H. Schwamm. Update to the AHA/ASA recommendations for the prevention of stroke in patients with stroke and transient ischemic attack. *Stroke.* 2008; 39(5).

Van Dis FJ, Keilson LM, Rundell CA, et al. Direct measurement of serum low-density lipoprotein cholesterol in patients with acute myocardial infarction on admission to the emergency room. *Am J Cardiol.* 1996; 77:1232-1234.

Weiss R, Harder M, Rowe J. The relationship between nonfasting and fasting lipid measurements in patients with or without type 2 diabetes mellitus receiving treatment with 3-hydroxy-3-methylglutaryl-coenzyme A reductase inhibitors. *Clin Ther.* 2003 May; 25(5):1490-7.

Measure Differences:

TJC: TJC does not explicitly exclude inpatient strokes, while PCNASR (and GWTG-S) do explicitly exclude inpatient strokes.

GWTG-Stroke: 1) Includes TIA patients in measure population. 2) Even if all elements related to evidence of atherosclerosis are missing, the patient remains in the measure calculation. TJC and PCNASR exclude patients with missing values.

January 2010 Update Notes:

1. The NC option is no longer present. You are asked if the patient received statin therapy at discharge; if not, if there was documentation for not prescribing statin therapy at discharge. If there was documentation, then the patient is excluded from the measure.
2. If a patient has a missing value for statin medication prescribed at discharge, the patient is excluded from the measure.

January 2011 Update:

1. The data element “Evidence of Atherosclerosis” is no longer used as an inclusion criterion. However, in order to be excluded from the measure, there must be a documented reason in the medical record why the patient did not receive a statin at discharge.

May 4, 2011 Update: Corrected LDL>100 to LDL≥100 in several places.

Measure Inclusions and Exclusions Table
Discharged on Statin Medication (STK-6)

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of ischemic stroke (or TIA)	IS=Yes (or TIA=Yes)	Final clinical diagnosis related to stroke
Exclusions (any of the following)	Response Values	GWTG Form Field
Age < 18 years	0-18	Age
0<Length of Stay >120 days	>120 or Missing	Admission Date, Discharge Date
<u>Patient not admitted to hospital</u>		
Comfort Measures Only (CMO)	Any response but ND/UTD	When is the earliest documentation of comfort measures only?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid intervention	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital	Patient location when stroke symptoms discovered
Discharge destination = another hospital; left against medical advice; expired; federal health care facility; hospice; or critical access hospital	02, 07, 20, 43, 50, 51, 66 or Missing	Discharge Status
No evidence of atherosclerosis	No for any, or all are Missing	Previously known medical hx of: MI, CAD Documentation that the patient has evidence of atherosclerosis?
Patient not admitted on lipid lowering therapy AND LDL measured AND LDL <100	No not missing <100	Medications prior to admission (Cholesterol-Reducer) LDL LDL
Patient not discharged on statin AND documented reason for no statin prescribed AND Patients for which Was a statin medication prescribed at discharge?	Any response (or missing) but Statin Yes Missing	Cholesterol-Reducing Tx Documented reason for not prescribing a statin med at d/c Cholesterol-Reducing Tx
Numerator		
Inclusions	Response Values	GWTG Form Field
Ischemic stroke (or TIA) patients discharged on statin	Statin	Cholesterol-Reducing Tx

