Carotid Endarterectomy Data Dictionary

Blue Cross Blue Shield of Michigan
Carotid Registry
Data Collection Definitions

Dictionary updated for REDCap 6.20.2023

CEA Qualifying Case Criteria

Qualifying Procedures:

- Endarterectomy of the common carotid artery (CCA), internal carotid artery (ICA), carotid bifurcation and carotid bulb
- CEA that is converted to a CAS during the same OR time
    - Enter a CEA and CAS for this scenario

CEA procedures that do not qualify:

- Endarterectomy of the external carotid artery (ECA)
- A qualifying CEA that is converted to a carotid bypass during the same OR time
- CEA of the intracranial regions of the internal carotid artery (ICA)
    - Petrous segment
    - Cavernous segment
    - Supraclinoid segment
- Patch on anastomosis
- The procedure was aborted BEFORE the primary incision was made.

Procedure Information

Procedure Number

Data Abstraction Instructions:

Enter ‘1’ in the data field for the first procedure you enter during this discharge. If there are multiple procedures during this discharge, enter ‘2’ for the following procedure. For multiple procedures performed during the same OR time, enter a different procedure number.

Required:
Yes

Physician

Data Abstraction Instructions:

Choose the attending physician from the drop down list or create a physician identification if not already listed.

Selections:

Choose Physician

Required:
Yes

Fellow ID/Second Operator

Data Abstraction Instructions:

Use the drop down box to choose a physician. If not available in drop down, enter the fellow's or second operator's information to create a physician ID.

Selections:

- Enter value

Supporting Definitions:

This is an optional field if your site chooses to track it' fellows or second operators.

Required:
No

Procedure Date & Start Time

Data Abstraction Instructions:

Enter the date of the procedure and the time the procedure was initiated (miliary time).

There are two ways to enter the procedure date & start time

In the Procedure Date & Start Time field type the two digit day, two digit month, and four digit year. Hit the spacebar once. Then type the two digit hour, enter a colon, and type the two digit minutes. For example, the procedure date and start time is June 16, 2023, at 12:21 p.m. You will type into this field 16062021 12:21. Hit the Tab key to go to the Procedure End Date & Time field.

- OR -

Click on the calendar and choose the month, year, and day of the current procedure. Use the slider below to enter the time the procedure was initiated. Click Done so that your response can be recorded.

Selections:

- Enter date & time

Supporting Definitions:

The time the procedure started is defined as the incision time for open procedures.

Required:
Yes

Procedure End Date & Time

Data Abstraction Instructions:

Enter the date and time the procedure ends (military time).

There are two ways to enter the procedure end date & time

In the Procedure End Date & Time field type the two digit day, two digit month, and four digit year. Hit the spacebar once. Then type the two digit hour, enter a colon, and type the two digit minutes. For example, the procedure date and end time is June 16, 2023, at 12:21 p.m. You will type into this field 16062021 12:21. Hit the Tab key to go to the next field.

- OR -

Click on the calendar and choose the month, year, and day of the current procedure. Use the slider below to enter the time the procedure ended. Click Done so that your response can be recorded.

Selections:

- Enter Date & Time

Supporting Definitions:

End time for open surgical procedures is defined as the time when all instrument and sponge counts are completed; all dressings and drains are secured; and the physicians/surgeons have completed all procedure-related activities on the patient. Should the patient expire in the procedure area, indicate the time the patient was pronounced.

Required:
Yes

Status of Procedure

Data Abstraction Instructions:

Indicate status of the procedure using the following categories.

Selections:

- Elective
- Urgent
- Emergent

Supporting Definitions:

Elective = the procedure could be deferred without increased risk of compromised vascular outcome. This should include the planned or scheduled procedures.

Urgent = required operation within 72 hours, but > 12 hours of admission.

Emergent = required operation within 12 hours of admission.

Required:
Yes

Patient History

Significant Valve Disease

Data Abstraction Instructions:

Indicate whether the patient has had a previous surgical replacement and/or repair of a cardiac valve by any approach prior to arrival at this facility. This includes percutaneous valve procedures and valvuloplasty. Also indicate if patient has mitral valve regurgitation of at least grade 2 or greater, mitral valve area < 1.5 cm^2, aortic valve regurgitation of at least grade 2 or greater, or aortic valve area <= 1.0 cm^2. Select all that apply.

Selections:

- Yes
  - MI/MR
  - MS
  - AI
  - AS
- No

Supporting Definitions:

This may include physician documentation of moderate or severe valve disease.

Required:
Yes

Mechanical Aortic or Mitral Valve

Data Abstraction Instructions:

Indicate if the patient has a history of open surgical or percutaneous valve replacement with a mechanical mitral or aortic valve.

Enter No if the patient has received a biological (e.g. tissue) valve, had surgical valve repair (without valve replacement), or undergone percutaneous valve modification (including valvuloplasty, mitral annular remodeling, or mitral valve clipping/suturing), without mechanical valve replacement.

Selections:

- Yes
- No

Required:
Yes

Angina CCS Class III or IV within 6 Weeks

Data Abstraction Instructions:

Indicate if the patient experienced anginal symptoms equivalent to the Canadian Cardiovascular Society (CCS) Classification System Class III or IV within 6 weeks prior to the procedure.

Selections:

- Yes
- No

Supporting Definitions:

CCS Class III or Class IV are defined as:

Class III = Marked limitation of ordinary activity; for example, angina occurs walking one or two blocks on the level or climbing one

flight of stairs in normal conditions and at a normal pace.

Class IV = Inability to carry on any physical activity without discomfort - angina syndrome may be present at rest.
Required:
Yes

Peripheral Arterial Disease (PAD)

Data Abstraction Instructions:

Indicate if the patient has a history of peripheral arterial disease prior to the current procedure.

Selections:

- Yes
- No

Supporting Definitions:

Peripheral arterial disease is characterized by any of the following:

- Claudication, either with exertion or at rest
- Amputation for arterial vascular insufficiency
- Vascular reconstruction, bypass surgery, or percutaneous intervention to the extremities
- Documented aortic aneurysm
- Positive noninvasive test (e.g., ankle brachial index less than 0.8)

Required:
Yes

Home O2 Therapy

Data Abstraction Instructions:

Indicate if the patient received home oxygen therapy for treatment of chronic lung disease prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

Major surgery planned within next 8 weeks

Data Abstraction Instructions:

Indicate if the patient is receiving carotid revascularization in preparation for a major surgical procedure within eight weeks after the carotid procedure.

Indicate the type of major surgical procedure scheduled within eight weeks after the current admission. If more than one major surgery is scheduled, choose the type of surgery that is scheduled to be completed first.

Selections:

- Yes
    - Cardiac
    - Vascular
    - Other
- No

Required:

Yes

Previous Neck Radiation

Data Abstraction Instructions:

Indicate if the patient had previous radiation therapy to the neck prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

Prior Neck Surgery (other than CEA)

Data Abstraction Instructions:

Indicate if the patient had a previous extensive (i.e., radical) neck dissection (other than carotid endarterectomy (CEA) prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

Tracheostomy Present

Data Abstraction Instructions:

Indicate if the patient has an open tracheostomy at the time of the current procedure.

