



McGill

**ANNUAL REFRESHER COURSE
FOR FAMILY PHYSICIANS**

| 2022

Patient Name: _____

Address: _____ Date: Nov 17, 2022

R_x

**Approach to
cardiovascular
prevention and
management**

MD: _____

Signature: _____

C-CHANGE 2022 Guideline Update

Case: Management of Elderly Patients
with Multi-morbidities

Dr. Rahul Jain, MD CCFP MScCH

Dr. Sheldon Tobe, MD, FRCPC, MScCH, FACP, FAHA

Case Development & Disclosures



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- **Relationships with financial interests:**

- **Grants/Research Support:** none
- **Speakers Bureau/Honoraria:** none
- **Consulting Fees:** none
- **Other:** none



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Co-chair, C-CHANGE Collaborative and CHEP+ Conference



- **Relationships with financial interests:**
 - **Grants/Research Support:** CIHR, KMH
 - **Speakers Bureau/Honoraria:** Astra-Zeneca, Bayer, Janssen, Otsuka, Pfizer
 - **Consulting Fees:** none
 - **Other:** none

Disclosure of Commercial Support



- This program has received financial support from the Ontario Ministry of Health and Long-Term Care, Public Health Agency of Canada and Health PEI in the form of educational grants
- This program has received in-kind support from CHEP+ in the form of content management, logistical and project support
- Potential for conflict(s) of interest: Support to make accredited sessions available to family physicians has been received from the following:
 - A&D Medical, Amgen, Astra Zeneca, Bayer, Boehringer Ingelheim, HLS Therapeutics, Janssen, KMH Labs, Novartis, Novo Nordisk, Pfizer, Sanofi



Mitigating Potential Bias



- Altering control over content: information and recommendations given in the program are evidence-based and sourced from multiple clinical practice guidelines/scientific professional associations.
- Program material is peer-reviewed by a committee with members representative of the target audience.

Case:

Management of Elderly Patients with Multiple Morbidities



Martin

An 86 year old patient comes into your office to renew his blood pressure medication.



Outline of Today's Activity



- Introduction
- Case Presentation
- Key Learnings & Questions
- Wrap Up



Learning Objectives



Upon completion of this workshop, participants will be able to:

1. Identify the 2022 C-CHANGE Guideline Update recommendations for the prevention and management of cardiovascular disease.
2. Implement recommendations for multimorbidity in a single patient.
3. Reflect how the C-CHANGE recommendations can help older adults live at home longer and healthier.

Patient Name: _____

Address: _____ Date: _____

R_x

**How do we work
with all those CV
guidelines for the
patient in our clinic?**

MD: _____

Signature: _____





“105 Priority Topics”



C-CHANGE

Abdominal Pain
Advanced Cardiac Life Support.....
Allergy
Anemia
Antibiotics
Anxiety
Atrial Fibrillation
Bad News
Behavioural Problems.....
Breast Lump.....
Cancer.....
Chest Pain.....
Chronic Disease
Chronic Obstructive Pulmonary Disease..
Chronic Pain.....
Contraception.....
Cough
Counselling
Crisis
Croup.....
Deep Venous Thrombosis.....
Dehydration.....
Dementia.....
Depression
Diabetes.....
Diarrhea.....
Difficult Patient.....
Disability
Dizziness.....
Domestic Violence.....
Dyspepsia
Dysuria
Earache.....

Elderly.....
Epistaxis.....
Family Issues.....
Fatigue
Fever.....
Fractures.....
Gastro-intestinal Bleed.....
Gender Specific Issues.....
Grief.....
Headache.....
Heart Failure
Hepatitis.....
Hyperlipidemia
Hypertension.....
Immigrants.....
Immunization
In Children.....
Infections.....
Infertility
Insomnia.....
Ischemic Heart Disease.....
Joint Disorder.....
Lacerations.....
Learning (Patients/Self)
Lifestyle
Loss of Consciousness
Loss of Weight
Low-back Pain.....
Meningitis
Menopause.....
Mental Competency
Multiple Medical Problems.....
Neck Pain.....

Newborn.....
Obesity.....
Osteoporosis.....
Pain
Palliative Care.....
Parkinsonism.....
Periodic Health Assessment/Screening...
Personality Disorder.....
Pneumonia.....
Poisoning.....
Pregnancy.....
Prostate.....
Rape/Sexual Assault.....
Rash
Red Eye.....
Renal Failure.....
Schizophrenia.....
Seizures.....
Sex.....
Sexually Transmitted Infections.....
Shortness of Breath.....
Skin Disorder.....
Smoking Cessation
Somatization.....
Stress.....
Stroke.....
Substance use and addiction.....
Suicide
Thyroid
Trauma.....
Travel Medicine

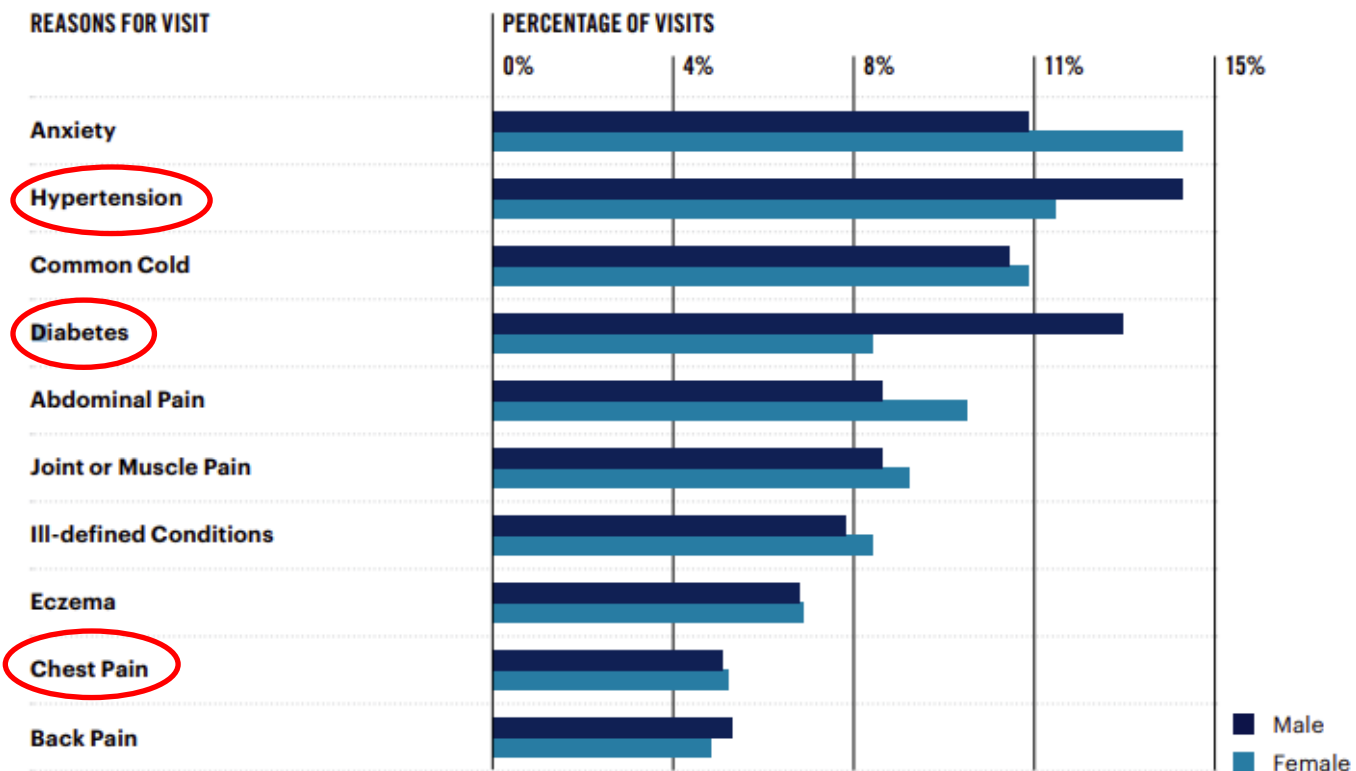
Upper Respiratory Tract Infection ..
Urinary Tract Infection.....
Vaginal Bleeding.....
Vaginitis
Violent/Aggressive Patient
Well-baby Care

CV focused topics

- **ACLS**
- **Atrial Fibrillation**
- **Chronic Disease**
- **Dementia**
- **Diabetes**
- **Heart failure**
- **Hyperlipidemia**
- **Hypertension**
- **Ischemic Heart Disease**
- **Lifestyle**
- **Obesity**
- **Screening**
- **Smoking cessation**
- **Stroke**
- **Etc.....**

Top reasons for visits to FM (DFCM, University of Toronto)

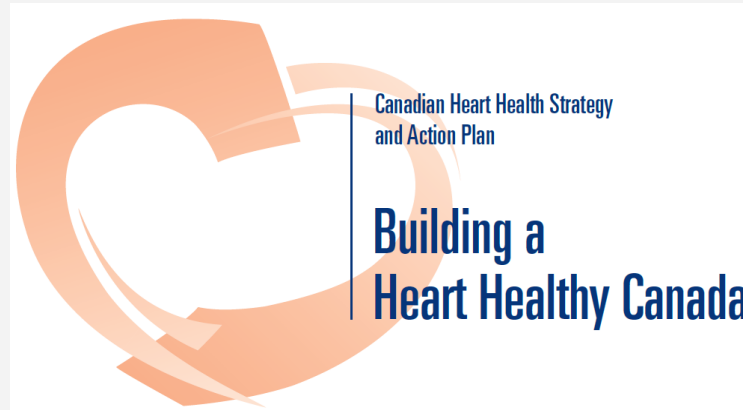
FIGURE 2: TOP 10 REASONS FOR VISITS TO FAMILY DOCTORS BY SEX IN 2018*



*Based on 108,276 male patients and 153,686 female patients that had a visit in 2018

The C-CHANGE Collaborative

(Developed in response to Canadian Heart Health Strategy (2009))



Facilitate a process among all of the guideline synthesis organizations to produce harmonized and simplified guidelines to address the needs of patients with multiple comorbidities for use by all members of the health care team.

Eldon R Smith, Canadian Journal of Cardiology 2009 Vol 25, No 8 451-2

What is C-CHANGE?



Canadian Cardiovascular Harmonized National Guidelines Endeavour (C-CHANGE)

- Established in 2011 in response to concerns that discrepancies between guidelines on CV risk prevention were affecting quality of care in Canada
- Nationally endorsed guideline process, targeting primary care clinicians.
- Composed of **11** of Canada's leading guideline groups focused on **the prevention and management of CV disease** (including patients with multiple co-morbidities)

C-CHANGE: The ultimate CV 'matchmaker' bringing together the 'dream team'

Guideline
Groups
participating in
C-CHANGE



Heart Failure



Dyslipidemia



**Canadian
Cardiovascular
Society**

Leadership. Knowledge. Community.



