

# CONSIDERATIONS IN STROKE PREVENTION

DR. LEANDRA GRIEVE- EGLIN MD FRCPC



Quinte Health



Queen's  
UNIVERSITY



Heart&Stroke™

# GOALS OF STROKE PREVENTION

Provide co-ordinated and urgent care

Prompt identification and aggressive management of risk factors: AFIB, Carotid stenosis, diabetes, HTN, sleep apnea, smoking etc

Patient and family education of risk factors and lifestyle modification

Ensure accessibility and co-ordination of investigations

Improve functional and emotional outcome after strokes

## COMMON

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## RARE RISK FACTORS

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Obesity

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Diabetes

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Smoking

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Hyperlipidaemia

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Atrial fibrillation

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Carotid stenosis

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Sleep apnea

- Cardiac thrombus
- Hypercoagulability
- Dissection
- Hereditary and acquired blood clotting disorder
- Fibromuscular dysplasia
- Cardiac interventions/ mechanical valve

# BASIC RECOMMENDATIONS

## 1) MICROVASCULAR DX



- Lifestyle modification, dietary changes, exercise, weight loss/ lifestyle clinics referrals
- Smoking cessation
- Antiplatelet therapy
- BP control ( CHEP)
- Statin therapy LDL < 1.8
- Tight DM control HbA1c < 7
- Tx sleep apnea- CPAP