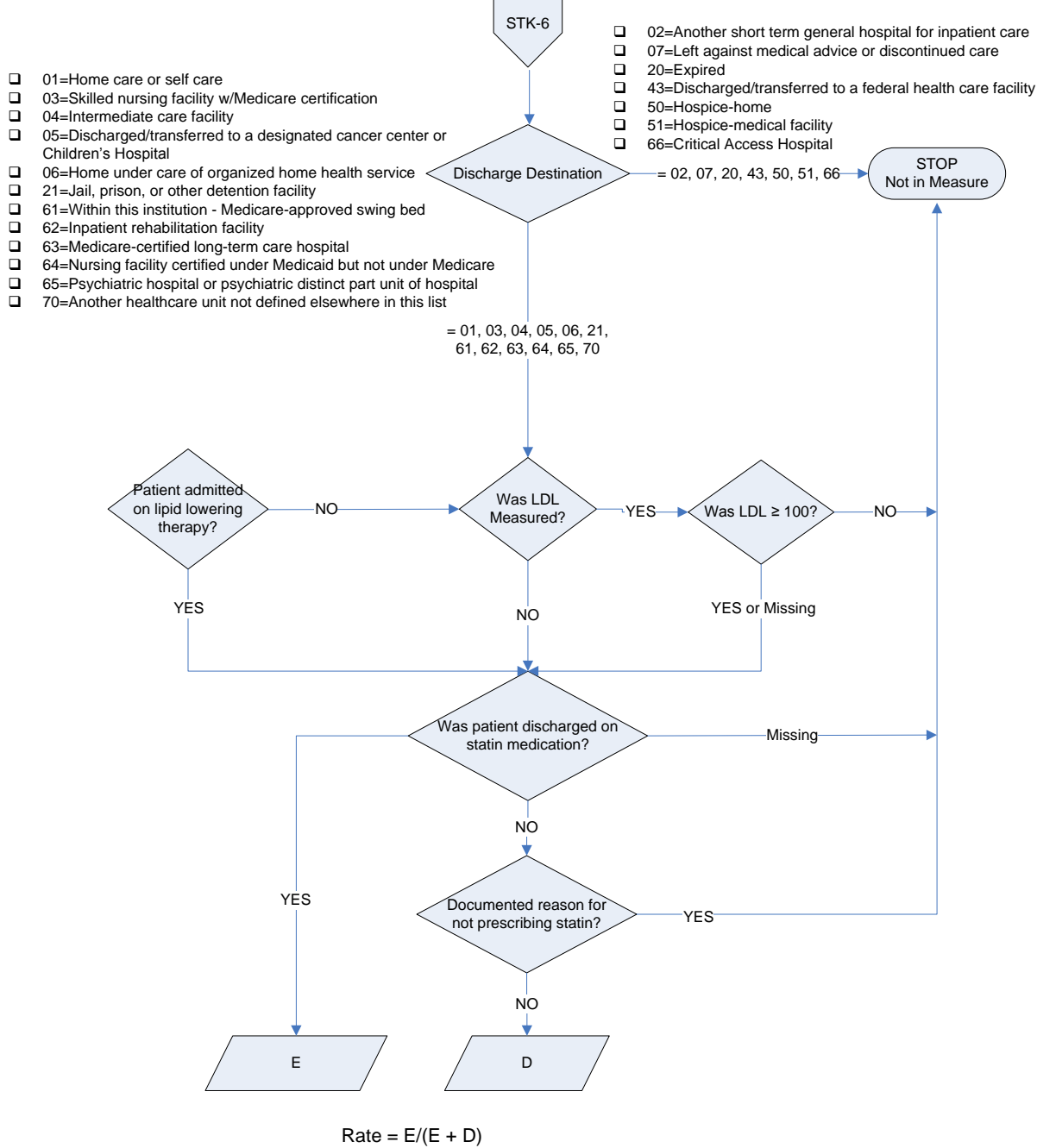
Flow Chart: Discharged on Statin Medication

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

D/C on Statin Medication

● STK-6



Dysphagia Screening (STK-7)

Patients with ischemic or hemorrhagic stroke who undergo screening for dysphagia with an evidence-based 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.

Clinical Practice Guideline Supporting Measure:

Post-Stroke Rehabilitation Guideline, Agency for Healthcare Research and Quality (formerly Agency for Health Care Policy and Research), 1995.

Management of Patients with Stroke, Identification and Management of Dysphagia Scottish Intercollegiate Guideline Network, 1997.

Duncan et al, Stroke Rehabilitation Clinical Practice Guidelines. Stroke. 2005; 36:e100-e143.

Kaiser Permanente Clinical Practice Guidelines for Acute Stroke Quartet III Inpatient Management, 1998.

VA/DoD Clinical Practice Guideline for the Management of Stroke Rehabilitation in the Primary Care Setting, Department of Veteran Affairs Department of Defense, 2003.

Numerator Statement: Patients who were screened for dysphagia before taking any food, fluids, or medications by mouth

Denominator Statement: All patients with acute ischemic or hemorrhagic stroke.

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient
- Patients who are NPO throughout the hospital stay
- Patients not indicated for dysphagia screen
- Patients with missing value for "Was patient screened for dysphagia prior to any oral intake, including food, fluids, or medications?" who would otherwise be included in the measure

Selected References:

ECRI Investigators. Diagnosis and treatment of swallowing disorders (dysphagia) in acute-care stroke. Agency for Health Care Policy and Research. Evidence Report/Technology Assessment: Number 8. 1999.

Differences:

Joint Commission: As of January 2009, TJC does not require collection nor reporting of data on dysphagia screening.

