

TIA / ND Stroke Algorithm and Referral to Provincial Secondary Stroke Prevention Clinic (PSSPC)

Please fax completed form to: **902-368-5511** Phone: **902-368-5506**

Name: _____
 MRN: _____
 DOB: _____
 Phone number: _____

Patient presents with neurological symptoms

Likely TIA or non-disabling (ND) Stroke

High risk for recurrent stroke (symptom onset within last 48 hours) - Immediate transfer to stroke capable ED (PCH/QEH)

- Focal neuro deficit <24 h or ND deficit NIHSS<=3: motor, language, unilateral vision loss, unilateral hemi-sensory loss, duration >10 min.
- ABCD2 score: _____
 - High Risk > 6
 - Moderate Risk 4-5
 - Low Risk 0-3
 (see reverse)
- Event date: _____

CT to rule out hemorrhage in ED
 CT at discretion of GP / NP in primary care

If no hemorrhage, proceed with SSPC referral and arrange following w/u and treatment per checklist

If hemorrhage, manage appropriately based on severity. BP target < 140/90, consider Neurology/Neurosurgery consult as clinically indicated.

Unlikely TIA

Isolated dizziness, confusion, syncope, fainting, isolated vertigo with negative HINTS testing (see over), memory loss, migraine, seizure

Consider Neuro consult if uncertain diagnosis and clinical concern

Consider outpatient Neuro consult if stable and clinically indicated

Etiology Workup:

Atheroembolic (large vessel disease):

- Carotid imaging within 24 hrs for high and moderate risk (ABCD2 above): CTA OR Carotid Ultrasound
 Carotid Ultrasound on week days; CTA head and neck within 24 hrs on weekends
 IF carotid stenosis >50% on symptomatic side THEN consider urgent referral to vascular surgeon if surgical candidate
 Consider Neurology consult if uncertain

Cardioembolic:

- ECG in ED / or ordered as outpatient by GP/ NP
- TTE as outpatient
- 24-48 hr holter monitor (IF Afib/flutter known or found THEN consider OAC (warfarin vs DOAC)
 - OAC may be contraindicated if significant bleeding risk or if sizeable completed stroke on CT in acute period
 - Consider Neurology consult if uncertain
 - Note: any AFib patient with CHADS 2 score equal to or greater than 1 should be considered a candidate for OAC
- Cardiac monitoring in ED if clinically appropriate

Risk Factor Management:

- Labs: A1C, Fasting Blood Glucose (target A1C <7%)
 Fasting Lipid Profile (target LDL <2)
 Kidney Function, CBC, PT/INR
- Blood Pressure management (target <130/80)
 - Smoking cessation/diet/exercise counseling
 - Antiplatelet Management:
 - IF Afib/flutter – OAC as above (see section on holter monitor)
 - IF no indication for OAC - antiplatelet load in ER (ASA 160mg & Plavix 300 mg); then Dual antiplatelet ASA 81mg + plavix 75 mg daily x 3wks
 - After 3 weeks: - IF ASA naive – use ASA 81mg & discontinue Plavix;
 - IF ASA on board at baseline – change to Plavix, discontinue ASA
 - Consider Neurology consult if uncertain
 - Rehab referral for non- disabling (ND) stroke with ongoing deficit(s)
 (see Provincial Ambulatory Stroke Rehabilitation Services info)
 - ED Physician or GP / NP to review driving as clinically indicated

Legend
 ND - Non-disabling Stroke
 OAC - Oral anticoagulant
 ED - Emergency Department
 TIA - Transient Ischemic Attack
 DOAC - Direct Oral Anticoagulant
 NIHSS – National Institute of Health Stroke Scale



Physician / NP Name _____ Signature _____
 Date of referral: _____

ABCD² SCORE – 7 DAYS STROKE RISK	
	POINTS
A ge ≥ 60	1
B lood pressure ≥ 140/90	1
C linical features	
✓ Unilateral weakness	2
✓ Speech disturbance w/o weakness	1
D uration of symptoms	
✓ > 10 min < 59 min	1
✓ ≥ 60 min	2
D iabetes	1
Risk: Score < 5 = 4%; Score of 5 = 16%; Score ≥ 6 = 35%	
<small>Johnston & Rothwell et al. Lancet 2007</small>	

