

STROKE EDUCATION FOR NEW HAMPSHIRE CRITICAL ACCESS HOSPITALS JUNE 22, 2020

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CO-CHAIR NEW HAMPSHIRE STROKE COLLABORATIVE

COUMADIN CLINIC NURSE – ELLIOT HOSPITAL

OBJECTIVES/TOPICS

- Interfacility transfer of stroke patients
- Posterior Circulation Strokes
- Secondary Stroke Prevention

- No Disclosures

INTERFACILITY TRANSFER OF STROKE PATIENTS

POSITION PAPER NATIONAL ASSOCIATION OF EMS PHYSICIANS

MEDICAL DIRECTION OF INTERFACILITY TRANSPORTS

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POSITION STATEMENT

Interfacility transport is defined as the movement of a patient from one health care facility to another in a licensed ground or air ambulance. The medical direction of an interfacility transport is a shared responsibility. The following statements should serve as a guide to promote a safe and effective transport of a patient between facilities.

- The transferring physician, by law, has the responsibility of selecting the most appropriate means of transport to include qualified personnel and transport equipment.
- The transport service and its medical director are responsible

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for ensuring that their transport personnel can provide quality care within their scope of practice and are skilled in the use of the transport equipment.

- The responsibility of online medical direction during transport should be established prior to the transport based on mutual agreement between the transferring physician, the transport service medical director, and the accepting physician.
- Interfacility transport should be defined by state statute/regulation as a component of the emergency medical services (EMS) system.
- System or service protocols should define the scope of practice of the transport service to ensure an appropriate, safe, and effective transport. Consultation by the transferring physician with the transport service medical director and the accepting physician may be necessary to provide this assurance.
- The EMS system should educate the medical community about interfacility transport standards.

DISCUSSION

The transfer of patients between

access to such care. The ability to transfer patients between facilities is crucial to society as a whole because it potentially prevents needless duplication of services and decreases cost in the system. It facilitates the existence of an integrated health care system, such as occurs in a trauma system. Transfer of patients was originally identified as one of 15 essential components of EMS system design.¹ Transfers occur with the expectation that potential complications en route may be adequately treated by transporting personnel. For the purposes of this paper, an interfacility transport is defined as the movement of a patient from one health care facility to another health care facility.

Emergency medical services systems and their medical directors are knowledgeable regarding system capabilities, but are unclear of the system's role regarding transfer. Transferring and accepting physicians know the problems and needs of patients requiring transfer, but are not always cognizant of the capabilities of transport services and personnel. As a result, the authority of medical direction for the care of patients during transport is unclear. Several organizations have developed position

American College of Emergency Physicians® POLICY STATEMENT

ADVANCING EMERGENCY CARE

Approved January 2016

Appropriate Interfacility Patient Transfer

Revised January 2016 with current title, February 2009, February 2002, June 1997, September 1992 titled "Appropriate Inter-Hospital Patient Transfer"

Originally approved September 1989 as a position statement titled "Principles of Appropriate Patient Transfer"

The American College of Emergency Physicians (ACEP) believes that quality emergency care should be universally available and accessible to the public. For patients evaluated or treated in the emergency department (ED) who require transfer from the ED to another facility, ACEP endorses the following principles regarding patient transfer.

- The optimal health and well-being of the patient should be the principal goal of patient transfer.
 - Emergency physicians, advance practice providers, and facility personnel should abide by applicable laws regarding patient transfer. All patients should be provided a medical screening examination (MSE) and stabilizing treatment within the capacity of the facility before transfer. If a competent patient requests transfer before the completion of the MSE and stabilizing treatment, these services should be offered to the patient and informed refusal documented.
 - The transferring facility is responsible for informing the patient or responsible party of the risks and the benefits of transfer and document these. Before transfer, patient consent should be obtained and documented whenever possible.
 - The medical facility's policies and procedures and/or medical staff bylaws should identify the individuals responsible for and qualified to perform MSEs. The policies and procedures or bylaws must define who is responsible for accepting and transferring patients on behalf of the hospital. The examining physician at the transferring hospital will use his or her best judgment regarding the condition of the patient when determining the timing of transfer, mode of transportation, level of care provided during transfer, and the destination of the patient.
 - The mode of transportation used for transfers should be at the discretion of the treating provider and based on the individual clinical situation, available options, needed equipment and patient preference. Options for transport include but are not limited to ambulance, air-transport and private vehicle. Regardless of the method of transfer, intravenous access may remain in place if deemed appropriate by the referring provider.
 - Payment for transport should not be retrospectively denied by insurance companies.
- Agreement to accept the patient in transfer should be obtained from a physician or responsible individual at the receiving hospital in advance of transfer. When a patient requires a higher level of care other than that provided or available at the transferring facility, a receiving facility with the capability and capacity to provide a higher level of care may not refuse any request for transfer.
 - All pertinent records and copies of imaging studies should accompany the patient to the receiving facility or be electronically transferred as soon as is practical.
 - When transfer of patients is part of a regional plan to provide optimal care at a specialized medical facility, written transfer protocols and interfacility agreements should be in place.

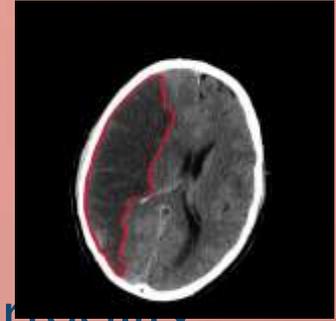
EMTALA
Medical screening
Risks and benefits
Patient records
Transfer agreement

SET THE TEAM UP FOR SUCCESS

- Part of interfacility transfer is pre-hospital care, communication and protocols
 - Coordinate with EMS on pre-hospital process
 - What does your Stroke Code, Stroke Alert or Stroke Team Activation look like?
 - Develop a communication tool to support the patient handoff between EMS and hospitals
 - What is the tool/run sheet? Where will it be left? What information?
 - EMS part of the hospital team
 - Feedback on performance improvement
 - Invite EMS to stroke education opportunities.
 - Involve in mock stroke codes that are put on by the hospitals
 - Communicate with EMS Medical Director



WHO IS BEING TRANSFERRED?



- Limited specialized neurovascular services require increased interfacility transfer to access advanced stroke resources.
- Critical ischemic strokes – usually larger in size with significant deficits
- Hemorrhagic strokes
- Those requiring medication or procedure not available at that hospital
- Large vessel occlusion strokes (LVOs)
 - Interhospital transfer for endovascular treatment (EVT) is increasingly common and is associated with a significant delay in EVT initiation highlighting the need to develop more efficient stroke systems of care.
 - Shah S, Xian Y, Sheng S, Zachrison KS, Saver JL, Sheth KN, Fonarow GC, Schwamm LH, Smith EE. Use, temporal trends, and outcomes of endovascular therapy after interhospital transfer in the United States. *Circulation*. 2019; 139:1568–1580.

AVOID DELAYS!!!!

