

HOSPITAL OUTPATIENT DEPARTMENT QUALITY MEASURES
Stroke

Measure ID #	Measure Short Name
OP-23	Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke Patients who Received Head CT or MRI Scan Interpretation Within 45 minutes of ED Arrival

OP STROKE GENERAL DATA ELEMENT LIST

General Data Element Name	Collected For:
<i>Arrival Time</i>	All Records
<i>Birthdate</i>	All Records
<i>CMS Certification Number^{1,2}</i>	All Records
<i>First Name</i>	All Records
<i>Hispanic Ethnicity</i>	All Records
<i>Last Name</i>	All Records
<i>National Provider Identifier^{1,2}</i>	Optional for All Records
<i>Outpatient Encounter Date</i>	All Records
<i>Patient HIC#</i>	Collected by CMS for patients with a <i>Payment Source</i> of Medicare who have a standard HIC number
<i>Patient Identifier</i>	All Records
<i>Payment Source</i>	All Records
<i>Physician 1</i>	Optional for All Records
<i>Physician 2</i>	Optional for All Records
<i>Postal Code</i>	All Records
<i>Race</i>	All Records
<i>Sex</i>	All Records

¹Transmission Data Element

²Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual

OP STROKE SPECIFIC DATA ELEMENT LIST

OP Stroke Data Element Name	Collected For:
<i>Arrival Time</i>	OP-23
<i>Discharge Code</i>	OP-23
<i>E/M Code</i>	OP-23
<i>Date Last Known Well</i>	OP-23
<i>ICD-9-CM Principal Diagnosis Code</i>	OP-23
<i>Head CT Scan or MRI Order</i>	OP-23
<i>Head CT Scan or MRI Interpretation Date</i>	OP-23
<i>Head CT Scan or MRI Interpretation Time</i>	OP-23
<i>Last Known Well</i>	OP-23
<i>Time Last Known Well</i>	OP-23

OP-23 Hospital Outpatient Emergency Department Stroke Population

Stroke

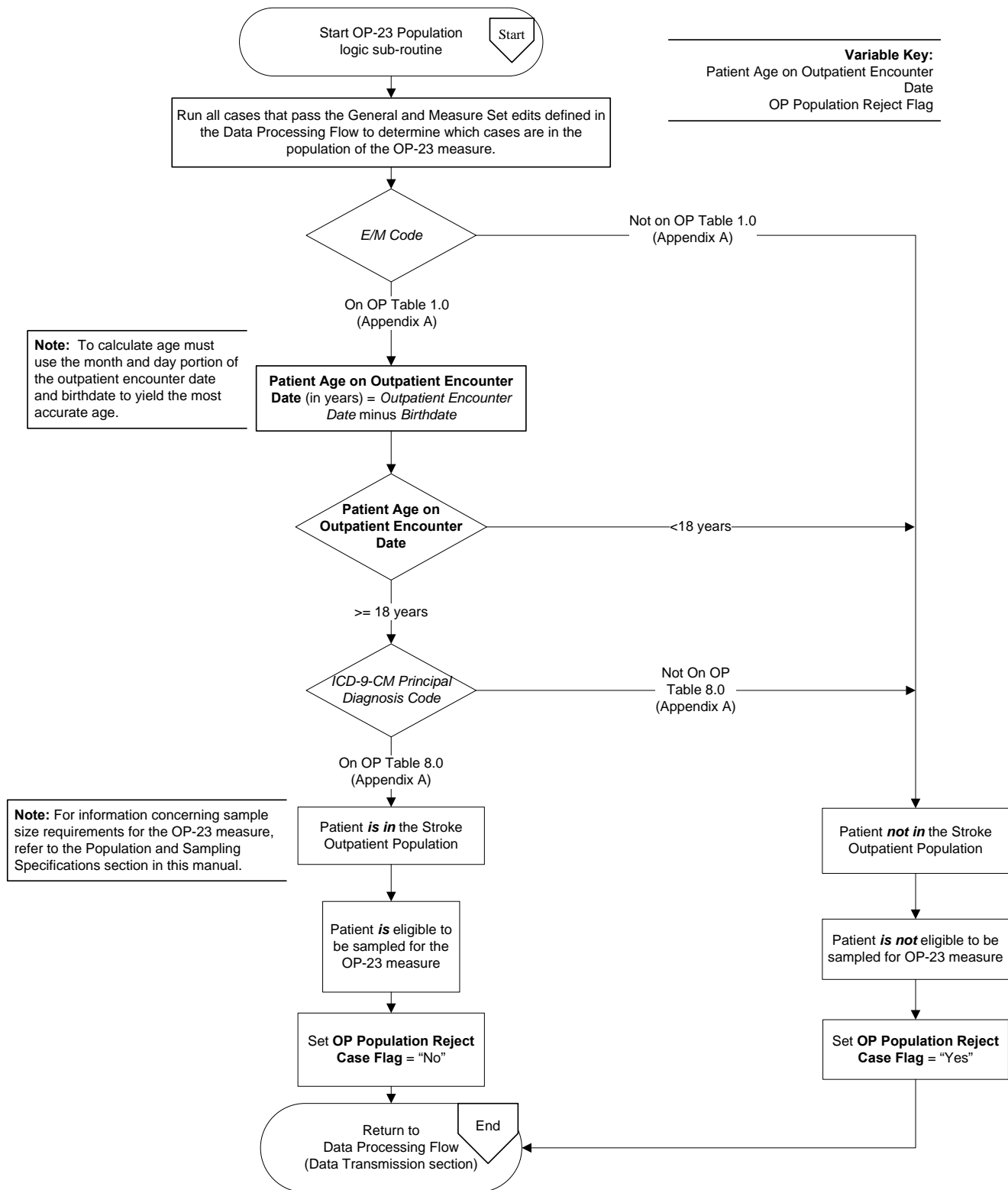
The population of the OP-23 ED Stroke measure is identified using 4 data elements:

