

# Secondary Stroke Prevention

Canadian Stroke Best Practices Update 2017  
Heart and Stroke Foundation  
F. Emilio Raimondo MD FRCPC  
NIAGARA REHAB DAY 2018



# Presenter Disclosures

## Dr. F. Emilio Raimondo

- No significant conflicts identified for this presentation
- Relationships with commercial interests  
Grants/research support: Pfizer, Boehringer-Ingelheim, Servier, Novartis  
Speakers Bureau/Honoraria: Pfizer, B-I, Servier, Novartis, Bayer  
Consulting Fees: Novartis, Pfizer, Boehringer-Ingelheim

# Disclosure of Commercial Support

- This program has not received financial support from any pharmaceutical company, Heart and Stroke Foundation of Canada
- Potential for Conflicts of Interest  
None for Dr. F. E. Raimondo  
no products/medications will be benefitted

# Secondary Prevention of Stroke Update 2017 (final edition)

- Wein T, Gladstone D (Writing Group Chairs) on behalf of the Canadian Stroke Best Practice Recommendations
- November 2017 Heart and Stroke Foundation
- Representative group of Neurologists, Cardiologists, Rehabilitation Medicine, Vascular surgery, Family Medicine, Dieticians, Stroke Nurse practitioners across Canada

# Outline

- Focus on Secondary Prevention
- Lifestyle
- Blood Pressure
- Lipid Management
- Diabetes Management
- Antiplatelet Therapy for Ischemic Stroke and TIA
- Anticoagulation for ST and Atrial fibrillation
- Cardiac Issues in Individuals with Stroke

# Lifestyle and Risk Factor Management

- Healty Balanced Diet  
Fruits and Vegetable intake, Mediterranean Diet, reduced refined sugars, processed meats, dairy intake
- Sodium <2 gm per day
- Exercise Strenuous exercise 3-4 times per week, 150 mins+
- Weight BMI <25, waist <102 cm men, <88 cm women
- Alcohol Consumption women <10 per week, men <15 per week  
avoiding binges, <3 at a sitting
- Oral Contraceptives conflicting data in primary prevention, should be likely stopped in secondary prevention

# Lifestyle and Risk Factor Management

- Recreational Drug Use Cocaine, stimulants should be discontinued
- Smoking Cessation for Tobacco and other inhaled substances identify smokers, non-judgmental advice, prepare for nicotine withdrawal, offer smoking cessation program with nicotine replacement, Varenicline/Bupropion

# Blood Pressure Assessment

- Single most important modifiable risk factor in stroke needs to be followed regularly in all stroke/TIA patients
- Antihypertensive therapy clearly reduces risk of stroke
- BP of over 130/85 requires further evaluation and management refer to CHEP guidelines
- Resistant hypertension need to look for secondary causes Renal, Metabolic, Sleep disorder, Alcohol, Conflicting Drugs, etc
- Aggressive lifestyle changes clearly recommended exercise, weight loss, diet, alcohol, tobacco