- **Before Transfer occurs**
- PI - Map out your processes
 - Walk through your stroke system from beginning to end
 - Mock Stroke Activation – use stopwatch
- **During Transfer process**
- Maintain patient flow
 - Call tertiary care facility EARLY – give heads up
 - CTA on front end to identify transfers
 - Flow stops at certain points of care
 - After patient returns from imaging
 - Now into transfer mode
 - After transfer decision has been made
 - Prepare documentation, supplies for transfer, call report
 - Be ready when EMS arrives
 - Anticipate some time for switch of IV/monitors
 - A checklist can be helpful

Your Mantra!



TRANSFER PROCESS



- Decision to transfer:

- Direct communication between the transferring and receiving facilities
- Send imaging ASAP – call provider to provider

- Labetalol 10–20 mg IV over 1–2 min, may repeat 1 time
- Nicardipine 5 mg/h IV, titrate up by 2.5 mg/h every 5–15 min, maximum 15 mg/h; when desired BP reached, adjust to maintain proper BP limits
- Clevidipine 1–2 mg/h IV, titrate by doubling the dose every 2–5 min until desired BP reached; maximum 21 mg/h
- Other agents (eg, hydralazine, enalaprilat) may also be considered

- AHA/ASA 2019 Guidelines

antihypertensive therapy. Also with BP > 220/120 mmHg, tPA eligible with BP > 185/110 mmHg, < 140 mmHg systolic for acute ICH

- Pre-transfer checklist is useful

TRANSFER PROCESS CONT...



- Mode of transfer:
 - Most common are **ground transport** (ambulances and Mobile Intensive Care Units (MICUs)) and **air transport** (helicopter or fixed wing airplanes)
 - Include patient/family if appropriate
 - What level of care is needed
 - Consider distance, traffic, weather, availability (when can they arrive)
 - Does receiving facility have their own teams to send
- Who accompanies:
 - Follow state/regional protocols
 - Usually recommended to have at least two competent personnel on transfer
 - They should be properly trained (ACLS, stroke certified), competent and experienced

TRANSFER PROCESS CONT...



- Equipment, Drugs and Monitoring:

- Meds/equipment for airway management, O₂, ventilation, hemodynamic monitoring, IV infusions and resuscitation
 - Antihypertensives: labetalol, nicardipine, enalapril
 - Anticonvulsants
- Establish supplies needed and start infusions (ie. tPA) **before** transfer

- Documentation/Safe Handover of patient:

- Documentation at all stages of transfer.
 - patient's condition, reason to transfer, referring and receiving clinicians, vital signs before/during transfer, clinical events during transfer and treatment given.
 - Complete report to receiving team – avoid compromising care

QUALITY – PERFORMANCE IMPROVEMENT

- Meet with transport services to develop ongoing QA processes.
- Collaborate with tertiary care organizations
 - Sharing images
 - Immediate accept (“just say yes” policy)
 - Transfer Agreements
- Competencies and education for crew and ED staff.
 - Promotes PI, improves communication, reinforces protocol adherence
- Align protocols with the American Stroke Association guidelines.
- Retrospective chart review of protocol adherence and complications quarterly/monthly with feedback to transport/ED teams.
- Stroke champion/Stroke Navigator



DRAFT EMS PROTOCOL FOR STROKE

Northern New England Unified Guideline Stroke – Adult DRAFT 2.21

- SUSPECT STROKE:** with any of the following new or sudden symptoms and/or complaints:
- Unilateral motor weakness or paralysis to face, limb or side of body, including facial droop
 - Unilateral numbness
 - Dizziness/vertigo
 - Acute visual disturbance, loss of vision in one eye or one side of vision
 - Difficulty with balance or uncoordinated movements of a limb, gait disturbance
 - Difficulty with speech understanding or production (slurred or inappropriate use of words)
 - Severe headache for no obvious reason
 - Altered mental state

EMT STANDING ORDERS

- E**
- Routine Patient Care.
 - Complete the Prehospital Stroke Screening Tool
 - If Prehospital Stroke screen is positive, complete stroke severity score (e.g., FAST-ED) to determine probability of a large vessel occlusion (LVO)
 - Establish Stroke Alert Criteria and notify receiving hospital of "Stroke Alert" with findings from the screening tools, thrombolytic checklist and time last known well (TLKW).
 - For symptomatic:
 - Administer oxygen to maintain O₂ between 94% - 98%
 - Elevate head of stretcher to 30° (unless patient requires spinal motion restriction);
 - Minimize on-scene time; do not delay for ALS intercept;
 - Acquire and transmit 12-lead ECG, if available;
 - Correct glucose if < 60 mg/dL. See [Hypoglycemia Protocol 2.8A or 2.8B](#).
 - Rapid transport to the most appropriate facility based on the destination guidance utilizing your local stroke plan.

AEMT & PARAMEDIC STANDING ORDERS

- A/P** Establish IV (18 gauge catheter & right AC preferred site) and administer 250 mL 0.9% NaCl bolus.

Prehospital Stroke Screening Tool

Stroke screen is positive if any abnormal finding in facial droop, arm drift or speech.

Time Last Known Well: (If patient awake with symptoms, time last known to be at baseline)

Witness: Best contact number for witness:

Prehospital Stroke Scale Examination Please check: Normal Abnormal

Facial Droop: Have the patient smile and show teeth.

Normal: Both sides of the face move equally well. Normal Abnormal

Abnormal: One side of the face does not move as well as the other.

Arm Drift: Have the patient close their eyes and hold arms extended for 10 seconds.

Normal: Both arms move the same, or both arms don't move at all. Normal Abnormal

Abnormal: One arm doesn't move, or one arm drifts down compared to the other.

Speech: Ask the patient to repeat a phrase such as, "You can't teach an old dog new tricks".

Normal: Patient says the correct words without slurring. Normal Abnormal

Abnormal: Patient slurs words, says the wrong word, or is unable to speak.

Blood Glucose:

Protocol Continues 

DRAFT EMS PROTOCOL FOR STROKE

2.21 Northern New England Unified Guideline Stroke – Adult DRAFT



Protocol Continued

If stroke screening scale is positive calculate stroke severity score using FAST-ED

Stroke Severity Score (FAST-ED)

A FAST-ED greater than or equal to 4 is considered high probability for an LVO

Assessment	Points	Score
Facial Palsy (ask the patient to smile)		
No facial droop or only minor paralysis on one side of the face	0	
Partial or complete paralysis of one side of the face	1	
Arm Weakness (arms out with palms up for 10 secs)		
No drift, or both arms slowly move down equally	0	
Arm drift or some effort to lift the affected arm against gravity	1	
No effort against gravity or no movement in one or both arms	2	
Speech Change (ask the patient to name 3 common items; ask them to show you 2 fingers)		
Able to name at least 2 of 3 objects and follow command	0	
Names none, or only 1 of the 3 items correctly	1	
Unable to "show two fingers" to command	1	
Time - when was patient last know well?		
Eye Deviation		
Able to look to both sides without difficulty	0	
Able to move eyes horizontally in both directions but not without clear difficulty	1	
Gaze is fixed to one side and does not move	2	
Denial/Neglect (only do if there is arm weakness AND commands followed)		
Recognizes weakness in their weak arm and recognizes their weak arm	0	
Unable to recognize weakness when asked "Are you weak anywhere"	1	
Does not recognize own arm when asked "Whose arm is this?"	1	
Total		

