Cerebrovascular accident (CVA)  
(also known as stroke, cerebral infarction, brain attack)

**Definition**
A cerebrovascular accident is an interruption or disruption of blood flow to the brain. When blood flow to an area of the brain stops, oxygen and nutrients cannot get to that area of the brain, and brain cells begin to die, resulting in permanent damage.

**Types**
- **Ischemic**: Usually caused by a blood clot that blocks a blood vessel (artery) that supplies oxygen-rich blood to the brain.
  - **Thrombotic stroke**: A blood clot forms inside an artery that supplies blood to the brain, blocking blood flow.
  - **Embolic stroke**: A blood clot forms in a vessel in another part of the body and then travels to and blocks a blood vessel in the brain.
  - **Other types of ischemic stroke** include very low blood pressure, or narrowing or tears in the lining of one of the blood vessels that carry blood to the brain (i.e., carotid arteries), all of which decrease blood flow to the brain.
- **Hemorrhagic**: A blood vessel within the brain weakens and bursts, causing bleeding in the brain.
  - **Intracerebral hemorrhage**: Bleeding within the brain.
  - **Subarachnoid hemorrhage**: Bleeding into the space (subarachnoid space) between the inner layer and middle layer of the tissue covering the brain (the meninges).

**Some of the causes**

**Ischemic**
- Conditions that can cause blood clots:
  - Atherosclerosis (fatty substances in the blood collect on the walls of arteries, causing narrowing of the vessel and slowing the flow of blood, which can result in formation of a blood clot)
  - Certain drugs and medications
  - Irregular heart rhythms, such as atrial fibrillation
  - Problems with heart valves
- Other factors:
  - Congenital heart defects
  - Blood clotting or blood vessel disorders
  - Inflammation of blood vessels
  - Injuries or surgeries involving the blood vessels in the head or neck
  - Cancer radiation treatments of the neck or brain

**Hemorrhagic**
- Uncontrolled high blood pressure
- Weak spots (aneurysms) in walls of blood vessels within the brain
- Traumatic head and neck injuries
- Other factors:
  - Vascular malformations
  - Blood-thinning medications
  - Surgeries involving blood vessels of the head and neck

**Other risk factors**
- Age (55 or older)
- Personal history of stroke
- Family history of stroke
- Alcoholism
- Male gender
- High blood pressure/hypertension
- Cigarette smoking
- High cholesterol
- Diabetes
- Obesity
- Cardiovascular disease
Signs and symptoms
Sometimes there are no signs or symptoms. Signs or symptoms that may occur include (but are not limited to):

- Difficulty walking
- Difficulty speaking
- Difficulty swallowing
- Loss of coordination or balance
- Paralysis, weakness or numbness on one side of the body
- Loss of bowel and bladder function
- Confusion or memory loss
- Impaired consciousness
- Changes in personality, mood or emotions
- Disturbances of vision, hearing or taste
- Headache

Complications
Complications depend on the type of stroke, degree of brain damage, the body systems affected and how quickly treatment is received. Complete recovery of function can occur, or there may be permanent residual effects.

Diagnostic tools
- Medical history and physical exam
- Computerized tomography (CT) scan
- Magnetic resonance imaging (MRI)
- Magnetic resonance angiography (MRA) or CT angiography (CTA)
- Ultrasound of carotid arteries
- Electrocardiogram, echocardiogram and other cardiac monitoring to check for heart problems
- Blood tests (to check blood clotting, blood sugar and other blood chemicals)

Treatment
An acute stroke represents a medical emergency. Prompt evaluation and treatment is critical to save brain tissue and avoid or reduce complications, residual effects and disability. Treatment depends on the cause and type of stroke and can include:

- For ischemic CVA, clot-busting drugs (must be administered within three hours of the onset of symptoms), blood thinners and carotid artery surgery if indicated
- For hemorrhagic CVA, surgical intervention if indicated to control bleeding
- Pain medications as indicated (e.g., headache)
- Control and management of underlying causal conditions
- Physical, occupational and speech therapy for residual conditions

Documentation tips for providers
- A good rule of thumb for any medical record is to limit – or avoid altogether – the use of acronyms and abbreviations. While “CVA” is a commonly accepted medical abbreviation for cerebrovascular accident, best practice is as follows:
  o The initial notation of an abbreviation or acronym should be spelled out in full with the abbreviation or acronym in parentheses: “Cerebrovascular accident (CVA).”
  o Subsequent mention of the condition can be made using the abbreviation or acronym.
  o The diagnosis should be spelled out in full in the final impression or plan.

- The subjective section of the office note should document any current symptoms of cerebrovascular accident or patient complaints of any current residual deficits that are due to past cerebrovascular accident.

- The objective section of the office note should include any current associated physical exam findings of current CVA or current residual deficits that are due to past CVA.