GWTG-Stroke: No difference. This measure is a "Quality Measure" for GWTG-S.

January 2010 Update Notes: There are no updates to this measure.

Measure Inclusions and Exclusions Table

Dysphagia Screening (STK-7)

Denominator			
Inclusions		Response Values	GWTG Form Field
Patients with a final clinical diagnosis of: (any):			
• Intracerebral hemorrhage		ICH=Yes	Final clinical diagnosis related to stroke
• Subarachnoid hemorrhage		SAH=Yes	Final clinical diagnosis related to stroke
• Ischemic stroke		IS=Yes	Final clinical diagnosis related to stroke
• Stroke not otherwise specified		SNS=Yes	Final clinical diagnosis related to stroke
Exclusions	MSRT#	Response Values	GWTG Form Field
(Any of the following)			
Age < 18 years		0-18	Age
0 < Length of Stay > 120 days		>120	Admission Date, Discharge Date
<u>Patient not admitted to hospital</u>			
Enrolled in stroke clinical trial		Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid endarterectomy		Yes	Admitted for elective carotid intervention?
In-hospital stroke		Stroke occurred while patient was an inpatient in your hospital=Yes	Patient location when stroke symptoms discovered
Patient is NPO throughout entire hospital stay		Yes	Patient NPO throughout the entire hospital stay?
Patient not indicated for dysphagia screen		NC	Was patient screened for dysphagia prior to any oral intake including water or medications?

Numerator		
Inclusions	Response Values	GWTG Form Field
Patients screened for dysphagia prior to being given any oral intake	Yes	Was patient screened for dysphagia prior to any oral intake including water or medications?

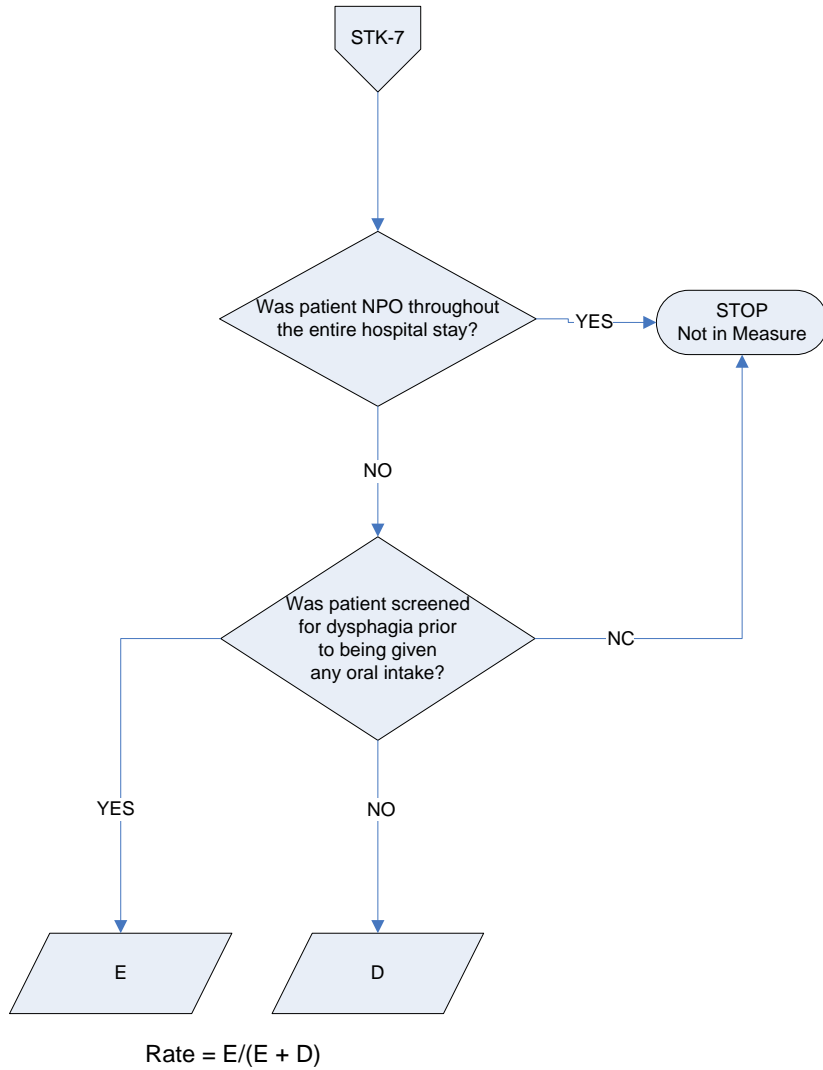
Flow Chart: Dysphagia Screening

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

Dysphagia Screening

● STK-7



Stroke Education (STK-8)

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

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.