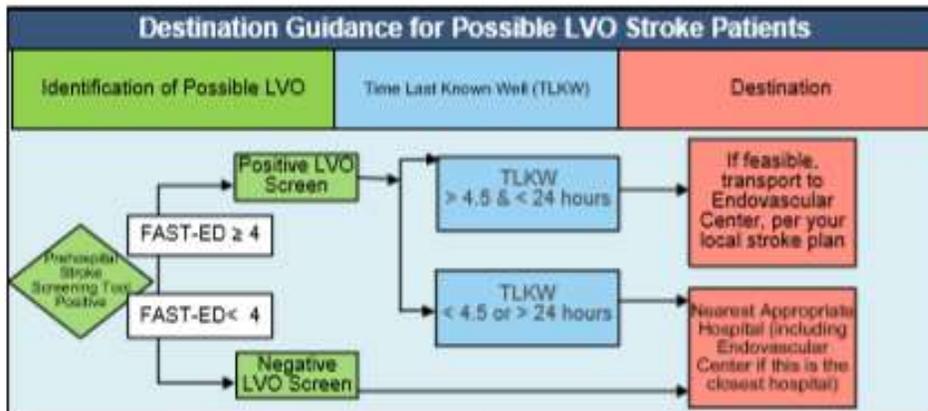
Medical Protocol 2.21

Establish Stroke Alert Criteria

- Yes No **Stroke Alert Criteria – Please check Yes or No:**
- Blood glucose is or has been corrected to greater than 80 mg/dL?
 - Deficit unlikely due to head trauma or other identifiable causes?
 - Positive Prehospital Stroke Screen:
 - and time last known well is less than 4.5 hours OR
 - FAST-ED score is greater than or equal to 4 AND time last known well is less than 24 hours

Stroke Alert Criteria – If yes to all criteria determine appropriate destination, contact receiving hospital and report a STROKE ALERT with time last known well, FAST-ED score & thrombolytic checklist results

DRAFT EMS PROTOCOL FOR STROKE



Work with your regional endovascular center when developing your local stroke plan.

Thrombolytic Checklist for patients eligible for thrombolytics (t-PA), try to complete the following:

YES	NO	Has the patient had any of the following:
<input type="checkbox"/>	<input type="checkbox"/>	1. Severe head trauma or intracranial or spinal surgery within the past 3 months?
<input type="checkbox"/>	<input type="checkbox"/>	2. Major non-cranial surgery or trauma within 14 days with uncontrolled bleeding (e.g.: internal organs)?
<input type="checkbox"/>	<input type="checkbox"/>	3. Spontaneous (non-traumatic) intracranial hemorrhage at any time in the past?
<input type="checkbox"/>	<input type="checkbox"/>	4. Is the patient taking any anticoagulants, including oral or injectable medications? If yes, clarify when last dose was taken (see PEARLS below)

PEARLS for Anticoagulants:

- Patients may recognize anticoagulants as "blood thinners". Ask about anticoagulants including warfarin (Coumadin or Jantoven), Heparin (IV/IM - including Lovenox), dabigatran (Pradaxa), rivaroxaban (Xarelto), apixaban (Eliquis), betroxaban (Bevyoxa) or edoxaban (Savaysa) and immediately communicate to hospital staff.
- Please note, medication manufacturers are producing new anticoagulants frequently.

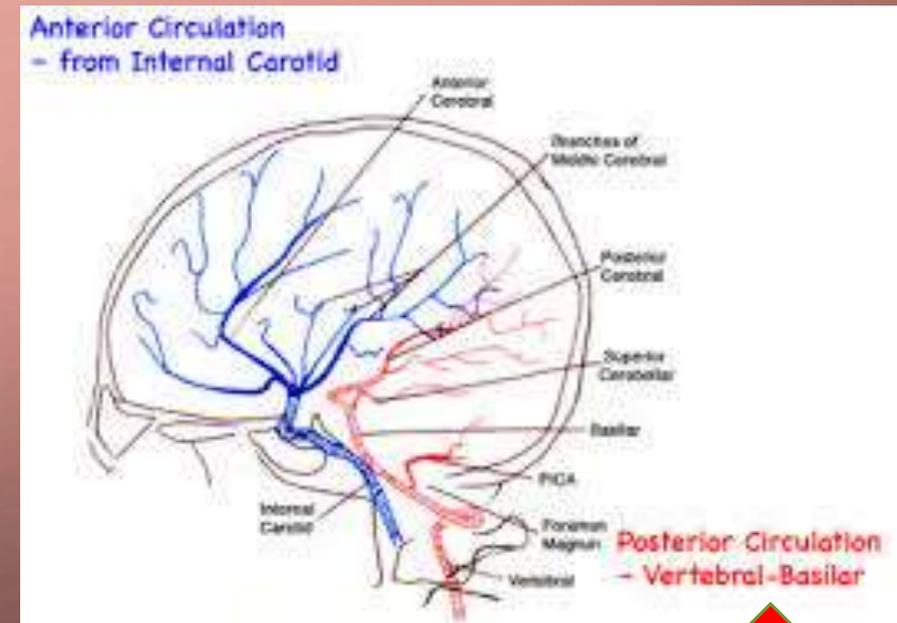
PEARLS:

- Stroke requires time sensitive interventions. Time = Brain
- Every minutes of acute stroke = about 2 million neurons lost.
- Transport witness, family or caregiver or obtain witness best phone number for hospital staff to verify time of symptom onset or Time Last Known Well (TLKW).
- TLKW is the last time patient known to be at their neurological baseline. If patient awakes with symptoms, TLKW is time patient was last known to be at their neurological baseline – Ask if patient got up during the night and was at baseline!
- Consider stroke mimics including: migraine, hypoglycemia, seizures, intoxication, sepsis cerebral infectious process, toxic ingestion, neuropathies (Bell's palsy), neoplasms, hypertensive encephalopathy.