Heart&Stroke™

The Canadian Cardiovascular Society's
**ATRIAL FIBRILLATION
GUIDELINES**

Canadian Action Network for the Advancement,
Dissemination, and Adoption of Practice-
Informed Tobacco Treatment

CAN ADAPTT

www.can-adaptt.net



Health
Canada

Santé
Canada

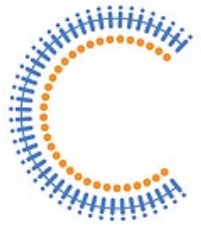
**Canada's
Dietary
Guidelines**



L'ASSOCIATION CANADIENNE
des MEDECINS et CHIRURGIENS BARIATRIQUE

The CANADIAN ASSOCIATION of
BARIATRIC PHYSICIANS and SURGEONS





C-CHANGE

Informing through evidence,
transforming through engagement™

C-CHANGE Methods



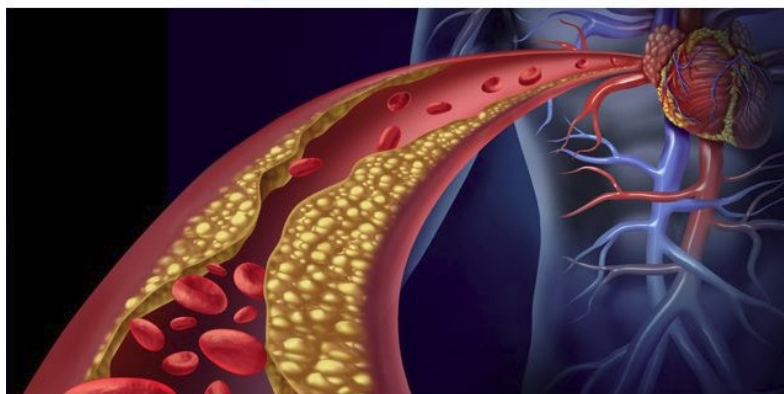
- Developed by a volunteer guideline panel
- Representation from each guideline partner and primary care providers with expertise in guideline dissemination → in 2022, ~50% primary care representation to ensure relevance to clinical practice
- Supports QI in guideline development (AGREE II instrument - (Appraisal of Guidelines, Research and Evaluation)) and uses modified Delphi method to select a subset of all of the guideline partners' recommendations that are most relevant in the primary care setting
- **The goal of the C-CHANGE process is for all Canadian HCPs to have easy access to a comprehensive and usable set of harmonized guidelines.**



So "we're all singing from the same song sheet"



cma.ca volume 194, issue 43



Editor's pick: Updated CVD guidelines from C-CHANGE

GUIDELINE

Updated CVD guidelines from C-CHANGE

C-CHANGE provides coordinated recommendations on cardiovascular disease from 11 Canadian guidelines.

[CPD CREDITS](#)

Guideline **CPD**

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

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■ Cite as: *CMAJ* 2022 November 7;194:E1460-80. doi: 10.1503/cmaj.220138

The goal of the Canadian Cardiovascular Harmonized National Guideline Endeavour (C-CHANGE) process is to give all Canadian health care providers easy access to a comprehensive and practical set of harmonized guideline recommendations. Clinicians claim that there are too many guidelines with too many individual recommendations to be practical and accessible for primary care; that their patients' multimorbidity requires them to access many guidelines at the same time; and that at least in the past, some of the recommendations were not harmonized and seemed contradictory.¹

Established in 2008 to address these issues, C-CHANGE produces a guideline that is a subset of recommendations chosen from guidelines developed by Canada's cardiovascular-focused guideline groups. It is designed to help clinicians formulate comprehensive treatment plans for use by all members of the health care team to address multimorbidity, as recommended by the *Canadian Heart Health Strategy and Action Plan*.² This fourth update was necessitated by recent changes to the guidelines included in previous updates and the addition of guidelines from 3 guideline groups new to the C-CHANGE process (Canadian Cardiovascular Society/Canadian Heart Rhythm Society guideline for the management of atrial fibrillation, Health Canada's Dietary Guideline and the Canadian Consensus Conference on Diagnosis and Treatment of Dementia) (Appendix 1, available at www.cmaj.ca/lookup/doi/10.1503/cmaj.220138/tab-related-content), thus increasing the comprehensiveness from the 2011,¹ 2014³ and 2018⁴ versions to a total of 11 guideline groups.

Key points

- This updated C-CHANGE guideline is a subset of recommendations chosen from guidelines from 11 of Canada's cardiovascular-focused guideline groups, expanded to include Health Canada's dietary guideline, the Canadian Consensus Conference on Diagnosis and Treatment of Dementia and the Canadian Cardiovascular Society/Canadian Heart Rhythm Society guideline for the management of atrial fibrillation.
- The 2022 C-CHANGE update includes a total of 83 recommendations, of which 48 are new or revised.
- Multifaceted care for patients with cardiovascular risk includes the cornerstones of health behaviour change: healthy eating, regular physical activity and exercise, healthy body weight, stress management, reduced alcohol intake and smoking cessation.
- Cardiovascular disease prevention is foundational to primary care practice and incorporates appropriate risk screening and risk stratification.
- Cardiovascular disease management combines guideline-directed health behaviour change and pharmacologic therapies to reduce symptoms, burden of disease, complications and residual cardiovascular risk.

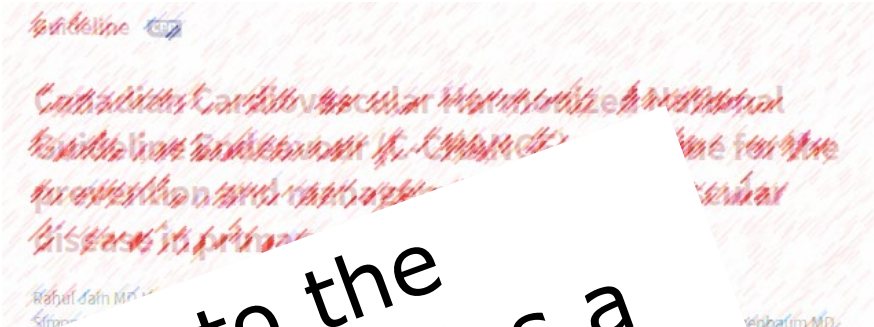
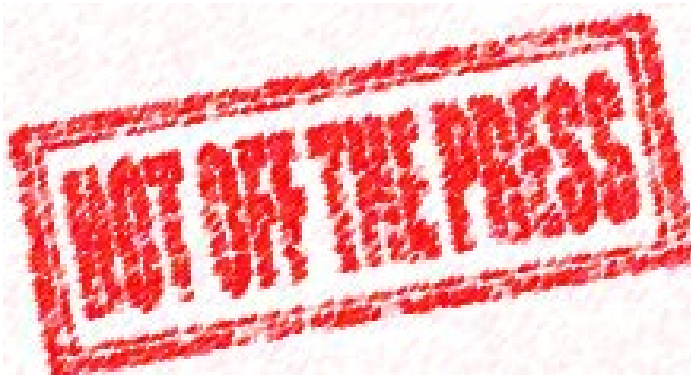
The Global Burden of Diseases survey identified that the risk factors accounting for the largest percentage of disability-adjusted life-years in Canada included tobacco use, dietary factors, high body mass index (BMI), high fasting blood glucose,

E1460

CMAJ | November 7, 2022 | Volume 194 | Issue 43

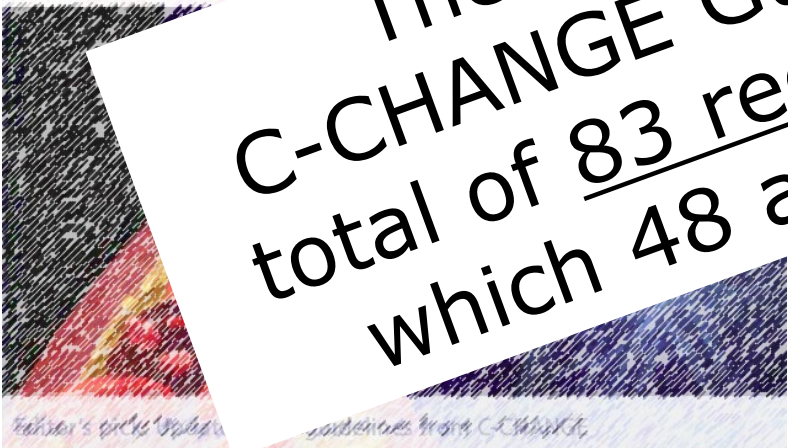
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<https://www.cmaj.ca/content/194/43/E1460>



cma|ca

The 2022 update to the C-CHANGE Guideline includes a total of 83 recommendations, of which 48 are new or revised



GUIDELINE
Updated CVD guidelines from C-CHANGE
C-CHANGE provides coordinated recommendations on cardiovascular disease from 14 Canadian guidelines.
CPD CREDITS

Guideline

Cardiovascular Disease: Updated Recommendations from the C-CHANGE Guideline

Rahel Jahn MD, FRCPC
Sifon...

Vejbæk MD,
Vonnild MD,
D'Asc, MSc,

This updated C-CHANGE guideline is a subset of recommendations chosen from guidelines from 14 of Canada's Cardiovascular-Focused guideline groups. It includes the Canadian Cardiovascular Society guideline, the Canadian Consensus Conference on Diagnosis and Treatment of Atrial Fibrillation, and the Canadian Cardiovascular Society/Canadian Heart Rhythm Society guideline for the management of atrial fibrillation.

The 2022 C-CHANGE update includes a total of 83 recommendations, of which 48 are new or revised.

- Individualized care for patients with cardiovascular risk includes the optimization of health behaviors (smoking cessation, regular physical activity and a healthy diet, weight, stress management, reduced alcohol intake and smoking cessation).
- Cardiovascular disease prevention is founded on primary prevention and incorporates appropriate risk assessment and risk stratification.
- Cardiovascular disease management combines guideline-directed health behavior change and pharmacologic therapies to reduce symptoms, burden of disease, complications and residual cardiovascular risk.