Selections:

- Yes
- No

Required:
Yes

Previous Laryngeal Nerve Palsy

Data Abstraction Instructions:

Indicate if the patient has a history of laryngeal nerve palsy prior to the current procedure and indicate the location of the laryngeal nerve palsy, either right or left. Laryngeal nerve palsy is defined as paralysis of the larynx caused by damage to the recurrent laryngeal nerve or its parent nerve, the vagus nerve.

Selections:

- Yes
  - Right
  - Left
- No

Supporting Definitions:

Yes - Right = Laryngeal Nerve Palsy located on the right side of the neck.

Yes - Left =Laryngeal Nerve Palsy located on the left side of the neck.

No = No Laryngeal Nerve Palsy.

Required:
Yes

Two or More Major Coronary Arteries within Stenosis >= 70% (LAD, LCX, RCA)

Data Abstraction Instructions:

Indicate if the patient currently has two or more major coronary arteries stenosis great than or equal to 70% prior to the current procedure. Enter No if the arteries were intervened upon or the patient had a CABG to repair the blocked arteries.

Selections:

- Yes
- No

Supporting Definitions:

Major Coronary Arteries are defined as Left Anterior Descending (LAD), Left Circumflex Artery (LCX) and Right Coronary Artery (RCA). This does not include collaterals.

Required:
Yes

Left Main Coronary Artery Stenosis >= 50%

Data Abstraction Instructions:

Indicate if the patient currently has a Left Main Coronary Artery stenosis greater than or equal to 50% prior to the current procedure.

Enter No if the patient had an intervention to repair the blocked Left Main artery or if the patient had a CABG.

Selections:

- Yes
- No

Supporting Definitions:

Required:
Yes

MI within 6 weeks

Data Abstraction Instructions:

Indicate if the patient had a myocardial infraction (MI) within 6 weeks prior to the index procedure as evidenced by the following:

- Acute myocardial infarction (<=7 days) manifested as a rise and fall of cardiac biomarkers (preferable troponin) with at least one of the values above the range of normal for your laboratory [above the 99th percentile of the upper reference limit (URL)] together with evidence of myocardial ischemia with at least one of the following:
    - ischemic symptoms;
    - ECG changes indicative of new ischemia (new ST-T changes or new left bundle branch block),
    - Development of pathological Q waves in the ECG;
    - Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality.
- Prior myocardial infarction (>7 days) manifested by:
    - A myocardial infarction meeting the criteria of an acute MI, as documented in the medical record, or
    - By either of the following:
        - Development of new pathological Q waves with or without symptoms.
        - Imaging evidence of a region of loss of viable myocardium that is thinned and fails to contract, in the absence of a non-ischemic cause.

Selections:

- Yes
- No

Required:
Yes

NYHA Functional Class III or IV within 6 Weeks

Data Abstraction Instructions:

Indicate if the patient's highest New York Heart Association (NYHA) cardiac functional class has been Class III or IV anytime within 6 weeks prior to the current procedure.

Enter No for patients without cardiac disease or patients with NYHA Class I or II.

Selections:

- Yes
- No

Supporting Definitions:

Patients with NYHA Class III and Class IV have anginal or heart failure symptoms, at rest, and/or resulting in marked limitation of physical activity. Class III and Class IV are formally defined as:

Class III = Patient has cardiac disease resulting in marked limitation of physical activity. Patient is comfortable at rest. However, less than ordinary physical activity (e.g., walking one to two level blocks or climbing one flight of stairs) causes fatigue, palpitations, dyspnea, or anginal pain.

Class IV = Patient has dyspnea at rest that increases with any physical activity. Patient has cardiac disease resulting in inability to perform any physical activity without discomfort. Symptoms may be present even at rest. If any physical activity is undertaken, discomfort is increased.

Required:
Yes

Permanent Pacemaker or ICD

Data Abstraction Instructions:

Indicate if the patient has a permanent pacemaker or implantable cardioverter defibrillator (ICD) prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

Dementia or Alzheimer's Disease

Data Abstraction Instructions:

Indicate if the patient has a history of dementia or Alzheimer's Disease, with global deterioration of intellectual or cognitive function as indicated in the medical record.

Selections:

- Yes
- No

Required:
Yes

History of Seizure or Known Seizure Disorder

Data Abstraction Instructions:

Indicate if the patient has a history of a seizure disorder as indicated in the medical record or characterized by at least two unprovoked seizures that occurred at different times (excluding febrile seizures) prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

Previous Carotid Intervention

Data Abstraction Instructions:

Indicate if the patient had a previous carotid endarterectomy, carotid artery angioplasty or carotid stent procedure prior to the current procedure. If there was more than one procedure (i.e. more than one carotid artery stent procedure on the right carotid artery), enter the most recent occurrence for each intervention.

Selections:

- Yes
- No

Required:
Yes

Previous Right CEA Timeframe

Data Abstraction Instructions:

Indicate the timeframe of the most recent carotid endarterectomy (CEA) for the right side, prior to the current procedure.

Selections:

- Yes
  - <=30 days
  - 31-180 days
  - >=181 days
- No

Required:
Yes

Previous Right CAS Timeframe

Data Abstraction Instructions:

Indicate the timeframe of the most recent carotid angioplasty and/or stent procedure for the right side, prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Required:
Yes

Previous Left CEA Timeframe

Data Abstraction Instructions:

Indicate the timeframe of the most recent carotid endarterectomy (CEA) for the left side, prior to the current procedure.

Selections:

- Yes

    - <= 30 days
    - 31-180 days
    - >= 181 days
- No

Required:
Yes

Previous Left CAS Timeframe

Data Abstraction Instructions:

Indicate the timeframe of the most recent carotid angioplasty and/or stent procedure for the left side, prior to the current procedure.

Selections:

- Yes
    - <= 30 days
    - 31-180 days
    - >= 181 days
- No

Required:
Yes

Neurologic Event(s) prior to procedure

Data Abstraction Instructions:

Indicate if the patient experienced a neurologic event at any time prior to the current procedure. Neurologic events are defined as TIA (transient ischemic attack), ischemic stroke, or intracranial hemorrhage/hemorrhagic stroke, and are further described as:

- Transient Ischemic Attacks (TIA) are characterized by the following: A focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery. They are evidenced by neurological symptoms involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.
- Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes. They are evidenced by loss of neurological function involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.
- Intracranial Hemorrhage or Hemorrhagic Strokes are caused by “bursting or leaking of blood vessels” in the brain and may lead to impaired functional outcomes. They are evidenced by intraparenchymal (e.g., hemorrhagic conversion of prior stroke) intracranial hemorrhage, subarachnoid intracranial hemorrhage, and/or subdural intracranial hemorrhage.

Symptoms of transient ischemic attack or ischemic stroke in specific territories can include the following:
1. Ischemia in the retinal territory can be manifested as:

- Transient monocular blindness (e.g., amaurosis fugax, defined as a transient episode of blindness or partial blindness, affecting one eye only).

2. Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect
- and/or, the symptoms noted in #4 (a through e) below

3. Ischemia in the vertebrobasilar territory can be manifested as:

- vertigo (spinning sensation)
- cranial nerve abnormalities (an example is dysconjugate gaze, in which eyes are no longer yoked together)
- “crossed” neurological symptoms, indicated by focal neurological deficits involving both sides of the body (example: sensory loss on the right and motor weakness on the left)
- and/or, the symptoms noted in #4 (a through e) below

4. Symptoms of ischemia that can be manifested in either the carotid hemispheric territory and/or Vertebrobasilar territory include:

- motor weakness
- sensory loss
- slurred speech ("dysarthria")
- visual field cut (more common in the vertebrobasilar territory)

- clumsiness or incoordination (more common in the vertebrobasilar territory)

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Selections:

- Yes
- No

Required:
Yes

TIA - Right Retinal

Data Abstraction Instructions:

Indicate if the patient experienced a Transient Ischemic Attack (TIA) involving the right retinal territory and the timeframe the TIA occurred. If there was more than one, enter the most recent occurrence prior the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by a focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery. Ischemia in the retinal territory can be manifested as Transient monocular blindness (e.g., amaurosis fugax, defined as a transient episode of blindness or partial blindness, affecting one eye only).

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

TIA - Left Retinal

Data Abstraction Instructions:

Indicate if the patient experienced a Transient Ischemic Attack (TIA) involving the left retinal territory and the timeframe the TIA occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by a focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery. Ischemia in the retinal territory can be manifested as Transient monocular blindness (e.g., amaurosis fugax, defined as a transient episode of blindness or partial blindness, affecting one eye only).

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

TIA - Right Hemispheric

Data Abstraction Instructions:

Indicate if the patient experienced a Transient Ischemic Attack (TIA) involving the right hemispheric territory and the timeframe the TIA occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by the following: A focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

. Symptoms of ischemia that can be manifested in either the carotid hemispheric territory and/or Vertebrobasilar territory include:

- motor weakness
- sensory loss
- slurred speech ("dysarthria")
- visual field cut (more common in the vertebrobasilar territory)
- clumsiness or incoordination (more common in the vertebrobasilar territory)

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

TIA - Left Hemispheric

Data Abstraction Instructions:

Indicate if the patient experienced a Transient Ischemic Attack (TIA) involving the left hemispheric territory and the timeframe the TIA occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by the following: A focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

. Symptoms of ischemia that can be manifested in either the carotid hemispheric territory and/or Vertebrobasilar territory include:

- motor weakness
- sensory loss
- slurred speech ("dysarthria")
- visual field cut (more common in the vertebrobasilar territory)
- clumsiness or incoordination (more common in the vertebrobasilar territory)

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

TIA - Vertebrobasilar

Data Abstraction Instructions:

Indicate if the patient experienced a Transient Ischemic Attack (TIA) involving the vertebrobasilar territory and the timeframe the TIA occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by the following: A focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Ischemia in the vertebrobasilar territory can be manifested as:

- vertigo (spinning sensation)
- cranial nerve abnormalities (an example is dysconjugate gaze, in which eyes are no longer yoked together)
- “crossed” neurological symptoms, indicated by focal neurological deficits involving both sides of the body (example: sensory loss on the right and motor weakness on the left)

Symptoms of ischemia that can be manifested in either the carotid hemispheric territory and/or Vertebrobasilar territory include:

- motor weakness
- sensory loss
- slurred speech ("dysarthria")
- visual field cut (more common in the vertebrobasilar territory)
- clumsiness or incoordination (more common in the vertebrobasilar territory)

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

TIA - Unknown

Data Abstraction Instructions:

Indicate if the patient experienced a Transient Ischemic Attack (TIA) involving an unknown territory and the timeframe the TIA occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by a focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Required:
Yes

Ischemic Stroke - Right Retinal

Data Abstraction Instructions:

Indicate if the patient experienced an ischemic stroke involving the right retinal territory and the timeframe the stroke occurred. If there was more than one, code the most recent occurrence prior to admission or the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes. They are evidenced by loss of neurological function involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

Ischemic Stroke - Left Retinal

Data Abstraction Instructions:

Indicate if the patient experienced an ischemic stroke involving the left retinal territory and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to admission or the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes. They are evidenced by loss of neurological function involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

Ischemic Stroke - Right Hemispheric

Data Abstraction Instructions:

Indicate if the patient experienced an ischemic stroke involving the right hemispheric territory and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

Symptoms of ischemia that can be manifested in either the carotid hemispheric territory and/or Vertebrobasilar territory include:

- motor weakness
- sensory loss
- slurred speech ("dysarthria")
- visual field cut (more common in the vertebrobasilar territory)
- clumsiness or incoordination (more common in the vertebrobasilar territory)

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

Ischemic Stroke - Left Hemispheric

Data Abstraction Instructions:

Indicate if the patient experienced an ischemic stroke involving the left hemispheric territory and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes.

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

Symptoms of ischemia that can be manifested in either the carotid hemispheric territory and/or Vertebrobasilar territory include:

- motor weakness
- sensory loss
- slurred speech ("dysarthria")
- visual field cut (more common in the vertebrobasilar territory)
- clumsiness or incoordination (more common in the vertebrobasilar territory)

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:

Yes

Ischemic Stroke - Vertebrobasilar

Data Abstraction Instructions:

Indicate if the patient experienced an ischemic stroke involving the vertebrobasilar territory and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes. They are evidenced by loss of neurological function involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.

Ischemia in the vertebrobasilar territory can be manifested as:

- vertigo (spinning sensation)
- cranial nerve abnormalities (an example is dysconjugate gaze, in which eyes are no longer yoked together)
- “crossed” neurological symptoms, indicated by focal neurological deficits involving both sides of the body (example: sensory loss on the right and motor weakness on the left)

Symptoms of ischemia that can be manifested in either the carotid hemispheric territory and/or Vertebrobasilar territory include:

- motor weakness
- sensory loss
- slurred speech ("dysarthria")
- visual field cut (more common in the vertebrobasilar territory)
- clumsiness or incoordination (more common in the vertebrobasilar territory)

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

Ischemic Stroke - Unknown

Data Abstraction Instructions:

Indicate if the patient experienced an ischemic stroke involving an unknown territory and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes.

Required:
Yes

Intracranial Hemorrhage or Hemorrhagic Stroke - Intraparenchymal

Data Abstraction Instructions:

Indicate if the patient experienced an intraparenchymal (e.g. hemorrhagic conversion of prior stroke) intracranial hemorrhage and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to admission or the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Intracranial Hemorrhage or Hemorrhagic Strokes are caused by “bursting or leaking of blood vessels” in the brain and may lead to impaired functional outcomes. The intraparenchymal area is within the brain tissue and hemorrhages or hemorrhagic strokes in this area may occur in trauma or spontaneously with ICP.

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

Intracranial Hemorrhage or Hemorrhagic Stroke - Subarachnoid

Data Abstraction Instructions:

Indicate if the patient experienced a subarachnoid hemorrhage and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to admission or the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Intracranial Hemorrhage or Hemorrhagic Strokes are caused by “bursting or leaking of blood vessels” in the brain and may lead to impaired functional outcomes. The subarachnoid area is between the brain and the meninges. Hemorrhages or hemorrhagic strokes in this area are usually caused by rupture of cerebral aneurysms.

