DEPARTMENT OF HEALTH
STROKE PROGRAM

# Minnesota Stroke Registry Data Dictionary

## VERSION 2

11/25/2025

**For abstraction guidance for the Minnesota Stroke Registry, please contact:**

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*To obtain this information in a different format, call: 651-201-5000. The Minnesota Stroke Registry Dictionary contains excerpts from Get With The Guidelines®-Stroke which are confidential and proprietary information of Quintiles and the American Heart Association, INC.*

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# Patient Information

## Patient ID

### Description

Enter a patient identifier.

### Required

Yes

### Options

- Alphanumeric character field
- Unlimited amount of characters

### Notes for Abstraction

- The patient identifier is a unique identifier assigned to the patient by your hospital.
- The patient identifier should not be related to any personal identifiers (Name, Medical Record Number, Social Security Number, etc.).
- Each case entry into the Registry should have their own unique identifier.
- It is allowed, but not recommended, to use the same Patient ID for multiple stroke incidences of the same patient.
- The hospital creates a stroke registry log or system to match up the Patient IDs that the hospital creates for the Minnesota Stroke Registry Tool.
- To change the patient identifier that has been saved, select the stroke case and click the "Edit" button in the box with the Patient ID and Facility. Change Patient ID and then hit “Save.”

### Rationale

The Patient Identifier allows for unique case identification independent of personal or hospital identification information.

# Arrival Date and Time

## Description

Determine the earliest documented date and time the patient arrived at the hospital.

## Required

Yes

## Options

- Date: MM/DD/YYYY
- Time: HH:MM [24-hour clock time (military time)]
- Unknown

## Notes for Abstraction

- Enter the earliest documented date and time the patient arrived at your hospital.
- If the date and time of arrival are unable to be determined, select “Unknown.”
- Review the ONLY ACCEPTABLE SOURCES to determine the earliest date the patient arrived at the hospital’s Emergency Department (ED), direct admit to inpatient floor, observation status, or sent directly to the endovascular cath lab. Use the earliest date documented unless other documentation suggests the patient was not in the hospital on that date. The intent is to utilize any documentation which reflects processes that occurred in the ED or hospital.
- Medical record documentation from the ONLY ACCEPTABLE SOURCES list should be carefully examined in determining the most correct date of arrival. Arrival date should not be abstracted simply as the earliest date in the acceptable sources, without regard to other (i.e., ancillary services) substantiating documentation. If documentation suggests that the earliest date in the acceptable sources does not reflect the date the patient arrived at the hospital, this date should not be used.
- When reviewing ED records do not include any documentation from external sources (e.g., ambulance records, physician office records, laboratory reports) obtained prior to arrival. The intent is to utilize any documentation which reflects processes that occurred in the ED or hospital.
- If the patient is in an outpatient setting of the hospital (e.g., undergoing dialysis, chemotherapy, cardiac catheterization) and is subsequently admitted to the hospital, use the time the patient presents to the ED or arrives on the floor for inpatient care as the arrival date and time.
- If the patient is in an observation status and is subsequently admitted to the hospital:
  - If the patient was admitted to observation from an outpatient setting of the hospital, use the date/time the patient arrived at the ED or on the floor for observation care as the arrival date/time.
  - If the patient was admitted to observation from the ED of the hospital, use the date/time the patient arrived at the ED as the arrival date/time.
- For "Direct Admits" to the hospital, use the earliest time the patient arrives at the hospital.

  - If the patient was a "Direct Admit" to acute inpatient or observation, use the earliest date/time the patient arrived at the nursing floor or in observation (as documented in the Only Acceptable Sources) as the arrival date/time.
  - If the patient is a "Direct Admit" to the cath lab, use the earliest date/time the patient arrived at the cath lab (or cath lab staging/holding area) as the arrival date/time.The arrival date can differ from the admission date.
- If the patient was transferred from your hospital's satellite/free-standing ED or from another hospital within your hospital's system (as an inpatient or ED patient), and there is one medical record for the care provided at both facilities, use the arrival date at the first facility.
- If the patient is in either an outpatient setting of the hospital other than observation status (e.g., dialysis, chemotherapy, cardiac cath) or a SNF unit of the hospital, and is subsequently admitted to acute inpatient, use the date the patient arrived at the ED or on the floor for acute inpatient care as the arrival date.
- For inpatient strokes, enter the actual hospital arrival date/time and not the date/time of symptom discovery.

## Examples

The patient arrived at the ED at 23:30 on 9/23/2009 and was admitted to the hospital at 00:30 on 9/24/2009. The arrival date and time is 9/23/2009 at 23:30.

## Rationale

The arrival date and time are used to determine the time window for the STK-5 Antithrombotic Therapy by End of Hospital Day Two

## Suggested Data Sources

**ONLY ACCEPTABLE SOURCES:**

- Emergency department record
  - Includes any documentation from the time period that the patient was an ED patient – e.g., ED face sheet, ED consent/Authorization for treatment forms, ED/Outpatient Registration/sign-in forms, ED vital sign record, triage record, ED physician orders, ECG reports, telemetry/rhythm strips, laboratory reports, x-ray reports.
- Nursing admission assessment/admitting note
- Observation record
- Procedure notes
  - Refers to procedures such as cardiac caths, endoscopies, and surgical procedures. Procedure notes do not include ECG and x-ray reports.
- Vital signs graphic record
  - Do not use preprinted dates on a vital sign graphic record.
  - In determining if there is documentation which suggests the patient was not in the hospital on a given date, sources outside of the ONLY ACCEPTABLE SOURCES list can be referenced. However, do not use dates described as hospital arrival on these sources for Arrival Date.

    Examples:

- ED ECG dated/timed as 05-07-20xx 2142. ED Greet Date/Time 05-08-20xx 0125. ED Triage Date/Time 05-08-20xx 0130. EMS record shows patient was en-route at 05-08-20xx 0100. Enter 05-08-20xx for Arrival Date.
- ED face sheet noted arrival date/time as 02-27-20xx 2300. The first vitals are recorded at 02-28-20xx 0020. There is no documentation to support that the patient was not in the hospital on 02-27-200xx 2300. Enter 02-27-20xx for Arrival Date.
- ED Triage Date/Time 03-22-20xx 2355. ED rhythm strip dated/timed 03-23-20xx 0030. EMS report indicates patient was receiving EMS care from 0005 through 0025 on 03-23-20xx. Enter 03-23-20xx for Arrival Date.

**Unacceptable sources**: Addressographs/Stamps

# Age

## Description

Enter the age of the patient on arrival.

## Options

- Numeric field

## Required

Yes

## Notes for Abstraction

- Calculate age by determining the number of years between the arrival date and the birth date.
  - For patients transferred from your ED to another hospital, calculate age by determining the number of years between the arrival date and birth date.
  - Because this data element is critical in determining the population for all measures, the abstractor should not assume the claim information for the birth date is correct. If the abstractor determines through chart review that the claim information is incorrect, she/her should correct and override the downloaded value. If the abstractor is unable to determine the correct birth date through chart review, they should default to the date of birth on the claim information

## Rationale

Age is used to exclude cases younger than 18 years of age from the registry and provide information about equity or disparities in medical history and/or care processes.

## Suggested Data Sources

ED records, face sheet, registration forms, UB-04 (Field Location: 14).

# Sex

## Description

The patient's reported sex on arrival at the hospital.

## Required

Yes

## Options

- Male
- Female
- Unknown

## Notes for Abstraction

- Collect the documented patient's sex at first documentation after arrival or at admission.
- Select "**Male**" if it is the patient's documented sex on arrival at the hospital.
- Select "**Female**" if it is the patient's documented sex on arrival at the hospital.
- Select "**Unknown**" if:
  - Sex is unable to be determined
  - The patient refuses to provide their sex
  - Documentation is contradictory
  - Documentation indicates the patient is intersex

## Rationale

Sex provides information about equity or disparities in medical history and/or care processes.

## Suggested Data Sources

Consultation notes, Emergency department record, Face sheet, History and physical, Nursing admission notes, Progress notes, UB-04/ UB-92 Field Location 15.

# Residential Zip Code

## Description

The patient's postal code for their place of residence.

## Required

Yes

## Options

- Numeric field
- Patient experiencing homelessness

## Notes for Abstraction

- Enter the patient's postal zip code for their permanent residence. If patient resides at a facility, enter the zip of the facility. For example, if patients lives in a nursing home, enter the nursing home's zip code.
- If it is determined that the patient does not have a permanent address and/or has been staying in a homeless shelter, select "**Patient experiencing homelessness**."
- If the postal code of the patient is unable to be determined from medical record documentation, enter the hospital's postal code.

## Suggested Data Sources

Medical record face sheet

# Preferred Language

## Description

Identify the patient's preferred language to communicate in.

## Required

Optional

## Options

- English
- Language other than English
- Not documented

## Notes for Abstraction

- Record the preferred language that the patient self-identifies to use during this episode of care.
- Select "**English**," if there is documentation that English is the patient's preferred language, or no documentation is found in the medical record suggesting any other language was used to communicate with the patient.
- Select "**Language other than English**," if there is documentation that the patient's preferred language is another language that is not English. This includes if there is an order for an interpreter during this episode of care.
- Select "**Not documented**," if there is conflicting information in the chart.

## Rationale

Patient preferred language can provide information about equity and disparities in medical history and/or care processes.

# Race/Ethnicity

## Description

Document the patient's self-assessed race/ethnicity. Select all that apply

## Required

Yes

## Options

- American Indian or Alaska Native
  - (optional to select) Anishinaabe/Ojibwa, Dakota/Lakota, American Indian or Alaska Native Tribe Not Listed Above
- Asian or Asian American
  - (optional to select) Asian Indian, Burmese, Cambodian, Chinese, Filipino, Hmong, Japanese, Karen, Korean, Lao, Vietnamese, Asian Ethnicity Not Listed Above
- Black, African, or African American
  - (optional to select) African American, Ethiopian, Ghanaian, Kenyan, Liberian, Nigerian, Somali, Sudanese, Black Ethnicity Not Listed Above
- Hispanic, Latino, or Spanish
  - (optional to select) Colombian, Ecuadorian, Guatemalan, Mexican, Mexican American and/or Chicano/a, Puerto Rican, Salvadoran, and Spanish/Spanish-American, Hispanic, Latino/a, and/or Spanish Origin Not Listed Above
- Middle Eastern or North African
- Native Hawaiian or Pacific Islander
  - (optional to select) Guamanian or Chamorro, Samoan, Native Hawaiian or Pacific Islander Ethnicity Not Listed Above
- White
  - (optional to select) Russian, White Ethnicity Not Listed Above
- Other
- Unknown/UTD

## Notes for Abstraction

- Do not abstract race based on documented physical characteristics.
- If patient is multi-racial, select all that applies. More granular levels of detail is optional to collect and enter.
- Select "**American Indian or Alaska Native**" if it is documented that the patient's race is American Indian or Alaska Native. Includes individuals with origins in any of the original peoples of North, Central, and South America, including, for example, Navajo Nation, Blackfeet Tribe of the Blackfeet Indian Reservation of Montana, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community, Aztec, and Maya.
  - If "**American Indian or Alaska Native**," optional sub-options will appear to collect further information:
    - "*Anishinaabe/Ojibwa*" and "*Dakota/Lakota*" are optional sub-options to record this information if available. Select all that apply.

- Select "**Asian or Asian American**" if it is documented that the patient's race is Asian. Includes individuals with origins in any of the original peoples of Central or East Asia, Southeast Asia, or South Asia, including, for example, Chinese, Asian Indian, Filipino, Vietnamese, Korean, Japanese, Pakistani, Hmong, and Afghan.
  - If "**Asian or Asian American**," optional sub-options will appear to collect further information:
    - *"Asian Indian", "Burmese", "Cambodian", "Chinese", "Filipino", "Hmong", "Japanese", "Karen", "Korean", "Lao", "Vietnamese", "Asian Ethnicity Not Listed Above"* are optional sub-options to record this information if available. Select all that apply.
- Select "**Black, African, or African American**" if it is documented that the patient's race is black, African American, Haitian or Afro-Caribbean. Includes individuals with origins in any of the Black racial groups of Africa, including, for example, African American, Jamaican, Haitian, Nigerian, Ethiopian, and Somali.
  - If "**Black, African, or African American**," optional sub-options will appear to collect further information:
    - *"African American", "Ethiopian", "Ghanaian", "Kenyan", "Liberian", "Nigerian", "Somali", "Sudanese", and "Black Ethnicity Not Listed Above"* are optional sub-options to record this information if available. Select all that apply.
- Select "**Hispanic, Latino, or Spanish**" if it is documented that the patient identifies as Hispanic or Latino/e. Includes individuals of Mexican, Puerto Rican, Salvadoran, Cuban, Dominican, Guatemalan, and other Central or South American or Spanish culture or origin.
  - If "**Hispanic, Latino, or Spanish**," optional sub-options will appear to collect further information:
    - *"Colombian", "Ecuadorian", "Guatemalan", "Mexican", "Mexican American and/or Chicano/a", "Puerto Rican", "Salvadoran", "Spanish/Spanish-American", and "Hispanic, Latino/a, and/or Spanish Origin Not Listed Above"* are optional sub-options to record this information if available. Select all that apply.
- Select "**Middle Eastern or North African**" if it is documented that the patient identifies as Middle Eastern or North African. Includes individuals Lebanese, Iranian, Egyptian, Syrian, Iraqi, Israeli, Moroccan, Yemeni, and Kurdish.
- Select "**Native Hawaiian or Pacific Islander**" if it is documented that the patient is Native Hawaiian or Pacific Islander. Includes individuals with origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands, including, for example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, and Marshallese.
  - If "**Native Hawaiian or Pacific Islander**," optional sub-options will appear to collect further information:
    - *"Guamanian or Chamorro", "Samoan", and "Native Hawaiian or Pacific Islander Ethnicity Not Listed Above"* are optional sub-options to record this information if available. Select all that apply.
- Select "**White**" if documented that the patient's race is Caucasian (white). Individuals with origins in any of the original peoples of Europe, including, for example, English, German, Irish, Italian, Polish, and Scottish.
  - If "**White**," optional sub-options will appear to collect further information:

    - *"Russian" and "White Ethnicity Not Listed Above"* are optional sub-options to record this information if available.
- Select "**Other**" if a patient's documented race is not covered by any of the other options.
- Select "**Unknown**", if based upon the documentation, you are unable to determine race, race is not documented, or the patient is unwilling to provide race.

## Examples

- When asked, the patient states that she is both African American and Fijian. Select "Black, African, or African American" and the "Native Hawaiian or Pacific Islander".
- When asked, patient states that she is both White and Filipino. Select "White" and "Asian".
- Patient reports he is Afro-Cuban. Select "Black, African, or African American," and "Hispanic, Latino, or Spanish."
- Patient is aphasic and there is conflicting documentation for race. Check "Unknown."

## Rationale

Patient race provides information about equity and disparities in medical history and/or care processes.

The PI Log in the Portal allows you to view your data broken down by race.

## Suggested Data Sources

Admission sheet, discharge summary, EMS transport sheets, ED Physician or Nurse Notes, ED triage sheet, Emergency department record, Face sheet, History and physical, nursing admission assessment, progress notes

# Health Insurance Status

## Description

Indicate the health insurance status for this patient.

## Required

Optional

## Options

- Medicare/Medicare Advantage
- Medicaid
- Private/VA/Champus/Other
- Self-Pay/No Insurance
- Not Documented (Insurance not disclosed)

## Notes for Abstraction

- Select "**Medicare/Medicare Advantage**" if documented that the patient's health insurance is provided by Medicare or Medicare Advantage. NOTE: "Ucare for Seniors" is a synonym for "Medicare/Medicare Advantage"
- Select "**Medicaid**" if documented that the patient's health insurance is provided by Medicaid. NOTE: Medical Assistance, GAMC, and Minnesota Care are synonyms for "Medicaid"
- Select "**Private/VA/Champus (or TRICARE)/Other**" if documented that the patient's health insurance is provided by another provider other than Medicare, Medicaid, or self-provided.
- Select "**Self Pay/No Insurance**" if documented that the patient's health insurance is self-provided or the patient has no current health insurance.
- Select "**Not Documented**" if a patient's health insurance provider is not documented.
- If a patient has multiple health insurance providers, check all that apply. If option "Not Documented" is selected, all other options are grayed-out.
- A pending application at the time of arrival for health insurance does not qualify as health insurance status. Exception: Applications pending for Medical Assistance do qualify as health insurance status
- Table 10 in Appendix C of the *Minnesota Stroke Registry Abstraction Manual* has a list of health insurance programs and their classified type to select.

## Rationale

Health insurance provides information about equity or disparities in medical history and/or care processes.

## Suggested Data Sources

ED admissions document, intake/face sheet/hospital admissions database.

# Was the Patient an ED Patient?

## Description

Patient received care in a dedicated emergency department (ED) of the facility.

## Required

Yes

## Options

- Yes
  - ED Discharge Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - ED Discharge Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
- No/Not Documented/Unable to Determine

## Notes for Abstraction

- For the purposes of this data element an ED patient is defined as any patient receiving care or services in the ED.
- Patients seen in an Urgent Care, ER Fast Track, etc. are NOT considered an ED patient unless they received services in the emergency department at the facility (e.g., patient treated at an urgent care and transferred to the main campus ED is considered an ED patient, but a patient seen at the urgent care and transferred to the hospital as a direct admit would not be considered an ED patient).
- Select "**Yes**" if there is documentation that the patient was an ED patient. This includes:
  - Patients presenting to the ED for outpatient services such as lab work etc.
  - If "**Yes**" a required sub-option will appear to record, the "*ED Discharge Date and Time*" when the patient left the ED care at this hospital.
    - If the date and/or time of ED Discharge is unable to be determined from medical record documentation, select "Unknown".
    - If this is an inpatient stroke and patient was sent to the ED again, use the first recorded ED discharge date.
    - The discharge date and time could be any one of the following events:
      - Patient is discharged from your institution's ED and admitted to observation status and/or admitted your hospital for acute inpatient care
      - Patient's expiration
      - Patient left against medical advice (AMA)
      - Transfer to a rehabilitation, skilled nursing, or hospice unit in your institution
      - Transfer to an acute in-patient unit outside of your own institution, even if that hospital is affiliated with your own.
    - Because this data element is critical in determining the population for all measures, the abstractor should NOT assume that the claim information for the discharge date is correct. If the abstractor determines through chart review that the claim date is incorrect, she/he should correct and override the downloaded

value. If the abstractor is unable to determine the correct discharge date through chart review, she/he should default to the claim discharge date.

- Select "**No/ND/UTD**" if there is no documentation that the patient was an ED patient, OR unable to determine from the medical record documentation. This includes:
  - If a patient is transferred in from any ED or observation unit OUTSIDE of your hospital. This applies even if the ED or observation unit is part of your hospital's system (e.g., your hospital's free-standing or satellite emergency department), has a shared medical record or provider number, or is in close proximity. Even if the transferred patient is seen in this facility's ED.
  - Patients presenting to the ED who do not receive care or services in the ED (e.g., patient is sent to hospital from physician office and presents to ED triage and is instructed to proceed straight to the floor).
  - If the patient is transferred to your hospital from an outside hospital where the patient was an inpatient or outpatient. This applies even if the two hospitals are close in proximity, part of the same hospital system, have the same provider number, and/or there is one medical record. Even if the transferred patient is seen in this facility's ED.

## Rationale

ED patient is used for inclusion in STK-4 Thrombolytic Therapy. Discharge date and time is critical in determining the population for all measures

## Suggested Data Sources

Emergency department record, face sheet, registration form. For discharge date: Administrative Data: UB-04, Field Location: 6, Medical Record: Discharge summary, face sheet, nursing discharge notes, physician orders, progress notes, transfer notes.

# Was Patient Admitted to this Hospital?

## Description

Indicate if the patient was admitted to this hospital.

## Required

Yes

## Options

- Yes
  - Inpatient admission date (required)
    - Date: MM/DD/YYYY
  - Inpatient discharge date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
- No/ND

## Notes for Abstraction

- Select "**Yes**" if the patient was admitted to this hospital. This includes:
  - If the patient was placed on observation status and was later admitted to your hospital for this episode of care.
  - If "**Yes**", a required sub-option will appear to record the "*Inpatient admission date*" when patient was admitted into acute inpatient care at this hospital. This can differ from arrival date.
    - The admission date is the date that the patient is admitted to acute care or in-patient unit of your institution. The dates of ED triage or an observation admission do *not* qualify as the admission date.
    - If a patient arrives through the ED and is held in observation for a day or two, use the actual date of admission to the hospital for the admission date (not the arrival date to the ED).
    - For patients who are admitted to Observation status and subsequently admitted to acute inpatient care, abstract the date that the determination was made to admit to acute inpatient care and the order was written. Do *not* abstract the date that the patient was admitted to Observation.
    - If there are multiple inpatient orders, use the order that most accurately reflects the date that the patient was admitted. The admission date should not be abstracted from the earliest admission order without regards to substantiating documentation. If documentation suggests that the earliest admission order does not reflect the date the patient was admitted to inpatient care, this date should not be used.
    - The intent of this data element is to determine the date that the patient was actually admitted to acute inpatient care. Because this data element is critical in determining the population for all measures, the abstractor should NOT assume that the claim information for the admission date is correct. If the abstractor

determines through chart review that the date from billing is incorrect, for purposes of abstraction, she/he should correct and override the downloaded value.
    - For inpatient strokes, enter the actual hospital admit date and not the date of stroke symptom discovery.
  - If "**Yes**", a required sub-option will appear to record the "*Inpatient discharge date*" when patient was discharged from inpatient care at this hospital. Select "Unknown" if inpatient discharge date is unavailable or not documented.
    - The discharge date could be any one of the following events:
      - Patient is discharged from your institution's acute care unit
      - Patient's expiration
      - Patient left against medical advice (AMA)
      - Transfer to a rehabilitation, skilled nursing, or hospice unit in your institution
      - Transfer to an acute in-patient unit outside of your own institution, even if that hospital is affiliated with your own.
- Select "**No/ND**" if the patient was not admitted to this hospital, or if it is not documented.

## Examples

- Patient is seen in the ED of your institution on November 30, 20xx at 22:35. After the ED evaluation, the patient is a candidate for endovascular treatment and is taken to the Neurovascular Catheterization Lab at 23:45 and treatment is completed. The patient is admitted to the Stroke Unit of your institution on December 1, 20xx at 04:10. Enter 12/01/20xx as the admission date.
- Preoperative Orders are dated as 04-06-20xx with an order to admit to Inpatient. Postoperative Orders, dated 05-01-20xx, state to admit to acute inpatient. All other documentation supports that the patient presented to the hospital for surgery on 05-01-20xx. The admission date would be abstracted as 05-01-20xx.
- Medical record documentation reflects that the patient was admitted to observation on 04-05-20xx. On 04-06-20xx the physician writes an order to admit to acute inpatient effective 04-05-20xx. The Admission Date would be abstracted as 04-06-20xx; the date the determination was made to admit to acute inpatient care and the order was written.
- Patient is admitted to your in-patient neurology floor from your ED, with a diagnosis of acute ischemic stroke, on January 10, 2004. Due to extension of the infarct (need for jejunostomy and placement), the patient is still on the in-patient unit on January 30, 2004. The patient expires from complications of aspiration pneumonia on February 12, 2004. Enter 2/12/2004 for the discharge date.

## Rationale

This data element helps account for cases transferred or released from the hospital without being admitted. In addition, this data element is used to determine the date that the patient was actually admitted to acute inpatient care. The admission date is used to measure length of stay which is an inclusion factor for all performance measures and is used to determine the time window for the STK-1 (Venous Thromboembolism Prophylaxis). The discharge date is used to measure length of stay and is an inclusion factor for all the stroke performance measures.

## Suggested Data Sources

Only allowable sources: Physician orders, face sheet, UB-04 Field 12. Cannot use UB-04 “From” and “Through Dates”, discharge summary, nursing discharge notes, progress notes, transfer note, UB-04 (Field Location: 06).

# Diagnosis

## Elective Carotid Intervention

### Description

Determine if the documentation demonstrates that the current admission is solely for the performance of an elective intervention (e.g., elective carotid endarterectomy, angioplasty, carotid stenting).

### Required

Yes

### Options

- Yes
- No/Unable to Determine

### Notes for Abstraction

- The term elective can be used as well as anticipated, asymptomatic, evaluation, non-emergent, planned, pre-admission, pre-arranged, pre-planned, pre-scheduled, previously arranged, prophylactic, scheduled, and work-up and MUST be explicitly documented by a Physician/APN/PA only.
- Select "**Yes**" if there is documentation that this admission was solely for the performance of elective carotid intervention (e.g., elective carotid endarterectomy, angioplasty, carotid stenting). This includes:
    - Documentation clearly indicates that the carotid intervention is elective (e.g., admitting orders to obtain informed consent for carotid procedure; pre-operative testing completed prior to admission; surgical order for carotid endarterectomy date prior to arrival; physician office visit documentation prior to arrival stating, "CEA with Dr. X planned in the near future").
    - Patients who are sent to the hospital by their physician and admitted for performance of a carotid intervention.
    - Patients admitted to the hospital for purposes of performance of a carotid intervention and the intervention cancelled/postponed during the hospital stay.
    - Patients who request admission to the hospital for performance of a carotid intervention.
    - Patients transferred to the hospital for purposes of surgical evaluation for performance of a carotid intervention.
    - When the patient is directly admitted to the hospital post-procedure following an elective carotid intervention performed as an outpatient.
        - Example: Patient scheduled for elective carotid endarterectomy right side on 05/17/20xx at 08:30. Patient checks into outpatient surgery at 06:13 and proceeds to the O.R., then to PACU. Patient status is changed to inpatient at 11:35 on 05/17/20xx. Patient discharged home on 05/18/20xx.

- Select "**No/Unable to Determine**" if there is no documentation that this admission was solely for the performance of elective carotid intervention, or unable to determine from the medical record documentation. This includes:
  - Patients who are symptomatic and come to the ED for treatment of stroke signs and symptoms and then admitted to the hospital are not considered elective admissions, even if a carotid intervention was performed after admission.
  - When documentation of the procedure is not linked with "elective."
  - Patients admitted for an acute stroke are not considered to have been admitted solely for the purpose of the performance of elective carotid intervention.
  - When conflicting information is documented in a medical record, (e.g., internist documents "elective" and surgeon documents "non-elective" or unspecified).
  - Patient was admitted following elective carotid intervention performed as an outpatient.
  - Patients with documentation of an elective carotid intervention performed and discharged from the outpatient setting prior to hospital admission for stroke.
    - Example: Patient scheduled for outpatient placement of an elective right carotid stent on 05/17/20xx. Patient discharged home on 05/17/20xx following the procedure. Patient arrives in the ED two days later with complaints of syncope and left-sided numbness, and is admitted to the hospital on 05/19/20xx.

## Rationale

Cases admitted for the sole purpose of performance of elective carotid intervention are excluded from all of the stroke performance measures.

## Suggested Data Sources

PHYSICIAN/APN/PA DOCUMENTATION ONLY: History and physical, OR report, Physician orders, Progress notes

# Stroke-Related Clinical Trial

## Description

Determine if there was documentation that during this hospital stay the patient was enrolled in a clinical trial in which stroke patients were being studied.

## Options

- Yes
- No/Unable to Determine

## Required

Yes

## Notes for Abstraction

- A clinical trial is defined as an experimental study in which research subjects are recruited and assigned a treatment/intervention and their outcomes are measured based on the intervention received. Treatments/interventions most often include use of drugs, surgical procedures, and devices. Often a control group is used to compare with the treatment/intervention. Allocation of different interventions to participants is usually randomized.
- Observational studies are non-experimental and involve no intervention (e.g., registries). Individuals are observed (perhaps with lab draws, interviews, etc.), data is collected, and outcomes are tracked by investigators. Although observational studies may include the assessment of the effects of an intervention, the study participants are not allocated into intervention or control groups.
- Select "**Yes**" if there is documentation that during this hospital stay the patient was enrolled in a clinical trial in which patients with stroke or venous thromboembolism (prevention or treatment interventions) were being studied.
  - Documentation must include *BOTH* of the following to select "Yes."
    - There must be a signed consent form for clinical trial.
    - There must be documentation on the signed consent form that during this hospital stay the patient was enrolled in a clinical trial in which stroke patients were being studied. Patients may either be newly enrolled in a clinical trial during the hospital stay or enrolled in a clinical trial prior to arrival and continued active participation in that clinical trial during this hospital stay.
- Select "**No/UTD**" if there is no documentation or it is unable to determine that during this hospital stay the patient was enrolled in a clinical trial in which patients with stroke or venous thromboembolism (prevention or treatment interventions) were being studied. This includes the following situations:
    - There is a signed patient consent form for an observational study only.
    - It is not clear whether the study described in the signed patient consent form is experimental or observational.
    - It is not clear which study population the clinical trial is enrolling. Assumptions should not be made if it is not specified.

## Rationale

Cases enrolled in clinical trials are excluded from all of the stroke performance measures.

## Suggested Data Sources

Signed consent form for clinical trial (Only acceptable data source)

# Principal ICD-10-CM Discharge Diagnosis

## Description

Determine the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) code that is primarily responsible for the admission of the patient to the hospital for care during this hospitalization. This is the principal ICD-10 code.

## Required

Yes

## Options

- Any valid diagnosis code as per the Centers for Medicare & Medicaid Services ICD-10-CM master code table.