Clinical Practice Guideline Supporting Measure:

Kaiser Permanente Clinical Practice Guidelines for Acute Stroke, Kaiser Permanente Medical Group, 1998.

Duncan et al, Stroke Rehabilitation Clinical Practice Guidelines. Stroke. 2005; 36:e100-e143.

Post Stroke Rehabilitation, Clinical Practice Guideline No.16, Agency for Health Care Policy and Research (now known as Agency for Healthcare Research and Quality), 1995.

Type of Measure: Process

Numerator Statement: Stroke patients (or TIA patients) with documentation that they or their caregivers were given educational material addressing all of the following:

1. Risk factors for stroke
2. Warning signs and symptoms of stroke
3. Activation of emergency medical system
4. Follow-up after discharge
5. Medications prescribed at discharge

Please Note: The data elements for each of the five education components provide the opportunity to assess each component individually. However, completion of all five education categories is required for this composite measure.

Denominator Statement: Patients with ischemic stroke or hemorrhagic stroke (or TIA patients)

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- Patients receiving comfort measures only
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient
- Patients discharged to a location other than home, home care, or law enforcement
- Patients with missing values for **all** any of the education categories

Selected References:

Evans RL, Matlock AL, Bishop DS, Stranahan S, Pederson C. Family intervention after stroke: Does counseling or education help? *Stroke*. 1988;19:1243-1249.

Lorig KR, Sobel DS, Stewart AL, et al. Evidence suggesting that a chronic disease self management program can improve health status while reducing hospitalization: A randomized trial. *Medical Care*. 1999; 37:5-14.

Measure Differences:**TJC:**

1. TJC does not explicitly exclude inpatient strokes, while PCNASR (and GWTG-S) do explicitly exclude inpatient strokes.
2. TJC excludes patients with a missing value for at least one education component. CDC excludes patients if all five education components have missing values.

GWTG-Stroke: Includes TIA patients in measure population. This is a “Quality Measure” for GWTG-S.

January 2010 Update Notes:

1. This measure now ONLY applies to patients being discharged to home, with or without home health, or to law enforcement.
2. Missing answers to all of the five components of education will exclude the patient from the measure.

January 2011 Update Notes:

3. Missing answers to [any](#) of the five components of education will exclude the patient from the measure. This is a correction from January 2010 update #2 above.

