Special considerations in stroke prevention

Stephanie Luco

November 22, 2023

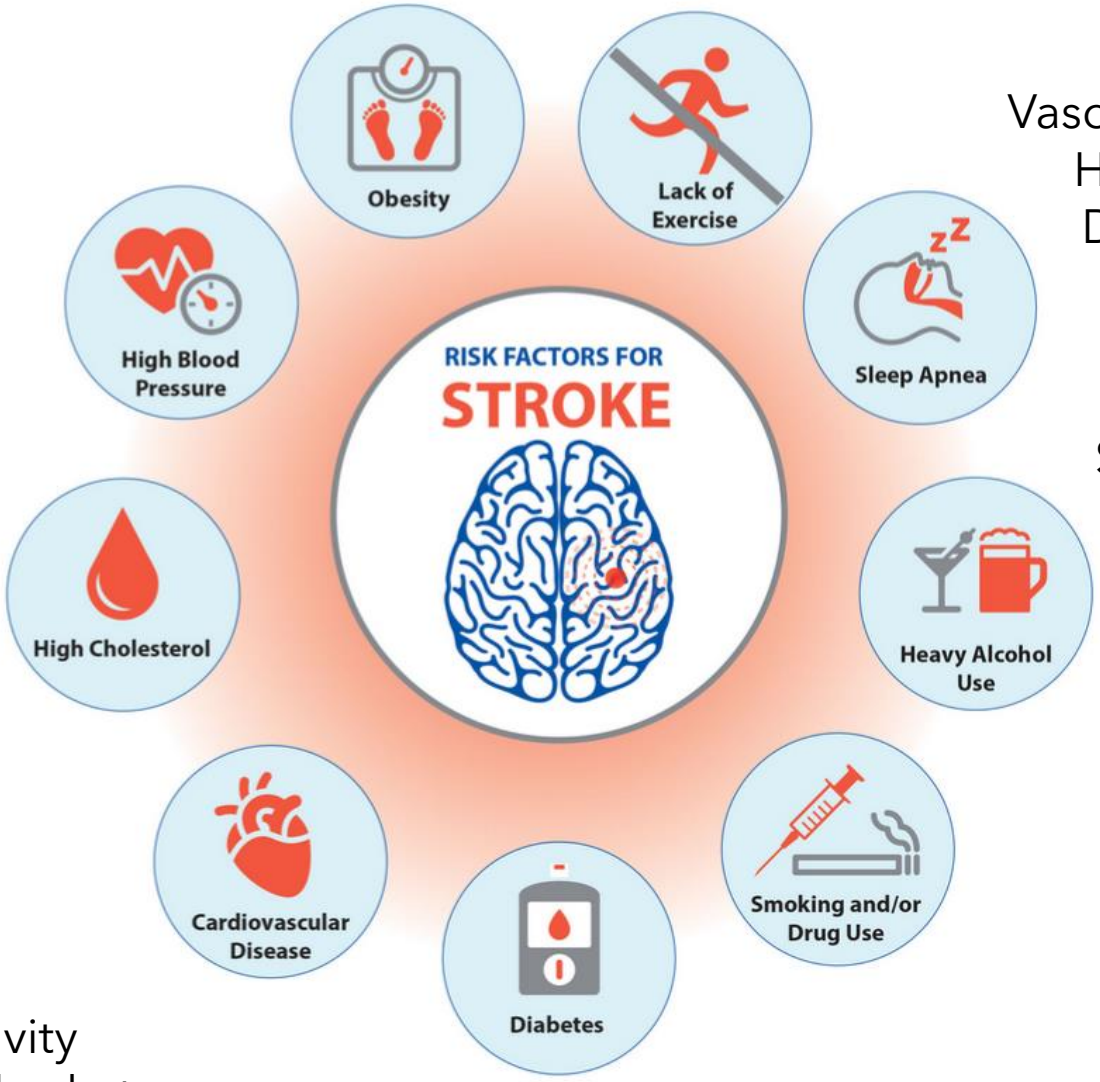
Outline

- Review of stroke risk factors
- Focus on management
  - Hypertension
  - Dyslipidemia
  - Carotid disease
  - Atrial fibrillation
- Stroke in Women

Conditions

Vascular disease
Hypertension
Dyslipidemia
Diabetes
Arrhythmia
Obesity
Sleep apnea

Pregnancy
OCP/HRT



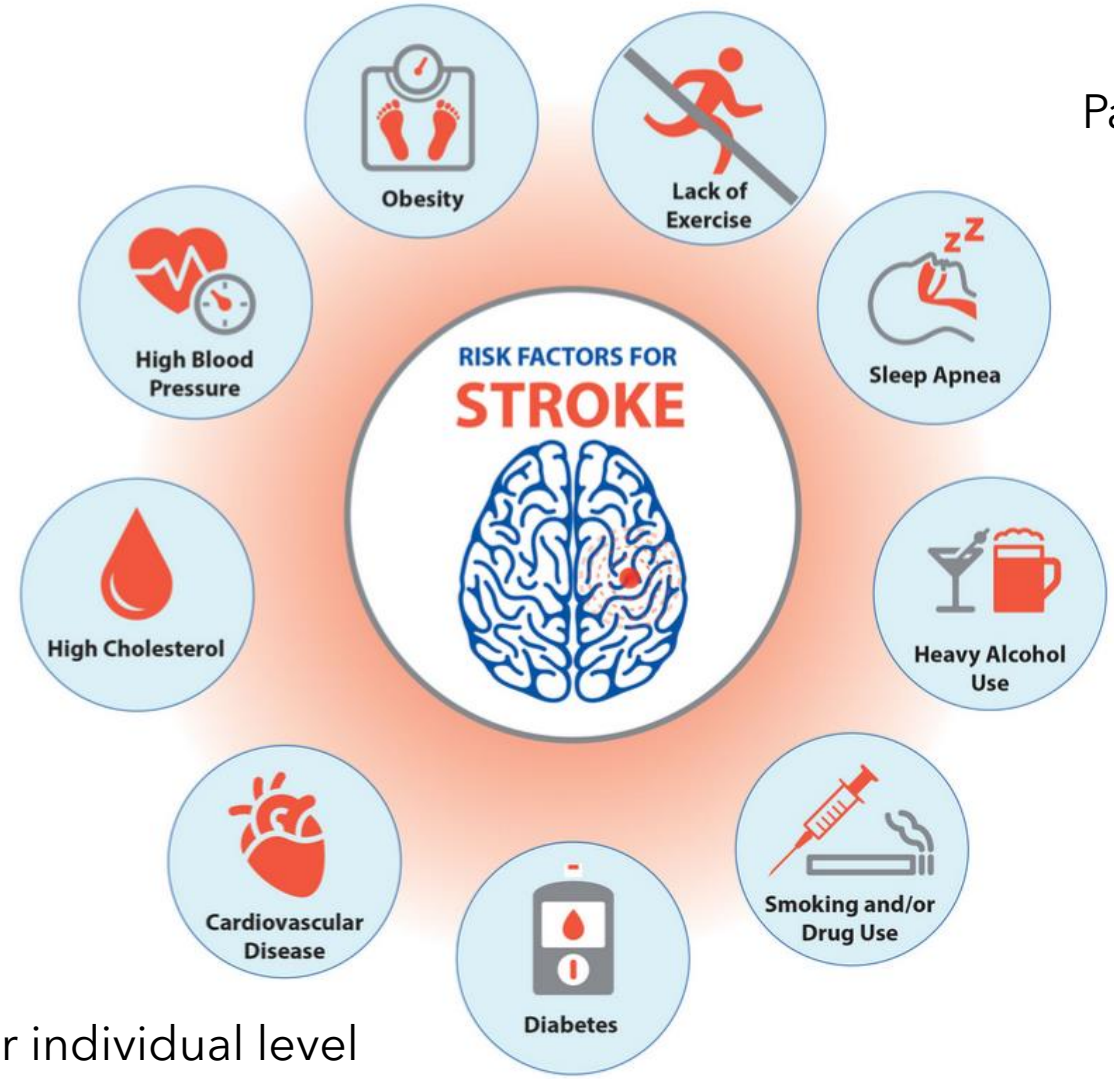
Lifestyle

Diet
Stress
Smoking
Physical activity
Alcohol and substance use

Secondary

Patient-based

CVA/TIA
CAD
HF
Arrhythmia
PVD
Vascular dementia



Primary

Population or individual level
Preventing the initial occurrence

Targets for lifestyle modification

Diet

- Balanced diet
- Limited processed foods
- Limiting sodium
- DASH diet

Exercise

- At least 150 minutes per week
- In bouts of 10 minutes or more
- Moderate- to vigorous-intensity aerobic physical activity

