

# 27th ANNUAL EXCELLENCE IN CARDIAC CARE CONFERENCE

|  January 24, 2026 |  8:00-13:00 p.m. EST



# What is the 'Corcare Quality and Education Platform'

The Corcare Quality and Education Platform(CQEP),  
is a Canadian not-for-profit corporation  
Providing quality of care research and medical education  
for community care providers  
to advance the secondary prevention of cardiovascular disease.

# Our Vision

To share the most *recent advances* in

Secondary Prevention of Cardiovascular Disease

That *YOU can use* in the care of our patients

*Starting today*

# CQEP Faculty

**Dr. Taryn Becker, FRCPC**  
*Endocrinologist*  
Scarborough Health Network

**Dr. Donna Birbrager**  
Nephrologist  
Lakeridge Health Oshawa

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*Cardiologist,*  
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Corcare

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**Dr. Nisha D'Mello, FRCPC**  
*Cardiologist,*  
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**Dr. Paul Galiwango, FRCPC**  
*Cardiologist,*  
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**Dr. Shaun Goodman**  
*Professor Heart & Stroke*  
*Foundation of Ontario Chair*  
*Department of Medicine,*  
*University of Toronto Associate*  
*Head, Cardiology St. Michael's*  
*Hospital Adjunct Professor of*  
*Medicine, University of Toronto*  
*Co-Director, Canadian VIGOUR*  
*Centre, University of Alberta*  
*Consultant, Canadian Heart*  
*Research Centre, Toronto*

**Dr. Robert Hegele**  
*Distinguished Professor of*  
*Medicine and Biochemistry*  
*Director, Lipid Genetics Clinic &*  
*London Regional Genomics*  
*Centre, Robarts Research*  
*Institute, Western University*

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**Dr. Saleem Kassam, FRCPC**  
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Canadian Heart Research Centre;  
Medical Director, LinCorp Medical Inc.

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Chief, Family Practice SHN  
Lead, Primary Care CELHIN

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**Dr. Howard Petroff, CCFP**  
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**Dr. Joseph Ricci, FRCPC, FACC**  
*Cardiologist,*  
Scarborough Rouge Hospital  
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**Dr. Bradley Sarak**  
*Cardiologist,*  
Scarborough Rouge Hospital  
Corcare

**Dr. Andrew Steele**  
Nephrologist  
Lakeridge Health Oshawa  
Scarborough Rouge Hospital

# Our Conference Speakers



**Taryn Becker MD FRCPC**  
Endocrinologist  
Scarborough Health Network



**Robert Hegele MD, FRCPC**  
Distinguished Professor of  
Medicine and Biochemistry  
Director, Lipid Genetics  
Clinic & London Regional  
Genomics Centre,  
Robarts Research Institute,  
Western University



**Joseph Ricci MD, FRCPC**  
Cardiologist  
Multimodality Imaging  
Lakeridge Health  
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**Paul Galiwango, MD FRCPC**  
Cardiologist,  
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**Noah Ivers, MD, PHD, CCFP**  
Senior Scientist, Women's  
College Hospital Research and  
Innovation Institute  
Canada Research Chair (Tier 2)  
in Implementation of Evidence-  
Based Practice  
Innovation Fellow, Women's  
College Hospital for Health  
System Solutions and Virtual  
Care  
Family Physician, Women's  
College Hospital  
Professor, Department of Family  
& Community Medicine,  
University of Toronto  
Adjunct Scientist, ICES



**Andrew Steele, MD**  
Nephrologist  
Lakeridge Health Oshawa  
Scarborough Rouge Hospital



**Shaun Goodman MD, FRCPC**  
Professor Heart & Stroke Foundation of Ontario Chair  
Department of Medicine, University of Toronto  
Associate Head, Cardiology St. Michael's Hospital  
Adjunct Professor of Medicine, University of Toronto  
Co-Director, Canadian VIGOUR Centre,  
University of Alberta Consultant,  
Canadian Heart Research Centre, Toronto

# Overall Learning Objectives

During this conference, participants will analyze and interpret the:

- Canadian Guidelines related to the secondary prevention of cardiovascular disease
- ‘pillars’ of secondary prevention care for patients with reduced heart function, ASCVD and reno-vascular disease
- important role of primary care in the early identification of patients who benefit from early secondary prevention including Heart failure, ASCVD and amyloidosis

# Agenda

			Chair: Dr. Shaun Goodman
Session 1		Topics	
30 min	8:10 - 8:40	The ABCDEFs of Secondary Prevention	Dr. Shaun Goodman
5 mins	8:40 - 8:45	The Canadian Cardiovascular Society (CCS) Secondary Prevention Pathway: A New Resource to Support Post-Acute Coronary Syndrome (ACS) Care	Dr. Shaun Goodman
30 mins	8:45 - 9:15	Case presentations: <ul style="list-style-type: none"> <li>• Barriers to Implementation &amp; Perspectives of People with Lived Experience</li> <li>• Development of the CCS Secondary Prevention Pathway.</li> <li>• Phase 1: At Discharge</li> <li>• Phase 2: Early After Discharge</li> <li>• Phase 3: Longer-Term Follow-Up</li> </ul>	Dr. Jacob Crawshaw (pre-recorded) Dr. JD Schwalm (pre-recorded) Dr. Palki Bhatt (pre-recorded) Dr. Claudia Bucci (pre-recorded) Dr. Noah Ivers

# Agenda

			Chair: Dr. Shaun Goodman
Session 1		Topics	
10 mins	9:15 - 9:25	Q & A	Drs. Ivers and Goodman
25 mins	9:25 - 9:50	Cardiac Rehabilitation in our community	Dr. Joseph Ricci
30 mins	9:50 - 10:20	Lipids: what's new for 2026?	Dr. Robert Hegele
20 mins	10:20 - 10:40	Panel Discussion	Drs. Ricci, Goodman, Hegele and Ivers
10:40 - 10:45		BREAK	

# Agenda

			Chair: Dr. Shaun Goodman
Session 2		Topics	
30 mins	10:45 - 11:15	Diabetes Update	Dr. Taryn Becker
30 mins	11:15 - 11:45	Hypertension	Dr. Andrew Steele
30 mins	11:45 - 12:15	Cardiac Care Amyloid: detection starts in community practice	Dr. Joseph Ricci
30 mins	12:15 - 12:45	Heart Failure with Non-Reduced Ejection fraction: 2025 CCS guidelines	Dr. Paul Galiwango
30 mins	12:45 - 12:57	Panel Discussion	Drs. Becker, Galiwango, Ricci, Steele
3 mins	12:57-13:00	Closing Remarks	Dr. Joseph Ricci



Dr. Shaun Goodman

# The ABCDEFs of Secondary Prevention

# From Acute to Chronic Coronary Syndromes of ASCVD: The ABCDEFs of Secondary Prevention

## *Learning Objectives*

*Review the evidence-based, guideline-recommended secondary prevention treatment of patients with atherosclerotic cardiovascular disease (ASCVD), focusing on the post-acute coronary syndrome (ACS) transition to chronic coronary syndrome (CCS) management*

Shaun Goodman@UnityHealthTo

ST. MICHAEL'S  
UNITY HEALTH TORONTO

UHN Peter Munk  
Cardiac  
Centre

Medicine  
UNIVERSITY OF TORONTO



Canadian VIGOUR Centre  
Bridging Hearts and Minds

UNIVERSITY OF  
ALBERTA

# Disclosures:

## Research Grant and Salary Support, Speaker/Consulting Honorarium

- Research grant support (e.g., executive/steering or data and safety monitoring committee) and/or speaker/consulting honoraria (e.g., advisory boards) from:
  - Alnylam
  - Amgen
  - Anthos
  - AstraZeneca
  - Bayer
  - Boehringer Ingelheim
  - Bristol Myers Squibb
  - CSL Behring
  - Daiichi-Sankyo/  
American Regent
  - Eli Lilly
  - Esperion
  - Ferring Pharmaceuticals
  - HLS Therapeutics
  - Idorsia/Viatris
  - JAMP Pharma
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Pharmascience
  - Pfizer
  - Regeneron
  - Roche
  - Sanofi
  - Servier
  - Tolmar
  - Valeo Pharma
- Honoraria and/or Salary support from:
  - Canadian Heart Research Centre and MD Primer
  - Canadian VIGOUR Centre
  - Cleveland Clinic Coordinating Center for Clinical Research
  - Duke Clinical Research Institute
  - New York University Clinical Coordinating Centre
  - PERFUSE Research Institute
  - Peter Munk Cardiac Centre/Ted Rogers Centre for Heart Research
  - TIMI Study Group (Brigham Health)

[https://thecvc.ca/about-us/bio/shaun-goodman - Relationships with industry](https://thecvc.ca/about-us/bio/shaun-goodman-Relationships%20with%20industry)

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

- **A**nti-thrombotic (antiplatelet[s] ± anticoagulant) therapy and **A**CE inhibitor (or **A**ngiotensin Receptor Blocker)
- **B**eta-blocker and **B**lood Pressure-lowering
- **C**holesterol-modifying therapy
- **D**iet, **D**iabetes-control/vascular protection, and **D**on't smoke
- **E**xercise
- **F**ollow-up

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**RICK DEMPSEY:**  
Learned from a pro. 3C

### OUR PICKS FOR BEST IN BASEBALL

AL AND NL, 3C

### BIG COLLEGE RIVAL GAMES

TEXAS-OKLA., 1, 7C

### O'S DEMPSEY A TV HIT

CREDITS WEAVER, 3C

# USA TODAY

PUBLISHED BY GANNETT

### DI, CHARLES SET RECORD STRAIGHT

FIRST TV INTERVIEW, 2D

### SHOPPING FOR CREDIT CARDS

7B

### 'NATTY GANN': DISNEY POURS ON THRILLS

1D

OTHER REVIEWS, 6D

BEST TV, BOOK BETS, 3, 4D



**SALENGER:** Vagabond  
seen in 'Natty Gann'

FRI./SAT./SUN., OCT. 11-13, 1985

## NEWSLINE

A QUICK READ ON THE NEWS

**WEATHER:** Frost or freeze across New England tonight; showers in Southeast, West; cool in Midwest; rain in Plains. Full color page. 12A. Flooding in central USA. 3A.

**WALL STREET UP:** Dow Jones picks up 1.35 points; closes at 1328.07; food stocks fall. 3B.

**BUDGET:** House considers deficit-reduction, borrowing extension today; Senate approves debt-limit increase. 5A. Economists on deficit cuts, balanced budget. 6B.

**WELLES, BRYNNER DIE:** Orson Welles, left, died at age 70; best known for 1941 film classic *Citizen Kane*, called Hollywood "snake pit"; friend said he was "commanding myth." 1D, 2A. Tribute to Yul Brynner. 6D.



## Aspirin a day keeps heart attack away

By Steven Findlay  
USA TODAY

WASHINGTON — Aspirin prevents heart attacks, the government said Thursday.

A Food and Drug Administration review of seven large studies has concluded that one aspirin tablet a day:

■ Cuts by about 20 percent

risk of death or of another attack in those who've had an attack; 1.5 million in the USA have heart attacks each year.

■ Cuts in half the risk of heart attack in those with unstable, or severe, angina.

The studies, with more than 11,000 people, did not evaluate whether aspirin would lower heart attack risk

in healthy people. But FDA's Dr. Robert Temple said, "It's reasonable to think that it will benefit everyone."

More studies must be finished before everyone is urged to take aspirin, he said. Patients should consult a doctor first, FDA said.

About 5 million in the USA have a history of heart dis-

ease or angina, or both.

Aspirin could save 30,000 to 50,000 lives a year, said Margaret Heckler, secretary of Health and Human Services. "For some of us, an aspirin a day may keep the doctor away." She said many healthy doctors take aspirin.

But, "Aspirin is not a substitute for other preventive

therapies for heart attack. A lot of us need to stop smoking, eat better, lose weight, exercise sensibly."

The FDA also OK'd an implant that prevents heart attacks and sudden death in those with irregular heartbeats. The defibrillator could aid up to 400,000 people, save 10,000 to 20,000 lives a year.