- *E/M Code*
- *Outpatient Encounter Date*
- *Birthdate*
- *ICD-9-CM Principal Diagnosis Code*

Patients seen in a Hospital Emergency Department (*E/M Code* on Appendix A OP Table 1.0) are included in the OP-23 ED Stroke Hospital Outpatient Population and are eligible to be sampled if they have:

- A Patient Age on *Outpatient Encounter Date* ($Outpatient\ Encounter\ Date - Birthdate$) \geq 18 years, and
- An *ICD-9-CM Principal Diagnosis Code* for Acute Ischemic or Hemorrhagic Stroke as defined in Appendix A, OP Table 8.0.

Stroke Hospital Outpatient Population Algorithm OP-23



Algorithm Narrative for OP-23: Stroke Hospital Outpatient Population

1. Start Stroke Initial Patient Population logic sub-routine. Process all cases that have successfully reached the point in the Transmission Data Processing Flow: Clinical which calls this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Transmission Data Processing Flow.
2. Check *E/M Code*.
 - a. If *E/M Code* is not on Appendix A, OP Table 1.0, Patient is Not in the Outpatient Stroke Population. Patient is not eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
 - b. If *E/M Code* is on Appendix A, OP Table 1.0, continue processing and proceed to Measurement Value.
3. Calculate Measurement Value. Measurement Value, in years, is equal to the *Outpatient Encounter Date* minus *Birthdate*.
4. Check Measurement Value.
 - a. If the Measurement Value is less than 18 years, Patient is Not in the Outpatient Stroke Population. Patient is not eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
 - b. If the Measurement Value is greater than or equal to 18 years, continue processing and the case will proceed to *ICD-9-CM Principal Diagnosis Code*.
5. Check *ICD-9-CM Principal Diagnosis Code*.
 - a. If the *ICD-9-CM Principal Diagnosis Code* is on Table 8.0, Patient is in the Outpatient Stroke Population. Patient is eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to NO. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
 - b. If the *ICD-9-CM Principal Diagnosis Code* is not on Table 8.0, Patient is Not in the Outpatient Stroke Population. Patient is not eligible to be sampled for OP-23 measure. Set the OP Population Reject Case Flag to YES. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form

Measure Set: Hospital Outpatient Stroke

Measure ID #: OP-23

Outpatient Setting: Emergency Department

Performance Measure Name: Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke Patients who Received Head CT or MRI Scan Interpretation Within 45 Minutes of ED Arrival.