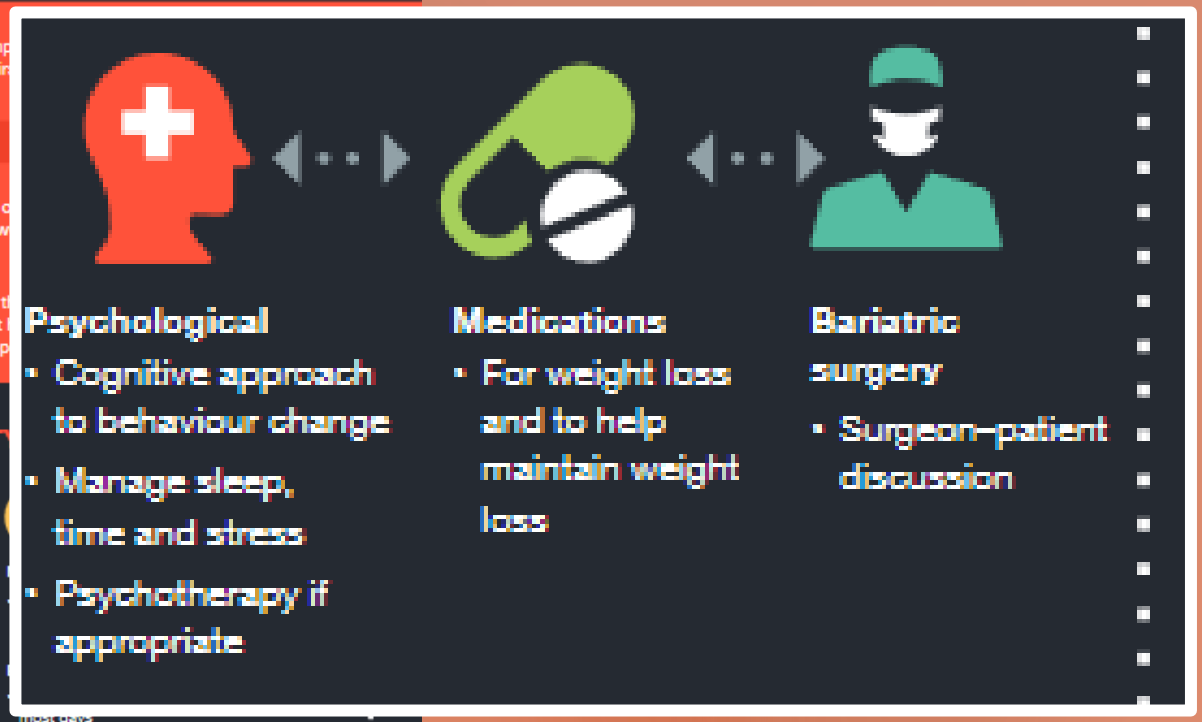
Smoking / Substances

Cessation

Alcohol consumption per week

Drinking alcohol has negative consequences. The more alcohol you drink per week, the more the consequences add up.

https://www.ccsa.ca/canadas-guidance-alcohol-and-health



Obesity in adults: a clinical practice guideline

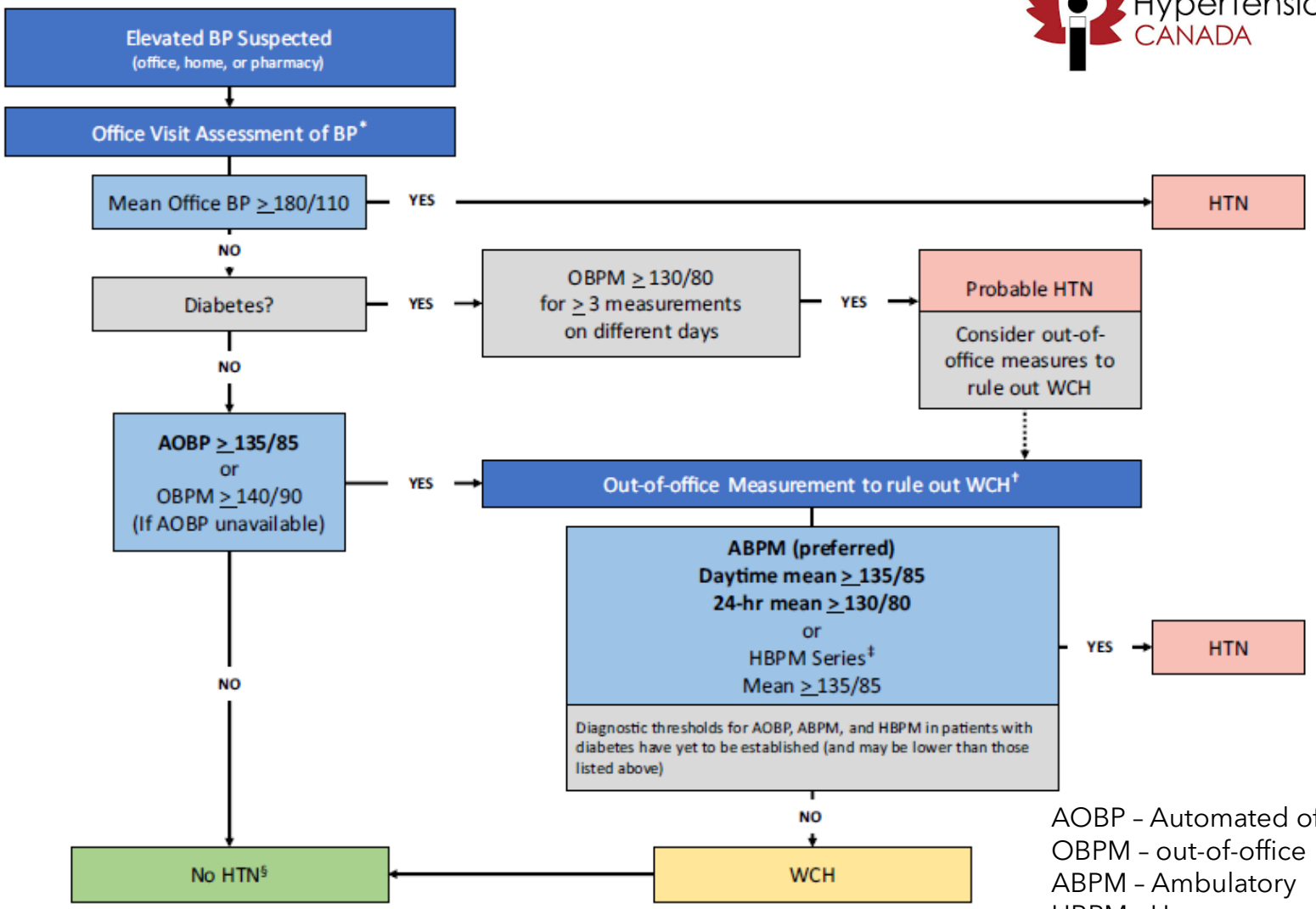
obesity canada | obésité canada

Key messages for health practitioners

- Pharmacological treatments are an effective and scalable approach to treating obesity. As with any chronic disease, such as type 2 diabetes (T2DM) or hypertension, pharmacotherapy is an important pillar in the management of obesity.
- The focus of obesity management should be the improvement of health parameters (metabolic, mechanical, mental, and/or quality of life [QoL]), not solely weight reduction, and should include outcomes that the patient identifies as important. Obesity is defined by body mass index (BMI) in clinical trials, which itself does not adequately reflect the burden of adiposity-related disease.
- There are four medications indicated for long-term obesity management in Canada as adjuncts to health-behaviour changes: liraglutide (Saxenda®), naltrexone/bupropion (Contrave®) in a combination tablet, orlistat (Xenical®) and semaglutide (Wegovy®). All four medications are effective in producing clinically significant weight loss and health benefits greater than placebo over a duration of at least one year.
- The individual response to pharmacotherapy for obesity management is heterogeneous. Efficacy (both for weight and management of obesity-related health issues), mechanism of action, safety, potential side effects/tolerability, contraindications, medication interactions, mode of administration and cost are important considerations in choosing the most appropriate obesity pharmacotherapy.
- Obesity medications are intended as part of a long-term treatment strategy. Clinical trials of pharmacotherapy for obesity management consistently demonstrate regain of weight when treatment is stopped.
- Medications that are not approved as pharmacotherapy for obesity management should not be used for this purpose.

Hypertension

Most prevalent CV risk factor in Canada



AOBP – Automated office
OBPM – out-of-office
ABPM – Ambulatory
HBPM - Home

Table 5. Blood pressure thresholds for initiation of antihypertensive therapy and treatment targets in adults

Patient population	BP threshold (mm Hg) for initiation of antihypertensive therapy	BP target (mm Hg) for treatment
Low risk (no target organ damage or cardiovascular risk factors)	SBP $\geq$ 160 (Grade A) DBP $\geq$ 100 (Grade A)	SBP $<$ 140 (Grade A) DBP $<$ 90 (Grade A)
High risk of cardiovascular disease*	SBP $\geq$ 130 (Grade B)	SBP $<$ 120 (Grade B)
Diabetes mellitus	SBP $\geq$ 130 (Grade C) DBP $\geq$ 80 (Grade A)	SBP $<$ 130 (Grade C) DBP $<$ 80 (Grade A)
All others	SBP $\geq$ 140 (Grade C) DBP $\geq$ 90 (Grade A)	SBP $<$ 140 (Grade A) DBP $<$ 90 (Grade A)

BP, blood pressure; DBP, diastolic blood pressure; SBP, systolic blood pressure.