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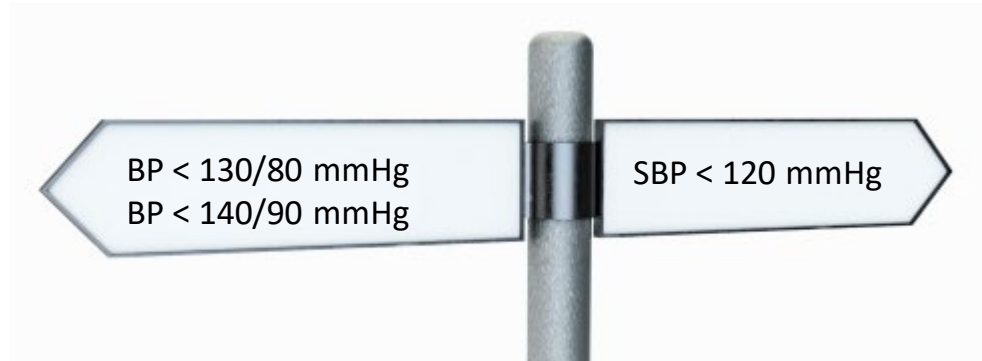
E1460 | November 7, 2022 | Volume 194 | Issue 43 | © 2022 CMAA College of Family Physicians

<https://www.cma|ca/content/194/43/E1460>

Clinical Practice Guidelines are Signposts, not Policies

The application of an individual guideline recommendation in clinical practice must remain at the discretion of the individual clinician who best knows their patient

- Guidelines help us manage populations
- HCPs should be able to explain a guideline to patient and why it does or does not apply to them
- Person-centred, individualized care informed by evidence/best practice



CHEP+ is the education and implementation arm of C-CHANGE



"Family physicians witness the increasing complexity and multiple co-morbidities of patients in our clinics - CHEP Plus does a great job in bringing together CPD programs to help improve CVD health outcomes for our patients."

Dr. Rahul Jain

Family Physician, Assistant Professor University of Toronto

Providing high-quality CME for primary care clinicians



CHEP+

(C-CHANGE Education Program)

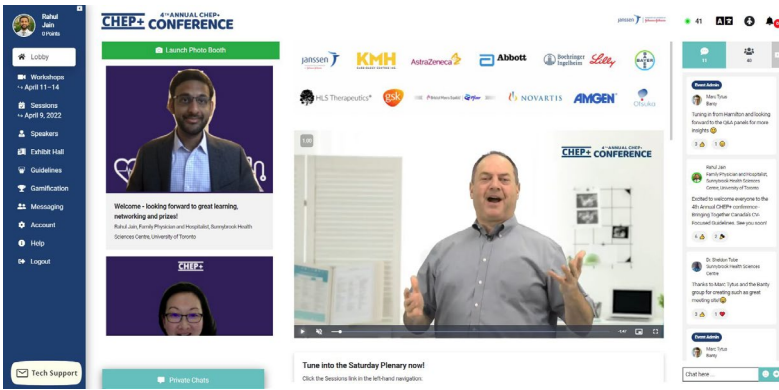
Canadian Cardiovascular Harmonized National Guidelines Endeavour (C-CHANGE) Education Program
Supporting clinician best practices through education



CHEP+ Presented by banty cme

Bringing Together Canada's Cardiovascular-Focused Guidelines

4th ANNUAL CHEP+ CONFERENCE
 April 9-14, 2022 (Virtual)



Hypertension Management Train-The-Trainer Workshop
C-CHANGE - PEARLS Clinical Practice Guidelines Workshop
 Presented by: Canadian Cardiovascular Harmonized Guidelines Endeavour (C-CHANGE)

Prevention in hand THE COLLEGE OF FAMILY PHYSICIANS OF CANADA LE COLLÈGE DES MÉDECINS DE FAMILLE DU CANADA
 Empowering Canadians to take hold of their health

Module 3: Sodium, Lifestyle and Hypertension (C-CHANGE)

Sodium, Lifestyle and Hypertension
 PEARLS e-Learning Module - Lavani: Sodium, Lifestyle and Hypertension. The pre- and post-test questions and the video were all developed by: C-CHANGE. Up to 2 Mainpro-B certified credits.



CHEP+ Conference

Bringing Together Canada's Cardiovascular- Focused Guidelines

Hybrid | Toronto – Pan Pacific Hotel

In Person Attendance: 900 York Mills Rd, North York, ON

Virtual Attendance Option

March 25, 2023

Registration now open: <https://www.chepplus.com/>

C-CHANGE Scope

- Directed to primary care
- for Canadian adults with or at risk of developing chronic CVDs:
 - Hypertension
 - Diabetes
 - Dyslipidemia
 - ASCVD
 - Heart failure
 - Stroke
 - Dementia
 - Atrial fibrillation
- and the risk factors for these conditions, including smoking, obesity, poor nutrition, and physical inactivity





C-CHANGE

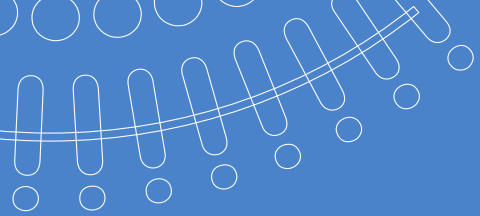
Informing through evidence,
transforming through engagement™

Multifaceted Care Approach for Global Cardiovascular Risk Reduction

- Healthy eating
- Regular physical activity
- Smoking cessation, alcohol reduction, stress management, healthy body weight
- Management of vascular risk factors
 - Control of **blood pressure**, **blood glucose**, and **cholesterol**
- Vascular protective medications (as appropriate), including
 - statins
 - ACEi or ARB (RAAS blockers)
 - BB
 - SGLT2i/GLP1RA
 - MRAs
 - ARNIs
 - ASA (secondary prevention)

Prevention
IS THE BEST
medicine





Statement of Need



*“My greatest challenge as a health care professional in the management of patients with **multiple morbidities** is*

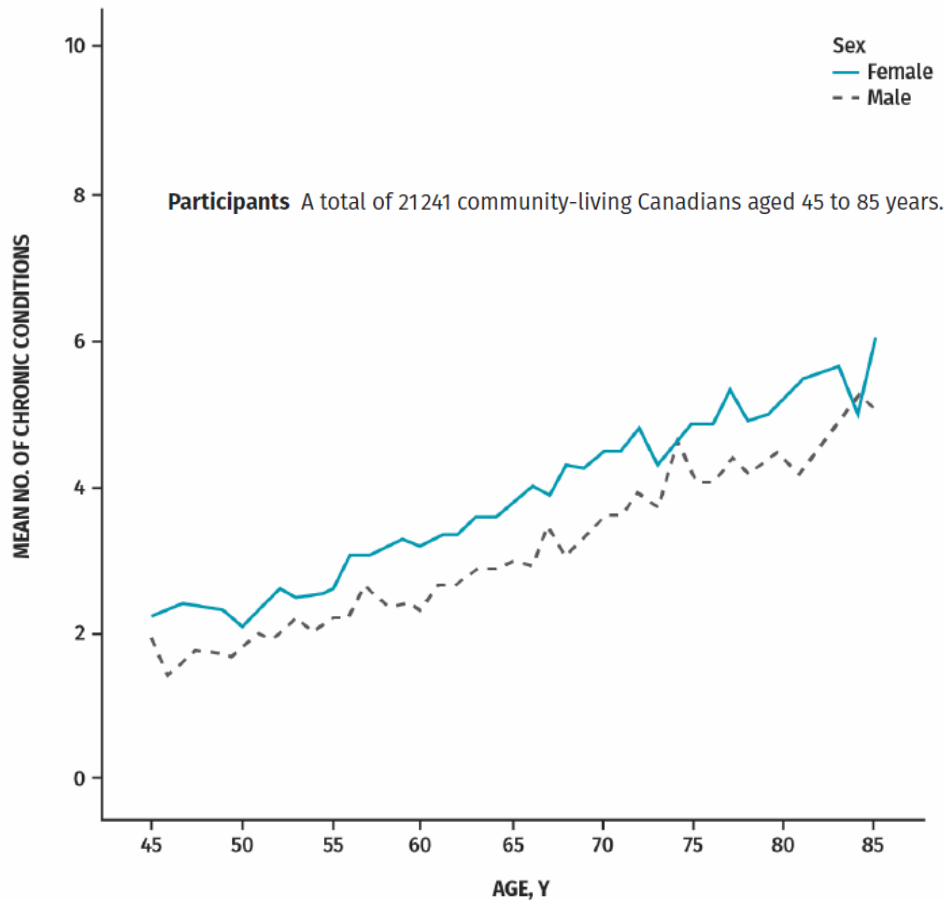
”

Multimorbidity in Canadians living in the community

Results from the Canadian Longitudinal Study of Aging



Philip D. St John MD MPH CCFP FRCPC Verena Menec PhD
Suzanne L. Tyas PhD Robert Tate PhD Lauren Griffith PhD



► Chronic diseases co-occur and are associated with increased health care use, polypharmacy, complexity of care, and death.

► Multimorbidity (MM) is common in those aged 45 to 85, and increased with age. The study also found that women have more chronic conditions than men.

► Lower socioeconomic status and education is associated with higher rates of multimorbidity.

Case:

Management of Elderly Patients with Multiple Morbidities



Martin

An 86 year old patient comes into your office to renew his blood pressure medication.



History of Present Illness



- Martin is an 86 year old patient with a history of previous stroke, hypertension, atrial fibrillation, coronary artery disease and heart failure
- He comes to your office to renew his medications
- He is active, walking 15 minutes, 4 days a week
- He lives alone with support from the Home and Community Care nurse
- He has meals delivered to him through a diet delivery program most nights; otherwise eats at restaurants.

Past Medical History



- Left parietal stroke
- Mild dementia
- Hypertension
- Atrial fibrillation
- Coronary artery disease (CABG in 1995)
- Congestive heart failure (HFrEF with LVEF 32%)
- Benign prostatic hypertrophy
- Basal cell carcinoma (skin)
- Gastroesophageal reflux disease
- Remote cholecystectomy



Family History

- Father
 - History of hypertension
- Mother
 - History of hypertension, mild dementia
- Sister
 - History of hypertension
 - Died of a stroke



Current Medications



- Bisoprolol 5 mg OD
- Perindopril 8 mg OD
- Dabigatran 110 mg BID
- Furosemide 60 mg OD
- Rosuvastatin 10 mg OD
- Rabeprazole 20 mg OD
- Tamsulosin 0.4 mg OD
- No known drug allergies



Recent Medical History



- Was seen at a walk-in clinic last weekend for a persistent cough
- Started on levofloxacin
- Is feeling a little better
- Comes to see you for follow-up
- Also wants to have his medications reviewed

Investigations



Test	Results	Normal Values
Fasting Glucose	5.5 mmol/L	4.0-8.0 mmol/L
Urea	6.8 mmol/L	3.0-7.0 mmol/L
Creatinine	85 μ mol/L eGFR 60ml/min	44-106 μ mol/L
K	4.3 mmol/L	3.5-5.0 mmol/L
Urine ACR	1.9	< 2.0 mg/mmol

Investigations



Test	Results	Normal Values
LDL	2.1 mmol/L	<2.50 mmol/L
Total Chol	4.2 mmol/L	<5.20 mmol/L
TG	1.4 mmol/L	<1.70 mmol/L
HDL	1.4 mmol/L	>0.99 mmol/L
Non-HDL	2.8 mmol/L	<4.2 mmol/L

Discussion Question 1)

What is your management plan for this patient?



Question 1)



What is your management plan for this patient?

