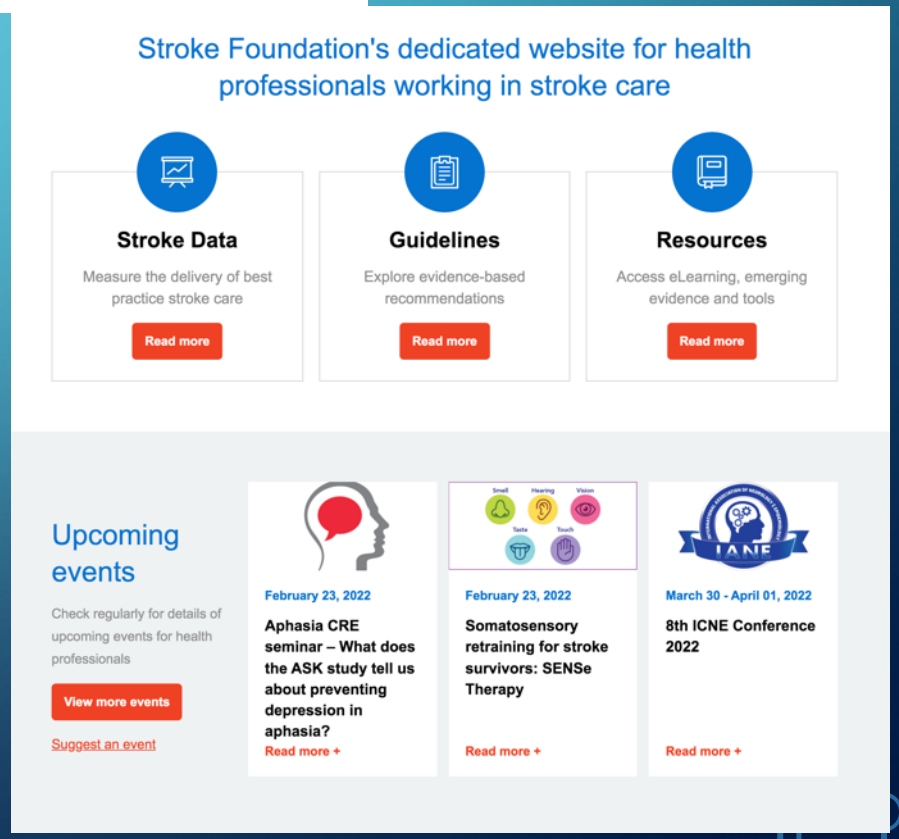
# STROKE & TIA

SAPMEA PROJECT ECHO | NEUROLOGY SERIES

# STROKE RESOURCES FOR HEALTH PROFESSIONALS

- Stroke Foundation Inform Me Page https://informme.org.au/
- Includes the 'living' Clinical Management Guidelines which will answer all your questions we don't get to cover today!
- Available on request
  - Support for Country Stroke Services Contact List
  - SA Stroke Protocols and Pathways document





# REFERRAL PATHWAYS | OVERVIEW

| | | |
|---|---|---|
| Suspected acute stroke | ED via ambulance if necessary | Metro - where possible to nearest hospital with a stroke unit (FMC, LMH, RAH)<br>Country – Whyalla, Berri, Mt Gambier &/or contact on-call stroke team for advice |
| Suspected TIA (i.e. symptoms fully resolved!) | < 48hr ago → ED | 48hr to 4 wks ago → TIA RAC<br>> 4 wks ago → Initial work up/mx and referral to stroke clinic |
| Established stroke | New diagnosis *and* > 4 wks ago → Initial work up/mx and referral to stroke clinic | Old diagnosis → consider secondary prevention, rehab needs.<br>Complex mx decisions → referral to stroke clinic |