## WE GOT 'EM; HERE'S HOW

### Heartland playoffs this weekend

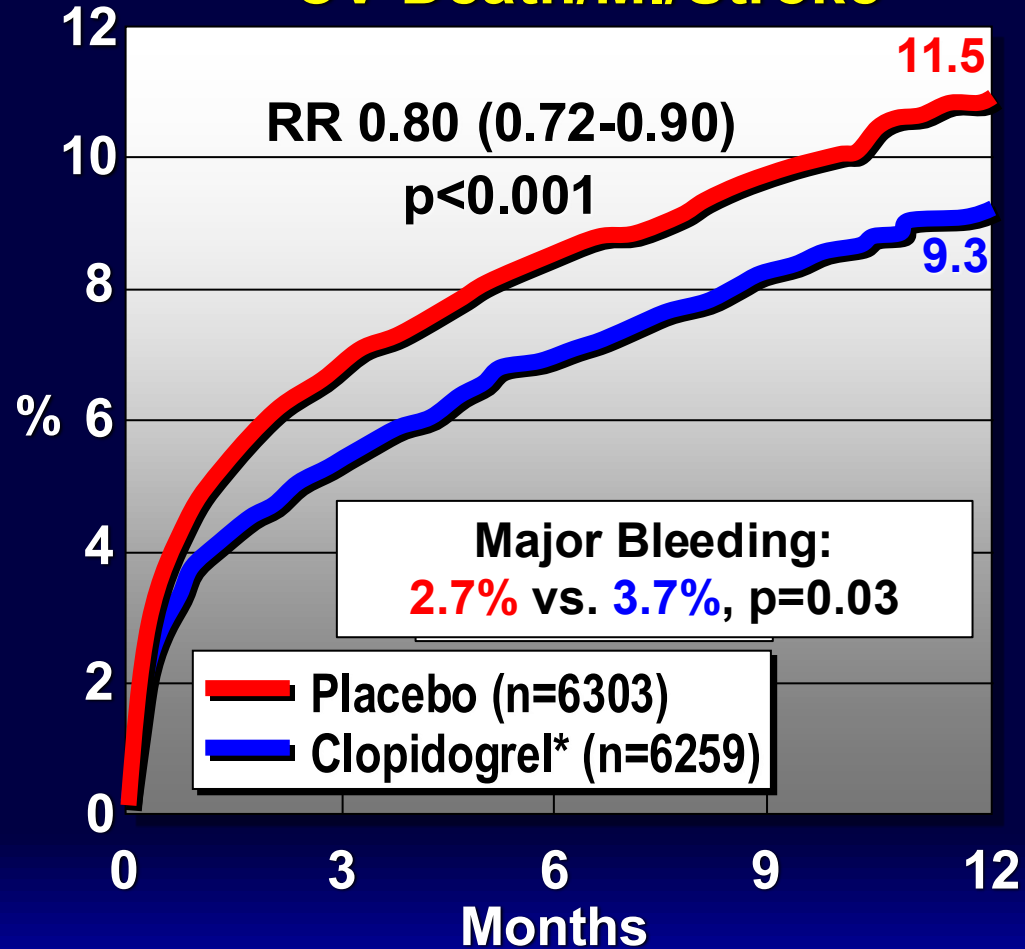
Special report, 6A

By Don Kirk  
and Loren Lynch



Non-ST Elevation ACS patients with ECG changes  $\pm$  cardiac marker elevation

### CV Death/MI/Stroke

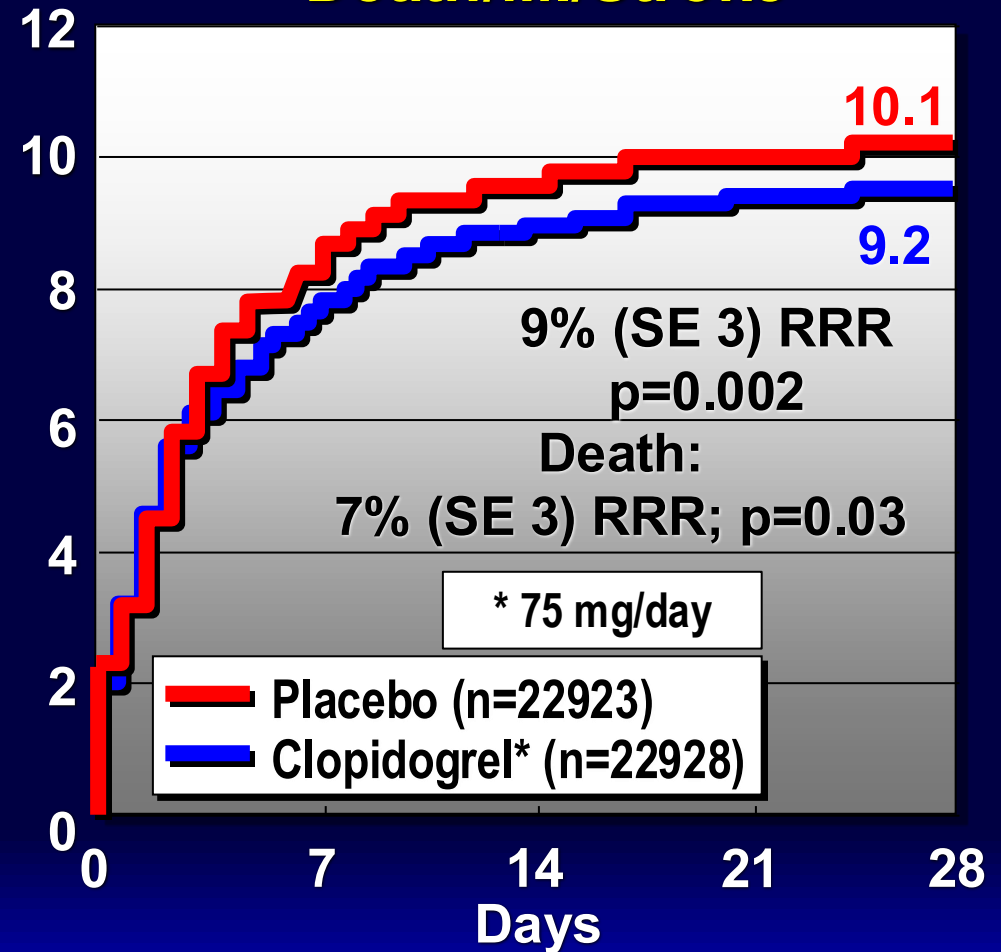


*N Engl J Med* 2001;345:494-502



Suspected acute MI (ST change or LBBB) within 24 h of symptom onset

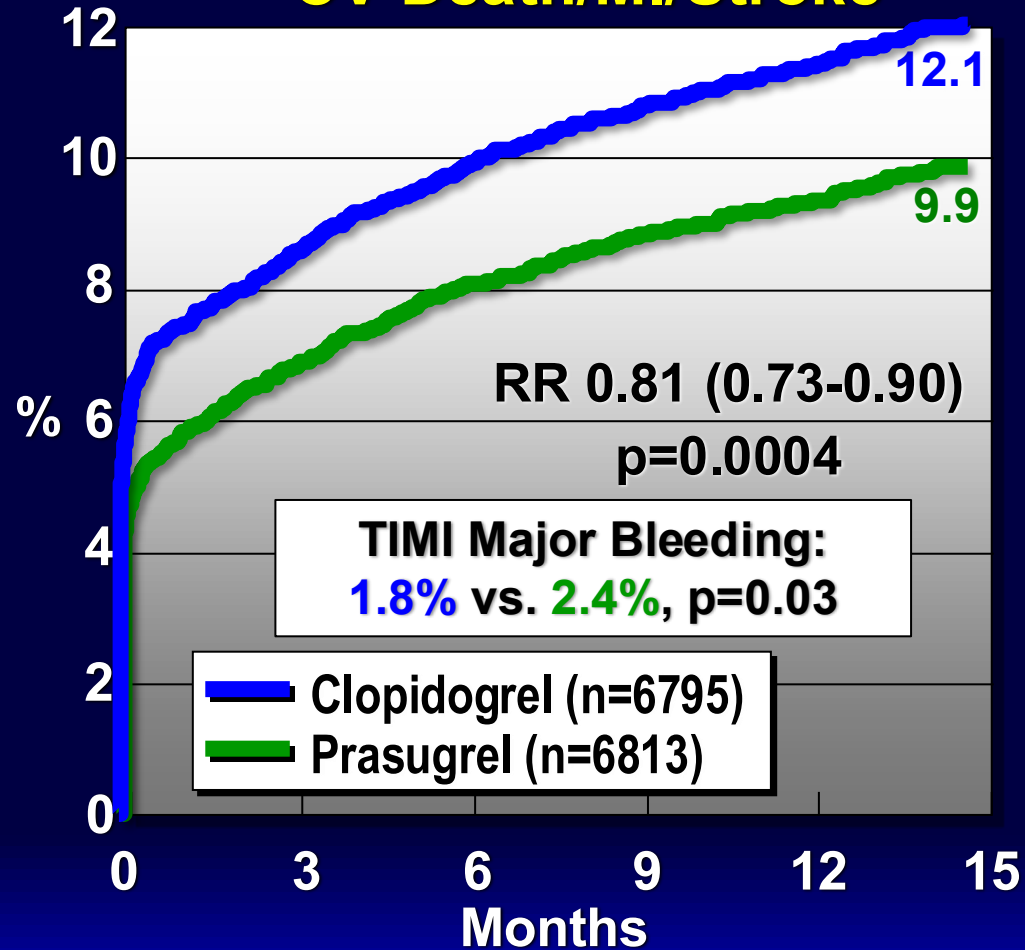
### Death/MI/Stroke



*Lancet* 2005;366:1607-21

ACS patients undergoing PCI

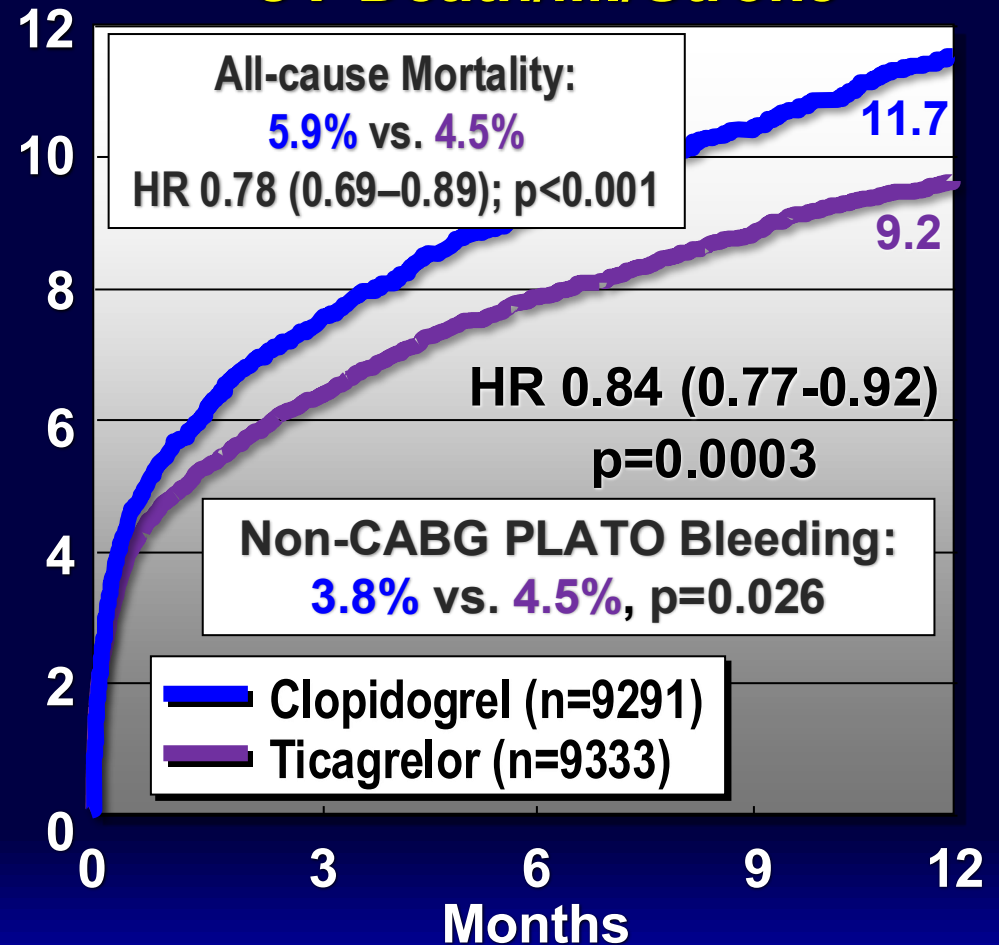
### CV Death/MI/Stroke



Wiviott et al *N Engl J Med*  
2007;357:2001-15

Moderate-to-high risk ACS patients (except those receiving fibrinolysis)

### CV Death/MI/Stroke



Wallentin et al *N Engl J Med*  
2009;361:1045-57

# Mortality Benefit of Prolonged Dual Antiplatelet Therapy

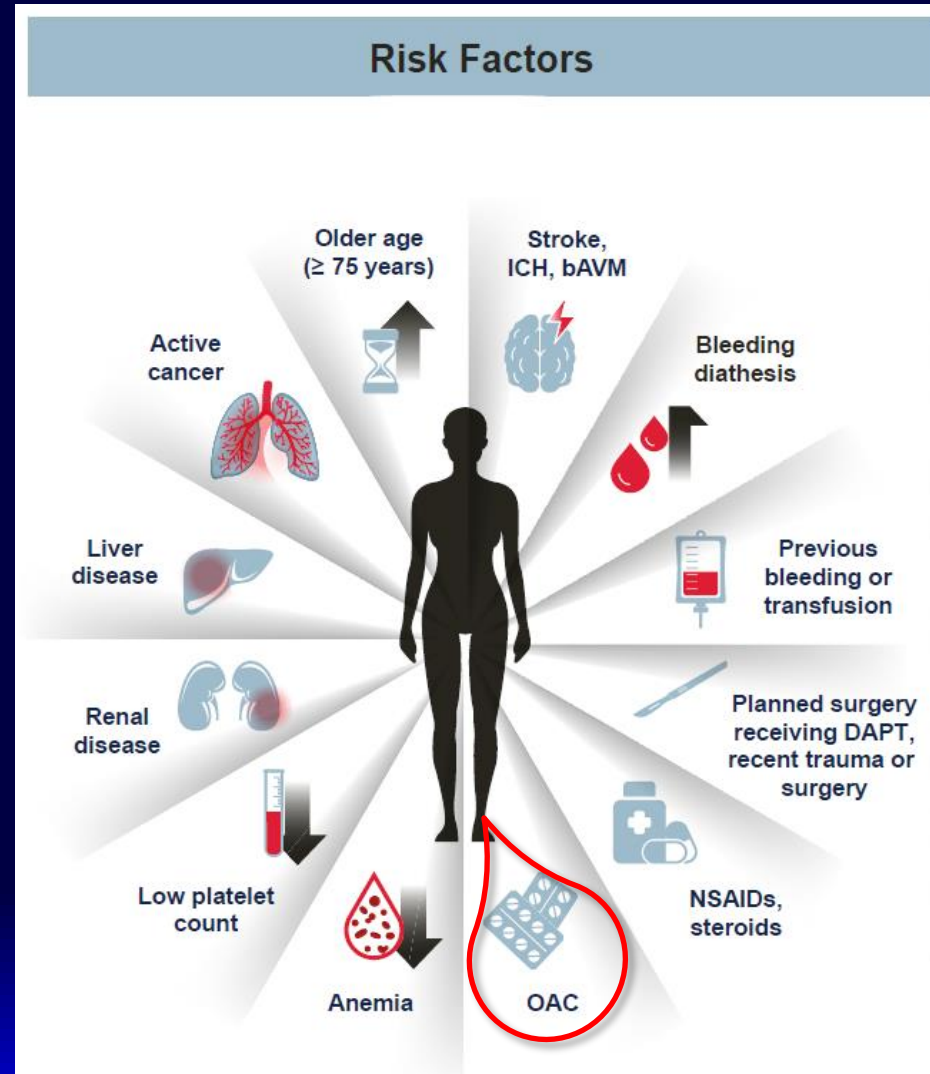
Patients with Prior Myocardial Infarction

Trial	Subgroup	CV Mortality	All-Cause Mortality
CHARISMA <sup>1</sup>	MI (n=4,441)	0.82 (0.57-1.18)	0.84 (0.62-1.13)
TRA2P TIMI 50 <sup>2</sup>	MI (n=17,779)	0.84 (0.68-1.05)	0.92 (0.78-1.09)
DAPT <sup>3</sup>	MI (n=3,576)	0.67 (0.31-1.44)	0.87 (0.50-1.50)
PEGASUS TIMI-54 <sup>4</sup>	60 mg BID (n=14,112)	0.83 (0.68-1.01)	0.89 (0.76-1.04)
<b>TOTAL</b>		<b>0.81 (0.69-0.95)</b>	<b>0.89 (0.81-0.99)</b>
		<b>P=0.010</b>	<b>P=0.037</b>

<sup>1</sup>Bhatt et al *J Am Coll Cardiol* 2007;49:1982-8; <sup>2</sup>Scirica et al *Lancet* 2012;380:1317-24;

<sup>3</sup>Yeh et al *J Am Coll Cardiol* 2015;65:2211-21; <sup>4</sup>Bonaca et al *N Engl J Med* 2015;372:1791-1800

# High Bleeding Risk (HBR)



### RECOMMENDATION

2. We suggest using short DAPT for 1-3 months rather than 6-12 months in patients at HBR who undergo PCI for ACS or elective PCI with maintenance SAPT thereafter, in patients who do not have any ischemic or bleeding events in the first month (Fig. 4; Weak Recommendation; Moderate-Quality Evidence).

#### Values and preferences:

- We value a shared decision-making approach weighing the risks of bleeding vs ischemic events when considering a short DAPT duration and transitioning to a SAPT strategy in HBR patients.

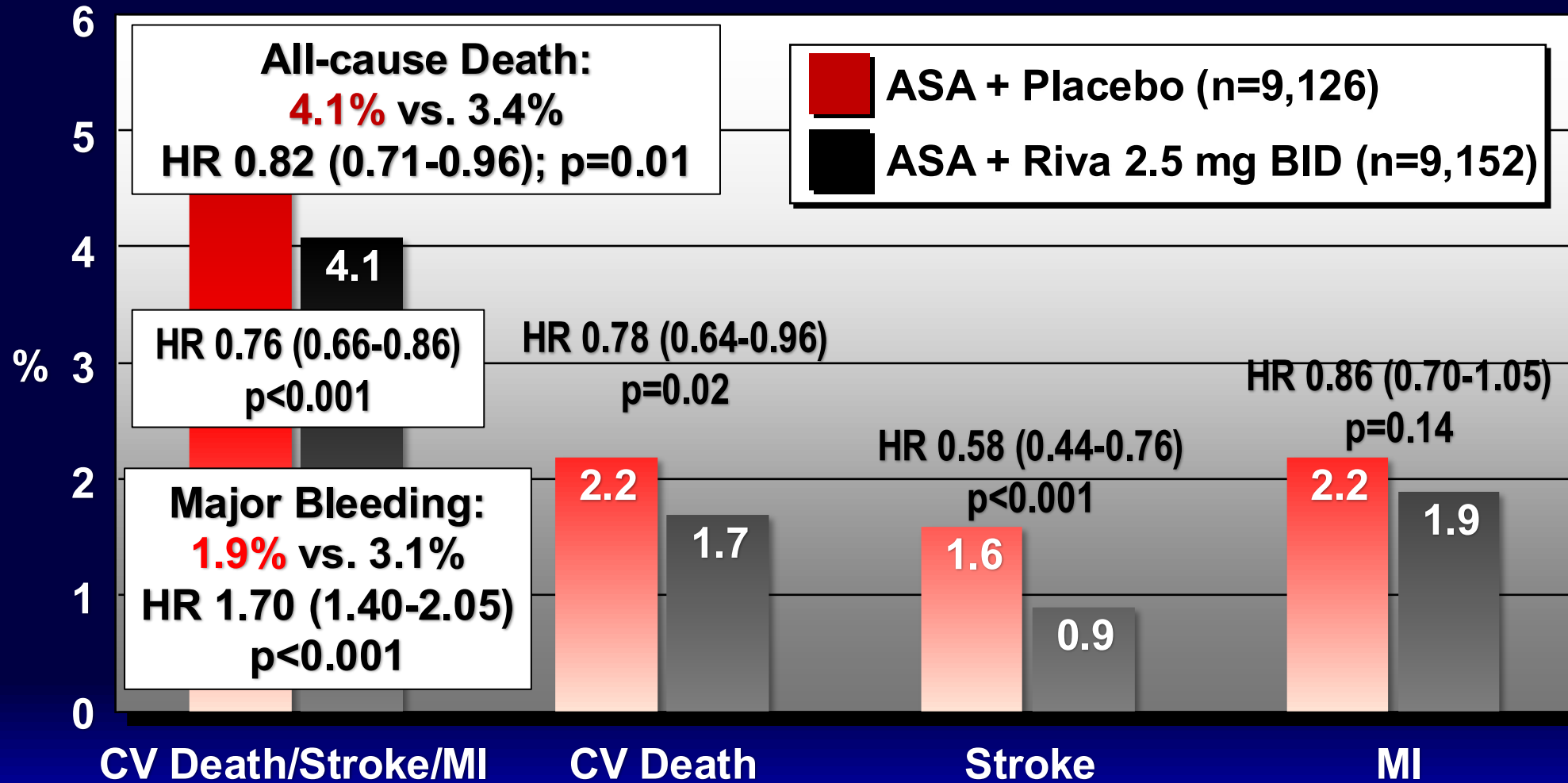
#### Practical tips:

- In patients at HBR, after 1-3 months of DAPT, current practice emphasizes consideration of SAPT with a P2Y<sub>12</sub> inhibitor over ASA monotherapy (ASA-free strategy; Fig. 4).

- After PCI, interventional cardiologists should provide *clear* recommendations (Fig. 4) to the treating physicians regarding DAPT duration to favour an efficient adoption of the selected DAPT strategies (recognizing this can be dynamic throughout the patient's APT treatment).

# Primary Outcome and Components

28,275 patients with CAD or PAD (including CeVD) *without* AF/indication for OAC



“...fragile balance between efficacy and adverse events.”

## Risk versus benefit



Thrombosis

Bleeding

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

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# Renin-Angiotensin-Aldosterone System Inhibition in MI

- Early and short-term benefits (including mortality) of ACEi (e.g., ramipril, lisinopril) in all MI patients
- No role for routine use in unselected MI patients of mineralocorticoid receptor antagonist (MRA) (spironolactone [CLEAR SYNERGY])
- Consider use in selected MI patients with
  - HFrEF: MRA (eplerenone [EPHESUS])
  - HF±rEF: Angiotensin-Nepriylsin Inhibitor (ARNI) instead of ramipril (sacubitril-valsartan [PARADISE-MI])

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

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# Beta-Blockers Post-Myocardial Infarction

Medscape



**Death, taxes...  
beta-blockers.**

**Are they all still inevitable?**

An estimated 30 million adults in America take the drugs. But should they?  
Mounting evidence shows beta-blockers are not quite *all that* anymore.