## Notes for Abstraction

- Enter the ICD-10-CM code associated with the diagnosis established after study to be chiefly responsible for occasioning the admission of the patient for this hospitalization. The principal diagnosis is defined in the Uniform Hospital Discharge Data Set (UHDDS) as "that condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care."
- The principal ICD-10-code may not correlate to the final clinical diagnosis related to stroke, in particular in circumstances of inpatient stroke or missed stroke.
- If you click on the 'Find' button, a list of stroke-related ICD-10 codes will populate and allow you to choose from Subarachnoid Hemorrhage, Intracerebral Hemorrhage, Ischemic Stroke, Transient Ischemic Attack, and Stroke in Pregnancy.
  - Full list available in the *Minnesota Stroke Registry Abstraction Manual* Appendix A, Tables 1 – 4.
- If the patient was treated for a stroke or TIA condition, but no code has been assigned contact your hospital's coding department regarding code assignment.

## Suggested Data Sources

Discharge summary, face sheet, UB-04 (Field Location: 67).

# Final Clinical Diagnosis Related to Stroke

## Description

Determine the stroke related condition documented by a physician following an evaluation of the patient. It may be a principal or secondary diagnosis assigned at discharge.

## Required

Yes

## Options

- Intracerebral hemorrhage
- Subarachnoid hemorrhage
- Ischemic stroke
- Stroke not otherwise specified
- Transient ischemic attack (TIA)
- No stroke related diagnosis

## Notes for Abstraction

- Select one of the six diagnosis options based on the clinical information found in the medical record.
  - This assignment of clinical diagnosis should be done independently of the ICD-10-CM code assigned.
  - For most cases the Final clinical diagnosis related to stroke will be equivalent to the principal diagnosis code. For some cases such as inpatient or in-hospital stroke or TIA the principal diagnosis code and the final clinical diagnosis related to stroke will differ. The Final diagnosis related to stroke can be the principal or secondary diagnosis assigned at discharge.
  - Patients admitted for non-stroke related illness, but who have inpatient strokes should have a final clinical diagnosis related to stroke that is in alignment with their inpatient stroke type.
- Select "**Intracerebral hemorrhage**" if the final hospital diagnosis related to stroke is an intracerebral hemorrhage. Intracerebral hemorrhage is defined as a hemorrhage occurring within the cerebrum.
- Select "**Subarachnoid hemorrhage**" if the final hospital diagnosis related to stroke is a subarachnoid hemorrhage. Subarachnoid hemorrhage is defined as a hemorrhage occurring within the space between the arachnoid and the pia matter through which the cerebrospinal fluid circulates.
- Select "**Ischemic stroke**" if the final hospital diagnosis related to stroke is an ischemic stroke. An ischemic stroke is defined as a stroke caused by thrombosis or embolism. This includes:
  - Patients who arrive with symptoms of stroke and have complete resolution after IV thrombolytic.

  - Patients who are documented as having "CVA" or "Stroke" in their medical record, without any additional documentation around stroke type, and who have no evidence of hemorrhage on initial brain imaging.
  - Patients who had an ischemic stroke who are treated with IV thrombolytic or other medications and develop the complication of intracerebral hemorrhage should be entered as ischemic stroke, even if the ICD-10-CM code is assigned as a hemorrhagic stroke classification. If a patient is transferred to your hospital for management of a hemorrhagic complication after treatment with IV thrombolytic for an ischemic stroke at the referring hospital, select Ischemic stroke.
  - Patients who have transient symptoms that are present on arrival to the ED but resolve, and then those symptoms later return during the hospitalization and subsequently meet criteria for ischemic stroke (symptoms > 24hrs or infarction on brain imaging).
- Select "**Stroke not otherwise specified**" if unable to determine the type of stroke from the documented final hospital diagnosis related to stroke due to both ischemic injury and brain hemorrhage on initial imaging.
- Select "**Transient ischemic attack**" (TIA) if the final hospital diagnosis related to stroke is a transient ischemic attack. A transient ischemic attack is defined as a brief episode of cerebral ischemia that is usually characterized by blurring vision, slurring of speech, numbness, paralysis, or syncope that is predictive of a serious stroke.
- Select "**No stroke related diagnosis**" for patients who present with neurological symptoms, but after work-up are determined not to have suffered from a stroke or TIA.
  - The patient presents with stroke mimic or a stroke-like clinical picture and IV thrombolytic is initiated, but the final clinical diagnosis is later determined not to be stroke related. You can report the stroke mimic in the comments section. Some examples include migraine, seizure, delirium, electrolyte or metabolic imbalance, functional disorder, dizziness, aphasia, dysarthria, altered mental status, or peripheral vertigo (list on all inclusive). This allows for hospitals to track outcomes of the patients who appeared to be having a stroke and were treated, but later turned out to have a stroke mimic.
  - The patient presents with stroke mimic or a stroke-like clinical presentation and a 'stroke code' is activated and/or the patient is followed by the stroke service until the stroke diagnosis is ruled out.

## Examples

- Patient was admitted with pneumonia. On hospital day two he developed right sided weakness and was diagnosed with an ischemic stroke. Select "Ischemic Stroke." Inpatient stroke cases are optional to enter.
- A patient was admitted with ischemic stroke and was treated with IV thrombolytic. The patient develops complications of intracerebral hemorrhage. As documented by the attending physician, the final hospital diagnosis is ischemic stroke. However, the ICD-10-CM code is assigned as hemorrhagic stroke. Select "Ischemic Stroke".

## Rationale

This data element is an inclusion factor for all stroke performance measures.

## Suggested Data Sources

Discharge summary

# Discharge Disposition

## Description

Select the patient's discharge disposition on the day of discharge.

## Required

Yes

## Options

- Home
- Hospice – Home
- Hospice – Health Care Facility
- Acute Care Facility
  - Facility (optional)
- Other Health Care Facility
  - Other Discharge Health Care Facility (required)
    - Inpatient Rehabilitation Facility (IRF)
    - Intermediate Care Facility (ICF)
    - Long Term Care Hospital (LTCH)
    - Skilled Nursing Facility (SNF)
    - Other
- Expired
- Left Against Medical Advice/ AMA
- Not Documented or Unable to Determine

## Notes for Abstraction

- Select "**Home**" if the patient has been discharged to:
  - Home or self-care (routine discharge) – includes home, board and care, foster or residential care, group or personal care homes, independent living, retirement communities and homeless shelters.
  - Home on oxygen (if durable medical equipment only), home on other durable medical equipment other than oxygen
  - Assisted Living Facilities (ALFs) – Includes ALFs and assisted living care at nursing home, intermediate care, and skilled nursing facilities.
  - Court/Law Enforcement – includes detention facilities, jails, and prison.
  - Home under Care of Organized Home Health Service Organization is defined as a home with a written plan of care (tailored to the patient's medical need) for home care services.
  - Outpatient Services including outpatient procedures at another hospital, Outpatient Chemical Dependency Programs and Partial Hospitalization
- Select "**Hospice- Home**" if the patient is discharged home under hospice care, this includes discharges with hospice referrals and evaluations. Hospice care is defined as the following services provided to a terminally ill individual by, or by others under arrangements made by, a hospice program under a written plan (for providing such care to such individual)

established and periodically reviewed by the individual's attending physician and by the medical director of the program:

- Nursing care provided by or under the supervision of a registered professional nurse
- Physical or occupational therapy, or speech-language pathology services
- Medical social services under the direction of a physician
- Services of a home health aide who has successfully completed a training program approved by Centers for Medicare and Medicaid Services (CMS)
- Medical supplies (including drugs and biologicals) and the use of medical appliances, while under such a plan
- Physicians' services
- Short-term inpatient care (including both respite care and procedures necessary for pain control and acute and chronic symptom management) in an inpatient facility meeting such conditions as CMS determines to be appropriate to provide such care, but such respite care may be provided only on an intermittent, non-routine, and occasional basis and may not be provided consecutively over longer than five days
- Counseling (including dietary counseling) with respect to care of the terminally ill individual and adjustment to his death

- Select "**Hospice- Health Care Facility**" if the patient is discharged to a certified medical facility providing hospice level of care as well as discharges with hospice referrals and evaluations.
  - Hospice care is defined as the following services provided to a terminally ill individual by, or by others under arrangements made by, a hospice program under a written plan (for providing such care to such individual) established and periodically reviewed by the individual's attending physician and by the medical director of the program
    - Nursing care provided by or under the supervision of a registered professional nurse
    - Physical or occupational therapy, or speech-language pathology services
    - Medical social services under the direction of a physician
    - Services of a home health aide who has successfully completed a training program approved by CMS
    - Medical supplies (including drugs and biologicals) and the use of medical appliances, while under such a plan.
    - Physicians' services
    - Short-term inpatient care (including both respite care and procedures necessary for pain control and acute and chronic symptom management) in an inpatient facility meeting such conditions as CMS determines to be appropriate to provide such care, but such respite care may be provided only on an intermittent, non-routine, and occasional basis and may not be provided consecutively over longer than five days
    - Counseling (including dietary counseling) with respect to care of the terminally ill individual and adjustment to his death
    - Any other item or service which is specified in the plan and for which payment may otherwise be made under the title of hospice
    - Hospice - General Inpatient and Respite, Residential and Skilled Facilities, Other Health Care Facilities

- Select "**Acute Care Facility**" if the patient is discharged to another short-term acute care general hospital for inpatient care, designated cancer center or children's hospital, federal health care facility, or critical access hospital. This includes:
  - Designated Cancer Center or Children's Hospital is defined as a designated cancer center defined by the National Cancer Institute.
  - Acute Short Term General and Critical Access Hospitals (CAH)
  - Federal Health Care Facility is defined as a government operated health care facility such as a Department of Defense hospital and Veterans Administration (VA) Hospitals
  - If you select "Acute Care Facility" sub-option will appear:
    - "*Facility*" is an optional sub-option to record the name of the acute care facility the patient was transferred/released.
- Select "**Other Health Care Facility**" if the patient is discharged to an inpatient rehabilitation facility, intermediate care facility, a long-term care hospital, skilled nursing facility, hospital based Medicare approved swing bed, nursing facility certified under Medicaid but not certified under Medicare, psychiatric hospital or psychiatric distinct part/unit of a hospital, or another health care unit not already defined.
  - If you select "Other Health Care Facility," a required sub-option appears to record the other discharge health care facility the patient was discharged to:
    - Select "*Inpatient Rehab Facility* (IRF)" (including rehabilitation distinct part units of a hospital) if the patient is discharged to a free standing rehabilitation hospital or rehabilitation unit in an acute care hospital. IRFs provide an intensive rehabilitation program and patients who are admitted must be able to tolerate three hours of intense rehabilitation services per day.
    - Select "*Intermediate Care Facility*" if patient is discharged or transferred to an intermediate care facility (ICF) that provides custodial or supportive care. This would include patients discharged to:
      - ECF (Extended Care Facility)
      - ICF (Intermediate Care Facility)
      - Nursing Home
      - Nursing facility for non-skilled/custodial/residential level of care
      - Veteran's Administration Nursing Facility or Veterans Home
      - Nursing facility with neither Medicare nor Medicaid certification
      - Nursing facility with hospice referral only (has not accepted hospice care by a hospice organization).
    - Select "*Long Term Care Hospital* (LTCH)" if the patient is discharged or transferred to a Medicare certified long term care hospital (LTCH or LTACH) or a nursing facility certified under Medicaid but not certified under Medicare. LTCH Usage Note: For hospitals that meet the Medicare criteria for LTCH certification. A Long-term care hospital or long-term care facilities provide acute inpatient care with an average length of stay greater than 25 days.
    - Select "*Skilled Nursing Facility*" if the patient is discharged or transferred to a skilled nursing facility (SNF) with Medicare Certification and to hospital-based Medicare approved swing bed. This would include patients discharged to:
      - skilled nursing facility (SNF)

        - A SNF is defined as a public or private non-profit institution, certified under section 1819(a) of the Social Security Act, which is primarily engaged in providing skilled nursing care and related services to residents requiring medical, rehabilitation or nursing care and is not primarily for the care and treatment of mental diseases.
        - To determine whether or not a nursing facility is certified by Medicare use the "Find and Compare Nursing Home Tool" (http://www.medicare.gov/NHCompare) and enter in "Minnesota."
      - SNF rehabilitation unit (a unit within the SNF)
      - Sub-Acute Care
      - Transitional Care Unit (TCU)
      - Swing Bed (patients discharged/ transferred to a SNF level of care within the hospital's approved swing bed arrangement)
      - Skilled nursing facility with hospice referral only (has not accepted hospice care by a hospice organization).
    - Select "*Other*" if the patient is discharged or transferred to a Psychiatric Hospital or Psychiatric Unit of a Hospital or other healthcare facility not defined in above options. These are defined as institutions that:
      - Are primarily engaged in providing, by or under the supervision of a doctor of medicine or osteopathy, psychiatric services for the diagnosis and treatment of mentally ill persons.
  - Select "**Expired**" if the patient expired during hospital admission.
  - Select "**Left Against Medical Advice/AMA**" if the patient left against medical advice or decided to discontinue care.
  - Select "**Not Documented or Unable to Determine"** if the discharge destination is not documented or unable to determine the discharge destination.

## Examples

- Patient is a resident of a nursing home. They were admitted to your institution for new onset of stroke symptoms. The patient was discharged to the same nursing home where they reside. Select "Home."
- Patient was admitted to your institution for new onset stroke symptoms from a local shelter. The patient had partial resolution of symptoms leaving only minor neurologic deficits. The patient was scheduled to be discharged to a shelter on Friday, December 21, 2004 (12/21/2004) with a written care plan for home care services, however patient left the unit prior to discharge and did not return. Select “Left against medical advice/AMA”. If the patient had been discharged to shelter with home health, select "Home."

## Rationale

Discharge disposition is an inclusion factor for multiple stroke performance measures.

## Suggested Data Sources

This information is usually listed in the medical record discharge summary, discharge instruction sheet, nurses progress notes, physician order sheets, physician progress notes, face

sheet, nursing discharge notes, social service note, transfer record, or in the administrative Data: UB-04 Field Location 17.

# Evaluation

## How Patient Arrived At Your Hospital

### Description

Indicate the type of transport used to bring the patient to your facility.

### Required

Yes

### Options

- EMS from home/scene
  - EMS Agency (optional)
  - Incident number (optional)
  - Scene Arrival Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - Scene Arrival Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
  - Scene Departure Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - Scene Departure Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
  - Advanced notification by EMS as a stroke alert/code (required)
  - Pre-hospital stroke screen performed? (required)
  - Was glucose checked by EMS? (required)
    - Blood Glucose value [required, measured by EMS, numerical value to be entered (0-999 mg/dL)]
- Private transportation/taxi/other
- Transfer from another hospital
  - Facility (required)
  - Transferred by EMS Agency (optional)
- Mobile stroke unit
- Not Documented or Unknown

### Notes for Abstraction

- Select "**EMS from home/scene**" if the patient was brought to your hospital by EMS.
  - EMS pertains to EMS by ground or by air.
  - Do not select this option for patients transferred to your hospital by EMS. Select "Transfer from another hospital" instead.
  - If "**EMS from home/scene**," sub-options will appear to collect further information.

- "*EMS Agency*" is an optional sub-option that is documented on the run sheet for this encounter. Select "Unknown" if information is unavailable.
- "*Incident number*" is an optional sub-option that is documented on the run sheet for this encounter. Select "Unknown" if information is unavailable.
- *"Scene arrival date and time"* is a required sub-option to record the date and time EMS arrived at the scene as documented by EMS.
  - Enter the date and time EMS documented time that EMS arrived at the scene on the run sheet or e-PCR.
  - This is different from when EMS agency arrived at the patient or first medical contact/at patient side.
  - Select *"Unknown"* if the date and/or time is not documented or unknown.
- *"Departure date and time"* is a required sub-option to record the date and time EMS left the scene with the patient to your facility.
  - Enter the date and time the unit left the scene with the patient to take them to your hospital as recorded by EMS on the run sheet or e-PCR.
  - Select *"Unknown"* if date and/or time is not documented or unknown.
- *"Advanced notification by EMS"* is a required sub-option to record if EMS notified the receiving hospital prior to arrival of a possible stroke patient
  - EMS personnel should provide prehospital notification to the receiving hospital that a suspected stroke patient is en route so that the appropriate hospital resources may be mobilized before patient arrival.
  - Select "*Yes*" if there is documentation that EMS notified the receiving hospital prior to arrival of an incoming possible stroke patient. There must be explicit documentation that advanced notification by EMS included that the patient was a suspected stroke.
  - Acceptable documentation contains any use of the word "stroke" or any documentation of signs and symptoms consistent with stroke, such as:
    - Sudden numbness or weakness of face, arm or leg – especially on one side of the body
    - Sudden confusion, trouble speaking or understanding
    - Sudden trouble seeing in one or both eyes
    - Sudden trouble walking, dizziness, loss of balance or coordination
    - Sudden severe headache with no known cause
  - Select "*No/ND*" if EMS did not pre-notify the receiving hospital that this was a suspected stroke or if EMS notification was not documented.
  - Select "*Unknown*" if the information is not available.
- "*Pre-hospital stroke screen performed*" is a required sub-option to indicate if there is documentation of a neurological assessment done by EMS
  - Select "*Yes*" if a pre-hospital neurologic assessment listed below was performed.
    - Cincinnati Stroke Scale Score (CPSS)
    - Face Arm Speech Time (FAST)
    - Los Angeles Prehospital Stroke Screen (LAPSS)
    - Other stroke neurological assessments

        - Select "*No*" if Glasgow Coma Scale (GCS) or no pre-hospital stroke screen was performed.
        - Select "*ND*" for Not Documented if there is no documentation if a stroke screen was performed.
    - "*Was glucose checked by EMS"* is a required sub-option to record if there is documentation of a glucose check done by EMS.
        - Select "*Yes*" if there is documentation of glucose checked by EMS personnel in the pre-hospital care setting.
            - A required sub-option will appear to enter earliest "*Blood Glucose*" value recorded by EMS personnel in the pre-hospital care setting
        - Select "*No*" if there is no documentation of glucose being checked by EMS in the pre-hospital care setting or if only shared verbally.
- Select "**Private transportation/taxi/other**" if the patient was brought to your hospital by any form of transportation other than EMS.
- Select "**Transfer from another hospital**" if the patient was transferred to your hospital from another hospital by EMS.
    - If "**Transfer from another hospital,**" sub-options will appear to collect additional information.
        - "*Facility*" is a required sub-option to specify the name of the referring hospital that transferred the patient to your hospital.
        - "*Transferred by EMS Agency*" is an optional sub-option to record the name of the transferring EMS Agency.
- Select "**Mobile stroke unit"** if patient arrived by mobile stroke, which is a transport unit capable of diagnosing and treating acute strokes in the field. It contains highly specialized staff, imaging capabilities (CT scanner), mobile lab and the ability to administer IV alteplase. These are not currently in use in Minnesota.
- Select "**ND or Unknown**" if based upon the documentation the arrival mode of the patient is not documented or the arrival mode is unknown.

## Examples

- EMS was called to the scene, but as patient refused rig transport, EMS helped patient into private vehicle and spouse drove patient to the ED. Select "Private transportation/taxi/other".
- Patient was picked up by the EMTs at 0810. On their departure to the hospital at 0820, they call the ED to inform them they are bringing in a potential stroke patient. They arrive at the ED at 0830. The hospital was therefore pre-notified that a potential stroke patient was arriving, therefore you would select "EMS from home/scene" and "Yes" – EMS provided advanced notification to the receiving hospital of an incoming suspected stroke patient.
- "Per EMS report, this patient's pre-hospital blood glucose was 120mg/dL" (as stated in hospital chart). This would not qualify as EMS documentation if the information was only shared verbally.

## Rationale

Arrival mode is used to inform public awareness campaigns.

Determining whether EMS notification occurred is important for analyzing door to image times and process improvement.

Numerous prehospital neurological assessment tools have been developed to accurately identify stroke patients, which facilitates appropriate field treatment, advanced notification, and routing to an appropriate hospital destination.

## Suggested Data Sources

ED records, intake/face sheet, hospital admissions records, EMS transport sheet, EMS run sheet, electronic patient care record (e-PCR), ED nursing notes, ED triage notes, or EMS trip record.

# Earliest Documentation of Comfort Measures Only (CMO)

## Description

Determine the earliest physician/ advanced practice nurse/ physician assistant documentation of comfort measures only.

## Required

Yes

## Options

- Day 0 or 1 (day of or day after arrival)
- Day 2 or after
- Timing unclear
- ND/UTD or NA

## Notes for Abstraction

- Comfort Measures Only refers to medical treatment of a dying person where the natural dying process is permitted to occur while assuring maximum comfort. It includes attention to the psychological and spiritual needs of the patient and support for both the dying patient and the patient's family. Comfort Measures Only is commonly referred to as “comfort care” by the general public. CMO are *not* equivalent to the following: Do Not Resuscitate (DNR), living will, no code, no heroic measure, or a physician order to withhold emergency resuscitation measures such as Do Not Resuscitate.
  - Inclusions for CMO (only accept terms listed below; comfort care measures described in a negative context should be disregarded):
    - Brain dead, Brain death, Comfort care, Comfort measures, Comfort measures only (CMO), Comfort Only, DNR-CC, End of life care, Hospice, Hospice care, Organ harvest, Terminal care, Terminal extubation
- Documentation of comfort measures only by physician/APN/PA in the following contexts suffices:
  - Comfort measures only recommendation
  - Order for consultation or evaluation by a hospice care service
  - Patient or family request for comfort measures only
  - Plan for comfort measures only
  - Referral to hospice care service
  - Discussion of comfort measures
- Determine the earliest day CMO was DOCUMENTED by the physician/APN/PA in the acceptable sources. Do not factor in when comfort measures only was actually instituted. For example:
  - "Discussed comfort care with family on arrival" notes in day 2 of progress note- Select "Day 2 or after."
  - POLST order for comfort care dated prior to arrival - Select "Day 0 or 1."

    - Consider comfort measures only documentation in the discharge summary as documentation on the last day of the hospitalization, regardless of when the summary is indicated.
- If there is documentation of an inclusion term clearly described as negative in one source and an inclusion term not described as negative in another source, that second source would still count for comfort measures only.
- State-authorized portable orders (SAPOs) are specialized forms or identifiers authorized by state law that translate a patient's preferences about specific end-of-life treatment decisions into portable medical orders. Examples:
    - DNR- Comfort Care form
    - Medical Orders for Life-Sustaining Treatment (MOLST)
    - Physician Orders for Life-Sustaining Treatment (POLST)
    - Out-of-Hospital DNR (OOH DNR)
        - If there is a SAPO in the record that is dated and signed prior to arrival with an option in which an inclusion term is found that is checked, select value "Day 0 or 1"
        - If a SAPO lists different options for CMO and any CMO option is checked, select value "Day 0 or 1," "Day 2 or after," or "Timing unclear" as applicable.
        - If one or more dated SAPOs are included in the record (and signed by the physician/APN/PA), use only the most recent one. Disregard undated SAPOs.
        - For cases where there is a SAPO in the record with a CMO option selected: If the SAPO is dated prior to arrival and there is documentation on the day of arrival or the day after arrival that the patient does not want CMO, and there is no other documentation regarding CMO found in the record, disregard the SAPO.
            - Example: Patient has a POLST dated prior to arrival in his chart and ED physician states in current record "Patient is refusing comfort measures, wants to receive full treatment and be a full code."
- Documentation of "CMO" should be disregarded if documentation makes clear it is not being used as an acronym for Comfort Measures Only (e.g., "hx dialted CMO" - cardiomyopathy context).
- In situations where pre-printed order forms signed by the physician/APN/PA:
    - Disregard an Inclusion term in a statement that is not part of the order or that is not clearly selected (on a form that offers options to select from).
        - Inclusion term used only in the title of the form (e.g., "DNR-Comfort Care" form, option "Comfort Care" is not checked)
        - Inclusion term used only in the pre-printed instruction for completing the form (e.g. "Copy of form to hospice", "Instructions" section of the form further defines the option "Comfort Care")
        - If there is a specific option for "Comfort Measures Only" (or other Inclusion term) that is unchecked, then disregard documentation on that form, regardless of whether that Inclusion term might be used in a different option that is checked.
        - Example: POLST form - The "Limited Additional Interventions" option checked is described as "In addition to care described in Comfort Measures Only, use medical treatment, antibiotics, ...".

- For inpatient strokes, assess earliest documentation of comfort measures only from date/time of discovery of stroke symptoms. If comfort measures was instituted prior to the date/time of discovery of stroke symptoms, select "**Day 0 or 1.**"
- Select "**Day 0 or 1**" if the earliest day the physician/APN/PA documented comfort measures only was the day of arrival (Day 0) or day after arrival (Day 1).
- Select "**Day 2 or after**" if the earliest day the physician/APN/PA documented comfort measures was two or more days after arrival day (Day +2).
- Select "**Timing unclear**" if there is physician/APN/PA documentation of comfort measures only during this hospital stay, but whether the earliest documentation of comfort measures only was on day 0 or 1 OR after day 1 is unclear.
- Select "**Not documented/UTD or NA**" if there is no physician/APN/PA documentation of comfort measures only, or unable to determine from medical record information.
  - This includes if the ONLY documentation found is an inclusion term in the following situations. Documentation of an inclusion term in the following situations should be *disregarded*. Continue to review the reminder of the physician/APN/PA documentation for acceptable inclusion terms.
    - Documentation (other than SAPOs) that is dated prior to arrival or documentation which refers to the pre-arrival time period.
      - Examples:
        - Comfort measures only order in previous hospitalization record.
        - "Pt. on hospice at home" in MD ED note.
    - Inclusion term clearly described as a negative or conditional.
      - Examples:
        - "No comfort care" or "Not appropriate for hospice"
        - "Family requests comfort measures only should the patient arrest."
        - "I offered hospice care consult to discuss end of life issues. Family did not show any interest."
        - "Patient declines hospice care at this time, but I feel this will be an important plan of care when patient's condition deteriorates further."
        - "Comfort care would also be reasonable- defer decision for now"
        - DNRCCA (Do Not Resuscitate- Comfort Care Arrest)
        - Comfort Care Protocol will be implemented in the event of a cardiac arrest or a respiratory arrest

## Examples

- On Day 0 the physician documents "The patient is not a hospice candidate." On Day 3, the physician orders a hospice consult. Select "Second day after arrival or later".
- On Day 1 the physician documents the patient is comfort measures only. On Day 2 the physician documents "The patient is refusing CMO." Select "Day of arrival or first day after arrival".
- On hospital day 1 (day of arrival), the physician documents "The patient is not a hospice candidate." On day hospital day 3, the physician orders a hospice consult. Select "Second day after arrival or later".
- On hospital 2, the physician documents the patient is comfort measures only. On hospital day 2 the physician documents "The patient is refusing CMO". Select "Day of arrival or first day after arrival".

- A patient arrives at the hospital on 4/1/2012 and was admitted the same day for acute MI. On 4/3/2012 the nurse finds the patient unable to speak and unable to move his right side. The stroke team is consulted and it is determine that the patient had an ischemic stroke. The neurologist orders a consultation for palliative care services on 4/4/2012. Select "Day 1 or 2" as the day of discovery of stroke symptoms (4/3/2012) is day 1 for inpatient strokes.

## Rationale

Comfort Measures Only (CMO) status is used as an exclusionary factor for multiple stroke performance measures.

## Suggested Data Sources

PHYSICIAN/APN/PA DOCUMENTATION ONLY IN THE FOLLOWING ONLY ACCEPTABLE SOURCES: Consultation notes, Discharge Summary, DNR/MOLST/POLST forms, Emergency department record, History & physical, Physician orders, Progress notes

# Last Known Well Date and Time and Discovery Date and Time

## Description

Last Known Well Date and Last Known Well Time

- Determine the date at which the patient was last known to be without the signs and symptoms of the current stroke or at his or her prior baseline.
- Determine the time at which the patient was last known to be without the signs and symptoms of the current stroke or at his or her prior baseline. To within 15 minutes of exact time is acceptable.

Discovery Date and Discovery Time

- Determine the date of discovery of patient's symptoms.
- Determine the time of discovery of patient's symptoms. To within 15 minutes of exact time is acceptable.

## Required

Yes

## Options

- Last Known Well Date
  - Date: MM/DD/YYYY
  - Date: Unknown
- Last Known Well Time
  - Time: HH:MM [24-hour clock (military time)]
  - Time: Unknown
- Discovery Date
  - Discovery same as last known well
  - Date: MM/DD/YY
  - Date: Unknown
- Discovery Time
  - Time: HH:MM [24-hour clock (military time)]
  - Time: Unknown

## Notes for Abstraction

- The purpose of this data element is to identify the earliest possible time that stroke symptoms began. This is sometimes known as "Onset Time" although the use of this term has been confusing to many in the past. If a patient experiences the onset of their symptoms in the company of another individual who can verify that the patient was functioning normally up until the time of start of symptoms, then in this patient the time "last known well" is also the time of symptom discovery. In many cases, however, no one is present at the exact start of symptoms. In this situation, we need to document the time when symptoms were first discovered (time of symptom discovery) as well as the time that the patient was last known to be well or at their baseline (time last known well), and record both of these.