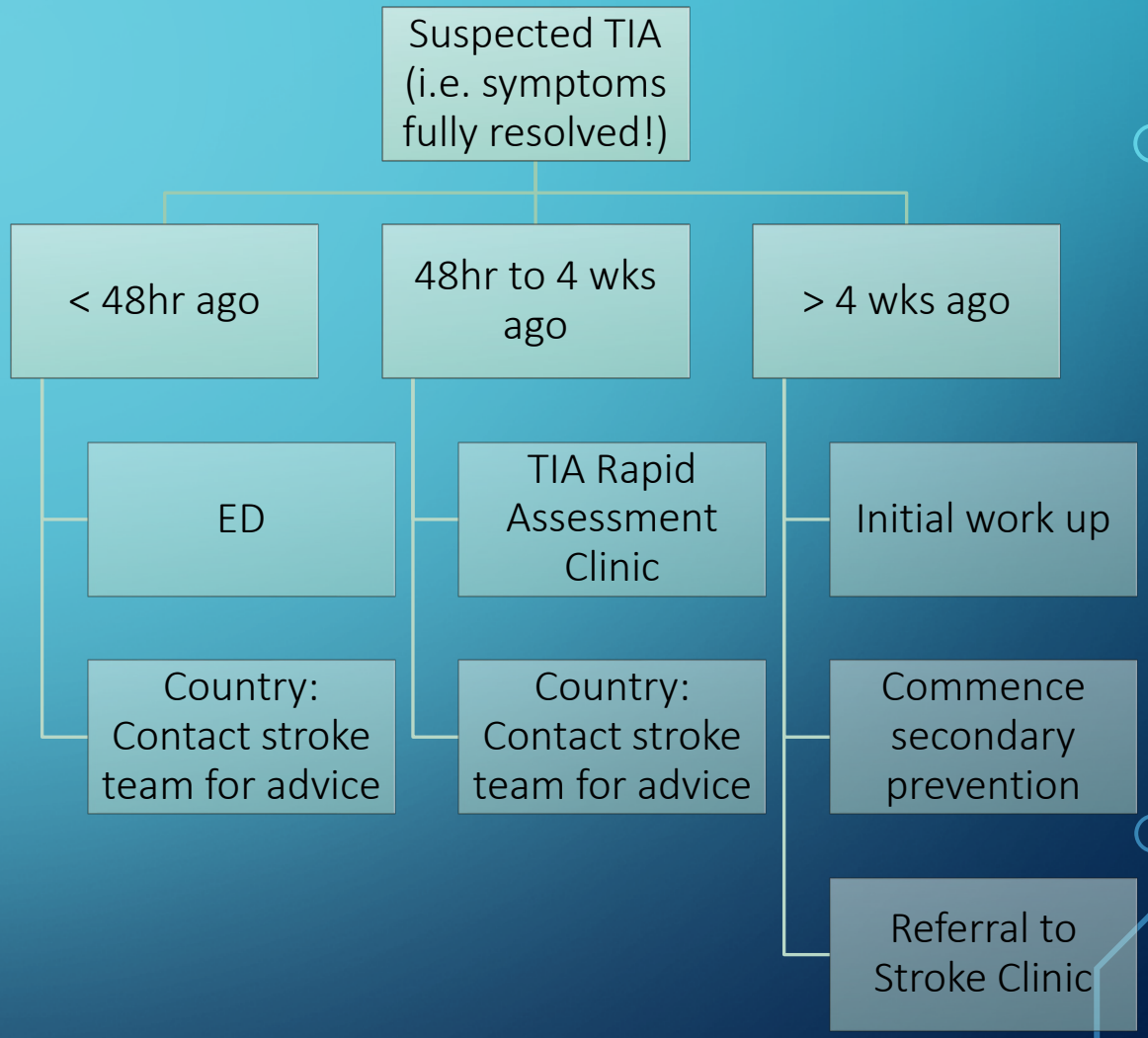
# TIA | DIAGNOSIS

- TIA is defined as focal neurological symptoms due to focal ischaemia **that have fully resolved**
  - Facial droop
  - Unilateral limb weakness
  - Dysarthria or dysphasia
  - Unilateral sensory loss
  - Acute onset vertigo
  - Acute onset ataxia
  - Acute onset diplopia
  - Monocular visual loss
- Transient symptoms usually not due to focal ischaemia
  - Migraine aura (slow spreading; 10-30min)
  - Generalised weakness/vagueness
  - Syncope
  - Seizure activity