Note: The specific territory of the prior event should be confirmed by a physician and prior imaging studies may be of assistance to confirm the territory involved.

Required:
Yes

Intracranial Hemorrhage or Hemorrhagic Stroke - Subdural

Data Abstraction Instructions:

Indicate if the patient experienced a subdural hemorrhage and the timeframe the stroke occurred. If there was more than one, enter the most recent occurrence prior to admission or the current procedure.

Selections:

- Yes
  - <= 30 days
  - 31-180 days
  - >= 181 days
- No

Supporting Definitions:

Intracranial Hemorrhage or Hemorrhagic Strokes are caused by “bursting or leaking of blood vessels” in the brain and may lead to impaired functional outcomes. The subdural area is on surface of brain. Hemorrhages or hemorrhagic strokes in this area are usually caused by trauma, tumor, or infection.

Required:
Yes

Acute Evolving Stroke

Data Abstraction Instructions:

Indicate if the patient has experienced an acute evolving stroke with ischemia which is ongoing and progressing at the time of the procedure.

Selections:

- Yes
- No

Supporting Definitions:

Acute evolving stroke includes all of the following:

- Any sudden development of neurological deficits attributable to cerebral ischemia and/or infarction.
- Onset of symptoms occurring within prior three days and ongoing at time of procedure.
- The event is marked by progressively worsening symptoms.

Note: Symptoms include but are not limited to the following: numbness or weakness of the face or body; difficulty speaking or understanding; blurred or decreased vision; dizziness; or loss of balance and coordination.

Required:
Yes

Imaging Studies Within past 6 months

Cardiac Stress Test (CEA)

Data Abstraction Instructions:

Indicate if a Cardiac Stress Test was performed within prior 6 months. If performed, indicate if the study was normal or abnormal.

Selections:

- Yes
  - Normal
  - Abnormal
- No

Required:
Yes

EKG (CEA)

Data Abstraction Instructions:

Indicate if an electrocardiogram (EKG) was performed within prior 6 months. If performed, indicate if the study was normal or abnormal.

Selections:

- Yes
  - Normal
  - Abnormal
- No

Required:
Yes

Carotid Duplex Ultrasound (PRE)

Data Abstraction Instructions:

Indicate if a carotid duplex ultrasound was performed prior to the current procedure. If yes, enter the most recent values.

Selections:

- Yes
- No

Required:
Yes

Peak Systolic Velocity - Right (PRE)

Data Abstraction Instructions:

Indicate the patient's right peak systolic velocity (PSV) for the internal carotid artery (ICA). If the carotid duplex ultrasound report provides a proximal and distal PSV for the ICA. Enter the highest PSV for the ICA and then enter the corresponding EDV.

Selections:

- Documented
  - Enter value cm/sec
- Not documented

Required:

Yes
Suffix:
cm/sec
Minimum:
0
Maximum:
999

End Diastolic Velocity - Right (PRE)

Data Abstraction Instructions:

Indicate the patient's right end diastolic velocity (EDV) for the internal carotid artery (ICA). Enter the EDV that correlates with the highest peak systolic velocity (PSV) for the ICA.

Selections:

- Documented
  - Enter value cm/sec
- Not documented

Required:
Yes
Suffix:
cm/sec
Minimum:
0
Maximum:
700

ICA/CCA Ratio - Right (PRE)

Data Abstraction Instructions:

Indicate the ratio of the peak systolic velocity (PSV) in the right internal carotid artery (ICA) to the PSV in the distal right common carotid artery (CCA).

Selections:

- Documented
  - Enter value
- Not documented

Required:
Yes

Peak Systolic Velocity - Left (PRE)

Data Abstraction Instructions:

Indicate the patient's left peak systolic velocity (PSV) for the internal carotid artery (ICA) in centimeters per second (cm/sec). If the carotid duplex ultrasound report provides a proximal and distal PSV for the ICA. Enter the highest PSV for the ICA and then enter the corresponding end diastolic velocity (EDV).

Selections:

- Documented
  - Enter value cm/sec
- Not documented

Required:
Yes
Suffix:
cm/sec
Minimum:
0
Maximum:

999

End Diastolic Velocity - Left (PRE)

Data Abstraction Instructions:

Indicate the patient's left end diastolic velocity (EDV) for the internal carotid artery (ICA). Enter the EDV that correlates with the highest peak systolic velocity (PSV) for the ICA.

Selections:

- Documented
  - Enter value cm/sec
- Not documented

Required:
Yes
Suffix:
cm/sec
Minimum:
0
Maximum:
700

ICA/CCA Ratio - Left (PRE)

Data Abstraction Instructions:

Indicate the ratio of the peak systolic velocity (PSV) in the left internal carotid artery (ICA) to the PSV in the distal left common carotid artery (CCA).

Selections:

- Documented
  - Enter value
- Not documented

Required:
Yes

MRA Angiography Performed

Data Abstraction Instructions:

Indicate if a magnetic resonance (MR) angiogram was performed prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

MRA CCA Highest % Stenosis - Right

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the right common carotid artery (CCA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes

Suffix:
%
Minimum:
0
Maximum:
100

MRA CCA Highest % Stenosis - Left

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the left common carotid artery (CCA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

MRA ICA Highest % Stenosis - Right

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the right internal carotid artery (ICA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

MRA ICA Highest % Stenosis - Left

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the left internal carotid artery (ICA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes
Suffix:
%
Minimum:

0
Maximum:
100

CT Angiography Performed

Data Abstraction Instructions:

Indicate if a computed tomography (CT) angiogram was performed prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

CTA CCA Highest % Stenosis - Right

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the right common carotid artery (CCA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

CTA CCA Highest % Stenosis - Left

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the left common carotid artery (CCA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

CTA ICA Highest % Stenosis - Right

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the right internal carotid artery (ICA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

CTA ICA Highest % Stenosis - Left

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the left internal carotid artery (ICA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Selections:

- Documented
  - Enter value %
- Not documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

Carotid Angiography Performed

Data Abstraction Instructions:

Indicate if a diagnostic carotid angiogram was performed prior to the current procedure. Do not include the angio that was performed at the same time as the procedure.

Selections:

- Yes
- No

Required:
No

Carotid Angio CCA Highest % Stenosis - Right

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the right common carotid artery (CCA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Do not include the angio that was performed at the same time as the procedure.

Selections:

- Documented
  - Enter Value %
- Not Documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

Carotid Angio CCA Highest % Stenosis - Left

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the left common carotid artery (CCA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Do not include the angio that was performed at the same time as the procedure.

Selections:

- Documented
  - Enter Value %
- Not Documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

Carotid Angio ICA Highest % Stenosis - Right

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the right internal carotid artery (ICA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Do not include the angio that was performed at the same time as the procedure.

Selections:

- Documented
  - Enter Value %
- Not Documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

Carotid Angio ICA Highest % Stenosis - Left

Data Abstraction Instructions:

Indicate the highest percent (%) stenosis for the left internal carotid artery (ICA). If the vessel is totally occluded, enter 100%. If no stenosis is present, enter 0%. If a range is given, enter the highest value.