*See Table 6; on the bass of automated office blood pressure measurement.

Table 6. Clinical indications defining high-risk adult patients as candidates for intensive management

Clinical or subclinical cardiovascular disease; or
Chronic kidney disease (nondiabetic nephropathy, proteinuria $<$ 1 g/d, *estimated glomerular filtration rate 20-59 mL/min/1.73 m^2); or
Estimated 10-year global cardiovascular risk $\geq$ 15%†; or
Age $\geq$ 75 years
Patients with 1 or more clinical indications should consent to intensive management.

*Four-variable Modification of Diet in Renal Disease equation.
†Framingham Risk Score.[109]

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*See Table 6; on the bass of automated office blood pressure measurement.

Treatment BP targets	Adults 18–79 y, primary SBP/DBP goal <140/90 mm Hg; if treatment well tolerated target SBP/DBP <130/80 mm Hg but not SBP <120 mm Hg or DBP <70 mm Hg. For adults with isolated systolic hypertension, target SBP lowering, albeit cautiously. In adults ≥80 y, target SBP/DBP <140/90 mm Hg, if well tolerated.	Recommendations are like previous ESH Guideline

Table 7. Considerations in the individualization of pharmacological therapy in adults

	Initial therapy	Second-line therapy	Notes and/or cautions
Hypertension without other compelling indications			
Diastolic hypertension with or without systolic hypertension	Monotherapy or SPC. Recommended monotherapy choices include thiazide/thiazide-like diuretics (with longer-acting diuretics preferred), β-blockers, ACE inhibitors, ARBs, or long-acting CCBs. Recommended SPC choices include combinations of an ACE inhibitor with CCB, ARB with CCB, or ACE inhibitor/ARB with a diuretic (consider statins in selected patients)	Combination of first-line drugs	Not recommended for monotherapy: α-blockers, β-blockers in those 60 years of age or older, ACE inhibitors in black people. Hypokalemia should be avoided in those prescribed diuretics. Combination of an ACE inhibitor with an ARB is not recommended
Isolated systolic hypertension without other compelling indications	Thiazide/thiazide-like diuretics, ARBs, or long-acting dihydropyridine CCBs	Combinations of first-line drugs	Same as diastolic hypertension with or without systolic hypertension
Diabetes mellitus			
Diabetes mellitus with microalbuminuria,* renal disease, cardiovascular disease, or additional cardiovascular risk factors	ACE inhibitors or ARBs	Additional use of a dihydropyridine CCB is preferred over a thiazide/thiazide-like diuretic	A loop diuretic could be considered in hypertensive chronic kidney disease patients with extracellular fluid volume overload
Diabetes mellitus not included in the above category	ACE inhibitors, ARBs, dihydropyridine CCBs, or thiazide/thiazide-like diuretics	Combination of first-line drugs. If combination with ACE inhibitor is being considered, a dihydropyridine CCB is preferable to a thiazide/thiazide-like diuretic	Normal urine microalbumin to creatinine ratio < 2.0 mg/mmol
Cardiovascular disease			
Coronary artery disease	ACE inhibitors or ARBs; β-blockers or CCBs for patients with stable angina	When combination therapy is being used for high-risk patients, an ACE inhibitor/dihydropyridine CCB is preferred	Avoid short-acting nifedipine Combination of an ACE inhibitor with an ARB is not recommended. Exercise caution when lowering SBP to target if DBP is ≤ 60 mm Hg, especially in patients with LVH
Recent myocardial infarction	β-Blockers and ACE inhibitors (ARBs if ACE inhibitor-intolerant)	Long-acting CCBs if β-blocker contraindicated or not effective	Nondihydropyridine CCBs should not be used with concomitant heart failure

Table 7. Considerations in the individualization of pharmacological therapy in adults

	Initial therapy	Second-line therapy	Notes and/or cautions
Heart failure	ACE inhibitors (ARBs if ACE inhibitor-intolerant) and β-blockers. Aldosterone antagonists (mineralocorticoid receptor antagonists) may be added for patients with a recent cardiovascular hospitalization, acute myocardial infarction, elevated BNP or NT-proBNP level, or NYHA class II-IV symptoms	ACE inhibitor and ARB combined. Hydralazine/isosorbide dinitrate combination if ACE inhibitor and ARB contraindicated or not tolerated. Thiazide/thiazide-like or loop diuretics are recommended as additive therapy; dihydropyridine CCB can also be used. A combined ARB/neprilysin-inhibitor is recommended (in place of an ACE inhibitor or ARB) in symptomatic patients with hypertension and HFrEF according to standard guideline-based therapies	Titrate doses of ACE inhibitors and ARBs to those used in clinical trials. Carefully monitor potassium and renal function if combining any of ACE inhibitor, ARB, and/or aldosterone antagonist
LVH	ACE inhibitor, ARB, long-acting CCB, or thiazide/thiazide-like diuretic	Combination of first-line agents	Hydralazine and minoxidil should not be used
Past stroke or TIA	ACE inhibitor and a thiazide/thiazide-like diuretic combination	Combination of first-line agents	Treatment of hypertension should not be routinely undertaken in patients with acute stroke unless extreme BP elevation. Combination of an ACE inhibitor with an ARB is not recommended
Nondiabetic chronic kidney disease			
Nondiabetic chronic kidney disease with proteinuria[†]	ACE inhibitors (ARBs if ACE inhibitor-intolerant) if there is proteinuria. Diuretics as additive therapy	Combinations of first-line agents	Carefully monitor renal function and potassium for those receiving an ACE inhibitor or ARB. Combinations of an ACE inhibitor and ARB are not recommended

ACE, angiotensin converting enzyme; ARB, angiotensin receptor blocker; BNP, brain natriuretic peptide; BP, blood pressure; CCB, calcium channel blocker; DBP, diastolic blood pressure; HFrEF, heart failure with reduced ejection fraction < 40%; LVH, left ventricular hypertrophy; NT-proBNP, N-terminal pro B-type naturietic peptide; NYHA, New York Heart Association; SBP, systolic blood pressure; SPC, single-pill combination; TIA, transient ischemic attack.

*Microalbuminuria is defined as persistent albumin to creatinine ratio > 2.0 mg/mmol.

[†]Proteinuria is defined as urinary protein > 150 mg in 24 hours or albumin to creatinine ratio > 30 mg/mmol in 2 of 3 specimens.

Hypertension – what's new?

- Aldosterone synthetase inhibitors
  - Baxdrostat, phase 2 trial published in NEJM Feb 2023
  - Lorundrostat, randomized control trial, JAMA Sept 2023

Dyslipidemia

Primary versus secondary prevention

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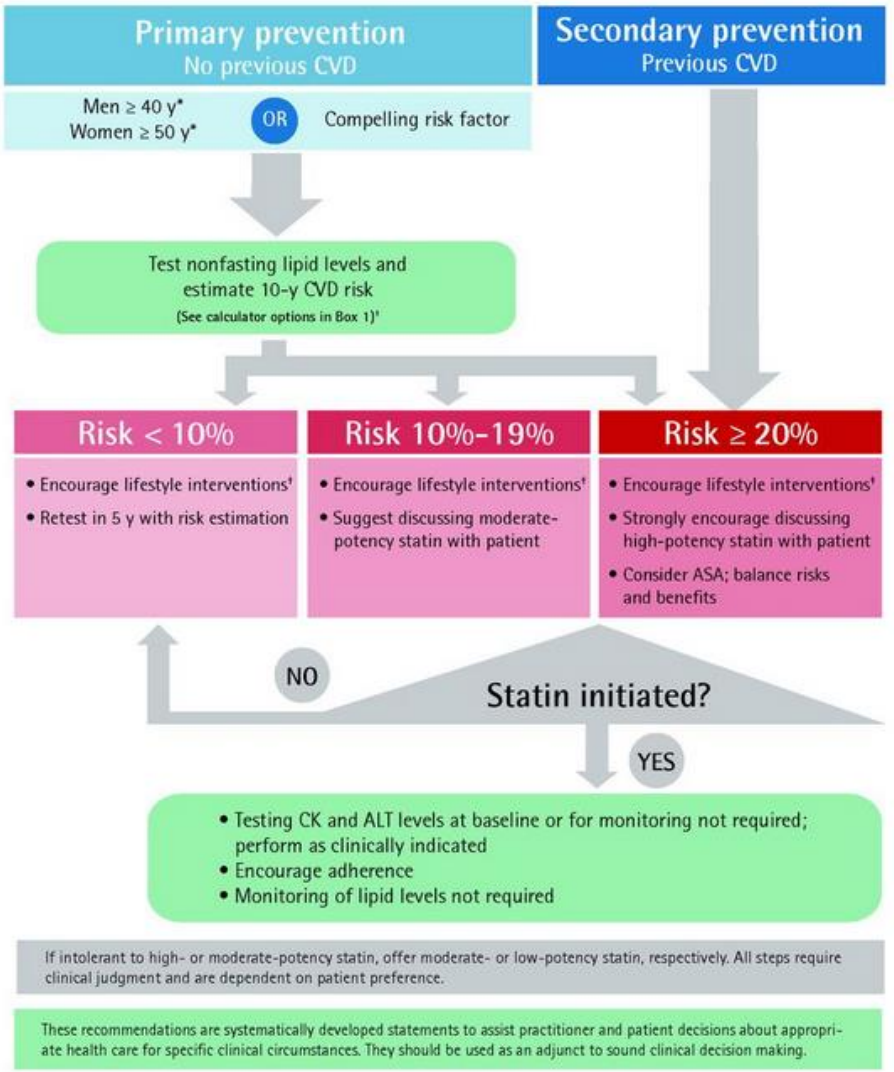
CANADIAN FAMILY PHYSICIAN • LE MÉDECIN DE FAMILLE CANADIEN
The official journal of the College of Family Physicians of Canada