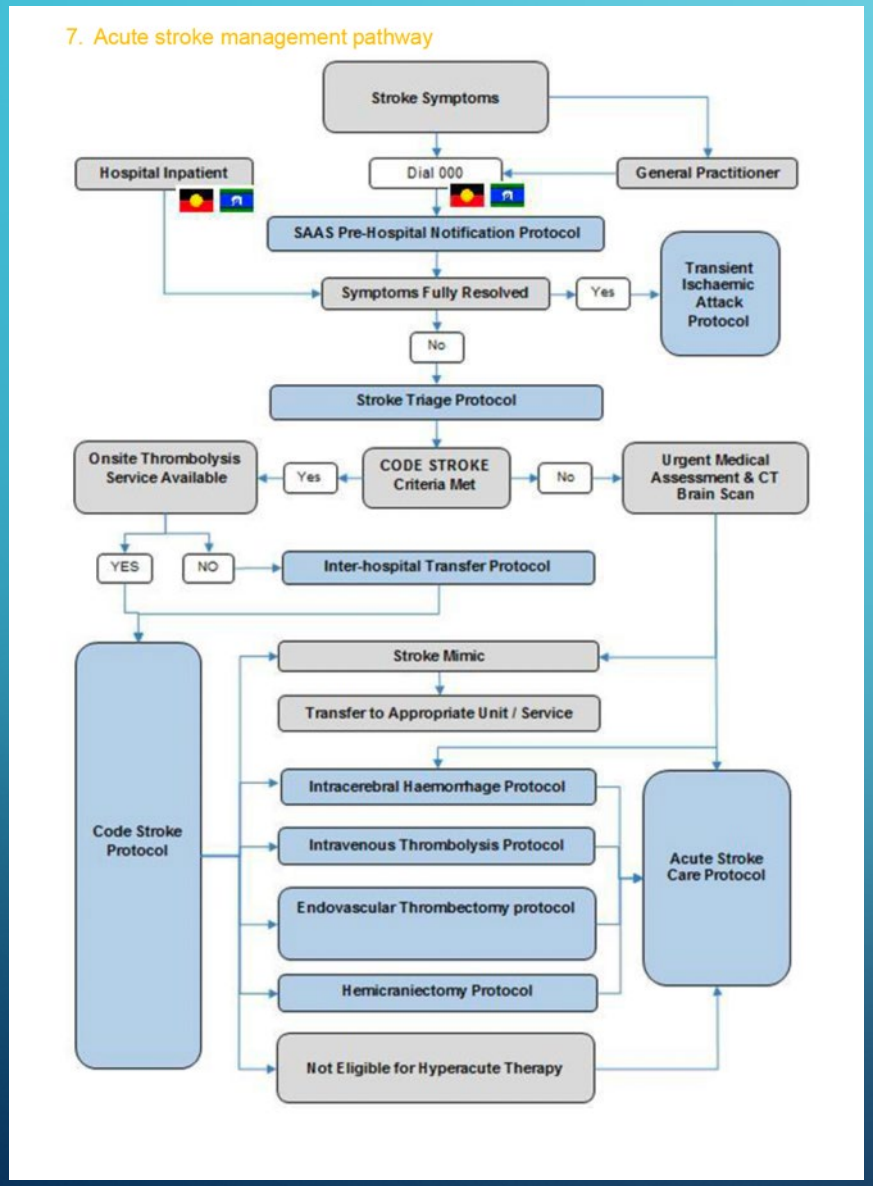
- Symptoms that are persisting or fluctuating should be treated as a **stroke → ED**
- High risk indicators (i.e. urgent action required)
  - Crescendo TIA (multiple/recurrent episodes over hours to days)
  - or Resolved hemiparesis
  - or >50% stenosis vessel to relevant region
  - or Current or suspected AF
  - or Current anticoagulant use
  - or High ABCD2 score

# TIA | MANAGEMENT

- Initial Work Up
  - CT or MRI brain (exclude haemorrhage or confirm stroke)
  - Vessel imaging - CT angiography aortic arch to cerebral vertex
    - MRA (arch to vertex) if CTA contraindicated
    - Carotid ultrasound (if anterior circulation symptoms and CTA/MRA not available/contraindicated)
  - ECG and Holter monitor
- Commence secondary prevention
- Referral for **stroke outpatient clinic** for urgent (within 1 month) review
- Consider need for driving restriction



