Transient Ischemic Attack (TIA)

Definition

While transient ischemic attack (TIA) is often labeled “mini-stroke,” it is more accurately characterized as a “warning stroke,” a warning that should be taken seriously

TIAs are usually caused by one of three things:

1. Low blood flow at a narrow part of a major artery carrying blood to the brain, such as the carotid artery.
2. A blood clot in another part of the body (such as the heart) breaks off, travels to the brain, and blocks a blood vessel in the brain.
3. Narrowing of the smaller blood vessel in the brain, blocking blood flow for a short period of time; usually caused by plaque (a fatty substance) build-up.

Some important facts to keep in mind include:

- 40 percent of people who have a TIA will go on to have a stroke
- Nearly half of all strokes occur within the first few days after a TIA
- Symptoms for TIA are the same as for a stroke

(National Stroke Association)

Additional signs of a stroke may include:

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, lack of balance or coordination
- Sudden severe headache with no known cause

Stroke mimics

- Seizures
- Syncope
- Infection
- Migraine with Aura
- CNS tumor
- Metabolic disorders
- Hypoglycemia
- Vertigo
- Psychogenic disorders
- Structural intracranial abnormalities
- Demyelinating Diseases

- Hypertensive encephalopathy
- Wenicke's encephaolopathy
- Drug toxicity
  (Martel, J. 2015)

Statistics

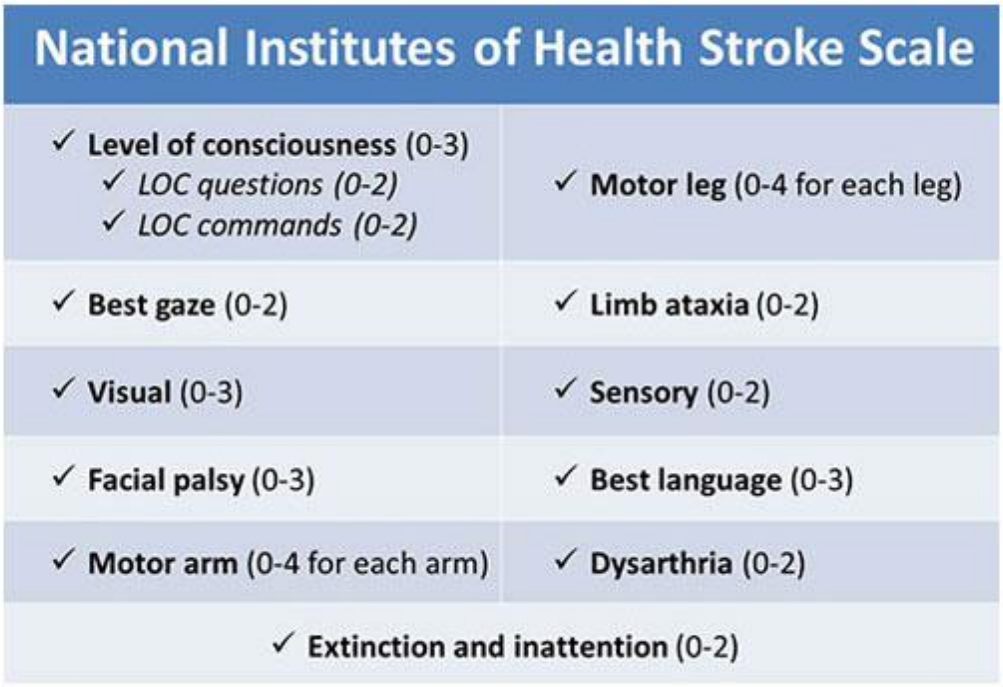
In the U.S., 800,000 people have a stroke each year, one every 40 seconds. Yet, 80% of strokes are preventable, many Americans cannot identify the stroke warning signs, and most stroke survivors and family caregivers do not know where to go for stroke recovery information. This presents a great opportunity to work together to teach Americans how to prevent a stroke, as well as how to recognize, respond to, and recover from a stroke. With your help, we can close the gap in stroke awareness and help save lives. Stroke is the Number one leading cause of disability and the fifth leading cause of death in the US.

Between 200,000 and 500,000 patients are diagnosed each in the United States with TIA; that many or more have symptoms and never seek treatment. The risk of stroke after TIA is highest within the first few hours of symptoms and nearly half of all strokes occur in the 30 days post TIA (Sorenson, 2011).