- long-term beta-blocker therapy after MI reduces mortality by ~20%<sup>1-3</sup>
- meta-analysis in the era of reperfusion strategies and secondary prevention therapies suggests that beta-blockers do not significantly reduce mortality<sup>4</sup>
- several contemporary trials post-MI comparing beta-blocker initiation  $\leq 14$  days (or continuation) vs. no beta-blocker

<sup>1</sup>Norwegian Multicenter Study Group *N Engl J Med* 1981; 304:801-7; <sup>2</sup>Hjalmarson et al *Lancet* 1981;2:823-7; <sup>3</sup>*JAMA* 1982;247:1707-14; <sup>4</sup>Bangalore et al *Am J Med* 2014;127:939-53

# Beta-blocker vs. No Beta-blocker after MI: Meta-analysis for LVEF ≥50%

n=17,801; mean age 62 yrs, ~21% women, 46% STEMI, >94% PCI  
Metoprolol 47%, Bisoprolol 46%, Carvedilol 5%



LVEF ≥50%  
n=2,277 (84.1%)

**BETAMI** Study



n=2,441 (85.3%)

**REβOOT**

n=7,459 (88.5%)

**CAPITAL-RCT**

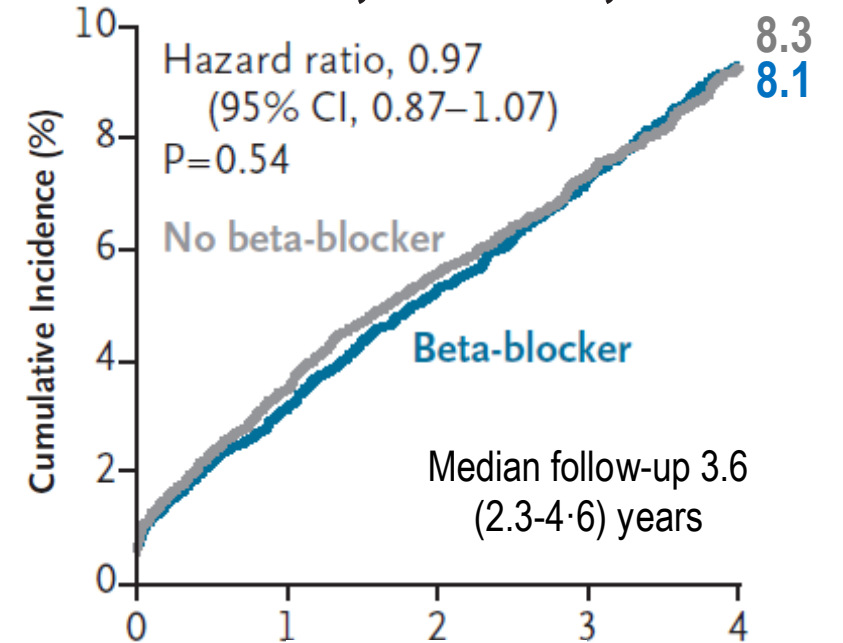
n=657 (84.1%)

**REDUCE-AMI**

n=4,967 (100%)

## All-cause death, new MI, or HF

Death: 4% vs. 4%  
HR 1.04 (0.89-1.21)  
reMI: 4% vs. 5%  
HR 0.89 (0.77-1.03)  
HF: 1% vs. 1%  
HR 0.87 (0.64-1.19)



No. at Risk	Years of Follow-up				
	0	1	2	3	4
Beta-blocker	8831	8272	7037	5253	3642
No beta-blocker	8970	8382	7098	5286	3641

# Beta-blocker vs. No Beta-blocker after MI: Meta-analysis for LVEF ≥40-49%

n=1,885; mean age 63 yrs, ~20% women, 68% STEMI, mean LVEF 45%, >95% PCI  
Metoprolol 49%, Bisoprolol 44%, Carvedilol 5%



**LVEF ≥40-49%**  
n=430 (15.9%)



n=422 (14.7%)



n=979 (11.5%)



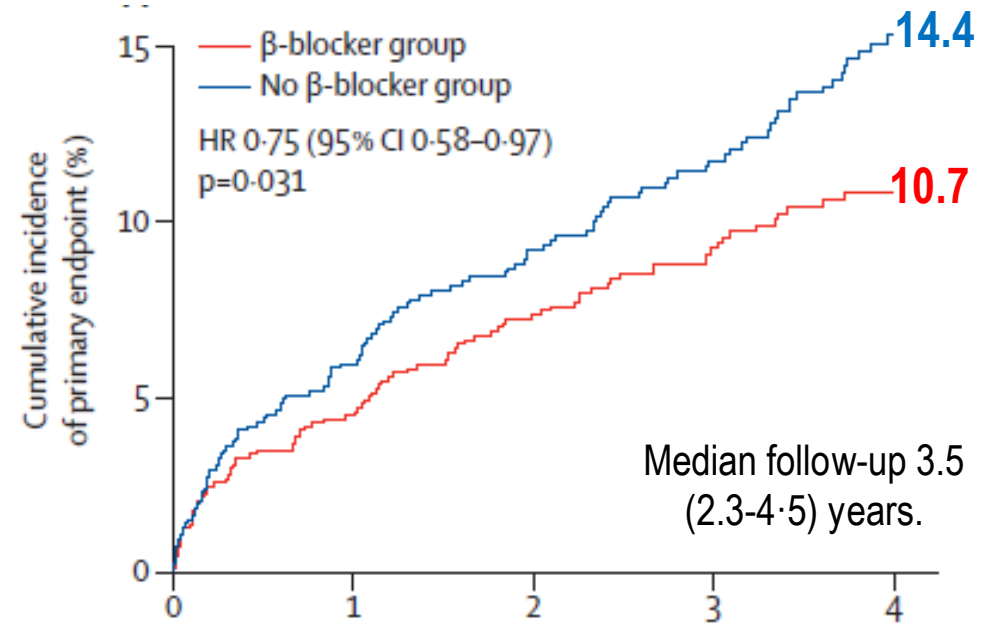
n=54 (15.9%)



n=0 (0%)

## All-cause death, new MI, or HF

Death: 6% vs. 8%  
HR 0.78 (0.55-1.11)  
reMI: 4% vs. 5%  
HR 0.77 (0.50-1.18)  
HF: 3% vs. 4%  
HR 0.71 (0.44-1.14)



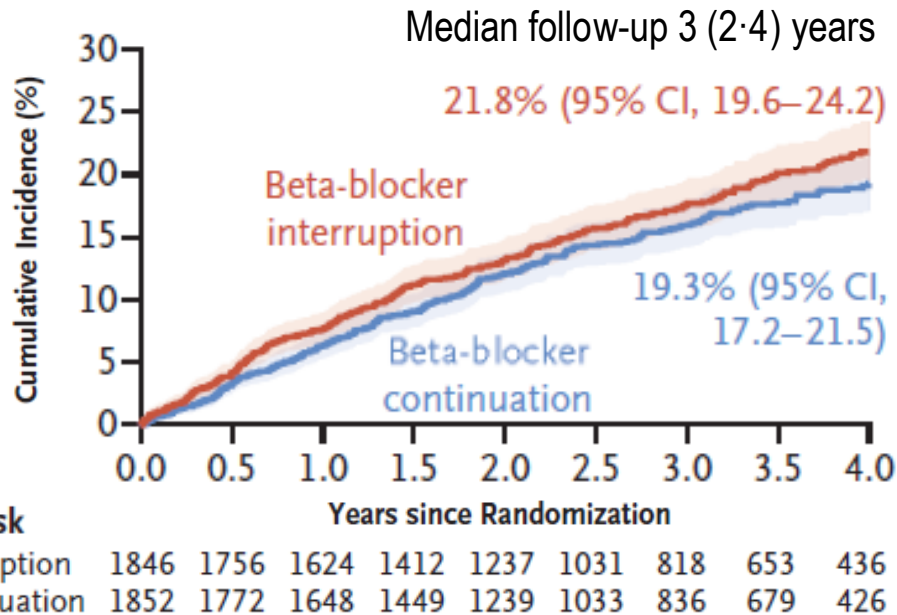
Number of patients (censored)	0	1	2	3	4
β-blocker group	991 (0)	915 (32)	756 (166)	560 (348)	380 (519)
No β-blocker group	894 (0)	821 (20)	697 (118)	528 (269)	367 (411)



# Continuing vs. Discontinuing Beta-blocker for LVEF $\geq 40\%$

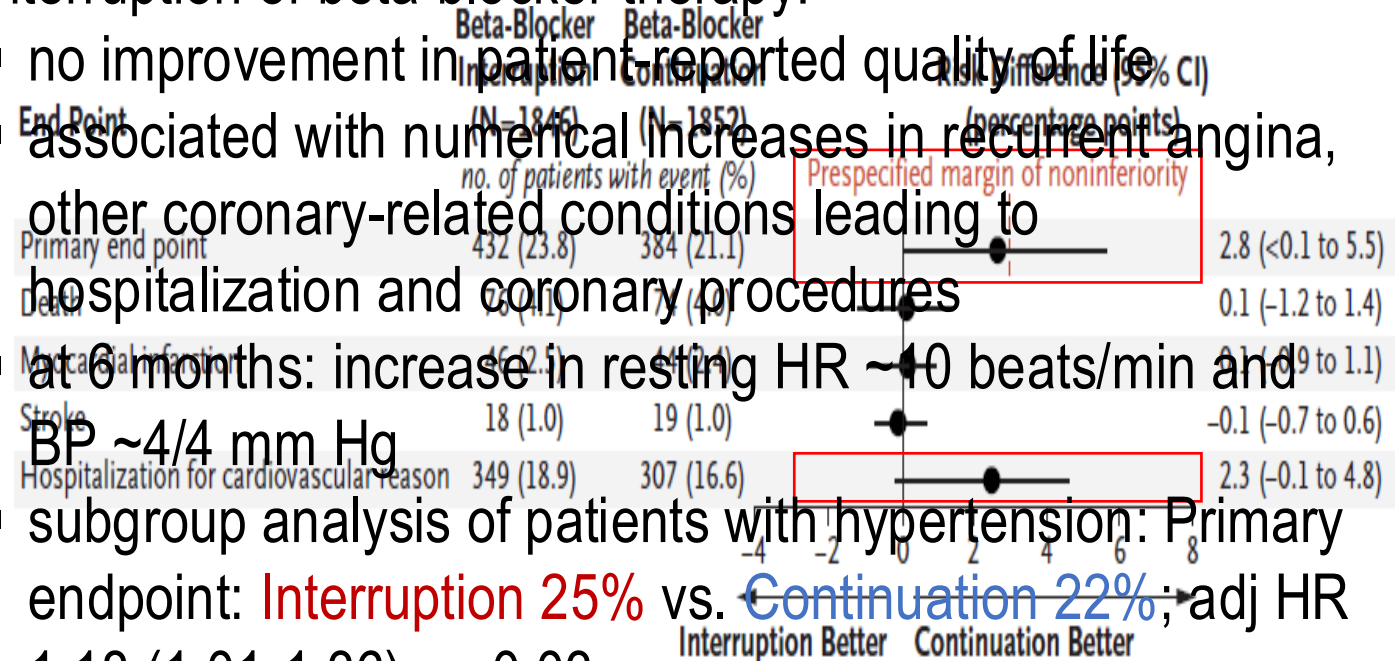
Prior acute MI  $\geq 6$  months (3 [1-6] yrs, on  $\beta$ -blocker with LVEF  $\geq 40\%$  and without uncontrolled BP, HF  $\leq 2$  yrs, persistent angina/ischemia, ventricular/supraventricular arrhythmia  $\leq 1$  yr  
 n=3,698; mean age 64 yrs, ~18% women, 63% STEMI, mean LVEF 60% ( $\geq 40-50\%$  ~23%), >96% PCI  
 bisoprolol 72%, acebutolol 11%, atenolol 9%, nebivolol 6%, metoprolol 1%, carvedilol 1%

## Death, MI, Stroke or CV Hospitalization



Interruption of beta-blocker therapy:

- no improvement in patient-reported quality of life
- associated with numerical increases in recurrent angina, other coronary-related conditions leading to hospitalization and coronary procedures
- at 6 months: increase in resting HR  $\sim 10$  beats/min and BP  $\sim 4/4$  mm Hg
- subgroup analysis of patients with hypertension: Primary endpoint: **Interruption 25%** vs. **Continuation 22%**; adj HR 1.18 (1.01-1.36); p=0.03



# PHARMACY



"Take them until further testing shows they really aren't effective."

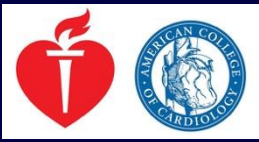
# ABCDEFs in Secondary Prevention of Coronary Artery Disease

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# Guideline for the Diagnosis and Treatment of Hypertension

- RCTs of intensive BP control have proven benefit in reducing major CV events and all-cause death, including for BP <130 vs.  $\geq$ 130 and BP <120 vs. <140 mm Hg<sup>1,2</sup>
- low dose combination therapy (ideally as a single-pill combination) recommended as initial treatment, including drugs from 2 of the following 3 complementary classes of medications:
  - ACE inhibitors or ARBs, thiazide/thiazide-like diuretics, long-acting dihydropyridine calcium channel blockers (Strong recommendation, moderate-certainty evidence)
- magnitude of CV risk reduction (specifically for stroke) is less with  $\beta$ -blockers; also more likely to be discontinued because of adverse effects; not recommended as first-line therapy for hypertension unless specific clinical indication present (e.g., post-MI, HF)

<sup>1</sup>Whelton et al *Hypertension* 2024;81:2329-39; <sup>2</sup>Verdecchia et al *Hypertension* 2025;82:2067-71; Goupil et al *CMAJ* 2025;197:E549-64



# Guideline for the Prevention, Detection, Evaluation and Management of Hypertension

- recommended goal systolic BP <130 mm Hg, with encouragement to achieve a BP <120 mm Hg to reduce the risk of major CVD events and all-cause mortality in high risk patients, including those with DM
- adverse events significantly more likely in the intensive SBP target groups, but the absolute risks (and numbers needed to harm [NNH]) were low):<sup>1</sup>
  - Hypotension (NNH 508), syncope (NNH 1701), injurious falls (NNH 2941), electrolyte abnormalities (NNH 3222), and acute kidney injury\* or acute renal failure (NNH 1657)

\*creatinine increase

<sup>1</sup>Whelton et al *Hypertension* 2024;81:2329-39; <sup>2</sup>Verdecchia et al *Hypertension* 2025;82:82:2067-71;

<sup>3</sup>Goupil et al *CMAJ* 2025;197:E549-64; Jones et al *Hypertension* 2025;152:e114-e218

# Hypertension: Not Just Drug Therapy

## *Dietary Modifications*

- Reduce intake of sodium
  - Goal is <1500 mg/day but aim for at least a 1000 mg/day reduction
  - 5-6 mm Hg systolic BP reduction
- Increase intake of potassium
  - from fruits (e.g., banana, avocado), vegetables (e.g., spinach, tomato), nuts, seeds, beans *not supplements*
  - Goal is 3500-5000 mg/day
  - 4-5 mm Hg systolic BP reduction
- Increase intake of fiber rich foods

# Hypertension: Not Just Drug Therapy

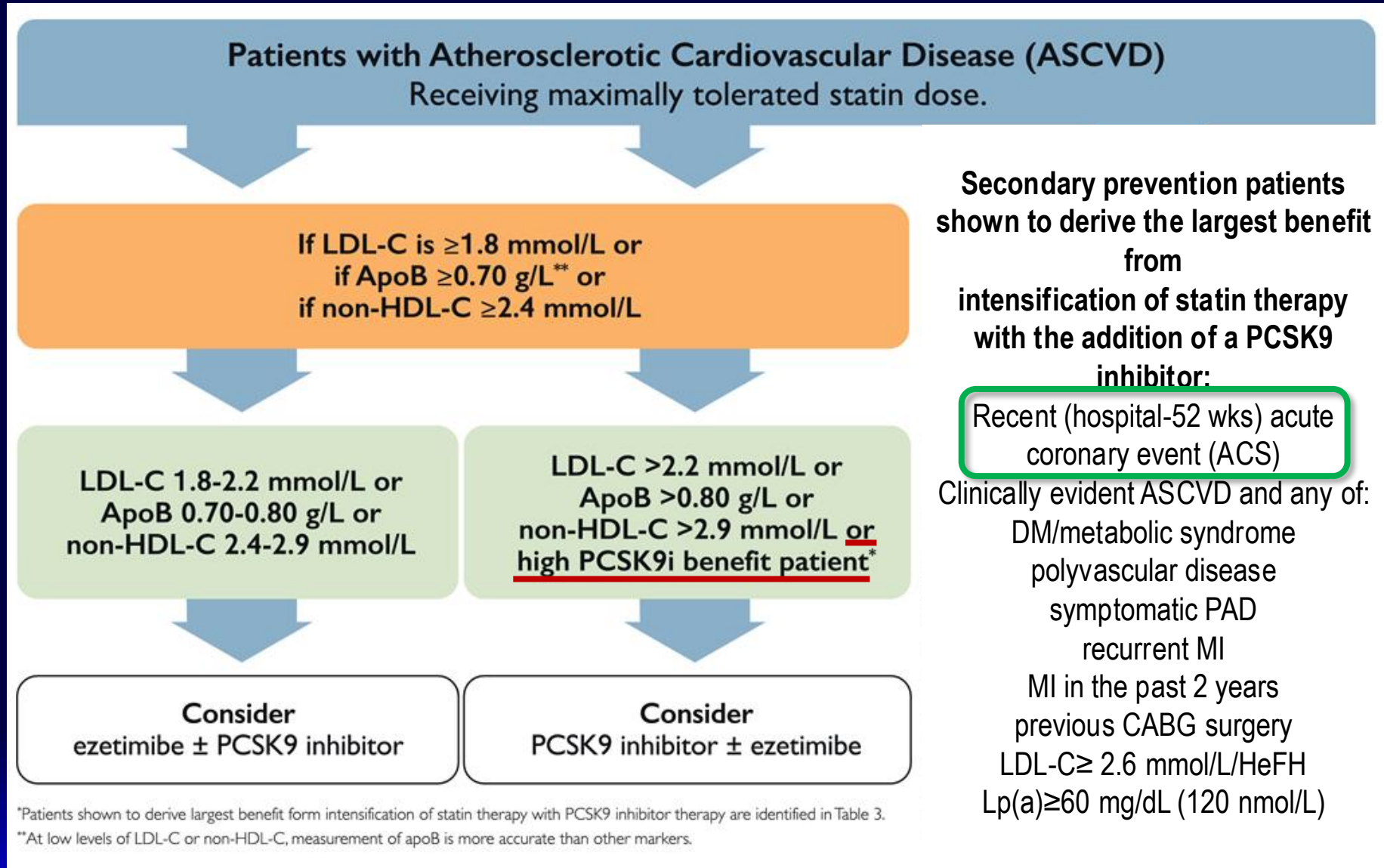
## *Lifestyle Modifications*

- Diet rich in fruits, vegetables, whole grains, with reduced content of saturated fat → 11 mm Hg systolic BP reduction
- Increased physical activity
  - Aerobic exercise → 5-8 mm Hg reduction in systolic BP
    - 90-150 min/week ~65%-75% hear rate reserve
  - Isometric resistance → 5 mm Hg reduction in systolic BP
    - 4 x 2 min (hand grip), 1 min rest between exercises, 30%-40% maximum voluntary contraction, 3 sessions/wk for 8-10 wks
  - Dynamic resistance → 4 mm Hg reduction in systolic BP
    - 90-150 min/week, 50-90% 1 rep maximum, 6 exercises, 3 sets/exercise, 10 repetitions/set

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

- **A**nti-thrombotic (antiplatelet[s] ± anticoagulant) therapy and **A**CE inhibitor (or **A**ngiotensin Receptor Blocker)
- **B**eta-blocker and **B**lood Pressure-lowering
- **C**holesterol-modifying therapy
- **D**iet, **D**iabetes-control/vascular protection, and **D**on't smoke
- **E**xercise
- **F**ollow-up

# 2021 CCS Guidelines for the Management of Dyslipidemia



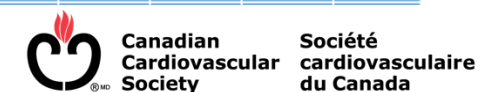
# Post-Acute Coronary Syndrome (ACS): Secondary Prevention Pathway



The CCS Secondary Prevention Pathway presents evidence-based guideline recommendations to support a patient's journey from discharge to outpatient follow-up after ACS. The pathway indicates when care goals should be implemented and the most responsible clinician. Links are provided to helpful resources.