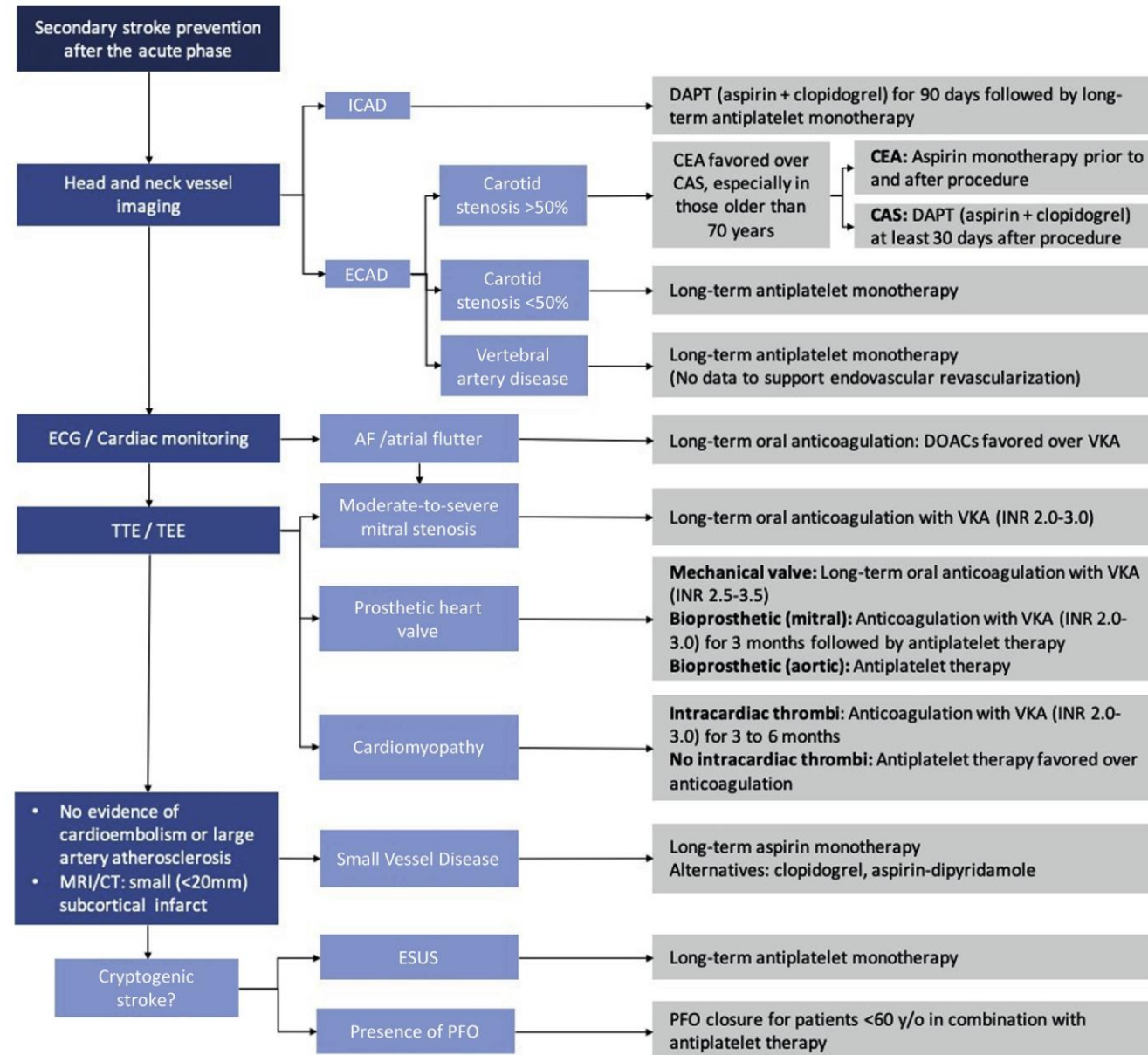
## 2) LARGE VESSEL DISEASE

- Antiplatelet therapy
- Carotid disease  $> 75\%$  vascular intervention within 14 days of event
- Moderate vascular dx 55-75%, dependent on comorbidities, location/ vascular presentation and stroke deficits,
- Aggressive risk factor management

### 3) CARDIOEMBOLIC

- DAOC/ Wafarin
- Cardiac shunting – closure of septum ovale, usually pt remains on Antiplatelet therapy thereafter or as per cardiology recommendations

## CENTRAL ILLUSTRATION: Approach to the Use of Antithrombotic Therapy for Secondary Prevention After Ischemic Stroke





# ANTIPLATELET THERAPY

- **Aspirin reduces the rate and severity of early recurrent stroke over the first 6 to 12 weeks by more than half. (6)**
- **Adding Clopidogrel in early phase has been validated externally in a large international population of 4881 patients with acute, noncardioembolic TIA and mild ischemic stroke for up to 90 days.(7)**
- **Third, triple antiplatelet therapy with aspirin, clopidogrel, and dipyridamole is not more effective than clopidogrel alone or combined aspirin and dipyridamole in reducing the incidence and severity of early recurrent stroke, and significantly increases the risk of major bleeding.**
- **Patients with stable atherosclerotic peripheral and coronary artery disease, including a subgroup with previous nonlacunar ischemic stroke, adding low-dose rivaroxaban (2.5 mg twice daily) to low-dose aspirin (100 mg daily) is more effective than aspirin alone in reducing the rate of stroke, but also causes more major bleeding (8)**



DOAC indicates direct oral anticoagulant; ESUS, embolic stroke of undetermined source; od, once daily; TIA, transient ischemic attack; and VKA, vitamin K antagonist.

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Patients with TIA and mild ischemic stroke.

†

Lowering coagulation Factor XI levels using an antisense oligonucleotide or inhibiting activated Factor XI.

‡

Timing of initiation of anticoagulation after ischemic stroke depends on size of brain infarct/stroke severity and other factors.