- For the date and time of "**Last Known Well**", record the date and time of when the patient was last known to be at their baseline health.
    - It is acceptable to determine the date and time of "Last Known Well" from a symptom onset that was either self-witnessed or witnessed by an individual other than the patient.
    - The time last known well should be the time closest to the time of discovery for which we have clear evidence that the patient was at their previous baseline. This might be established by a telephone or in person conversation. Family members, EMS personnel, and others, often mistakenly record the time of symptom discovery as the time the patient was last known well. It is imperative to distinguish these two times to avoid inappropriate use of IV thrombolytic.
    - If a patient wakes up with symptoms, do not infer that symptom onset began when the patient awoke. Instead, determine the date and time the patient was last conscious and without symptoms for "Last Known Well."
    - If a stroke "onset time" is listed in the medical record, without reference to the circumstances preceding its detection, then it should be assumed to be the time "Last Known Well."
- If there is a specific reference to the patient having been discovered with symptoms already present, then this "onset time" should be treated as a "Discovery Date and Time" rather than a time of "Last Known Well". If no time of "Last Known Well" can be determined, then "*Unknown*" should be selected for time "Last Known Well."
- When a time of discovery is documented, but the start of stroke symptoms is not witnessed and no time "Last Known Well" is documented, then "Unknown" should be selected for time "Last Known Well."
- In certain selected cases, patients may have transient symptoms which resolve and are later followed by symptoms that result in presentation to the hospital. If in the opinion of the physician, the patient had several symptomatic episodes between which he/she returns completely to baseline, then use the onset time of the most recent episode as the date and time of "Last Known Well."
- If there are multiple times of "Last Known Well" documented, either because subsequent more accurate information became available or because of different levels of expertise in sorting out the actual time of "Last Known Well," use the time recorded according to the following hierarchy:
    - Stroke team/neurology
    - Admitting physician
    - Emergency department physician
    - ED nursing notes
    - EMS
- If the time of "Last Known Well" is noted to be a range of time prior to hospital or ED arrival (e.g., "2 - 3 hours ago"), assume the maximum time from the range (e.g., 3 hours).
- If the time of "Last Known Well" is documented as being a specific number of hours prior to arrival (e.g., 2 hours ago) rather than a time, subtract that number from the time of hospital or ED arrival and enter that time as the "Last Known Well" time.
- If the date or time of "Last Known Well" cannot be determined, select "Unknown."

- For the date and time of "**Discovery**", record the date and time of when symptoms were first realized by the patient or noticed by another individual.
  - Select option "*Discovery same as last known well*" when the "Last Known Well" is the same as the "Discovery Date and Time". This option was added to reduce the redundancy of abstraction. If the event was witnessed by the patient or another individual, the dates and times for "Last Known Well" and "Discovery" will be the same.
  - It is acceptable to determine the date and time of "Discovery" from a symptom onset that was self-witnessed or witnessed by an individual other than the patient.
  - If the date or time of "Discovery" cannot be determined, select "*Unknown*".
  - In certain selected cases, patients may have transient symptoms which resolve and are later followed by symptoms that do not resolve and result in admission to the hospital. If there is documentation of one or more symptomatic episodes of transient stroke symptoms and documentation of symptom resolution between episodes (e.g. patient returns to baseline), then enter the date/time of the most recent (last) episode here (even if it occurs after hospital arrival (i.e., stroke symptoms returned or occurred while in the emergency department, or while patient was already admitted)).

## Examples

- On May 20th 20xx, patient was gardening with her husband in their backyard when the patient noticed that her left arm went limp. She immediately told her husband and her husband noticed that the left side of her face was drooping. The husband drove his wife to the hospital. The husband stated it was 8:15 AM when the onset of symptoms occurred. The dates and times for "Last Known Well" and "Discovery" are both 5/20/20xx at 8:15.
- On May 20th 20xx, patient was gardening in her backyard when the patient noticed that her left arm went limp. According to the patient, it also felt as if the left side of her face was also numb. She immediately went inside and called 911. The patient stated it was 8:15 AM when the onset of symptoms occurred. The dates and times for "Last Known Well" and "Discovery" are both 5/20/20xx at 8:15.
- Patient woke up at 4:00 AM on May 20th 20xx with left sided paresis and an inability to speak according to his wife. Patient's wife noted that the patient was normal when he went to bed at between 9:45 PM and 10:00 PM the night before. The date and time for "Last Known Well" are 5/19/2009 at 21:45 and the date time for Discovery are 5/20/20xx at 4:00.
- Patient woke up at 4:00 AM on May 20th 20xx with left sided paresis and an inability to speak according to his wife. Patient's wife noted that the patient was normal when he went to bed last night but she is unsure of what time he went to bed. The date and time for "Last Known Well" are both "Unknown/ND/UTD" and the date and time for "Discovery" are 5/20/20xx at 4:00.
- Patient woke up at 4:00 PM on May 20th 20xx with left sided paresis and an inability to speak according to his wife. Patient's wife noted that the patient was normal in the early afternoon prior to the nap but was unsure of exactly when the patient laid down to rest. The date and time for "Last Known Well" are 5/20/20xx and "Unknown/ND/UTD" and the date and time for "Discovery" are 5/20/20xx at 16:00.
- On May 20th 20xx, the patient was gardening in her backyard when the patient noticed that the left side of her face went numb around 9:30 AM. After a minute or so, the

numbness subsided and the patient continued to garden. At 10:30 AM, according to the patient, the numbness came back to the left side of her face and her left arm went limp. She went inside the house and called 911. The dates and times for “Last Known Well” and “Discovery” are both 5/20/20xx at 10:30.

## Rationale

- The Last Known Well date and time is used to determine the time window for the STK-4 Thrombolytic Therapy.

## Suggested Data Sources

Ambulance record, emergency department records, history and physical, IV flow sheets, medication administration record, nursing flow sheets, progress notes, transfer Sheet, consultations

# Patient location when stroke symptoms were discovered

## Description

Indicate the setting from which the patient came from when the stroke like symptoms were discovered.

## Required

Yes

## Options

- Not in a healthcare setting
- Another acute care facility
- Chronic healthcare facility
- Outpatient healthcare setting
- Stroke occurred after hospital arrival (in ED/Obs/Inpatient)
- ND or cannot be determined

## Notes for Abstraction

- Select "**Not in a health care setting**" when:
  - The patient was at home or private residence, this includes patients who reside in an assisted living facility and stroke symptoms occurred at that facility.
  - The patient was a resident of a nursing home, but stroke occurred while outside of facility and family/EMS brought patient into hospital.
  - The patient was transferred to your hospital from another hospital's ED or inpatient unit but was outside of a healthcare facility when the stroke occurred.
- Select "**Another acute care facility**" when:
  - The patient experienced stroke symptoms in another hospital's ED or inpatient unit and then transferred to your hospital.
- Select "**Chronic healthcare facility**" when:
  - The patient was a resident of a nursing home, long-term care facility, inpatient rehab facility, psychiatric hospital, and transitional care unit and experienced stroke symptoms in that setting.
- Select "**Outpatient healthcare setting**" when:
  - The patient is at a clinic or physician office visit, or at your hospital but receiving outpatient procedure or service that did not require the patient to be admitted as an inpatient
- Select "**Stroke occurred after hospital arrival (in ED/Obs/Inpatient)**" when:
  - The patient was already admitted as an inpatient in your hospital when stroke symptoms were first discovered.
  - The patient was already within your hospital ED, radiology suite, or observation unit and experienced a new onset of stroke symptoms.
  - Only those hospitals that are interested in collecting information regarding inpatient stroke occurrences should enter these patients. Patients who have transient symptoms that are present on arrival to the ED but resolve, and then later return

during the hospitalization and meet criteria for ischemic stroke should all be entered as inpatient strokes.

- Select "**ND or cannot be determined**" when:
  - The record does not have any documentation on the setting where the patient developed stroke like symptoms or it cannot be determined after reviewing the patient's documentation related to this episode of care.

## Rationale

Inpatient strokes are excluded from certain stroke measures.

## Suggested Data Sources

Physician documentation (including Admitting physician notes, consultation notes, ED physician notes, Physician's hospital admission, transfer, or ED discharge notes, progress notes)

ED documentation (including ED nurse notes, ED order sets or pathway documentation, ED physician notes, ED record, ED triage sheet, Registration form, ED vital signs graphical record)

Inpatient documentation (including physician notes, history and physical, medication documentation, nurse progress notes, nursing admission assessment note, physical or occupational therapy consultation or progress notes, speech pathology consultation or progress notes, diet or nutrition services consultation or progress notes)

# Stroke Symptoms Resolved at Time of Presentation

## Description

Indicate whether symptoms resolved completely prior to presentation.

## Required

Yes

## Options

- Yes
- No
- Not Documented

## Notes for Abstraction

- Select "**Yes**" if patient's symptoms resolve completely (patient's health returned to baseline) prior to presentation to the hospital.
- Select "**No**" if patient symptoms did not resolve completely prior to presentation.
  - This includes inpatient strokes since the time of presentation equals the time of symptom discovery.
- Select "**ND**" if there is no documentation indicating whether the patient's symptoms resolved.

## Rationale

Cases whose symptoms have resolved prior to presentation are excluded from the Stroke Performance Measure 4 (Thrombolytic Therapy Administered).

## Suggested Data Sources

Physician documentation (including Admitting physician notes, consultation notes, ED physician notes, Physician's hospital admission, transfer, or ED discharge notes, progress notes)

ED documentation (including ED nurse notes, ED order sets or pathway documentation, ED physician notes, ED record, ED triage sheet, Registration form, ED vital signs graphical record)

Inpatient documentation (including physician notes, history and physical, medication documentation, nurse progress notes, nursing admission assessment note, physical or occupational therapy consultation or progress notes, speech pathology consultation or progress notes, diet or nutrition services consultation or progress notes)

# Acute Stroke Team Activated

## Description

Indicate whether an Acute Stroke Team was activated for this patient.

## Required

Yes

## Options

- Yes
  - Acute Stroke Team Activated Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - Acute Stroke Team Activated Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
  - ED Provider Assessment Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - ED Provider Assessment Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
- No

## Notes for Abstraction

- Acute stroke teams can be activated or notified in a variety of ways including by telephone or pager system. A best practice would include a single call activation system.
- May be referred to as Acute Stroke Team (AST) activation, Stroke Code Team activation, Code Stroke, Stroke Alert, etc.
- Select "**Yes**" if there is documentation of an Acute Stroke Team activation, Stroke Code Team activation, Code Stroke, or Stroke Alert called for the patient's episode of care.
  - If "**Yes**," sub-options will appear to collect further information.
    - "*Acute Stroke Team Activated Date and Time*" are required sub-options to record the earliest documented date and time that the Acute Stroke Team was activated for this case.
      - This time can be before patient arrival if the AST was activated using pre-notification by EMS.
      - If either the date and/or time is not documented or unable to be determined, then select the "*Unknown*" option.
    - "*ED Provider Assessment Date and Time*" are required sub-options to record the earliest documented date and time that an emergency department provider performs an assessment for a suspected stroke patient at your hospital.
      - This time can be before AST was activated.
      - This time might be the same as AST arrival/bedside if provider is part of AST.

    - If either the date and/or time is not documented or unable to be determined, then select the "*Unknown*" option.
- Select "**No**" if the Acute Stroke Team was not activated at your hospital.

## Examples

- Patient presents to the ED on 02/25/2019 at 10:00 am. The triage nurses quickly assesses the patient and identifies criteria within their protocol to activate a stroke alert. The acute stroke team is notified at 10:05 am. The date/time of stroke team activation should be documented as 02/25/2019 10:05.
- Patient arrives in the ED on 08/10/20XX at 11:05am. The ED provider evaluates the patient at 11:10am and calls the neurologist at home at 11:15am to discuss the case and receive recommendations. The date/time stroke team arrival should be documented as 08/10/20XX 11:15.
- EMS pre-notifies hospital of possible stroke case at 1100 on 12/5/2019. ED RN activates AST at 1105. Patient arrives to ED at 1115. ED Provider begins assessment at 1115. The date/time of stroke team activation should be 12/5/2019 1105 and ED provider assessment date/time should be 12/5/2019 1115.

## Rationale

This element is used to calculate “Door to Stroke Team Activation.”

## Suggested Data Sources

ED Log, Stroke Activation/Code Stroke Log, ED Nurse Note, timestamps in EHR, notes, flowsheets, and documentation that activation occurred by EMS, nursing, or provider.

# Patient Received a Telestroke Consultation

## Description

Indicate whether the patient received telestroke consultation from a stroke expert (either from your hospital or another) for this episode of care and where the patient was located when the consultation took place.

## Required

Yes

## Options

- Yes
  - Patient location at the time of consultation
    - At my hospital
      - Consultation method (required)
        - Video
        - Phone/Other
      - Telestroke initiated date (required)
        - Date: MM/DD/YYYY
        - Date: Unknown
      - Telestroke initiated time (required)
        - Time: HH:MM [24-hour clock (military time)]
        - Time: Unknown
      - Telestroke connected date (required)
        - Date: MM/DD/YYYY
        - Date: Unknown
      - Telestroke connected time (required)
        - Time: HH:MM [24-hour clock (military time)]
        - Time: Unknown
    - At another hospital
      - Who provided the telestroke consultation? (required)
        - My hospital staff
        - Someone other than my hospital staff
        - Not documented
- No
- ND (Not documented)

## Notes for Abstraction

- In order to be considered telestroke, the consult must be with a stroke expert and be supporting your ED provider in the patient's care. Patients evaluated through e-emergency, other telehealth service, or phone consultation only qualify as "telestroke" if the consulting provider is a neurologist, stroke neurologist, neurosurgeon, or other stroke expert.
- Telemedicine (telestroke) is an integrated audio and visual remote assessment. Telestroke allow doctors who have advanced training (neurologists) to remotely evaluate patient's

experiencing stroke symptoms. Through the telestroke evaluation, the neurologists can virtually provide expertise in diagnosing, treating, and managing the care of the patient. This service line may be available 24/7 in a variety of settings.

- Select "**Yes**" if
  - The patient received a telestroke consultation by video or phone through e-emergency, other telehealth service, or phone consultation by a stroke expert remotely.
  - There is a stroke robot equipped with a video camera for the stroke expert to help with the assessment (doing NIHSS, etc) and help the ED provider decide on IV thrombolytic treatment, and/or to transfer the patient for further care. Or if they access a stroke expert over the phone.
  - The hospital first calls a transfer or patient placement line to connect with a stroke expert or to receive a call back from a stroke expert.
  - Patients evaluated through e-emergency, other telehealth service, or phone consultation only qualify as "telestroke" if the consulting provider is a neurologist, stroke neurologist, neurosurgeon, or other stroke expert.
  - If "**Yes**," required sub-options will appear to indicate where the patient was located at the time of the telestroke consultation.
    - Select *"At my hospital"* if the patient received telestroke consultation by a remotely located expert when the patient was located at your hospital.
      - If *"At my hospital,"* required sub-options will appear to collect more information to indicate the timing and delivery method used to obtain stroke expertise for the patient to assist with decision-making:
        - "*Consultation method*" is a required sub-option to record if the consultation was conducted by "*Video*" or "*Phone/Other*."
          - Select "*Video*" if two-way real-time audiovisual conferencing and share images were used. Video allows clinicians to perform consults as if they were present in the room. This includes if you initiated telestroke using the phone but the consultation was done by video.
          - Select "*Phone/Other*" if only telephone consultations were used with a stroke specialist as part of as ancillary, adjunctive, supplemental, or back-up modality.
        - "*Telestroke initiated date and time"* is a required sub-option to record the earliest documented date and time of that the telestroke consult was initiated.
          - This is most likely the date and time that your hospital called the answering service.
          - From performance improvement purposes, the decision to activate telestroke and initiate the process (your hospital calling the answering service) is what your hospital has control over.
          - This is not the time when the consultation began between the stroke expert and the requesting individual.
          - If multiple modalities used, indicate the initial initiation time with the consulting stroke specialist for the earliest modality used.

        - If the initiation date and/or time is not documented, select "*Unknown.*"
    - "*Telestroke connection date and time"* is a required sub-option to record the initial contact connection time when the stroke expert joins the call or appears on the video- whatever happens first.
        - First contact between the individual requesting the stroke consult and the stroke expert began.
        - For telestroke video consult, this is the date and time of first contact with the stroke expert, for example when the stroke expert appeared on the screen or joined via video.
        - For a phone consult, this is the date and time that your hospital first speaks (first contact) with a stroke expert.
        - If your hospital first initiates a call to a transfer or patient placement line to connect with a stroke expert, or to receive a call back, document the date and time of first contact with the telestroke provider.
        - If multiple modalities are used, indicate the initial connection time with the consulting stroke specialist for the earliest modality used.
        - If either the date and/or time is not documented, then select "*Unknown.*"
- Select *"At another hospital"* if the patient received telestroke consultation when they were located at another hospital.
    - If the patient was located at another hospital and not your hospital at the time of telestroke consultation.
    - If "*At another hospital,"* required sub-options will appear to indicate who provided the telestroke consultation:
        - Select *"My hospital staff"* if your hospital staff provided the telestroke consultation for the patient. This option could be used by a hub site.
        - Select *"Someone other than my hospital staff"* if someone other than your hospital staff provided the telestroke consultation. For example, if it is documented the telestroke consultation occurred and it is known that your hospital does not provide telestroke consultation.
        - Select *"Not documented"* if it is unclear or there is conflicting information if your hospital or staff at another hospital provided the consultation.
- Select "**No**," if:
    - If the ED provider contacts a neurologist in-house (in person or via phone). This would not count as telestroke.
    - The consult is through a transfer or patient placement line, e-emergency, or other telehealth service and the consulting provider is not a stroke expert as specified above, then this would not count as telestroke consult.

## Examples

- Called answering service for video telestroke consultation at 1300. Stroke expert appears on screen and begins consult with ED provider at 1305. Select "Video" for initiation method, initiation time would be 1300 and connection time would be 1305.

## Rationale

Earlier access to stroke expertise is associated with faster IV thrombolytic administration, which is strongly associated with improved outcomes. Additionally, studies indicate patients treated without a neurologist on-site have achieved similar outcomes as those with on-site neurologist. For this element, indicate the delivery method(s) used to obtain stroke expertise for the patient to assist with decision-making. In the future, the telestroke quality improvement may focus on door-to-needle and consult-to-needle times.

## Suggested Data Sources

Progress Notes, Admission Report, Transfer Sheet, Date/time on system software (e.g. Cisco)

# NIH Stroke Scale Performed

## Description

Indicate if the NIHSS assessment was performed at this hospital by a physician or nurse during the patient's initial evaluation or within 48 hours of the patient's arrival date and time.

## Required

Yes

## Options

- Yes
  - Initial NIHSS score (required)
    - Numerical field (0-42)
    - Not documented
- No/Not documented

## Notes for Abstraction

- Select "**Yes**" if:
  - The NIH stroke scale was performed at this hospital by a physician or nurse during the initial physical evaluation of the case or within 48 hours of the patient's arrival if NIH stroke scale was not performed during initial assessment.
  - The 48 hour time allowance was written in order to allow hospitals a longer period of time to conduct and record a NIHSS in order to establish a baseline level of severity – for the purpose of helping predict patient outcomes and changes in functional status.
  - If comprehensive neurological findings are outlined in the medical record that enables you to abstract the complete NIHSS, answer "Yes" to this data element and enter the findings into the sub questions under the "Initial NIHSS Score".
  - If "**Yes**," a required sub-option will appear to record the "*Initial NIHSS score".*
    - Enter the total score of the first NIHSS performed prior to treatment with thrombolytic therapy or acute endovascular procedure at your hospital.
    - Enter the total score of NIHSS recorded within 48 hours of hospital arrival for those patients that did not undergo treatment with thrombolytics or an acute endovascular procedure.
    - The first NIHSS score can be recorded by either the physician/APN/PA or a member of the "stroke team" (including RN).
    - Record the highest value if the NIHSS score is documented as a range.
    - Select "*ND*" if the NIH stroke scale was performed but the total NIHSS score was not documented
- You should be looking for the first NIHSS calculated or documented based on the first arrival notes or in the first neurology consultation note, whichever comes first. Patients with acute ischemic stroke treated with IV thrombolytic or with an acute endovascular procedure at your facility should be included as a "Yes" response only if the NIHSS is performed before the start of these treatments. If the first NIH Stroke Scale score was calculated or documented only after treatment with IV thrombolytic or acute endovascular

procedure at your facility, 48 hours after arrival in those patients that do not receive thrombolytic treatment, or not performed at all, then select "No/ND."

- Select "**No/ND**" if:
  - The NIH stroke scale was not performed by a physician or nurse within 48 hours of the patient's arrival date and time or there was no documentation of a NIHSS performed.
  - Your hospital decides to follow the recommendation by the Minnesota Stroke Registry, select "No/ND" if the NIHSS was not performed during the initial physical evaluation of the case.
  - Another stroke scale assessment (other than the NIHSS) was performed.
    - The Modified NIHSS does not count as the NIHSS and consequently "No/Not Documented" should be selected.
- For inpatient stroke, use the first NIHSS performed within 48 hours of discovery of stroke symptoms in the hospital. If the patient arrives to the hospital with transient symptoms that resolve, and an NIHSS was performed at that time, but later in the hospital stay the patient has new onset stroke symptoms and meets criteria to be entered as an inpatient stroke, a new NIHSS should be performed and the results of the NIHSS performed after discovery of new onset of stroke symptoms should be used. If a new NIHSS is not performed after new symptom discovery, select "No/ND". Do not use the results of the NIHSS done prior to new symptom discovery.

## Examples

- A patient presents to the ED with complaints of dizziness, fatigue, and slurred speech which resolve prior to admission. NIHSS was documented as 1. The following day, the patient has new onset slurred speech and right leg weakness. NIHSS is performed with a score of 6. Enter this patient as an inpatient stroke and select "Yes" for "Was the NIH Stroke Scale performed?" and enter 6 for "Initial NIHSS Score".

## Rationale

The NIHSS is used to predict patient outcomes and assess progress in functional status.

## Suggested Data Sources

ED physician or nurses notes, ED Pathway, Acute physician or nursing notes, NIHSS documentation form, Acute Stroke Pathway Documentation forms

# Patient NPO throughout Entire Hospital Stay

## Description

Indicate if the patient was NPO (nothing by mouth)/no oral intake of food, fluid, water, or medications, for the entire hospital stay. This includes any medications delivered in the Emergency Room phase of care.

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- Data abstractors should wait until either the patient is taken off NPO (a no oral intake of fluid, food, or medications status) or discharged prior to answering this question.
- The delivery of food, fluid, or medication via a nasogastric tube, orogastric tube, or percutaneous gastrostomy tube should be independent of the assessment of NPO. "NPO except medications" is a commonly used order on patients who will be undergoing surgery or procedures in the near future to prevent the risk of peri-procedure complications. This order is used to limit the amount of material in the stomach prior to a procedure and is not relevant to the issue of dysphagia. "NPO except medications" is not an acceptable treatment order for patients who have not yet undergone dysphagia screening. Patient can be NPO and still receive delivery of food, fluid, or medication via a nasogastric tube (PNGT), orogastric tube (POGT), or percutaneous gastrostomy tube (PGT).It is critical to review medication administration records from the ER to identify any oral medication received prior to the patient being made NPO or undergoing dysphagia screening, as this is a very common occurrence (for example "Aspirin 325mg POx1" prior to stroke team activation).
- If the patient was only given sublingual medication specifically formulated for sublingual delivery, this is not considered oral intake.
- Select "**Yes**" for the following:
  - The patient had no oral intake of fluid, food, or medications during the entire hospitalization and was discharged or transferred or deceased with no oral intake of fluid, food, or medications.
  - If the delivery all food, fluid, or medication was done via a nasogastric tube, orogastric tube, or percutaneous gastrostomy tube during the entire hospital stay.
  - If yes, the patient was kept NPO entire hospital stay, patient will be excluded from STK-7.
  - The acronym NPO does not necessarily mean that the patient had no oral intake of fluid, food, or medications. If the acronym NPO is used within the medical record, confirm that the meaning of NPO is no oral intake of fluid, food, or medications.

- Make sure to review medication administration records from the ER to identify any oral medication received prior to the patient being placed on a no oral intake of fluid, food, or medications status or undergoing dysphagia screening.
- Select "**No/ND**" if:
  - Patient was not kept NPO during entire hospital stay or patient received food, water, or medication by mouth during the hospitalization (even if there was an NPO order).
- For inpatient stroke, assess NPO status from Date/Time of discovery of stroke symptoms. If the patient was made NPO prior to stroke symptom discovery and was kept NPO throughout the entire hospitalization select "Yes".

## Rationale

Patients that are NPO during their entire hospital stay are excluded from STK-7 Dysphagia Screen.

## Suggested Data Sources

Speech pathologist consultation notes, admission sheets, progress notes, physician notes, physician orders.

# STK-7: Patient Screened for Dysphagia Prior to Any Oral Intake

## Description

Indicate whether the patient was screened for dysphagia before being given any oral intake including food, fluids, or medications

## Required

Yes

## Options

- Yes
  - Results of most recent screen prior to oral intake (required)
    - Pass
    - Fail
    - Not Documented
- No
- None Contraindicated (NC)

## Notes for Abstraction

- Documentation in the record should indicate that an assessment of the patient's ability to swallow was completed by a health care professional prior to oral intake of food, fluid, or medications. A screening assessment need not be a formal evaluation of swallowing by a speech and language pathologist, but should be a standardized method of swallowing assessment accepted by the institution. A variety of methods may be employed to assess swallowing status. These methods may include but are not limited to:
  - Bedside swallow assessment, Simple water swallow test, Burke water swallow test, Bedside swallowing assessment, Simple standardized bedside swallowing assessment (SSA), Barium swallow, Video fluoroscopy, Double contrast esophagoscopy, Radio nucleotide studies, Manometry, Endoscopy, Formal evaluation by speech language pathologist
- The following are NOT acceptable as swallow screening:
  - Patient evaluation using the NIH/NIHSS (National Institute of Health/National Institute of Health Stroke Scale)
  - Documentation of "Cranial nerves intact"
  - Positive gag reflex noted
  - A swallow screen conducted at outside hospital does not count as "Yes" or "NC" for this data element, since all incoming stroke patients to your hospital should receive a dysphagia screen.
- Select "**Yes**" if there is documentation in the record that an assessment of the patient's ability to swallow was completed by a health care professional prior to oral intake of food, fluid, or medications and if:
  - The patient was ONLY given sublingual (SL) medication specifically formulated for sublingual delivery (e.g., nitroglycerin) or traditionally given by sublingual route prior

to dysphagia screen, this is not considered oral intake. These include medication formulations such as pills (e.g., lorazepam), orally disintegrating tablets (e.g., olanzipine) or wafers (e.g., clonazepam). If these sublingual medications are the only oral intake prior to dysphagia screen select “Yes”.

- Patient received a dysphagia screen despite being CMO.
- If you select “**Yes**,” a required sub-option will appear to record the “*Results of most recent screen prior to oral intake*”:
  - Select "*Pass*" if there is documentation that the screen is passed, or that the patient successfully demonstrates safe swallowing on the initial bedside screening evaluation.
    - Documentation might include evidence that oral intake of food or medication without modification of consistency or other swallowing related features is permitted unsupervised.
    - Restrictions on type of diet such as amounts of calories, protein, etc. are not relevant to this option.
  - Select "*Fail*" if there is documentation that the screen is failed, or that the patient did not demonstrate safe swallowing on dysphagia screening protocol. Restrictions in oral intake generally follow as a result of failure in screen.
  - Select "*ND*" if there was a screen performed but there is no documentation as to the results of the dysphagia screen.

- Select “**No**” if there is either documentation of oral intake prior to any screening for dysphagia or there is no documentation of screening for dysphagia. NOTE: If "Yes" is selected for "Was patient was NPO throughout entire hospital stay?" then the patient will be excluded from STK-7 - regardless of your answer to this question.
  - If medications that are not traditionally given via the sublingual route are taken by the patient before dysphagia screening, then select the answer as “No/ND”
- Select "**None Contraindicated (NC)**" if there are documented reasons for not performing a screening for dysphagia prior to any oral intake. Reasons for not performing a dysphagia screen must be explicitly documented by a physician, advanced practice nurse, or physician assistant. If reasons are not mentioned in the context of dysphagia screening, do not make inferences. Acceptable reasons for not performing a dysphagia screen include:
  - Complete recovery of all symptoms and neurological deficits prior to hospital arrival.
  - If patient was NPO throughout entire hospital stay (that is, "Yes" is selected for the question: "Was patient NPO throughout entire hospital stay?") then select "NC," if a dysphagia screen was not conducted.
  - If patient refused swallow screen.
  - Patients who are made CMO prior to receiving anything by mouth (Note, you may still enter "Yes" if the patient still received a dysphagia screen despite being CMO.)
- For inpatient stroke, assess dysphagia screen prior to oral intake from the date/time of discovery of stroke symptoms. If the patient arrives to the hospital with transient symptoms that resolve and was screened for dysphagia (prior to oral intake) but later in the hospital stay has new onset stroke symptoms and meets criteria to be entered as an inpatient stroke, a new dysphagia screen should be performed and dysphagia screen prior to oral intake should be assessed from the date/time stroke symptom discovery.

## Examples

- Patient is admitted on 5/6/2008 at 16:00 to the inpatient unit from the ED as NPO (no oral intake of medications, fluids, or foods). The nurse flow-sheets document the earliest medications received by mouth at 10:00 on 5/7/2008, the earliest fluids/foods received by mouth at 09:50 AM on 5/7/2008, and the first dysphasia screen done at 09:30 on 5/7/2008. Select "Yes".
- Patient is admitted with dysarthria and drooling. The ED physician notes evidence of dysphagia and the diet order reads NPO except meds. No formal swallowing evaluation is performed. Select "No/Not Documented".
- Patient is admitted to the hospital on 4/1/2012 for heart failure. The patient is given PO food and medications. On 4/3/2012 the nurse discovers that the patient has difficulty speaking and facial droop and calls the stroke team. The stroke PA performs an NIHSS and dysphagia screen. The patient did not receive any food, water or medications from the date/time of discovery of stroke symptoms to the date/time that the dysphagia screen was performed. Select “Yes”.
- Patient arrives to the hospital on 3/22/2012 with transient symptoms that resolve in the ED prior to admission. The patient had a dysphagia screen in the ED prior to oral intake. The patient is admitted to the stroke unit. Later that day nurse discovered that the patient developed new onset right sided-weakness. The nurse activates the stroke team and when the stroke physician arrives, the patient is eating dinner. The nurse did not do a repeat dysphagia screen. Data entry is to select “No/ND.” Note, this patient would be entered as an inpatient stroke.