Objective 2. Conduct necessary medical investigations to identify risk factors and optimize management								
Foundational Practice	Goals			Most Responsible Clinician				
	At Discharge	1 Week to 1 Month After Discharge	> 1 Month After Discharge	Discharging clinician*	PCC**	Nurse	Pharmacist	Dietitian
1. Identify risk factors by screening for/optimizing management of: 1.1. Diabetes 1.2. Dyslipidemia 1.3. Hypertension	<ul style="list-style-type: none"> <li>Screen for, or assess current management of, diabetes with HbA1c<sup>ii</sup> (Resource A)</li> <li>Assess/reassess recent LDL-C, HDL-C, triglycerides, non-HDL-C, and total cholesterol<sup>ii</sup> (Resource B)</li> <li>Assess Lp(a) if not yet done<sup>iii</sup></li> <li>Assess blood pressure<sup>iv</sup></li> </ul>	<ul style="list-style-type: none"> <li>Ensure discharge standards complete</li> </ul>	<ul style="list-style-type: none"> <li>If patient has diabetes, follow Diabetes Canada monitoring guidelines (Resource A)</li> <li>Repeat lipid panel (fasting to assess triglycerides) at 1 month and then (non-fasting) every 1 month if lipid lowering therapy intensification is required to achieve recommended thresholds<sup>iii</sup> (Resource B)</li> <li>Assess HbA1c at 3 months</li> </ul>	✓	✓		✓	

\* Discharging physician, or cardiologist/internist at follow-up (also includes nurse practitioner working with a specialist)  
 \*\* Primary care clinician (PCC) (family physician or nurse practitioner) or alternative clinician.  
 For patients without a PCC: Pathway care planning, interventions, and follow-up should be provided by an alternative clinician such as a cardiologist/internist OR hospital-based clinic (nurse practitioner, pharmacist or physician-led clinic), OR cardiac rehabilitation program. Regional resources and center-specific practices will determine the approach.



# 2021 CCS Guidelines for the Management of Dyslipidemia

Patients with Atherosclerotic Cardiovascular Disease (ASCVD)  
Receiving maximally tolerated statin dose.

## **RECOMMENDATION**

We recommend the use of icosapent ethyl to lower the risk of CV events in patients with ASCVD, or with diabetes and  $\geq 1$  CVD risk factors, who have an elevated fasting triglyceride level of 1.5-5.6 mmol/L despite treatment with maximally tolerated statin therapy.

*Strong Recommendation;  
High-Quality Evidence*

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

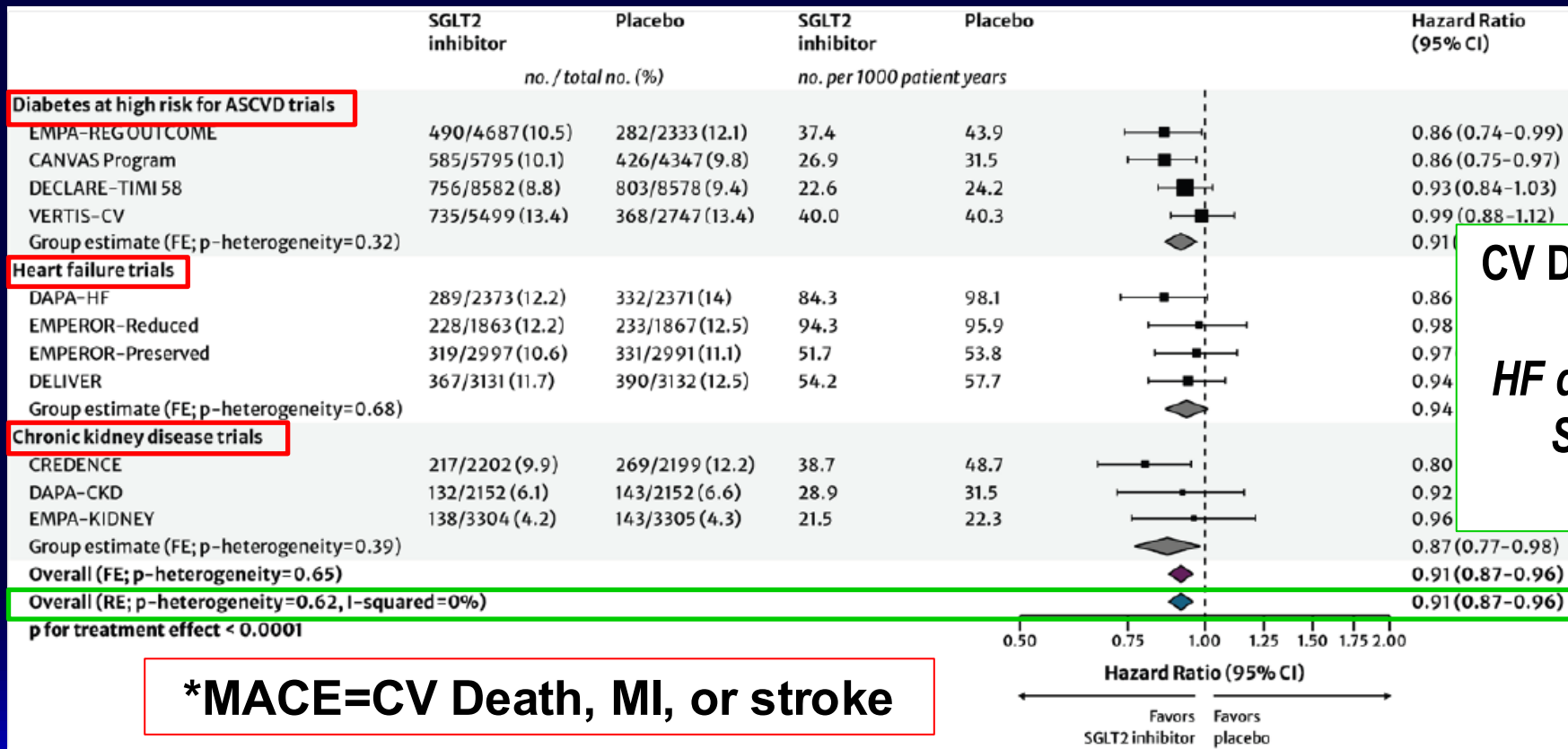
- **A**nti-thrombotic (antiplatelet[s]  $\pm$  anticoagulant) therapy and **A**CE inhibitor (or **A**ngiotensin Receptor Blocker)
- **B**eta-blocker and **B**lood Pressure-lowering
- **C**holesterol-modifying therapy
- **D**iet, **D**iabetes-control/vascular protection, and **D**on't smoke
- **E**xercise
- **F**ollow-up

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

- **A**nti-thrombotic (antiplatelet[s] ± anticoagulant) therapy and **A**CE inhibitor (or **A**ngiotensin Receptor Blocker)
- **B**eta-blocker and **B**lood Pressure-lowering
- **C**holesterol-modifying therapy
- **D**iet, **D**iabetes-control/vascular protection, and **D**on't smoke
- **E**xercise
- **F**ollow-up

# Sodium-Glucose Cotransporter-2 Inhibitors and Major Adverse Cardiovascular Outcomes (MACE)\*

Patients (n=78,607; 11 trials) with Type 2 Diabetes at high risk for ASCVD (54%), HF (26%), or CKD (20%); mean age 62-72 years, 34% women with T2D (80%), HF (36%), eGFR<60 ml/min (37%): canagliflozin, empagliflozin, dapagliflozin, ertugliflozin vs. placebo with 2-4 year follow-up



**CV Death: HR 0.86 (0.81-0.92);  
p<0.0001**  
**HF death: HR 0.68 (0.46-1.02)**  
**Sudden cardiac death:  
HR 0.86 (0.78-0.95)**


**\*MACE=CV Death, MI, or stroke**

# Cardiovascular Effects and Tolerability of GLP-1 Receptor Agonists


n=99,599 (21 trials) with established CV disease (e.g., history of HF or prior CV events), those at high risk (e.g., diabetes, obesity, or chronic kidney disease), or both; 8 GLP-1ras (lixisenatide, liraglutide, exenatide, semaglutide, efpeglenatide, dulaglutide, albiglutide, tirzepatide) vs. placebo/controls; mean follow-up 2.4 yrs

Endpoint	Incidence Rate Ratio (95% CI)
All-cause death	0.88 (0.84-0.92)
CV death	0.87 (0.81-0.92)
MACE	0.87 (0.83-0.91)
SAEs	0.91 (0.87-0.96)
Myocardial infarction	0.85 (0.78-0.94)
HF hospitalization	0.85 (0.75-0.97)
Infections	0.90 (0.85-0.96)


Consistent Results Across Subgroups




Diabetic status




Obese status



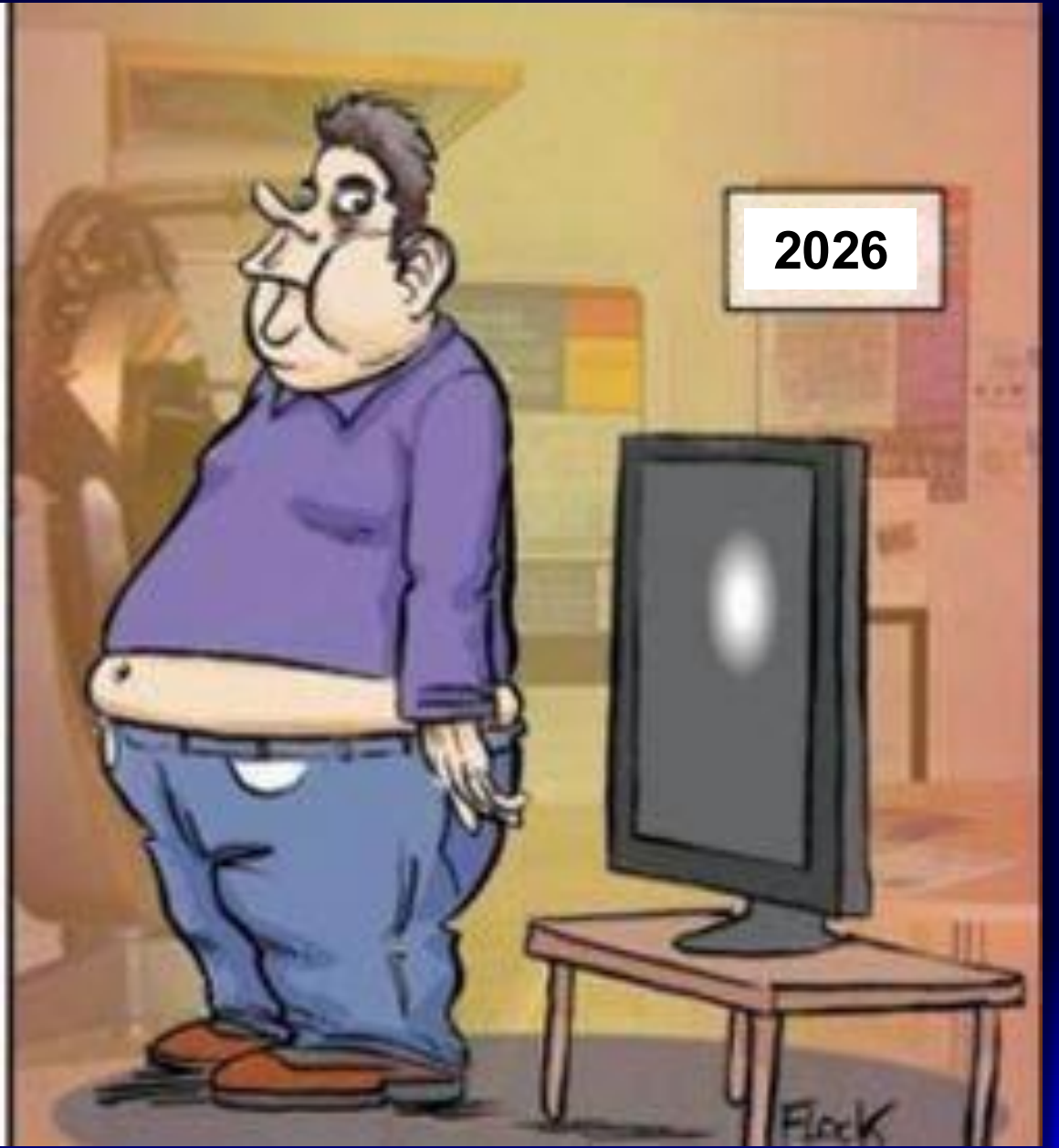
HF status



CKD status

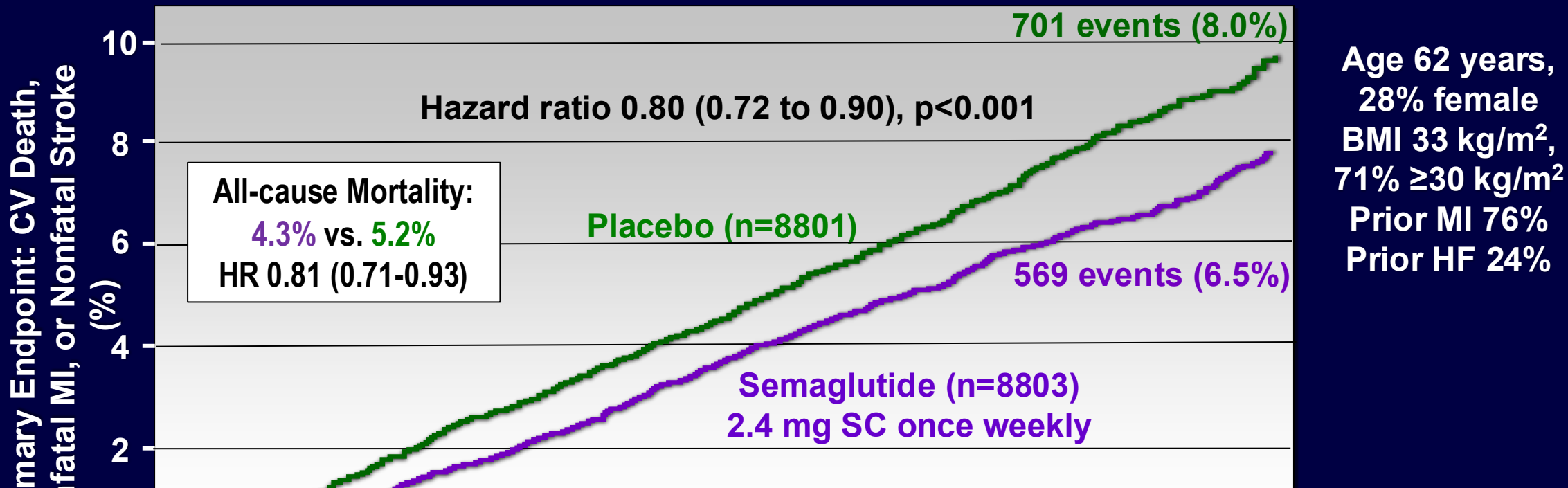


Type of GLP-1RA



# GLP-1ra Benefit in Obesity/Overweight and ASCVD

Age  $\geq 45$  yrs, BMI  $\geq 27$  kg/m<sup>2</sup>, and ASCVD (Prior MI, stroke, or symptomatic PAD [claudication with ABI  $< 0.85$ , peripheral artery revascularization, or amputation due to atherosclerotic disease]) *without DM*



cardioprotective effects of semaglutide independent of baseline adiposity and weight loss  
estimated 33% of MACE benefit mediated through waist circumference reduction  
→ suggests some mechanisms for benefit beyond adiposity/weight loss reduction

**Deanfield et al *Lancet* 2025;406:2257-68**

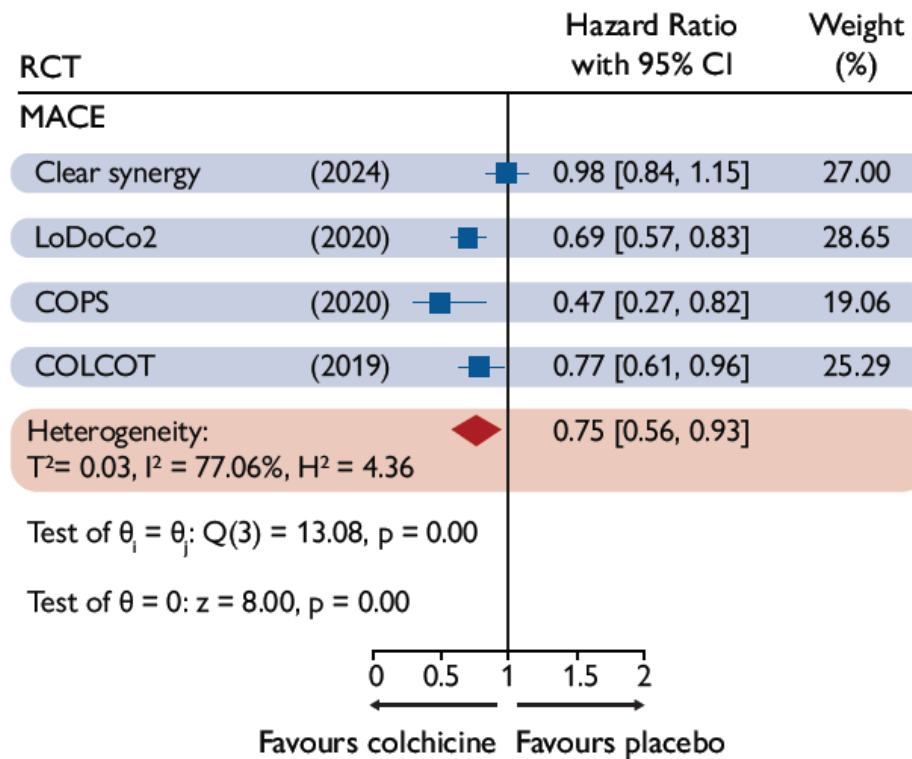
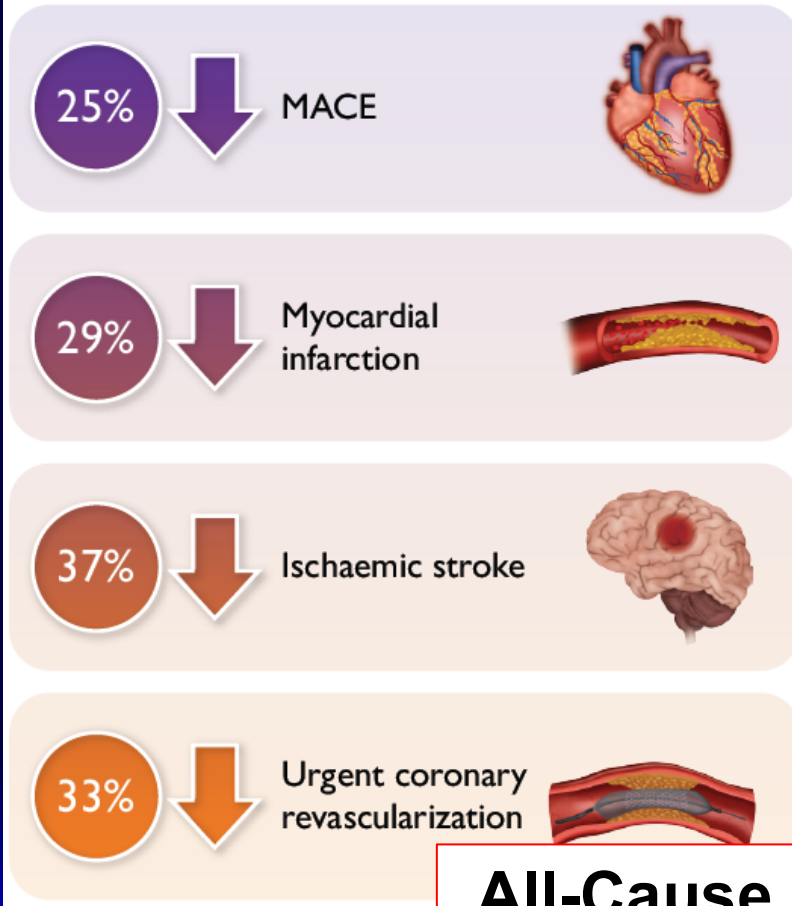
# ABCDEFs in Secondary Prevention of Coronary Artery Disease