Medical Protocol 2.1

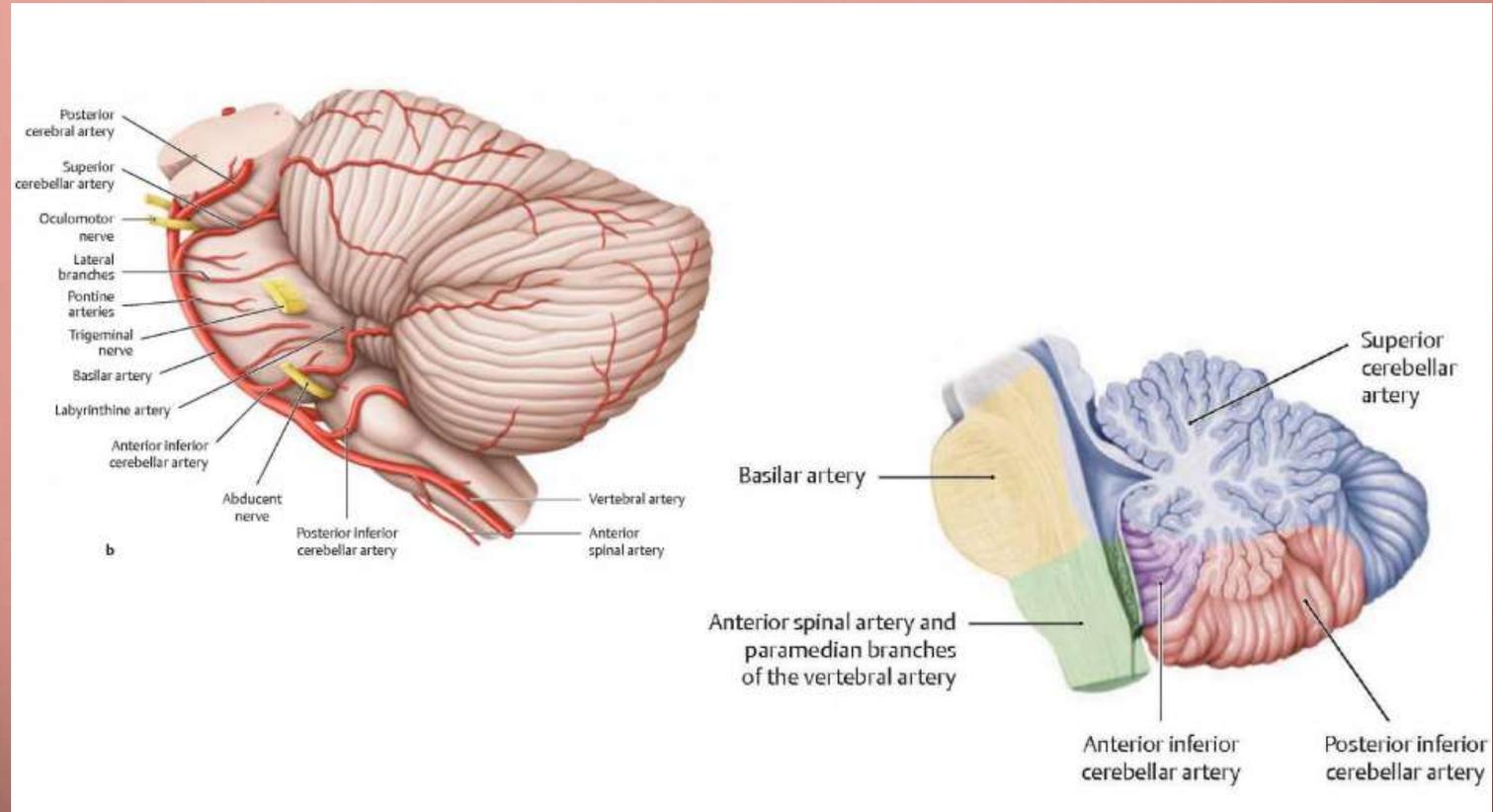
POSTERIOR CIRCULATION STROKES (PCS)

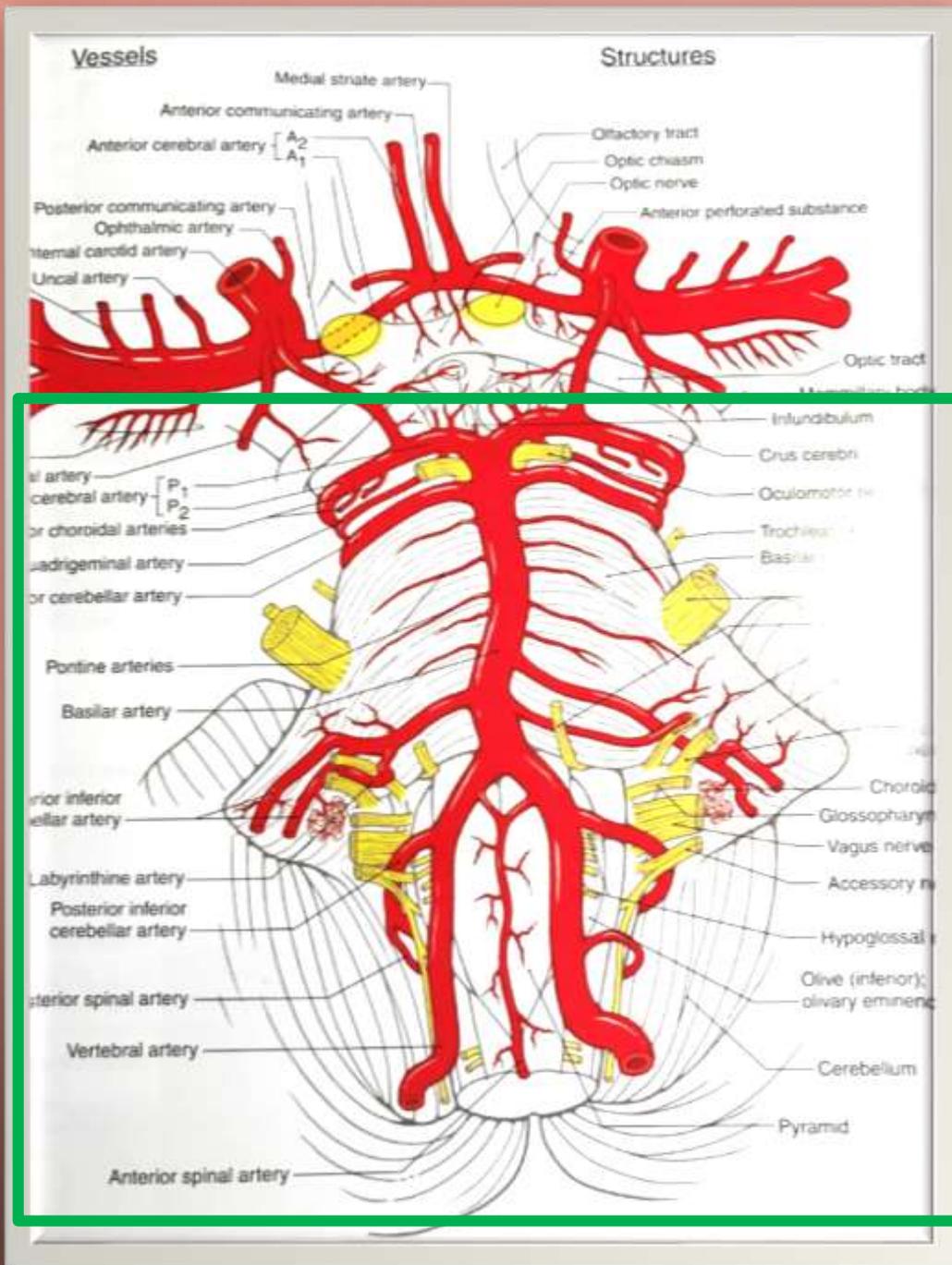
- Comprise about 20% of all strokes
- Often misdiagnosed due to atypical symptoms = delay in care/treatment
- EMS Screening Tools for PCS
 - S-A-V-E (Sudden, AMS, Vision, Equilibrium)
 - FAST-AV (ataxia and vision)
 - FAST-AB (ataxia and blindness)
 - BE-FAST (Balance, Eyes, FAS)
- Diagnosis – HINTS test
 - Must walk them in the ED