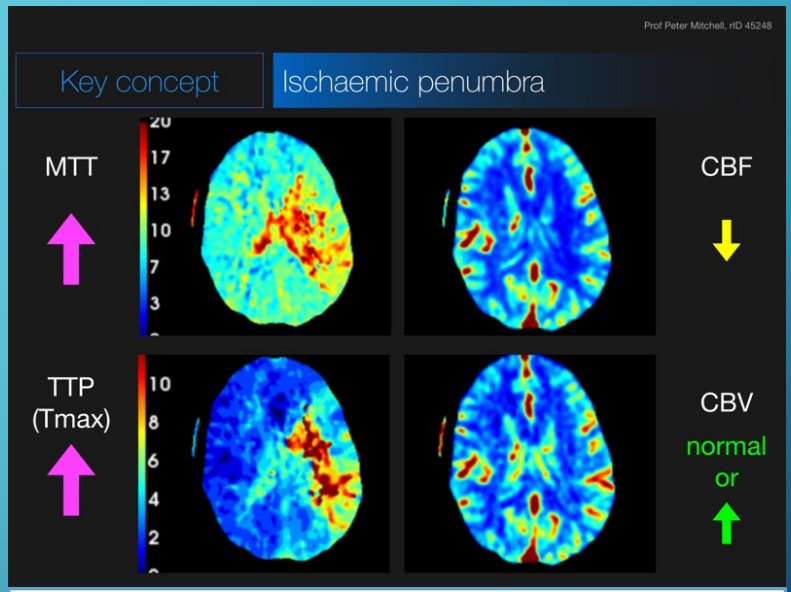
# ACUTE STROKE MANAGEMENT PATHWAYS



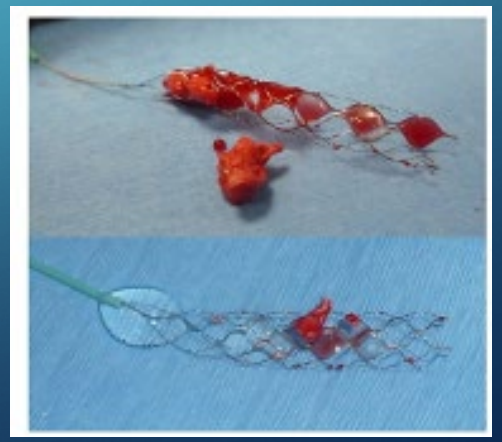

- Out of hospital with new onset stroke symptoms - **dial 000**
- Country Code Stroke Phone (24/7)
- Metro (24/7)
  Patient's LHN On-Call Stroke Team via switchboard
- NB: Do not give anticoagulation to a suspected stroke patient prior to imaging ("*First do no harm.*")

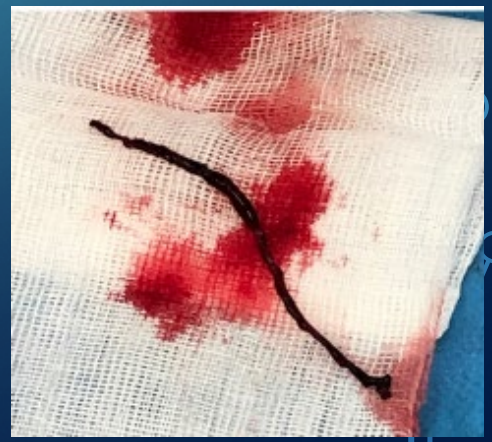
# ACUTE STROKE MANAGEMENT | STROKE CENTRE

- Emergency imaging
  - CT brain, CT angiogram, CT perfusion study
- Consider eligibility for hyperacute stroke therapy
  - IV thrombolysis with alteplase or tenecteplase
  - Endovascular clot retrieval +/- vascular stenting
  - Surgical intervention for ICH or malignant MCA syndrome
- Blood pressure control
- Swallow assessment/NET
- Early assessment of rehabilitation needs



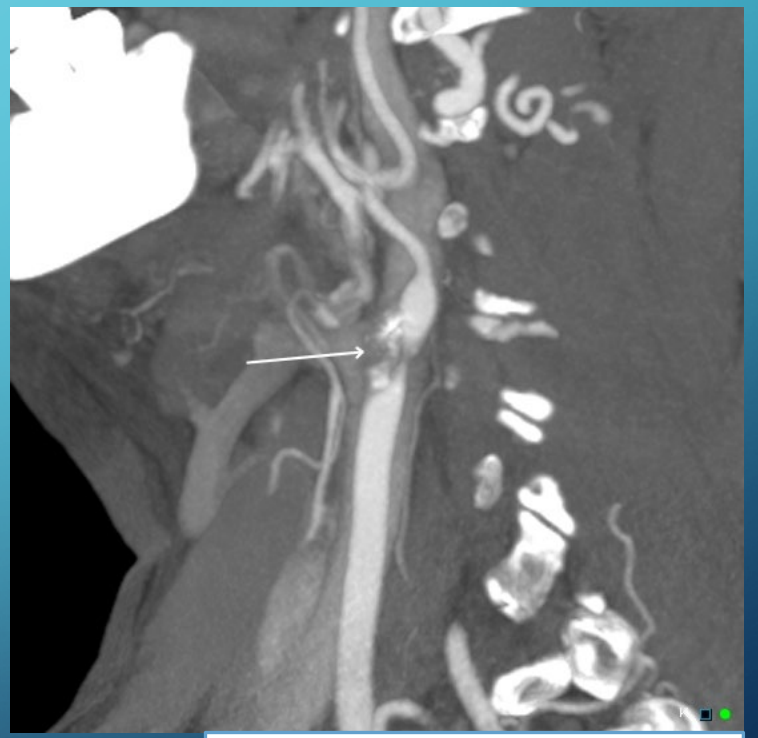
Case courtesy of Assoc Prof Craig Hacking, Radiopaedia.org, rID: 72596