| Cause of Ischemic Stroke                  | Timing After Stroke Onset  |  |
|---|--|--|
|   | Acute  | Long-Term  |
| Arterial disease (eg, atherosclerosis)    | Antiplatelet therapy: aspirin + clopidogrel, <sup>*</sup> or aspirin         | Antiplatelet therapy: clopidogrel, or aspirin + extended release dipyridamole, or aspirin                  |
|   | Research? Aspirin + ticagrelor? DOAC ± aspirin? Lower Factor XI <sup>‡</sup> | Research? Rivaroxaban 2.5 mg BID + aspirin 100 mg od? cilostazol + aspirin or clopidogrel? Lower Factor XI |
| Cardiac disease (eg, atrial fibrillation) | Anticoagulation <sup>‡</sup> (DOAC or VKA)                                   | Anticoagulation (DOAC or VKA)  |
| ESUS                                      | Antiplatelet therapy (as per arterial disease)                               | Antiplatelet therapy (as per arterial disease)   |
|   | Research? Aspirin + ticagrelor? Lower factor XI <sup>‡</sup>                 | Research? Rivaroxaban 2.5 mg BID + aspirin 100 mg od   |

# CASE

- 76 M
- Comorbidities:
  - Smoking >40 p
  - Hypertension
  - Hyperlipidemia
  - CAD with MI 2015, 2018, inf STEMI 2023 multiple stents to RCA
  - HErEF EF 25% (2024)
  - previous hx of TIA
  - TIA- amaurosis fugax October 2024
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# INFO ON PREVIOUS TIA

- First TIA remote occurred on ASA: immediate treatment with 3 weeks ASA- Clopidogrel , Malcompliant to ASA
- No source determined, ECHO findings not known, no Afib- patient continued on ASA
- Repeat TIA October 2024: Amaourosis fugax; Holter: no afib, patient was compliant with ASA

Echo: EF 25%, inferior and septal wall akinetic, no thrombus seen, no significant carotid dx

- after discussion between patient – cardiology: started on Rivaroxaban for stroke prevention secondary to significant wallmotion abnormalities with pooling of blood in apex.

# HOME MEDICATION PRIOR TO ADMISSION

- Riveroxaban 20mg daily started 2024 October
- Atorvastatin 80mg Hs
- Bisoprolol 5mg daily
- Empagliflozin 10mg daily
- Perindopril 4mg daily
- Spironolactone 12.5mg daily
- Pantoprazol 40mg daily

# PRESENTATION

- 76 M presenting with inf STEMI
- Coronary angiogram shows subtotal occlusion mid RCA recurrent in-stent thrombosis, patient was compliant with medications.

# THERAPY DECISIONS

- Cardiology recommendation DAPT for at least 1 month, then to remain on Ticagrelor lifelong for stent treatment
  - Option 1: 1 month triple therapy DOAC- ASA – Ticagrelor then step down to DOAC + Ticagrelor lifelong
  - Option 2: Lifelong ASA + Ticagrelor
  - Option 3: DAPT ASA+ Ticagrelor, then DOAC + Ticagrelor
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- Discussion point when is triple therapy ok? Minimal time possible.
  - Risk - Benefit

# BASIC CONSIDERATIONS

- 23% of all ischemic strokes are recurrent events.
- Stroke subtypes include: **25% due to cardioembolism**; 10% due to extracranial atherosclerotic disease; 10% due to intracranial atherosclerotic disease (ICAD); 25% due to small vessel disease (SVD); 5% from other determined causes; and 25%, labeled cryptogenic, without a definite understanding of the cause
- Beyond this stage, therapeutic goals are to reduce the risk of stroke recurrence and prevent medical complications. The pattern of recurrence varies by stroke subtype, being the highest for large-artery atherosclerosis (LAA) in the early phase, whereas for cardioembolic strokes, the long-term risk is steadily high and is associated with higher mortality
- Long-term prevention of stroke recurrence, dual antiplatelet therapy (DAPT) with aspirin plus clopidogrel has not demonstrated benefit and led to significantly increased hemorrhagic complications



# BLEEDING RISK CONSIDERATIONS

- Various study all conclusively show a significant increase in Bleeding risk, some up to 3 fold.
- Bleeding events more frequently happen in first 30 days.
- Patient habits, behaviour, fear
- Previous bleeding history



"To prevent a stroke, take one Aspirin every day. Take it out for a run, then take it to the gym, then take it for a bike ride..."

# REFERENCES

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