POSTERIOR CIRCULATION STROKES

- Supplies blood to:
 - Medulla
 - Pons
 - Midbrain
 - Thalamus
 - Hippocampus
 - Cerebellum
 - Parts of occipital and temporal lobes (visual cortex)





Vision
 Balance
 Sensory
 Brainstem
 Cranial nerves

POSTERIOR CIRCULATION STROKE

Other cortical regions (including medial temporal and parietal lobes)

Blood supply—Supplied by posterior cerebral artery in some but not all people
Ischaemia symptoms—Neuropsychological such as memory deficits, alexia, acalculia, agraphia, prosopagnosia

Thalamus

Blood supply—Posterior cerebral artery
Ischaemia symptoms—Sensory loss or disturbance

Occipital lobes

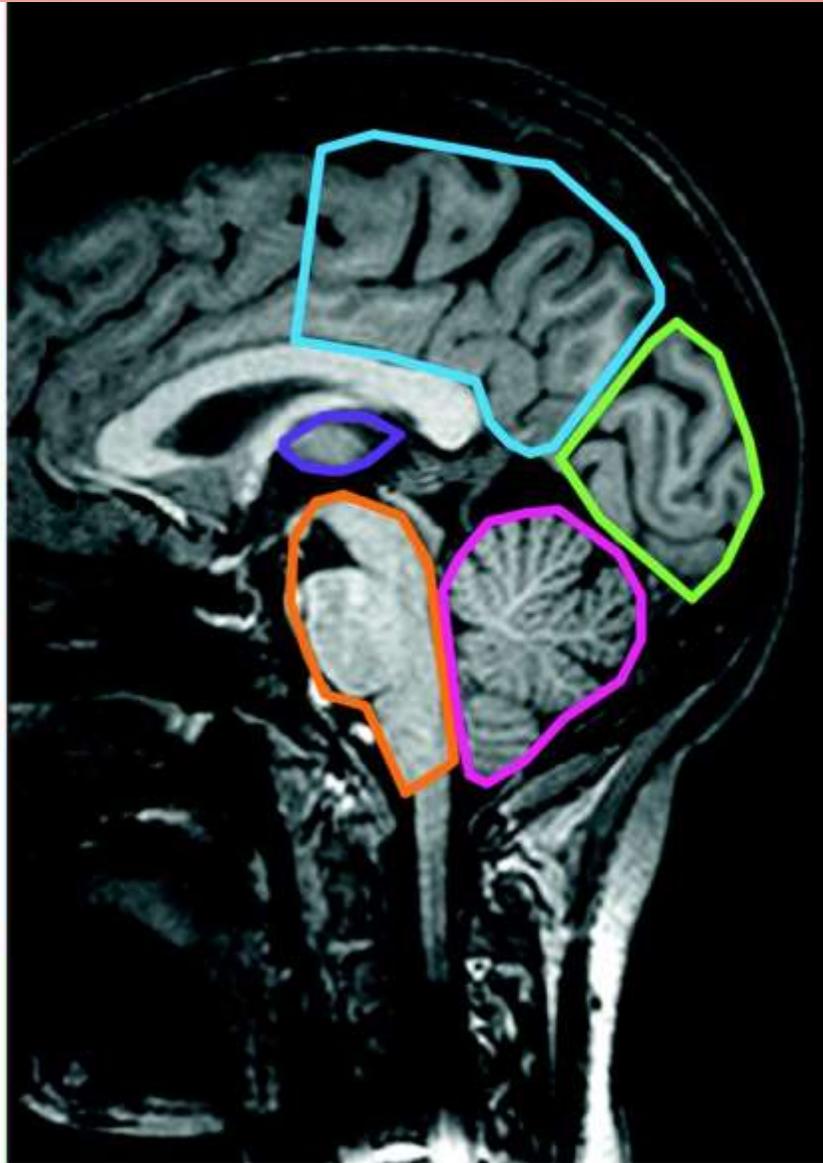
Blood supply—Posterior cerebral artery
Ischaemia symptoms—Visual field defects

Brainstem (midbrain, pons, medulla)

Blood supply—Basilar, superior cerebellar, and anterior inferior cerebellar arteries
Ischaemia symptoms—Limb weakness, sensory loss, cranial nerve palsies; classical brainstem syndromes with crossed signs; "locked-in" syndrome; "top of the basilar" syndrome

Cerebellum

Blood supply— Superior, anterior inferior, and posterior inferior cerebellar arteries
Ischaemia symptoms—Vertigo, ataxia, nystagmus, and other cerebellar signs



Alexia – inability to see words or read

Acalculia- loss of the ability to perform simple arithmetic calculations

Agraphia – loss of ability to write

Prosopagnosia - inability to recognize the faces of familiar people

S/S ISCHEMIC STROKE KEY CEREBRAL AREAS

- **Left Hemisphere**

- Left gaze preference
- Right visual field deficit
- Right hemiparesis
- Right hemisensory loss
- Speech deficits (95% have dominance)

- **Right Hemisphere**

- Right gaze preference
- Left visual field deficit
- Left hemiparesis
- Left hemisensory loss neglect

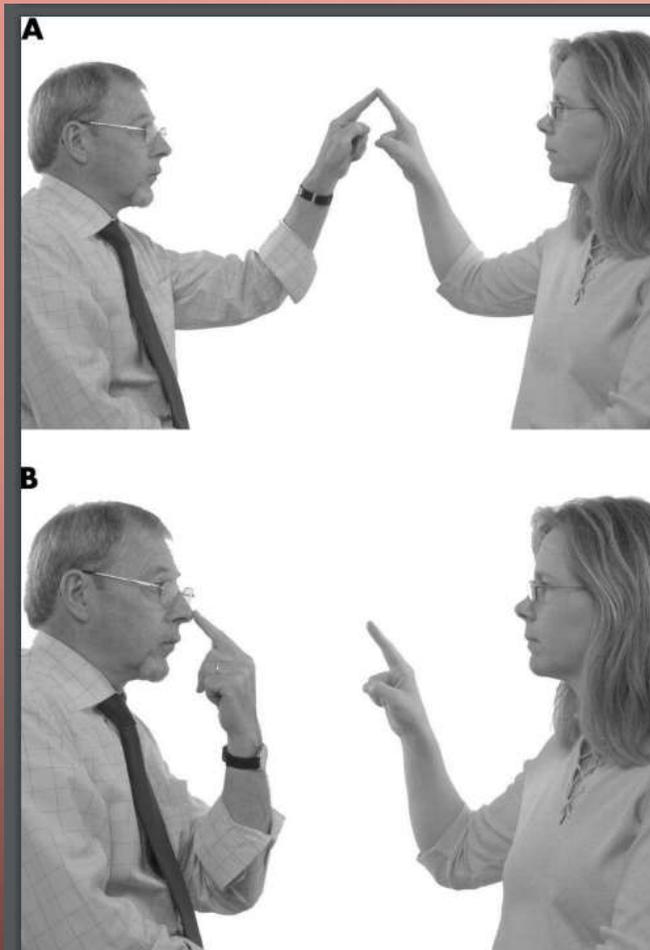
- **Brainstem**

- Nausea/vomiting
- Diplopia, gaze palsy
- Dysarthria, dysphagia
- Vertigo, imbalance
- Hemiparesis or quadriplegia
- Sensory loss in hemibody or all 4 limbs
- Decreased LOC
- Issues with vital functions