Simplified lipid guidelines

Prevention and management of cardiovascular disease in primary care

(2015)

Figure 1. Lipid algorithm: *For primary or secondary prevention; excludes those with familial hypercholesterolemia.*



Dyslipidemia

Canadian Cardiovascular Society

2021 Canadian Cardiovascular Society Guidelines for the Management of Dyslipidemia for the Prevention of Cardiovascular Disease in Adults

- New treatment targets
  - Non-HDL and ApoB
- New therapies
  - PCSK9 inhibitors and IPE

Dyslipidemia

Canadian Cardiovascular Society

Statin indicated conditions

Atherosclerotic cardiovascular diseases (ASCVD)

- CAD
- CVA/TIA
- PAD
- Carotid disease
- AAA

Other

- Diabetes
- CKD
- LDL ≥ 5 mmol/L
- FH

Dyslipidemia

Canadian Cardiovascular Society

Statin indicated conditions

Atherosclerotic cardiovascular disease (ASCVD)	Other
Coronary artery disease	Diabetes
Stroke / TIA	CKD
Peripharal arterial disease	LDL ≥ 5 mmol/L
Carotid disease	Familial hypercholesterolemia
AAA	

Dyslipidemia

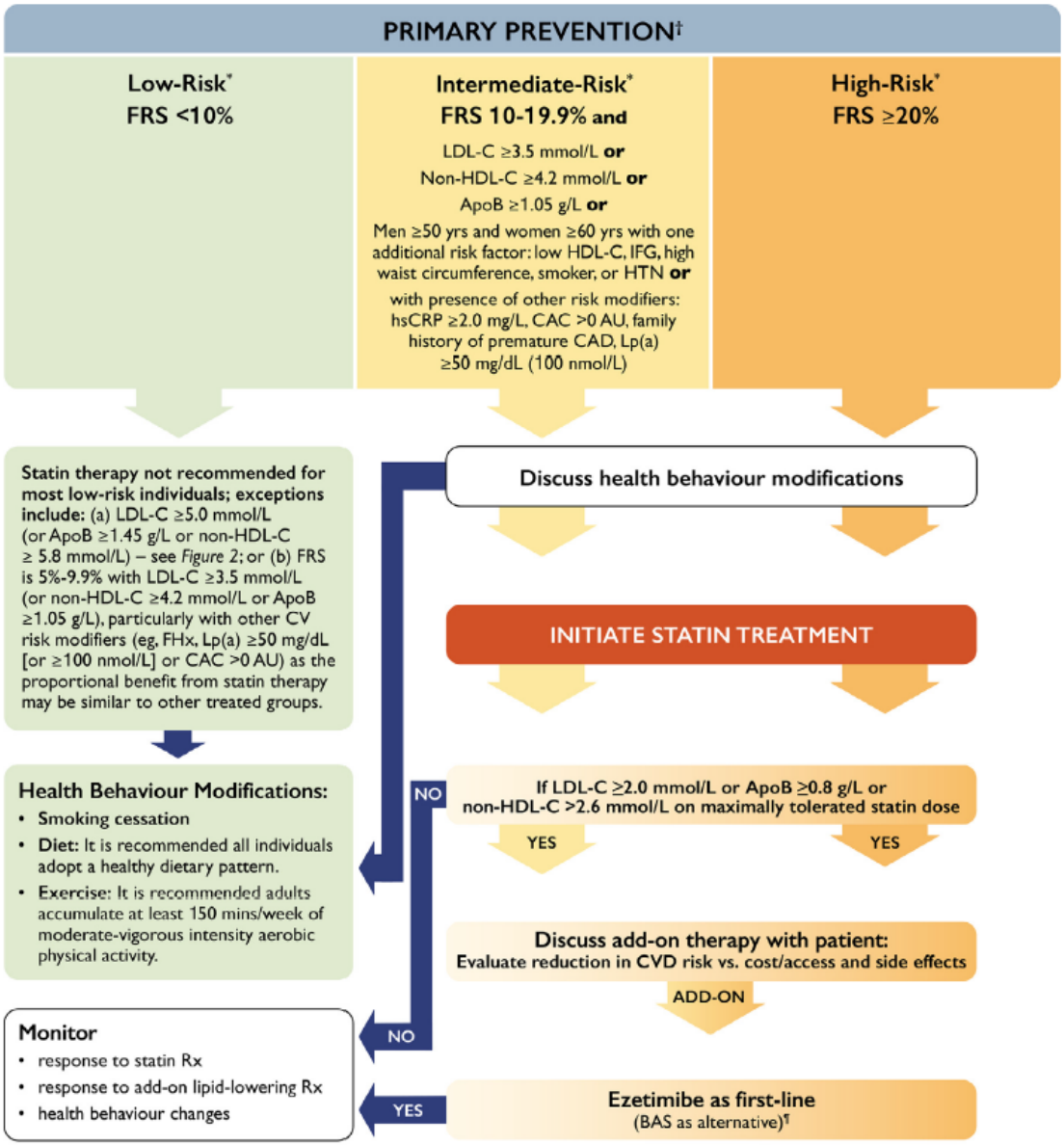
Canadian Cardiovascular Society

Table 1. Who to screen for dyslipidemia in adults at risk

Who to screen
Men 40 years of age or older; women 40 years of age or older (or postmenopausal)
• Consider earlier in ethnic groups at increased risk such as South Asian or indigenous individuals
All patients with any of the following conditions, regardless of age
• Clinical evidence of atherosclerosis
• Abdominal aortic aneurysm
• Diabetes mellitus
• Arterial hypertension
• Current cigarette smoking
• Stigmata of dyslipidemia (corneal arcus, xanthelasma, xanthoma)
• Family history of premature CVD*
• Family history of dyslipidemia
• CKD (eGFR $\leq$ 60 mL/min/1.73 m^2 or ACR $\geq$ 3 mg/mmol)
• Obesity (BMI $\geq$ 30)
• Inflammatory diseases (RA, SLE, PsA, AS, IBD)
• HIV infection
• Erectile dysfunction
• COPD
• History of hypertensive disorder of pregnancy

Table 2. How to screen for dyslipidemia in adults at risk

How to screen
For all
• History and physical examination
• Standard lipid profile*: TC, LDL-C, HDL-C, non-HDL-C,† TG
• FPG or A1c
• eGFR
• Lipoprotein(a)—once in patient's lifetime, with initial screening
Optional
• ApoB
• Urine ACR (if eGFR <60 mL/min/1.73 m^2, hypertension, or diabetes)