- Clearly link associated conditions or manifestations to cerebrovascular accident as the cause by using linking terms such as “with,” “due to,” “secondary to,” “associated with,” “related to,” etc. (for example, “Acute CVA with left hemiplegia” or “Facial droop due to stroke six months ago”).
Cerebrovascular accident (CVA), continued

• Describe CVA, past or present, and any residual deficits, to the highest level of specificity. For example, document the type of CVA (ischemic, hemorrhagic, postoperative, etc.), along with the cause, if known. For related neurologic deficits, past or present, specify laterality (right or left, dominant or nondominant) or type (e.g., dysphagia oral phase, dysphagia pharyngeal phase, neurogenic dysphagia, etc.).

• The medical record must clearly show the residual deficit or late effect of a past CVA is still present. For example, if the final diagnostic statement is “Left hemiparesis due to past CVA,” the physical exam should document left hemiparesis (a completely normal neurologic exam would contradict the final diagnostic statement).

• Do not use past-tense terms such as “status post,” “history of,” “recent,” “past,” “prior,” etc., to describe current residual deficits of past CVA. In diagnosis coding, a residual deficit of CVA described as “history of,” “status post,” etc., represents a historical condition. Codes for sequelae cannot be assigned based on the status of the condition in the past. Rather, codes are assigned based on current status. Further, as noted above, the residual deficit cannot be coded as current if there is no supporting documentation to show the residual deficit is still present.

Consider and contrast these two final diagnostic statements:
  - “History of CVA with facial weakness” – This documentation supports a historical condition (at some time in the past, the patient experienced a CVA with associated facial weakness).
  - “Residual facial weakness due to past CVA” – This documentation supports current facial weakness due to past CVA. The physical exam should include facial weakness.

• A cerebrovascular accident that occurred in the past should not be documented in the final assessment as if it were current. An acute CVA represents a medical emergency that requires prompt medical treatment. If the final assessment in an outpatient office note documents a diagnosis stated as simply “CVA,” but the treatment section indicates the patient was sent home to follow up at a later date, this does not support the CVA as an acute event. Rather, this documentation suggests the CVA occurred in the past and should have been stated as “History of CVA.” Provider query for clarification would be needed before diagnosis codes are assigned.

• The plan section of the record should include the current treatment plan for cerebrovascular accident or residual deficits or disability related to past cerebrovascular accident (e.g., “Plan: Admit from emergency department to intensive care unit for acute cerebrovascular accident” or “Referral to ABC provider for physical therapy evaluation and treatment of right-sided hemiparesis due to past CVA”).
ICD-10-CM tips and resources for coders

Cerebrovascular accident (CVA), stroke and associated sequelae/late effects classify to the following categories:

<table>
<thead>
<tr>
<th>Categories</th>
<th>Description</th>
<th>Additional characters specify</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>I60-I62</td>
<td>Nontraumatic intracranial hemorrhage (i.e., spontaneous subarachnoid, intracerebral or subdural hemorrhages)</td>
<td>Location/affected artery and laterality (right versus left)</td>
<td>I60.12 Nontraumatic subarachnoid hemorrhage from left middle cerebral artery</td>
</tr>
<tr>
<td>I63*</td>
<td>Cerebral infarctions (i.e., due to a vessel thrombosis or embolus)</td>
<td>Cause of ischemic stroke (i.e., thrombosis, embolus or unspecified), location/affected artery and laterality of the occlusion</td>
<td>I63.131 Cerebral infarction due to embolism of right carotid artery</td>
</tr>
<tr>
<td>I69</td>
<td>Sequelae of cerebrovascular disease (late effect)</td>
<td>Type of stroke that caused the sequela/late effect and the sequela/late effect itself, plus laterality with dominance or nondominance</td>
<td>I69.153 Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting right nondominant side</td>
</tr>
</tbody>
</table>

To ensure accurate diagnosis code assignment, carefully review and follow all instructional notes for each category, subcategory and code.

*When coding from category I63, the medical coder must be familiar with the following terms:
  - Stenosis narrowing
  - Occlusion complete or partial blockage
  - Thrombus blood clot that develops inside a blood vessel and stays in place
  - Embolus blood clot that develops inside a blood vessel but dislodges and travels to another location
  - Cerebral arteries arteries located inside the cerebrum of the brain
    - Examples: anterior cerebral artery, middle cerebral artery, posterior cerebral artery
  - Precerebral arteries arteries that lead to the cerebrum of the brain but are not located within the brain
    - Examples: vertebral artery, basilar artery, carotid artery

The terms “stroke,” “cerebral infarction” and “cerebrovascular accident” (CVA) are often used interchangeably, and these terms with no other specification or description are all indexed to the default code I63.9, Cerebral infarction, unspecified.