- **Cerebellum**

- Gait ataxia - imbalance
- Limb ataxia
- Neck stiffness
- Tremors
- Headache

ASSESSING ATAXIA

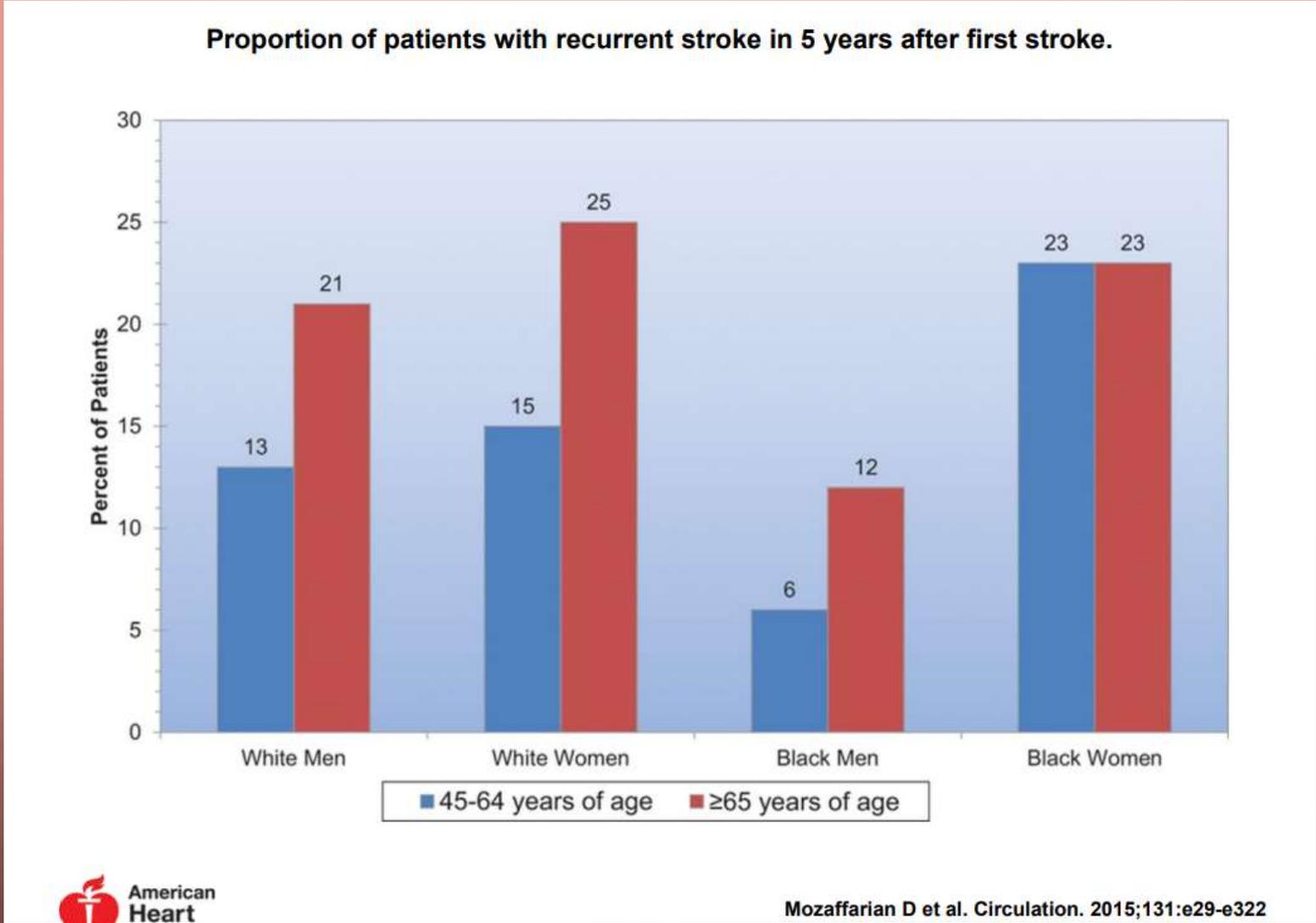


Finger-to-Nose Test

- Test for limb ataxia
- Element of the NIH stroke scale
 - Limb ataxia present in 30% of EMS unrecognized stroke cases in our pilot registry
- Reasonable inter-rater reliability
 - Kappa 0.51¹ to 0.68²
- Easy to teach
- Integrates well into existing prehospital stroke scale (CPSS)

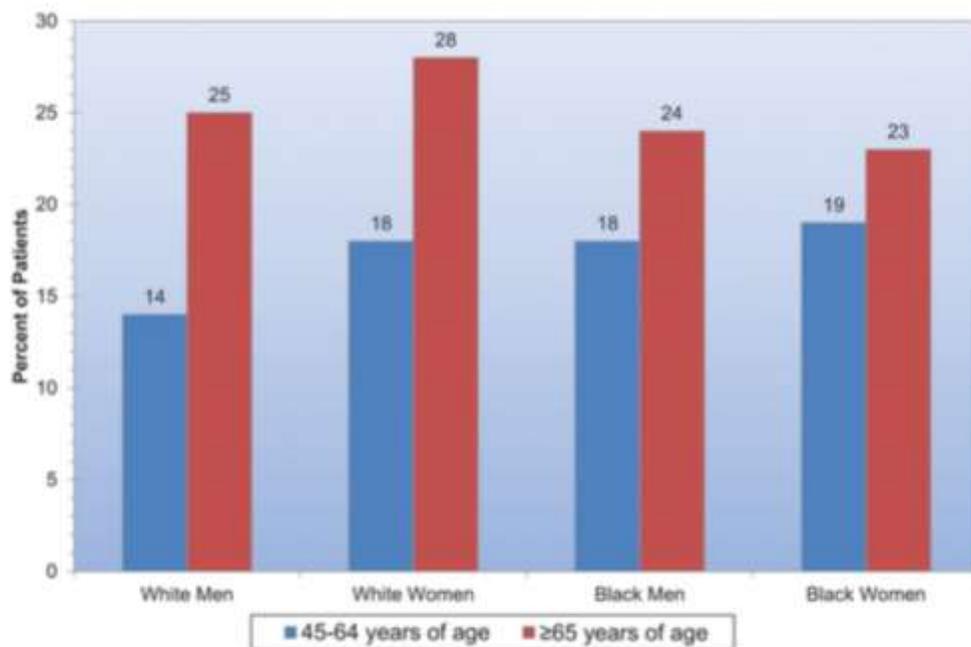
1. Brott et al. Stroke **20**(7): 864-870.
2. Hansen et al. Acta Neurol Scand **90**(3): 145-149.