## 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. Most guidelines include a recommendation that all patients be screened for their ability to swallow and those with abnormal results be referred for a thorough evaluation by a speech 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. Results of the dysphagia screening can help hospitals assess the effectiveness of their dysphagia screening process.

## Suggested Data Sources

Admission Data, Hospitalization Data, especially Speech Pathology consultation or progress notes

# Brain Imaging Performed at Your Hospital for this Episode of Care

## Description

Determine if brain imaging was performed at this hospital after arrival as part of the initial evaluation for this episode of care or event.

## Required

Yes

## Options

- Yes
  - Type of Brain Imaging
    - CT
    - MRI
  - Brain imaging first initiated at your hospital (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - Imaging Initiated Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
  - Imaging Interpreted Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - Imaging Interpreted Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
  - Initial brain imaging findings (required)
    - Acute hemorrhage
    - No acute hemorrhage
    - Not available
  - No
  - NC

## Notes for Abstraction

- Select "**Yes**" if patient did receive brain imaging at your hospital/facility for this event; carotid ultrasound does not qualify.
  - If "**Yes**" required sub-options will appear to collect more information.
    - "*Type of Brain Imaging"* is a required sub-option to record the type of brain imaging first initiated at your hospital for this episode of care.
      - Select "*CT*" if documentation of a CT was completed.
      - Select "*MRI*" if documentation of a MRI was completed.
    - "*Brain imaging first initiated at your hospital Date"* and *"Brain imaging first initiated at your hospital Time"* are required sub-options to record the date and

time of the initial non-contrast CT or MRI of the head performed at your institution from the DICOM header information.
    - This is the date and time printed on the hard copy of the film or available when reviewing the image digitally.
    - Record CT or MRI initiated date/time only if the first study was performed at your hospital. Please note, use the time indicated on the radiology report only if it clearly indicates the time of study initiation or completion (time of initiation preferred) and NOT time of scheduling, dictation or reporting.
    - If the date and time of image initiation is not documented, abstract the closest documented time after brain imaging initiation. In most cases, this would be the completion time of the brain imaging.
    - Date/time documentation on the "first slice" is acceptable.
    - Select "*Unknown*" if the date and time of image initiation or completion of the initial CT or MRI performed at this hospital is not documented.
- "*Imaging Interpreted Date"* and "*Imagine Interpreted Time"* are required sub-options to specify the earliest documented date and time at which the initial imaging results were made available to the treating team.
    - Results must be interpreted by a physician such as a radiologist, neurologist, or others with experience and expertise in interpreting CT and/or MRI.
    - Interpretation of the brain image does not have to be done onsite. It can be performed off site by teleradiology.
    - Enter CT or MRI interpretation date/time only if the first study was performed at your hospital. If a patient had outside brain imaging prior to transfer from another hospital, leave this element blank.
    - Includes unofficial reports by ED physician if he/she continues to make decisions based upon his/her interpretation. If the ED physician reviews the imaging but waits for the final read by a radiologist to determine the plan of care, document the time the ED physician receives these official results from the radiologist.
    - If the date and time of results is not clearly documented then select "*Unknown*".
- "*Initial brain imaging findings"* is a required sub-option to record the initial brain imaging findings after symptom onset (done at any facility).
    - Hemorrhage includes any intracranial hemorrhagic stroke. It is important that only new hemorrhages thought to be responsible for the current acute event should be used if checking hemorrhage. *Do not mark hemorrhage for old hemorrhages found on imaging*, which are **not** responsible for the current event.
    - Select "*Acute hemorrhage,*" if the first brain image result indicates hemorrhaging.
    - Select "*No acute hemorrhage,*" if the first brain image result does not indicate acute hemorrhaging.
    - Select "*Not available*," if the first brain image result is not documented.
- Select "**No**" if the patient did not receive any brain imaging at your hospital/facility or did not receive imaging at an outside hospital prior to transfer.
    - If the patient arrives to the hospital with transient symptoms that resolved and brain imaging is completed, but later in the hospital stay they patient has new onset of stroke symptoms and meets criteria to be entered as an inpatient stroke, new brain imaging should be performed. If new brain imaging is not performed, select "No."

  - Do not use brain imaging performed for the prior resolved event.
- Select "**NC**" if the patient had outside brain imaging prior to transfer from another hospital, and results for that imaging are recorded in the record. This includes:
  - If there are documented reasons in the medical record for not performing brain imaging.
  - If a second brain image is completed at your hospital, after an initial imaging has been completed at an outside hospital, you would still select NC here.
- For inpatient stroke, use the first brain image performed after discovery of stroke symptoms in the hospital. If patient had brain imaging performed in the hospital prior to stroke symptom onset, use the brain imaging performed after discovery of stroke symptoms in the hospital.

## Examples

- Patient 150a presented to the ED with a brief episode of slurred speech. The patient had a CT and lab tests completed. Symptoms completely resolved while in the ED and the patient was discharged from the ED with complete recovery of neurological symptoms. The patient returned to the ED 3 hours later and no repeat CT or lab tests were completed, but the previous CT and labs are used to determine course of treatment. Select "NC" for Brain Imaging Completed at this hospital.
- The ED nurses notes document that the CT scan was initiated at 10:30 in the morning of November 23, 2011. Enter the date and time of 11/23/2011 at 10:30.
- ED physician reviews CT results and notes that the patient does not have a hemorrhage but waits until he/she receives confirmation from the radiologist prior to initiating IV thrombolytic. Document the time the ED physician received the imaging results from the radiologist either in verbal or written form (i.e. phone conversation, fax, or dictation).
- Patient comes into the ED and has a CT scan which is negative, but the symptoms still continue. The patient is admitted with stroke like symptoms and the hospitalist orders an MRI which shows an acute stroke. Enter the date and time of the first CT as the "Imaging Initiated Date" and "Imaging Initiated Time" and not the MRI which confirmed the stroke.

## Rationale

Rapid diagnosis of stroke subtype and possible contraindications to thrombolytic therapy needs to occur within 3 hours of symptom onset for IV thrombolytic to be a potential viable option. Tracking whether an imaging was performed may lead to streamlining of key care processes that might otherwise delay the initiation of thrombolytic therapy.

## Suggested Data Sources

ED records, intake/face sheet/hospital admissions records, progress notes, acute physician notes, diagnostic reports, radiology notes

# Acute Vascular or Perfusion Imaging Performed at your Hospital

## Description

Determine if acute vascular or perfusion imaging (e.g., CTA, MRA, DSA) was performed at this hospital after arrival as part of the acute evaluation and *before* initiating treatment for acute ischemic stroke.

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- This element will only appear if final clinical diagnosis related to stroke is ischemic stroke or stroke not otherwise specified.
- The purpose of this element is to determine if detection of large vessel occlusion by means of noninvasive intracranial vascular imaging was performed *prior* to initiating clinical decisions for treatment.
- Select "**Yes**" if additional imaging (e.g. CTA, MRA, DSA) was performed in the acute evaluation for the purpose of diagnosing large vessel occlusion (LVO) for the patient and prior to initiating treatment for acute ischemic stroke.
  - Advanced imaging includes:
    - Computed Tomography Angiography (CTA)
    - Computed tomography perfusion (CT Perfusion)
    - Magnetic Resonance Imaging (MRI)
    - Magnetic Resonance Angiography (MRA)
    - Magnetic Resonance with Perfusion (MR Perfusion)
    - Digital Subtraction Angiography (DSA)
- Select "**No/ND**" if there was no advanced imaging performed at your hospital for diagnosing large vessel occlusions prior to initiating treatment for the patient or if there was no documentation in the patient's medical record/unknown.

# Treatment

## IV Thrombolytic Initiated at an Outside Hospital or EMS/Mobile Stroke Unit

### Description

Indicate if IV thrombolytic was initiated at an outside hospital or EMS/Mobile Stroke Unit.

### Required

Yes

### Options

- Yes
  - Thrombolytic administered (required)
    - Alteplase
    - Tenecteplase
- No

### Notes for Abstraction

- Select "**Yes**" if the patient was transferred from another hospital where IV thrombolytic was started, even if the infusion continues after the patient arrives at your facility.
  - If "**Yes**", a required sub option will appear to collect more information.
    - *"Thrombolytic administered at outside hospital or Mobile Stroke Unit"* is a required sub option to collect the thrombolytic administered by the outside hospital or the EMS/Mobile Stroke Unit.
      - Select "*Alteplase"* if the documentation from the medical record indicate the outside hospital or EMS/Mobile Stroke Unit administered alteplase.
      - Select "*Tenecteplase"* if the documentation from the medical record indicate the outside hospital or EMS/Mobile Stroke Unit administered tenecteplase.
- Select "**No**" if IV thrombolytic was not initiated at an outside hospital.

### Rationale

IV thrombolytic initiated at an outside hospital excludes the patient from STK-4 Thrombolytic Therapy.

### Suggested Data Sources

Admission sheet, ED notes/records, progress notes

# STK-4: IV Thrombolytic Therapy Initiated at this Hospital

## Description

Determine if intravenous (IV) thrombolytic therapy was initiated at this hospital.

## Required

Yes

## Options

- Yes
  - Initiated IV thrombolytic Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - Initiated IV thrombolytic Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
  - Thrombolytic used (required)
    - Alteplase
      - Alteplase dose (mg) or Not documented (ND) (required)
    - Tenecteplase
      - Tenecteplase dose (mg) or Not Documented (ND) (required)
      - Reason for selecting tenecteplase instead of alteplase? (required)
        - Large Vessel Occlusion (LVO) with potential thrombectomy
        - Mild stroke
        - Other
  - If IV thrombolytic initiated > 45 minutes or > 60 minutes after arrival, were eligibility or medical reasons documented as the cause for delay? (required)
    - Yes
      - Reason the need for additional PPE for suspected/confirmed infectious disease (required)
        - Yes
        - No
    - No
  - If IV thrombolytic initiated 3-4.5 hours of last known well time, was there a documented reason for extending the initiation of IV thrombolytic? (required)
    - Yes
    - No
  - If IV thrombolytic administered beyond 4.5-hour, was imaging used to identify eligibility? (required)
    - Yes, Diffusion-FLAIR mismatch
    - Yes, Core-Perfusion mismatch
    - None
    - Other
  - First Systolic BP (optional); First Diastolic BP (optional)
    - Numeric field (mmHg)
  - First Blood Glucose (optional)
    - Numeric field (mg/dL)

  - Complications of thrombolytic therapy (required)
    - None
    - Symptomatic intracranial hemorrhage within 36 hours
    - Life threatening, serious systemic hemorrhage within 36 hours
    - Other serious complications
    - Unknown/Unable to Determine (UTD)
  - If transferred after IV thrombolytic given, when were complications detected? (required)
    - Prior to transfer
    - After transfer
    - Unable to Determine
    - Not Applicable or not transferred
- No

## Notes for Abstraction

- Select "**Yes**" if intravenous (IV) thrombolytic therapy was initiated at this hospital. This includes "hang time" or "infusion time" for IV thrombolytic documented in the medical record. This includes:
  - If patient received IV thrombolytic in the ED in your hospital and was then transferred from your ED (without hospital admission) to another acute care hospital ("drip and ship"), this instance of providing IV thrombolytic by your hospital must be recorded by your hospital even though the patient may not have been formally admitted to your hospital.
  - If a patient begins treatment with IV thrombolytic but does not get the full dose due to a medical reason like an elevated INR or a newly discovered history element.
  - Only acceptable thrombolytic therapy for stroke:
    - Activase
    - Alteplase
    - IV-tPA
    - Recombinant tPA tissue plasminogen activator
    - tPA tissue plasminogen activator
  - Reasonable alternative to alteplase:
    - Tenecteplase
    - TNK
    - TNKase
  - Do not include thrombolytic therapy for indications other than ischemic stroke. Specifically, do not include the following:
    - Intra-cerebral venous infusion for cerebral venous thrombosis
    - Intraventricular infusion for intraventricular hemorrhage
    - Intraparenchymal infusion for percutaneous aspiration of intracerebral hematoma
    - myocardial infarction
    - PE
    - peripheral clot
  - If "**Yes**," a required sub-option will appear to record the "*Date and Time IV thrombolytic Initiated*" at this hospital or ED.
    - This data element applies only to patients for whom IV thrombolytic therapy was initiated at this hospital. Do not abstract this data element if IV thrombolytic

therapy was initiated at another hospital and patient was subsequently transferred to this hospital.
  - If a discrepancy exists in documentation from different sources, choose the earliest date and time. If there are two or more different IV thrombolytic initiation dates or times (either different IV thrombolytic episodes or corresponding with the same episode), enter the earliest date or time.
  - If the date or time of initiating IV thrombolytic therapy is unable to be determined from medical record documentation, select "*Unknown*".
  - The medical record must be abstracted as documented (taken at "face value"). When the date or time documented is obviously in error (not a valid date/format) and no other documentation is found that provides this information, the abstractor should select "*Unknown*".
- If "**Yes**," a required sub-option will appear to collect the "*Thrombolytic used"* on the patient at your facility. Reminder: This data element applies only to patients for whom IV thrombolytic therapy was initiated at your hospital. Do not abstract this data element if IV thrombolytic therapy was initiated at another hospital and patient was subsequently transferred to your hospital.
  - Select "*Alteplase*" if it was the thrombolytic administered to the patient at your facility.
    - "*Alteplase dose"* An optional box will appear to collect the total dose ordered in milligrams as it is recorded in the patient's record. Total dose for alteplase includes bolus and infusion. Select not documented (ND) if you cannot locate the dose in the medical record.
  - Select "*Tenecteplase"* if it was the thrombolytic administered to the patient at your facility.
    - "*Tenecteplase dose"* An optional box will appear to collect the total dose ordered in milligrams as it is recorded in the patient's record. Total dose for tenecteplase is the bolus. Select not documented (ND) if you cannot locate the dose in the medical record.
    - If "*Tenecteplase",* a required sub-option will appear to collect "*Reason for selecting tenecteplase instead of alteplase".*
      - Select "*Large Vessel Occlusion (LVO) with potential thrombectomy*" if documented by a physician/APN/PA or pharmacist as the reason why tenecteplase was chosen instead of alteplase or if tenecteplase was administered prior to potential mechanical thrombectomy.
      - Select "*Mild stroke*" if it is documented by a physician/APN/PA or pharmacist as the reason why tenecteplase was chosen instead of alteplase. For example, if the physician documents tenecteplase was used due to low NIHSS, this could be categorized as mild stroke.
      - Select "*Other*" if there is a different reason than the options above. Write in the text box the specific reason, such as "System standard of care" or "Not documented".
- If "**Yes**" and "*Door-To-Needle time > 45 minutes" or* "*Door-To-Needle time > 60 minutes",* a required sub-option will appear to indicate if eligibility or medical reasons were documented for delay.

- Select "*Yes*" if the following allowed reasons are documented by a physician, advanced practice nurse, physician assistant, or pharmacist for not initiating IV thrombolytic within 45 or 60 minutes of hospital arrival:
  - Eligibility and/or medical reasons for delay in treatment must be mentioned in the context of IV thrombolytics. It is the intent that the abstractor will not make inference as to the eligibility or medical reasons for delay in treatment based upon the presence of certain patient clinical characteristics and conditions in the record but will only abstract reasons that are specifically documented in the medical record as the reason for the delay beyond 45 or 60 minutes.
  - Eligibility: social/religious, initial refusal, or care team unable to determine eligibility
    - "Initial refusal" would include patients that cannot participate in shared decision making or provide consent, for example if there is documentation that there was a delay in treatment with IV rt-PA due to reasonable attempts to contact a proxy decision maker to obtain consent.
    - "Care-team unable to determine eligibility" means that the diagnosis of stroke was made but that eligibility for thrombolytic therapy could not be established or verified by the clinician.
  - Medical: hypertension requiring aggressive control with IV meds, further diagnostic evaluation to confirm stroke for patients with hypoglycemia, seizures, or major metabolic disorders; management of concomitant emergent/acute conditions, such as cardiopulmonary arrest, respiratory failure (requiring intubation); need for additional PPE for suspected/confirmed infectious disease; and investigational or experimental protocol for thrombolysis.
  - If your hospital uses telemedicine in the assessment of stroke, and there is documentation in the medical record as to why the stroke expert delayed treatment with IV tPA, this is acceptable as documentation to select the eligibility and or medical reason(s) specified by the stroke expert. In this case, it is acceptable for the documentation in your hospital's medical record to be done by a nurse.
  - If "*Yes"* to documented eligibility and/or medical reasons as cause for delay, a required sub-option will appear asking if the medical reason for delay was the need for additional PPE for suspected/confirmed infectious disease
    - Select "*Yes"* if there is documentation in the patient medical record that treatment was delayed so that health care providers could obtain additional Personal Protection Equipment (PPE) because the patient had a confirmed or suspected infection.
    - Select "*No"* if there is no documentation in the patient medical record that treatment was delayed so that health care providers could obtain additional Personal Protection Equipment (PPE) because the patient had a confirmed or suspected infection.

- Select "*No*" if delay in administration of IV thrombolytic was due to: delay in stroke diagnosis, in-hospital time delay, equipment related delay, or, a hospital-related or other reason was present which may or may not be documented but was apparent to the abstractor.

- If "**Yes**," and "*IV thrombolytic was initiated 3-4.5 hours of time last know well,"* a required sub-option will appear to indicate if there was a documented reason for extending the initiation of IV thrombolytic to 3-4.5 hours of last know well. This documentation must be done on the day of or the day after hospital arrival and must specifically refer to the time period prior to IV thrombolytic initiation.
  - Select "*Yes*" if:
    - There is documentation on the day of or the day after hospital arrival of a reason for extending initiation of IV thrombolytic to 3-4.5 hours of last known well time.
    - The following are acceptable as stand-alone reasons for extending the initiation of IV thrombolytics -- IV thrombolytic therapy linkage is not needed
      - Documentation of treatment to lower blood pressure prior to IV thrombolytic initiation
      - Documentation of patient/family refusal of IV thrombolytic which was recanted/reversed prior to IV thrombolytic initiation
      - Documentation of cardiac arrest, respiratory arrest, cardiopulmonary resuscitation, defibrillation, or intubation in the emergency department prior to IV thrombolytic initiation
    - Other reasons for extending the initiation of IV thrombolytics to 3 to 4.5 hours documented by physician/APN/PA or pharmacist. (Must be mentioned in the context of IV thrombolytic. Do not make inferences.)
      - Documentation to initiate IV thrombolytic for worsening symptoms following documentation to not give tPA because symptoms resolved after hospital arrival, select "*Yes*."
      - *Exception*: Nursing documentation of a telestroke reason for extending the initiation of IV thrombolytic therapy to 3 to 4.5 hours is acceptable.
  - Select "*No*" if:
    - There is no documentation on the day of or day after hospital arrival of reason for extending the initiation of IV thrombolytic to 3-4.5 hours of time last known well OR unable to determine from the medical record documentation.
    - System reasons are not acceptable as "other" reasons, regardless of any linkage to IV thrombolytics:
      - Equipment-related (e.g., CT not available, IV pump malfunction)
      - Pharmacy-related (e.g., thrombolytic agent not available from pharmacy)
      - Staff-related (e.g., unable to contact consulting MD)
    - NIHSS score of 1 on arrival. IV thrombolytic ordered 4 hours after hospital arrival, select "*No*."
- If "**Yes**," and "*IV thrombolytic was initiated beyond 4.5 hours of time last know well,"* a required sub-option will appear to indicate if there was documentation that imaging was used to determine thrombolytic eligibility.

- Select "*Yes, Diffusion-FLAIR mismatch*" if diffusion flair mismatch is documented in the record or the presents of a diffusion hyperintensity without a corresponding flair hyperintensity on brain MRI.
- Select "*Yes, Core-Perfusion Mismatch*" if mismatch between the perfusion and the core may be visualized on CT perfusion or MRI perfusion studies. This mismatch may also be termed "penumbra".
- Select "*None*" if there is no documentation in the record of any imaging used to determine thrombolytic eligibility.
- Select "*Other*" if there is documentation that imaging was used to determine thrombolytic eligibility but is not listed as an option.

- If "**Yes**," optional sub-options will appear to record blood pressure and first glucose.
  - Record the *First Systolic BP* documented taken at your hospital.
  - Record the *First Diastolic BP* documented taken at your hospital.
  - Record the *First Blood Glucose* documented taken at your hospital.
- If "**Yes**," indicate if there were **Complications of thrombolytic therapy**
  - Select "None" if no complications were found or if complications do not require additional medical interventions or prolong the length of stay.
  - Select "Symptomatic ICH <36 hrs" if this occurred within 36 hours of IV thrombolytic administration. Symptomatic brain hemorrhage is defined as a CT imaging result within 36 hours that shows intracranial hemorrhage AND physician's notes indicate clinical deterioration due to hemorrhage.
  - Select "Life threatening, serious systemic hemorrhage" if occurred within 36 hours" of the time of IV thrombolytic administration and > 3 transfused units of blood within 7 days or discharge (whichever is earlier) and physician note attributing bleeding problem as reason for transfusion.
  - Select "Other serious complications" if they that require additional medical interventions or prolonged length of stay. Serious complications include those that are unexpected or out of proportion to the patient's expected course and that are documented as complications of reperfusion therapy. For example, rapid development of malignant edema, angioedema, or recurrent stroke.
  - Select "Unknown/UTD" if worsening stroke symptoms or in-hospital death without definitive evidence of a complication listed above (such as hemorrhage).
- If "**Yes**," and the patient experienced a complication of thrombolytic therapy, indicate when bleeding complications were detected.
  - Select "Prior to transfer" if symptomatic brain or systemic hemorrhage was detected or strongly suspected prior to transfer. Select this option if the patient has hemodynamic instability suggesting systemic hemorrhage, or a deterioration in the neurologic exam suggesting intracerebral hemorrhage while still at the initial treating hospital, even if the testing which confirms the finding doesn't occur until after transfer.
  - Select "After transfer" if symptomatic brain or systemic hemorrhage is not detected or strongly suspected prior to transfer, and occurs only after the patient has left the initial treating facility.
  - Select "*Unable to determine*" if it is not possible to obtain information from the hospital at which the patient received IV thrombolytic prior to transfer (if you are

the receiving hospital), or to which you transferred the patient after starting IV thrombolytic (if you are the initial treating hospital), or in case of patient death without confirmed hemorrhage.
    - Select "*Not applicable or not transferred*" if no IV thrombolytic is given, or if the patient is not transferred after IV thrombolytic (patient remains at your hospital).
- Select "**No**" if IV thrombolytic is not initiated at your hospital, or unable to determine from the medical record. This includes the following:
    - If IV thrombolytic therapy was administered at another hospital and patient was subsequently transferred to this hospital.
    - If the patient was transferred to this hospital with IV thrombolytic infusing.
    - Intra-arterial (IA) t-PA does not qualify for this data element.
- Currently, IV alteplase is the only FDA-approved IV thrombolytic. IV alteplase is not FDA approved for use in the 3-4.5 hour window, but there is Class 1A level guideline from the AHA regarding this treatment (Expansion of the Time Window for Treatment of Acute Ischemic Stroke With Intravenous Tissue Plasminogen Activator- http://stroke.ahajournals.org/cgi/reprint/STROKEAHA.109.192535)
- Note that the Federal Privacy Rule (HIPAA) does not restrict the communication of protected health information when performed for quality assurance purposes. To avoid interfering with an individual's access to quality health care or the efficient payment for such health care, the Privacy Rule permits a covered entity to use and disclose protected health information, with certain limits and protections, for treatment, payment, and health care operations activities. [These health care operations activities include] conducting quality assessment and improvement activities, population based activities relating to improving health or reducing health care costs, and case management and care coordination; Reviewing the competence or qualifications of health care professionals, evaluating provider and health plan performance, training health care and non-health care professionals, accreditation, certification, licensing, or credentialing activities [from The Health Insurance Portability and Accountability Act of 1996 (HIPAA), Public Law 104-191, enacted on August 21, 1996.]

## 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. 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 alteplase in patients treated within 3 hours of symptom onset.
- IV thrombolytics convert plasminogen to plasmin, which in turn breaks down fibrin and fibrinogen, thereby dissolving thrombus. IV alteplase is the only FDA-approved IV thrombolytic for stroke.
- The date and time of IV thrombolytic allows for measuring how quickly IV thrombolytic is administered. For indicated cases, the data element helps determines whether or not the case falls into both the numerator and denominator or only the denominator for Stroke Performance Measure 4 (Thrombolytic Therapy Administered).

- A documented reason due to eligibility or medical issues will exclude a patient from the door-to-needle <60 minutes quality measure.

## Examples

- Patient received thrombolytic therapy on 07/01/04. The following day the patient developed a sudden headache and decreased level of consciousness. A head CT was performed which showed a large intracerebral hemorrhage. Select “Yes” to complications.

## 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. 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 alteplase in patients treated within 3 hours of symptom onset.
- IV thrombolytics convert plasminogen to plasmin, which in turn breaks down fibrin and fibrinogen, thereby dissolving thrombus. IV alteplase is the only FDA-approved IV thrombolytic for stroke.
- The date and time of IV thrombolytic allows for measuring how quickly IV alteplase is administered. For indicated cases, the data element helps determines whether or not the case falls into both the numerator and denominator or only the denominator for Stroke Performance Measure 4 (Thrombolytic Therapy Administered).

## Suggested Data Sources

Emergency room records, Medication records, Progress notes, IV flow sheets, Medication administration record, Nursing flow sheets

Do not use physician orders as they do not demonstrate initiation of the IV thrombolytic (in the ED this may be used if signed/initialed by a nurse).

# Contraindications or warnings documented for not administering thrombolytics within 0-3 hour treatment window

## Description

If IV thrombolytic was not initiated at this hospital or if it was initiated but over 180 minutes from patient's recorded Last Known Well. This will not appear if the final clinical diagnosis related to stroke is "No stroke related diagnosis."