- For inpatient admissions for acute CVA, additional code(s) should be assigned for any neurologic deficits associated with the acute CVA, even when they have been resolved prior to discharge from the hospital.

An acute CVA represents a medical emergency that requires prompt medical treatment. If a final diagnostic statement in an outpatient office note documents simply “CVA” with no obviously related treatment plan, and the record indicates the patient was sent home to follow up at a later date, this does not support the CVA as an acute event. Rather, this documentation suggests the final diagnostic statement likely should have stated “history of CVA,” and the physician should be queried for clarification.

To assign a code for intraoperative or postprocedural cerebrovascular accident, the medical record documentation should clearly specify the cause-and-effect relationship between the medical intervention and the cerebrovascular accident. Proper code assignment depends on whether it was an infarction or hemorrhage and whether it occurred intraoperatively or postoperatively. If a cerebral hemorrhage, code assignment depends on the procedure performed. (ICD-10-CM Official Guidelines for Coding and Reporting, Section I.C.9.c)
Cerebrovascular accident (CVA), continued

Assign code Z92.82, status post administration of tissue plasminogen activator (tPA) in a different facility within the last 24 hours prior to admission to current facility, as a secondary diagnosis when a patient is received by transfer into a facility and documentation indicates he or she was administered tPA within the last 24 hours prior to admission to the current facility. This guideline applies even if the patient is still receiving the tPA at the time he or she is received into the current facility. The appropriate code for the condition for which the tPA was administered (in this case, cerebrovascular accident) should be assigned first. Code Z92.82 is applicable only to the receiving facility record and not to the transferring facility record. (ICD-10-CM Official Guidelines for Coding and Reporting, Section I.C.21.c.3)

Sequelae of cerebrovascular accident (formerly late effects)

Codes from category I69, Sequelae of cerebrovascular disease, provide great specificity in reporting the residual effects of cerebrovascular diseases. These “late effects” include neurologic deficits that persist after the initial episode of care for cerebrovascular conditions that code to categories I60 — I67.

- The neurologic deficits caused by cerebrovascular disease may be present from the onset or may arise at any time after the onset of the condition classifiable to categories I60 through I67.
- When the patient is discharged from the initial episode of care for an acute CVA, even if transferred to a rehabilitation facility, any remaining residual neurologic deficits are considered sequelae and should be coded from category I69.
- Fourth characters specify the causal conditions as sequelae of:
  - I69.0- Nontraumatic subarachnoid hemorrhage
  - I69.1- Nontraumatic intracerebral hemorrhage
  - I69.2- Other nontraumatic intracranial hemorrhage
  - I69.3- Cerebral infarction
  - I69.8- Other cerebrovascular diseases
  - I69.9- Unspecified cerebrovascular diseases

- Fifth characters indicate the particular neurological deficits (with some codes having sixth characters for additional specificity). The fifth characters and corresponding neurological deficits are as follows:
  - Ø Unspecified sequelae
  - 1 Cognitive deficits
  - 2 Speech and language deficits
  - 3 Monoplegia of upper limb
  - 4 Monoplegia of lower limb
  - 5 Hemiplegia/hemiparesis
  - 6 Other paralytic syndrome
  - 9 Other sequelae

Documentation must clearly link the residual deficit, late effect or sequela to the past CVA as the cause.

In some cases, a patient is admitted with a current acute CVA with associated neurologic deficits while at the same time having current residual neurologic deficits that are a result of an old, past or healed CVA. In this scenario, codes may be assigned together from categories I60 — I63 and I69 as indicated by the specific documentation in the medical record.

(Note: Even though categories I60 — I63 have an Excludes1 note indicating an acute CVA with current associated deficits cannot be coded at the same time as current residual neurologic deficits from past CVA, the parties that govern ICD-10-CM have issued a statement indicating it is appropriate to code these conditions together when they are documented in the record as coexisting. See AHA Coding Clinic guidelines for Interpretation of Excludes1 Notes and Interim Coding Advice on Excludes 1, both published Fourth Quarter 2015, Page 40).
Cerebrovascular accident (CVA), continued

Codes for sequelae cannot be assigned based on the status of the condition in the past. Rather, codes are assigned based on the current status of the condition. Look for documentation in the medical record that clearly shows the residual neurological deficit that is a late effect or sequela of a past CVA is still present and current. For example, if the final diagnosis is “Left hemiparesis due to past CVA,” ideally the physical exam should document left hemiparesis – or at the least, the physical exam should not contradict the final diagnosis (e.g., a detailed musculoskeletal and neurologic exam with all normal findings would contradict the final diagnosis).