Risk factors	Score	CHADS2-VASc score and Annual stroke risk (%)
Congestive heart failure	1	Score 1 = 1.3
Hypertension	1	2 = 2.2
Age > 75 years	2	3 = 3.2
Diabetes mellitus	1	4 = 4
Stroke/TIA/systemic embolism	2	5 = 6.7
Vascular disease	1	6 = 9.8
Age 65 to 74 years	1	7 = 9.6
Sex (female)	1	8 = 6.7
		9 = 15.2

Indications **HiNTs Exam**

- A) Acute Vestibular Syndrome (AVS) exam to evaluate for posterior circulation Cerebrovascular Accident
- B) Requires ongoing Vertigo and Nystagmus at the time of the exam for accurate test (esp. head impulse)

Exam (Mnemonic: HiNTs)

- A) Head Impulse
 - 1. See Horizontal Head Impulse Test (Head Thrust Test, h-HIT)
 - 2. Head is rapidly rotated 20-40 degrees to one side or the other
 - 3. Observe for one eye that lags in response to maintain forward gaze (other eye will lack corrective saccades)
 - a. Makes quick saccade movement to catch-up or correct (HiNTs-Peripheral)
 - 4. "Normal" test or HiNTs-Central (no saccade/correction on head provocation) strongly suggests posterior CVA
 - a. Test Specificity approaches 100%, but Test Sensitivity is only 85%
 - b. Although saccade/correction on testing suggests peripheral cause, it does not exclude posterior CVA
 - c. False positive (absent saccades) may also be present if Vertigo has resolved
- B) Direction Changing Nystagmus (or Nystagmus that is vertical or torsional)
 - 1. See Nystagmus
 - 2. Patient follows examiner's finger as they move it slowly in all directions
 - a. Patient should look up, down, left or right, as well as to eccentric positions (off-center)
 - 3. Nystagmus should be present in all cases of acute vestibular system whether of peripheral or central cause
 - 4. Findings suggestive of peripheral Vertigo
 - a. Horizontal Nystagmus suggests a peripheral cause (although it does not exclude a central cause)
 - 5. Findings suggestive of central Vertigo (e.g. posterior CVA)
 - a. Vertical Nystagmus
 - b. Torsional Nystagmus
 - c. Nystagmus that changes direction
 - i) Rightward Nystagmus with rightward gaze
 - ii) Leftward Nystagmus with leftward gaze
- C) Test of Skew
 - 1. See Skew Deviation (Vertical Ocular Misalignment, Vertical Heterotropia, Vertical Strabismus)
 - 2. Perform as with Alternate Eye Cover Test (also used to evaluate for horizontal Strabismus in children)
 - 3. Alternately cover one eye and then the other
 - 4. Observe for quick vertical gaze corrections (abnormal)
 - a. Uncovered eye shifts to center from its abnormal, vertically displaced position
 - 5. Abnormal skew test with quick vertical gaze corrections suggests a central cause (e.g. Brainstem CVA)
 - 6. Examiner may also see a Head Tilt at rest that often accompanies Skew Deviation

Interpretation

- A) Positive HiNTs Criteria (at least 1 of 3 positive) suggestive of cerebellar CVA or Brainstem CVA
 - 1. Normal Horizontal Head Impulse Test (no saccade/correction on head rotation) OR
 - 2. Nystagmus that changes direction (or Vertical Nystagmus or torsional Nystagmus) OR
 - 3. Skew Deviation on Alternate Eye Cover Test
 - a. Uncovered eye demonstrates quick vertical gaze corrections

Efficacy

- A) Positive criteria (1 of 3 present as above) suggests posterior Cerebrovascular Accident (cerebellar CVA or Brainstem CVA)
 - 1. Test Sensitivity: 100%
 - 2. Test Specificity: 96%

Resources

EMCrit Blog - Video demonstrating the HiNTs Exam <http://emcrit.org/misc/posterior-stroke-video/>

References

Kattah (2009) Stroke 40:3504-10 [PubMed]