## Required

Yes

## Options

- Yes
- No

## Notes for Abstraction

- Reasons must be documented by a physician, advanced practice nurse, or physician assistant AND mentioned in the context of IV thrombolytics. If reasons are not mentioned in the context of IV thrombolytics, do not make inferences (e.g., do not assume that IV thrombolytic was not initiated because of a bleeding disorder unless documentation explicitly states so.
- Documentation of initiation of IV or IA thrombolysis/thrombectomy at an outside hospital prior to arrival is a stand-alone reason. No further documentation of it as the reason for not initiating IV thrombolytic at this hospital is needed in order to select this option.
- You may abstract reasons for non-treatment that are entered into the medical record after the IV thrombolytic decision has occurred. This should be done only when the documentation is written by someone who was involved in the IV thrombolytic decision, but was unable to document it at the time. This documentation needs to be made prior to patient discharge. An example of this would be if the neurologist who was called by telephone puts a note in the medical record the next day that documents the reason for non-treatment.
- Do not document evidence from outside physician or nurse notes that played a factor in the decision-making process for not giving thrombolytic therapy. EXCEPTION: If your hospital uses telemedicine in assessing stroke patients, it is acceptable to select reasons specified by the teleneurologist when reasons are documented in the medical record. In these cases, it is acceptable for the documentation to be done by a nurse.
- Select **"Yes"** if any of the following **Contraindications and Warnings** listed below were documented by a physician/APN/PA or pharmacist and mentioned in the context of IV thrombolytics. Do not make inferences (e.g., do not assume that IV thrombolytic was not initiated because of a bleeding disorder unless documentation explicitly states so).
  - "Contraindications" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to a contraindication of IV thrombolytic use. This includes any of the following:

- Elevated blood pressure (systolic > 185 mm Hg or diastolic > 110 mm Hg) despite treatment.
- Recent intracranial or spinal surgery or significant head trauma, or prior stroke in previous 3 months
- History of previous intracranial hemorrhage, intracranial neoplasm, arteriovenous malformation, or aneurysm
- Active internal bleeding
- Acute bleeding diathesis (low platelet count, increased PTT, INR ≥ 1.7 or use of NOAC). This includes: Platelet count <100 000/mm3; Heparin received within 48 hours, resulting in abnormally elevated aPTT greater than the limit or normal; current use of anticoagulant with INR >1.7 or PT >15 seconds; current use of direct thrombin inhibitors or direct factor Xa inhibitors with elevated sensitive laboratory tests (such as aPTT, INR, platelet count, and ECT; TT; or appropriate factor Xa activity assays). Commonly prescribed NOACs include: apixaban (Eliquis), dabigatran (Pradaxa), rivaroxaban (Xarelto), edoxaban (Savaysa)
- Arterial puncture at noncompressible site in previous 7 days
- Blood glucose concentration <50 mg/dL (2.7 mmol/L)

- "CT findings (ICH, SAH, or major infarct signs)" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to a CT result of an intracerebral hemorrhage, subarachnoid hemorrhage, or major infarct. Symptoms suggest subarachnoid hemorrhage. CT demonstrates multilobar infarction (hypodensity >1/3 cerebral hemisphere)
- "Warnings" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to a warning against the use of IV thrombolytic. Warnings include:
  - Pregnancy
  - Recent acute myocardial infarction within previous 3 months
  - Seizure at onset with postictal residual neurological impairments
  - Major surgery or serious trauma within previous 14 days
  - Recent gastrointestinal or urinary tract hemorrhage within previous 21 days.
  - Currently taking Alzheimer's Disease Immunotherapy
- "Stroke severity too mild (non-disabling)" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to the mild severity of the stroke. This includes:
  - If there is minimal to no disability associated with the stroke symptoms (e.g. numbness, mild weakness, lack of gait impairment). Note that there is no lower limit to NIHSS score that prohibits the use of IV thrombolytic.
  - If record documents that the reason is "NIHSS low" (for example "NIHSS = 3"), then this would appropriately be categorized as stroke severity too mild.
  - If NIHSS = 0, documentation by a nurse is acceptable. Score documentation must refer to the timeframe for thrombolytic therapy.
- "Life expectancy < 1 year or severe co-morbid illness or CMO on admission" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV-thrombolytic was not administered due to a life expectancy of less

than a year for the patient, the patient had a severe co-morbid illness, or the patient was placed on CMO status on admission. This includes:
    - If the patient has an order for Comfort Measures Only in the ED and this restriction of care preceded evaluation for IV thrombolytic.
    - If patients are not treated due to coexisting terminal cancer, advanced dementia, severe cardiopulmonary disease or other conditions which severely limit quality of life or life expectancy. Limited life expectancy, severe co-morbid conditions, and CMO status all need to be explicitly documented as the reason for no IV thrombolytic.
- "Patient/Family refused" if there is documentation by a physician, advanced practice nurse, nurse, or physician assistant that explains that IV thrombolytic was not administered due to the refusal of IV thrombolytic treatment by the patient or family of the patient. This includes if patients decline IV thrombolytic and instead select catheter-based reperfusion or other investigational protocol. Reasons must refer to the timeframe for thrombolytic therapy
- "Care team unable to determine eligibility" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered since the diagnosis of stroke was made, but that eligibility for thrombolytic therapy could not be established, or the clinician could not verify the patient's eligibility for treatment. This includes:
    - If the time of onset could not be clearly established at the time of patient assessment in the ED or that the timing of a recent procedure or surgery could not be definitively established, or time of "Last Known Well" is unknown.
    - If there is documented concern for the presence of a prior medical condition (or possible presence if a limited accurate history) of the presence of a prior medical condition excludes a patient from IV thrombolytic therapy.
    - If it is documented that IV thrombolytic was not given due to an uncertainty as to when the stroke started. This would include patients who have experienced multiple episodes of transient neurologic function, or TIAs, which have fully resolved clinically, but imaging or other features of the history make it uncertain as to when the stroke actually started.
- "IV or IA thrombolysis/thrombectomy at an outside hospital prior to arrival" if there is documentation by a physician, advanced practice nurse, nurse, or physician assistant that explains that IV thrombolytic was not administered due to IV thrombolytic or IA thrombolytic (including all endovascular therapies) given already at an outside hospital. This includes when a patient was transferred from another hospital where IV thrombolytic was started, even if the infusion continues after the patient arrives at your facility. Reasons must refer to the timeframe for thrombolytic therapy

- Select "**No"** if the following Hospital-Related Factors are the reasons for not initiating IV thrombolytics in the 0-3 hour treatment window or there is no documentation at all. Abstractors may infer reasons for not administering IV thrombolytic when selecting these options. Note that these will not exclude patients from STK-4.
    - "Unable to diagnose or did not diagnose in the 3-hour time frame" if the reason for not administering IV thrombolytic is the doctor was unable to diagnose or did not

diagnose the patient within 3 hours of the time of “Last Known Well.” Select this option if a stroke diagnosis was unclear.
- “In-hospital time delay” if the reason for not administering IV thrombolytic is due to a delay within the hospital. If there is a delay in getting the CT done or read, or a delay in patient evaluation, then select this option.
- “Delay in patient arrival” if the reason for not administering IV thrombolytic is due to a delay in the patient’s arrival to the hospital.
- “No IV access” if the reason for not administering IV thrombolytic is due to a lack of IV access.
- "Advanced Age" if the reason for not administering IV thrombolytic is the patient's age. Advanced age alone is no longer considered a sufficient reason for not providing IV thrombolytic in the 0-3 hour window.
- "Stroke too severe" if the documentation indicates that IV thrombolytic was withheld due to the severity of the stroke symptoms. There is no upper limit in terms of NIHSS score that prohibits use of IV thrombolytic in the 0-3 hour treatment window.
- “Rapid or Early Improvement” if documentation indicates that IV thrombolytic was not administered due to the rapid or early improvement of the patient’s health.
- “Other” if the reason for not administering IV thrombolytic is due to a reason that is not accurately captured by the other options.
    - For example, if there is a time delay due to the patient's condition that required other treatment (e.g., intubation, resuscitation).

- For inpatient stroke, the 0-3 and 3-4.5 hour treatment window is calculated from Symptom Discovery Date/Time -Date/Time Last Known Well.

## Examples

- The patient has a history of seizures and is taking anti-convulsants, and the family states that he had twitching of his arm before he became aphasic. The doctor documents the possibility of seizure with residual neurological symptoms as the reason for not administering IV thrombolytic. Select “Contraindications.”
- The patient is a 95 years old male who presents with aphasia and right-sided weakness. He is not treated with IV thrombolytic and the reason is documented as "increased risk of bleeding due to advanced age". Select "Advanced Age," under the "Hospital-Related or Other Factors" section.
- The patient came into the ED within 120 minutes of time last known well. After a head CT, the ED doc recommended to the patient's wife that the patient receive IV thrombolytic. The wife wanted to wait to discuss the issue with the daughter, who was driving to the hospital. When the daughter finally arrived, the patient was outside the 180 min window, and so IV thrombolytic was initiated in the 3-4.5 hour treatment window. Select "Patient/Family refused."
- The patient arrives at 1 hour and 50 minutes after “Last Known Well” date and time, with an NIH stroke scale of 10 and he takes warfarin for atrial fibrillation. His blood pressure is 190/105 and he requires several doses of labetalol to control his blood pressure. By the time it is under control, it is 3hrs 10min after “Last Known Well” date and time. His INR is 1.3. He does not receive IV thrombolytic. The physician documents that he was not eligible for IV thrombolytic when he arrived due to uncontrolled blood pressure and that the use of warfarin made him ineligible for treatment beyond 3 hours, select "Contraindications.”

Elevated blood pressure or the use of anticoagulation must be specifically identified as the reasons for non-treatment, do not infer or assume that these are the reasons for non-treatment, in order to select “Contraindications.”

- The patient arrives within 2 hours from “Last Known Well” date and time. His NIHSS is 2, due to mild dysarthria and mild drift. The physician documents no IV thrombolytic due to stroke too mild. However, at 3hr 15min after Last Known Well, he suddenly worsens to an NIHSS of 10. At this point, the physician reviews the results of his evaluation and finds no contraindications or warnings, including the additional warnings for patients beyond the 3 hour window. IV thrombolytic is administered at 3hr 50min after “Last Known Well” date and time. Select “Stroke severity too mild.”
- The patient is brought to the ED by his daughter who found him aphasic at home at 16:00. She had last seen him well at 08:00 that morning. The physician documents no IV thrombolytic due to greater than 4.5 hours since “Last Known Well” date and time. While in the ED, the son who lives at home arrives at 16:30 and states that he saw his father well at 14:15pm. Armed with this new information, the patient is rapidly evaluated and receives IV thrombolytic at 18:00, 4 hours after the new time of “Last Known Well” date and time. At the time of his initial evaluation, the care team was unable to determine if he was eligible due to the long interval from “Last Known Well” date and time. Select the "Care-team unable to determine eligibility." If there was no physician documentation describing this change in the time “Last Known Well” date and time, do not infer that this was the cause of non-treatment in the 0-3 hour time window.

## Rationale

Applicable reasons for not administering thrombolytics within 0-3 hour window excludes patients from STK-4: Thrombolytic Therapy. Hospital-related or other factors do not get excluded from STK-4. Used to identify process improvements opportunities for thrombolytic therapy administration.

## Suggested Data Sources

Admission sheets, diagnostic reports, discharge summary, ED notes/records, medication order sheets, progress notes

*Disclaimer: The reasons provided herein are not intended to supersede physician judgment but serve as a guideline to abstractors. As always, the physician must exercise due caution in providing treatment, given the risks and benefits to the individual patient and the available information at the time of treatment decision. Reasons have been taken from the package insert for Activase, as well as those used in previous clinical trials.*

# Contraindications or warnings documented for not administering thrombolytics within the 3-4.5 hour treatment window

## Description

If IV thrombolytic was not initiated at this hospital or if it was initiated but over 270 minutes from patient's recorded Last Known Well. This will not appear if the final clinical diagnosis related to stroke is "No stroke related diagnosis."

## Required

Yes

## Options

- Yes
- No

## Notes for Abstraction

- If contraindication(s) and/or warning(s) for non-treatment are documented for the 0-3 hour treatment window, it is acceptable to assume the same reason(s) for non-treatment to be valid for the 3-4.5 hour window unless documentation in the medical record indicates the patients clinical condition changed. For example, if SBP > 185 or DBP > 110 mmHg, Stroke Severity too mild, Stroke Severity too severe, Rapid improvement, or Care Team Unable to determine eligibility are documented as the reason(s) for not administering IV alteplase in the 0-3 hour time window, and there is documentation of a change in clinical status within 4.5 hours in the medical record then you should not assume that the same reason for non-treatment remains in the extended time window. In these situations, there must be specific documentation around the reason for non-treatment in the 3-4.5 hour window.
- Reasons must be documented by a physician, advanced practice nurse, or physician assistant AND mentioned in the context of IV thrombolytics. If reasons are not mentioned in the context of IV thrombolytics, do not make inferences (e.g., do not assume that IV thrombolytic was not initiated because of a bleeding disorder unless documentation explicitly states so.
- Documentation of initiation of IV or IA thrombolysis/thrombectomy at an outside hospital prior to arrival is a stand-alone reason. No further documentation of it as the reason for not initiating IV thrombolytic at this hospital is needed in order to select this option.
- You may abstract reasons for non-treatment that are entered into the medical record after the IV thrombolytic decision has occurred. This should be done only when the documentation is written by someone who was involved in the IV thrombolytic decision but was unable to document it at the time. This documentation needs to be made prior to patient discharge. An example of this would be if the neurologist who was called by telephone puts a note in the medical record the next day that documents the reason for non-treatment.

- Do not document evidence from outside physician or nurse notes that played a factor in the decision-making process for not giving thrombolytic therapy. EXCEPTION: If your hospital uses telemedicine in assessing stroke patients, it is acceptable to select reasons specified by the teleneurologist when reasons are documented in the medical record. In these cases, it is acceptable for the documentation to be done by a nurse.
- Select **"Yes"** if any of the following **Contraindications and Warnings** were documented by a physician/APN/PA or pharmacist and mentioned in the context of IV thrombolytics. Do not make inferences (e.g., do not assume that IV thrombolytic was not initiated because of a bleeding disorder unless documentation explicitly states so).
  - "Contraindications" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to a contraindication of IV thrombolytic use. This includes any of the following:
    - Elevated blood pressure (systolic > 185 mm Hg or diastolic > 110 mm Hg) despite treatment.
    - Recent intracranial or spinal surgery or significant head trauma, or prior stroke in previous 3 months
    - History of previous intracranial hemorrhage, intracranial neoplasm, arteriovenous malformation, or aneurysm
    - Active internal bleeding
    - Acute bleeding diathesis (low platelet count, increased PTT, INR ≥ 1.7 or use of NOAC). This includes: Platelet count <100 000/mm3; Heparin received within 48 hours, resulting in abnormally elevated aPTT greater than the limit or normal; current use of anticoagulant with INR >1.7 or PT >15 seconds; current use of direct thrombin inhibitors or direct factor Xa inhibitors with elevated sensitive laboratory tests (such as aPTT, INR, platelet count, and ECT; TT; or appropriate factor Xa activity assays). Commonly prescribed NOACs include: apixaban (Eliquis), dabigatran (Pradaxa), rivaroxaban (Xarelto), edoxaban (Savaysa)
    - Arterial puncture at noncompressible site in previous 7 days
    - Blood glucose concentration <50 mg/dL (2.7 mmol/L)
  - "CT findings (ICH, SAH, or major infarct signs)" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to a CT result of an intracerebral hemorrhage, subarachnoid hemorrhage, or major infarct. Symptoms suggest subarachnoid hemorrhage. CT demonstrates multilobar infarction (hypodensity >1/3 cerebral hemisphere)
  - "Warnings" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to a warning against the use of IV thrombolytic. Warnings include:
    - Pregnancy
    - Recent acute myocardial infarction within previous 3 months
    - Seizure at onset with postictal residual neurological impairments
    - Major surgery or serious trauma within previous 14 days
    - Recent gastrointestinal or urinary tract hemorrhage within previous 21 days.
    - Currently taking Alzheimer's Disease Immunotherapy

- "Stroke severity too mild (non-disabling)" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered due to the mild severity of the stroke. This includes:
  - If there is minimal to no disability associated with the stroke symptoms (e.g. numbness, mild weakness, lack of gait impairment). Note that there is no lower limit to NIHSS score that prohibits the use of IV thrombolytic.
  - If record documents that the reason is "NIHSS low" (for example "NIHSS = 3"), then this would appropriately be categorized as stroke severity too mild.
  - If NIHSS = 0, documentation by a nurse is acceptable. Score documentation must refer to the timeframe for thrombolytic therapy.
- "Life expectancy < 1 year or severe co-morbid illness or CMO on admission" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV-thrombolytic was not administered due to a life expectancy of less than a year for the patient, the patient had a severe co-morbid illness, or the patient was placed on CMO status on admission. This includes:
  - If the patient has an order for Comfort Measures Only in the ED and this restriction of care preceded evaluation for IV thrombolytic.
  - If patients are not treated due to coexisting terminal cancer, advanced dementia, severe cardiopulmonary disease or other conditions which severely limit quality of life or life expectancy. Limited life expectancy, severe co-morbid conditions, and CMO status all need to be explicitly documented as the reason for no IV thrombolytic.
- "Patient/Family refused" if there is documentation by a physician, advanced practice nurse, nurse, or physician assistant that explains that IV thrombolytic was not administered due to the refusal of IV thrombolytic treatment by the patient or family of the patient. This includes if patients decline IV thrombolytic and instead select catheter-based reperfusion or other investigational protocol. Reasons must refer to the timeframe for thrombolytic therapy
- "Care team unable to determine eligibility" if there is documentation by a physician, advanced practice nurse, or physician assistant that explains that IV thrombolytic was not administered since the diagnosis of stroke was made, but that eligibility for thrombolytic therapy could not be established, or the clinician could not verify the patient's eligibility for treatment. This includes:
  - If the time of onset could not be clearly established at the time of patient assessment in the ED or that the timing of a recent procedure or surgery could not be definitively established, or time of "Last Known Well" is unknown.
  - If there is documented concern for the presence of a prior medical condition (or possible presence if a limited accurate history) of the presence of a prior medical condition excludes a patient from IV thrombolytic therapy.
  - If it is documented that IV thrombolytic was not given due to an uncertainty as to when the stroke started. This would include patients who have experienced multiple episodes of transient neurologic function, or TIAs, which have fully resolved clinically, but imaging or other features of the history make it uncertain as to when the stroke actually started.

  - "IV or IA thrombolysis/thrombectomy at an outside hospital prior to arrival" if there is documentation by a physician, advanced practice nurse, nurse, or physician assistant that explains that IV thrombolytic was not administered due to IV thrombolytic or IA thrombolytic (including all endovascular therapies) given already at an outside hospital. This includes when a patient was transferred from another hospital where IV thrombolytic was started, even if the infusion continues after the patient arrives at your facility. Reasons must refer to the timeframe for thrombolytic therapy
- Select "**No"** if the following Hospital-Related Factors are the reasons for not initiating IV thrombolytics in the 3-4.5 hour treatment window or there is no documentation at all. Abstractors may infer reasons for not administering IV thrombolytic when selecting these options.
  - "Unable to diagnose or did not diagnose in the 3-hour time frame" if the reason for not administering IV thrombolytic is the doctor was unable to diagnose or did not diagnose the patient within 3 hours of the time of "Last Known Well." Select this option if a stroke diagnosis was unclear.
  - "In-hospital time delay" if the reason for not administering IV thrombolytic is due to a delay within the hospital. If there is a delay in getting the CT done or read, or a delay in patient evaluation, then select this option.
  - "Delay in patient arrival" if the reason for not administering IV thrombolytic is due to a delay in the patient's arrival to the hospital.
  - "No IV access" if the reason for not administering IV thrombolytic is due to a lack of IV access.
  - "Advanced Age" if the reason for not administering IV thrombolytic is the patient's age. Advanced age alone is no longer considered a sufficient reason.
  - "Stroke too severe" if the documentation indicates that IV thrombolytic was withheld due to the severity of the stroke symptoms.
  - "Rapid or Early Improvement" if documentation indicates that IV thrombolytic was not administered due to the rapid or early improvement of the patient's health.
  - "Other" if the reason for not administering IV thrombolytic is due to a reason that is not accurately captured by the other options.
    - For example, if there is a time delay due to the patient's condition that required other treatment (e.g., intubation, resuscitation).
- For inpatient stroke, the 0-3 and 3-4.5 hour treatment window is calculated from Symptom Discovery Date/Time -Date/Time Last Known Well.

## Rationale

Used to identify process improvements opportunities for thrombolytic therapy administration and documentation.

## Suggested Data Sources

Admission sheets, diagnostic reports, discharge summary, ED notes/records, medication order sheets, progress notes

*Disclaimer: The reasons provided herein are not intended to supersede physician judgment, but serve as a guideline to abstractors. As always, the physician must exercise due caution in providing treatment, given the risks and benefits to the individual patient and the available*

*information at the time of treatment decision. Reasons have been taken from the package insert for Activase, as well as those used in previous clinical trials.*

# Endovascular Reperfusion Initiated

## Description

Indicate if IA thrombolytic catheter-based treatment or mechanical endovascular reperfusion (MER) was initiated to a patient with ischemic stroke at this hospital.

## Required

Yes

## Options

- Yes
  - Initiated Endovascular Reperfusion Date (required)
    - Date: MM/DD/YYYY
    - Date: Unknown
  - Initiated Endovascular Reperfusion Time (required)
    - Time: HH:MM [24-hour clock (military time)]
    - Time: Unknown
  - No

## Notes for Abstraction

- Select "**Yes**" if IA catheter-based treatment for acute ischemic stroke was initiated at this hospital. A catheter-based treatment therapy includes all uses of IA delivery of pharmacologic thrombolytic therapy, as well as mechanical devices such as "Clot retrieval devices" for acute ischemic stroke. Mechanical devices may be used alone or in conjunction with IA thrombolytic therapy. Inclusion for IA catheter-based treatment include IA thrombolytic, retrievable stent, other mechanical clot retriever device, clot suction device, intracranial angioplasty (with or without permanent), cervical carotid angioplasty (with or without stent), other. This includes:
  - If IA thrombolytic therapy is given regionally (remote from clot due to an inability to access the clot).
  - If endovascular therapy, including groin puncture, is attempted but ultimately unsuccessful.
  - If “**Yes**”, a required sub-option will appear to record the date and time endovascular reperfusion was initiated at this hospital.
    - Record the date and time of when IA catheter-based reperfusion or mechanical endovascular reperfusion (MER) was initiated for this patient with ischemic stroke at this hospital.
    - Record the start time of IA infusion, or time of first deployment with MER device.
    - The earliest time should be used. If both IA thrombolytic and MER were initiated in the same procedure or different procedures, select the start time for the intervention that was done first.
    - Other acceptable inclusions are date/time of skin puncture, first pass, first deployment, reperfusion, or other term.

    - Select “*Unknown*” if date and/or time of initiation is unable to be determined from the medical record.
- Select "**No**" if IA catheter-based treatment was not initiated at this hospital. This data element is looking to capture patients that receive IA catheter-based reperfusion for acute stroke events only. This includes:
    - If catheter-based treatment for planned therapeutic intervention is initiated, but there is no visualized occlusion.
    - If patients undergo treatment for secondary prevention.
    - If patients undergo diagnostic angio or elective stenting.

## Examples

"Patient entered the interventional suite at 1130. Anesthesia start time 1145. Groin puncture documented at 1151. IA infusion at 1205. Solataire deployed at 1229; second deployment 1243; Trevo deployed at 1310." Select 1205 for IA thrombolytic or MER initiation time.

## Rationale

Date and time of IA catheter based reperfusion or MER allows for measuring how quickly thrombolytic therapy is administered.

## Suggested Data Sources

Admission sheets, diagnostic reports, discharge summary, ED notes/records, medication order sheets, progress notes

# History

## Known Medical History

### Description

Indicate if any of these conditions are known to exist prior to this episode of care or admission.

### Required

Yes, select all that apply. At least one option must be selected.

### Options

- Atrial fibrillation/flutter
- Coronary artery disease (CAD) or previous myocardial infarction (MI)
- Carotid stenosis
- Dementia
- Diabetes mellitus
- Dyslipidemia
- E-Cigarette Use (Vaping)
- Heart failure
- Hypertension
- Peripheral artery disease
- Currently pregnant or within six (6) weeks postpartum
  - Yes, currently pregnant
  - No, postpartum up to 6 weeks
- Postpartum (6 weeks to 12 months postpartum)
- Sickle cell disease/anemia
- Smoking
- Stroke
- TIA/VBI
- Valve prosthesis
- Hx of emerging infectious disease (SARS, COVID-19, MERS)
  - SARS-CoV-1
  - SARS-CoV-2 (COVID-19)
  - MERS
  - Other infectious respiratory pathogen
- None of the listed conditions

### Notes for Abstraction

- Do not include diagnoses that were made at your hospital during this hospitalization and were not previously part of medical history.
  - If you are a receiving hospital of a transfer patient, do not include diagnoses made at the sending hospital as part of the medical history.

- Select "**Atrial Fibrillation/Flutter**" if there is documentation that the patient has a history of any atrial fibrillation (e.g., remote, persistent, or paroxysmal) or atrial flutter anywhere in the medical record.
  - Inclusions (not all inclusive):
    - AF
    - A-fib
    - Atrial fibrillation
    - Atrial flutter
    - Persistent atrial fibrillation
    - Paroxysmal atrial fibrillation
    - PAF
    - History of any remote episode of documented atrial fibrillation or flutter except within 8 weeks following CABG
    - Any patient with a history of atrial fibrillation/flutter who has undergone a procedure for atrial fib/flutter such as pacemaker placement or ablation or who is under medical therapy for rhythm control is still considered as having a history of atrial fib/flutter.
    - Exclusions:
      - History of atrial fibrillation or flutter that terminated within 8 weeks following coronary artery bypass graft (CABG)
      - History of transient and entirely reversible episode of documented atrial fibrillation or flutter due to thyrotoxicosis
      - Paroxysmal atrial tachycardia (PAT)
      - Paroxysmal supraventricular tachycardia (PST)
      - Premature atrial contraction (PAC)
- Select "**CAD or Previous MI**" if the patient has a medical history of CAD or a physician diagnosed myocardial infarction or EKG evidence of an old MI prior to the stroke event.
  - Coronary artery disease is defined as a condition that reduces the blood flow through the coronary arteries to the heart muscle (especially due to atherosclerosis) and typically results in chest pain and heart damage.
  - Myocardial infarction is defined as an acute episode of heart disease marked by the death or damage of heart muscle itself.
  - "Premature CAD", for the purposes of Minnesota Stroke Registry, qualifies as CAD.
  - STEMI or NSTEMI are synonymous with MI.
- Select "**Carotid Stenosis**" if the patient has a medical history any one of the following:
  - Stenosis of the carotid artery of "moderate", greater than, or equal to 50%.
  - Previous duplex ultrasound or MR/CT/conventional angiography methods recorded as "moderate" or greater than or equal to 50%
  - History of carotid endarterectomy or stenting.
- Select **"Dementia"** if there is history of dementia documented in their medical record.
- Select "**Diabetes mellitus**" if the patient has a medical history of physician diagnosed diabetes (Types I or II) regardless of duration of disease, including the use of diet, need for anti-diabetic agents, oral hypoglycemic agents or insulin, or a fasting blood sugar greater than 7 mmol/l or 126 mg/dl.

  - Do not include diabetes based on a patient's statements about elevated glucose or based on a single value of elevated blood sugar in the chart.
  - In order to select this element, there must be a confirmed diagnosis of diabetes mellitus.
- Select "**Dyslipidemia**" if the patient has a medical history of dyslipidemia.
  - Dyslipidemia is defined as a condition marked by abnormal concentrations of lipids or lipoproteins in the blood.
  - Inclusions (not all inclusive):
    - High cholesterol, hyperlipidemia or hypercholesterolemia is present based on physician diagnosis
    - Treatment with a lipid lowering agent
    - Total cholesterol greater than 200
    - LDL greater than 130
    - HDL less than 40
    - Elevated triglycerides greater than 200.
    - Patients on lipid lowering therapy are included even if their LDL levels are in range.
- Select **"E-Cigarette Use (Vaping)"** if the patient uses an electronic nicotine delivery system or electronic cigarettes.
- Select "**Heart Failure**" if the patient has a medical history of heart failure or congestive heart failure.
  - Heart failure is defined as a condition in which the heart is unable to pump blood at an adequate rate or in adequate volume or cessation of heartbeat.
  - Congestive heart failure is defined as heart failure in which the heart is unable to maintain adequate circulation of blood to the tissues of the body or to pump out the venous blood returned to it by the venous circulation.
- Select "**Hypertension**" if the patient has a medical history of high blood pressure whether or not the patient is on prescribed medications.
  - Hypertension is defined as systolic blood pressure greater than 140 and diastolic blood pressure greater than 90 in the non-acute setting on at least two occasions
  - Inclusions (not all inclusive):
    - Current use of antihypertensive pharmacological therapy
    - History of HTN diagnosed and treated with medication, diet, and/or exercise.
    - Do not base this decision solely on blood pressure recordings taken in the ED or in the first few days of admission after stroke, since many normotensive patients will have elevated blood pressure after stroke.
- Select "**Peripheral arterial disease**" if the patient has a medical history of peripheral arterial disease (PAD) or peripheral vascular disease (PVD).
  - PAD is defined as damage to or dysfunction of the arteries outside the heart resulting in reduced blood flow.
  - PVD is defined as a vascular disease of the arteries of the extremities, especially conditions that interfere with adequate blood flow to the extremities and occurring prior to this acute event.
    - Examples: peripheral arterial occlusion, abdominal aortic aneurysm.

- Select "**Currently pregnant or within 6 weeks postpartum**" for patients who are currently pregnant, or within six weeks postpartum.
  - If "**Currently pregnant or within 6 weeks postpartum** is selected, required sub-options will appear to record if patient is:
    - Yes, currently pregnant
    - No, postpartum up to 6 weeks
- Select "**Postpartum (6 weeks to 12 months postpartum)**" for patients who are 6 weeks to 12 months postpartum. If the patient is currently pregnant or up to 6 weeks postpartum, select "Current Pregnancy (up to 6 weeks postpartum)."
- Select "**Sickle-cell disease / anemia**" if the patient has a medical history of sickle-cell disease.
  - Sickle-cell Disease or Sickle Cell Anemia is defined as a chronic anemia in individuals who are homozygous for the gene controlling hemoglobin S and that is characterized by the destruction of red blood cells and by episodic blocking of blood vessels by the adherence of the sickle cells to the vascular endothelium which causes the serious complications of the disease.
  - Inclusions (not all inclusive): Sickle-cell Trait
- Select "**Smoking**" if patient has smoked at least one cigarette within the past year prior to hospital admission.
  - This includes the following documentation:
    - A history of smoking or tobacco use, without mention of a time frame, and there is no indication that the patient quit
    - A history of smoking and the patient quit "several months ago"
    - A history of smoking or tobacco history, or current smoking or tobacco use, and the type of product is not specified
  - In cases where there is conflicting documentation about the patient's smoking history and there is no specific documentation that the patient has not smoked during the year prior to hospital arrival, select "Yes." Examples:
    - "Current smoker" per H&P, but ED note states "Non-smoker"
    - "Cigarette Smoking: Yes, 1-2 cigarettes a day" on nursing admission note, but "Smoking – Quit" on H&P
    - "Recent smoker" in H&P, but progress note states "Smokes – No"
- Select "**Stroke**" if the patient has a medical history of stroke. A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts (or ruptures). When that happens, part of the brain cannot get the blood (and oxygen) it needs, so it and brain cells die.
- Select "**TIA/VBI**" if the patient has a medical history of transient ischemic attack (TIA) or vertebrobasilar insufficiency (VBI).
  - A transient ischemia attack is defined as a brief episode of cerebral ischemia that is usually characterized by blurring vision, slurring of speech, numbness, paralysis, or syncope that is predictive of a serious stroke.
  - A vertebrobasilar insufficiency is defined as a condition of insufficient blood flow to the posterior circulation of the brain.

- Select "**Valve prosthesis**" (Prosthetic heart valve: mechanical or biological [ex. porcine]). A valve prosthesis is defined as a prosthetic heart valve either mechanical or biological (example: porcine) in nature.
- Select **"Hx of emerging infectious disease**" if the patient is known to have any of the following in their medical history. *This does **NOT** include a current infection.*
  - If "**Hx of emerging infectious disease**" is selected, required sub-options will appear to record the disease(s):
    - SARS-CoV-1 (Severe Acute Respiratory Syndrome-associated coronavirus)
    - SARS-CoV-2 (COVID-19) (Severe Acute Respiratory Syndrome-associated coronavirus)
    - MERS (Middle East Respiratory Syndrome)
    - Other infectious respiratory pathogen
- Select "**None of the listed conditions**" if the patient did not have any of the listed conditions known to exist prior to this episode of care or admission.

## Rationale

Medical history is used to understand morbidity and mortality rates. Additional conditions were added in January 2013 in response to overwhelming customer request over the past few years that additional categories for patient medical history be added that address those pre-existing conditions that have the greatest impact on stroke risk.

## Suggested Data Sources

Face sheet, Discharge instruction sheet, Discharge summary, History and physical, EKG report, Holter monitor report, problem list, progress notes, rhythm strip with documented interpretation of atrial fibrillation/flutter, transfer sheet

# Ambulation Status Prior to Current Event

## Description

Indicate the patient's ability to walk prior to the current event.