- a) Review the patient, refill his medications and counsel him to call you if his cough worsens
- b) Review the C-CHANGE recommendations for management of the patient with multiple co-morbidities

This is what actually happened to Martin



This is what actually happened to Martin



a) Review the patient, refill his medications and counsel him to call you if his cough worsens

- He seems well
- On examination he has only a few crackles on inspiration
- You refill his medications after reviewing them in depth with him
- He is quite pleased and thanks you before going

This is what actually happened to Martin



- Three nights later he called EMS due to dyspnea
- He was taken to the ER and found to have CHF
- He survived a 14-day admission complicated by a GI bleed, C diff., and delirium
- On discharge he was referred back to his primary care provider for further management advice

b) Review the C-CHANGE recommendations for management of patients with multiple morbidities

- You review the C-CHANGE recommendations that apply to him as follows...

Multimorbid Complex Patient



Cardiovascular Co-morbidities:

Stroke (secondary prevention)

Hypertension

Atrial Fibrillation

Coronary Artery Disease

Congestive Heart Failure (HFrEF)

C-CHANGE Recommendations for Patients with a Previous Stroke



- **Persons at risk of stroke and patients who have had a stroke should be assessed for vascular disease risk factors, lifestyle management issues (diet, sodium intake, exercise, weight, alcohol intake, smoking), as well as use of oral contraceptives or hormone replacement therapy.**
- Persons at risk of stroke should receive information and counseling about possible strategies to modify their lifestyle and risk factors.
- For patients with ischemic stroke or transient ischemic attack, antiplatelet therapy is recommended for long-term secondary stroke prevention to reduce the risk of recurrent stroke and other vascular events unless there is an indication for anticoagulant therapy.

Discussion Question 2)

In **secondary prevention** of stroke, what would be Martin's LDL target (or threshold to achieve before needing to intensify therapy)?

EXAMPLE OF HARMONIZATION/ALIGNMENT OF GUIDELINES

Discussion Question 2)

In **secondary prevention** of stroke, what would be Martin's LDL target (or threshold to achieve before needing to intensify therapy)?

(Based on the 2020 Canadian Stroke Best Practices Recommendations AND the 2021 Canadian Cardiovascular Society Lipid Guidelines).

- a) LDL < 5.0 mmol/L
- b) LDL < 3.5 mmol/L
- c) LDL < 2.0 mmol/L
- d) LDL < 1.8 mmol/L

EXAMPLE OF HARMONIZATION/ALIGNMENT OF GUIDELINES

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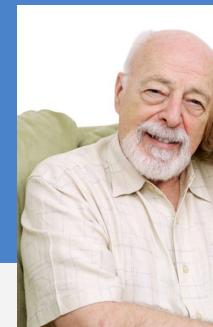
Primary Prevention (use Framingham (FRS))

- If statin indicated, aim for LDL < 2 or 50% reduction

Secondary Prevention (ASCVD is a statin-indicated condition)

- Treat with maximally tolerated statin (+/- Ezetimibe or PCSK9i) to achieve LDL < 1.8 mmol/L

Secondary Prevention of Stroke



Test	Results
LDL	2.1 mmol/L
Total Chol	4.2 mmol/L
TG	1.4 mmol/L
HDL	1.4 mmol/L
Non-HDL	2.8 mmol/L

Medications:

- Bisoprolol 5 mg OD
- Perindopril 8 mg OD
- Dabigatran 110 mg BID
- Furosemide 60 mg OD
- **Rosuvastatin 10 mg OD**
- Rabeprazole 20 mg OD
- Tamsulosin 0.4 mg OD

Optimize Health Behaviour modifications

Confirm med adherence, if so, increase dose of Rosuvastatin to achieve LDL <1.8

Use ezetimibe if higher statin dose not tolerated or unable to achieve LDL <1.8

Additional History

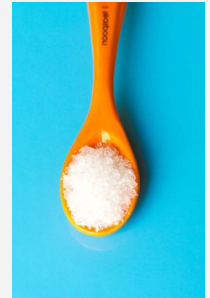


- Martin's son has just come back to live with him after a marital issue
- The son drinks heavily and has brought beer, pizza, potato chips, nachos and pickles into the house
- They enjoy Chinese food frequently as they used to when his son was young
- He did not want to take the levofloxacin and wanted your advice first

C-CHANGE Recommendations for Patients with Hypertension and Previous Stroke



- To prevent hypertension and reduce BP in hypertensive adults, consider reducing sodium intake toward 2000 mg (5 g of salt or 87 mmol of sodium) per day → ~ 1 teaspoon salt/day all sources



- **For patients who have had an ischemic stroke or transient ischemic attack, blood pressure lowering treatment is recommended to achieve a target of consistently lower than 140/90 mm Hg.**

Watch the sodium

Hypertension Canada recommends Canadians eat less than 2000 mg of sodium per day, which is equal to one teaspoon of salt. Currently, the average Canadian consumes closer to 2800 mg of sodium per day. Too much sodium increases the risk of high blood pressure, which increases the risk of heart disease and stroke.



UofT Family Medicine
@UofTFamilyMed

1 in 4 Canadian adults have high blood pressure, and about 30% of cases are related to high sodium in the diet, says faculty Dr. Rahul Jain who is helping Canadians prevent [#heartdisease](#) by eating well.

[@Sunnybrook](#)



health.sunnybrook.ca

How to cook (and eat) with heart health in mind

February is Heart Month, and one way to care for your heart is by eating well. Dr. Rahul Jain, Family Physician at Sunnybrook, and Karen Fung, Registered ...

Practical Tips to reduce sodium (salt) intake:

- Cook meals at home
- Limit the use of processed and canned foods such as frozen dinners or canned soups; read food labels
- Replace [salt] with other herbs and spices to create flavour (ex. adding basil and oregano to soups and pasta, or garam masala and cumin to lentil dishes or stews).

<https://health.sunnybrook.ca/food-nutrition/how-to-cook-and-eat-with-heart-health-in-mind/>

C-CHANGE Recommendations for Patients with Hypertension and Previous Stroke



Recommended Office BP Treatment Targets

Treatment consists of health behaviour \pm pharmacological management

Population	SBP	DBP	
High Risk # (CKD, FRS \geq 15%, Age 75+)	\leq 120	NA	# Based on AOBP
Diabetes	< 130	< 80	
All others*	< 140	< 90	*AOBP \leq 135/85 mmHg



Systolic blood Pressure Intervention Trial (SPRINT)

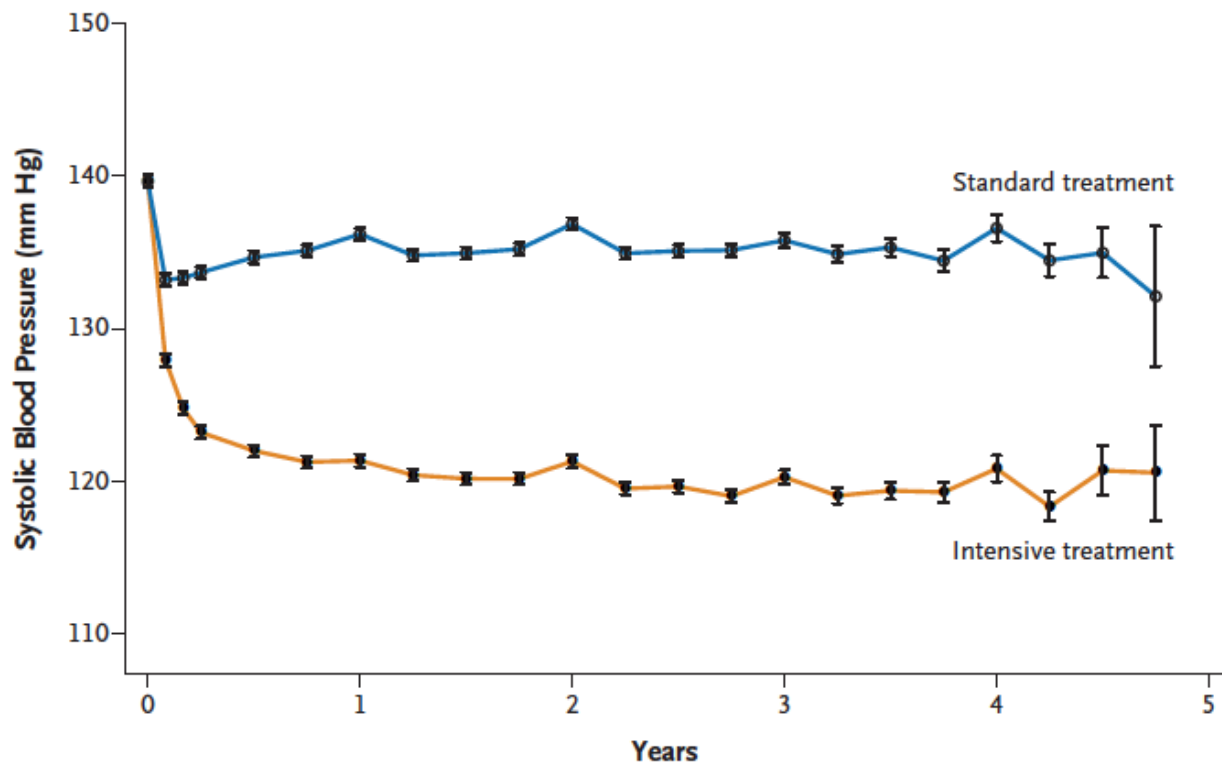


- Compares SBP < 120 vs < 140 mmHg
- NHLBI RCT
 - Age 50+
 - **SBP 130-180**
 - High CV risk (other than stroke)
 - CKD (eGFR 20 - <60) or
 - 10 Year Framingham risk of 15%+ or
 - **Age 75+**
- Excludes: DM, prior stroke, eGFR <20

(Limited evidence Heart failure (EF <35%) or recent MI (within 3 months)).