WHO IS HAVING RECURRENT STROKE?

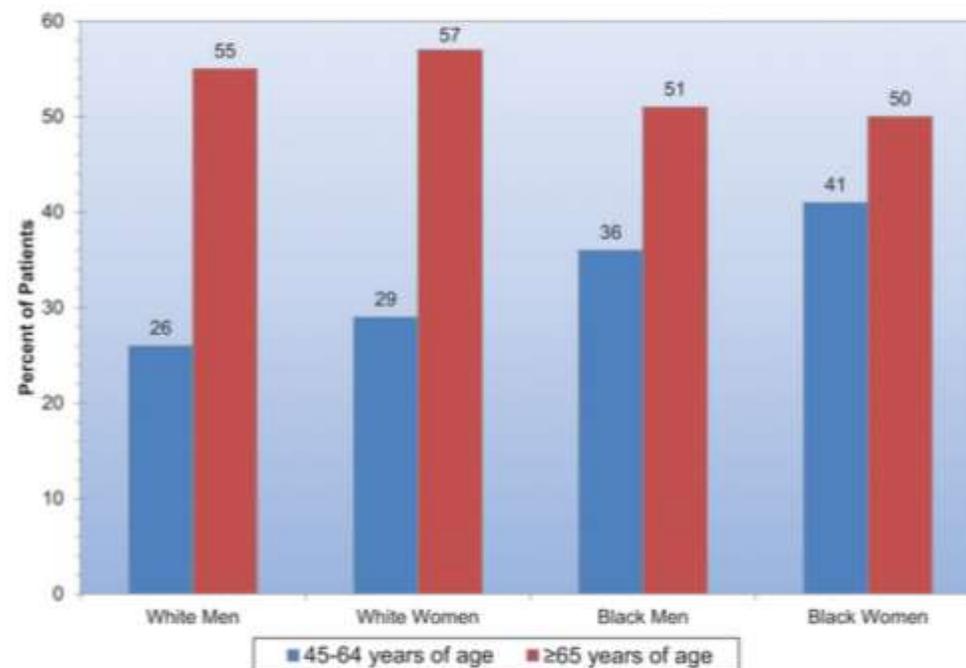


WHO IS DYING FROM STROKE?

Proportion of patients dead 1 year after first stroke.



Proportion of patients dead within 5 years after first stroke.



Mozaffarian D et al. *Circulation*. 2015;131:e29-e322
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Mozaffarian D et al. *Circulation*. 2015;131:e29-e322

RECURRENT STROKE

Open Access Original article

SVN Stroke and Vascular Neurology

Risk factors associated with 90-day recurrent stroke in patients on dual antiplatelet therapy for minor stroke or high-risk TIA: a subgroup analysis of the CHANCE trial

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NW and XW contributed equally.

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ABSTRACT
Objective Many patients receiving dual antiplatelet therapy still had recurrent strokes. We aimed to identify factors associated with recurrent stroke at 90 days in patients receiving dual antiplatelet therapy in Clopidogrel in High-risk patients with Acute Non-disabling Cerebrovascular Events trial.
Methods Patients with transient ischaemic attack or minor stroke receiving clopidogrel and aspirin in the trial were analysed in the study. The primary outcome was recurrent stroke within 90 days after the index event. Cox proportional hazard model with backward selection was used to identify factors associated with stroke.
Results Among 2564 patients, 212 (8.2%) had a recurrent stroke, 216 (8.4%) had a composite of stroke, myocardial infarction, or vascular death and 204 (7.9%) had ischaemic stroke within 90 days. Multivariate analysis identified the following factors associated with stroke: history of hypertension with poor blood pressure control (HR, 1.92; 95% CI 1.22 to 3.03), the high baseline National Institute of Health Stroke Scale (NIHSS) score of 2 and 3 (2.12 (1.07 to 4.21) and 4.11 (2.05 to 8.22), respectively), time from onset to randomisation of <12 hours (1.47 (1.12 to 1.94), the lipid-lowering therapy (0.61 (0.47 to 0.83)), the open-label aspirin dose at day 1 of >300 mg (1.98 (1.45 to 2.69)), intracranial arterial stenosis (ICAS) was significantly

The Clopidogrel in High-risk patients with Acute Non-disabling Cerebrovascular Events (CHANCE) trial showed that the combination of clopidogrel and aspirin is superior to aspirin alone for reducing the risk of 90-day stroke and does not increase the risk of haemorrhage in patients with TIA or minor stroke.¹ However, up to 8.2% of patients receiving dual antiplatelet therapy still experienced a recurrent stroke in the CHANCE trial. Importantly, approximately 2%–5% of recurrent stroke occurred early within 24–48 hours after the index event,^{1,2} highlighting the need for rapid assessment and treatment of these high-risk patients. A study showed that the ABCD² score might not have a good performance in triage for acute non-disabling stroke or TIA patients with hyperacute symptomatic carotid stenosis.³ Therefore, examining factors associated with recurrent stroke may help identify a target for secondary stroke prevention, especially among patients who have already received more aggressive antiplatelet therapy. Using

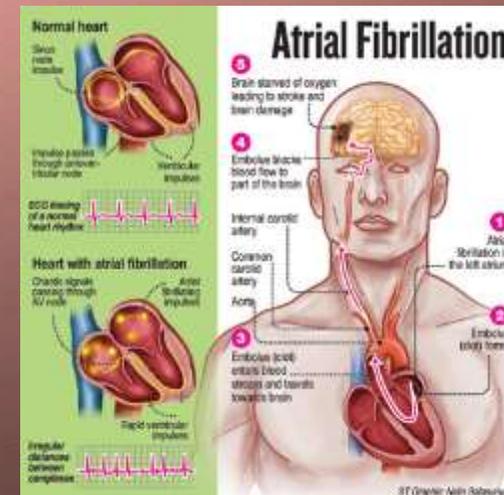
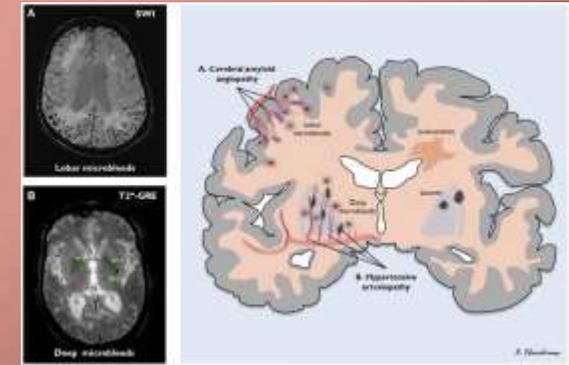
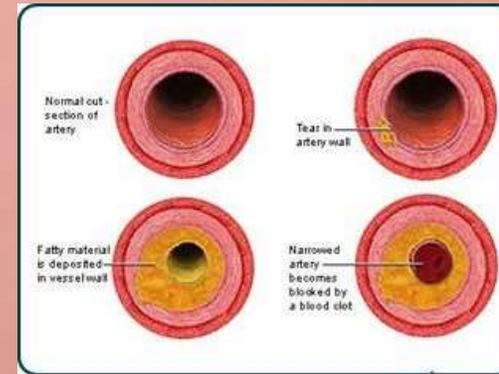
Stroke Vasc Neurol: first published as 10.1136/svn-2017-000088 on 8 July 2017. Downloaded from http://svn.bmj.com/ on 0

Conclusions: What was associated with recurrent stroke...