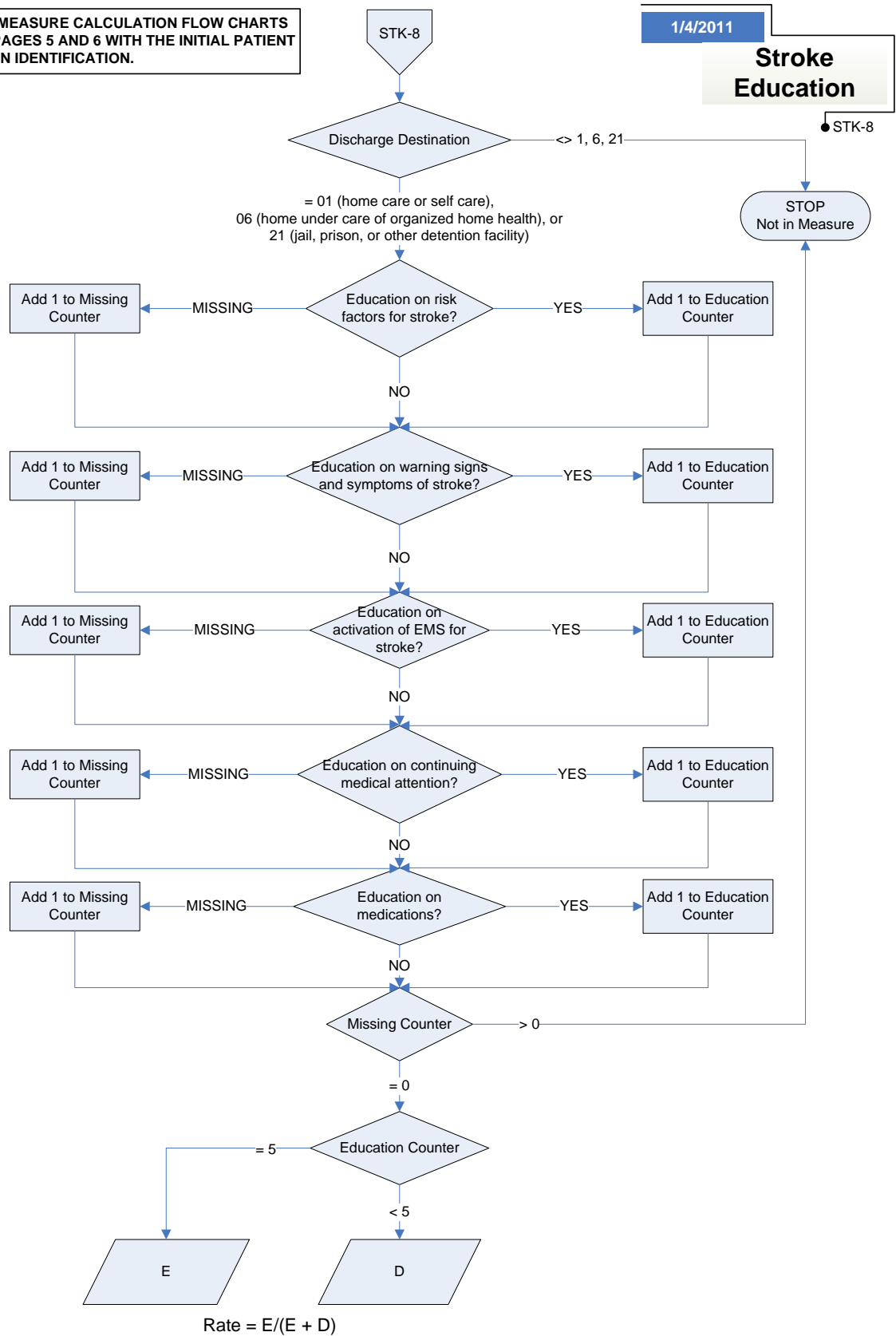
Measure Inclusions and Exclusions Table

Stroke Education (STK-8)

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of: (any):		
<ul style="list-style-type: none"> Intracerebral hemorrhage Subarachnoid hemorrhage Ischemic stroke Stroke not otherwise specified (or TIA patients)	ICH=Yes SAH=Yes IS=Yes SNS=Yes (or TIA=Yes)	Final clinical diagnosis related to stroke Final clinical diagnosis related to stroke Final clinical diagnosis related to stroke Final clinical diagnosis related to stroke Final clinical diagnosis related to stroke
Exclusions	Response Values	GWTG Form Field
(Any of the following)		
Age < 18 years	0-18	Age
Length of Stay <2 days or >120 days	<2 or >120	Admission Date, Discharge Date
Patient not admitted to hospital		
Comfort Measures Only on day of or after arrival	Day of arrival or first day after arrival	When is the earliest documentation of CMO?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid endarterectomy	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital=Yes	Patient location when stroke symptoms discovered
Discharge destination anything but home/self care home under care of organized home health, or jail, prison or detention facility	Any but 01, 06, 21	Discharge Status
Missing for all any of the education elements	Missing	Patient and/or caregiver received education and/or resource materials regarding all of the following:
Numerator		
Inclusions	Response Values	GWTG Form Field
Stroke (or TIA) patients receiving education on all of the below:		Patient and/or caregiver received education and/or resource materials regarding all of the following:
- Risk factors for stroke	Yes	
- Warning signs and symptoms for stroke	Yes	
- Activation of EMS for stroke	Yes	
- Continuing medical attention	Yes	
- Medications	Yes	

Flow Chart: Stroke Education

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.



Smoking Cessation/Advice/Counseling (STK-9)

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.

Clinical Practice Guideline Supporting Measure:

Biller, J., et. al. Guidelines for Carotid Endarterectomy: A statement of healthcare professionals from a special writing group of the stroke council, American Heart Association, *Circulation*. 1998 Feb 10; 97(5):501-9.

Management of Patients with Stroke. Rehabilitation, Prevention and Management of Complications and Discharge Planning, Scottish Intercollegiate Guidelines Network, 2002.

Smoking Cessation. Clinical Practice Guideline No. 18. U.S. Department of Health and Human Services and Public Health Service, Agency for Health Care Policy and Research, 1996.