National Institute of Health Stroke Score (NIHSS)

NIHSS scoring system is used to objectively rate the severity of the patient's stroke. **It does not quantify the posterior stroke**. The NIHSS is a 15-item neurologic examination stroke scale used to evaluate the effect of acute cerebral infarction on the levels of consciousness, language, neglect, visual-field loss, extraocular movement, motor strength, ataxia, dysarthria, and sensory loss. A trained observer rates the patent's ability to answer questions and perform activities. Ratings for each item are scored with 3 to 5 grades with 0 as normal, and there is an allowance for untestable items. The single patient assessment requires less than 10 minutes to complete. The picture below gives

a brief overview of the assessment that the RN performs on patients with symptoms consistent with stroke.



The stroke scale will measure stroke severity from 1- 42. The higher the number the greater the patients impairment.

0-7- mild impairment

8-15 moderate impairment

Over 15 severe impairment.

Risk Assessment Tool:

There are a variety of risk stratification tools that will help the practitioner to determine the likelihood that the patient with TIA will progress to a stroke. The ABCD2 score is reviewed below with potential risk for stroke at days 2, 7, 30 and 90 days based upon Risk Factors.

ABCD^2 Score

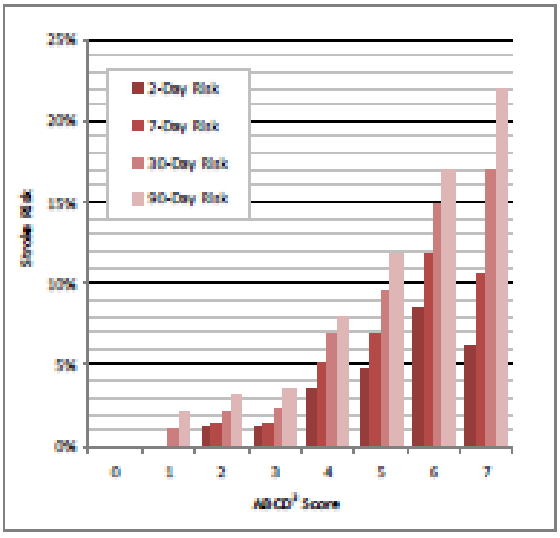
The ABCD^2 score is a risk assessment tool designed to improve the prediction of short-term stroke risk after a transient ischemic attack (TIA). The score is optimized to predict the risk of stroke within 2 days after a TIA, but also predicts stroke risk within 90 days. The ABCD^2 score is calculated by summing up points for five independent factors.

Risk Factor	Points	Score
Age		
≥ 60 years	1	☐
Blood pressure		
Systolic BP ≥ 140 mm Hg *OR* Diastolic BP ≥ 90 mm Hg	1	☐
Clinical features of TIA (*choose one*)		
Unilateral weakness with or without speech impairment *OR*	2	☐
Speech impairment without unilateral weakness	1	
Duration		
TIA duration ≥ 60 minutes	2	☐
TIA duration 10-59 minutes	1	
Diabetes	1	☐
Total ABCD^2 score	0-7	☐

Using the ABCD^2 Score

Higher ABCD^2 scores are associated with greater risk of stroke during the 2, 7, 30, and 90 days after a TIA (Figure). The authors of the ABCD^2 score made the following recommendations for hospital observation:[1]

ABCD^2 Score	2-day Stroke Risk	Comment
0-3	1.0%	Hospital observation may be unnecessary without another indication (e.g., new atrial fibrillation)
4-5	4.1%	Hospital observation justified in most situations
6-7	8.1%	Hospital observation worthwhile



[1] Johnston SC, Rothwell PM, Huynh-Huynh MN, Giles MF, Elkins JS, Sidney S, "Validation and refinement of scores to predict very early stroke risk after transient ischemic attack," *Lancet*, 369:283-292, 2007.

The ABCD2 score ranges from 0-7.

Patients with a score of 0-3 may be fine to release home for follow up with primary care physician.

Patients with a score 4-5 have a justification to be admitted for observation and further testing

Patients with a score of 6-7 should be admitted to an observation unit

(National Stroke Association)

Upon admission to the Observation Unit ensure that the following diagnostic tests have been completed:

- Basic Metabolic Profile
- Fasting Lipid Profile
- Hemoglobin A1C
- CBC with Diff
- Protime
- PTT
- Troponin I
- Erythrocyte Sedimentation Rate (ESR)
- Non-contrast CT scan- considered the initial imaging standard
- Magnetic Resonance Imaging- Is more sensitive than CT for acute ischemia, infarction and, intracranial bleeding and underlying lesions.