Description: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients who arrive at the ED within 2 hours of the onset of symptoms who have a head CT or MRI scan performed during the stay and having a time from ED arrival to interpretation of the Head CT or MRI scan within 45 minutes of arrival.

Rationale: Improved access to diagnostic imaging assists clinicians in the decision making process and treatment plans. Over 143,579 people die each year from stroke (Stroke Center, 2009). Stroke is the third leading cause of death in the United States. Each year, about 795,000 people suffer a stroke. About 600,000 of these are first attacks, and 185,000 are recurrent attacks (AHA, 2009). Decreasing radiology turnaround times will enhance decision making capabilities for patients with TIA or Acute Ischemic Stroke. The Food and Drug Administration (FDA) approved the use of tissue plasminogen activator (t-PA) for treatment of acute ischemic stroke when given within three hours of stroke symptom onset (NSA, 2000). Of all strokes, 87 percent are ischemic, 10 percent are intracerebral hemorrhage, and 3 percent are subarachnoid hemorrhage (NINDS, 2004). Because of the therapeutic time window for treatment possibilities, timely completion and results of the CT or MRI scan are imperative and will directly impact the quality of care a patient receives.

Improved access to diagnostics assists clinicians in decision making. Diagnostic imaging and laboratory reports are expected to increase length of stay in the emergency department. Radiology report turnaround time can impact patient throughput times in the emergency department (Delfino, 2008). Decreasing radiology report turnaround times can have impacts across the facility and assist in reducing the length of stay and enhancing decision making capabilities for patient treatment plans (Marquez, 2005). Efficiencies in throughput with tasks can lead to less diversion, less overcrowding, less elopements, and less financial loss (Falvo, 2007).

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well, with an order for a head CT or MRI scan whose time from ED arrival to interpretation of the Head CT scan is within 45 minutes of arrival.

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:

- *Arrival Time*
- *Head CT or MRI Scan Interpretation Date*
- *Head CT or MRI Scan Interpretation Time*
- *Outpatient Encounter Date*

Denominator Statement: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well with an order for a head CT or MRI scan.

Included Populations:

- Patients with an *ICD-9-CM Principal Diagnosis Code* for acute ischemic stroke, or hemorrhagic stroke as defined in Appendix A, OP Table 8.0; and
- Patients who had a *Head CT or MRI Scan Order*, and
- An *E/M Code* for emergency department encounter as defined in Appendix A, OP Table 1.0

Excluded Populations:

- Patients less than 18 years of age
- Patients who expired
- Patients who left the emergency department against medical advice or discontinued care

Data Elements:

- *Birthdate*
- *Date Last Known Well*
- *Discharge Code*
- *E/M Code*
- *Head CT or MRI Scan Order*
- *ICD-9-CM Principal Diagnosis Code*
- *Last Known Well*
- *Time Last Known Well*

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical record documents. Some hospitals may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunities for improvement at the point of care/service. However, complete documentation includes the principal or other ICD-9-CM diagnosis and procedure codes, which require retrospective data entry.

Data Accuracy: N/A

Measure Analysis Suggestions: None

Sampling: Yes, for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate rate generated from count data reported as a proportion