Unlike in ICD-9-CM, in ICD-10-CM residual unilateral weakness related to past CVA is considered synonymous with hemiparesis and should be coded as such (AHA Coding Clinic guideline for residual right-sided weakness due to previous cerebral infarction, First Quarter 2015, Page 25).

Residual weakness (without further description or specification) due to past CVA is coded to I69.398 and R53.1. Residual muscle weakness related to a past CVA is coded I69.398 and M62.81.

Codes from category I69, Sequelae of cerebrovascular disease, that specify hemiplegia, hemiparesis and monoplegia identify whether the dominant or nondominant side is affected. Should the affected side be documented, but not specified as dominant or nondominant, and the classification system does not indicate a default, code selection is as follows (ICD-10-CM Official Guidelines for Coding and Reporting, I.C.6.a.):

- For ambidextrous patients, the default should be dominant.
- If the left side is affected, the default is nondominant.
- If the right side is affected, the default is dominant.

Hemiparesis or hemiplegia documented without further specification, or stated to be longstanding but of unspecified cause (i.e., not clearly linked in the documentation to past CVA as the cause), is coded to category G81. Carefully review and follow all instructional notes under this category.

History of CVA

The ICD-10-CM code that is assigned when there is a history of CVA with no residual deficits is Z86.73, Personal history of transient ischemic attack (TIA), and cerebral infarction without residual deficits.

Coding examples

<table>
<thead>
<tr>
<th>Example 1</th>
<th>Final diagnosis</th>
<th>Admit for acute CVA in patient with old right hemiparesis from past stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-10-CM code(s)</td>
<td>I63.9, I69.351</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 2</th>
<th>Final diagnosis</th>
<th>Embolic stroke involving left vertebral artery with associated dysphasia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Admit and request stat neurology consult</td>
<td></td>
</tr>
<tr>
<td>ICD-10-CM code(s)</td>
<td>I63.112, R47.02</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 3</th>
<th>Final diagnosis</th>
<th>CVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Continue current medications and return in 6 months for annual exam</td>
<td></td>
</tr>
<tr>
<td>ICD-10-CM code(s)</td>
<td>Documentation suggests the CVA is historical. Query the physician for clarification.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 4</th>
<th>Final diagnosis</th>
<th>Receiving home health speech therapy services related to oropharyngeal dysphagia caused by cerebrovascular accident one month ago.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-10-CM code(s)</td>
<td>I69.391, R13.12</td>
<td></td>
</tr>
</tbody>
</table>
### Example 5

<table>
<thead>
<tr>
<th>Final diagnosis</th>
<th>Residual facial droop from past CVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-10-CM code(s)</td>
<td>I69.392</td>
</tr>
</tbody>
</table>

### Example 6

<table>
<thead>
<tr>
<th>Final diagnosis</th>
<th>Status post CVA with residual left hemiplegia. (There is no mention of left hemiplegia in the physical exam or elsewhere in the medical record. The neurological physical exam is documented as completely normal.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Query the physician. The above statement indicates an historical condition; it is not clear that left hemiplegia due to past CVA is still present.</td>
</tr>
</tbody>
</table>

### Example 7

<table>
<thead>
<tr>
<th>History of present illness</th>
<th>Here for cardiology follow-up. Denies any episodes of angina, exertional dyspnea or other cardiovascular symptoms. Still able to be active despite previous stroke and left-side weakness – plays golf regularly. Has had progressive deterioration of his left knee which is being considered for replacement in the next several months. Needs pre-op clearance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of systems</td>
<td>All systems negative except left knee arthritis pain and left side weakness.</td>
</tr>
<tr>
<td>Physical exam</td>
<td>BP 134/68. Pulse 60. Heart regular rate and rhythm, normal S1 and S2. No murmur, rubs or gallops. EKG shows evidence of past inferior wall infarction. Echocardiogram one week ago showed ejection fraction of 50%. Extremities: left knee deformity and left leg brace. Neuro: right side strength 5/5. Left side strength 3/5.</td>
</tr>
<tr>
<td>Final diagnosis</td>
<td>1. Coronary artery disease with prior inferior wall myocardial infarction. 2. Left ventricular systolic dysfunction; ejection fraction 50%. 3. Other and unspecified hyperlipidemia. 4. Left-sided weakness due to past stroke.</td>
</tr>
<tr>
<td>ICD-10-CM code(s)</td>
<td>I25.10, I25.2, I51.9, E78.5, I69.354</td>
</tr>
<tr>
<td>Plan</td>
<td>Refilled all present medications. He is cleared for left knee replacement – hold aspirin and Plavix for one week prior to surgery. Return visit in one year or sooner as needed.</td>
</tr>
</tbody>
</table>

**References:** American Hospital Association Coding Clinic; ICD-10-CM Official Guidelines for Coding and Reporting; Mayo Clinic; MedlinePlus; Merck Manual; WebMD