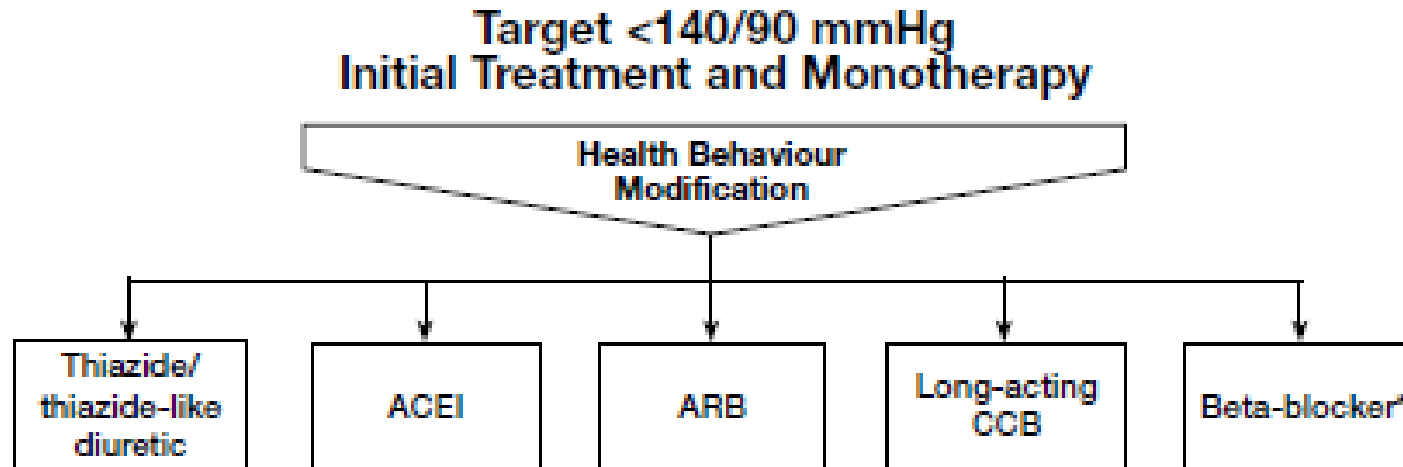
# Blood Pressure Management

- In stroke/TIA patients a BP of <140/90 is recommended
- In small subcortical strokes a BP of <130 is suggested
- In Diabetics BP of <130/80
- In Chronic Kidney disease <140/90
- Timing of BP targets following stroke not clearly defined but should be initiated prior to discharge, in the hyperacute phase 0-72 hrs depends on the type, size/severity of the stroke

Figure 3.2: CHEP Treatment Algorithm 2016 (Reproduced with Permission, CHEP 2016)

## Treatment of Adults with Systolic/Diastolic Hypertension Without Compelling Indications for a Specific Agent

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A combination of two first-line drugs may be considered as initial therapy if the blood pressure is  $\geq 20$  mmHg systolic or  $\geq 10$  mmHg diastolic above target.

\* Beta-blockers are not indicated as first-line therapy for age 60 and above.

ACEI, ARB and direct renin inhibitors are contraindicated in pregnancy and caution is required in prescribing to women of childbearing potential.

# Lipid Management

- Lipid levels should be assessed for all patients with stroke/TIA include LDL and HDL, total cholesterol and TG's
- Statin therapy should be first line therapy with a target goal LDL of  $<2.0$  mmol/l or a 50% reduction in LDL from baseline
- In patients with also CAD, a target LDL of 1.8 mmol/l should be targeted
- In diabetics with ischemic stroke, high risk of recurrence and statin therapy again indicated with LDL goal of  $<2.0$
- No advantage of statin therapy in intracerebral hemorrhage

# Lipid Management

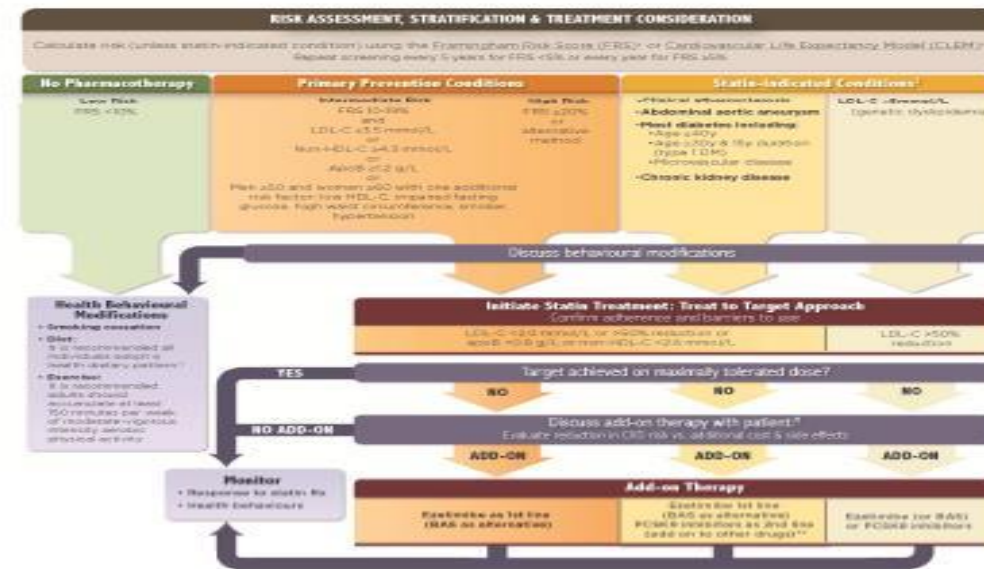
- Fourier trial recently suggested adding a PCSK-9 inhibitor evolocumab to a statin also reduces risk of stroke bringing down LDL further to 1.45 mmol/l  
these agents would be considered in patients not at target with adequate statin dosing

# CCS 2016 Lipid Guidelines

(Anderson et al; Canadian Journal of Cardiology 32 (2016) 1263-1282)