Other tests to consider:

Vascular imaging- Carotid Doppler of the Neck, CTA/ MRA- will evaluate occlusive disease in cerebrovascular circulation and imaging of vessels in the brain and neck.

Cardiac Imaging- Transthoracic or Transesophageal echocardiography to evaluate for cardioembolic source or Patent Foramen Ovale. Holter Monitor to evaluate for dysrhythmias.

(Nanda, A. , O'Connor, R. 2015)

Follow the order sets

Because Trihealth hospitals are Joint Commission Acute Primary Stroke Center Certified, we must meet all of the standards required by best practice.

The Stroke Core Measures are evaluated on every patient with a diagnosis of TIA and Stroke:

STK-1	Venous Thromboembolism (VTE) Prophylaxis@
STK-2	Discharged on Antithrombotic Therapy@
STK-3	Anticoagulation Therapy for Atrial Fibrillation/Flutter@
STK-4	Thrombolytic Therapy@
STK-5	Antithrombotic Therapy By End of Hospital Day 2@
STK-6	Discharged on Statin Medication@
STK-8	Stroke Education@
STK-10	Assessed for Rehabilitation@

Diagnostics included in the Observation TIA order set Reviewed:

CD Echocard w cd & cf

CD Transesophageal echo

ECG 12 lead	
VL carotid duplex doppler B-mode	

VTE Prophylaxis - Low Risk Patients

Ambulate Patient

VTE Prophylaxis - Moderate Risk Patients (Single Response)

Most medical/surgical patients, such as (list not inclusive): CHF, COPD, pneumonia. Select pharmacologic prophylaxis from this list or select mechanical prophylaxis from the VTE Prophylaxis - Mechanical Interventions section (unless contraindicated).

heparin (porcine) subcutaneous injection 5,000 Units Q8H SCH	5,000 Units, Subcutaneous, Every 8 hours scheduled
heparin (porcine) subcutaneous injection 5,000 Units Q12H SCH	5,000 Units, Subcutaneous, Every 12 hours scheduled
enoxaparin (LOVENOX) subcutaneous injection and supporting orders panel	
Platelet Count - Prior to Starting Lovenox	Once-Routine, Starting today For 1 Occurrences, Within 24 hours prior to starting Lovenox., Lavender Top Tube
Platelet Count - Weekly after Starting Lovenox	Morning draw, Starting 4/22/15 For 1 Occurrences, Perform on morning of second day after starting Lovenox., Lavender Top Tube
enoxaparin (LOVENOX) subcutaneous injection 40 mg	40 mg, Subcutaneous, Every 24 hours Renal dose for enoxaparin (LOVENOX) for CrCl less than 30 mL/min.

VTE Prophylaxis - High Risk Patients (Single Response)

Patients with major risk factors, such as (list not inclusive): orthopedic patients, acute spinal cord injury with paresis, stroke with lower extremity paralysis, multiple major trauma, abdominal/pelvic or cancer surgery. Select pharmacologic prophylaxis from this list and select mechanical prophylaxis from the VTE Prophylaxis - Mechanical Interventions section (unless contraindicated).

heparin (porcine) subcutaneous injection 5,000 Units Q8H SCH	5,000 Units, Subcutaneous, Every 8 hours scheduled
heparin (porcine) subcutaneous injection 5,000 Units Q12H SCH	5,000 Units, Subcutaneous, Every 12 hours scheduled
enoxaparin (LOVENOX) subcutaneous injection and supporting orders panel	
Platelet Count - Prior to Starting Lovenox	Once-Routine, Starting today For 1 Occurrences, Within 24 hours prior to starting Lovenox., Lavender Top Tube
Platelet Count - After Starting Lovenox	Morning draw, Starting 4/22/15 For 1 Occurrences, Perform on morning of second day after starting Lovenox., Lavender Top Tube

☐ enoxaparin (LOVENOX) subcutaneous injection 40 mg	40 mg, Subcutaneous, Every 24 hours Renal dose for enoxaparin (LOVENOX) for CrCl less than 30 mL/min.