## Required

Yes

## Options

- Able to ambulate independently with or without device
- With assistance (from person)
- Unable to ambulate
- ND

## Notes for Abstraction

- Select "**Able to ambulate independently with or without a device**" if:
  - The patient is able to walk without help from another person.
  - The patient uses a device to walk. A "device" is defined as a walking aid such as a cane or walker.
  - For patients who are in a healthcare environment prior to coming to this hospital:
    - Patient ambulating to and from the bathroom unassisted. Even though actual ambulation is not documented in the medical record, privileges to walk to and from the bathroom and evidence of the patient getting out of bed unassisted are considered to meet the definition of ambulation.
  - For patients not in a healthcare setting prior to coming to this hospital:
    - Patient ambulating around the house unassisted, even if they need assistance to walk outside.
- Select "**With assistance (from person)**" if the patient is walking throughout the day with assistance of another person.
- Select "**Unable to ambulate**" if:
  - For patients who are in a healthcare environment prior to coming to this hospital:
    - Patient is on bedrest. Patient is only getting out of bed to the bedside commode (or up in chair) and is primarily in the bed (or immobile).
  - For patients not in a healthcare setting prior to coming to this hospital:
    - Patient is bedridden or currently on bedrest recovering from an injury or illness. Patient is only getting out of bed to the bedside commode (or up in chair) and is primarily in the bed (or immobile)
- Select "**ND (Not Documented)**," if unable to determine walking status from documentation.

## Examples

- Patient walks around the home but rides a motorized scooter when outdoors. Select "Able to ambulate independently with or without a device".

- Patient has severe arthritis and is sedentary throughout most of the day. She requires a full person assistance to transfer from bed to chair. Select "Unable to ambulate."

## Rationale

Ambulation status prior to the stroke event is used to assess the disability burden of patients when compared to the walking status of the patient by the day after admission and at discharge.

## Suggested Data Sources

History and physical notes, physician progress notes, rehab department notes, case management notes

# Inpatient Care (only visible if patient was admitted)

## Statin or Other Cholesterol Reducing Medication Prior to Admission

### Description

Determine if there is documentation in the medical record that the patient was on a lipid-lowering medication prior to hospital arrival.

### Required

Yes

### Options

- Yes
- No/ND

### Notes for Abstraction

- Select "**Yes**" if:
  - There is documentation in the medical record that the patient was on a lipid-lowering medication (cholesterol-reducing/controlling medication) prior to hospital arrival.
  - When conflicting information is documented in a medical record.
  - Evidence in the medical record of a medication in the cholesterol-reducing class at a given dosage and frequency of administration.
  - If there is documentation that the patient was on a lipid-lowering medication at home but there is indication it was on temporary hold or the patient has been non-compliant/self-discontinued their medication (e.g., refusal, side effects, cost).
  - Reference Table 6 in *Minnesota Stroke Registry Abstraction Manual's* Appendix C for inclusions.
- Select "**No/Not Documented**" if:
  - There is documentation in the medical record that the patient was not on a lipid-lowering medication prior to hospital arrival
  - There is no documentation in the medical record that the patient was on a lipid-lowering medication prior to hospital arrival.
  - You are unable to determine from the medical record documentation.

### Rationale

If a case was admitted on a lipid lowering medication, this is an inclusion factor for STK-6 (Discharged on Statin Medication).

### Suggested Data Sources

Consultation notes, Emergency department record, history and physical, medication reconciliation form, nursing admission assessment, progress notes, transfer sheet

# STK-5: Was Antithrombotic Therapy Received by End of Hospital Day 2

## Description

Document whether antithrombotic therapy was administered by the end of hospital day two.

## Required

Yes

## Options

- Yes
- No
- NC (None-contraindicated)

## Notes for Abstraction

- To compute end of Hospital Day two, count the day of arrival at this hospital as day one. It is not necessary to review documentation outside of this timeframe (after Day 2) to answer this data element.
- Select "**Yes**" if antithrombotic therapy was administered by the end of hospital day 2, including the following:
  - If antithrombotic therapy was administered by 23:59 of hospital day two.
  - If antithrombotic therapy was administered in the Emergency Department/observation area prior to the end of hospital day 2.
  - Antithrombotic therapy administration information must demonstrate actual administration of the medication.
    - Do not use physician orders as they do not demonstrate administration of the antithrombotic therapy (in the ED this may be used if signed/initialed by a nurse).
  - Refer to Table 8 and Table 9 in Appendix C of the *Minnesota Stroke Registry Abstraction Manual* for acceptable antithrombotic therapy. Antithrombotic include both anticoagulant and antiplatelet drugs.
- Select "**No**" if antithrombotic therapy was not administered by the end of day 2 OR unable to determine from medical record documentation. This includes:
  - If antithrombotic is noted as a "home" or "current" medication or documentation indicates that it was received prior to hospital arrival only.
  - Lovenox SQ for VTE prophylaxis (i.e. enoxaparin SQ 40 mg once daily; enoxaparin SQ 30 mg Q12 hours) is not sufficient. If no other antithrombotic therapy is administered by the end of the hospital day 2 it would not qualify.
- Select "**None – contraindicated**" if there is documentation in the medical record of a reason for not administering antithrombotic therapy by the end of hospital day 2.
  - If patient refused treatment. This must be documented and may be documented by a nurse.
  - If antithrombotic held for 24 hours due to status post IV thrombolytic (must be documented as a reason for no antithrombotic).

- Acceptable reasons for not giving antithrombotic medication by the end of the 2nd hospital day include:
  - Allergy to or complication related to antithrombotic
  - Aortic dissection
  - Bleeding disorder
  - Brain/CNS cancer
  - CVA, hemorrhagic
  - Extensive/metastitic CA
  - Hemorrhage, any type
  - Intracranial surgery/biopsy
  - Patient/family refusal
  - Peptic ulcer
  - Planned surgery within 7 days following discharge
  - Risk of bleeding or discontinued due to bleeding
  - Serious side effect to medication
  - Unrepaired intracranial aneurysm
  - Terminal illness
  - Other documented by physician/APN/PA or pharmacist
- Anticoagulants at doses (low dose) designed to prevent deep vein thrombosis are **insufficient** as antithrombotic therapy to prevent recurrent ischemic stroke or TIA. Conversely, antiplatelet agents at doses to prevent recurrent ischemic stroke or TIA are insufficient therapy to prevent deep vein thrombosis
  - DVT prevention doses may include (these are not sufficient doses to mark yes):
    - dalteparin (Fragmin): 2500 or 5000 units SQ every day
    - enoxaparin (Lovenox): 30-40 mg SQ every day or 2 times a day
    - fondaparinux (Arixtra): 2.5 mg SQ every day
    - Heparin: 5000 units SQ every 8-12 hrs
    - rivaroxaban (Xarelto) Oral: 10 mg every day for prevention of DVT after hip surgery
- However, anticoagulants at **full** therapeutic doses (full dose LMW heparin, Unfractionated heparin IV, or warfarin) are considered acceptable treatment options for both VTE prophylaxis and antithrombotic medication.
  - Therapeutic doses, that may prevent DVT and also be effective as therapeutic anticoagulation to prevent stroke, may include:
    - argatroban at any dose IV infusion
    - dabigatran (Pradaxa): 150 mg 2 times a day (75 mg 2 times a day in patients with renal failure)
    - dalteparin (Fragmin) : 100 mg/kg SQ every 12hrs
    - desirudin (Iprivask): 15 mg every 12 hours
    - enoxaparin (Lovenox): 1 mg/kg SQ 2 times a day
    - fondaparinux (Arixtra): 5-10 mg SQ every day
    - Heparin: continuous IV infusion titrated to elevated PTT outside the normal range. Typical ranges could include PTT 50-70 or 60-84; however, IV heparin is not of proven benefit for acute ischemic stroke or secondary prevention of stroke
    - lepirudin (Refludan) at any dose IV infusion

    - rivaroxaban (Xarelto) Oral: 20 mg every day (15 mg every day in patients with renal failure)
- These doses are provided to aid chart abstraction and not as an endorsement of any of the specific medicines for treatment or prevention of stroke. In many cases these medicines are not approved by the FDA for treatment or prevention of stroke, but could reasonably be used off-label for that purpose

## Examples

- Patient arrives at ED on Monday at 05:00 with an ischemic stroke. Because beds are full, patient waits in ED holding bed, and patient is not delivered to the stroke unit until 15:00 on Tuesday. Hospital day one is Monday (day of arrival at hospital), hospital day two is Tuesday. Patient should receive antithrombotic therapy by 23:59 on Tuesday in order to answer “Yes”.

## 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.

## Suggested Data Sources

Admission Data, Hospitalization Data, Emergency department record, Nursing notes, Nursing flow sheet, Progress notes, Physician orders, Medication administration record (MAR)

Excluded sources: Emergency medical system (EMS) or ambulance documentation and any documentation dated/timed prior to hospital arrival or after hospital day 2.

# STK-1: VTE Prophylaxis Administered the Day of or Day After Admission

## Description

Determine what initial types of venous thromboembolism (VTE) prophylaxis were provided to the patient.

## Required

Yes

## Options

- Select all the types that apply:
  - Low dose unfractionated heparin (LDUH)
  - Low molecular weight heparin (LMWH)
  - Intermittent pneumatic compression devices (IPC)
  - Graduated compression stockings (GCS)
    - Documented reason for not administering VTE prophylaxis (required if only option selected)
  - Factor Xa Inhibitor
  - Oral Factor Xa Inhibitor
    - Reason for using Oral Factor Xa Inhibitor? (required)
      - Yes
      - No
  - Warfarin
  - Venous foot pumps
  - Aspirin
    - Documented reason for not administering VTE prophylaxis (required if only option selected)
  - If any of the above are selected:
    - Date initial VTE prophylaxis administered (required)
      - Date: MM/DD/YYYY
      - Date: Unknown
  - Not Documented or none of the above
    - Documented reason for not administering VTE prophylaxis (required)

## Notes for Abstraction

- Abstract all VTE prophylaxis that was initially administered in the allowable time frame (the day of or the day after hospital admission).
- If a patient is receiving therapeutic anticoagulation for an indication other than prophylaxis (i.e. full dose IV heparin or an alternate anticoagulant such as dabigatran) and is not receiving any interventions on this list, select “Not documented or None of the above” here and then select the appropriate medication from the “Other Therapeutic Anticoagulation” list. If a patient is receiving Rivaroxaban (Xarelto) and is not receiving any other medication on this list, select Oral factor Xa inhibitor here and also select Oral Factor Xa Inhibitors

under the "Other Therapeutic Anticoagulation" list. If a patient is receiving Apixaban (Eliquis) and is not receiving any other medication on this list, select Oral factor Xa inhibitor here and also select Oral Factor Xa Inhibitors under the "Other Therapeutic Anticoagulation" list. If a patient is receiving treatment with an intervention on this VTE interventions list and is also receiving an alternate anticoagulant, just select the appropriate interventions from the "VTE Interventions" list.

- If multiple types of VTE prophylaxis are given, record all of them that fall in the appropriate timeframe.
- Only select VTE prophylaxis if there is documentation that it was administered. For example, documentation in the physician progress notes under assessment/Plan: "DVT prophylaxis – IPC" is not enough to select value "Intermittent pneumatic compression devices".
    - Application of mechanical prophylaxis may be documented by any personnel. Example: nursing assistant documentation of IPC application during the allowable timeframe is acceptable.

- If the patient received an anticoagulation medication for other reasons, select the allowable value that was administered during the specified timeframe. For example: if the patient received warfarin for atrial fibrillation on the day of admission, select "Warfarin".
- If one pharmacological medication is ordered and another medication is substituted (such as per pharmacy formulary substitution or protocol), abstract the medication administered. No copy of the formulary or protocol is required in the medical record.
- Graduated compression stockings and aspirin are not acceptable forms of VTE prophylaxis for STK-1.
- VTE Prophylaxis administered in the ED or Observation prior to the hospital admission order is *not* sufficient.
    - If **any type of VTE prophylaxis is selected** (excluding GCS and Aspirin), a required sub-option will appear to record "*Date of initial VTE prophylaxis administered"*.
        - Of the selected VTE prophylaxis, enter the earliest date of the VTE prophylaxis administered. The medical record must be abstracted as documented (take at "face value").
        - Select *"Unknown"* if the date of administering VTE prophylaxis is not documented or the abstractor is unable to determine the date. This includes when the date documented is obviously in error (not a valid date/format) and no other documentation is found that provides this information.
        - If "**Oral Factor Xa Inhibitor**" is selected, a required sub-option will appear to record if a physician/APRN/PA documented an acceptable reason why Oral Factor XA Inhibitor was administered for VTE prophylaxis.
            - Select *"Yes*" if the reason documented reason is acceptable:
                - History of atrial fibrillation/flutter or current finding of atrial fibrillation/flutter
                - History of total or partial hip or total knee replacement surgery
                - When conflicting information is documented in the medical record
                - History of treatment for venous thromboembolism or current treatment for venous thromboembolism

        - If a patient is receiving Rivaroxaban (Xarelto) or Apixaban (Eliquis) and is not receiving any other medication on this list. If so, also select "*Yes*" to *Was other therapeutic anticoagulant provided?*
    - Select "*No*" if there is no documentation or the documented reasons is not on the acceptable reasons named above. No other reasons will be accepted.
- If no VTE prophylaxis was administered during this timeframe, select "**Not documented or None of the above**."
    - If "Not documented or None of the above" is selected, no other selections should be recorded.
    - If the patient is receiving therapeutic anticoagulation for an indication other than prophylaxis (i.e. full dose IV heparin or an alternate anticoagulant such as debigatran) and is not receiving any interventions on this list, select "None of the above," and select "Yes" for Was other therapeutic anticoagulant provided?
- If "**Graduated compression stockings, Aspirin, and/or Not documented/None of the above,**" are the only options selected, a required sub-option will appear to record if there is "*Documented reason for not administering VTE prophylaxis?"*
    - Graduated compression stockings and/or Aspirin alone will not be sufficient to pass this measure unless there are documented reasons for not administering VTE prophylaxis.
    - If Graduated compression stockings and/or Aspirin were administered along with another listed VTE prophylaxis, this question will disappear.
    - Documentation of the reason for no VTE prophylaxis must be written by the day after hospital admission. Documentation written after arrival but prior to admission is acceptable.
    - Reasons for not prescribing mechanical **and** pharmacological VTE prophylaxis must be documented by a physician/APN/PA or pharmacist.
    - Select "*Yes"* when:
        - There is physician/APN/PA or pharmacist documentation (from arrival to day after hospital admission) why both forms of VTE prophylaxis was not administered at hospital admission.
        - Documented reasons for not prescribing VTE prophylaxis must be documented by a physician, nurse practitioner, physician assistant, or pharmacist.
        - **Exception**: If patient/family refuses one form of prophylaxis, this is sufficient to select "*Yes*." Both forms do not need to be ordered and refused – refusal of one form is sufficient. This can be documented by a nurse.
        - If documented reasons are not mentioned in the context of VTE prophylaxis, do not make inferences.
        - The documented reason(s) must explain why all of the listed types of VTE prophylaxis were not administered at hospital admission.
        - If documentation indicates that patient/caregiver refused any form of VTE prophylaxis. This may be documented by a nurse, but should be documented within the same time frame as the reason for no VTE prophylaxis.

- If patient refused graduated compression devices or aspirin, this does not count as a documented reason for not administering VTE prophylaxis.
- For patients determined to be at low risk for VTE:
  - If documentation of "No VTE Prophylaxis needed" is written, then it will be inferred that both mechanical and pharmacological options were not indicated for the patient.
- A completed risk assessment within this timeframe is an acceptable source for this data element, if it is clear that the patient is at low risk for VTE and does not need VTE prophylaxis. If there is conflicting information about the need for prophylaxis, select "No".
- For patients determined to be at risk for VTE and pharmacologic prophylaxis is contraindicated, then evaluation for mechanical prophylaxis must be addressed. For example, if there is physician documentation of "bleeding, no pharmacologic prophylaxis", there must also be documentation about mechanical prophylaxis such as "no mechanical prophylaxis" to select "Yes".
- Documentation that the patient is adequately anticoagulated or already anticoagulated.
- Patient is on continuous IV heparin therapy the day of or day after hospital admission.
- If warfarin is listed as a home or current medication.
- For patients on warfarin therapy prior to admission, but placed on hold due to "high INR."
- For patients receiving anticoagulant therapy other than warfarin for atrial fibrillation or other conditions the day of or the day after hospital admission.
- If CMO was determined after the day after arrival (Day 1), but by the day after hospital admission.
- Patient/family refusal may be documented by a nurse, but should be documented within the same timeframe as the reason for no VTE prophylaxis. Patient/family refusal of any form of prophylaxis is acceptable.
- Reasons for not administering any mechanical or pharmacologic prophylaxis:
  - Patient at low risk for VTE
  - Explicit documentation that the patient does not need VTE prophylaxis
  - Patient/family refusal
  - If there is documentation that the patient is receiving therapeutic anticoagulation for an indication other than VTE prophylaxis, but the treatment meets the criteria for VTE prophylaxis, select "Yes."

- Select "*No*" when:
  - There is no physician/APN/PA or pharmacist documentation on why mechanical or pharmacologic VTE prophylaxis was not administered at

hospital admission or unable to determine from medical record documentation.
- Patients with a reason for no pharmacologic prophylaxis and an order for mechanical prophylaxis that was not administered without a reason
- Patients with a reason for no mechanical prophylaxis and an order for pharmacologic prophylaxis that was not administered without a reason.

## Examples

- If was a patient was admitted on 12/8/2009 and was administered warfarin on 12/9/2009 and intermittent pneumatic compression devices were provided on 12/10/2009, enter 12/9/2009.
- Doctor ordered IPCs and Lovenox for VTE prophylaxis on the day after patient was admitted. Later that same day, Nurse documents that patient refused Lovenox. Select "None of the above" and "Yes" for Documented reason for not administering VTE prophylaxis.
- PA ordered low dose unfractionated heparin for VTE prophylaxis on the day patient was admitted. Day after admission, nurse documents that patient refused LDUH. Select "None of the above" and "Yes" for Documented reason for not administering VTE prophylaxis.

## 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.

## Suggested Data Sources

Emergency department record, Graphic/flow sheets, Medication administration record, Nursing notes, Physician notes, Progress notes

# Other Therapeutic Anticoagulation Provided

## Description

Determine if another anticoagulant was provided to the patient.

## Required

Yes

## Options

- Yes
  - Other therapeutic anticoagulation (required)
    - Unfractionated heparin IV
    - Dabigatran (Pradaxa)
    - Argatroban
    - Desirudin (Iprivask)
    - Oral Factor Xa Inhibitors [Rivaroxaban (Xarelto) or Apixaban (Eliquis)].
    - Lepirudin (Refludan)
    - Other Anticoagulant
- No/Not Documented

## Notes for Abstraction

- Select **"Yes"** if patient did not receive one of the listed "VTE Interventions" but was receiving therapeutic anticoagulation therapy by the end of the day after hospital admission for an indication other than VTE prophylaxis, or the patient was receiving an Oral Factor Xa Inhibitor, such as Rivaroxaban (Xarelto) or Apixaban (Eliquis).
  - If "**Yes**", a required sub-option will appear to document the other therapeutic anticoagulation provided to the patient.
- Select "**No"** if the patient did not receive other therapeutic anticoagulant therapy by the end of day after hospital admission for an indication other than VTE prophylaxis or did not receive an Oral Factor Xa Inhibitor.

## Examples

- Patient 240d arrives at ED on Monday at 05:00 with an ischemic stroke. He is started on continuous IV heparin at 7:00. SCD's are prescribed and initiated the following morning. Select "VTE Interventions = Intermittent pneumatic compression devices (IPC)".

## Suggested Data Sources

Admission Data, Hospitalization Data, Emergency department record, Nursing notes, Nursing flow sheet, Progress notes, Physician orders, Medication administration record (MAR)

# Persistent or Paroxysmal Atrial Fibrillation/Flutter (STK-3)

## Description

Determine if the patient had any atrial fibrillation (e.g., remote, persistent, or paroxysmal) or atrial flutter during the admission

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- Select "**Yes**" if there is any evidence of atrial fibrillation/flutter observed or identified during the hospital admission. The medical record should contain documentation by a physician or other provider which describes the episode or EKG/monitor finding of atrial fibrillation or flutter. This includes persistent or paroxysmal findings. This includes:
  - Inclusions (not all inclusive): AF, A-fib, Atrial fibrillation, Atrial flutter, Persistent atrial fibrillation, Paroxysmal atrial fibrillation, or PAF
  - Diagnosis of current atrial fibrillation or flutter anywhere in the medical record.
  - Documentation of atrial fibrillation or flutter on current EKG.
- Select "**No/ND**" if there is no documented evidence of atrial fibrillation/flutter or paroxysmal fibrillation/flutter or if you are unable to determine whether there is evidence of atrial fibrillation/flutter or paroxysmal fibrillation/flutter during this admission.

## Examples

- Patient was admitted with the diagnosis of acute ischemic stroke and atrial fibrillation. The attending neurologist has documented new onset of atrial fibrillation in a consult to cardiology. The patient is discharged on Coumadin for non-valvular atrial fibrillation. Select "Yes" for this data element.
- Patient was admitted with the diagnosis of acute ischemic stroke, a history of paroxysmal atrial fibrillation, but the EKG in the ED shows sinus rhythm. The attending neurologist has documented paroxysmal atrial fibrillation as a possible cause of the stroke in a consult to cardiology. The patient is discharged on Coumadin for non-valvular paroxysmal atrial fibrillation. Select "No or UTD" for this data element.
- Patient was admitted with the diagnosis of acute ischemic stroke and a remote history of a brief period of self-limited atrial fibrillation after bypass surgery 6 years ago and negative Holter monitoring in the years since. The patient is in sinus rhythm and on no current management for AF. There is no evidence of atrial fibrillation during the hospitalization. Select "No or UTD" for this data element.

## Rationale

This data element captures patients who may benefit from being discharged on anticoagulation therapy and inclusion into STK-3 measure.

## Suggested Data Sources

Face sheet, Discharge Instruction sheet, Discharge summary, History and physical, EKG report, Holter monitor report, Problem list, Progress Notes, Rhythm strip with documented interpretation of atrial fibrillation/flutter, Transfer sheet

# Patient Treated for Hospital Acquired Pneumonia 48 Hours or More After Admission

## Description

Indicate if the patient was treated for hospital acquired pneumonia 48 or more hours after admission.

## Required

Yes

## Options

- Yes
- No
- NC

## Notes for Abstraction

- Select **"Yes"** when the following two conditions are met:
  - There is documentation of clinical suspicion/mention of pneumonia 48 hours or more after admission (not on admission) by the physician **AND**
  - Antibiotic treatment was administered to the patient to treat the pneumonia.
- Select **"No"** when:
  - There is documentation of clinical suspicion/mention of pneumonia 48 hours or more after admission (not on admission) by the physician **AND**
  - No antibiotic treatment was prescribed
- Select **"NC"** when:
  - There is mention of pneumonia during the applicable timeframe (48 hours more after admission), but pneumonia is ruled out and not diagnosed.
  - There is mention of pneumonia at admission/outside the timeframe of interest (48 hours more after admission).
  - There is no mention or clinical suspicion of pneumonia at all during their admission.

# Patient Experience a DVT or PE During This Admission

## Description

Indicate if the patient was confirmed, using appropriate diagnostic modalities, to have developed a deep vein thrombosis (DVT) or pulmonary embolus (PE) during hospital admission.

## Required

Yes

## Options

- Yes
- No/ND

## Notes for Abstraction

- The documentation of DVT or PE must be confirmed by ultrasound, venous imaging, or appropriate diagnostic modality. Ensure that the report clearly indicates that it is a deep vein and not a superficial vein.
  - The Joint Commission defines this as objectively confirmed DVT based on duplex ultrasound, contrast venography, CT with contrast or CT venogram, MR imaging or MR venography.
- Select **"Yes"** when these two conditions are met:
  - One of the approved diagnostic modalities reveals a **deep** vein thrombosis **AND**
  - Development of DVT or PE was not pre-existing prior to admission
- Select **"No/ND"** when:
  - No documentation, diagnosis, or imaging studies were completed to identify DVT or PE during hospital admission.
  - Development of DVT or PE appears to have been prior to hospital admission.
  - Imaging studies are performed to rule out DVT, but imaging studies were negative.

# Active Bacterial or Viral Infection at Admission or During This Hospital Stay

## Description

Indicate if the patient was confirmed to have an active bacterial or viral infection(s) at admission or any time during hospitalization.

## Required

Yes

## Options

- Seasonal cold
- Influenza
- Other bacterial infection
- Other viral infection
- Emerging infectious disease (SARS, COVID-19, MERS)
  - SARS-CoV-1
  - SARS-CoV-2 (COVID-19)
  - MERS
  - Other emerging infectious disease
- None/ND

## Notes for Abstraction

- Do **not** select if the documentation state only “suspected”, “possible,” “probable”, or “inconclusive” infection.
- Select **“Seasonal cold”** and/or **“Other bacterial infection”** and/or “**Other viral infection**” only when a confirmed diagnosis is documented by the provider or when a positive test result is documented in the patient medical record.
- Select “**Influenza**” only when a provider documents confirmed diagnosis and/or a positive test result is documented in the patient record, this includes a positive rapid AG or positive PCR test.
- Select **“Emerging infectious disease (SARS, COVID-19, MERS)”** when the patient has a confirmed diagnosis of an infectious respiratory pathogen documented by the provider or when a positive test result is documented in the patient medical record.
  - If **“Emerging infectious disease (SARS, COVID-19, MERS)”** is selected, required sub-options will appear to record the disease(s):
    - Select *“SARS-CoV-1”* (Severe Acute Respiratory Syndrome-associated coronavirus) if confirmed diagnosis includes a positive RT-PCR test, a positive IgM antibody test, or a clinical diagnosis using hospital specific criteria. This may include ICD-10- CM code B97.21
    - Select *“SARS-CoV-2 (COVID-19)”* (Severe Acute Respiratory Syndrome-associated coronavirus) if a confirmed diagnosis includes a positive RT-PCR test, a positive IgM antibody test, or a clinical diagnosis using hospital specific criteria. Active

infection is considered testing positive within 10 days of arrival or during this episode of care. This may include ICD-10-CM code U07.1
    - Select *"MERS"* (Middle East Respiratory Syndrome) This may include ICD-10-CM code B97.29
    - Select *"Other emerging infectious disease"* if it is an emerging respiratory pathogen not listed or captured above.
- Select **"None/ND"** if no bacterial or viral infection was documented.

# STK-2: Antithrombotic Medication Prescribed at Discharge

## Description

Determine if the patient was prescribed antithrombotic medication at discharge.

## Required

Yes

## Options

- Yes
  - Antithrombotic medications prescribed (required)
    - Antiplatelet
    - Anticoagulant
- No
- None-Contraindicated

## Notes for Abstraction

- In determining whether antithrombotic therapy was prescribed at discharge, it is not uncommon to see conflicting documentation amongst different medical record sources. For example, the discharge summary may list an antithrombotic that is not included in any of the other discharge medication sources (e.g., discharge orders). All discharge medication documentation available in the chart should be reviewed and taken into account by the abstractor.
- If two discharge summaries are included in the medical record, use the one with the latest date/time. If one or both are not dated or timed, and you cannot determine which was done last, use both. This also applies to discharge medication reconciliation forms. Use the dictated date/time over transcribed date/time, file date/time, etc. Examples:
  - Two discharge summaries, one dictated 5/22 (day of discharge) and one dictated 5/27 - Use the 5/27 discharge summary.
  - Two discharge medication reconciliation forms, one not dated and one dated 4/24 (day of discharge) - Use both.
- Disregard an antithrombotic medication documented only as a recommended medication for discharge (e.g., “Recommend sending patient home on aspirin”). Documentation must clarify that an antithrombotic was actually prescribed at discharge.
- Disregard documentation of antithrombotic prescribed at discharge when noted only by medication class (e.g., “Antithrombotic Prescribed at Discharge: Yes” on a core measures form). The antithrombotic must be listed by name.
- Select “**Yes**” if any of the following antithrombotic medications were prescribed to the patient at discharge:
  - Antiplatelet
    - Aspirin (ASA) [If Prasugrel (Effient) is prescribed in addition to aspirin, select "Yes”]
    - ASA/ dypiridamole (Aggrenox)
    - Clopidogrel (Plavix)
    - Ticlopidine (Ticlid)

- Anticoagulant
  - Full dose Unfractionated heparin IV
  - Full dose LMW heparin
  - Warfarin (Coumadin)
  - Dabigatran (Pradaxa)
  - Argatroban
  - Fondaparinux (Arixtra)
  - Rivaroxaban (Xarelto)
  - Apixaban (Eliquis)
  - Lepirudin (Refludan)
- If "**Yes**", a required sub-option will appear to document the type(S) of antithrombotic medication prescribed.
- In cases where there is an antithrombotic in one source that is not mentioned in other sources, it should be interpreted as a discharge medication (select "**Yes**") unless documentation elsewhere in the medical record suggests that it was NOT prescribed at discharge - Consider it a discharge medication in the absence of contradictory documentation.
- If documentation of a hold on an antithrombotic after discharge in one location and a listing of that antithrombotic as a discharge medication in another location as contradictory ONLY if the timeframe on the hold is not defined (e.g., "Hold Plavix"). Examples of a hold with a defined timeframe include "Hold Plavix x2 days" and "Hold ASA until after stress test."
- Reasons do NOT need to be documented at discharge or otherwise linked to the discharge timeframe: Documentation of reasons anytime during the hospital stay are acceptable (e.g., mid-hospitalization note stating "no ASA due to rectal bleeding" - select "Yes," even if documentation indicates that the rectal bleeding has resolved by the time of discharge and ASA was restarted).
- Examples:
  - "Stool Occult Blood positive. May start Coumadin as outpatient."
  - "Start ASA if hematuria subsides."