- **A**nti-thrombotic (antiplatelet[s] ± anticoagulant) therapy and **A**CE inhibitor (or **A**ngiotensin Receptor Blocker)
- **A**nti-inflammatory therapy
- **B**eta-blocker and **B**lood Pressure-lowering
- **C**holesterol-modifying therapy
- **D**iet, **D**iabetes-control/vascular protection, and **D**on't smoke
- **E**xercise
- **F**ollow-up

*Adapted from Cohen Lancet 2001;357:972-73*

# Low Dose Colchicine in ASCVD

This updated systematic review and meta-analysis of 6 randomized controlled trials in 21 800 patients with vascular disease (post-myocardial infarction, stroke, and stable CAD) demonstrated that colchicine (compared to medical therapy only) reduced:



**All-Cause Mortality: Risk Ratio 1.01 (95% CI 0.80-1.28)**  
**Non-Cardiovascular Mortality: 1.06 (0.76-1.54)**

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

- **A**nti-thrombotic (antiplatelet[s] ± anticoagulant) therapy and **A**CE inhibitor (or **A**ngiotensin Receptor Blocker)
- **B**eta-blocker and **B**lood Pressure-lowering
- **C**holesterol-modifying therapy
- **D**iet, **D**iabetes-control/vascular protection, and **D**on't smoke
- **E**xercise
- **F**ollow-up

# Recommendations on Interventions for Tobacco Smoking Cessation

**RECOMMENDATIONS**

- **Know** your patients' smoking status
- **Encourage** all patients who smoke to quit
- **Offer** 1 or more recommended smoking cessation interventions
- **Engage** in shared decision-making to determine best option(s)

**Interventions**

**Strongly recommended**

- **Behavioural**
  - Primary care advice
  - Individual or group counselling by trained cessation counsellor (in person or by telephone)
  - Text messaging interventions
  - Self-help materials
- **Pharmacotherapy**
  - Bupropion
  - Cytisine
  - Nicotine replacement therapy (patch, gum, lozenges, inhaler and/or spray)
  - Varenicline
- **Combined behavioural and pharmacotherapy interventions**

**Conditionally recommended**

- Interactive computer-based or online programs with direct behavioural support

**Strongly recommended against**

- Acupuncture
- Hypnotherapy
- Laser therapy
- Continuous auricular stimulation
- Electrostimulation
- St. John's Wort
- S-adenosyl-L-methionine

**Conditionally recommended against**


- Interactive computer-based or online programs without additional support
- E-cigarettes\*

**We suggest against using e-cigarettes,\* except in people who:**

- have unsuccessfully tried other interventions
- are unwilling to try other interventions
- express a strong preference for e-cigarettes

No e-cigarettes have been approved for smoking cessation in Canada.

\*With or without nicotine.



Thombs et al, for the  
Canadian Task Force on  
Preventive Health Care  
CMAJ 2025;197:E846-61

# ABCDEFs in Secondary Prevention of Coronary Artery Disease

- **A**nti-thrombotic (antiplatelet[s] ± anticoagulant) therapy and **A**CE inhibitor (or **A**ngiotensin Receptor Blocker)
- **B**eta-blocker and **B**lood Pressure-lowering
- **C**holesterol-modifying therapy
- **D**iet, **D**iabetes-control/vascular protection, and **D**on't smoke
- **E**xercise → Referral to Cardiac Rehabilitation program
- **F**ollow-up

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www.glasbergen.com



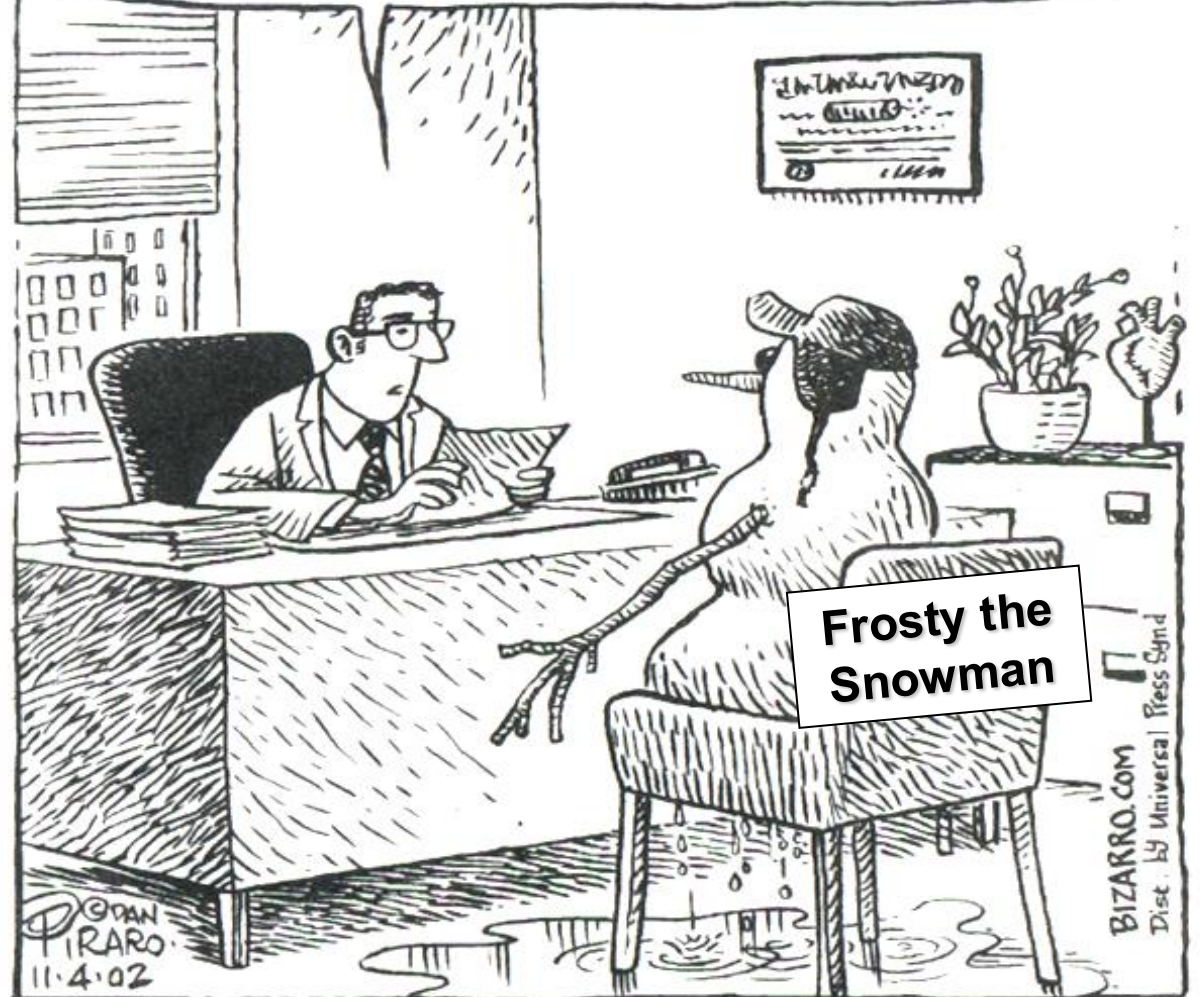
**“What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?”**



ONE SIZE DOES NOT FIT ALL

BIZARRO

Based on these test results,  
you've got 15 minutes to live.



Frosty the  
Snowman

DAN BIZARRO  
11.4.02

BIZARRO.COM  
Dist. by Universal Press Synd.



Dr. Shaun Goodman



Dr. Noah Ivers

# **CCS Secondary Prevention Pathway Project: A new resource to support post-ACS care**



Q&A



Dr. Joseph Ricci

# Cardiac Rehabilitation in our community

# Financial disclosure

<b>Direct financial relationships including grants and honoraria</b>	<ul style="list-style-type: none"><li>• Amgen</li><li>• Bayer</li><li>• Boehringer-Ingelheim</li><li>• Novartis</li><li>• Servier</li><li>• Pfizer</li><li>• Sanofi</li><li>• Servier</li><li>• HLS Therapeutics</li></ul>
<b>Membership on advisory boards or speakers' bureaus</b>	Medical Education: <ul style="list-style-type: none"><li>• Amgen</li><li>• Bayer</li><li>• Boehringer-Ingelheim</li><li>• Janssen</li><li>• Novartis</li><li>• Pfizer</li><li>• Servier</li><li>• HLS Therapeutics</li></ul>
<b>Other</b>	Corcare Quality and Education Director

# Learning Objectives

During this session, participants will analyze and interpret the:

- Value of secondary prevention in patients with ASCVD
- Individualized treatment strategies to optimize cardiovascular risk through rehabilitation in patients with ASCVD
- Treatment options that support cardiovascular protection as part of a comprehensive for rehabilitation approach

# Global Cardiovascular Risk

## In one Generation

- Global CVD mortality has fallen >50%
- Myocardial Infarction Mortality declined from 30% to 4%
- > 80% decline in cardiovascular risk factors

55% of the outcome improvement  
Due to medical secondary prevention therapies

# Why Does Secondary Prevention Matter?

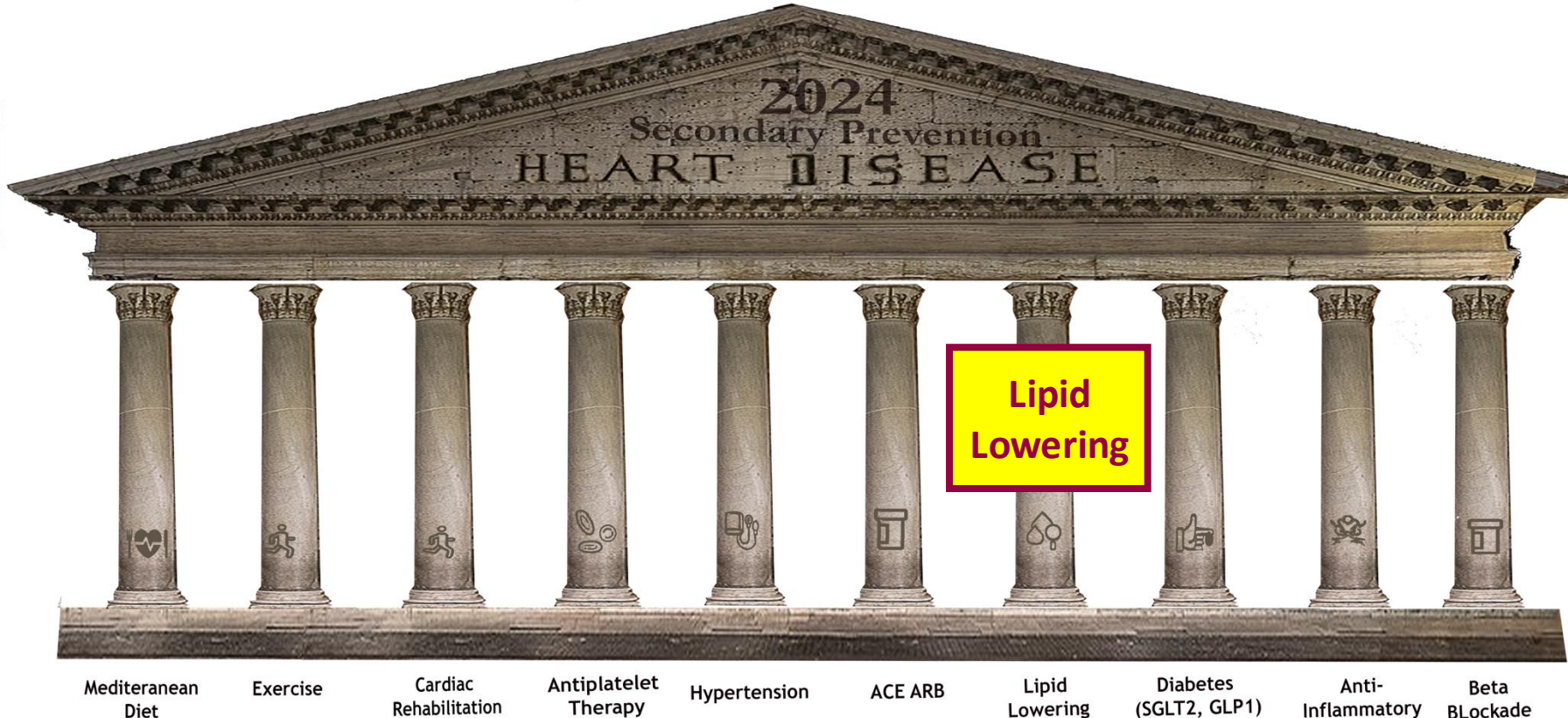
- Vascular Event
- Symptoms
- Imaging evidence
- Risk Score

## Symptoms and Events

Cardiac	MI, CHF,
Neurologic	Stroke, TIA
Renal	CKD
Vascular	Claudication, gangrene

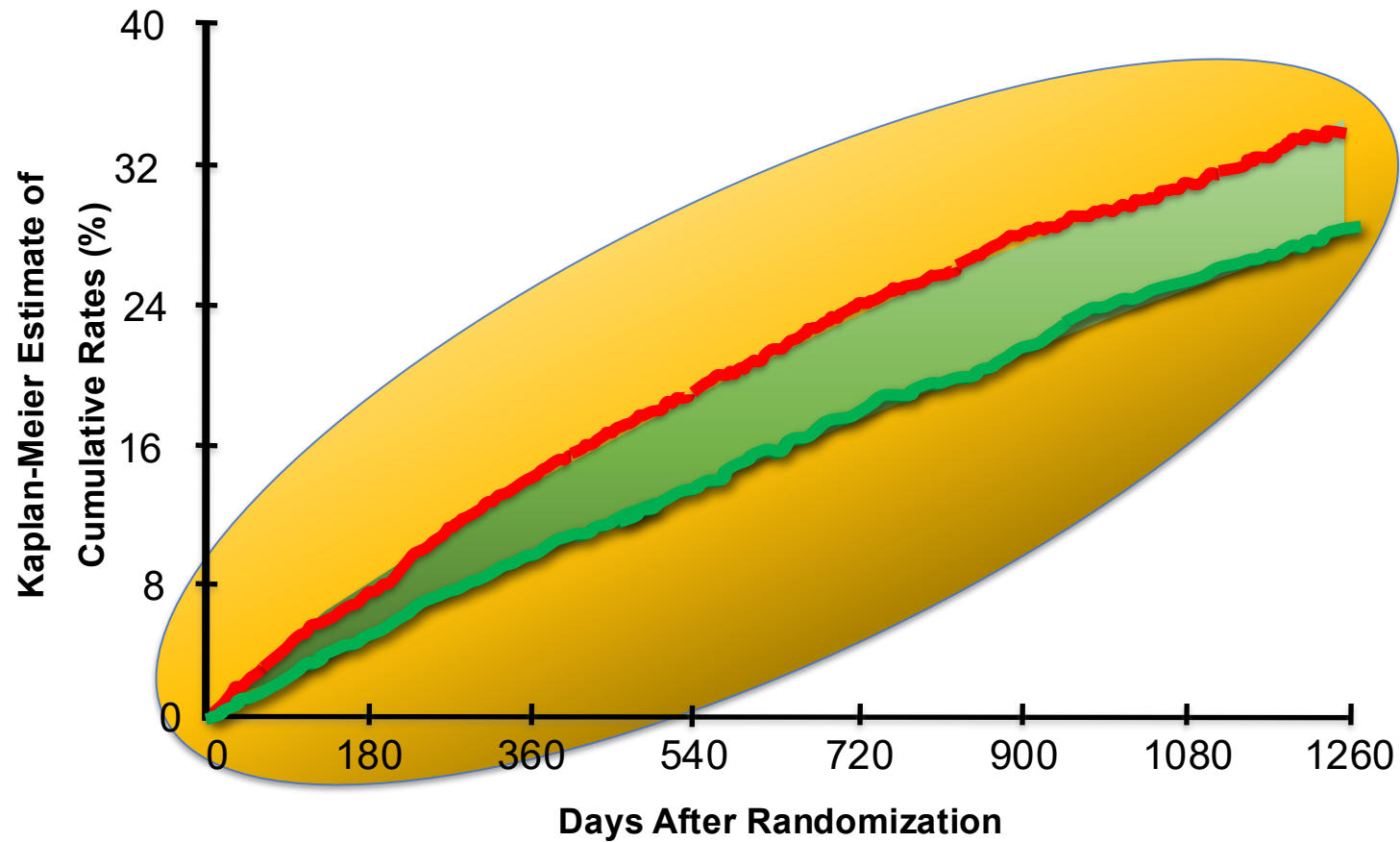
↓ Quality of Life  
↓ Survival

# The Pillars Of Prevention



	Risk Reduction
Exercise	25%
Diet	25%
Hypertension	25%
ASA/ Anti-Platelet	25%
Lipid Lowering	>30%
ACE	25%
SGLT2	25%
GLP1	20%
Colcicine	25%
Beta Blockers	15%
<b>Overall Benefit</b>	<b>+80%</b>