VTE - Mechanical

☑ Apply Sequential Compression Device	Routine, Until discontinued, Starting today Right,Left, or Bilateral? BILATERAL Knee High, or Thigh High? Knee High
☐ Prescription Graduated Compression Hose (JOBST/COMPASS)	Routine, Until discontinued, Starting today Right,Left, or Bilateral? BILATERAL Knee High, or Thigh High? Thigh High
☐ Athrombic Foot Pump	Routine, Until discontinued, Starting today Right,Left, or Bilateral? BILATERAL
☐ labetalol (NORMODYNE,TRANDATE) intravenous injection 10 mg	10 mg, Intravenous, Every 10 min PRN, High Blood Pressure, Until systolic blood pressure (SBP) less than 180. Hold for heart rate less than 60. Administer IVP over 2 minutes. May repeat in 10 minutes until systolic blood pressure (SBP) less than 180. May repeat x3. If no response, call MD.
☐ hydrALAZINE (APRESOLINE) intravenous injection 10 mg	10 mg, Intravenous, Every 1 hour PRN, Other, To keep systolic blood pressure (SBP) at 160-220. Administer IVP. May administer every 1 hour as needed to keep systolic blood pressure (SBP) at 160-220.

Antiplatelet Therapy (Single Response)

○ low dose aspirin chewable tablet 81 mg	81 mg, Oral, Daily
○ aspirin tablet 325 mg	325 mg, Oral, Daily
○ clopidogrel (PLAVIX) tablet 75 mg	75 mg, Oral, Daily
○ aspirin-dipyridamole (AGGRENOX) 25-200 MG per 12 hr capsule - 1 capsule	1 capsule, Oral, 2 times daily
○ Contraindications for Antiplatelet Therapy	Routine, Once-Routine, Starting today For 1 Occurrences Reason for not prescribing:

Standard Lipid-Lowering Agents (Single Response)

Choose one lipid-lowering agent (statin) from the list. If contraindicated, select the appropriate reason from the Contraindications for Lipid-Lowering Agents order. If the patient has already been prescribed a lipid-lowering agent outside of this Order Set, select the Lipid-Lowering Agent Ordered Previously order.

○ atorvastatin (LIPITOR) tablet 10 mg	10 mg, Oral, Daily
○ Contraindications for Lipid-Lowering Agents	Routine, Once-Routine For 1 Occurrences Contraindications for lipid-lowering agents/statins:
○ Lipid-Lowering Agent Ordered Previously	Routine, Once-Routine For 1 Occurrences A lipid-lowering agent has already been ordered for this patient (i.e., outside of this Order Set).

CONSULTS

Ancillary Consults

☐ Inpatient Consult to Nutrition Services	Reason for Consult? Evaluate and Treat
☑ Ip Consult To Physical Therapy	Reason for Consult? Possible stroke - Evaluate and Treat
☑ Ip Consult To Occupational Therapy	Reason for Consult? Possible stroke - Evaluate and treat
☐ Ip Consult To Speech Pathology	Reason for Consult? Evaluate and Treat
☐ IP Consult to Physical Medicine Rehab	Reason for Consult? Evaluate and Treat Has Consultant been contacted? No
☐ IP Consult to Neurology	Reason for Consult? Evaluate and Treat Has Consultant been contacted? No

Discharge:

It is important to ensure that patients in the observation unit have appropriate discharge instructions in the After Visit Summary. A time frame for follow up must be documented in order to be compliant with Joint Commission Primary Stroke Center requirements. Document follow up with Primary Care Physician within 2 days is an example. The Joint Commission expectation is that patients with TIA have a connection with a Primary Care Physician within two weeks.

Reference:

American Stroke Association. Retrieved December 2016 from https://www.stroke.org/sites/default/files/resources/tia-abcd2-tool.pdf

Martel, J. 2015. Stroke mimics a clinical dilemma. Retrieved December, 2016 from https://www.ahcmedia.com/articles

Nanda, A. , O'Connor, R. 2015. Transient ischemic attack workup. Medscape. Retrieved Decembe, 2016 from http://emedicine.medscape.com/article/1910519-workup?src=refgatesrc1#c12

Sorenson, A.G. 2011. Transient ischemic attack definition, diagnosis, risk stratification Retrieved December, 2016 from https://www.ncbi.nlm.nih.gov