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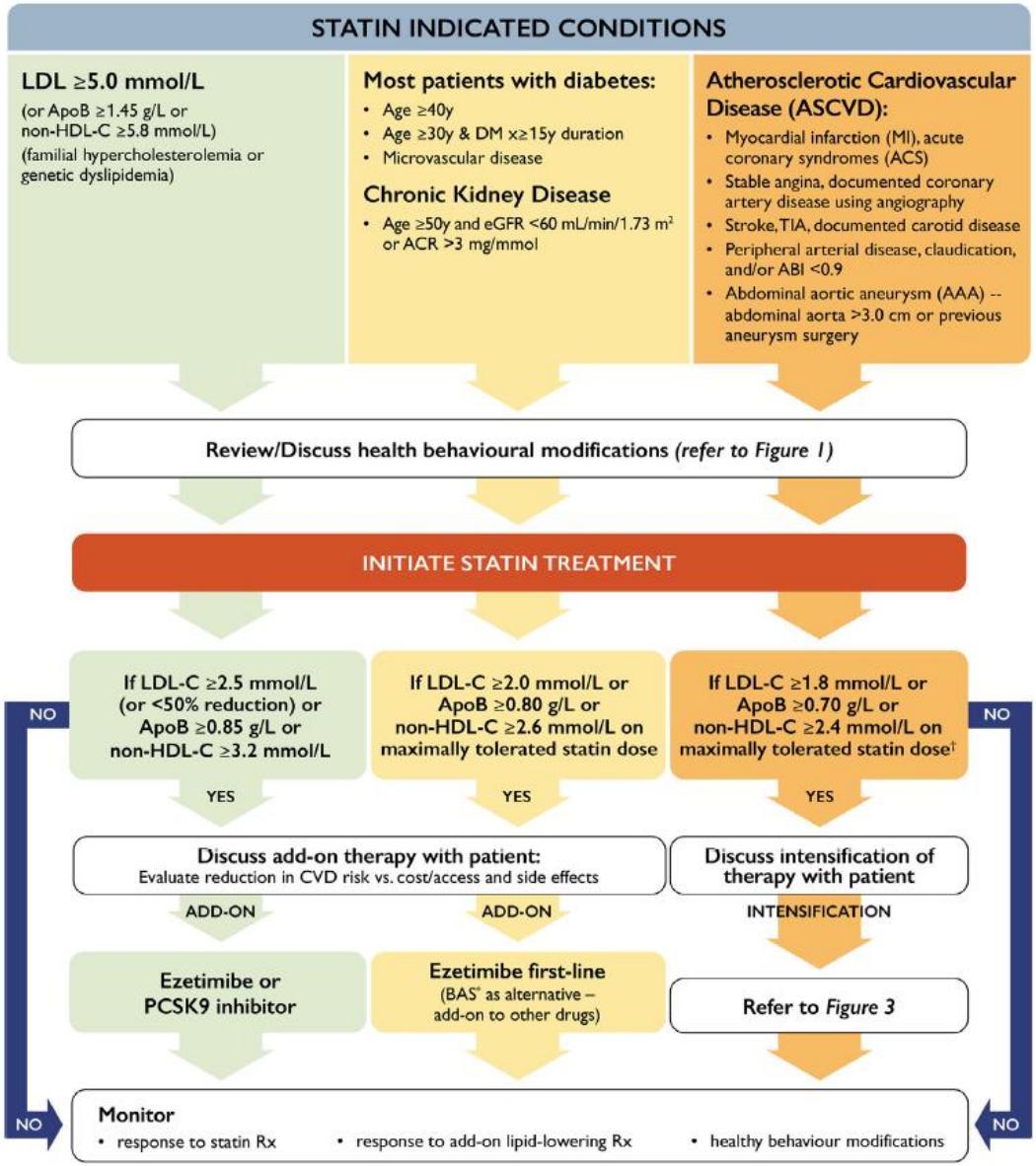

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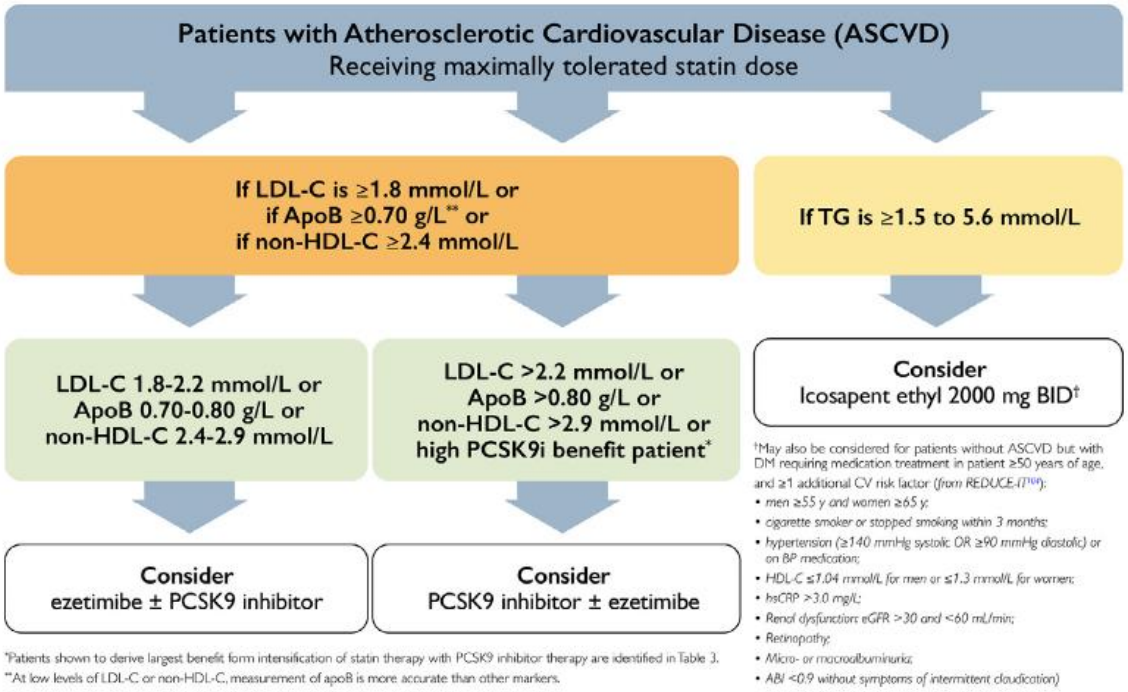

Cardiovascular Risk Reduction with Icosapent Ethyl for Hypertriglyceridemia

Deepak L. Bhatt, M.D., M.P.H., P. Gabriel Steg, M.D., Michael Miller, M.D., Eliot A. Brinton, M.D., Terry A. Jacobson, M.D., Steven B. Ketchum, Ph.D., Ralph T. Doyle, Jr., B.A., Rebecca A. Juliano, Ph.D., Lixia Jiao, Ph.D., Craig Granowitz, M.D., Ph.D., Jean-Claude Tardif, M.D., and Christie M. Ballantyne, M.D. for the REDUCE-IT Investigators*

Article Figures/Media Metrics

38 References 1906 Citing Articles Letters 7 Comments

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Simplified lipid guidelines

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(2015)

Figure 1. Lipid algorithm: *For primary or secondary prevention; excludes those with familial hypercholesterolemia.*

Guideline CPD

Canadian Cardiovascular Harmonized National Guideline Endeavour (C-CHANGE) guideline for the prevention and management of cardiovascular disease in primary care: 2022 update

- Testing CK and ALT levels at baseline or for monitoring not required; perform as clinically indicated
- Encourage adherence
- Monitoring of lipid levels not required

If intolerant to high- or moderate-potency statin, offer moderate- or low-potency statin, respectively. All steps require clinical judgment and are dependent on patient preference.

These recommendations are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances. They should be used as an adjunct to sound clinical decision making.

Statin intolerance

An assessment by the Statin Muscle Safety Task Force: 2014 update

Box 1 Factors that may increase the risk of statin induced myopathy

- Advanced age (>80 years old)
- Female sex
- Low body mass index
- Multisystem diseases (for example, diabetes mellitus)
- Diseases affecting kidney or liver function
- Hypothyroidism (untreated)
- Drug interactions, especially with drugs that are inhibitors or substrates of the cytochrome P450 pathway (for example, fibrates, nicotinic acid, calcium channel blockers, ciclosporin, amiodarone, thiazolidinediones, macrolide antibiotics, azole antifungals, protease inhibitors, warfarin)
- Vigorous exercise
- Excess alcohol
- Intercurrent infections
- Major surgery or trauma
- Diet (excessive grapefruit or cranberry juice)
- Genetic factors (for example, polymorphisms of the cytochrome P450 isoenzymes or drug transporters, inherited defects of muscle metabolism, traits that affect oxidative metabolism of fatty acids)

- new-onset or increased symptoms of myalgia (muscle aches, stiffness, cramping, soreness, and tenderness) that were unassociated with recent exercise;
- symptoms that persisted for at least 2 weeks;
- symptoms that resolved within 2 weeks of stopping the study drug; and
- symptoms that reoccurred within 4 weeks of restarting the medication.

An assessment by the Statin Muscle Safety Task Force: 2014 update

Statin intolerance

Table 1 Spectrum of statin-associated muscle adverse events

- Myalgia—unexplained muscle discomfort often described as "flu-like" symptoms with normal CK level. The spectrum of myalgia complaints includes:
  - Muscle aches;
  - Muscle soreness;
  - Muscle stiffness;
  - Muscle tenderness; and
  - Muscle cramps with or shortly after exercise (not nocturnal cramping).
- Myopathy—muscle weakness (not attributed to pain and not necessarily associated with elevated CK).
- Myositis—muscle inflammation
- Myonecrosis—muscle enzyme elevations or hyperCKemia
  - Mild >3-fold greater than baseline untreated CK levels or normative upper limit that are adjusted for age, race, and sex.
  - Moderate ≥10-fold greater than untreated baseline CK levels or normative upper limit that are adjusted for age, race, and sex.
  - Severe ≥50-fold above baseline CK levels or normative upper limit that are adjusted for age, race, and sex.
- Myonecrosis with myoglobinuria or acute renal failure (increase in serum creatinine ≥0.5 mg/dL (clinical rhabdomyolysis).