- High baseline NIHSS score
- Hypertension with poor blood pressure control
- ICAS – intracranial arterial stenosis
- No lipid-lowering therapy
 - *Suggesting that patients with identified predictors still remain at high risk of recurrent stroke even with dual antiplatelet therapy.*

FIND THE CAUSE – FIND THE TREATMENT (TOAST)

- Large Vessel Occlusion (LVO) (20%)
- Small Vessel Disease (SVD) (25%)
- Cardioembolic (20%)
- Stroke of Other Determined Cause (5%)
 - Nonatherosclerotic vasculopathies
 - Hypercoagulable states
 - Hematologic disorders



FIND THE CAUSE – FIND THE TREATMENT (TOAST)

- Stroke of Undetermined Cause – Cryptogenic (30%)
 - Two or more causes identified
 - Negative evaluation
 - Incomplete evaluation
 - Occult Paroxysmal Atrial Fibrillation
 - OP monitoring
 - Patent Foramen Ovale (PFO)
 - AIS/TIA + PFO and no AC, start antiplatelets
 - AIS/TIA + PFO + venous source of embolism – AC or IVC filter
 - Inherited Thrombophilias
 - Usefulness of screening unknown, AC or antiplatelet
 - Aortic Arch Atheroma
 - Antiplatelet and statin

HYPERTENSION 2014 GUIDELINE

- Previously untreated patients who, after the first several days, have BP ≥ 140 systolic or ≥ 90 diastolic – initiate treatment
 - Lifestyle modifications and single drug
 - BP $\geq 160/100$ – lifestyle and two drugs or combination med
- Resume therapy for previously treated patients with known hypertension and are beyond the first several days
- Goals uncertain, reasonable to achieve BP $< 140/90$.
 - For patients with a recent lacunar stroke, it might be reasonable to target BP of < 130 mm Hg
 - BP management more cautiously made in patients with advanced age, a long history of hypertension, extensive WMH, or cognitive dysfunction
- Initiate antihypertensive therapy for previously untreated with AIS/TIA of atherothrombotic, lacunar or cryptogenic stroke with baseline BP $> 120/70$

2019 GUIDELINE FOR MANAGEMENT OF AIS IN-HOSPITAL INSTITUTION OF SECONDARY STROKE PREVENTION

- **Anti-thrombotic Treatment**

- Noncardioembolic acute ischemic stroke (AIS)
 - antiplatelets, not AC
 - If AIS on ASA may switch to alternate antiplatelet
 - AIS or high-risk TIA, minor ischemic stroke or severe stenosis of a major intracranial artery, may add clopidogrel 75 mg/d to aspirin for 21 days (load 300-600mg/dl)
 - DAPT in recent small vessel, lacunar stroke - no benefit, may be harmful
- Patients with AIS, Afib and CAD may consider adding antiplatelet to oral AC if unstable angina or coronary artery stenting
- AIS with extracranial carotid or vertebral arterial dissection – antiplatelet or AC 3-6 months is reasonable
- AIS and hemorrhagic transformation, starting or continuing antiplatelet or AC may be considered

2019 GUIDELINE FOR MANAGEMENT OF AIS IN-HOSPITAL INSTITUTION OF SECONDARY STROKE PREVENTION

High-intensity statin

Atorvastatin – Lipitor 40 -
80mg

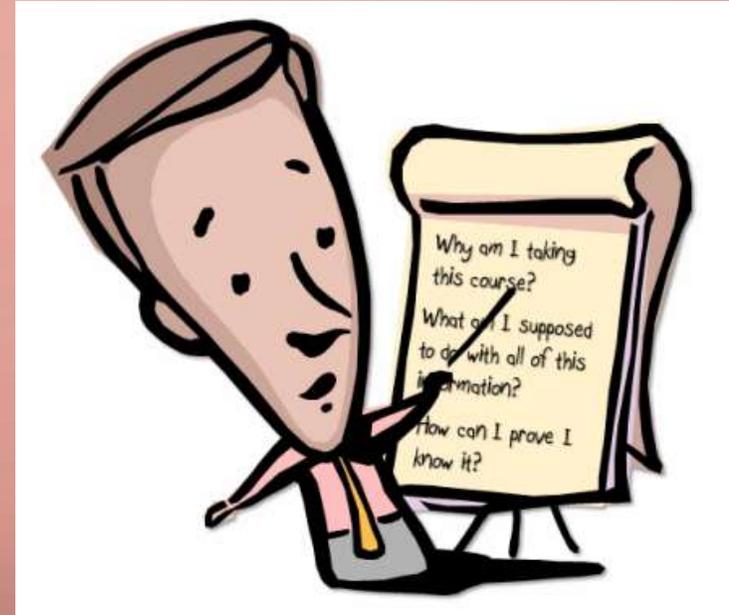
Rosuvastatin 20 - 40mg

• Hyperlipidemia

- 2018 ACC/AHA Cholesterol Guidelines
 - Lifestyle modifications, dietary recommendations, medication recommendations
- Patients ≤ 75 with clinical ASCVD (Atherosclerotic cardiovascular disease), high-intensity statin aiming for $\geq 50\%$ reduction in LDL
- Contraindications to high-intensity start moderate-intensity aiming for 30-49% reduction
- Max tolerated statin with LDL-C ≥ 70 reasonable to add ezetimibe
- High risk, max statin and ezetimibe before PCSK9 inhibitors (Repatha) considered – discuss benefit, safety and cost
- Patients ≥ 75 with clinical ASCVD reasonable to start/continue mod or high intensity statin after evaluation for risks

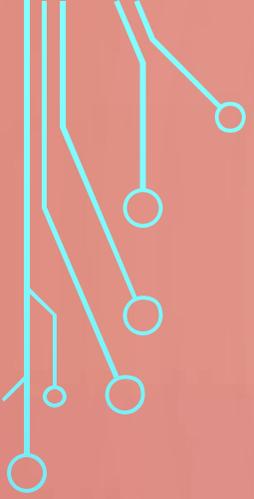
PRIOR TO DISCHARGE

- Antithrombotics
- BP management
- Statin
- Diabetes management
- Therapy
- Appointments for PCP/Neurology
- Cryptogenic stroke work up
- Who to contact and when



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THANK YOU!

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