Do not include the angio that was performed at the same time as the procedure.

Selections:

- Documented

    - Enter Value %
  - Not Documented

Required:
Yes
Suffix:
%
Minimum:
0
Maximum:
100

Labs Pre Procedure

Pre Procedure Creatinine

Data Abstraction Instructions:

Enter the creatinine value documented within the 30 days before the current procedure. If more than one creatinine value is documented, enter the value that is closest to the procedure start time. If there is no value, enter Not drawn.

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not drawn".

The range for Pre Procedure Creatinine is 0.1 - 15 mg/dL. Enter 0.1 for a Pre Procedure Creatinine this is <0.1. Enter 15 for a Pre Procedure Creatinine that is >15.

Selections:

- Drawn
  - Enter value mg/dl
- Not drawn

Required:
Yes
Suffix:
mg/dl
Minimum:
0.1
Maximum:
15
Soft Minimum:
0.3

Pre Procedure Hemoglobin (Hgb)

Data Abstraction Instructions:

Enter the hemoglobin value documented within the 30 days before the current procedure. If more than one hemoglobin value is documented, enter the value that is closest to the procedure start time. If there is no value, mark "Not drawn."

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not drawn".

The Pre Procedure Hemoglobin range is 2 - 20 g/dL. Enter 2 for a hemoglobin value <2. Enter 20 for a hemoglobin value >20.

Selections:

- Drawn
  - Enter value g/dl
- Not drawn

Required:
Yes
Suffix:
g/dl
Minimum:
2
Maximum:
20
Soft Minimum:
5
Soft Maximum:

18

Pre Procedure BNP

Data Abstraction Instructions:

Enter the BNP value documented within the 30 days before the current procedure. If more than one BNP value is documented, enter the value that is closest to the procedure start time. If there is no value, enter not drawn.

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not drawn".

Selections:

Pre Procedure BNP

- Yes
  - Enter value pg/mL
- No

Required:
Yes

Pre Procedure Troponin

Data Abstraction Instructions:

Enter the Troponin I, Troponin T, Troponin I HS (High Sensitivity) or Troponin T HS value documented within the 30 days before the procedure. If more than one value exists, use the value closest to the procedure start time. If there is no value, enter not drawn.

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not Drawn" for the initial Troponin field.

Selections:

- Yes
  - Pre procedure troponin I
    - Yes
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
      - Enter lab value
    - No
  - Pre procedure troponin T
    - Yes
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
      - Enter lab value
    - No
  - Pre procedure troponin I HS
    - Yes
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
      - Enter lab value
    - No
  - Pre procedure troponin T HS
    - Yes
      - Pick unit of lab value from list

- ng/dL
- ng/mL
- ng/L
- pg/mL

- Enter lab value

- No

- Not Drawn

Supporting Definitions:

Required:
Yes
Suffix:
ng/dL, ng/mL, ng/L, pg/mL

Labs Post Procedure

Post Procedure Peak Creatinine

Data Abstraction Instructions:

Record the highest level recorded from time of procedure to next procedure or discharge, whichever occurs first.

Selections:

- Drawn
  - Enter value mg/dl
- Not drawn

Supporting Definitions:

The next procedure is any procedure utilizing contrast, or any open surgical procedure. If the "next procedure" is a complication from the entered procedure, continue to abstract the peak creatinine beyond it. If only one value is available post procedure through discharge, that value will be used for both the post procedure peak creatinine **and** the discharge value.

Required:
Yes
Suffix:
mg/dl
Minimum:
0.1
Maximum:
15
Soft Minimum:
0.3

Post Procedure Nadir Hemoglobin

Data Abstraction Instructions:

Record the lowest level recorded from time of procedure to next procedure, or discharge, whichever occurs first.

Selections:

- Drawn
  - Enter value g/dl
- Not drawn

Supporting Definitions:

The next procedure is any procedure utilizing contrast, or any open surgical procedure. If the "next procedure" is a complication from the entered procedure, continue to abstract the peak creatinine beyond it. If only one value is available post procedure through discharge, that value will be used for both the post procedure nadir hemoglobin **and** the discharge value.

Required:
Yes
Suffix:
g/dl
Minimum:
2
Maximum:
20
Soft Minimum:
5
Soft Maximum:
18

Procedure Indications and Anatomic Variables

Urgent Cardiac Surgery w/in 30 Days

Data Abstraction Instructions:

Indicate if the patient is having the carotid revascularization procedure because of the need for cardiac surgery within 30 days of the current procedure.

Selections:

- Yes
- No

Supporting Definitions:

Cardiac Surgery is defined as bypass, valve, ICD patches and transplant surgery.

Required:
Yes

Concurrent with CABG

Data Abstraction Instructions:

Indicate if the CEA was performed in the same OR time as a CABG.

Selections:

- Yes
- No

Required:
Yes

Target Lesion Symptomatic w/in Past 6 Months

Data Abstraction Instructions:

Indicate if the patient has had neurologic symptoms in the past six months related to the target lesion. Conditions qualifying patients as symptomatic:

- Transient Ischemic Attack (TIA): distinct focal neurologic dysfunction persisting less than 24 hours;
- Non-disabling stroke: Modified Rankin Scale < 3 with symptoms for 24 hours or more;
- Transient monocular blindness: amaurosis fugax

Selections:

- Yes
- No

Required:
Yes

Syncope

Data Abstraction Instructions:

Indicate if the patient experienced syncope as an indication for the procedure. If you enter Yes for Syncope, then enter No for Target Lesion Symptomatic within Past 6 Months.

Selections:

- Yes
- No

Required:
Yes

Restenosis in Target Vessel After Prior CAS

Data Abstraction Instructions:

Indicate if the current procedure was performed for restenosis in the target carotid artery, which was previously treated with angioplasty and/or stent.

Selections:

- Yes
- No

Supporting Definitions:

Carotid artery restenosis is defined as greater than 50% diameter stenosis at or adjacent to the site previously treated with balloon angioplasty or stent.

Required:
Yes

Restenosis in Target Vessel After Prior CEA

Data Abstraction Instructions:

Indicate if the current procedure was performed for restenosis in the target carotid artery, which was previously treated with carotid endarterectomy.

Selections:

- Yes
- No

Supporting Definitions:

Restenosis is defined as the reoccurrence of stenosis within or adjacent to a prior endarterectomy site, evidenced by greater than 50% diameter stenosis.

Required:
Yes

Contralateral Carotid Artery Occlusion

Data Abstraction Instructions:

Indicate if there is known 100% occlusion of the patient's contralateral carotid artery.

Selections:

- Yes
- No

Supporting Definitions:

The contralateral carotid artery is the artery on the opposite side of the artery being performed on.

Required:
Yes

Fibromuscular Dysplasia of Carotid Artery

Data Abstraction Instructions:

Indicate if the patient has a history of known fibromuscular dysplasia of the ipsilateral carotid artery prior to the current procedure.

Selections:

- Yes
- No

Supporting Definitions:

The ipsilateral carotid artery is the artery on the same side of the artery being performed on.

Required:
Yes

Spontaneous Carotid Artery Dissection

Data Abstraction Instructions:

Indicate if the patient has had a spontaneous carotid artery dissection prior to the current procedure.