Ralph L. Sacco, Robert Adams, Greg Albers, Mark J. Alberts, Oscar Benavente, ; Karen Furie, Larry B. Goldstein, Philip Gorelick, Jonathan Halperin, Robert Harbaugh, S. Claiborne Johnston, Irene Katzan, Margaret Kelly-Hayes, Edgar J. Kenton, Michael Marks, Lee H. Schwamm, Thomas Tomsick. Guidelines for Prevention of Stroke in Patients With Ischemic Stroke or Transient Ischemic Attack: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association Council on Stroke: Co-Sponsored by the Council on Cardiovascular Radiology and Intervention. *Stroke*. 2006; 37:577.

Ira S. Ockene and Nancy Houston Miller, Cigarette Smoking, Cardiovascular Disease, and Stroke : A Statement for Healthcare Professionals From the American Heart Association. *Circulation*. Nov 1997; 96:3243 - 3247.

Type of Measure: Process

Numerator Statement: Stroke patients (or TIA) (cigarette smokers) who receive smoking cessation advice or counseling during hospital stay, or documentation that patient's caregiver was given smoking cessation advice or counseling during hospital stay.

Denominator Statement: Ischemic stroke or hemorrhagic stroke patients (or TIA) with a history of smoking cigarettes anytime during the year prior to hospital arrival.

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- Patients receiving comfort measures only on day of or day after arrival
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients discharged/transferred to another short term general hospital for inpatient care
- Patients who left against medical advice or discontinued care
- Patients who expired
- Patients discharged/transferred to hospice
- Patients discharged/transferred to a federal health care facility
- Patients discharged to a critical access hospital
- Patients for whom discharge destination cannot be determined or unknown
- Patients who are not smokers
- Patients not indicated for smoking cessation counseling
- [Patients with missing value for "Patient/Caregiver was given smoking cessation advice or counseling during the hospital stay" who would otherwise be included in the measure](#)

Selected References:

Ockene IS, Miller NH. Cigarette Smoking, Cardiovascular Disease and Stroke. *Circulation*. 1997; 96:3243-3247.

Smith, PEM. Smoking and stroke: a causative role. (Editorial) *Br Med J*. 1998; 317:962-3.

Wolf P, Kannel W, Bonita R, Belanger A. Cigarette smoking as a risk factor for stroke: The Framingham Study. *JAMA*.1988; 259:1025-1029.

Measure Differences:

TJC: As of January 2009, TJC does not require collection nor reporting of data on smoking cessation counseling.

GWTG-Stroke: Includes TIA patients in measure population. Excludes patients transferred from ED to another acute care hospital.

January 2010 Update Notes: There are no updates to this measure.

Measure Inclusions and Exclusions Table
Smoking Cessation Counseling (STK-9)

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of: (any):		
• Intracerebral hemorrhage	ICH=Yes	Final clinical diagnosis related to stroke
• Subarachnoid hemorrhage	SAH=Yes	Final clinical diagnosis related to stroke
• Ischemic stroke	IS=Yes	Final clinical diagnosis related to stroke
• Stroke not otherwise specified	SNS=Yes	Final clinical diagnosis related to stroke
(or TIA patients)	(or TIA=Yes)	Final clinical diagnosis related to stroke
Exclusions	Response Values	GWTG Form Field
(Any of the following)		
Age < 18 years	0-18	Age
Length of Stay <2 days or >120 days	<2 or >120	Admission Date, Discharge Date
Patient not admitted to hospital		
Comfort Measures Only on day of or after arrival	Day of arrival or first day after arrival	When is the earliest documentation of CMO?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid endarterectomy	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital=Yes	Patient location when stroke symptoms discovered
Discharge destination = another hospital; left against medical advice; expired; federal health care facility; hospice; or critical access hospital	02, 07, 20, 43, 50, 51, 66	Discharge Status
Patient did not smoke cigarettes during the past year	No	Previously known medical hx of: Smoker
Patient not indicated for smoking cessation counseling	NC	Anti-Smoking Tx = NC
Numerator		
Inclusions	Response Values	GWTG Form Field
Patients who smoked cigarettes in past year AND given smoking cessation counseling during hospital stay	Yes	Anti-Smoking Tx