# ACUTE STROKE MANAGEMENT | STROKE CENTRE

- Work up for aetiology
  - Carotid stenosis → consider carotid endarterectomy
  - Atrial fibrillation/flutter → anticoagulation when safe (may need delay in very large stroke)
  - Intracranial atherosclerosis → emerging role for additional therapies beyond the usual (e.g. colchicine)
  - Small vessel/arteriolosclerosis
  - Other rarer causes: thrombophilia, paradoxical embolism (PFO), malignancy, vasculitis, infective endocarditis



Case courtesy of Dr Chris O'Donnell, Radiopaedia.org, rID: 42484

# POST ACUTE CARE | REHAB

- Key points
  - Rehab needs assessed and care arranged by acute stroke team prior to discharge
  - Subacute/older stroke still need stroke management addressed prior to referral to rehab
- Info available on HealthPathways SA
  - Allied Health and Nursing > Rehabilitation > Rehabilitation Services
  - https://southaustralia.communityhealthpathways.org/44724.htm
- Rehabilitation pathways
  - Statewide Services
    - Brain Injury Services - Brain Injury Rehabilitation Unit (BIRU) & Brain Injury Community & Home (BIRCH)
    - Telerehabilitation Services
  - Metropolitan patients (depends on residential address and needs)
    - Private vs public
    - Rehab In The Home (RITH)
    - Day Rehabilitation Services (DRS)
    - Outpatient single discipline (e.g. speech pathology, physio)
      - Private & public options
  - Country patients
    - Some metro rehab prior to transfer to local services
    - Rural Rehab Services (NALHN, SALHN, Rural Stroke Centres)
    - Country Health Connect **1800 003 007**
      https://countryhealthconnect.sa.gov.au

## Rural Rehabilitation services

**Please email referrals to: Health.RuralRehabilitationServices@sa.gov.au**

Or contact

Natalie Thackray

Nurse Consultant Rehabilitation

Rural Support Service

**0477 346 940**

**Natalie.Thackray@sa.gov.au**

Country Rehabilitation Sites- offering inpatient and ambulatory rehabilitation programs:

Whyalla: **0459 839 660**

Mt Gambier: **0435 961 520**

Berri: **0477 314 217**

# POST ACUTE CARE | DRIVING

- Austroads Fitness to Drive: https://austroads.com.au/publications/assessing-fitness-to-drive
- 'Appropriate specialist' in this setting usually refers to a rehabilitation physician rather than a neurologist
- Specialist Driving Fitness Assessment
  - Public at FMC, QEH and Modbury
  - Private options (Calvary, Griffith, OTs)
- New guidelines due March 2022