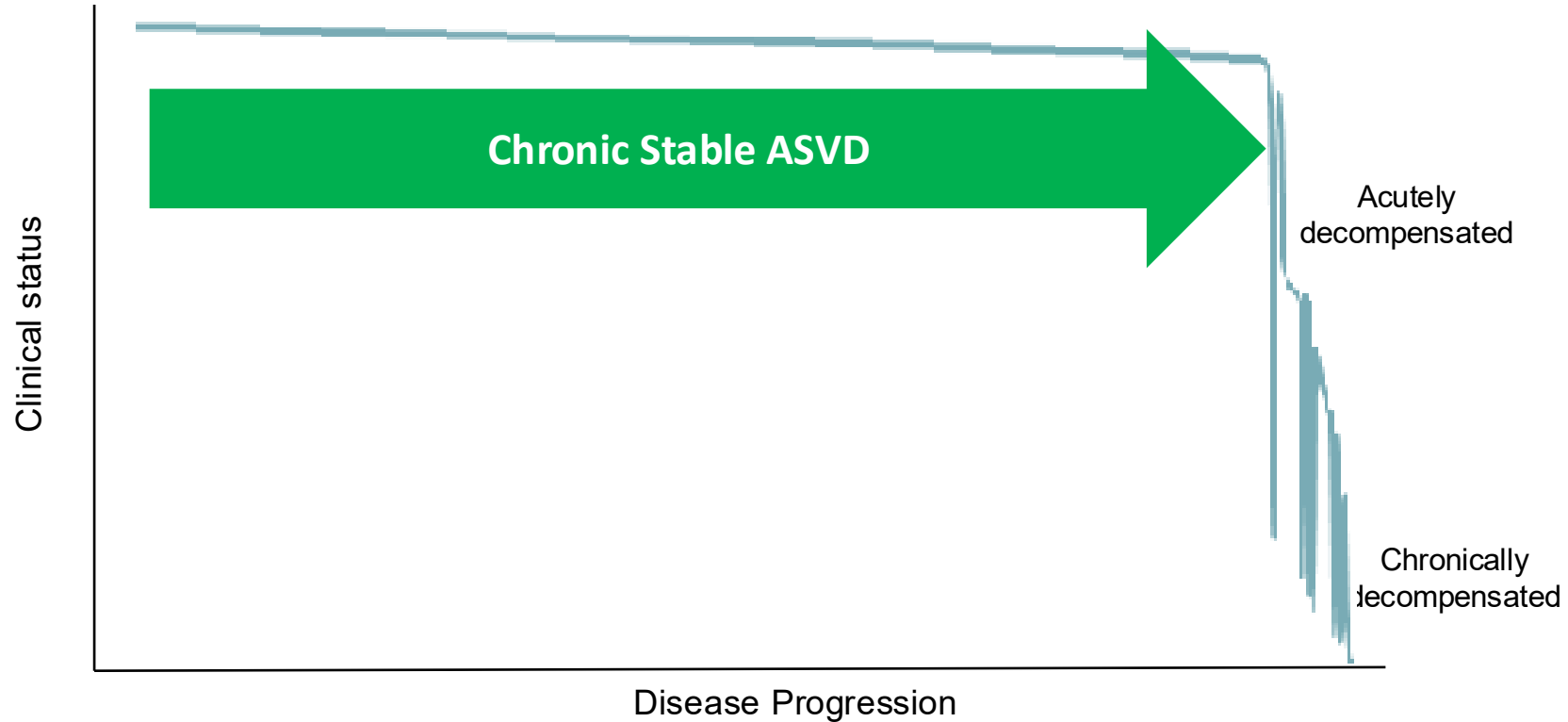
# Time Under Treatment Matters



Benefits start early

& increase over time

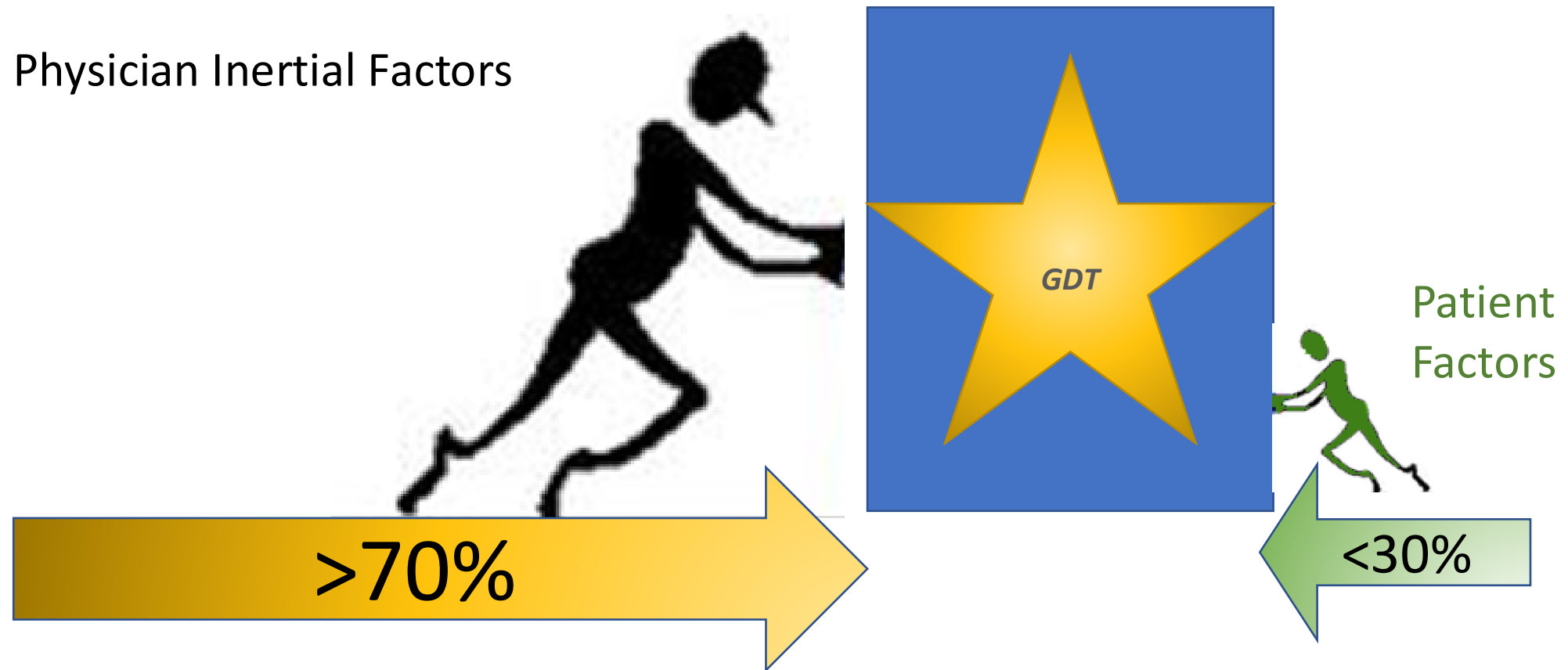
# Reframe the Perspective as Lifelong!



## ASCVD as a Chronic Condition

# Providers Drive Good Patient Outcomes!

## Focus on Positives not the negative (Inertia)

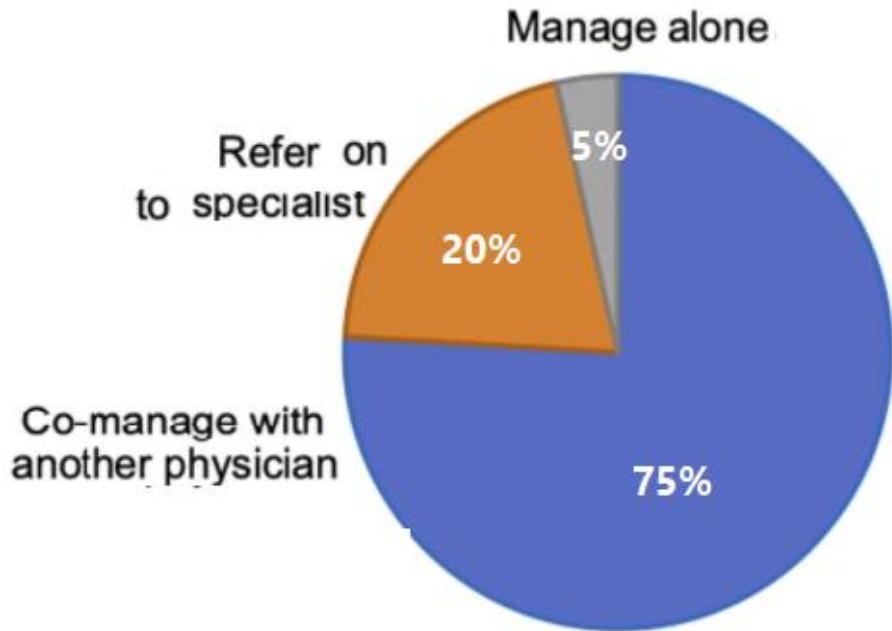


# Secondary Prevention

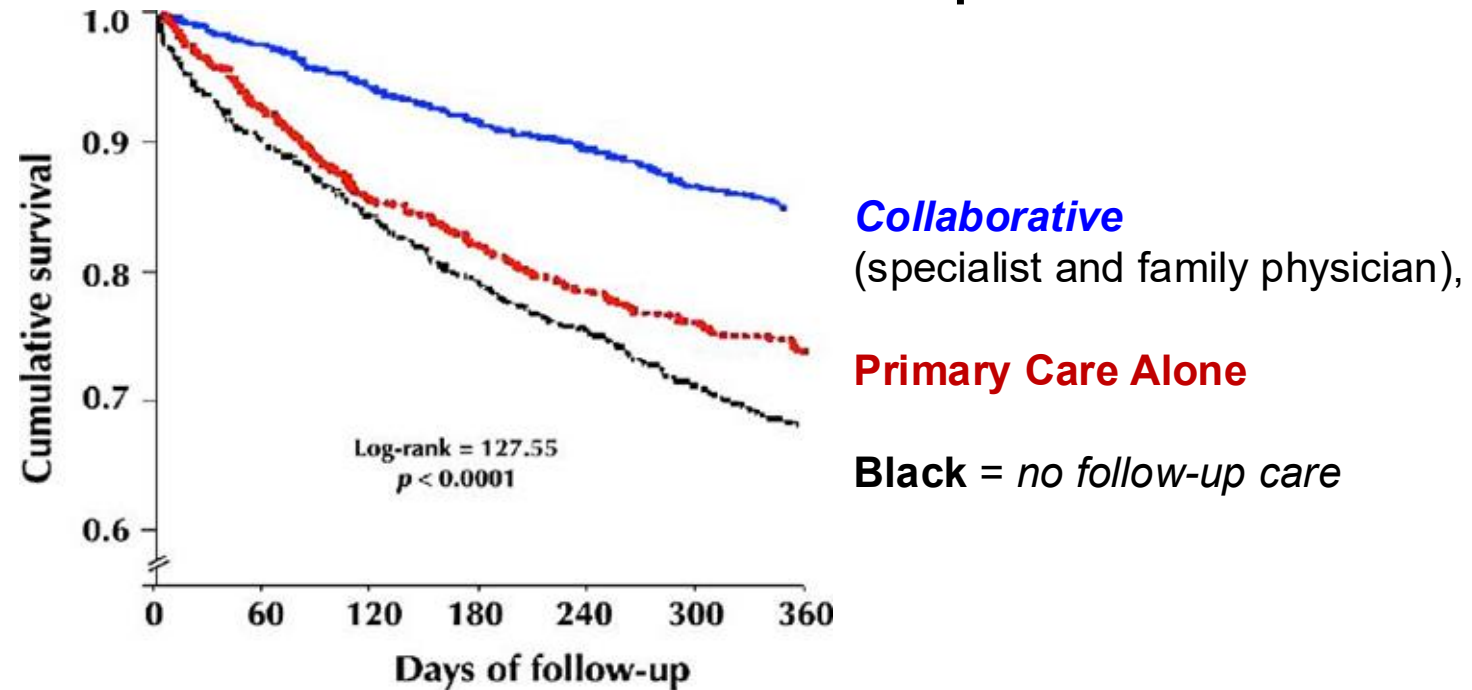


# Expect Primary Care & Specialist Alignment

## Co-Management

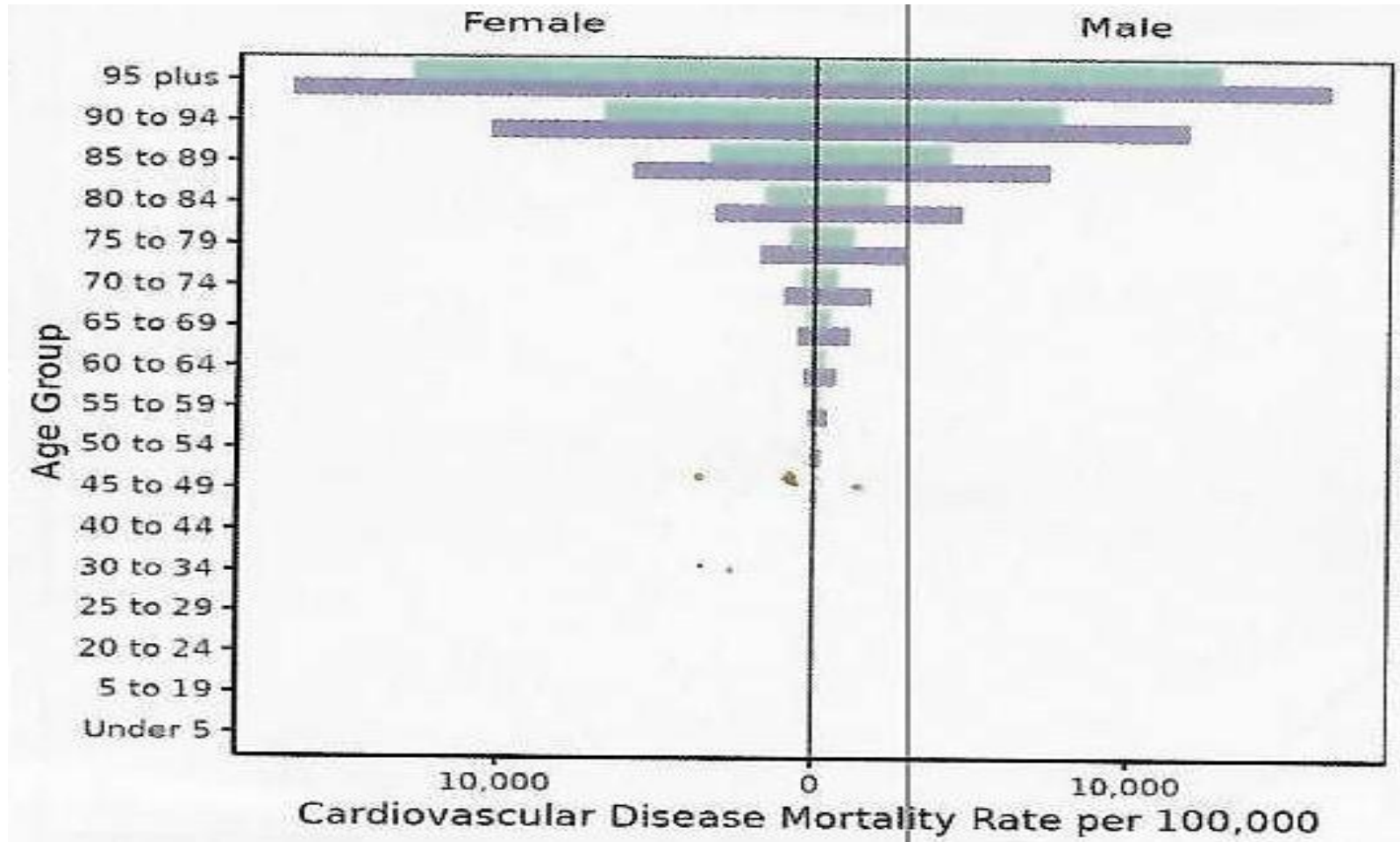


## - Provide Collaboration Improves



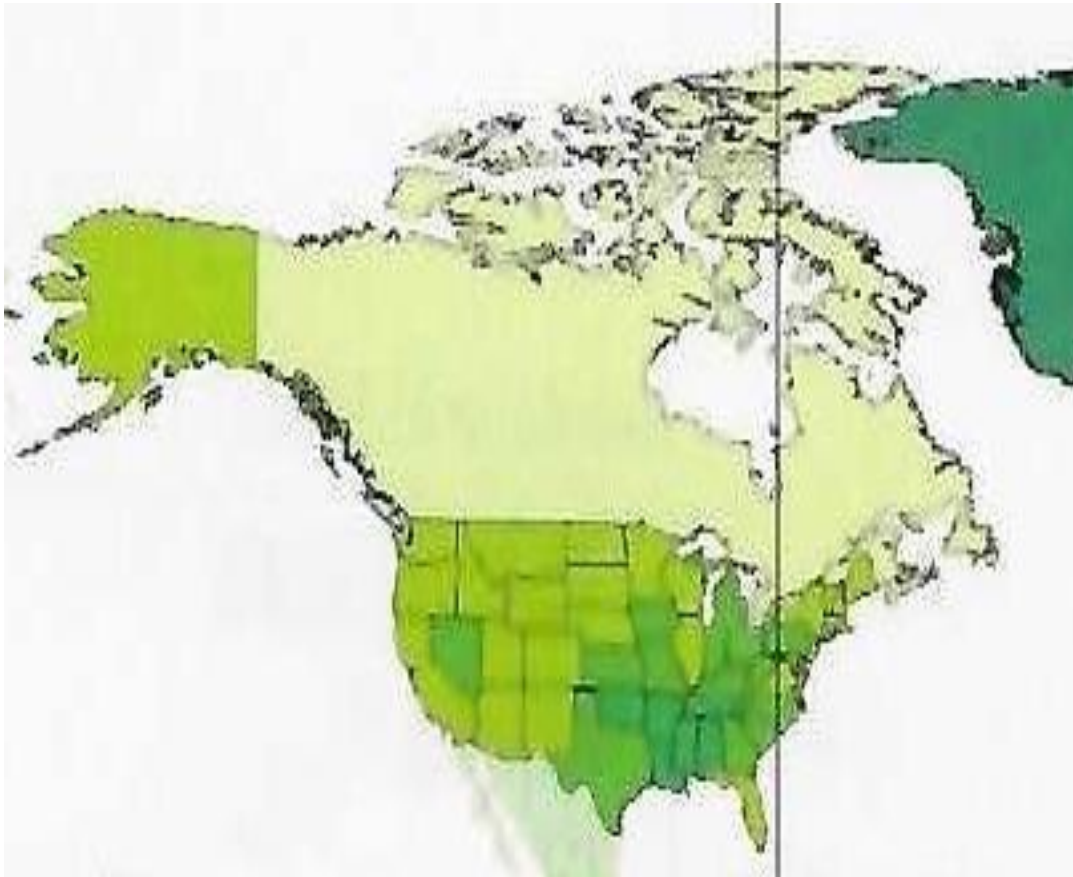


# Cardiovascular Risk is Falling

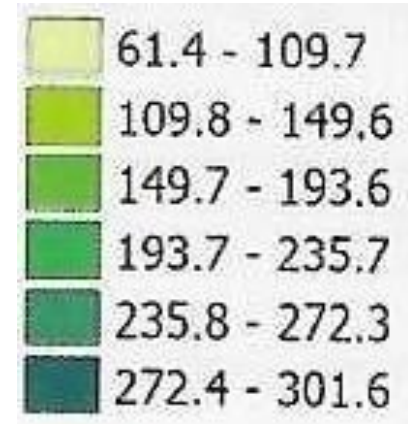


● 2001  
● 1991

# Canada As A Leader



Age Standardized Cardiovascular Mortality  
Per 100,000 population > 40 years of age