SPRINT – SBPs Achieved

Average # of meds:
Intensive care: 2.8
Standard care: 1.8



No. with Data

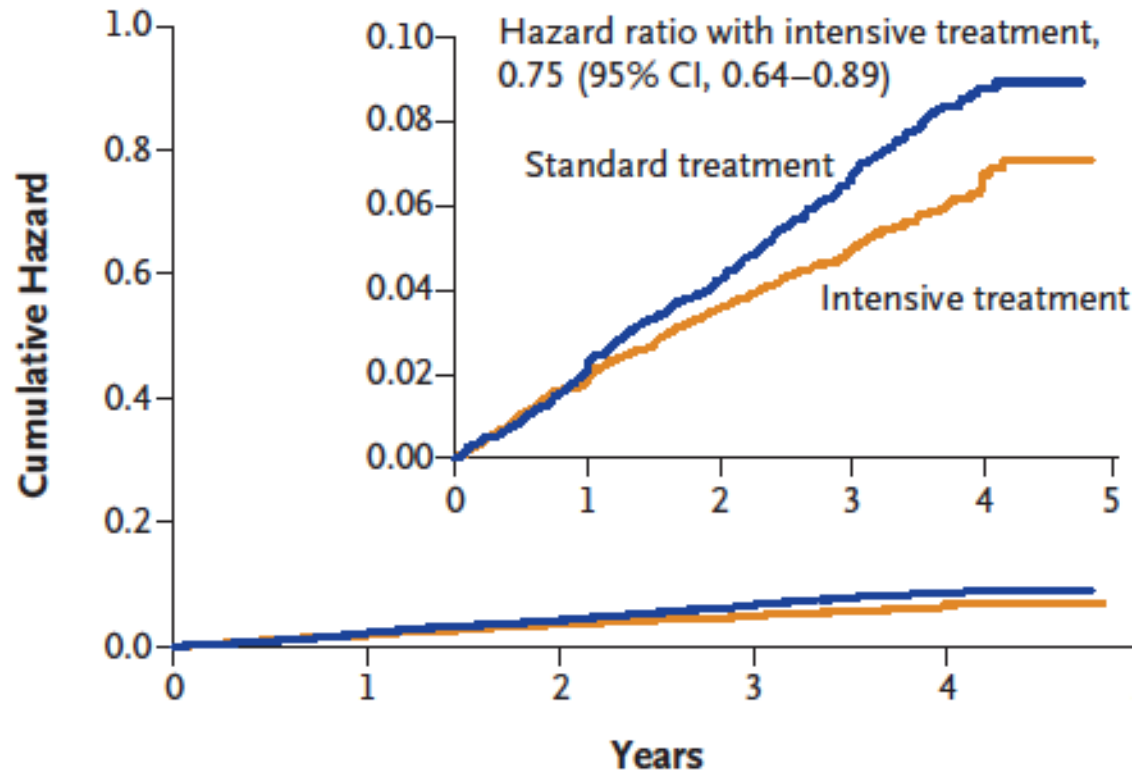
Standard treatment	4683	4345	4222	4092	3997	3904	3115	1974	1000	274
Intensive treatment	4678	4375	4231	4091	4029	3920	3204	2035	1048	286

Mean No. of Medications

Standard treatment	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
Intensive treatment	2.3	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	3.0

SPRINT - Primary Outcome (MI, ACS, Stroke, CHF, CV death)

NNT=61



No. at Risk

Standard treatment	4683	4437	4228	2829	721
Intensive treatment	4678	4436	4256	2900	779

C-CHANGE Recommendations for Patients with Atrial Fibrillation

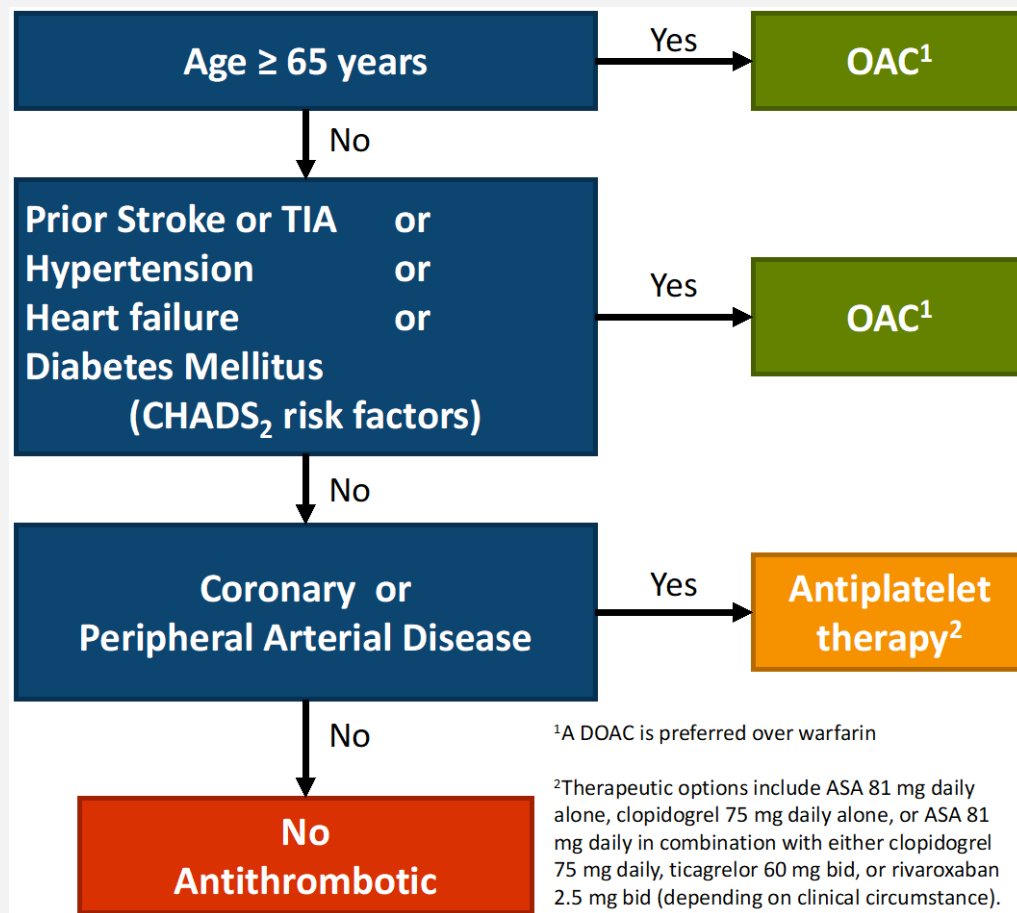


- **We recommend that the “CCS Algorithm” (CHADS- 65) be used to guide the choice of antithrombotic therapy for the purpose of stroke/systemic embolism prevention in patients with non-valvular atrial fibrillation.**
- We recommend most patients should receive a DOAC (apixaban, dabigatran, edoxaban, or rivaroxaban) in preference to warfarin when OAC therapy is indicated for patients with NVAf.
- When selecting choice of oral anticoagulants, patient specific criteria should be considered.

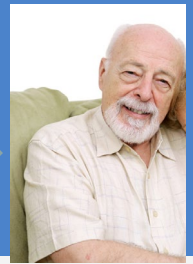
CCS Algorithm (CHADS-65) for Stroke Prevention in AFib

We recommend:

- OAC be prescribed for most patients with AF and age 65 years or older, or CHADS² score ≥ 1 . (Moderate-Quality Evidence)
- OAC alone for patients with AF aged 65 years or older or with a CHADS² score ≥ 1 and stable coronary or arterial vascular disease. (Moderate-Quality Evidence)
- OAC be prescribed for most frail elderly patients with AF. (Moderate-Quality Evidence)

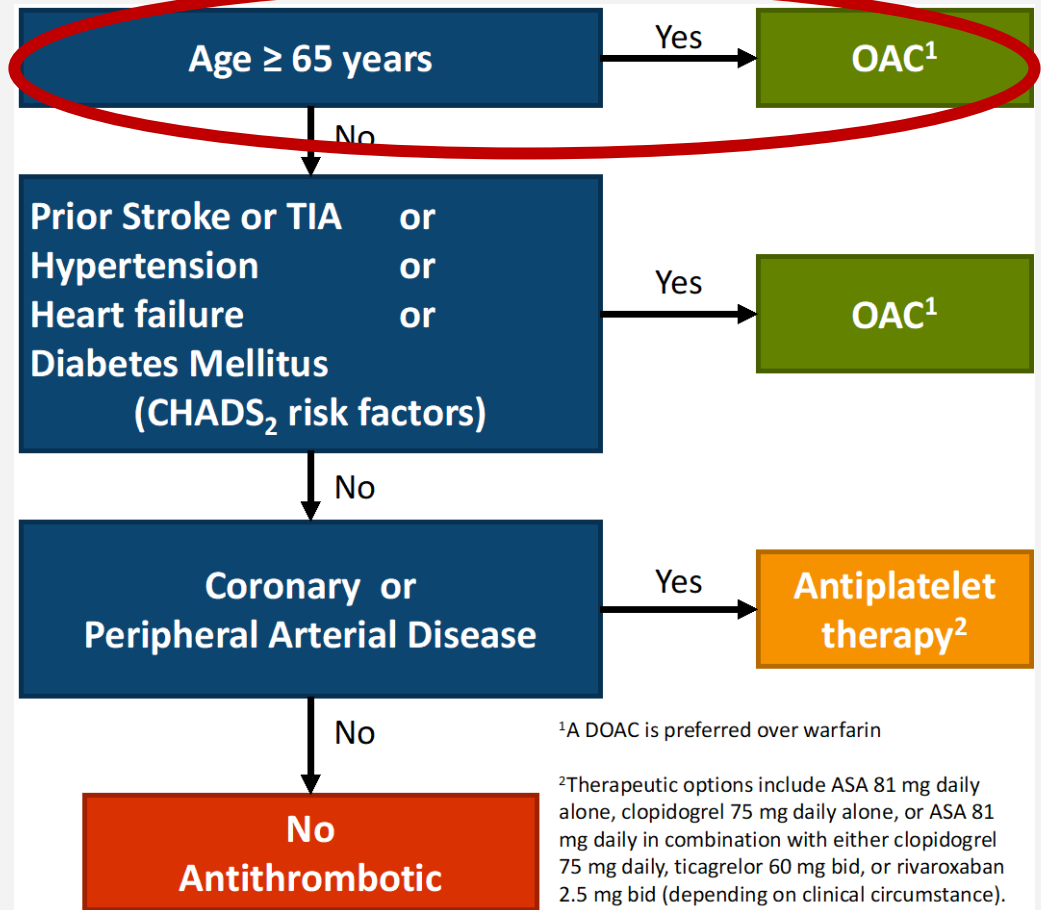


CCS Algorithm (CHADS-65) for Stroke Prevention in AFib



We recommend:

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- OAC alone for patients with AF aged 65 years or older or with a CHADS² score ≥ 1 and stable coronary or arterial vascular disease. (Moderate-Quality Evidence)
- **OAC be prescribed for most frail elderly patients with AF. (Moderate-Quality Evidence)**



DOAC Dose Recommendation By Product Monograph - Canada



Oral Anticoagulant	Usual Dose	Adjusted dose for CKD
Apixiban (Eliquis) (Direct Factor Xa Inhibitor)	5 mg BID	(*Avoid if CrCl < 15 ml/min) → *no dose recommendation can be made CrCl 15-25 2.5 mg BID for ≥ 2 of the following: <ul style="list-style-type: none"> • age ≥ 80 • body weight ≤ 60 kg • serum creatinine > 133 $\mu\text{mol/L}$
Dabigatran (Pradaxa) (Direct Thrombin (IIa) inhibitor)	150 mg BID	(Avoid if CrCl < 30 ml/min) 110 mg BID <ul style="list-style-type: none"> • age ≥ 80 <u>OR</u> • age ≥ 75 (with at least 1 other bleeding risk factor (i.e. CrCl 30-50, concomitant ASA/NSAID, interacting drug, blood dyscrasia, recent bleed, etc)
Edoxaban (Lixiana) (Direct Factor Xa Inhibitor)	60 mg daily	(Avoid if CrCl < 15 ml/min) 30 mg daily with 1 or more: <ul style="list-style-type: none"> • eGFR 15-50 • body weight ≤ 60 kg • Concomitant use of P-gp inhibitors (except amiodarone and verapamil)
Rivaroxaban (Xarelto) (Direct Factor Xa Inhibitor)	20 mg daily	(Avoid if CrCl < 15 ml/min) 15 mg daily for eGFR 15-49