Reprinted with permission, CCS 2016 [http://www.onlinecjc.ca/article/S0828-282X\(16\)30732-2/pdf](http://www.onlinecjc.ca/article/S0828-282X(16)30732-2/pdf)

## Lipid Management



# Diabetes Management

- All patients should be screened for DM, A1C measured
- A1C level of <7 are target for both type 1 and 2 Diabetics with post prandial glucose levels of 5-10 mmol/l if possible
- Avoidance of hypoglycemia is important to reduce CV events
- Consideration in using SGLT-2 inhibitors, empagliflozin or GLP-1 agonists liraglutide have recently been shown to reduce CV events in higher risk diabetics including stroke

# Antiplatelet Therapy

- All patients with ischemic stroke or TIA should be prescribed an antiplatelet agent, ASA, clopidogrel, or ASA-dipyridamole are all appropriate first line agents
- Short term use of combined ASA-clopidogrel is recommended in smaller stroke in the first 21 days, modest benefit
- Longterm use of combined ASA-clopidogrel is not recommended unless other cardiac indications (stenting) because of bleeding risk, but being presently studied in the POINT trial
- Benefit is always offset by higher bleeding rates.

# Antiplatelet therapy Clinical Considerations

- If a patient experiences a stroke on an antiplatelet agent, switching to another eg. ASA to clopidogrel is reasonable, or to the combination ASA-dipyridamole
- All other vascular risk factors should be optimized, and consider a further search for other causes (carotid disease, atrial fibrillation)



# Anticoagulation for Individuals with Stroke and Atrial Fibrillation

- An ECG is always mandatory in Stroke patients to assess for atrial fibrillation. Initial 24 hr monitoring in the acute phase is recommended assessing for atrial fibrillation
- In strokes of undetermined origin where cardioembolic cause is suggested, longterm holter monitoring over 2 weeks is suggested along with echocardiography
- 30 seconds of atrial fibrillation is the diagnostic requirement

# Anticoagulation in Patients with Atrial Fibrillation

- A direct acting oral anticoagulant(DOAC) is recommended in patients over warfarin as first line agents; consider dabigatran, apixiban, rivaroxaban, or edoxaban  
clinical circumstances need to be considered, particularly renal function
- Warfarin is already used could be continued if INR levels are easily maintained between 2-3
- Warfarin is indicated in Rheumatic valvular heart disease and in patients with Mechanical valvular prostheses
- Bridging with heparin in patients not recommended, using antiplatelet therapy should be considered as a bridge

# Atrial Fibrillation Anticoagulation Clinical Considerations

- Optimal timing for anticoagulation following stroke in atrial fibrillation has not been determined by clinical trial, decision depends on a number of clinical factors including infarct size, risk of hemorrhage
- Expert consensus has suggested initiating anticoagulation
  - 1 day following a TIA
  - 3 days following a small stroke
  - 6 days following a moderate stroke
  - 12 days following a severe stroke without hemorrhagic transformation
- In patients unable to be anticoagulated consider initially dual antiplatelet therapy or a Left atrial occluder device (Watchman)

# Anticoagulation Clinical Considerations

- drug compliance is critical in anticoagulated patients on either warfarin or DOAC's
- Monitoring of renal function in DOAC treated patients is necessary with appropriate dose adjustment.
- DOAC's are short acting medications and patients need to be advised against missing doses, cutting doses etc, as a clear increase in stroke risk exists
- Concomitant antiplatelet therapy is not recommended due to increased bleeding risk unless other clinical circumstances exist (coronary stenting)

# Cardiac Issues in Patients with Stroke

- **PFO** new guidelines 2017  
in patients with cryptogenic stroke between ages of 18-60 yrs, a PFO closure with antiplatelet therapy is now recommended over anticoagulation  
in patients already on anticoagulation, the decision to close a PFO is unclear as little data exists and further decisions based on individual factors

# Cardiac Issues in Patients with Stroke

- Aortic Arch atheroma  
often difficult to diagnose, no other identified cause for the recurrent stroke, no convincing beneficial therapy of antiplatelet therapy over anticoagulant therapy  
consider optimizing all other risk factors
- Heart Failure with reduced EF, and a mural thrombus, anticoagulation with Warfarin for 3 months at least  
in patients without detected thrombus, and poor EF, decision to anticoagulate or use antiplatelet therapy is individualized.

# Summary

- A team approach to treating stroke victims is of utmost importance
- Prevention of further stroke is very successful, with particular emphasis on treating risk factors, managing blood pressure, and antithrombotic therapy

# Questions?

Thank you

Dr. Emilio Raimondo