**Medical standards for licensing – Neurological conditions**

| Condition | Private standards (Drivers of cars, light rigid vehicles or motorcycles unless carrying public passengers or requiring a dangerous goods driver licence – refer to definition, page 21) | Commercial standards (Drivers of heavy vehicles, public passenger vehicles or requiring a dangerous goods driver licence – refer to definition, page 21) |
|---|---|---|
| **Stroke** (cerebral infarction or intracerebral haemorrhage) | **A person should not drive for at least four weeks following a stroke.**<br>**Treatable causes of stroke should be identified and managed with reference to this standard.**<br>The driver licensing authority may consider a return to driving on an **unconditional licence**, after at least **four weeks**, taking into account:<br>• the nature of the driving task;<br>• information provided by an **appropriate specialist** regarding the level of impairment of any of the following: visuospatial perception, insight, judgement, attention, comprehension, reaction time, memory, sensation, muscle power, coordination, vision (including visual fields); and the likely impact on driving ability; **and**<br>• the results of a practical driver assessment if required (refer to Part A, section 2.3.1 Practical driver assessments).<br>The person does not require a conditional licence. | **A person should not drive for at least three months following a stroke.**<br>**Treatable causes of stroke should be identified and managed with reference to this standard.**<br>A person is **not** fit to hold an **unconditional licence**:<br>• if the person has had a stroke.<br>A **conditional licence** may be considered by the driver licensing authority after at least **three months** and subject to at least **annual review**, taking into account:<br>• the nature of the driving task;<br>• information provided by an **appropriate specialist** regarding the level of impairment of any of the following: visuospatial perception, insight, judgement, attention, comprehension, reaction time, memory, sensation, muscle power, coordination, vision (including visual fields) and the likely impact on driving ability; **and**<br>• the results of a practical driver assessment if required (refer to Part A section 2.3.1 Practical driver assessments). |
| **Transient ischaemic attack** (advisory only) | **A person should not drive for at least two weeks following a TIA.**<br>A conditional licence is not required. | **A person should not drive for at least four weeks following a TIA.**<br>A conditional licence is not required. |

# SECONDARY PREVENTION

- Long-term BP management:
  - Target < 140/90 using any agent (best evidence for ACE-I/thiazide) (NB: beta-blockers not first-line unless cardiac disease)
  - Consider more aggressive target (<130 systolic) esp. in haemorrhagic stroke, small vessel disease or diabetes
- Atrial fibrillation
  - Lifelong oral anticoagulation with direct oral anticoagulant (warfarin if other indication (e.g. mech valve) or DOAC contraindication)
  - Under dosing of apixaban is an issue
    - **At least 2 factors before reducing dose**
    - Age > 80; weight < 60kg; Cr > 133
  - Left atrial appendage closure only where strong contraindication to anticoagulation exists
  - Anticoagulants usually held until stabilised (4 weeks) in ICH, but may restart sooner 10-14 days in high risk (e.g. mech valve)
- Antiplatelets
  - Single agent (aspirin or clopidogrel) in moderate to large stroke
  - Aspirin + clopidogrel for 3 weeks then single agent (aspirin *or* clopidogrel) in high risk TIA and minor stroke
  - Lifelong antiplatelet therapy (unless on anticoagulation) in atherosclerosis or arteriolosclerosis related stroke or embolic stroke of undetermined source (ESUS)
  - Treatment for 3-6 months only in arterial dissection stroke
  - Can be restarted once BP controlled and clinically stable in haemorrhagic stroke

# SECONDARY PREVENTION

- Cholesterol lowering therapy
  - If atherosclerosis suspected contributing factor, regardless of lipid levels, high potency statin recommended (e.g. atorvastatin 80mg)
  - Consider omitting if limited life expectancy from other causes
  - Target LDL < 1.8
- Diabetes
  - As per best practice guidelines
- Lifestyle
  - Mediterranean diet or similar (dietitian input helpful)
  - Regular physical exercise
  - Smoking cessation
  - Alcohol harm reduction
- Other considerations
  - Drug-drug interactions
  - Avoidance of drugs with increased stroke risk (e.g. celecoxib)
  - Medication adherence (e.g. use of aids)
- Things you don't need to manage alone!
  - Carotid endarterectomy
  - Patent foramen ovale closure
  - Duration of anticoagulation after cerebral venous sinus thrombosis
  - Decisions about suitability for hormone replacement therapy or COCP in women with stroke

# OTHER QUESTIONS?

- Is an abnormal MRI with an old stroke always relevant?
  - It depends. Consider secondary prevention measures. Consider need for additional evaluation (e.g. young patient without risk factors). Consider clinical context (symptoms?).
- How do we manage cognitive and psychiatric challenges after stroke?
  - Common and can be underappreciated and best management is poorly understood
  - Brain Injury Rehab services can be helpful in addition to more traditional cognitive and psychiatric management strategies

# Q&A | EXTRAS

- **Stroke Triage Tools**
  - ROSIER scale (screen for stroke likely dx)
    - Syncope or LOC (less likely)
    - Seizure activity (less likely)
    - New acute onset asymmetrical face or arm or leg weakness, speech disturbance, visual field defect (more likely)
  - ACT-FAST (screen for large vessel occlusion)
    - Arm weakness
    - R: check speech, L: check neglect/VF
    - Onset < 24hr
    - Screening to exclude stroke mimics
    - No known active malignant brain cancer