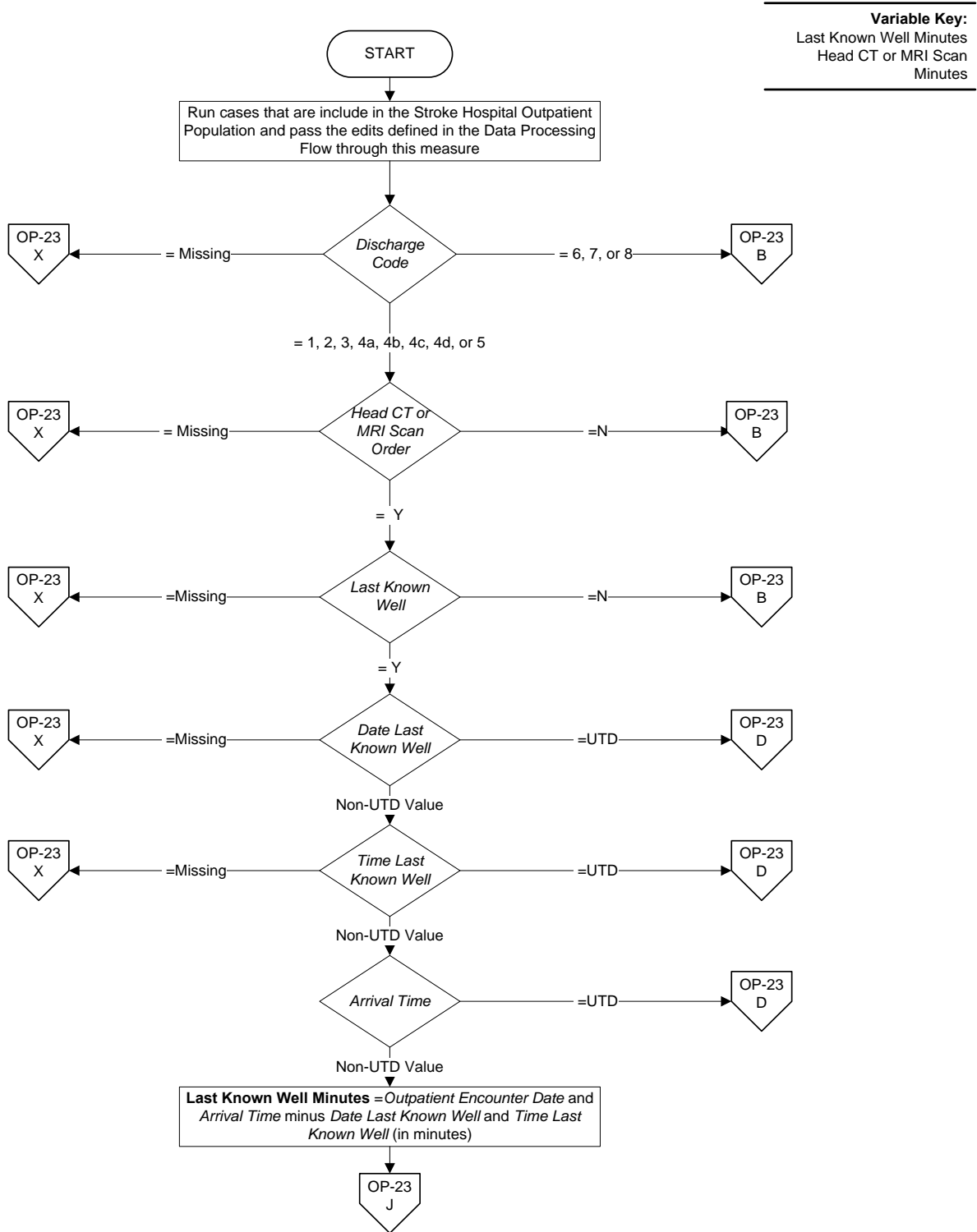
Suggested References:

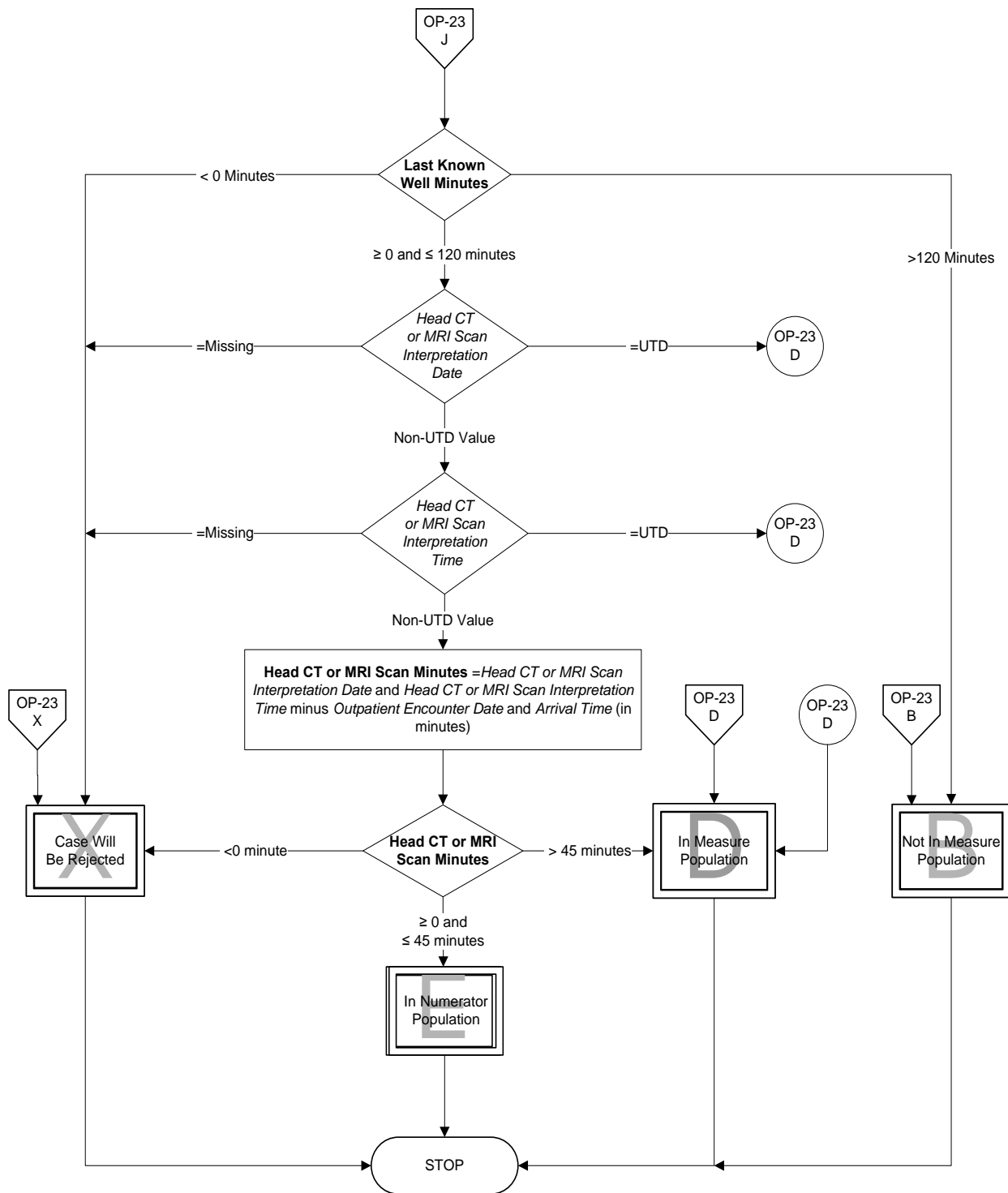
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- DeFlorio R, Coughlin B, Coughlin R, Li H, Santoro J, Akey B and Favreau M. Process modification and emergency department radiology service. *Emerg Radiol.* 2008 Nov;15(6):405-12.
- Falvo T, Grove L, Stachura R, and Zirkin W. The financial impact of ambulance diversions and patient elopements. *Acad Emerg Med.* 2007 Jan;14(1):58-62.
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- Stroke Center. Stroke Statistics 2009.
- Stroke statistical information.
- STROKE the First Hours Guidelines for Acute Treatment, *National Stroke Association*, 2000.
- The ATLANTIS, ECASS, and NINDS rt-PA Study Group Investigators. Association of Outcome with early stroke treatment: pooled analysis of ATLANTIS, ECASS, and NINDS rt-PA stroke Trials. *Lancet* 2004;363:768-774.