CK, creatine kinase.

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https://doi.org/10.1007/s00296-022-05230-0

Rheumatology
INTERNATIONAL

CASE BASED REVIEW

Check for updates

Challenges in the diagnosis and management of immune-mediated necrotising myopathy (IMNM) in a patient on long-term statins

Dyslipidemia in the elderly

Table 2.

Ongoing Studies of Statin Therapy in the Elderly

	SCOPE-RCT	SITE	STAREE
Country	South Korea	France	Australia
Age	>75 years	>75 years	>70 years
Type of prevention	Primary	Primary	Primary
Study Arms	Moderate dose vs high dose statin	D/C statin vs not D/C statin	Atorvastatin 40 mg/day vs placebo
Primary endpoint	Statin-Associated Muscle Symptoms	Incremental cost per QALY gained, mortality	Death, dementia or disability
Secondary endpoints	Fatal and nonfatal CV events	New events: cardiovascular, cognitive, diabetes	Fatal and nonfatal CV events, diabetes, dementia, hospitalization, QALY, cost-effectiveness
Duration	6 years	3 years	7 years
Number of enrollees	2,234	2,430	18,000
Year of completion	2024	2021	2023

Carotid Artery disease

Symptomatic

9.1 Symptomatic Carotid Stenosis

9.1.1 Imaging

i. If revascularization is being considered for carotid stenosis based only on carotid ultrasound, then CTA or contrast enhanced MRA is recommended to confirm the degree of stenosis and guide surgical decision-making, as well as to assess for tandem disease [Evidence Level C].

9.1.2 Indications for carotid revascularization

i. Patients with a symptomatic event attributed to an ipsilateral 50 to 99 percent carotid artery stenosis should be evaluated without delay for potential carotid revascularization by a health professional with stroke expertise [Evidence Level B].

   a. In men with 50 to 99 percent and women with 70 to 99 percent symptomatic carotid artery stenosis, carotid endarterectomy (CEA) is recommended and should be performed as soon as possible following the qualifying event [Evidence Level A].

   b. In women with 50 to 69 percent symptomatic carotid stenosis, CEA may be considered in those at highest risk of stroke recurrence and upon consideration of other patient factors [Evidence Level B].

ii. Carotid endarterectomy is generally more appropriate than CAS for patients over age 70 years who are otherwise fit for surgery as current evidence indicates stenting carries a higher peri-procedural risk of stroke and death in older patients. [Evidence Level A].

iii. Carotid stenting may be considered for patients who are not operative candidates for technical, anatomic, or medical reasons [Evidence Level A].

9.1.4 Timing

i. In clinically stable patients (men and women), CEA should be performed as early as possible following a qualifying event [Evidence Level B] and ideally within 14 days [Evidence Level A].

ii. In men with 50-69 percent stenosis the benefit of CEA is greatest when performed within 14 days of the qualifying event [Evidence Level A] and is attenuated when performed beyond 14 days of the qualifying event (*Refer to Table 9 below for summary of recurrent stroke risk at various time points*).

Other vascular disease

Symptomatic

9.3 Symptomatic Vertebral Artery Stenosis

i. **(NEW FOR 2020)**: For patients with symptomatic vertebral artery stenosis (extracranial or intracranial), medical therapy is recommended over stenting for secondary stroke prevention [Evidence Level B].

9.4 Symptomatic Intracranial Artery Stenosis

i. For patients with a recent ischemic stroke or transient ischemic attack due to symptomatic intracranial artery stenosis of 70-99 percent, medical therapy is recommended over stenting for secondary stroke prevention [Evidence Level B].

Carotid Artery disease

Asymptomatic or remotely symptomatic

9.2 Asymptomatic and Remotely Symptomatic Carotid Artery Stenosis

i. Individuals with asymptomatic carotid artery stenosis should receive aggressive medical management of risk factors as defined throughout the Secondary Prevention of Stroke Module (for example, blood pressure, diabetes, cholesterol, antiplatelet therapy, smoking cessation, and lifestyle changes) [Evidence Level B].

ii. Carotid endarterectomy may be considered for highly selected patients with 60 to 99 percent carotid stenosis who are asymptomatic or were remotely symptomatic (i.e., greater than six months prior to presentation) [Evidence Level A].

iii. Carotid stenting may be considered in patients with 60 to 99 percent asymptomatic carotid stenosis who are not operative candidates for technical, anatomic or medical reasons provided there is a less than 3 percent risk of peri-procedural morbidity and mortality [Evidence Level A].

a. The benefit of carotid endarterectomy for women with 60-99 percent asymptomatic carotid artery stenosis is not clear and should only be considered in highly selected patients [Evidence Level B] in consultation with a health professional with stroke expertise.

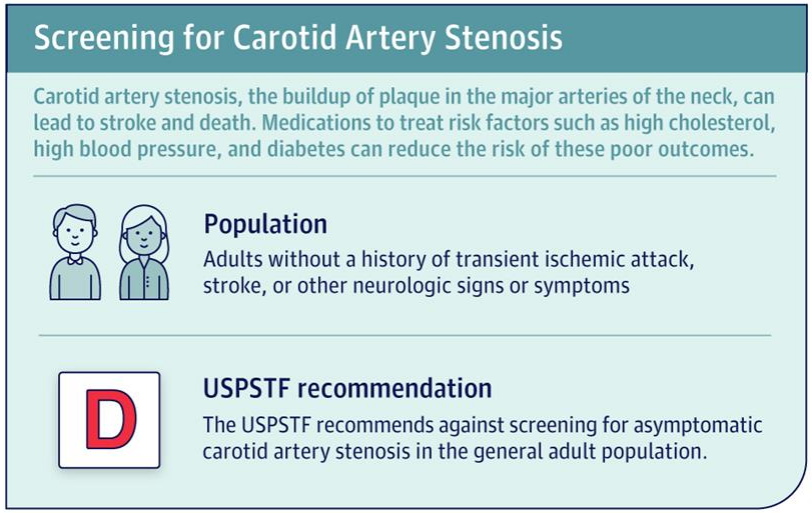
b. Patients should be evaluated to determine eligibility for carotid endarterectomy, such as a life expectancy of more than five years, and an acceptable risk of surgical complications [Evidence Level A].

c. In carefully selected patients, carotid endarterectomy should be performed by a surgeon who routinely audits their performance results and demonstrates a less than 3 percent risk of peri-operative morbidity and mortality [Evidence Level B].

d. Important improvements in best medical therapy (control of blood pressure, lipids, diabetes, and smoking) since the major trials of endarterectomy for asymptomatic stenosis possibly make their results less applicable to contemporary management practise (Evidence Level C)

Carotid Artery disease

Asymptomatic



(2011)

"May be reasonable to screen patients "

- Carotid bruit
- Disease in another vascular bed
- 2 vascular risk factors

Atrial fibrillation (briefly)