Selections:

- Yes
- No

Required:
Yes

Procedure Details

Target Carotid Vessel

Data Abstraction Instructions:

Indicate whether the target vessel is the right or left carotid artery for the current procedure.

Selections:

- Right
- Left

Required:
Yes

Type of Carotid Procedure

Data Abstraction Instructions:

Indicate if the procedure was done conventionally or by eversion carotid endarterectomy.

Selections:

- Conventional
- Eversion

Supporting Definitions:

Carotid endarterectomy is conventionally undertaken by a longitudinal arteriotomy. Eversion carotid endarterectomy (CEA), employs a transverse arteriotomy and reimplantation of the carotid artery. This refers to the arteriotomy of the ICA or CCA, NOT the ECA.

Required:
Yes

ASA (American Society of Anesthesiologists) Class

Data Abstraction Instructions:

Enter the ASA class as documented by the anesthesia team.

Selections:

- Class 1
- Class 2
- Class 3
- Class 4
- Class 5

Supporting Definitions:

Class 1 = normal/healthy
Class 2 = mild systemic disease
Class 3 = severe systematic disease
Class 4 = severe systematic disease that is a constant threat to life
Class 5 = moribund/not expected to survive without operation

Required:
Yes

Anesthesia (CEA)

Data Abstraction Instructions:

Indicate if the patient received general anesthesia, local anesthesia, or regional anesthesia during the current procedure. If more than one given, enter the strongest form of anesthesia.
Ex: Local + Regional = Regional.

Selections:

- General
- Local
- Regional

Supporting Definitions:

General = medicine that is administered by the anesthesia team through a mask or IV. The patient is intubated. A combination of medications are used such as propofol, etomidate, ketamine, versed, fentanyl, isoflurane, or desflurane.

Local = numbing medication is injected at or near the operative site. The patient is awake during the procedure.

Regional = A nerve block that affects cervical nerves from C2 to C4. The patient is awake during the procedure. The most frequently used regional anesthetic techniques for this purpose are superficial, intermediate, and deep cervical block.

Required:
Yes

Monitoring During Procedure

Data Abstraction Instructions:

Indicate the type of neurologic monitoring per anesthesia/surgical team during the carotid endarterectomy. Select all that apply.

Selections:

- Yes
  - Awake
  - Cerebral monitoring
  - Stump pressure
  - EEG
  - Other
- No

Supporting Definitions:

Awake = Locoregional anesthesia is given (e.g., cervical plexus block or cervical epidural) that allows awake cerebral function monitoring.

Cerebral monitoring = Cerebral oximetry is a non-invasive, continuous monitoring device that monitors adequate cerebral oxygenation. Sensors are applied to the patient's forehead and attached to a monitor. With Somatosensory evoked potentials (SSEP), stimulating electrodes are placed on the ankle and wrist, and signals are sent to receiving electrodes placed on the scalp. If **cerebral oximetry** or **SSEP** was used to monitor the patient, enter **Cerebral monitoring**.

Stump pressure = an estimate of hemispheric blood flow by measuring pressure in the carotid stump distal to the clamp. Stump pressure is more often used to determine whether or not a shunt should be placed intraoperatively.

EEG = measurement of the spontaneous electrical activity of the brain. Electrodes are attached to the patient's scalp and connected to a monitor.

Other = a form of neurologic monitoring was used during the carotid endarterectomy that is not on the list.

Required:
Yes

Antibiotics Pre Procedure

Data Abstraction Instructions:

Indicate if an antibiotic was given within one hour of incision (2 hours for Vancomycin).

Selections:

- Yes
- No

Required:
Yes

Skin Preparation

Data Abstraction Instructions:

Enter the skin prep used to prep the skin before the incision was made. Select all that apply.

Selections:

- Chlorhexidine
- Alcohol
- Iodine
- Chlorhexidine + Iodine
- Chlorhexidine + Alcohol
- Iodine + Alcohol

Supporting Definitions:

Include Ioban in the Iodine option.

Required:
Yes

Arteriotomy Patch Used

Data Abstraction Instructions:

Indicate if there was closure of the internal carotid arteriotomy with a patch during the carotid endarterectomy (CEA) procedure.

Selections:

- Yes
- No

Required:
Yes

Visible Thrombus Present

Data Abstraction Instructions:

Indicate if a thrombus (blood clot) was present on direct visual inspection intraoperatively during the carotid endarterectomy (CEA) procedure.

Selections:

- Yes
- No

Required:
Yes

Shunt Used

Data Abstraction Instructions:

Indicate if a shunt was used at the surgical site to maintain blood flow during the carotid endarterectomy (CEA) procedure.

Selections:

- Yes

- No

Required:
Yes

Completion Evaluation

Data Abstraction Instructions:

Indicate if any of the following studies were utilized during the procedure at completion to evaluate patency. Select all that apply.

Selections:

- Yes
    - Doppler
    - Duplex
    - Angiogram
    - Flowprobe
- No

Required:
Yes

Drain

Data Abstraction Instructions:

Indicate if a suction wound drain was placed during closure of the surgical incision.

Selections:

- Yes
- No

Required:
Yes

Surgical Procedure Terminated

Data Abstraction Instructions:

Indicate if the carotid endarterectomy procedure was terminated.

Selections:

- Yes
- No

Required:
Yes

Reasons for Surgical Termination

Data Abstraction Instructions:

Indicate the reasons the carotid endarterectomy procedure was terminated. Choose all that apply:

Selections:

- Hypotension
- Hypertension
- Cardiac instability
- Nerve compromise
- Difficulty with anesthesia
- Inability to implement shunting
- Excessive scar tissue
- Difficult dissection
- Excessive bleeding

- Carotid artery thrombosis
- ICA string sign/atresia
- Inability to access lesion due to anatomical reasons
- Other

Required:
Yes

Re-explore After Closure

Data Abstraction Instructions:

Indicate if a defect was detected, after closure, during the same operation, which resulted in reopening the incision for exploration.

Selections:

- Yes
- No

Required:
Yes

Outcomes

New Stroke

Data Abstraction Instructions:

Indicate if the patient experienced a new Stroke during or after the current procedure and before discharge. If yes, specify all new events and resolution status.

Selections:

- Yes
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes. They are evidenced by loss of neurological function involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.

Required:
Yes

New Right Hemispheric or Retinal Neurologic Event Occurred (Stroke)

Data Abstraction Instructions:

Indicate if a new right ischemic hemispheric or retinal stroke developed during or after the current procedure and before discharge.

Selections:

- Yes
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes.

Ischemia in the retinal territory can be manifested as transient monocular blindness (e.g., amaurosis fugax, defined as a transient episode of blindness or partial blindness, affecting one eye only).

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

Required:
Yes

New Right Hemispheric or Retinal Neurologic Event Resolved (Stroke)

Data Abstraction Instructions:

Indicate if the new right hemispheric or retinal stroke resolved prior to discharge.

Selections:

- Yes
- No

Required:

Yes

New Left Hemispheric or Retinal Neurologic Event Occurred (Stroke)

Data Abstraction Instructions:

Indicate if a new left ischemic hemispheric or retinal stroke developed during or after the current procedure and before discharge.