OP-23: Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke patients who Received Head CT or MRI Scan Interpretation Within 45 minutes of ED Arrival

Numerator: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well, with an order for a head CT or MRI scan whose time from ED arrival to interpretation of the Head CT scan is within 45 minutes of arrival.

Denominator: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well with an order for a head CT or MRI scan.





**Algorithm Narrative for OP-23:
Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic
Stroke patients who Received Head CT or MRI Scan Interpretation Within
45 minutes of ED Arrival.**

Numerator Statement: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients who arrive at the ED within 2 hours of the onset of symptoms who have a head CT or MRI scan performed during the stay and having a time from ED arrival to interpretation of the Head CT or MRI scan within 45 minutes of arrival.

Denominator Statement: Emergency Department Acute Ischemic Stroke or Hemorrhagic Stroke patients arriving at the ED within 2 hours of the time last known well with an order for a head CT or MRI scan.

1. Start processing. Run cases that are included in the Stroke Hospital Outpatient Population and pass the edits defined in the Data Processing Flow through this measure.
2. Check *Discharge Code*.
 - a. If *Discharge Code* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Discharge Code* equals 6, 7, or 8, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Discharge Code* equals 1, 2, 3, 4a, 4b, 4c, 4d, or 5, continue processing and proceed to *Head CT or MRI Scan Order*.
3. Check *Head CT or MRI Scan Order*.
 - a. If *Head CT or MRI Scan Order* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Head CT or MRI Scan Order* equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Head CT or MRI Scan Order* equals Yes, continue processing and proceed to *Last Known Well*.
4. Check *Last Known Well*.
 - a. If *Last Known Well* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Last Known Well* equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

- c. If *Last Known Well* equals Yes, continue processing and proceed to *Date Last Known Well*.
5. Check *Date Last Known Well*.
 - a. If *Date Last Known Well* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Date Last Known Well* equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Date Last Known Well* equals a Non Unable To Determine Value, continue processing and proceed to *Time Last Known Well*.
6. Check *Time Last Known Well*.
 - a. If *Time Last Known Well* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Time Last Known Well* equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Time Last Known Well* equals a Non Unable To Determine Value, continue processing and proceed to *Arrival Time*.
7. Check *Arrival Time*.
 - a. If the *Arrival Time* equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Arrival Time* equals a Non Unable To Determine Value, continue processing and proceed to Measurement Value.
8. Calculate Measurement Value. Measurement Value, in minutes, is equal to the *Outpatient Encounter Date* and *Arrival Time* minus *Date Last Known Well* and *Time Last Known Well*.
9. Check Measurement Value.
 - a. If the Measurement Value is greater than one hundred and twenty minutes, the case will proceed to a Measurement Category Assignment of B and will not be in the Measure Population Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If the Measurement Value is greater than or equal to zero and less than or equal to one hundred and twenty minutes, continue processing and proceed to *Head CT or MRI Scan Interpretation Date*.

- c. If the Measurement Values is less than zero minutes, the case will proceed to a Measurement Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
10. Check *Head CT or MRI Scan Interpretation Date*.
- a. If *Head CT or MRI Scan Interpretation Date* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Head CT or MRI Scan Interpretation Date* equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Head CT or MRI Scan Interpretation Date* equals a Non Unable To Determine Value, continue processing and proceed to *Head CT or MRI Scan Interpretation Time*.
11. Check *Head CT or MRI Scan Interpretation Time*.
- a. If *Head CT or MRI Scan Interpretation Time* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Head CT Scan Interpretation Time* equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Head CT Scan Interpretation Time* equals a Non Unable To Determine Value, continue processing and proceed to Measurement Value.
12. Calculate Measurement Value. Measurement Value, in minutes, is equal to the *Head CT or MRI Scan Interpretation Date* and *Head CT or MRI Scan Interpretation Time* minus *Outpatient Encounter Date* and *Arrival Time*.
13. Check Measurement Value.
- a. If the Measurement Value is greater than forty-five minutes, the case will proceed to a Measurement Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If the Measurement Value is greater than or equal to zero and less than or equal to forty-five minutes, the case will proceed to a Measure Category Assignment of E and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If the Measurement Value is less than zero minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.