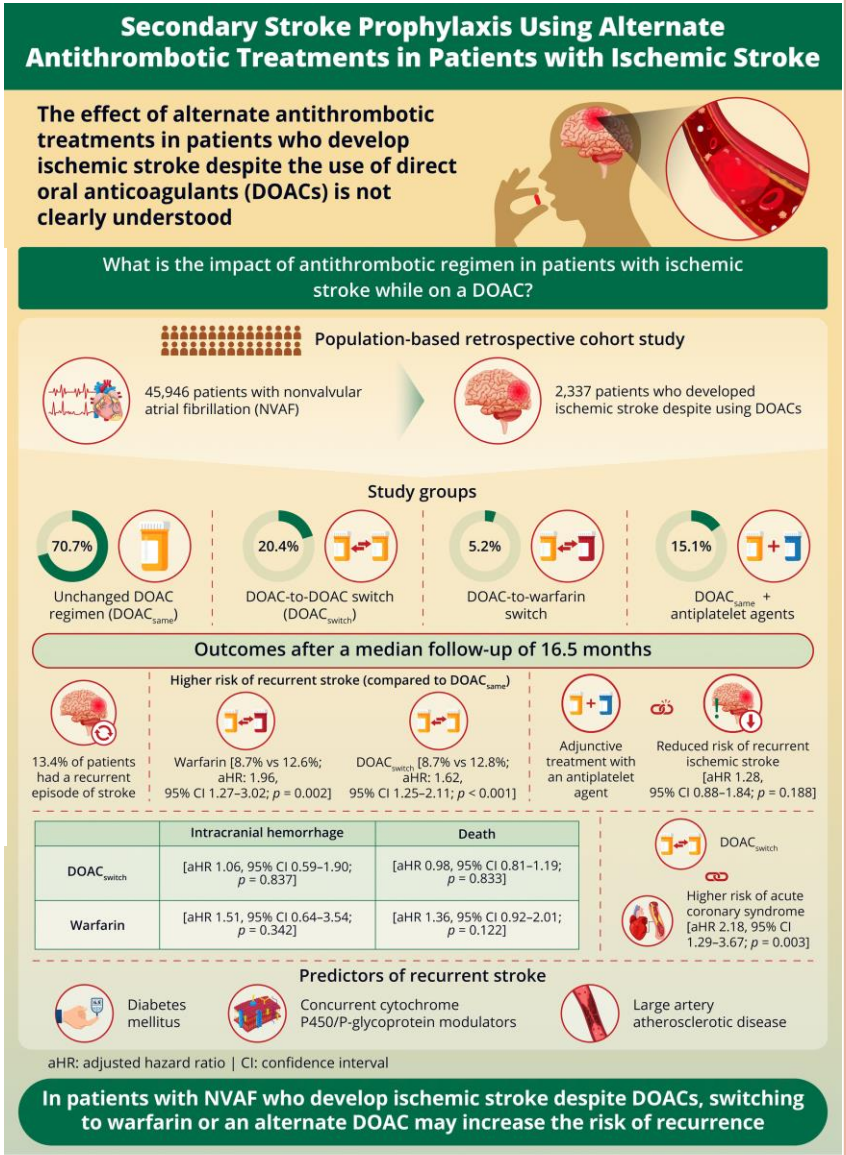
48h → 14d Holter monitor

a. **(NEW FOR 2020):** For patients with an ischemic stroke or transient ischemic attack and atrial fibrillation, oral anticoagulant therapy is strongly recommended [Evidence Level A]. It is recommended over acetylsalicylic acid [Evidence Level A] and dual antiplatelet therapy [Evidence level B].

b. For most patients requiring anticoagulants for atrial fibrillation, a direct oral anticoagulant (DOAC) such as apixaban, dabigatran, edoxaban, or rivaroxaban should be prescribed in preference over warfarin [Evidence Level A].

c. For patients already receiving warfarin with good International Normalized Ratio (INR) control (range 2.0 – 3.0, with time in therapeutic range (TTR) of >70%) and without adverse effects, continuing warfarin, rather than switching to a DOAC, is a reasonable anticoagulant option [Evidence Level B]. Patient preferences should be considered in decision-making [Evidence Level C].

vi. **NEW RECOMMENDATION FOR 2020:** For patients with atrial fibrillation who experience ischemic stroke or transient ischemic attack in spite of anticoagulant therapy, we recommend the following: (1) identify and address medication nonadherence; (2) ensure correct DOAC dosing or warfarin INR control; (3) avoid DOACs drug-drug interactions; (4) investigate for and treat other potential stroke etiologies, and (5) promote general vascular risk factor modification [Evidence Level C]. *Refer to current Canadian Cardiovascular Society guideline for Atrial Fibrillation secondary prevention of stroke section for additional information.*



doi: 10.1212/WNL.0000000000207422

Neurology®

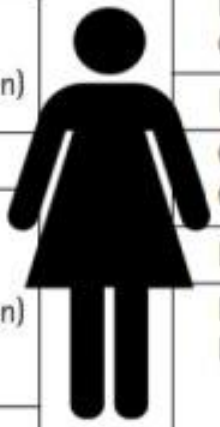
Stroke in Women

Stroke risk factors in women

Common risk factors

Less favorable for women

Comparison of women to men	
Prevalence	
Hypertension in older age[19] Migraine[58] Obesity[64,65]	Greater (women > men)
Association with stroke risk	
Hypertension[29-31] Diabetes mellitus[29,37] Atrial fibrillation (AF)[39,40] Migraine[63] Smoking[29,69]	Greater (women > men)
Treatment rate	
Oral anticoagulant therapy[42,43] Statin therapy[56,57]	Lesser (women < men)
Procedural complication rate	
Catheter ablation of AF[45] Left atrial appendage closure[46,47]	Greater (women > men)