Selections:

- Yes
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes.

Ischemia in the retinal territory can be manifested as transient monocular blindness (e.g., amaurosis fugax, defined as a transient episode of blindness or partial blindness, affecting one eye only).

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

Required:
Yes

New Left Hemispheric or Retinal Neurologic Event Resolved (Stroke)

Data Abstraction Instructions:

Indicate if the new left hemispheric or retinal stroke resolved prior to discharge.

Selections:

- Yes
- No

Required:
Yes

New Vertebrobasilar Event Occurred (Stroke)

Data Abstraction Instructions:

Indicate if a new ischemic vertebrobasilar stroke developed during or after the current procedure and before discharge..

Selections:

- Yes
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes. They are evidenced by loss of neurological function involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.

Ischemia in the vertebrobasilar territory can be manifested as:

- vertigo (spinning sensation)
- cranial nerve abnormalities (an example is dysconjugate gaze, in which eyes are no longer yoked together)

- “crossed” neurological symptoms, indicated by focal neurological deficits involving both sides of the body (example: sensory loss on the right and motor weakness on the left)
- visual field cut
- clumsiness or incoordination

Required:
Yes

New Vertebrobasilar Event Resolved (Stroke)

Data Abstraction Instructions:

Indicate if the new vertebrobasilar stroke resolved prior to discharge.

Selections:

- Yes
- No

Required:
Yes

New Unknown Event Occurred (Stroke)

Data Abstraction Instructions:

Indicate if a new stroke developed in an unspecified or unknown location during or after the current procedure and before discharge..

Selections:

- Yes
- No

Supporting Definitions:

Ischemic Strokes are caused by a “blockage of a blood vessel” resulting in residual symptoms lasting greater than 24 hours and leading to impaired functional outcomes.

Required:
Yes

New Unknown Event Resolved (Stroke)

Data Abstraction Instructions:

Indicate if the unknown stroke resolved prior to discharge.

Selections:

- Yes
- No

Required:
Yes

New TIA

Data Abstraction Instructions:

Indicate if the patient experienced a new TIA during or after the current procedure and before discharge. If yes, specify the territory of all new events.

Selections:

- Yes
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by a focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery. They are evidenced by neurological symptoms involving right or left retinal, right or left hemispheric, vertebrobasilar, and/or unknown territories.

Required:
Yes

New Right Hemispheric or Retinal Neurologic Event Occurred (TIA)

Data Abstraction Instructions:

Indicate if a new right hemispheric or retinal TIA developed during or after the current procedure and before discharge.

Selections:

- Yes
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by a focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Ischemia in the retinal territory can be manifested as transient monocular blindness (e.g., amaurosis fugax, defined as a transient episode of blindness or partial blindness, affecting one eye only).

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

Required:
Yes

New Left Hemispheric or Retinal Neurologic Event Occurred (TIA)

Data Abstraction Instructions:

Indicate if a new left hemispheric or retinal TIA developed during or after the current procedure and before discharge.

Selections:

- Yes
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by a focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Ischemia in the retinal territory can be manifested as transient monocular blindness (e.g., amaurosis fugax, defined as a transient episode of blindness or partial blindness, affecting one eye only).

Ischemia in the hemispheric territory supplied by the carotid artery can be manifested as:

- language impairment
- speech impairment or dysphasia
- hemi-neglect

Required:

Yes

New Vertebrobasilar Event Occurred (TIA)

Data Abstraction Instructions:

Indicate if a new vertebrobasilar TIA developed during or after the current procedure and before discharge.

Selections:

- Yes
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by a focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Ischemia in the vertebrobasilar territory can be manifested as:

- vertigo (spinning sensation)
- cranial nerve abnormalities (an example is dysconjugate gaze, in which eyes are no longer yoked together)
- “crossed” neurological symptoms, indicated by focal neurological deficits involving both sides of the body (example: sensory loss on the right and motor weakness on the left)
- visual field cut
- clumsiness or incoordination

Required:
Yes

New Unknown Event Occurred (TIA)

Data Abstraction Instructions:

Indicate if a new TIA developed in an unspecified or unknown location during or after the current procedure.

Selections:

- Yes
- No

Supporting Definitions:

Transient Ischemic Attacks (TIA) are characterized by the following: A focal neurologic abnormality of sudden onset and brief duration (i.e., lasting <24 hours) that reflects a dysfunction (presumed to be ischemic in origin) in the cerebral distribution of the affected artery.

Required:
Yes

Death

Data Abstraction Instructions:

Indicate if the patient died during or post procedure, prior to discharge.

Selections:

- Yes
  - During procedure
  - Post procedure
- No

Required:

Yes

Cause of Death

Data Abstraction Instructions:

Indicate the cause of death.

Selections:

- Neurologic: Due to a new or progressive neurologic event.
- Cardiac: Due to a fatal arrhythmia, MI, or heart failure.
- Pulmonary: Due to pulmonary complication.
- Vascular: Due to major blood loss or other vascular complication.
- Infection: Due to infection.
- Renal Failure: Due to renal failure.
- Other: Due to other cause.

Required:
Yes

CHF

Data Abstraction Instructions:

Indicate if the patient developed a new onset or acute reoccurrence/exacerbation of symptomatic heart failure or pulmonary edema after the procedure and before discharge.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Supporting Definitions:

Pulmonary edema with requirement for monitoring or treatment in the ICU.

Required:
Yes

Cranial Nerve Injury

Data Abstraction Instructions:

Indicate if the patient experienced a new cranial nerve injury, involving glossopharyngeal, vagus, accessory, hypoglossal, and/or superior laryngeal nerves. The cranial nerve injury can be an mechanical injury caused by the procedure or caused by retraction and can be transient or persistent. Select all that apply.

Selections:

- Yes
  - VII
  - IX
  - X
  - XII
  - Other
- No

Supporting Definitions:

VII (facial) = new facial droop or drooping of the corner of the mouth. Inability to keep fluids in the mouth occurs with severe injuries.

IX (glossopharyngeus) = swallowing difficulty or problems with gag reflex unless other diagnosis confirmed. Recurrent aspiration or respiratory failure can occur with severe injuries.

X (vagus) = hoarseness and laryngoscopy is normal.

XII (hypoglossal) = any tongue deviation or tongue discoordination. Upper airway obstruction occurs with bilateral hypoglossal nerve injury.

Other = any other cranial nerve injury that is not in this list.