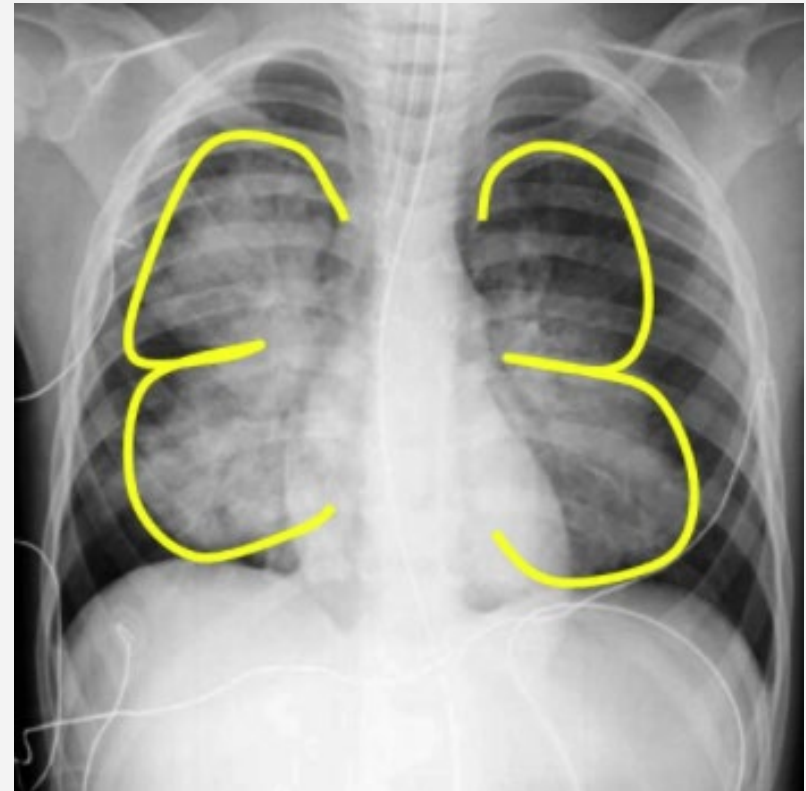
Physical Examination

- Height: 178 cm
- Weight: 75 kg (**up 5 kg from last visit**)
- BMI: 24 kg/m²
- BP (left arm, seated):
 - **156/74** mmHg using an automated device
- Pulse: **66 irreg irreg**
- Funduscopic: Arteriolar narrowing, no AV nicking
- Heart: **JVP 4cm ASA**, no gallops, no murmurs
- Lungs: **bilateral basal crackles**
- Abdomen: normal
- Arteries: reduced peripheral pulses
- **Leg edema: 2+ ½ way to knees**
- Neuro: Gait is normal, good muscle tone, mild hyper-reflexia bilaterally

You send Martin for a CXR

Consistent with CHF

- Increased pulmonary vascularity
- Kerley B lines
- Bat wing distribution



Discussion Question 3)

How would you manage Martin?

Question 3) How would you have managed Martin?

- a) What health behaviours change (lifestyle) counseling would he benefit from?

- b) What change of medication(s) do you recommend?

- c) What follow-up do you recommend?

a) What health behaviours change counseling would Martin benefit from?

- Sodium intake
- Alcohol intake
- Medication adherence
- Physical Activity

Impact of Health Behaviours on Blood Pressure



Intervention	Intervention	SBP/DBP
Reduce sodium intake	-2000 mg/day sodium Hypertensive	-5.1 / -2.7
Weight loss	per kg lost	-1.1 / -0.9
Alcohol intake	-3.6 drinks/day	-3.9 / -2.4
Aerobic exercise	120-150 min/week	-4.9 / -3.7
Dietary patterns	DASH diet Hypertensive	-11.4 / -5.5

Padwal R et al. *CMAJ* 2005;173;(7);749-751

b) What change of medication(s) do you recommend?

Meds at Initial Appt

- Bisoprolol 5 mg OD
- Perindopril 8 mg OD
- Dabigatran 110 mg BID
- Furosemide 60 mg OD
- Rosuvastatin **20 mg OD** ← *increased dose (achieve LDL<1.8)*
- Rabeprazole 20 mg OD
- Tamsulosin 0.4 mg OD

- No known drug allergies



Medication Change



Increase furosemide to 80 mg (am) and 40 mg (pm)

- Daily weight measurements
- Goal is 0.5 kg/day loss until he is back to baseline (dry weight)


C-CHANGE Recommendations for Patients with HFrEF – Foundational Therapy



- We recommend that in the absence of contraindications, patients with HFrEF (EF<40%) be treated with combination therapy including 1 evidence-based medication from each of the following categories:
 - a. ARNI (or ACEI/ARB);
 - b. B-blocker;
 - c. MRA;
 - d. SGLT2 inhibitor.
- We recommend loop diuretics be used to control symptoms of congestion and peripheral edema.

C-CHANGE Recommendations for Patients with HFrEF – Foundational Therapy



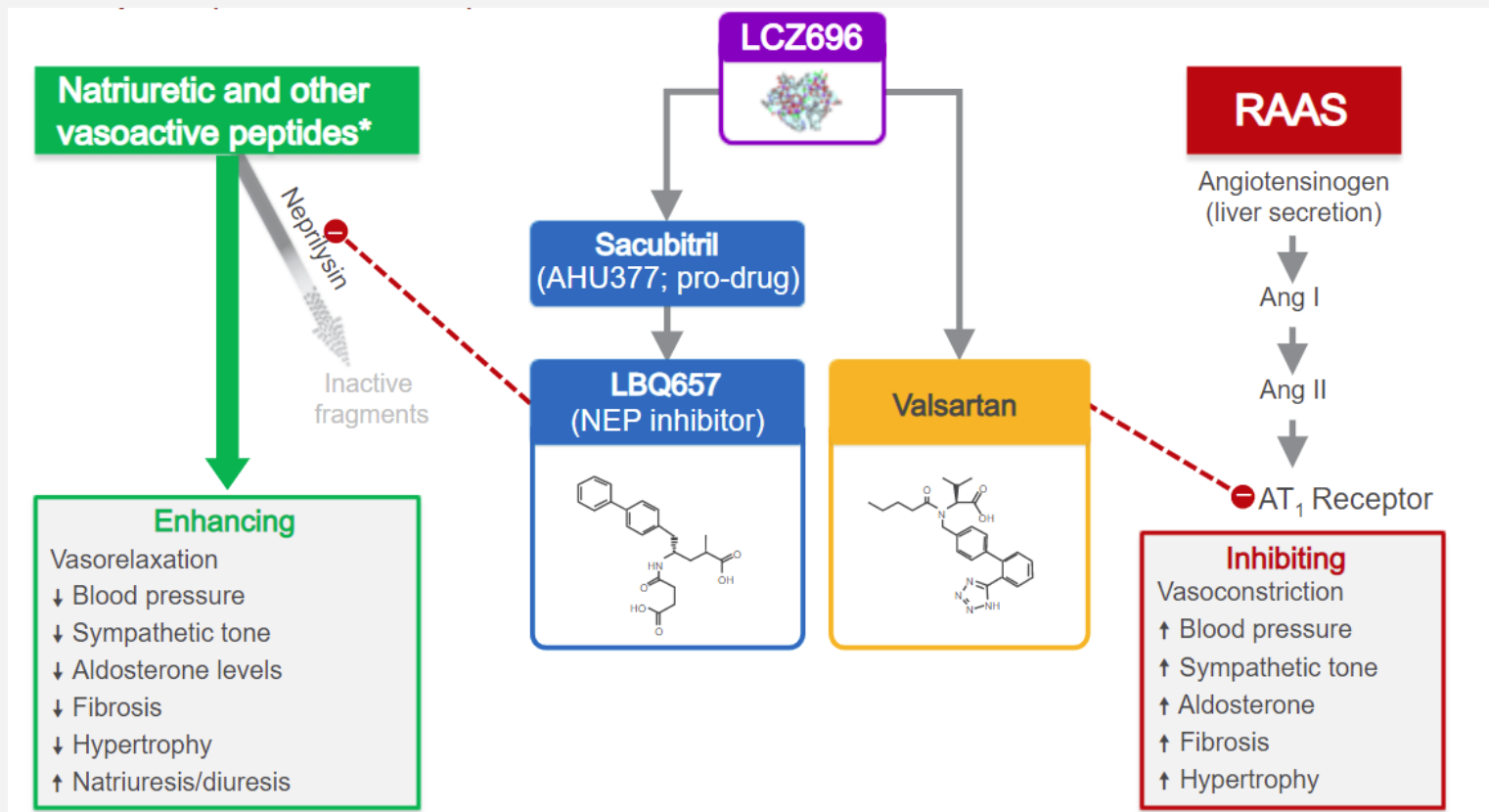
- We recommend that in the absence of contraindications, patients with HFrEF (EF<40%) be treated with combination therapy including 1 evidence-based medication from each of the following categories:
 - a. ARNI (or ACEI/ARB);
 - b. B-blocker;
 - c. MRA;
 - d. SGLT2 inhibitor.  SGLT2i can have additional diuretic effect (reducing need/dose of loop diuretic)
- We recommend loop diuretics be used to control symptoms of congestion and peripheral edema.

Would Martin benefit from an ARNI?



We recommend that an Angiotensin Receptor-Neprilysin Inhibitor (ARNI) be used in place of an ACEi or ARB, in patients with HFrEF (EF<40%), who remain symptomatic despite treatment with appropriate doses of goal directed medical therapy (GDMT) to decrease CV death, HF hospitalizations, and symptoms.

Sacubitril/Valsartan (ARNI) simultaneously promotes the NP pathway and inhibits the RAAS pathway



*Nephrysin substrates listed in order of relative affinity for NEP: ANP, CNP, Ang II, Ang I, adrenomedullin, substance P, bradykinin, endothelin-1, BNP
 Levin et al. N Engl J Med 1998;339:321-8; Nathisuwan & Talbert. Pharmacotherapy 2002;22:27-42;
 Schrier & Abraham N Engl J Med 2009;341:577-85; Langenickel & Dole. Drug Discov Today: Ther Strateg 2012;9:e131-9;
 Feng et al. Tetrahedron Letters 2012;53:275-6

Fantastic 4:

The 4 pillars of HFrEF management



CUMULATIVE IMPACT OF EVIDENCE-BASED HFrEF THERAPIES ON ALL-CAUSE MORTALITY

	Relative Risk	Two-year Mortality
None	—	35.0%
ARNI (vs. imputed placebo)	↓ 28%	25.2%
Beta-blocker	↓ 35%	16.4%
Aldosterone antagonist	↓ 30%	11.5%
SGLT2i	↓ 17%	9.5%

A red arrow pointing downwards, indicating the cumulative reduction in mortality from the 'None' baseline to the 'SGLT2i' row.