- Select "**No**" if antithrombotic medications were not prescribed to the patient at discharge or you were unable to determine if antithrombotic medications were prescribed to the patient at discharge and there is no documentation in the medical record of a reason for not prescribing antithrombotic therapy. This includes:
  - If Prasugrel (Effient) is the only antithrombotic medication prescribed at discharge. Prasugrel (Effient) is contraindicated in post ACS/PCI patients with stroke or TIA and is not considered an acceptable antithrombotic (antiplatelet) therapy for stroke prevention treatment.
  - If documentation is contradictory (e.g., physician noted "d/c Plavix" in the discharge orders, but Plavix is not listed in the discharge summary's discharge medication list), or after careful examination of circumstances, context, timing, etc., documentation raises enough questions, the case should be deemed unable to determine.
  - Heparin SQ, Heparin Flush, and Hep-Lock do not count as antithrombotic therapy.
  - If an antithrombotic is NOT listed as a discharge medication, and there is only documentation of a hold or plan to delay initiation/restarting of antithrombotic

therapy after discharge (e.g., “Hold Plavix x2 days,” “Start Plavix as outpatient,” “Hold Plavix”).
    - Examples:
        - “Consider starting Coumadin in a.m.”
        - “May add Plavix when pt. can tolerate”
- Select "**NC**" if there is documentation by a physician, advanced nurse, physician assistant, or pharmacist in the medical record of a reason for not prescribing antithrombotic therapy at hospital discharge. This includes:
    - If any of the following are documented by an physician, APN, PA, or pharmacist: the discharge destination is expired, left against medical advice, or hospice; if the patient did not receive a medication at discharge due to a contraindication; if the patient was comfort measures only; if the treatment was not indicated; or if the patient refused. Patient/family refusal can be documented by a nurse.
    - Inclusions for accepted reasons (not all inclusive):
        - Allergy to all antithrombotic medications
        - Aortic dissection
        - Bleeding disorder
        - Brain/CNS cancer
        - CVA, hemorrhagic
        - Extensive/ metastatic CA
        - Hemorrhage, any type
        - Intracranial surgery/biopsy
        - Patient/family refusal
        - Peptic ulcer
        - Planned surgery within 7 days following discharge
        - Risk of bleeding or discontinued due to bleeding
        - Serious side effect to medication
        - Unrepaired intracranial aneurysm
        - Terminal Illness
    - If reasons are not mentioned in the context of antithrombotics, do not make inferences
        - Physician/APN/PA or pharmacist documentation of a hold on an antithrombotic medication or discontinuation of an antithrombotic medication that occurs during the hospital stay constitutes a “clearly implied” reason for not prescribing antithrombotic therapy at discharge. A hold/discontinuation of all p.o. medications counts if an oral antithrombotic medication (e.g., Plavix) was on order at the time of the notation.
        - If there is documentation of a plan to initiate/restart antithrombotic therapy, and the reason/problem underlying the delay in starting/restarting antithrombotic therapy is also noted, this constitutes a “clearly implied” reason for not prescribing antithrombotic therapy at discharge.
        - Crossing out of an antithrombotic medication counts as a "clearly implied reason" for not prescribing antithrombotic therapy at discharge only if on a pre-printed form.

- When the current record includes documentation of a pre-arrival reason for no antithrombotic therapy, the following counts regardless of whether this documentation is included in a pre-arrival record made part of the current record or whether it is noted by hospital staff during the current hospital stay:
  - Pre-arrival hold/discontinuation or notation such as "No Coumadin" IF the underlying reason/problem is also noted (e.g., “Coumadin held in transferring hospital due to possible GI bleed”).
  - Pre-arrival "other reason" (other than hold/discontinuation or notation of "No ASA") (e.g., "History GI bleeding with ASA" in transferring ED record).
- Do not select “NC” if none of the reasons listed above were documented within the medical record.
  - Documentation of a conditional hold or discontinuation of an antithrombotic medication does not count as a reason for not prescribing an antithrombotic medication at discharge (e.g., “Hold ASA if guaiac positive”, “Stop plavix if rash persists.”)
  - Discontinuation of a particular antithrombotic medication documented in combination with the start of a different antithrombotic medication (i.e., switch type of antithrombotic medication) does not count as a reason for not prescribing an antithrombotic medication at discharge. Examples:
    - “Stop Plavix” and “Start Plavix 75 mg p.o. daily” in same physician order
    - “Change Plavix to aspirin” in progress note
    - “Do not continue after discharge” checked for Plavix and “Continue after discharge” checked for clopidogrel on a physician-signed discharge medication reconciliation form
  - Discontinuation of an antithrombotic medication at a particular dose documented in combination with the start of a different dose of that antithrombotic (i.e., change in dosage) does not count as a reason for not prescribing an antithrombotic medication at discharge. Examples:
    - “Stop dipyridamole 25 mg p.o. daily” and “Start dipyridamole 50 mg p.o. daily” in same physician order
    - “Increase dipyridamole 25 mg to 50 mg daily” in progress note
    - “Do not continue after discharge” checked for dipyridamole 25 mg and “Continue after discharge” checked for dipyridamole 50 mg on a physician-signed discharge medication reconciliation form
- Deferral of antithrombotic therapy from one physician/APN/PA or pharmacist to another does NOT count as a reason for not prescribing antithrombotic therapy at discharge unless the problem underlying the deferral is also noted.
  - “Consulting neurologist to evaluate pt. for warfarin therapy.” – do not select “No”.
  - “Rule out GI bleed. Start ASA if OK with neurology.” - select “No”.
- An allergy or adverse reaction to one type of antithrombotic would NOT be a reason for not administering all antithrombotics. Another medication can be ordered.

- Anticoagulants at doses (low dose) designed to prevent deep vein thrombosis are insufficient as antithrombotic therapy to prevent recurrent ischemic stroke or TIA. Conversely, antiplatelet agents at doses to prevent recurrent ischemic stroke or TIA are

insufficient therapy to prevent deep vein thrombosis. However, anticoagulants at full therapeutic doses (such as full dose LMW heparin, unfractionated heparin IV, or warfarin) are considered acceptable treatment options for both DVT prophylaxis and antithrombotic medication.

- DVT prevention doses may include:
  - dalteparin (Fragmin): 2500 or 5000 units SQ every day
  - enoxaparin (Lovenox): 30-40 mg SQ every day or 2 times a day
  - fondaparinux (Arixtra): 2.5 mg SQ every day
  - Heparin: 5000 units SQ every 8-12 hrs
  - rivaroxaban (Xarelto) Oral: 10 mg every day for prevention of DVT after hip surgery
- Therapeutic doses, that may prevent DVT and also be effective as therapeutic anticoagulation to prevent stroke, may include:
  - argatroban at any dose IV infusion
  - dabigatran (Pradaxa): 150 mg 2 times a day (75 mg 2 times a day in patients with renal failure)
  - dalteparin (Fragmin) : 100 mg/kg SQ every 12hrs
  - desirudin (Iprivask): 15 mg every 12 hours
  - enoxaparin (Lovenox): 1 mg/kg SQ 2 times a day
  - fondaparinux (Arixtra): 5-10 mg SQ every day
  - Heparin: continuous IV infusion titrated to elevated PTT outside the normal range. Typical ranges could include PTT 50-70 or 60-84; however, IV heparin is not of proven benefit for acute ischemic stroke or secondary prevention of stroke
  - lepirudin (Refludan) at any dose IV infusion
  - rivaroxaban (Xarelto) Oral: 20 mg every day (15 mg every day in patients with renal failure)
- These doses are provided to aid chart abstraction and not as an endorsement of any of the specific medicines for treatment or prevention of stroke. In many cases these medicines are not approved by the FDA for treatment or prevention of stroke, but could reasonably be used off-label for that purpose.

- For inpatient stroke, to compute end of Hospital Day two, count the day of stroke symptom discovery as day one. If antithrombotic therapy was administered by 11:59 PM of the day after stroke symptom discovery, answer “Yes” for this data element. If the patient was receiving antithrombotic therapy prior to date/time stroke discovery you still need to assess whether the patient was receiving antithrombotic therapy by the second hospital day after the discovery of stroke symptoms.

## Examples

- Patient is admitted with a new onset of atrial fibrillation and a minor stroke. He is discharged on dalteparin 100 IU/kg sq twice a day (full dose LMW heparin) along with a plan to start warfarin in 7 days. Select “Yes.”
- Patient is admitted with new onset atrial fibrillation and a minor stroke. He is discharged on enoxaparin 40 mg sq daily for DVT prophylaxis. Select “No.”

## Rationale

Antithrombotic therapy should be prescribed at discharge following acute ischemic stroke to reduce stroke mortality and morbidity as long as no contraindications exist.

## Suggested Data Sources

Consultation notes, Discharge summary, medication reconciliation form, physician orders, progress notes, after visit summary (AVS)

# STK-3: Anticoagulation Medication Prescribed for Atrial Fibrillation/Flutter

## Description

Determine if the patient was prescribed anticoagulation medication at discharge for atrial fibrillation or flutter.

## Required

Yes

## Options

- Yes
- No
- None – contraindicated

## Notes for Abstraction

- In determining whether anticoagulation therapy was prescribed at discharge, it is not uncommon to see conflicting documentation amongst different medical record sources. For example, the discharge summary may list an anticoagulant that is not included in any of the other discharge medication sources (e.g., discharge orders). All discharge medication documentation available in the chart should be reviewed and taken into account by the abstractor.
- Disregard an anticoagulant medication documented only as a recommended medication for discharge (e.g., Recommend sending patient home on dabigatran). Documentation must clarify that an anticoagulant was actually prescribed at discharge.
- Disregard documentation of anticoagulant prescribed at discharge when noted only by medication class (e.g., Anticoagulant Prescribed at Discharge. The anticoagulant must be listed by name.
- If two discharge summaries are included in the medical record, use the one with the latest date/time. If one or both are not dated or timed, and you cannot determine which was done last, use both. This also applies to discharge medication reconciliation forms. Use the dictated date/time over transcribed date/time, file date/time, etc. Examples:
  - Two discharge summaries, one dictated 5/22 (day of discharge) and one dictated 5/27 - Use the 5/27 discharge summary.
  - Two discharge medication reconciliation forms, one not dated and one dated 4/24 (day of discharge) - Use both
- Consider documentation of a hold on an anticoagulant after discharge in one location and a listing of that anticoagulant as a discharge medication in another location as contradictory ONLY if the timeframe on the hold is not defined (e.g., "Hold Coumadin"). Examples of a hold with a defined timeframe include "Hold Coumadin x2 days" and "Hold warfarin until after stress test."
- Select "**Yes**" if the patient was prescribed anticoagulation medication at hospital discharge for atrial fibrillation or flutter. This includes:
  - Inclusions for anticoagulation therapy (all inclusive):

    - Unfractionated heparin IV
    - Full dose LMWH
    - Warfarin (Coumadin)
    - Apixaban (Eliquis)
    - Dabigatran (Pradaxa)
    - Argatroban
    - Fondaparinux (Arixtra)
    - Lepirudin (Refludan)
    - Rivaroxaban (Xarelto)
    - Edoxaban (Savaysa)
    - Desirudin (Iprivask)
    - Ticagrelor (Brilinta)
    - Prasugrel (Effient)
    - Other antithrombotic
  - In cases where there is an anticoagulant in one source that is not mentioned in other sources, it should be interpreted as a discharge medication unless documentation elsewhere in the medical record suggests that it was NOT prescribed at discharge - Consider it a discharge medication in the absence of contradictory documentation.
- Select "**No**" if the patient did NOT have history, persistent, or paroxysmal atrial fibrillation associated with this hospitalization or if there is not a documented reason for not prescribing anticoagulation therapy at hospital discharge. This includes:
  - If the patient was not prescribed anticoagulation medication at discharge or it was not documented that the patient was not prescribed anticoagulation medication at discharge.
  - Patients who are discharged only on low doses (5000 units subQ BID) of heparin or equivalent doses for DVT prophylaxis using LMWH
  - Patients who are discharged only on antiplatelet therapy, without anticoagulation therapy
  - Heparin SQ, Heparin Flush, and Hep-Lock do not count as anticoagulants
  - If documentation is contradictory (e.g., physician noted d/c Coumadin in the discharge orders, but Coumadin is not listed in the discharge summary's discharge medication list), or after careful examination of circumstances, context, timing, etc., documentation raises enough questions, the case should be deemed "unable to determine."
  - If an anticoagulant is NOT listed as a discharge medication, and there is only documentation of a hold or plan to delay initiation/restarting of anticoagulation therapy after discharge (e.g., "Hold Coumadin x2 days," "Start Coumadin as outpatient," "Hold Coumadin").
  - Unacceptable examples:
    - “Consider starting Coumadin in a.m.”
    - “May add warfarin when pt. can tolerate”
    - “Consulting neurologist to evaluate pt. for warfarin therapy.”
- Select “**NC**” if there is documentation by a physician, advanced nurse, physician assistant, or pharmacist in the medical record of a reason for not prescribing anticoagulation therapy at hospital discharge. This includes:

- If any of the following are documented by an physician, APN, PA, or pharmacist: the discharge destination is expired, left against medical advice, or hospice; if the patient did not receive a medication at discharge due to a contraindication; if the patient was comfort measures only; if the treatment was not indicated; or if the patient refused.
- Reasons must be explicitly documented (e.g., “Active GI bleed – anticoagulation therapy contraindicated”, “No warfarin” [no reason given].).
- Physician/APN/PA or pharmacist documentation of a hold on an anticoagulant medication or discontinuation of an anticoagulant medication that occurs during the hospital stay constitutes a “clearly implied” reason for not prescribing anticoagulation therapy at discharge. A hold/discontinuation of all p.o. medications counts if an oral anticoagulant medication (e.g., warfarin) was on order at the time of the notation.
- If there is documentation of a plan to initiate/restart anticoagulation therapy, and the reason/problem underlying the delay in starting/restarting anticoagulation therapy is also noted, this constitutes a “clearly implied” reason for not prescribing anticoagulation therapy at discharge.
- Acceptable examples:
  - “Stool Occult Blood positive. May start Coumadin as outpatient.”
  - “Start warfarin if hematuria subsides.”
- Reasons do NOT need to be documented at discharge or otherwise linked to the discharge timeframe: Documentation of reasons anytime during the hospital stay are acceptable (e.g., mid-hospitalization note stating “no warfarin due to rectal bleeding” - select “NC,” even if documentation indicates that the rectal bleeding has resolved by the time of discharge and warfarin was restarted).
- Crossing out of an anticoagulant medication counts as a "clearly implied reason" for not prescribing anticoagulation therapy at discharge only if on a pre-printed form
- When conflicting information is documented in a medical record, select “NC”.
- When the current record includes documentation of a pre-arrival reason for no anticoagulation therapy, the following counts regardless of whether this documentation is included in a pre-arrival record made part of the current record or whether it is noted by hospital staff during the current hospital stay:
  - Pre-arrival hold/discontinuation or notation such as "No Coumadin" IF the underlying reason/problem is also noted (e.g., “Coumadin held in transferring hospital due to possible GI bleed”)
  - Pre-arrival "other reason" (other than hold/discontinuation or notation of "No warfarin") (e.g., "History GI bleeding with warfarin" in transferring ED record).
- If reasons are not mentioned in the context of anticoagulation therapy, do not make inferences (e.g., do not assume that anticoagulation therapy was not prescribed because of a bleeding disorder unless documentation explicitly states so).
  - Documentation of a conditional hold or discontinuation of an anticoagulant medication does not count as a reason for *not* prescribing an anticoagulant medication at discharge (e.g., “Hold Coumadin if guaiac positive”, “Stop warfarin if rash persists.”).
  - Discontinuation of a particular anticoagulant medication documented in combination with the start of a different anticoagulant medication (i.e., switch

type of anticoagulant medication) does NOT count as a reason for not prescribing an anticoagulant medication at discharge. Examples:
    - "Stop warfarin" and "Start warfarin 2 mg p.o. daily" in same physician order
    - "Change Coumadin to Pradaxa" in progress note
    - "Do not continue after discharge" checked for warfarin and "Continue after discharge" checked for Coumadin on a physician-signed discharge medication reconciliation form
  - Discontinuation of an anticoagulant medication at a particular dose documented in combination with the start of a different dose of that anticoagulant (i.e., change in dosage) does NOT count as a reason for not prescribing an anticoagulant medication at discharge. Examples:
    - "Stop warfarin 5 mg p.o. daily" and "Start warfarin 2.5 mg p.o. daily" in same physician order
    - "Decrease dabigatran 150 mg p.o. BID to 75 mg p.o. BID" in progress note
    - "Do not continue after discharge" checked for Coumadin 5 mg and "Continue after discharge" check for Coumadin 2.5 mg on a physician-signed discharge medication reconciliation form
  - Deferral of anticoagulation therapy from one physician/APN/PA or pharmacist to another does NOT count as a reason for not prescribing anticoagulation therapy at discharge unless the problem underlying the deferral is also noted.
    - Rule out GI bleed. Start Coumadin if OK with neurology." – acceptable documentation for NC
- An allergy or adverse reaction to one type of anticoagulant would NOT be a reason for not administering all anticoagulants. Another medication can be ordered.
- Reasons for NOT PRESCRIBING anticoagulation therapy at hospital discharge:
  - Allergy to all anticoagulant medications
  - Aortic dissection
  - Bleeding disorder
  - Brain/CNS cancer
  - CVA, hemorrhagic
  - Extensive/metastatic CA
  - Hemorrhage, any type
  - Intracranial surgery/biopsy
  - Patient/family refusal
  - Peptic ulcer
  - Planned surgery within 7 days following discharge
  - Risk of bleeding
  - Unrepaired intracranial aneurysm
  - Other documented by physician/APN/PA or pharmacist

## 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. 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. 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.

- Patients with Atrial fib/flutter are at increased risk for stroke. This includes patients who have atrial fibrillation or flutter during the hospital stay or patients who have a history of any Afib/Flutter including PAF documented in the medical record, even without evidence of atrial fibrillation or flutter during the current hospitalization. Even in patients who have undergone catheter ablation therapy there is uncertainty as to what the risk of recurrence of AF is over the long term, AF can recur without symptoms and be unrecognized by the patient or physician. Therefore anticoagulation is still indicated for stroke patients with catheter ablation therapy for AF.

## Suggested Data Sources

Consultation notes, Discharge summary, Medication reconciliation form physician orders, progress notes, after visit summary (AVS)

# STK-6: Cholesterol Reducing Treatment

## Description

Determine the cholesterol reducing/controlling medication the patient was been prescribed upon discharge.

## Required

Yes

## Options

- Statin
  - Statin medication and statin dosage (required)
  - Statin intensity
  - Documented reason for not prescribing guideline recommended statin dose? (required if statin intensity below guideline)
    - Intolerant to moderate (>75 years) or high (≤ 75 years) intensity statin
    - No evidence of atherosclerosis (cerebral, coronary, or peripheral vascular disease)
    - Other documented reason
    - Unknown
- Fibrate
- Niacin
- Absorption Inhibitor
- PCSK9
- Other
- None - contraindication
- None prescribed/ Not Documented
- If statin is not prescribed or selected:
  - Documented reason for not prescribing a statin at discharge (required)
    - Yes
    - No/ND

## Notes for Abstraction

- Reference Appendix C, Table 6. "Cholesterol Reducing/Controlling Medications" in the *Minnesota Stroke Registry Abstraction Manual* for inclusions.
- For combination agents, select both medication classes. (e.g. Patient is prescribed Vytorin), select “Statin” AND “Absorption inhibitor.”
- Table 6 in the Minnesota stroke Registry Abstraction Manual lists cholesterol reducing medications by name and drug class.
- Select **“Statin”**: See Table 6 for a list statin containing medications.
  - If **“Statin”**, sub-options will appear to collect more information.
    - *“Statin Medication”* is a required sub-option to select the statin medication the patient was prescribed.
    - *“Statin Dosage”* is a required sub-option to select the statin dosage prescribed. Select “Unknown” if information is unavailable.

- Statin medications are routinely prescribed to be taken once daily. If the patient is prescribed a statin dose to be taken more than once daily, add the individual doses and enter as "Total Daily Dosage."
- If the patient is prescribed Atorvastatin (Lipitor) at a total daily dose of 40 mg or greater, select "≥ 40 mg". 40 mg is the minimum daily dosage which qualifies as intensive statin therapy. For all other dosages, select the specific total daily dose prescribed.
- If the patient is prescribed Rosuvastatin (Crestor) at a total daily dose of 20 mg or greater, select ≥ 20 mg. 20 mg is the minimum daily dosage which qualifies as intensive statin therapy. For all other dosages, select the specific total daily dose prescribed.

- "*Statin Intensity"* will populate based on selected statin medication and dosage.
  - You will be required to document a reason for non-treatment if the statin daily dose does not meet the guideline recommended dose. Patients 75 years or younger should receive a high intensity statin dose unless contraindicated. Patients greater than 75 years should receive a moderate or high dose
- If "*Statin Intensity,"* is below guideline recommend dose, a required sub-option will appear to record if there is a "*Documented reason for not prescribing guideline recommended dose?"*
  - Reasons for not prescribing guideline recommended dose for statin therapy at discharge must be documented by a physician, PA, or APN.
  - Reasons for not prescribing guideline recommended dose must be mentioned in the context of statin therapy intensity, do not make inferences. (e.g. Do not assume that more intense statin therapy is not being prescribed because a patient has muscle pain and weakness. Documentation must make muscle pain or weakness to a reason for not prescribing a higher dose of statin therapy.)
  - Select *"Intolerant to moderate or greater intensity"* if there is documentation in the medical record that the reason for not prescribing guideline recommended dose is that the patient was intolerant to a higher intensity statin than prescribed.
    - Acceptable examples include: "patient intolerant to greater intensity statin, maintain current dose", "muscle pain in past, trial of low dose statin", "chronic kidney disease - proceed with 10mg Simvastatin"; "liver disease so intolerant to higher dose".
  - Select "*No evidence of atherosclerosis (cerebral, coronary or peripheral vascular disease)"*, if there is documentation that the patient's stroke is not of atherosclerotic origin AND there is no other history or evidence that the patient has atherosclerosis.
  - Select *"Other documented reasons"* may include patient/family refusal to increase statin dose.
  - Select "*Unknown/ND*" if the reason for not prescribing a guideline recommended dose is not documented in the medical record.

- Select **"Fibrate"**: See Table 6 for a list of fibrate medications
- Select **"Niacin"**: See Table 6 for a list of niacin containing medications

- Select **"Absorption Inhibitor"**: See Table 6 for a list of absorption inhibitor containing medications
- Select **"PCSK9"**: See Table 6 for a list of PCSK9 medications
- Select **"Other"**: See Table 6 for a list of other medications
- In determining whether cholesterol reducing therapy was prescribed at discharge, it is not uncommon to see conflicting documentation among different medical record sources. For example, the discharge summary may list a drug that is not included in any of the other discharge medication sources (e.g., discharge orders). All discharge medication documentation available in the medical record should be reviewed and taken into account by the abstractor.
  - In cases where there is a cholesterol reducing drug noted in one source that is not mentioned in other sources, it should be interpreted as a discharge medication (select the specified class of cholesterol reducer) unless documentation elsewhere in the medical records suggest that it was NOT prescribed at discharge – Consider it a discharge medication in the absence of contradictory documentation.
  - Consider documentation of a hold on a statin medication after discharge in one location and a listing of that statin medication as a discharge medication in another location as contradictory ONLY if the timeframe on the hold is not defined (e.g., "Hold lovastatin"). Examples of a hold with a defined timeframe include "Hold Vytorin x2 days" and "Hold lovastatin until ALT/AST normalize."
  - If two discharge summaries are included in the medical record, use the one with the latest date/time. If one or both are not dated or timed, and you cannot determine which was done last, use both. This also applies to discharge medication reconciliation forms. Use the dictated date/time over transcribed date/time, file date/time, etc. Examples:
    - Two discharge summaries, one dictated 5/22 (day of discharge) and one dictated 5/27 - Use the 5/27 discharge summary.
    - Two discharge medication reconciliation forms, one not dated and one dated 4/24 (day of discharge) - Use both.
- Disregard a statin medication documented only as a recommended medication for discharge (e.g., "Recommend sending patient home on lovastatin"). Documentation must clarify that a statin was actually prescribed at discharge.
- Disregard documentation of statin prescribed at discharge when noted only by medication class (e.g., "Statin Prescribed at Discharge"). The statin must be listed by name.
- Select "**None-contraindication**" if there is documentation of a reason for not prescribing cholesterol-reducing treatment at discharge. Reasons for not prescribing cholesterol reducing medication must be documented by a physician, advance practice nurse or physician assistant.
  - Documented reasons for not prescribing cholesterol reducing treatment may include (list is not all-inclusive):
    - Allergy to or complication related to cholesterol reducing treatment
      - Documentation of an allergy/sensitivity to one particular statin medication is acceptable to take as an allergy to the entire class of statin medications (e.g., "Allergic to Lipitor").

        - An allergy or adverse reaction to one class of cholesterol reducing medications would NOT be a reason for not administering all cholesterol reducing medications. Another medication class can be ordered. (e.g. If patient is allergic to statins, a fibrate could be prescribed).
      - Patient/family refusal
      - Terminal illness/Comfort Measures Only
      - Hepatitis
      - Hepatic failure
      - Myalgias
      - Rhabdomyolysis
      - ICH within prior 6 months
      - Patient does not meet ATP III criteria and has a stroke not of atherosclerotic origins
      - Patients who meet Adult Treatment Panel (ATP) III criteria (1) should receive lipid-lowering therapy. The conditions that reflect systemic atherosclerosis and therefore meet ATP III criteria include: Clinical coronary heart disease; symptomatic carotid artery disease; peripheral arterial disease; abdominal aortic aneurysm and diabetes mellitus. Patient may also meet ATP III criteria based on their Framingham Risk score.
- Select "**None prescribed/Not Documented**" if no cholesterol medications were prescribed to the patient at discharge or if you are unable to determine from the medical record. This include:
  - If documentation is contradictory (e.g., MD noted discontinuation of the cholesterol reducing therapy in the discharge medication orders, but it is listed in the discharge summary's discharge medication list), or after careful examination of circumstances, context, timing, etc., documentation raises enough questions, the case should be deemed "unable to determine".
  - When there is a documented plan to delay initiation/restarting of a cholesterol reducing therapy for a time period after discharge.
- If "**Statin"** is **NOT** selected, a required sub-option will appear to indicate if there was a documented reason for not prescribing a *statin* at discharge:
  - Select "*Yes*" if there is documentation of a reason for not prescribing a statin medication at discharge. This includes:
    - Reasons do NOT need to be documented at discharge or otherwise linked to the discharge timeframe: Documentation of reasons anytime during the hospital stay are acceptable (e.g., mid-hospitalization note stating "no statin medications due to abnormal liver enzymes", even if documentation indicates that the liver enzyme levels normalized by the time of discharge and the lipid-lowering medication was restarted).
    - Crossing out of a statin medication counts as a "clearly implied reason" for not prescribing statin medication at discharge only if on a pre-printed form.
    - Reasons for not prescribing a statin medication at discharge:
      - Documented statin medication allergy or sensitivity.
        - A statin medication "allergy" or "sensitivity" documented at anytime during the hospital stay counts as an allergy regardless of what type of

reaction might be noted (e.g., "Allergies: Atorvastatin - Nausea" - select "Yes.").
    - Documentation of an allergy/sensitivity to one particular statin medication is acceptable to take as an allergy to the entire class of statin medications (e.g., "Allergic to Lipitor").
- Other reasons documented by physician/advanced practice nurse/physician assistant (physician/APN/PA) or pharmacist. Patient/family refusal of any form of statin therapy may be documented by a nurse.
    - Reasons must be explicitly documented (e.g., "Chronic liver failure - Statins contraindicated", "Hx muscle soreness with statins in past") or clearly implied (e.g., "No evidence of atherosclerosis - no statin therapy", "Pt. refusing all medications," "Supportive care only - no medication," statin medication on pre-printed order form is crossed out, "Statins not indicated," "No statin medications" [no reason given]). If reasons are not mentioned in the context of statin medications, do not make inferences (e.g., do not assume that a statin medication is not being prescribed because of the patient's history of alcoholism or severe liver disease alone).
    - Physician/APN/PA or pharmacist documentation of a hold on a statin medication or discontinuation of a statin medication that occurs during the hospital stay constitutes a "clearly implied" reason for not prescribing a statin medication at discharge. A hold/discontinuation of all p.o. medications counts if statin medication p.o. was on order at the time of the notation.
- LDL-c less than 70 mg/dL
    - Documentation of a LDL-c less than 70 mg/dL anytime during the hospital stay is an acceptable stand-alone reason for not prescribing statin medication at discharge – Linkage with statin is not needed. If more than one LDL value is documented, the highest value must be less than 70 mg/dL. Direct or calculated fasting or non-fasting values are both acceptable. LDL values obtained within 30 days prior to hospital arrival are acceptable

- Select "*No/ND"* if there is no documentation of a reason for not prescribing a statin medication at discharge, OR unable to determine from medical record documentation.
    - Reason documentation which refers to a more general medication class is not acceptable (e.g., "No cholesterol-reducers", "Hold all lipid-lowering medications").

## Examples

- The patient is admitted to the in-patient unit with right hemiparesis and dysarthria. His pre-admission medications were lisinopril, aspirin, metformin and furosemide. His metformin is held but all other medications are continued. LDL is noted to be 180 and he has a recent non-q wave MI. He is discharged on day 5 on his original pre-admission medications and pravastatin plus a low-cholesterol diet. Select "Statin".
- Patient was admitted with cardio embolic ischemic stroke and no other vascular risk factors. The patient has elevated cholesterol with LDL measurement of 115 mg/dL and is discharged on atorvastatin 20 mg. The physician documents that the patient is not a

candidate for intensive statin therapy due to no atherosclerosis. Select "No evidence of atherosclerosis".