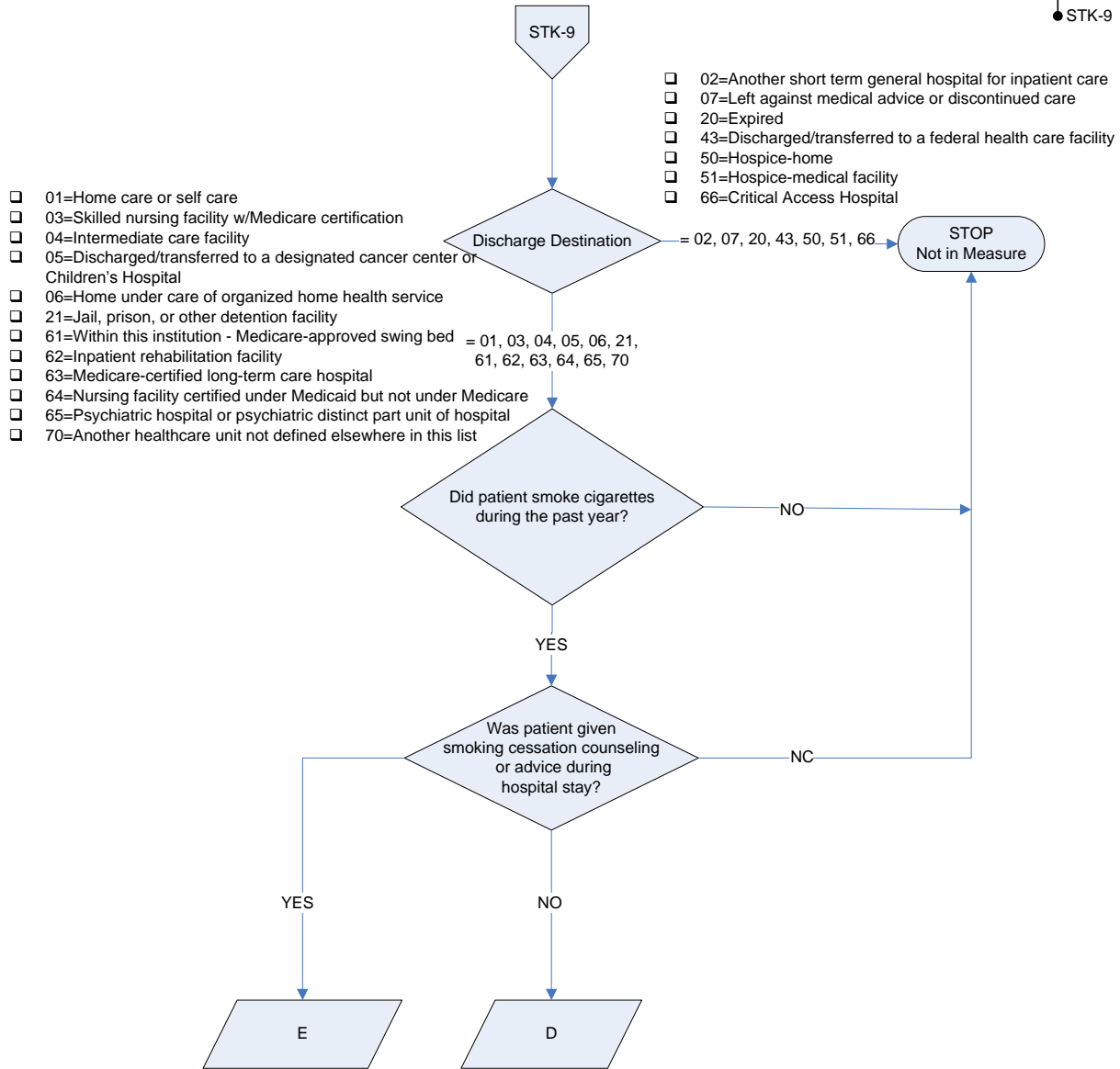
Flow Chart: Smoking Cessation Counseling

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

Smoking Cessation Counseling

● STK-9



Rate = E/(E + D)

Assessed for Rehabilitation (STK-10)

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.

Clinical Practice Guidelines Supporting Measure:

VA/DoD Clinical Practice Guideline for the Management of Stroke Rehabilitation in the Primary Care Setting, 2003 Post Stroke Rehabilitation, Clinical Practice Guideline No.16, Agency for Health Care Policy and Research (now known as Agency for Healthcare Research and Quality), 1995.

Management of patients with stroke. Rehabilitation, prevention and management of complications, and discharge planning, Scottish Intercollegiate network Guidelines Network (SIGN), 2002.

Type of Measure: Process

Numerator Statement: Ischemic or hemorrhagic stroke patients assessed for or who received rehabilitation services.

Denominator Statement: All patients with ischemic stroke or hemorrhagic stroke.