# Every Day Counts

**INITIATE** Secondary Prevention Strategies

From the **FIRST DAY** the Diagnosis of ASCVD is made

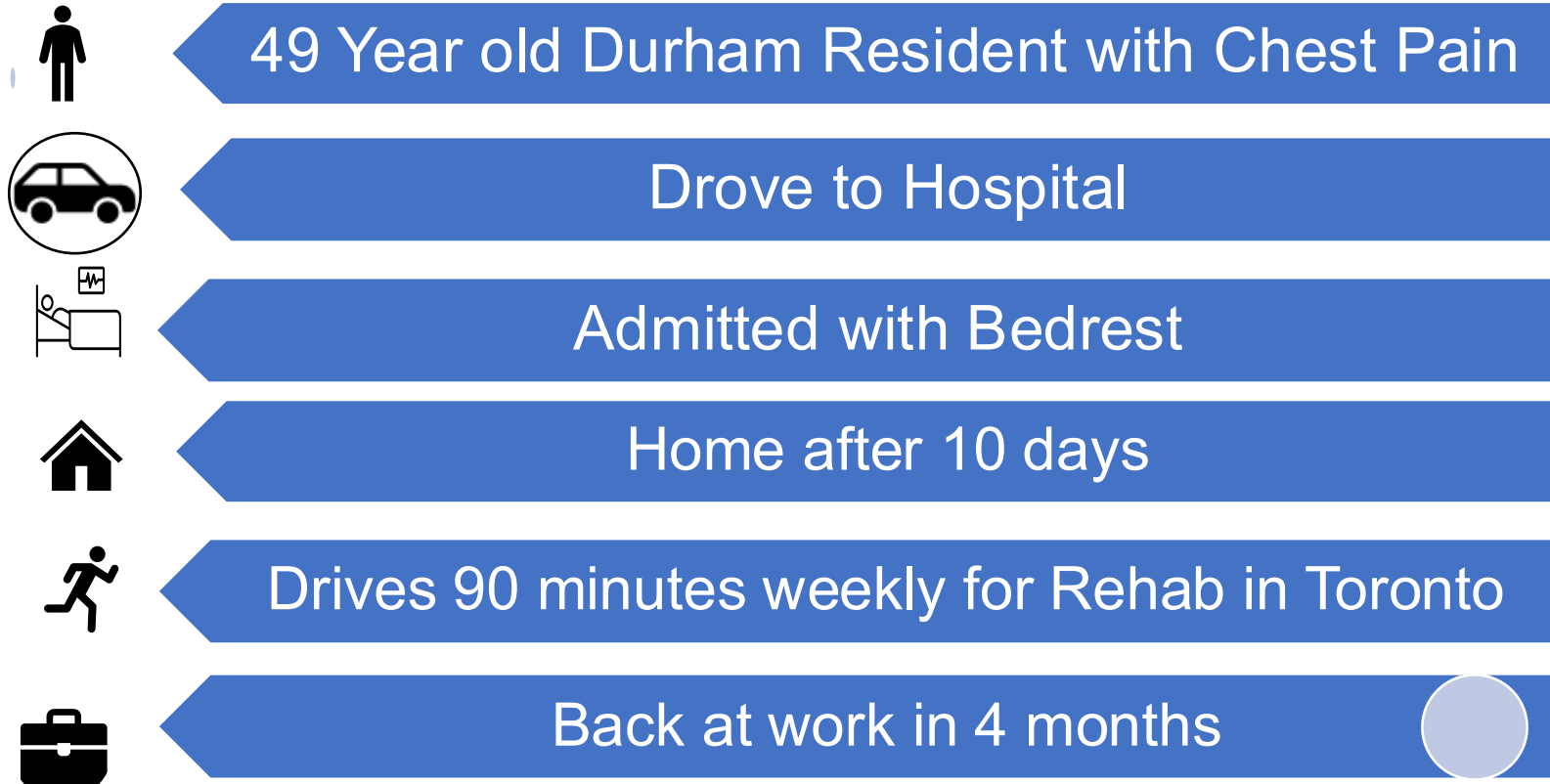
and at **EVERY VISIT**

For the **REST OF YOUR PATIENTS' LIFE**

# Our Community Story

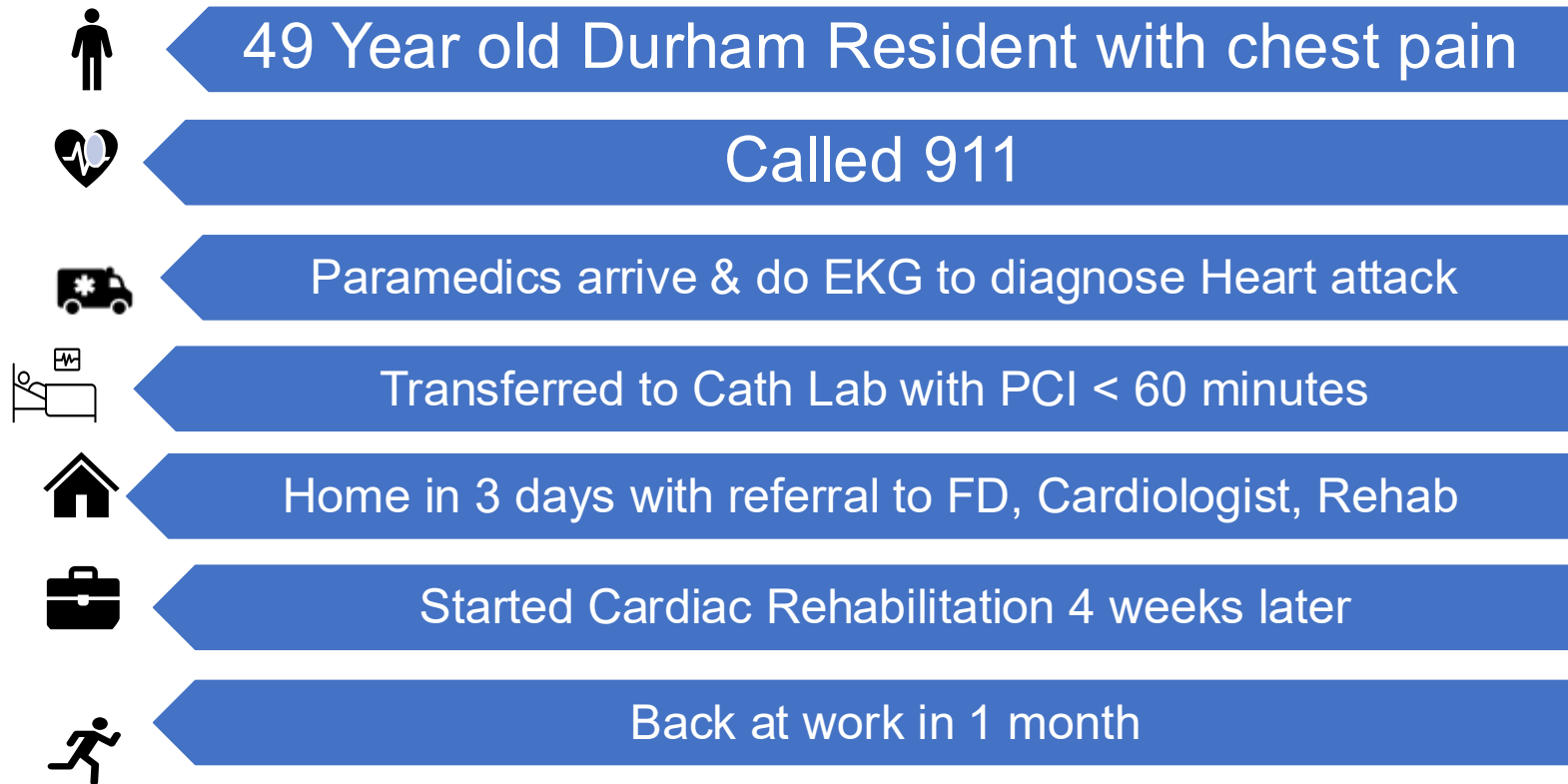
# How Far We Have Progressed

## Patient Journey: 1999



# How Far We Have Progressed

## Patient Journey: 2024



# How Did We Get Here



# A COMMUNITY JOURNEY



# Patient Leadership



“Why doesn’t a Cardiac Center offer this life-saving service closer to home?”

# CENTRAL EAST CARDIOVASCULAR REHABILITATION

1997: Opening of Central East Cardiovascular Rehab Program



**Peter Lobraico**  
Donor

**Terry Swabey**  
CR manager

**Vince Lobraico**  
Board Member

**Phil Diamond**  
Volunteer

**Gloria Zive**  
Hospital VP

Board member

**Robin Campbell**  
Toronto Rehab

**Joe Ricci**  
Cardiology

**Terry Kavanagh**

Toronto Rehab (regrets)

# 3 DECADES OF LOCAL AND PROVINCIAL LEADERSHIP



**International Leadership:** Dr Terry Kavanaugh of the Toronto Rehabilitation service



**Community Advocacy:** Mr. Philip Diamond and Lobraico Family Advocate for Cardiac Rehabilitation Services for the Eastern GTA



**Public Advocacy** CRNO Forms as advocate for a Ontario Wide Cardiovascular Rehabilitation Service



**Ministry of Health:** Sponsoring expert panels and the Ontario Pilot Study Evidence for the feasibility and value of public CRSP delivery system

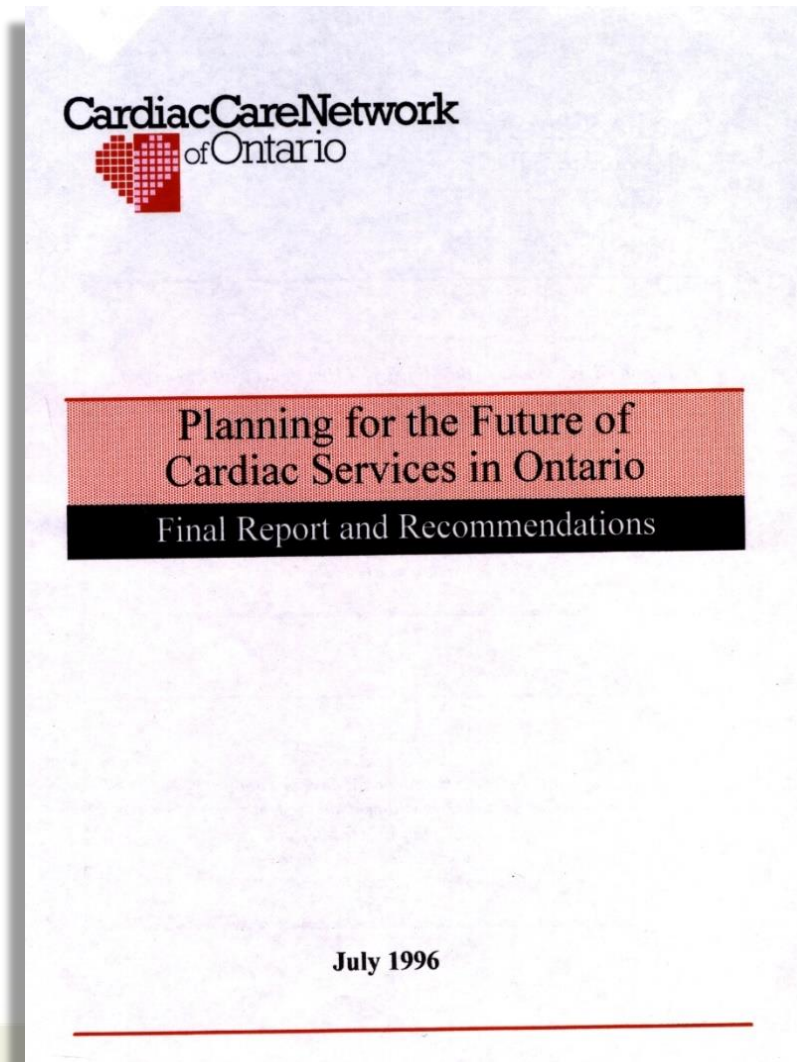


**CELHIN** CECR Imagined as a unique population health policy for the CELHIN



**CECR Research** CECR forms Population Health Research Committee with Western University Confirms the regional CRSP model is cost effective

# CCN VISION STATEMENT 1996

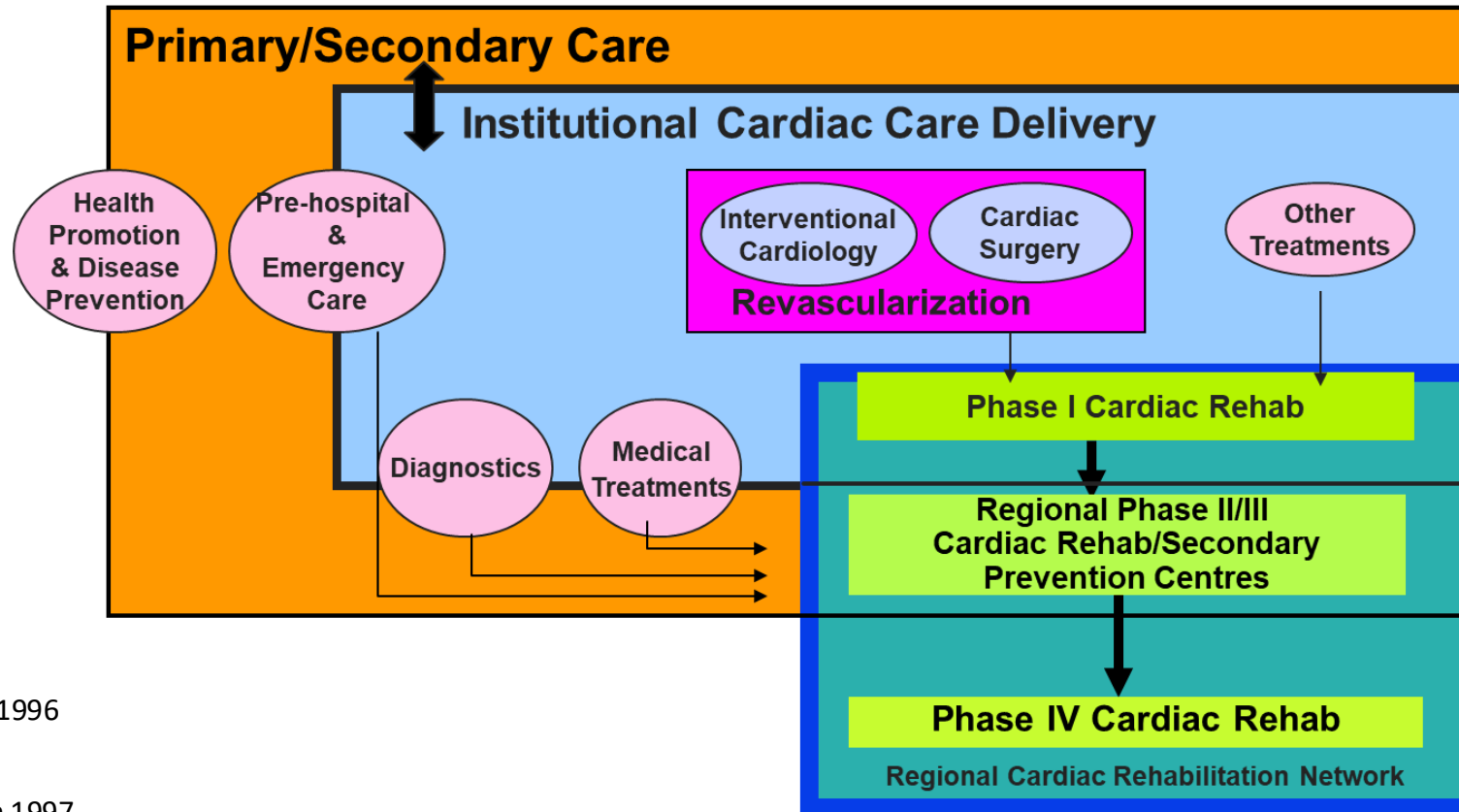


“That a time limited process be established, involving Ontario experts in Cardiac Rehabilitation to develop and recommend a specific provincial strategy for cardiac rehabilitation.....

May include.....

- ❖ Model
- ❖ Needs assessment...
- ❖ Criterion for siting...
- ❖ Options for funding...

# A Regional Model For The Delivery Of Cardiac Rehabilitation And Secondary Prevention Services In Ontario



Masters Proposal: Terry Swabey 1996

Academic Supervisor: Joe Ricci

Presentation to CCN board March 1997

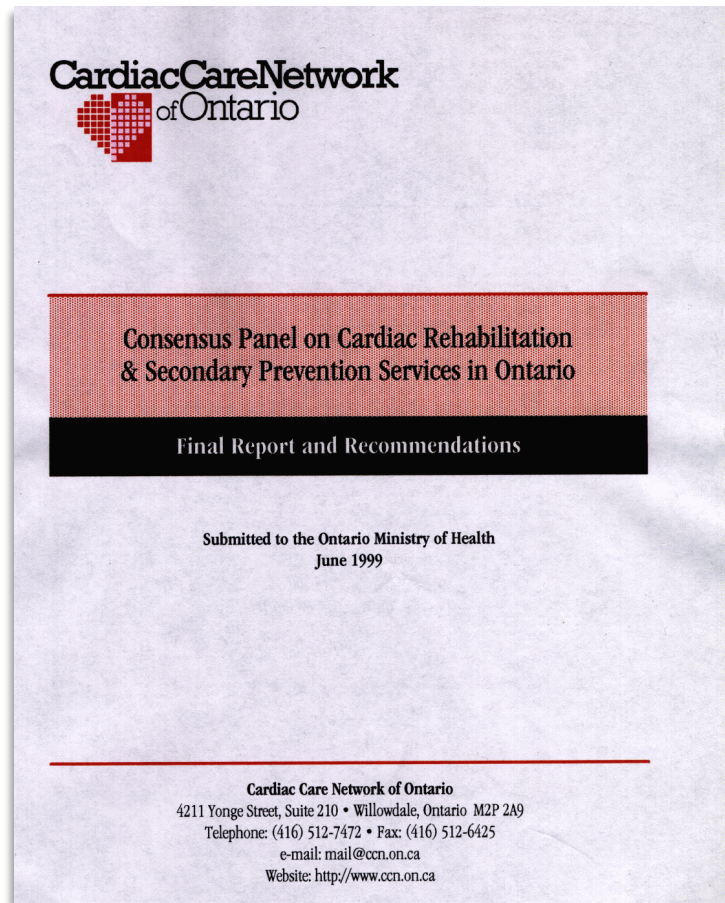
And Ontario Working Group Terry Swabey

# CRNO (Cardiac Rehabilitation Network of Ontario) Advocacy For Cardiovascular Rehabilitation

## CRNO Presentation to CCNO board, March 1997

Joseph Ricci	Centenary Cardiac Care
Shaun Goodman	Saint Michaels Hospital
Terry Kavanagh	Toronto Rehabilitation Center
Robert McKelvie	McMaster University
Larry Patrick	London Health Sciences
Judy Poupore	Laurentian University CR
Pat Scholey	Saint Michaels Hospital
Terry Swabey	Centenary Cardiac Care

# Expert Panel Recommends Province Wide Service



## CRNO Participants

Robin Campbell

Terry Fair

Shaun Goodman

Terry Kavanaugh

Keith Kwok

Bob McKelvey

Joe Ricci

Terry Swabey

Neville Suskin



# ONTARIO CARDIAC REHABILITATION PILOT PROJECT 2000-2001



Feb 2000  
Minister of Health Elizabeth Witmer



## Announces Ontario Pilot Study to test Feasibility of the Expert Panels Recommendations

- \$9.6 million 21-month Pilot Chaired by Neville Suskin
- Double provincial CRSP volume to 10,000 patients annually < 6 months
- 24 (8 new) Pilot sites
- Provincial oversight committee to ensure standard model of care delivery
- Provincial patient database (CCN, ICES)



# ONTARIO CARDIAC REHABILITATION PILOT PROJECT

17 sites, 9796 patients

36%

more patients at exercise targets

20%

more patients had resolution of angina

12%

more patients at lipid targets

75%

patients on appropriate medications

15%

improvement in quality of life, anxiety & depression

< 30 minute drive time correlated with Positive outcomes



# ONTARIO CARDIAC REHABILITATION PILOT PROJECT

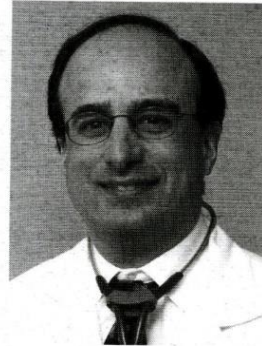
## The Regional Integrated strategy was highly effective:

- ✓ Implemented across broad geographic & practice settings
- ✓ Improves the health of Ontarians with cardiovascular diseases
- ✓ Improves access to cardiac rehabilitation services
- ✓ Coordinates & standardizes care across the Province
- ✓ Cost effective

**“The reduction of risk of hospitalization  
...could yield substantial savings to the health care system....”**

# CRNO National Recognition

## Harold N Segall Award 2002 Canadian Cardiovascular Society



Dr. Joseph Ricci

Dr. Harold N. Segall  
Award of Merit

*This award honours the late Dr. Harold N. Segall, a founding member of the CCS who for many years served as the Society's Archivist. Recipients are an individual, group or organization that has contributed significantly to the prevention of cardiovascular disease or the promotion of cardiovascular health in Canadians.*

Dr. Ricci gathered the initial information and organized the political will to push the Ontario Government to develop a cardiac rehabilitation pilot project. He was a founding member of the Cardiac Rehabilitation Network of Ontario (CRNO) and was a primary panelist on the CRNO Cardiac Rehabilitation Services document which served as a basis for expansion of cardiac rehabilitation services throughout Ontario. He also organizes an annual educational cardiac rehabilitation symposium for professionals within the field and is a recipient of the Award of Excellence for Quality Management from the College of Physicians and Surgeons of Ontario for his leadership in this area.