Reference: https://www.jvascsurg.org/action/showPdf?pii=S0741-5214%2897%2970258-1
Required:
Yes

Dysrhythmia

Data Abstraction Instructions:

Indicate if the patient had a **new** rhythm disturbance post procedure that required treatment with medications or cardioversion.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Required:
Yes

Myocardial Injury

Data Abstraction Instructions:

Indicate if the patient suffered any type of myocardial injury post procedure, including an Acute Myocardial Injury, Type 2 Myocardial Infarction, Type 1 NSTEMI or STEMI. If yes is entered, indicate the date of the first elevated troponin value as well as the peak troponin value. **The peak troponin value should be obtained within 30 days of the procedure.**

Selections:

- Yes
  - Enter date of first occurrence of Myocardial Injury post procedure _____
  - Enter type of injury:
    - Acute Myocardial Injury
    - Type 2 Myocardial Infarction
    - Type 1 NSTEMI
    - STEMI
    - Not documented
- No

Supporting Definitions:

Myocardial ischemia = The patient has one or more of the following:

- Chest pain
- Nausea
- Shortness of breath
- new ischemic EKG changes (S-T elevations, S-T depression, pathological Q waves)
- An Echo/MRI/Stress test that is positive for ischemia
- Thrombus seen on angiogram or autopsy

Acute Myocardial Injury = Elevated cardiac troponin value(s) greater than the 99th percentile URL (upper reference limit) with a rise and/or fall in troponin **without** myocardial ischemia. Some causes of an Acute Myocardial Injury are hypertension, acute heart failure, or myocarditis.

Type 2 Myocardial Infarction = Elevated cardiac troponin value(s) greater than the 99th percentile URL (upper reference limit) with a rise and/or fall in troponin **with** myocardial ischemia. With Type 2 Myocardial Infarction, a supply and demand imbalance is causing a stressor to the heart. Some causes of Type 2 Myocardial Infarction are severe hypertension, sustained tachyarrhythmias, hemorrhagic shock/anemia, sepsis, pulmonary embolism, hypoxia, respiratory failure, or heart failure.

Type 1 NSTEMI (Non-ST Elevation Myocardial Infarction) = Elevated cardiac troponin value(s) greater than the 99th percentile URL with a rise and/or fall in troponin **with** myocardial ischemia related to atherosclerotic plaque disruption, which causes a complete or partial blockage in the coronary artery. The EKG during an NSTEMI will not show ST elevations.

STEMI (ST Elevation Myocardial Infarction) = Elevated cardiac troponin value(s) greater than the 99th percentile URL with a rise and/or fall in troponin **with** myocardial ischemia related to atherosclerotic plaque disruption, which causes a complete or partial blockage in the coronary artery. The patient having a STEMI will develop new ST-segment elevations in 2 contiguous leads or new bundle branch blocks with ischemic repolarization patterns.

Not documented = The type of injury is not documented, or there is not sufficient information recorded to determine what type of injury the patient suffered.

No =

- A single abnormal troponin value was found without other criteria for myocardial injury.
- Troponins are elevated but stable (no rise and/or fall).
- The patient did not suffer a myocardial injury post procedure.

Reference: Thygesen, K., Alpert, J. S., Jaffe, A. S., Chaitman, B. R., Bax, J. J., Morrow, D. A., White, H. D., & The Executive Group on behalf of the Joint European Society of Cardiology (ESC)/American College of Cardiology (ACC)/American Heart Association (AHA)/World Heart Federation (WHF) Task Force for the Universal Definition of Myocardial Infarction. (2018, November 13). *Fourth Universal Definition of Myocardial Infarction (2018)*. Fourth universal definition of myocardial infarction (2018). Retrieved August 22, 2022, from https://www.ahajournals.org/doi/epub/10.1161/CIR.0000000000000617

Required:
Yes

Peak post-operative troponin value

Data Abstraction Instructions:

Indicate the peak post-operative troponin value and type of troponin drawn within 30 days post procedure.

Selections:

Peak post-operative troponin

- Yes
  - troponin I
    - Yes
      - Enter lab value _____
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
    - No
  - troponin T
    - Yes
      - Enter lab value _____
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
    - No
  - troponin I HS
    - Yes
      - Enter lab value _____
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
    - No
  - troponin T HS
    - Yes
      - Enter lab value _____

- Pick unit of lab value from list
  - ng/dL
  - ng/mL
  - ng/L
  - pg/mL
- No

- Not Drawn

Required:
Yes
Suffix:
ng/dL, ng/mL, ng/L, pg/mL

Persistent Hypotension

Data Abstraction Instructions:

Indicate if the patient experienced persistent hypotension for >24 hours post procedure requiring parenteral drug treatment. Hypotension is defined as a systolic blood pressure (SBP) <90 mm Hg or the need for IV vasopressors and/or atropine to maintain SBP>=90 mm Hg.

Selections:

- Yes
- No

Required:
Yes

Reperfusion Symptoms

Data Abstraction Instructions:

Indicate if the patient had an incidence of hyperperfusion syndrome. Clinical diagnosis should be made by knowledgeable provider, familiar with this syndrome.

Selections:

- Yes
  - Seizure
  - Hemorrhage
  - Non specific
- No

Supporting Definitions:

Seizures are associated with headache, or hemorrhage on CT/MRI.

Required:
Yes

Return to OR

Data Abstraction Instructions:

Indicate if the patient had to return to the Operating Room, post procedure, for an event related to the Carotid Endarterectomy. If yes, indicate reason(s).

Selections:

- Yes
  - Bleeding
  - Neurologic event
  - Technical defect requiring revision
- No

Supporting Definitions:

An example of Bleeding is when the patient is taken back to the OR for treatment of a neck hematoma.

Examples of Technical Defect Requiring Revision are:

- To fix a problem with the arteriotomy patch
- To add an arteriotomy patch
- The ends of the plaque lesion were not secured and are causing an obstruction

Required:
Yes

Reasons LOS >2 days after CEA

Data Abstraction Instructions:

Enter the reason the patient was in the hospital >2 days after the elective CEA procedure. Select all that apply. This field will display when the LOS is greater than 2 days after the procedure date for an elective CEA.

Selections:

- Yes
  - Hypertension
  - Lack of transportation
  - No caregiver/support at home
  - COPD
  - Urinary retention
  - Placement to another facility
  - Worsening of stroke after CEA
  - CEA & another surgical procedure, same DC
  - Other
- No

Supporting Definitions:

Hypertension = Indicate if the patient experienced hypertension for >24 hours post procedure requiring parenteral drug treatment. Hypertension is a systolic blood pressure (SBP) > 160 mmHg and requires IV antihypertensives, ACE inhibitors, calcium channel blockers, beta-blockers, or diuretics to maintain a SBP <160 mmHg.

Lack of transportation = The hospital delayed the patient's discharge while waiting for transport to home or another facility.

No caregiver/support at home = The patient lives alone and cannot take care of themselves after surgery or does not have another person to care for them at home. If the patient's discharge is delayed because there is a dispute among the family regarding guardianship of the patient, enter No caregiver/support at home.

COPD = The patient developed an exacerbation of COPD after the procedure.

Urinary retention = The patient cannot void (urinate), requiring catheterization within 24 hours postoperatively. Or the patient cannot void (urinate) 6 hours after removing a Foley catheter inserted preoperatively.

Placement to another facility = The hospital delayed the patient's discharge while waiting for placement to another facility, such as an ECF, SNF, assisted living center, or rehabilitation institution. Please include an admission/transfer to an inpatient rehab unit.

Worsening of stroke after CEA = The patient had a stroke before the CEA and the patient's stroke symptoms are worse after the CEA.

CEA & another surgical procedure same DC = A CEA and another surgical procedure were performed during the same discharge (i.e., hemodialysis graft, CABG that was performed separately from the CEA).

Other = The reason the patient was in the hospital > 2 days is not on the list.

Required:
Yes