Excluded Populations:

- [Patients not admitted to the hospital](#)
- Patients less than 18 years of age
- Patients who have a length of stay >120 days
- Patients receiving comfort measures only on day of or day after arrival
- ~~Patients enrolled in clinical trials~~
- ~~Patients admitted for elective carotid intervention~~
- Patients in whom stroke occurred as an inpatient
- Patients discharged/transferred to another short term general hospital for inpatient care
- Patients who left against medical advice or discontinued care
- Patients who expired
- Patients discharged/transferred to hospice
- Patients discharged/transferred to a federal health care facility
- Patients discharged to a critical access hospital
- Patients for whom discharge destination cannot be determined or unknown
- [Patients with missing value for “Was assessed for or received rehabilitation services” who would otherwise be included in the measure](#)

Selected References:

American Academy of Physical Medicine and Rehabilitation. Rehabilitation Helps Stroke Patients Recover Skills. AAPM&R Chicago, IL Office: Author. Retrieved July 7, 2004 from World Wide Web: <http://www.aapmr.org/condtreat/rehab/recover.htm> .

American Academy of Physical Medicine and Rehabilitation. Urgency Key But Perseverance Pays Off. AAPM&R Chicago, IL Office: Author. Retrieved July 7, 2004 from World Wide Web: <http://www.aapmr.org/condtreat/rehab/recover.htm> .

American Academy of Physical Medicine and Rehabilitation. Rehabilitation Helps Stroke Patients Recover Skills Therapy Helps in Regaining Coordination, Full Speech, and Other Abilities. AAPM&R Chicago, IL Office: Author. Retrieved July 7, 2004 from World Wide Web: <http://www.aapmr.org/condtreat/rehab/recover.htm> .

National Institute of Neurological Disorders. Post-Stroke Rehabilitation Fact Sheet. National Institute of Neurological Disorders Bethesda, MD Office: Author. Retrieved July 7, 2004 from World Wide Web: http://www.ninds.nih.gov/health_and_medical/pubs/poststrokerehab.htm

Zorowitz RD , et al, the Post-Stroke Rehabilitation Outcomes Project (PSROP), Top Stroke Rehabil. 2005 Fall;12(4).

Measure Differences:

TJC: TJC does not explicitly exclude inpatient strokes, while PCNASR (and GWTG-S) do explicitly exclude inpatient strokes.

GWTG-Stroke: Includes TIA patients in measure population. This is a “Quality Measure” for GWTG-S.

January 2010 Update Notes: There are no updates to this measure.

**Measure Inclusions and Exclusions Table
Assessed for Rehabilitation (STK-10)**

Denominator		
Inclusions	Response Values	GWTG Form Field
Patients with a final clinical diagnosis of: (any):		
• Intracerebral hemorrhage	ICH=Yes	Final clinical diagnosis related to stroke
• Subarachnoid hemorrhage	SAH=Yes	Final clinical diagnosis related to stroke
• Ischemic stroke	IS=Yes	Final clinical diagnosis related to stroke
• Stroke not otherwise specified	SNS=Yes	Final clinical diagnosis related to stroke
Exclusions	Response Values	GWTG Form Field
(Any of the following)		
Age < 18 years	0-18	Age
Length of Stay <2 days or >120 days	<2 or >120	Admission Date, Discharge Date
Patient not admitted to hospital		
Comfort Measures Only on day of or after arrival	Day of arrival or first day after arrival	When is the earliest documentation of CMO?
Enrolled in stroke clinical trial	Yes	Patient enrolled in a clinical trial...
Admitted solely for elective carotid endarterectomy	Yes	Admitted for elective carotid intervention?
In-hospital stroke	Stroke occurred while patient was an inpatient in your hospital=Yes	Patient location when stroke symptoms discovered
Discharge destination = another hospital; left against medical advice; expired; federal health care facility; hospice; or critical access hospital	02, 07, 20, 43, 50, 51, 66	Discharge Status

Numerator		
Inclusions	Response Values	GWTG Form Field
Stroke patients (or TIA) assessed for rehab services OR discharge destination is inpatient rehabilitation facility	Yes 62	Patient assessed for and/or received rehabilitation services during this hospitalization?; Discharge Status = 62

Flow Chart: Assessed for Rehabilitation

NOTE: ALL MEASURE CALCULATION FLOW CHARTS BEGIN ON PAGES 5 AND 6 WITH THE INITIAL PATIENT POPULATION IDENTIFICATION.

1/4/2011

Assessed for Rehabilitation

STK-10