Cumulative risk reduction in mortality if all evidence-based medical therapies are used: relative reduction 72.9%; absolute risk reduction: 25.5%; NNT=3.9



Toolkit: HF Outpatient Care Flow Sheet

C-CHANGE

Heart Failure Outpatient Care Flow Sheet

Patient Name: _____ Age: _____ Cardiologist (if any): _____ Date: _____
 Diagnosis: HFrEF (LVEF ≤ 40%) HFmrEF (LVEF 41 – 49%) HFpEF (LVEF ≥ 50%).
 Annual Influenza Vaccine (date): _____ Pneumococcal Vaccine (date): _____ COVID vaccine(s): Y N

Past Medical History:

Cardiac History	Non-Cardiac History

Cardiac Risk Factors: HTN DM Dyslipidemia Smoking: () Alcohol (___ drinks/week) Family Hx (early cardiac)

Med: (refer to page 2-3 for drug recommendations) _____
 Social History: _____

History of Presenting Illness:

NHYA Class (Dyspnea): I III IV CCS Class (Chest pain): 0 I III IV
 Orthopnea PND Edema Ascites Palpitations Presyncope Syncope

Weight trends, response to diuretics:

HF medication tolerance:

Recent hospitalizations/ER visits:

Other:

Physical Exam: Vitals: BP: _____ HR: _____ Current Weight: _____
 Dry (target) Weight: _____
 Cardiac (ind. JVP): _____
 Resp: _____
 GI: _____
 Other: _____

Labs/Investigations: BNP (NT-pro BNP): _____ Hb: _____
 Na: _____ Ferritin: _____
 K: _____ Hematocrit: _____
 Cr/eGFR: _____
 HbA1c: _____
 LDL: _____
 TSH: _____
 ECHO: _____
 ECG (rhythm, QRS): _____
 CXR: _____

Education/Non-pharmacological Management

- Salt and Fluid Restrictions (no more than 2g/day of sodium and no more than 2L/day of fluids for patients with fluid retention)
- Patient should weigh themselves every morning, after voiding and before breakfast
- Exercise/Cardiac Rehab
- Goals of Care Discussion

Plan and Follow-up: (med changes, non replacement, lab/re-cardiac investigations, referrals, etc)

- Target Modifiable Risk Factors Hypertension Diabetes Dyslipidemia Overweight/Obesity Smoking/Alcohol
- Exercise/Cardiac Rehab application; Referral to Cardiology/Heart Function Clinic
- Optimize Heart Failure guideline-directed medical therapies every 2-4 weeks to target doses or as tolerated (refer to page 2-3)
- Consider referral for implantable cardioverter defibrillator (ICD) if LVEF <35% despite optimal medical therapy for 3 months

Medication and Protocols

Diuretic and potassium therapy
 Indicated for the management of hypervolemia and titrate to the minimum effective dose to maintain a euvolemic state.
 Furosemide _____ mg PO q _____ (if wt > 2lbs/1kg in 24hrs take extra furosemide: _____ mg for that day only)
 Metolazone _____ mg PO q _____ (to be administered 30 minutes before furosemide)
 Potassium _____ mEq PO q _____
 Other _____

ACEi/ARB OR ARNI (Sacubitril/Valsartan) or other vasodilators

*Angiotensin Neprilysin Inhibitor (ARNI) is the preferred medication for HFpEF (LVEF ≤ 40%) (unless intolerant/contraindicated)

1. Initiate/continue ACEi or ARB:
- | | |
|--|--|
| <input type="checkbox"/> Ramipril _____ mg PO _____ | <input type="checkbox"/> Valsartan _____ mg PO BID |
| <input type="checkbox"/> Perindopril _____ mg PO daily | <input type="checkbox"/> Candesartan _____ mg PO daily |
| <input type="checkbox"/> Enalapril _____ mg PO BID | <input type="checkbox"/> Other _____ mg PO _____ |

2. *Initiation of an ARNI:
 (verify patient coverage/provincial reimbursement prior to initiation)
 If currently taking ACE inhibitor, THEN discontinue ACEi AND 36 hours later on: Initiate Sacubitril/Valsartan 24/26 mg PO BID
 If currently taking ARB, THEN discontinue ARB AND 24 hours later on: Initiate Sacubitril/Valsartan 24/26 mg PO BID
 If not taking ACE or ARB, THEN initiate Sacubitril/Valsartan: 24/26 mg PO BID
 If currently taking sacubitril/valsartan, THEN continue or increase dose: 24/26 mg 48/51 mg 97/103 mg PO BID

3. Other Vasodilators: to be considered if LVEF ≤ 40% and not currently eligible for ARBi/ACEi or ARNI (e.g., severe CKD (eGFR < 30 mL/min/1.73 m²), hyperkalemia (potassium > 5.5 mmol/L) or in Black patients (consider combination of nitrate and hydralazine).
 Hydralazine _____ mg PO q 8 h
 Isosorbide dinitrate _____ mg PO q 8 h
 Isosorbide 5-monomonitrate _____ mg PO QD
 Nitro Patch 0.4mg QD

Drug Class	SP	NO	AP2	Start Dose	Target Dose
ARNI	Sacubitril	Valsartan		24/26mg	97/103mg bid
ACEi	Enalapril	Ramipril		10-20mg BID	20/26mg BID - dose rounded
ARB	Losartan	Candesartan		1.25 - 2.5mg daily	10mg BID / 20mg BID (NYHA IV)
Diuretic	Furosemide	Metolazone		2 - 4mg daily	20 - 30mg daily
	Acetazolamide			1.25 - 2.5mg BID	4 - 8mg daily
	Torsemide			1 - 2mg daily	5mg BID
	Chlorthalidone			4 - 8mg daily	4mg BID
	Valsartan			40mg BID	32mg daily
Vasodilator	Hydralazine	Isosorbide dinitrate		10 - 37.5mg TID / 10 - 20 mg TID	75 - 100mg TID or QID / 40mg TID

Beta-blockers

- For HFpEF (LVEF ≤ 40%) or for another indication for beta blocker (ex. CAD, atrial fibrillation)
 Bisoprolol _____ mg PO daily
 Carvedilol _____ mg PO BID
 Other _____ mg PO _____

Drug Class	Specific Agent	Start Dose	Target Dose
Beta-Blocker	Carvedilol	1.5625 - 3.125mg BID	25mg BID / 50mg BID (if >85 kg)
	Bisoprolol	1.25mg daily	10mg daily

Mineralocorticoid receptor antagonists (MRA)

- For HFpEF (LVEF ≤ 40%) or HFpEF (LVEF ≤ 50%) (if potassium < 5 mmol/L and CrCl ≥ 30 mL/min)
 Spironolactone _____ mg PO daily
 Eplerenone _____ mg PO daily

Drug Class	Specific Agent	Start Dose	Target Dose
MRA	Spironolactone	12.5mg daily	25 - 50mg daily
	Eplerenone	25mg daily	50mg daily

Sodium-glucose co-transporter type 2 (SGLT2) inhibitors:

For HF (irrespective of EF) if eGFR ≥ 25 mL/min
 Dapagliflozin _____ mg PO QD
 Empagliflozin _____ mg PO QD
 Other _____ mg PO QD

Drug Class	Specific Agent	Start / Target Dose	Target Dose
SGLT2 inhibitor	Dapagliflozin	10mg daily	10mg daily
	Empagliflozin	10mg daily	10 - 25mg daily
	Canagliflozin	100mg daily	100 - 300mg daily

Other agents:

Sinus Node Modulator
 Eligibility criteria: LVEF ≤ 40%, on standard therapy and sinus rhythm with a resting HR ≥ 70 bpm despite optimal β-blocker therapy
 Ivabradine _____ mg PO q BID (start at 2.5 mg if patient ≥ 75 years)
 Undesired:
 Digoxin _____ mg PO QD
 *Digoxin plasma target < 0.8nM, or < 1 nMol/L 1 week after titration.

Drug Class	Specific Agent	Start Dose	Target Dose
Sinus Node Modulator	Ivabradine	2.5 - 5mg BID	7.5mg BID
Cardiac Glycoside	Digoxin	0.625 - 0.125mg daily	Not applicable. Monitor for toxicity

Other agents:

- Consider continuing on:
 Aldosterone antagonists (if K⁺ > 4.0 and/or cyclo-oxygenase se-2 (COX 2) inhibitor
 Dihydropyridines
 Sawaiglatin (not recommended in HF)
 Thiazolidinediones (not recommended in HF): Pioglitazone Rosiglitazone
 Potassium supplements (if K⁺ < 4.0)

Additional Notes: (refer to CCS/CHFS/C-CHANGE guidelines for more information)

New York Heart Association (NYHA) functional classification of heart failure

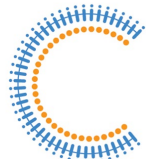
- CLASS 1 - Asymptomatic. No symptoms with ordinary physical activity.
 - CLASS 2 - Mild symptoms (symptoms with ordinary activity. Slight limitation of activity).
 - CLASS 3 - Moderate symptoms (symptoms with less than ordinary activity. Marked limitation of activity).
 - CLASS 4 - Severe symptoms (symptoms with any physical activity or even at rest).
- Canadian Cardiovascular Society (CCS) functional classification for stable CAD (anginal)
 CLASS 1 - Asymptomatic
 CLASS 2 - Ordinary physical activity such as walking or climbing stairs does not cause angina. Angina with strenuous, rapid, or prolonged exertion at work or recreation.
 CLASS 3 - Slight limitation of ordinary activity. Walking or climbing stairs rapidly, walking uphill, walking or stair climbing after meals, or in cool, or in wind or under emotional stress, or during the few hours after awakening. Working more than 2 blocks on the level and climbing more than one flight of stairs at a normal pace and in normal conditions.
 CLASS 4 - Marked limitation of ordinary physical activity. Walking one or two blocks on the level or climbing one flight of stairs in normal conditions and at a normal pace.
 CLASS 4 - inability to carry out any physical activity without discomfort - anginal symptoms may be present at rest.

Natriuretic peptide cut-points for the diagnosis of HF

Elevated NP levels are recommended as an additional diagnostic criterion for HFpEF (ex. workup of dyspnea NYD) and are associated with increased risk, although the levels might be lower than in HFpEF.