## Rationale

If a reason for not prescribing a statin medication is documented, this is an exclusion for STK-6: Discharged on Statins.

## Suggested Data Sources

- Consultation notes, Discharge summary, Emergency department record, History and Physical, Medication Administration Record, Medication Reconciliation form, Physician orders, Progress Notes
- Excluded data sources: Any documentation dated/timed after discharge, except discharge summary.

# Antihypertensive Medication Prescribed

## Description

Determine if antihypertensive treatment was prescribed at discharge.

## Required

Yes

## Options

- Yes
- No
- None – contraindication

## Notes for Abstraction

- Select "**Yes**" if antihypertensive treatment was prescribed to the patient at discharge. Reference Appendix C, Table 5. "Antihypertensive Medications" in the *Minnesota Stroke Registry Abstraction Manual* for inclusions.
- Select "**No/Not Documented**" if the antihypertensive treatment was not prescribed to the patient at discharge or based upon the medical record the prescribing of antihypertensive treatment at discharge was not documented.
- Select "**NC**" if there is a documented reason for not prescribing an anti-hypertensive medication at discharge.

## Examples

- Patient 350a is admitted to the in-patient unit with right hemiparesis and dysarthria. His pre-admission medications were lisinopril, aspirin, metformin and furosemide. His metformin is held but all other medications are continued. Paroxysmal atrial fibrillation (PAF) is noted during admission but he returns to sinus rhythm spontaneously. He is discharged on day 5 on his original pre-admission medications and the DASH diet. Select "Yes"
- The notes for Patient 350b document critical intracranial stenosis. At discharge his blood pressure is 100/60 and his lisinopril and furosemide were held with a plan to restart if BP increases. Data entry would be to select "NC".

## Rationale

The Minnesota Stroke Registry Program is interested in measuring those cases that are discharged with medications that control hypertension, since hypertension control is important for secondary stroke prevention.

## Suggested Data Sources

Medication order sheets, discharge summary, progress notes, after visit summary (AVS)

# Modified Rankin Scale at Discharge

## Description

Determine if there was a Modified Rankin Scale (mRS) performed at discharge.

## Required

Yes

## Options

- Yes
  - Modified Rankin Scale Score
    - 0 - No symptoms
    - 1 - No significant disability despite symptoms
    - 2 - Slight disability
    - 3 - Moderate disability, can walk without assistance
    - 4 - Moderate to severe disability, needs assistance to walk
    - 5 - Severe disability, bedridden
    - 6 - Death
- No/Not Documented

## Notes for Abstraction

- Select "**Yes"** if a Modified Rankin Scale (mRS) was performed at discharge. This includes if a mRS measurement has not been documented in the medical record, but if sufficient information is available from the physical therapy (PT) notes, occupational therapy (OT) notes, and/or other sources to allow a mRS to be assigned retrospectively assigned mRS score may be entered into the case report form.
  - If "**Yes**," a required sub-option will appear to record the *"Modified Rankin Scale Score"* at discharge.
    - The mRS is a 6- point disability scale with possible scores ranging from 0 to 5. A separate category of 6 is usually added for patients who expire.
    - The mRS may be documented by the physician/APN/PA, RN, medical assistant, or any individual trained to performed mRS.
    - If there is more than 1 measured, use the mRS measured closest to hospital discharge. Ideally the mRS will be measured at discharge.
    - Do not use mRS Score or information collected post-discharge or outside of this episode of care.
- Select "**No/Not Documented**" if the mRS was not measured or documented and a mRS cannot be assigned retrospectively.
- Two formal scoring methods for the mRS are the Simplified Questionnaire (SQ) and the Rankin Focused Assessment (RFA).
  - The Simplified Questionnaire may not be the most appropriate for use in the pre-discharge setting.

- The more detailed Rankin Focused Assessment may be more appropriate for use at post-discharge visits, but also may be helpful to use selectively for cases in which pre-discharge scoring based on the SQ is uncertain.

## Rationale

This mRS assessment is intended to measure disability or dependence at the time of discharge.

## Suggested Data Sources

Admission data, hospitalization data, discharge data

# Ambulation Status at Discharge

## Description

Determine the patient's walking status at discharge

## Required

Yes

## Options

- Able to ambulate independently with or without a device
- With assistance (from person)
- Unable to ambulate
- Not Documented

## Notes for Abstraction

- Select "**Able to ambulate independently (no help from another person) with or without device**" if the patient is ambulating without assistance (no help from another person) with or without a device. This means patient is able to ambulate without help from another person. The use of a device, such as a cane, still meets this definition. Patient ambulating to and from the bathroom unassisted. Even though actual ambulation is not documented in the medical record, privileges to walk to and from the bathroom and evidence of the patient getting out of bed unassisted are considered to meet the definition of ambulation.
- Select "**With assistance (from person)**" if the patient is ambulating with assistance of another person.
- Select "**Unable to ambulate**" if the patient is on bedrest. Patient is only getting out of bed to the bedside commode (or up in chair) and is primarily in the bed (or immobile) at discharge
- Select "**ND**": If it is unable to determine the patient's walking status at discharge from documentation.

## Examples

- Patient has privileges to walk to and from the bathroom unassisted but there is no further evidence of walking by at discharge. Select "Able to ambulate independently with or without a device" as this patient would be considered able to walk.
- Patient has orders written for "bathroom with assist." There is no other documentation in the medical record to indicate that the patient is in fact walking at discharge. Select "Unable to ambulate" as this patient would be considered not able to walk. An order of "bathroom with assist" without additional evidence of walking would not count as walking.
- Patient is walking with assistance from nursing. There is documented evidence of the patient walking around the unit with assistance from his nurses. Select "With Assistance (from person)" as this patient is considered walking.

## Rationale

Walking status at discharge is used to assess the disability burden of patients when compared to the walking status of the patient prior to the current event and by the day after admission.

## Suggested Data Sources

Discharge summary, physical or occupational therapy notes, progress notes

# STK-8 Education: Risk Factors for Stroke

## Description

Determine whether the patient/caregiver received written instructions or educational materials that address risk factors for stroke.

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- Select "**Yes**" if written instructions/educational material that address risk factors for stroke are given to the patient or caregiver (the caregiver is defined as the patient's family or any other person (e.g., home health/VNA provider) who will be responsible for care of the patient after discharge). This includes if the patient refused written instructions/material which addressed risk factors for stroke.
  - The caregiver is defined as the patient's family or any other person (e.g. home health, VNA provider, prison official or other law enforcement personnel) who will be responsible for care of the patient after discharge.
  - Educational material must specifically address risk factors for stroke.
  - Inclusions for risk factors for stroke are (not all inclusive):
    - Age
    - Atrial fibrillation
    - Carotid artery stenosis
    - Carotid/peripheral or other artery disease
    - Cigarette smoking
    - Diabetes mellitus
    - Excessive alcohol consumption
    - Heredity (family history)
    - High blood pressure
    - Other heart disease (e.g., coronary heart disease, heart failure, dilated cardiomyopathy)
    - Overweight (BMI >= 25)
    - Physical inactivity
    - Poor diet (e.g., high in saturated fat, trans fat, cholesterol or sodium)
    - Prior stroke, TIA or heart attack
    - Race
    - Sex (gender)
    - Sickle cell disease (also called sickle cell anemia )
  - Individual risk factors that are not mentioned in the context of education provided on the risk factors for stroke, do not count (e.g., discharge instruction to limit alcohol

without explicit documentation that excessive alcohol consumption is a risk factor for stroke).
    - Acceptable materials include discharge instruction sheets, brochures, booklets, teaching sheets, videos, CDs, and DVDs.
        - Documentation must clearly convey that the patient/caregiver was given a copy of the material to take home. When the material is present in the medical record and there is no documentation which clearly suggests that a copy was given, the inference should be made that it was given IF the patient's name or the medical record number appears on the material AND hospital staff or the patient/caregiver has signed the material.
    - Use only documentation provided in the medical record itself. Do not review and use outside materials in abstraction. Do not make assumptions about what content may be covered in material documented as given to the patient/caregiver.
    - Written instructions given anytime during the hospital stay are acceptable.
    - If documentation indicates that written instructions/material on risk factors for stroke were not given because the patient is cognitively impaired (e.g., comatose, obtunded, confused, short-term memory loss) and has no caregiver available, select “Yes”.
- Select “**No/ND**” if patient or caregiver did not receive written instructions or educational material that address risk factors for stroke, or it was not documented that the patient received written instructions or educational material that address risk factors for stroke.

## Rationale

Adequate understanding of the cause and manifestations of the stroke, its treatment, and the prognosis are particularly important, as is counseling to help the patient and family deal with their concerns. Patient education should include information about the event, the role of various medications or prevention strategies, as well as desirable lifestyle modifications to reduce risk or improve outcomes.

Patient education programs for specific chronic conditions have increased healthful behaviors, improved health status, and/or decreased health care costs of their participants.

## Suggested Data Sources

Discharge instruction sheet, discharge summary, education record, home health referral form, nursing discharge notes, nursing notes, progress notes, teaching sheet, after visit summary (AVS)

# STK-8 Education: Stroke Warning Signs & Symptoms

## Description

Determine whether the patient/caregiver received educational materials that address the warning signs and symptoms of stroke.

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- Select "**Yes**", if written instructions/educational material address warning signs and symptoms of stroke were given to the patient or caregiver (the caregiver is defined as the patient's family or any other person (e.g. home health, VNA provider, prison official or other law enforcement personnel) who will be responsible for care of the patient after discharge.).
  - This includes if the patient refused written instructions/material which addressed stroke warning signs and symptoms or if documentation indicates that written instructions/material on warning signs and symptoms of stroke were not given because the patient is cognitively impaired (e.g., comatose, obtunded, confused, short-term memory loss) and has no caregiver available
  - Inclusions for Warning Signs and Symptoms of Stroke (not all inclusive)
    - Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
    - Sudden confusion, trouble speaking or understanding
    - Sudden trouble seeing in one or both eyes
    - Sudden trouble walking, dizziness, loss of balance or coordination
    - Sudden severe headache with no known cause
  - Do not make assumptions about what content may be covered in material given to the patient/caregiver.
  - Acceptable materials include discharge instruction sheets, brochures, booklets, teaching sheets, videos, CDs, and DVDs.
    - Documentation must clearly convey that the patient/caregiver was given a copy of the material to take home. When the material is present in the medical record and there is no documentation which clearly suggests that a copy was given, the inference should be made that it was given IF the patient's name or the medical record number appears on the material AND hospital staff or the patient/caregiver has signed the material.
    - Use only documentation provided in the medical record itself. Do not review and use outside materials in abstraction. Do not make assumptions about what content may be covered in material documented as given to the patient/caregiver.

  - Include instructions which address what to do if warning signs or symptoms of stroke are noted. Example: “Call 911 immediately if sudden numbness or weakness of an extremity is noted.”
  - Written instructions given anytime during the hospital stay are acceptable.
- Select “**No/ND**” if patient or caregiver did not receive written instructions or educational material that address the warning signs and symptoms of stroke, or it was not documented that the patient received written instructions or educational material that address the warning signs and symptoms of stroke.

## Rationale

The patient may be at risk for a second stroke event. The patient/caregiver ought to be made aware of the signs of stroke so that early treatment can be sought.

Patient education programs for specific chronic conditions have increased healthful behaviors, improved health status, and/or decreased health care costs of their participants.

## Suggested Data Sources

Discharge instruction sheet, Discharge summary, Education record, Home health referral form, Nursing discharge notes, Nursing notes, Progress notes, Teaching sheet, After Visit Summary (AVS)

# STK-8 Education: How to Activate EMS for Stroke

## Description

Determine whether the patient/caregiver received educational materials that address the need for activation of the emergency medical system (EMS) if signs or symptoms of stroke occur.

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- Select "**Yes**", if written instructions/educational material address the need for activation of the emergency medical system (EMS) if signs or symptoms of stroke occur were given to the patient or caregiver (the caregiver is defined as the patient's family or any other person (e.g. home health, VNA provider, prison official or other law enforcement personnel) who will be responsible for care of the patient after discharge.).
  - This includes if the patient refused written instructions/material which addressed activation of the emergency medical system (EMS) if signs or symptoms of stroke occur or if documentation indicates that written instructions/material on activation of the emergency medical system (EMS) were not given because the patient is cognitively impaired (e.g., comatose, obtunded, confused, short-term memory loss) and has no caregiver available
  - Educational material must address activation of the emergency medical system if signs or symptoms of stroke occur.
    - Warning signs and symptoms of stroke:
      - Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
      - Sudden confusion, trouble speaking or understanding
      - Sudden trouble seeing in one or both eyes
      - Sudden trouble walking, dizziness, loss of balance or coordination
      - Sudden severe headache with no known cause
    - Example: "Call 911 immediately if sudden numbness or weakness of an extremity is noted".
  - Do not make assumptions about what content may be covered in material given to the patient/caregiver.
  - Acceptable materials include discharge instruction sheets, brochures, booklets, teaching sheets, videos, CDs, and DVDs.
    - Documentation must clearly convey that the patient/caregiver was given a copy of the material to take home. When the material is present in the medical record and there is no documentation which clearly suggests that a copy was given, the inference should be made that it was given IF the patient's name or the medical

record number appears on the material AND hospital staff or the patient/caregiver has signed the material.
    - Use only documentation provided in the medical record itself. Do not review and use outside materials in abstraction. Do not make assumptions about what content may be covered in material documented as given to the patient/caregiver.
    - Written education materials given anytime during the hospital stay are acceptable.
  - Written instructions given anytime during the hospital stay are acceptable.
- Select "**No/ND**" if patient or caregiver did not receive written instructions or educational material that address the need for activation of the emergency medical system (EMS) if signs or symptoms of stroke occur, or it was not documented that the patient received written instructions or educational material that address the need for activation of the emergency medical system (EMS) if signs or symptoms of stroke occur.

## Rationale

Immediate activation of the emergency medical system by calling 911 or another EMS number improves hospital arrival time and the likelihood of thrombolytic administration.

## Suggested Data Sources

Discharge instruction sheet, Discharge summary, Education record, Home health referral form, Nursing discharge notes, Nursing notes, Progress notes, Teaching sheet, After Visit Summary (AVS)

# STK-8 Education: Need for Follow-Up After Discharge

## Description

Determine whether the patient/caregiver received educational materials that address the need for continuing medical care after discharge.

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- Select "**Yes**" if written instructions/educational material that address the need for continuing medical care after discharge given to patient or caregiver (Caregiver is defined as the patient's family or any other person (e.g., home health/VNA provider) who will be responsible for care of the patient after discharge).
  - This includes if the patient refused written instructions/material which addressed follow-up or if documentation indicates that written instructions/material on follow-up after discharge were not given because the patient is cognitively impaired (e.g., comatose, obtunded, confused, short-term memory loss) and has no caregiver available.
  - In the absence of explicit documentation that follow-up involves contact with a physician/APN/PA, the abstractor may infer contact with a physician/APN/PA, unless documentation suggests otherwise (e.g., BP check, laboratory work only).
  - Documentation must clearly convey that the patient/caregiver was given a copy of the education material to take home.
    - In the absence of explicit documentation that follow-up involves contact with a physician/APN/PA, the abstractor may infer contact with a physician/APN/PA, unless documentation suggests otherwise (e.g., BP check, laboratory work only).
    - If documentation indicates that written instructions/material on the need for continuing medical care after discharge were not given because the patient is cognitively impaired (e.g., comatose, obtunded, confused, short-term memory loss) and has no caregiver available, select "Yes".
  - Do not make assumptions about what content may be covered in material given to the patient/caregiver.
  - Acceptable materials include discharge instruction sheets, brochures, booklets, teaching sheets, videos, CDs, and DVDs.
    - Documentation must clearly convey that the patient/caregiver was given a copy of the material to take home. When the material is present in the medical record and there is no documentation which clearly suggests that a copy was given, the inference should be made that it was given IF the patient's name or the medical

record number appears on the material AND hospital staff or the patient/caregiver has signed the material.
    - Use only documentation provided in the medical record itself. Do not review and use outside materials in abstraction. Do not make assumptions about what content may be covered in material documented as given to the patient/caregiver.
  - Written instructions given anytime during the hospital stay are acceptable.
- Select "**No/ND**" if patient or caregiver did not receive written instructions or educational material that address the need for continuing medical care after discharge, or it was not documented that the patient received written instructions or educational material that address the need for continuing medical care after discharge. Examples include:
  - Follow-up prescribed on PRN (or as needed basis)
  - Follow-up noted only as Not Applicable (N/A), None, or left blank
  - Pre-printed follow-up appointment instruction with all fields left blank (e.g., "Please return for follow up appointment with Dr. [blank line] on [blank line]", "Make an appointment with your physician in [blank line] for follow up"), unless next to checked checkbox.

## Rationale

Adequate understanding of the cause and manifestations of the stroke, its treatment, and the prognosis are particularly important, as is counseling to help the patient and family deal with their concerns. Patient education should include information about the event, the role of various medications or prevention strategies, as well as desirable lifestyle modifications to reduce risk or improve outcomes.

Patient education programs for specific chronic conditions have increased healthful behaviors, improved health status, and/or decreased health care costs of their participants.

## Suggested Data Sources

Discharge instruction sheet, Discharge summary, Education record, Home health referral form, Nursing discharge notes, Nursing notes, Progress notes, Teaching sheet, After Visit Summary (AVS).

# STK-8 Education: Medications Prescribed at Discharge

## Description

Determine if the patient/caregiver received educational materials covering all medications prescribed at discharge.

## Required

Yes

## Options

- Yes
- No/Not Documented

## Notes for Abstraction

- The caregiver is defined as the patient's family or any other person (e.g. home health, VNA provider, prison official or other law enforcement personnel) who will be responsible for care of the patient after discharge
- Select "**Yes**" if the patient or caregiver received educational materials covering all medications prescribed at discharge. The caregiver is defined as the patient's family or any other person (e.g. home health, VNA provider, prison official or other law enforcement personnel) who will be responsible for care of the patient after discharge.
- This includes if the patient refused written discharge instructions/material which addressed discharge medications or If documentation indicates that written instructions/material on discharge medications were not given because the patient is cognitively impaired (e.g., comatose, obtunded, confused, short-term memory loss) and has no caregiver available.
    - To determine whether patients received educational materials covering all medications at discharge, follow the following steps:
        - Instructions must address at least the names of all discharge medications but may also include other usage instructions such as dosages, frequencies, side effects, etc. The importance of medications prescribed to prevent a second stroke (e.g., Plavix) should be emphasized.
        - Determine all of the medications being prescribed at discharge, based on available medical record documentation.
            - Discharge medication information included in a discharge summary dated after discharge should be used as long as it was added within 30 days after discharge.
            - If two discharge summaries are included in the medical record, use the one with the latest date/time. If one or both are not dated or timed, and you cannot determine which was done last, use both. This also applies to discharge medication reconciliation forms. Use the dictated date/time over transcribed date/time, file date/time, etc. Examples:
                - Two discharge summaries, one dictated 5/22 (day of discharge) and one dictated 5/27 - Use the 5/27 discharge summary.

    - Two discharge medication reconciliation forms, one not dated and one dated 4/24 (day of discharge) - Use both.
  - If discharge medications are noted using only references such as “continue home meds,” “resume other meds,” or “same medications,” rather than lists of the names of the discharge medications, the abstractor should use all sources to compile a list of medications the patient was on prior to arrival (or in the case of acute care transfers, use the medications the patient was on prior to arrival at the first hospital).
  - Disregard all references to laxatives, antacids, vitamins, minerals (EXCEPT potassium), food supplements, and herbs, prn or not, AND disregard references to medications by class only (e.g., “heparinoids”) where the specific medication name is not specified. They are NOT required in the written instructions for the purposes of the Stroke Education measure (STK-8).
  - PRN medications are required on the discharge instructions, with one exception: When discharge medications outside of the written discharge instructions are noted using ONLY references such as “continue current medications” or “continue present meds,” rather than lists of the names of the discharge medications, and the abstractor is referencing what medications the patient was taking on the day of discharge (for comparison against the written discharge instructions, to confirm completeness of that list), medications which are clearly listed as prn (given on an as needed basis only) do NOT need to be included in the instructions.
  - Oxygen should not be considered a medication.
  - Medications which the patient will not be taking at home (and/or the caregiver will not be giving at home) are NOT required in the medication list included in the written discharge instructions (e.g., monthly B12 injections, dialysis meds, chemotherapy).
- Check this list against the written discharge instructions given to the patient to ensure that these instructions addressed at least the names of all of the discharge medications. If a list of discharge medications is not documented elsewhere in the record, and the completeness of the medication list in the instructions cannot be confirmed as complete, or it can be determined to be incomplete, select “No”.
  - EXCEPTION: If a comparison list is not available, and the discharge list in the written discharge instructions cannot be determined to be complete or incomplete, but the written discharge instructions have the name or initials of the physician/advanced practice nurse/physician assistant (physician/APN/PA) signed on the form, presume the list of discharge medications in those instructions is complete. Signatures that are dated/ timed after discharge are not acceptable.
  - In making medication name comparisons, consider two medications that are brand/trade name vs. generic name in nature or that have the same generic equivalent as matches.
    - Examples of matches:
      - Coumadin vs. Warfarin
      - ASA vs. EC ASA

    - Plavix vs. Clopidogrel
    - Mevacor vs. Lovastatin
    - Lopressor vs. Metoprolol
    - Metoprolol vs. Metoprolol succinate
  - Examples of mismatches: Lopressor vs. Toprol
- If there is documentation that the patient was discharged on insulin(s) of ANY kind, ANY reference to insulin as a discharge medication in the written discharge instructions can be considered a match, for the purposes of the Stroke Education measure (STK-8). E.g., D/C summary notes patient discharged on “Humulin Insulin” and “Insulin 70/30” is listed on the discharge instruction sheet – Consider this a match. However, contradictory documentation abstraction guidelines still apply to insulin cases (e.g., D/C summary notes patient discharged on “Novolog 50 units t.i.d.” and “Novolog 50 units t.i.d.” is discontinued on discharge medication reconciliation form – Select “No”).

- In determining the medications prescribed at discharge (step 1 above), all discharge medication documentation available in the chart should be reviewed and taken into account by the abstractor.
- If there is a medication in one source that is not mentioned in other sources, take it as a discharge medication (i.e., required in the written discharge instructions) unless documentation elsewhere in the medical record suggests that it was NOT prescribed at discharge - Consider it a discharge medication in the absence of contradictory documentation.
  - If documentation is contradictory (e.g., physician noted “d/c ASA” in the discharge orders, but it is listed in the discharge summary’s discharge medication list), or, after careful examination of circumstances, context, timing, etc., documentation raises enough questions about what medications are being prescribed at discharge, the case should be deemed "unable to determine” (select "No”), regardless of whether the medication in question is included in the written discharge instructions.
  - If there is documentation of a plan to start/restart a medication after discharge or a hold on a medication for a defined timeframe after discharge (e.g., “Start Plavix as outpatient,” “Hold Lasix x 2 days,” “Hold ASA until after endoscopy”):
    - If it is NOT listed as a discharge medication elsewhere (e.g., “Lasix,” “Plavix”), it is not required in the discharge instructions (but if it is listed on the instructions, this is acceptable).
    - If it IS listed as a discharge medication elsewhere (e.g., “Lasix,” “Plavix”), do not regard this as contradictory documentation, and require the medication in the discharge instructions.
  - Disregard a medication documented only as a recommended medication for discharge. E.g., “Recommend sending patient home on Vasotec” – Vasotec is not required in the discharge instructions (but if it is listed on the instructions, this is acceptable). Documentation must clarify that such a medication was actually prescribed at discharge.
- Acceptable materials include discharge instruction sheets, brochures, booklets, teaching sheets, videos, CDs, and DVDs.

        - Documentation must clearly convey that the patient/caregiver was given a copy of the material to take home. When the material is present in the medical record and there is no documentation which clearly suggests that a copy was given, the inference should be made that it was given IF the patient's name or the medical record number appears on the material AND hospital staff or the patient/caregiver has signed the material.
        - Use only documentation provided in the medical record itself. Do not review and use outside materials in abstraction. Do not make assumptions about what content may be covered in material documented as given to the patient/caregiver.
    - Written instructions given anytime during the hospital stay are acceptable.
- Select "**No/ND**" if the patient or caregiver did not receive educational materials covering all medications prescribed at discharge or it was not documented that the patient or caregiver received educational materials covering all medications prescribed at discharge.
    - Do not give credit in cases where the patient was given written discharge medication instructions only in the form of written prescriptions.
    - Any general reference to a medication regimen (e.g., "continue home meds" listed on discharge instruction sheet), without specific documentation of medication names does not qualify for this data element.

## Rationale

Adequate understanding of the cause and manifestations of the stroke, its treatment, and the prognosis are particularly important, as is counseling to help the patient and family deal with their concerns. Patient education should include information about the event, the role of various medications or prevention strategies, as well as desirable lifestyle modifications to reduce risk or improve outcomes.

## Suggested Data Sources

Discharge instruction sheet, Discharge progress notes, Discharge summary, Home health referral form, Medication reconciliation form, Nursing notes, Teaching sheet, After Visit Summary (AVS).

# STK-9 History of Smoking: Smoking Cessation

## Description

Indicate if the patient was given smoking cessation advice or counseling during admission.

## Required

Yes

## Options

- Yes
- No
- NC

## Notes for Abstraction

- Select "**Yes**" if the patient received counseling to stop smoking or smoking cessation advice during the hospitalization:
  - Acceptable forms of advice and counseling include:
    - Direct discussion with patient or caregiver about stopping smoking (e.g., "advised patient to stop smoking")
      - Prescription of smoking cessation aid (e.g., Habitrol, NicoDerm, Nicorette, Nicotrol, Prostep, Zyban, Chantix [Varenicline]) during hospital stay or at discharge
      - Prescription of Wellbutrin/bupropion during hospital stay or at discharge aid or alternative FDA approved smoking cessation medication if prescribed as smoking cessation
      - Referral to smoking cessation class/program
      - Smoking cessation brochures/handouts/video
    - Smoking cessation therapies (such as patch, gum, etc) are also equivalent to counseling.
    - This includes if any of the educational components of the interventions listed above are directed at the patient's caregiver when the patient is unable to comprehend.
    - It does NOT meet criteria of "Yes" to simply advise the patient that smoking is bad for their health.
    - If the patient is prescribed Wellbutrin (bupropion), do NOT assume that this is a smoking cessation aid unless specifically noted as such. It is sometimes used as an antidepressant unrelated to smoking.
- Select "**No**" if the patient did not receive counseling to stop smoking or smoking cessation advice during the hospitalization or it was not documented that the patient received counseling to stop smoking or smoking cessation advice during the hospitalization. If the patient has a history of cigarette smoking within the year prior to arrival date but the patient does not currently smoke, they should be advised to continue not smoking.
- Select "**NC**" If the patient refused smoking cessation advice or counseling during the hospital admission.

## Rationale

Cigarette smoking is the single most alterable risk factor contributing to premature morbidity and mortality, and it nearly doubles the risk of ischemic stroke. This data element identifies patients eligible for smoking cessation advice/counseling.

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.

## Suggested Data Sources

Progress notes, admission notes, physician notes, physical or occupational therapy notes, discharge summary

# STK-10: Assessed for and/or Received Rehabilitation Services

## Description

Determine if that the patient was assessed for or received rehabilitation services during this hospitalization.

## Required

Yes

## Options

- Yes
- No

## Notes for Abstraction

- Select "**Yes**" if the patient was assessed for and/or received rehabilitation services during this hospitalization by a member of the rehabilitation team or patient received rehabilitation services from a member(s) of the rehabilitation team.
  - Examples of rehabilitation team members include (not all-inclusive):
    - Advanced Practice Nurse (APN)
    - Kinesiotherapist (KT)
    - Neuro-psychologist (PsychD)
    - Occupational therapist (OT)
    - Physical therapist (PT)
    - Physician
    - Physician Assistant (PA)
    - Speech language pathologist (SLP)
  - This includes:
    - If a documented reason exists for not completing a rehabilitation assessment.
      - Examples:
        - "Patient returned to prior level of function, rehabilitation not indicated at this time."
        - "Patient unable to tolerate rehabilitation therapeutic regimen."
        - Patient/family refusal
    - When an assessment is not found in the medical record but documentation indicates that the patient was seen by a member of the rehabilitation team (e.g., PT, OT, Speech Pathology) during the hospital stay
      - Examples:
        - "PT X 2 for range of motion (ROM) exercises at bedside."
        - "Patient aphasic - evaluated by speech pathology"
    - When patient is transferred for rehabilitation or referred to rehabilitation services following discharge
  - Do not infer that documentation of symptoms resolved means that a rehabilitation assessment was completed, unless mentioned in the context of rehabilitation service. Example: "Symptoms resolved - no rehab needed."

- Select "**No**" if the patient was not assessed for or did not receive rehabilitation services during this hospitalization or it was not documented that the patient was assessed for or received rehabilitation services during this hospitalization.
  - This includes:
    - Requests or orders for the rehabilitation consult do not unless there is evidence that rehabilitation consult was completed
    - If request/order for inpatient rehabilitation consult was not performed.

## Rationale

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.

## Suggested Data Sources

**Included data sources**: Consultation notes, discharge instruction sheet, discharge summary, history and physical, nursing notes, occupational therapy notes, physical therapy notes, physician orders, progress notes, referral forms, rehabilitation records

**Excluded data sources**: Notes written by a certified nursing assistant (CNA) or health care technician (HCT). Nursing assessments for activities of daily living (ADLs).