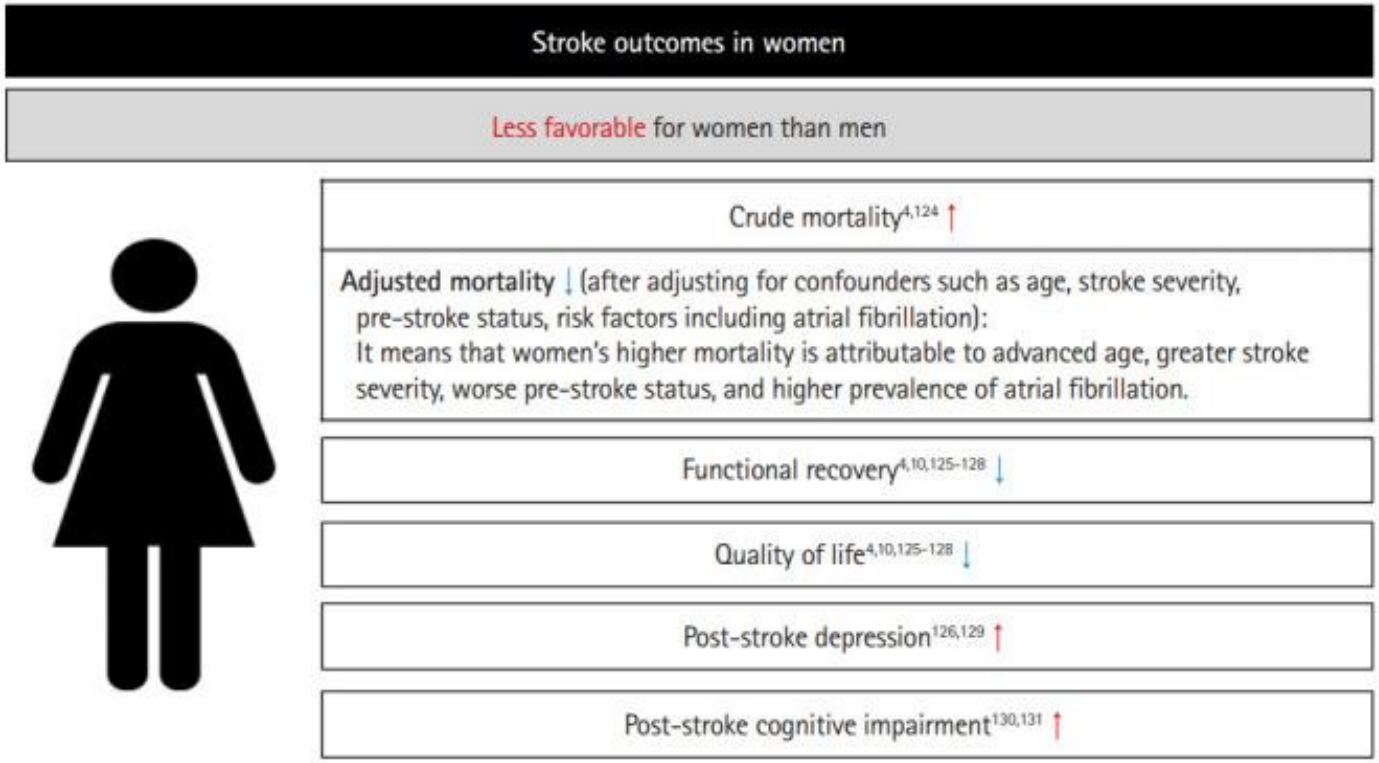


Women-specific risk factors

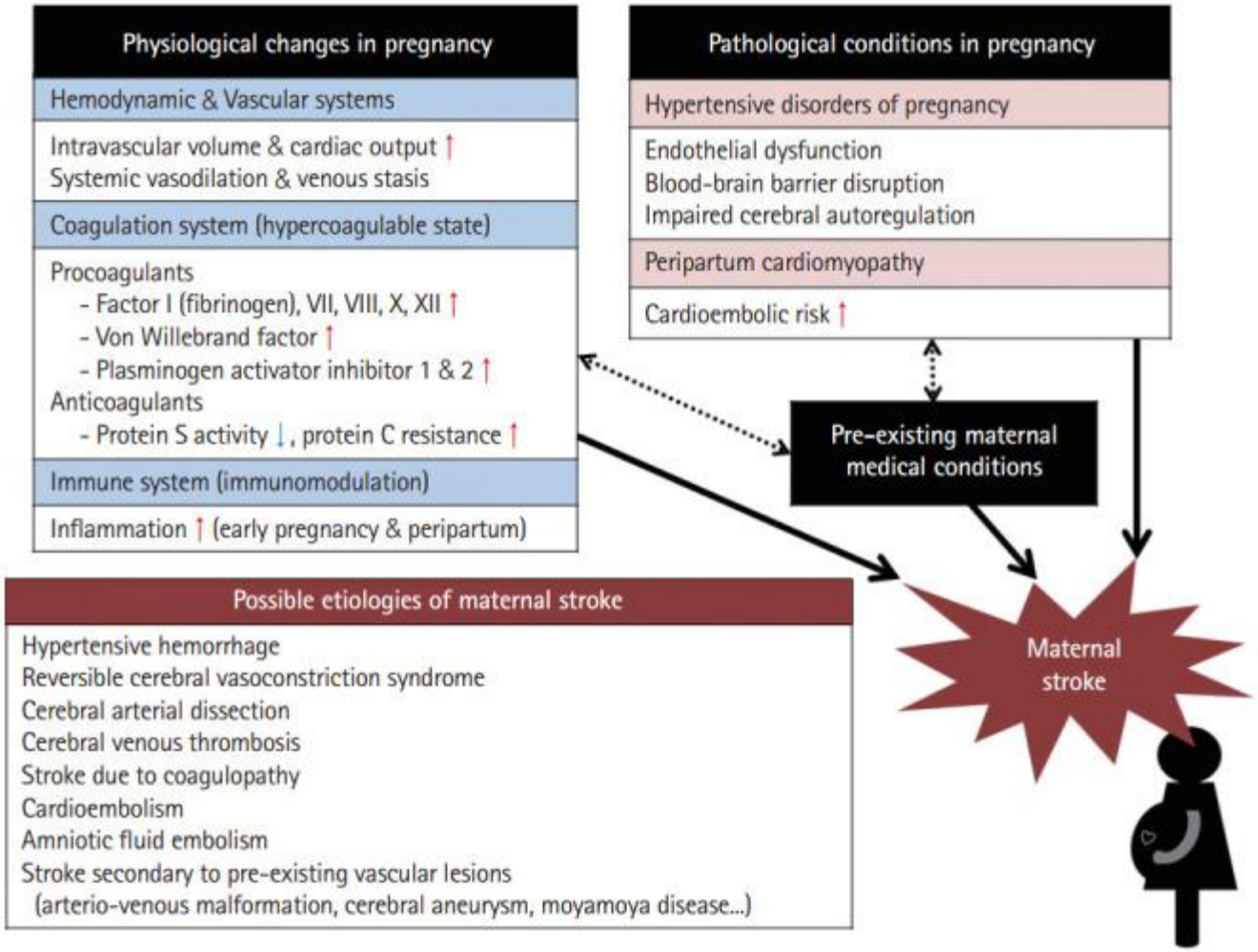
Unique to women

Pregnancy & adverse pregnancy outcomes
Hypertensive disorders of pregnancy Preterm delivery Gestational diabetes
Exogenous estrogen
Oral contraceptive Oral postmenopausal hormone therapy
Lifetime endogenous estrogen exposure
Early & late menarche Early menopause - Natural menopause - Surgical menopause (oophorectomy with/without hysterectomy)

Stroke in Women: A Review Focused on Epidemiology, Risk Factors, and Outcomes



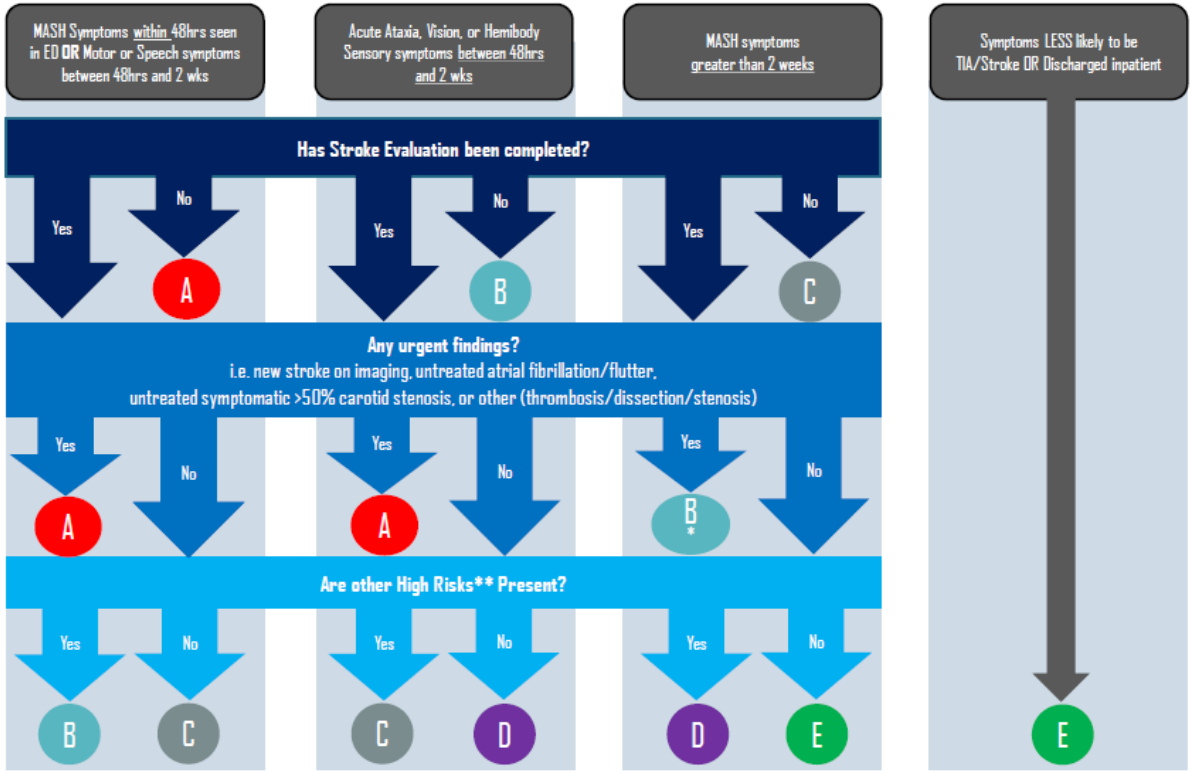
Stroke in Women: A Review Focused on Epidemiology, Risk Factors, and Outcomes



Stroke in Women: A Review Focused on Epidemiology, Risk Factors, and Outcomes

Ontario Triage Algorithm for Stroke Prevention Clinic Referrals

Patients with TIA or Non Disabling Stroke Symptoms



Adapted from Northwestern Ontario Regional Stroke Network & Thunder Bay Regional Health Sciences Centre Source: Canadian Stroke Best Practice Recommendations (2020; 2017) & References (See Appendix)
Updated by Ontario Secondary Stroke Prevention Task Group (May, 2022)

* If untreated atrial fibrillation/flutter-implement plan for anticoagulation ASAP
** See over for other high risks

New Acute TIA / Stroke Symptoms → **Within 48 hrs and no ED Visit** → **Advise to go to CT-capable ED Immediately**

Stroke Symptoms - MASH
likely TIA or minor stroke (transient, fluctuating) & if persistent, increase triage scale or admit

MOTOR (Unilateral weakness: face or arm or leg)
ACUTE ATAXIA or VISION CHANGE (monocular or hemifield vision loss or diplopia)
SPEECH (dysarthric or dysphasia/aphasia)
HEMIBODY SENSORY (unilateral numbness: face/arm or arm/leg)

Stroke Evaluation

- Head Imaging
- Vascular Imaging
- Cardiac Monitoring (ECG or Holter or Loop)
- Antiplatelet or Anticoagulation started

Triage Scale
Time frame to be seen at SPC from date of referral sent

- A — Within 24hrs (ED or SPC Fast Track) *(emergent)*
- B — Within 1 Week (*urgent/high*)
- C — Within 2 Weeks (*moderate*)
- D — Within 1 Month (*low*)
- E — Within 3 Months *(discharge inpatients / less likely to be TIA/stroke but still may need attention)*

Other High Risks to Consider:**
Higher priority for those based on:

- Symptoms
  - Longer duration of symptoms
  - MASH stroke symptoms occurring > 2 weeks [with time the priority diminishes (e.g., 2 weeks vs > 3 months)]
  - Warrants OT/PT/SLP assessment
- Other vascular conditions
- Previous TIA/stroke
- Pregnancy including post-partum
- Cancer
- Vascular risk factors
- Already on Antiplatelet/Anticoagulation therapy
- Blood pressure reading is high (e.g., initial triage diastolic blood pressure ≥ 110 mmHg as per Canadian TIA Score)
- Abnormal blood work (e.g., Glucose ≥ 15 mmol/L &Platelet count ≥ 400 x 10^9/L as per Canadian TIA Score)
- High Canadian TIA Score ≥ 9
- Other considerations:
  - Lifestyle risks
  - Age (younger)
  - Ethnicity
  - Family history

Not likely to be a TIA

- Transient symptoms lasting only seconds
- Seizure
- Isolated transient loss of consciousness or syncope
- Transient global amnesia
- Isolated non-vertiginous dizziness
- Vague generalized weakness without loss of power

OR

No other focal neurological findings

Defer back to referral source or primary care physician for follow up or as per internal processes

References

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