	Age (years)	HF is Unlikely	HF is Possible but Other Diagnoses Need to be Considered	HF is Very Likely
Acute setting	BNP	All	<100 pg/mL	>400 pg/mL
	NT-proBNP	<30	<300 pg/mL	>400 pg/mL
Ambulatory care setting	BNP	All	<100 pg/mL	>400 pg/mL
	NT-proBNP	All	<135 pg/mL	>400 pg/mL

Updated March 2022
 C-CHANGE
 Canadian Cardiovascular Society
 CHFS SCIC
 Canadian Heart Failure Society
 Société canadienne d'insuffisance cardiaque



C-CHANGE

Informing through evidence, transforming through engagement™



Canadian Heart Failure Society
Société canadienne d'insuffisance cardiaque



<https://cep.health/clinical-products/managing-patients-with-heart-failure/>

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c) What follow-up do you recommend?

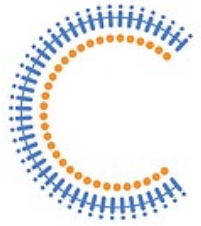
Communicate with Home and Community Care nurse

- help follow weights
- confirm medication adherence
- follow-up on lifestyle changes, including possible consultation with dietitian for advice on dietary sodium

Ongoing History



- Martin is seen in clinic in one week – he feels much better
- His son has stopped bringing in junk food and he has gone back to healthier food choices
- His weight is down 3 kg – closer to dry weight
- He starts an MRA (Spironolactone) and his repeat bloodwork is normal (incl. Cr, lytes)
- His blood pressure and lipids are at target
- He is clinically stable and deferred switch of ACEi to ARNI, he prefers to readdress SGLT2i at next appt



C-CHANGE

Informing through evidence,
transforming through engagement™

Multifaceted Care Approach for Global Cardiovascular Risk Reduction



INDIVIDUALIZE



- **Healthy eating**
- **Regular physical activity**
- Smoking cessation, **alcohol reduction**, **stress management**, healthy body weight
- Management of vascular risk factors
 - Control of **blood pressure**, blood glucose, and **cholesterol**
- Vascular protective medications (as appropriate based on co-morbidities), including
 - **statins**
 - **ACEi** or ARB (RAAS blockers)/ARNI
 - **BB**
 - **(SGLT2i)**/GLP1RA
 - **(MRA)**
 - ASA (secondary prevention) → **anticoag (given afib)**

Key Learnings – Multimorbid Complex Patient



ASCVD - Stroke (and Coronary Artery Disease) – 2⁰ prevention

- Assess for vascular risk factors and lifestyle mgmt. issues

Cardiovascular Co-morbidities:



Key Learnings – Multimorbid Complex Patient



Cardiovascular Co-morbidities:



ASCVD - Stroke (and Coronary Artery Disease) – 2^o prevention

- Assess for vascular risk factors and lifestyle mgmt. issues

Hypertension

- Anti-HTN therapy should be considered if SBP \geq 140 and/or DBP \geq 90 mmHg in the presence of macrovascular target organ damage.
- To decrease BP, reduce sodium intake towards 2000 mg per day.

Key Learnings – Multimorbid Complex Patient



Cardiovascular Co-morbidities:



ASCVD - Stroke (and Coronary Artery Disease) – 2^o prevention

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Atrial Fibrillation

- Patients with TIA or ischemic stroke and non-valvular Afib should receive oral anticoagulation (DOAC preferred over coumadin).

Key Learnings – Multimorbid Complex Patient



Cardiovascular Co-morbidities:



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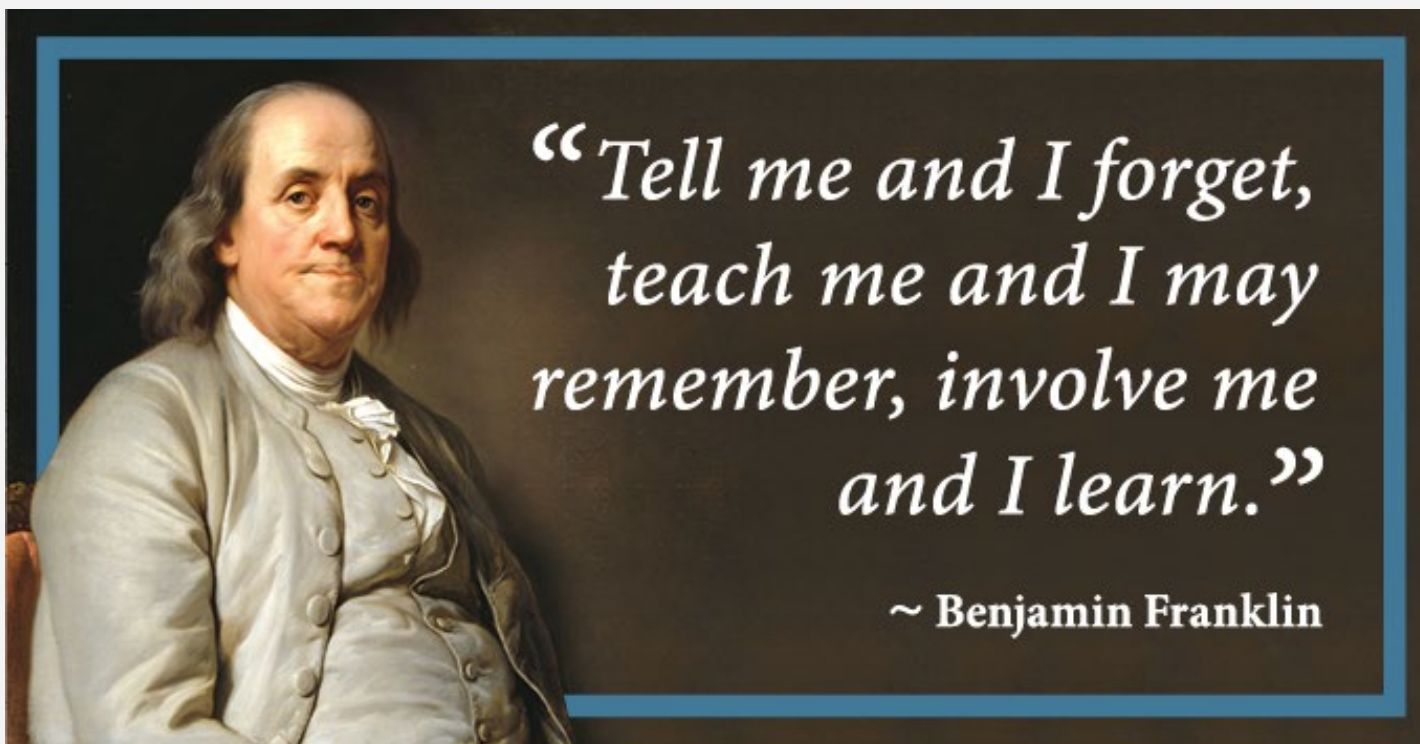
Atrial Fibrillation

- Patients with TIA or ischemic stroke and non-valvular Afib should receive oral anticoagulation (DOAC preferred over coumadin).

Congestive Heart Failure (HFrEF)

- Patients with HFrEF should be treated with quadruple therapy, including an ARNI (or ACEi/ARB), beta blocker, MRA, and SGLT2i unless specific contraindications exist.

Empowering patient engagement



Thank You! Questions?



Guideline **CPD**

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

Rahul Jain MD MScCH, James A. Stone MD PhD, Gina Agarwal MBBS PhD, Jason G. Andrade MD, Simon L. Bacon PhD, Harpreet S. Bajaj MD MPH, Brian Baker MBChB, Gemma Cheng MD, David Dannenbaum MD, Mark Gelfer MD, Jeffrey Habert MD, John Hickey MD, Karim Keshavjee MD MSc, Darlene Kitty MD, Patrice Lindsay RN PhD, Mary R. L'Abbé CM PhD, David C.W. Lau MD PhD, Laurent Macle MD, Michael McDonald MD, Kara Nerenberg MD MSc, Glen J. Pearson PharmD, Thuy Pham MN MScCH, Alexandre Y. Poppe MD CM, Doreen M. Rabi MD MSc, Diana Sherifali RN PhD, Peter Selby MBBS MSc, Eric Smith MD MPH, Sol Stern MD MSc, George Thanassoullis MD, Kristin Terenzi MD, Karen Tu MD MSc, Jacob Udell MD MPH, Sean A. Virani MD MSc, Richard A. Ward MD, Darren E.R. Warburton PhD MSc, Sean Wharton MD PharmD, Jennifer Zymantas MD, Diane Hua-Stewart MACP MPH, Peter P. Liu MD, Sheldon W. Tobe MD MScCH

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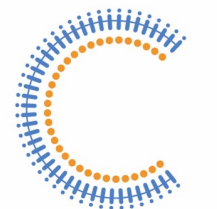
The goal of the Canadian Cardiovascular Harmonized National Guideline Endeavour (C-CHANGE) process is to give all Canadian health care providers easy access to a comprehensive and practical set of harmonized guideline recommendations. Clinicians claim that there are too many guidelines with too many individual recommendations to be practical and accessible for primary care; that their patients' multimorbidity requires them to access many guidelines at the same time; and that at least in the past, some of the recommendations were not harmonized and seemed contradictory.¹

Established in 2008 to address these issues, C-CHANGE produces a guideline that is a subset of recommendations chosen from guidelines developed by Canada's cardiovascular-focused guideline groups. It is designed to help clinicians formulate comprehensive treatment plans for use by all members of the health care team to address multimorbidity, as recommended by the *Canadian Heart Health Strategy and Action Plan*.² This fourth update was necessitated by recent changes to the guidelines included in previous updates and the addition of guidelines from 3 guideline groups new to the C-CHANGE process (Canadian Cardiovascular Society/Canadian Heart Rhythm Society guideline for the management of atrial fibrillation, Health Canada's Dietary Guideline and the Canadian Consensus Conference on Diagnosis and Treatment of Dementia) (Appendix 1, available at www.cmaj.ca/lookup/doi/10.1503/cmaj.220138/tab-related-content), thus increasing the comprehensiveness from the 2011,³ 2014⁴ and 2018⁵ versions to a total of 11 guideline groups.

Key points

- This updated C-CHANGE guideline is a subset of recommendations chosen from guidelines from 11 of Canada's cardiovascular-focused guideline groups, expanded to include Health Canada's dietary guideline, the Canadian Consensus Conference on Diagnosis and Treatment of Dementia and the Canadian Cardiovascular Society/Canadian Heart Rhythm Society guideline for the management of atrial fibrillation.
- The 2022 C-CHANGE update includes a total of 83 recommendations, of which 48 are new or revised.
- Multifaceted care for patients with cardiovascular risk includes the cornerstones of health behaviour change: healthy eating, regular physical activity and exercise, healthy body weight, stress management, reduced alcohol intake and smoking cessation.
- Cardiovascular disease prevention is foundational to primary care practice and incorporates appropriate risk screening and risk stratification.
- Cardiovascular disease management combines guideline-directed health behaviour change and pharmacologic therapies to reduce symptoms, burden of disease, complications and residual cardiovascular risk.

The Global Burden of Diseases survey identified that the risk factors accounting for the largest percentage of disability-adjusted life-years in Canada included tobacco use, dietary factors, high body mass index (BMI), high fasting blood glucose,



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