# 2001-2010 MOHTLC Policy Redirection

## Cardiovascular Rehabilitation Contracts



Keep trying. Stay humble,  
Trust your instincts. Most  
importantly, act. When you  
come to a fork in the road,  
take it.

Yogi Berra

# A REGION WIDE SERVICE IMAGINED FOR CELHIN

## A NEW STANDARD

### CE-LHIN Leadership

### A 'Real World' Region Wide Implementation of the Ontario Pilot



#### Regional cardiovascular rehab service will improve access and save lives

Joint News Release – July 25, 2011

Patients in Durham Region and Scarborough will now have greater access to co-ordinated cardiovascular rehabilitation services after the Board of the Central East LHIN approved \$1 million in funding to support the integration of the cardiovascular rehabilitation programs at Rouge Valley Health System (RVHS) and Lakeridge Health. The two hospitals will work together to deliver a groundbreaking regional cardiovascular rehabilitation and secondary prevention program, which will provide services annually to an additional 680 patients per year, or a total of 1,980 residents in their communities.

# CENTRAL EAST CARDIOVASCULAR REHAB

1997: Opening of Central East Cardiovascular Rehab Program



Peter  
Lobraico  
Foundation

Terry  
Swabey  
CR manager

Vince  
Lobraico  
Board Member

Phil  
Diamond  
Volunteer

Gloria  
Zive  
Hospital VP Board member

Robin  
Campbell  
Toronto Rehab

Joe  
Ricci  
Cardiology

2024: Central East Cardiovascular Rehab Program

- The largest service in Canada
- The only region wide community wide service
- Serves the entire central east region of Ontario
- Serves nearly 4,000 individuals with vascular disease per year

# OVERVIEW OF CENTRAL EAST CARDIOVASCULAR REHABILITATION

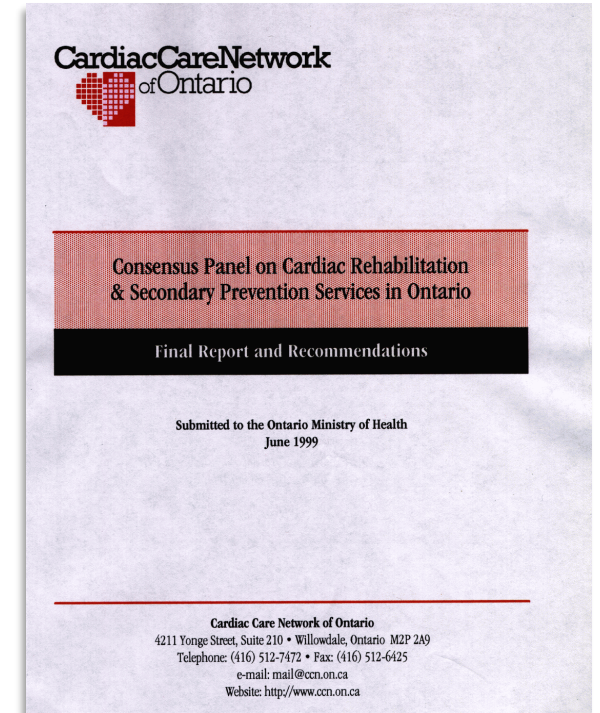
# Definition of Cardiovascular Rehabilitation

Integrated multi-factorial interventions

to enhance and maintain the physical, psychological and vocational status

Of individuals with established vascular disease or at high risk for the development of vascular disease .....

to prevent disease progression and recurrence



# HOW IS CARDIOVASCULAR REHAB ORGANIZED?

Central East  
**REGIONAL  
 CARDIOVASCULAR  
 REHAB**

Regional Cardiovascular Rehab Referral

**Patient Information**

Last name: \_\_\_\_\_ First name: \_\_\_\_\_ Gender:  Male  Female  
 Street address: \_\_\_\_\_ City: \_\_\_\_\_ Postal code: \_\_\_\_\_  
 Health card number: \_\_\_\_\_ Date of birth (DDMMYY): \_\_\_\_\_  
 Phone number: \_\_\_\_\_ Email: \_\_\_\_\_

**Indication for Referral** (Established vascular disease or heart failure)

Coronary artery disease  Congestive heart failure  Peripheral vascular disease  
 Angina  Cardiomyopathy  Non-debilitating stroke or TIA  
 Angioplasty or Bypass surgery  Heart transplant  Carotid stenosis  
 Myocardial infarction  Valve surgery  Renovascular disease  
 Admission acute coronary syndrome  Pacemaker/Defibrillator  Diabetes > 55yo + 2+ risk factors

**Risk Factors**

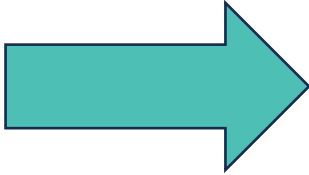
Family history  Diabetes  Hypertension  Hyperlipidemia  
 History of smoking  Obesity  Sedentary

**Referral by**

Referred by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Name (print please): \_\_\_\_\_  
 Phone number: \_\_\_\_\_ Fax number: \_\_\_\_\_ Work email: \_\_\_\_\_

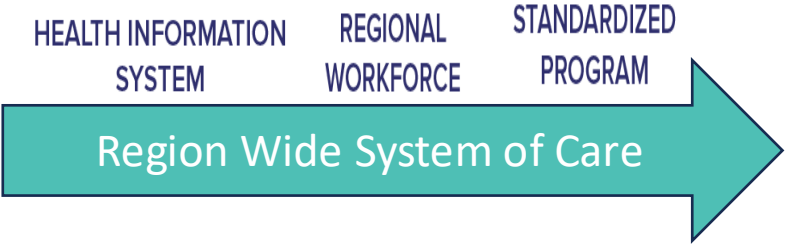
Referral to cardiovascular rehab **includes** a fitness assessment

Please send completed referral and clinical notes to [cardiacrehabbooking@shn.ca](mailto:cardiacrehabbooking@shn.ca) or fax to 416-281-7290  
 Please use One Mail Direct or password encryption for email transmission  
 For any other enquiries, please phone 416-281-7022 or (Toll Free) 1-855-448-5471  
[getthehearthealthy.ca](http://getthehearthealthy.ca)



**CENTRALIZED  
 COORDINATION CENTRE**

Manages and triages referrals for patients from across the region



**COMMUNITY  
 BASED**

Community programming close to home

**Referral**


**Acceptance**

**Participation**

# WHO SHOULD PARTICIPATE?

## ALL ASCVD or Heart failure Patients

- Heart Attack, Angina or abnormal tests
- Heart failure
- Stroke
- Kidney disease
- Vascular disease
- Diabetic with vascular disease



**Regional Cardiovascular Rehab Referral**

**Patient Information**

Last name: \_\_\_\_\_ First name: \_\_\_\_\_ Gender:  Male  Female  
Street address: \_\_\_\_\_ City: \_\_\_\_\_ Postal code: \_\_\_\_\_  
Health card number: \_\_\_\_\_ Date of birth (DD/MM/YY): \_\_\_\_\_  
Phone number: \_\_\_\_\_ Email: \_\_\_\_\_

**Indication for Referral (Established vascular disease or heart failure)**

<input type="checkbox"/> Coronary artery disease	<input type="checkbox"/> Congestive heart failure	<input type="checkbox"/> Peripheral vascular disease
<input type="checkbox"/> Angina	<input type="checkbox"/> Cardiomyopathy	<input type="checkbox"/> Non-debilitating stroke or TIA
<input type="checkbox"/> Angioplasty or Bypass surgery	<input type="checkbox"/> Heart transplant	<input type="checkbox"/> Carotid stenosis
<input type="checkbox"/> Myocardial infarction	<input type="checkbox"/> Valve surgery	<input type="checkbox"/> Renovascular disease
<input type="checkbox"/> Admission acute coronary syndrome	<input type="checkbox"/> Pacemaker/Defibrillator	<input type="checkbox"/> Diabetes > 55yo + 2+ risk factors

**Risk Factors**

<input type="checkbox"/> Family history	<input type="checkbox"/> Diabetes	<input type="checkbox"/> Hypertension	<input type="checkbox"/> Hyperlipidemia
<input type="checkbox"/> History of smoking	<input type="checkbox"/> Obesity	<input type="checkbox"/> Sedentary	

**Referral by**

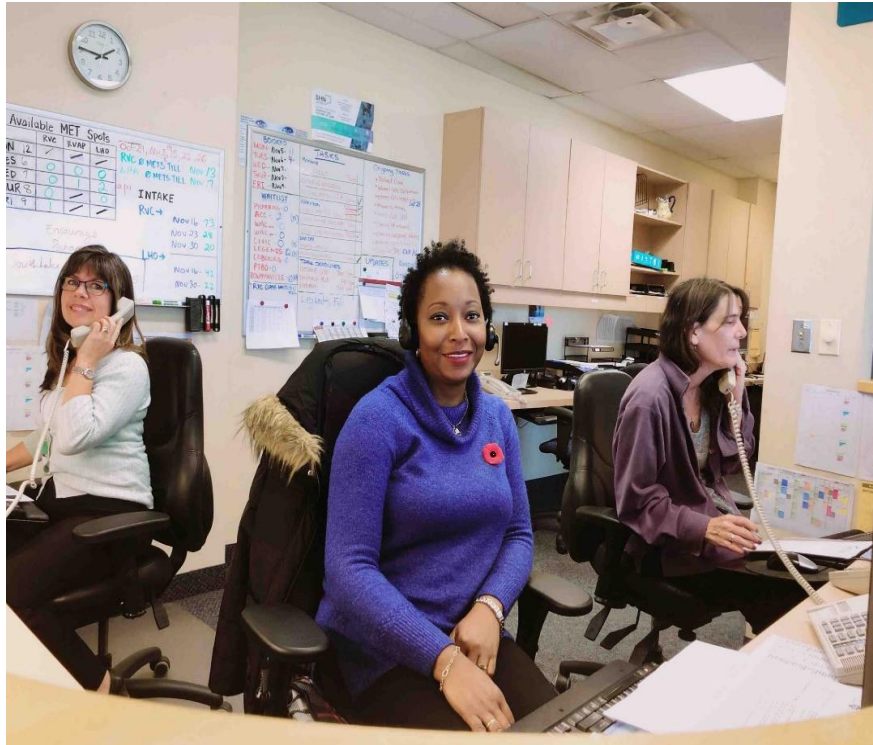
Referred by: \_\_\_\_\_ Date: \_\_\_\_\_  
Name (print please): \_\_\_\_\_  
Phone number: \_\_\_\_\_ Fax number: \_\_\_\_\_ Work email: \_\_\_\_\_

Referral to cardiovascular rehab **includes** a fitness assessment

Please send completed referral and clinical notes to [cardiacrehabbooking@shn.ca](mailto:cardiacrehabbooking@shn.ca) or fax to 416-281-7280  
Please use One Mail Direct or password encryption for email transmission  
For any other enquiries, please phone 416-281-7022 or (Toll Free) 1-855-448-5471  
[getthehealthy.ca](http://getthehealthy.ca)

Its not just about the ‘Heart Attacks’

# CENTRAL REFERRAL ACCEPTANCE



## Referral

- Automated hospital inpatient referral ( via EPIC)
- Fax
- Email
- Ocean
- Telephone

## Referral Acceptance

- ASCVD criterion
- No prior enrollment < 5 years

## Booking

- Location by postal Closest to home or work
- 2-4 weeks from admission or intervention

# CARE CLOSE TO HOME



**18 community centers (and growing)**

**Located across the East GTA**

**Less than 30 drive from home  
for 95% of participants**

# 24 Weekly visits for 6 months

## ■ LIFESTYLE COACHING

- Personalized heart-healthy plans
- Learn to self-manage cardiovascular risk factors
- Learn healthy lifestyle choices

## ■ EDUCATION

- Classes and workshops

## ■ EXERCISE

- Supervised exercise
- individualized routines to continue at home

## ■ HEART FAILURE

- Assessment and education specifically for heart failure patients



# REGIONAL WORKFORCE



## Care Team

We have a multidisciplinary team of health professionals, ready to get you on track to better heart health. Our team includes exercise therapists, dietitians, pharmacists, counsellors, as well as volunteers and administrative support.

rehab program



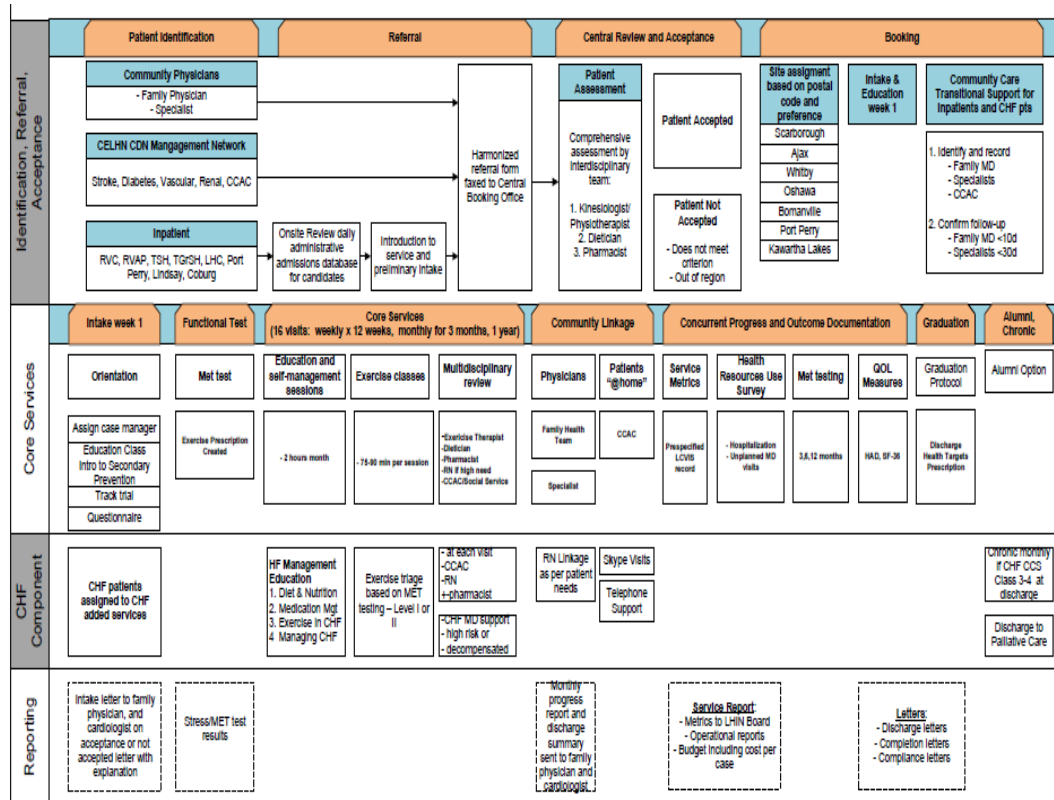
18 FTE Cardiovascular rehabilitation specialists

Services at local community centers across the region

Standardized Workflow and Resources

- virtual interaction,
- patient handbooks and
- web resources
- Video library

# STANDARD WORKFLOW



Same care at all sites

Compliant with Canadian & Ontario Guidelines

No Cost to Patients

No redundant Medical or OHIP billed Services

- No Medical billing
- No cardiac stress testing

# Online Resources

The screenshot shows the homepage of the Central East Regional Cardiovascular Rehab website. The header includes the logo, a 'Next Steps' button, and a language selector set to 'English'. A teal navigation bar contains links for 'How our program works', 'Is rehab for you?', 'How to join', 'Education & Heart@Home', and 'Locations'. The main content area features a large image of a healthcare professional and a patient walking in a hallway. Overlaid on this image is the headline 'Get on track to better heart health' and the sub-headline 'EXERCISE • EDUCATION • LIFESTYLE COACHING • MOTIVATION & SUPPORT'. A text block at the bottom left states: 'Every year, our lifestyle and self-management program helps to change lives for more than 5,000 patients with or at risk for cardiovascular disease across Central East Ontario. We are the largest program of the kind in North America.' A 'LEARN MORE ABOUT OUR REGIONAL PROGRAM' button is located in the bottom right of the main content area.

Central East  
REGIONAL  
CARDIOVASCULAR  
REHAB

Next Steps

English

How our program works | Is rehab for you? | How to join | Education & Heart@Home | Locations

## Get on track to better heart health

EXERCISE • EDUCATION • LIFESTYLE COACHING • MOTIVATION & SUPPORT

Every year, our lifestyle and self-management program helps to change lives for more than 5,000 patients with or at risk for cardiovascular disease across Central East Ontario. We are the largest program of the kind in North America.

LEARN MORE ABOUT OUR REGIONAL PROGRAM

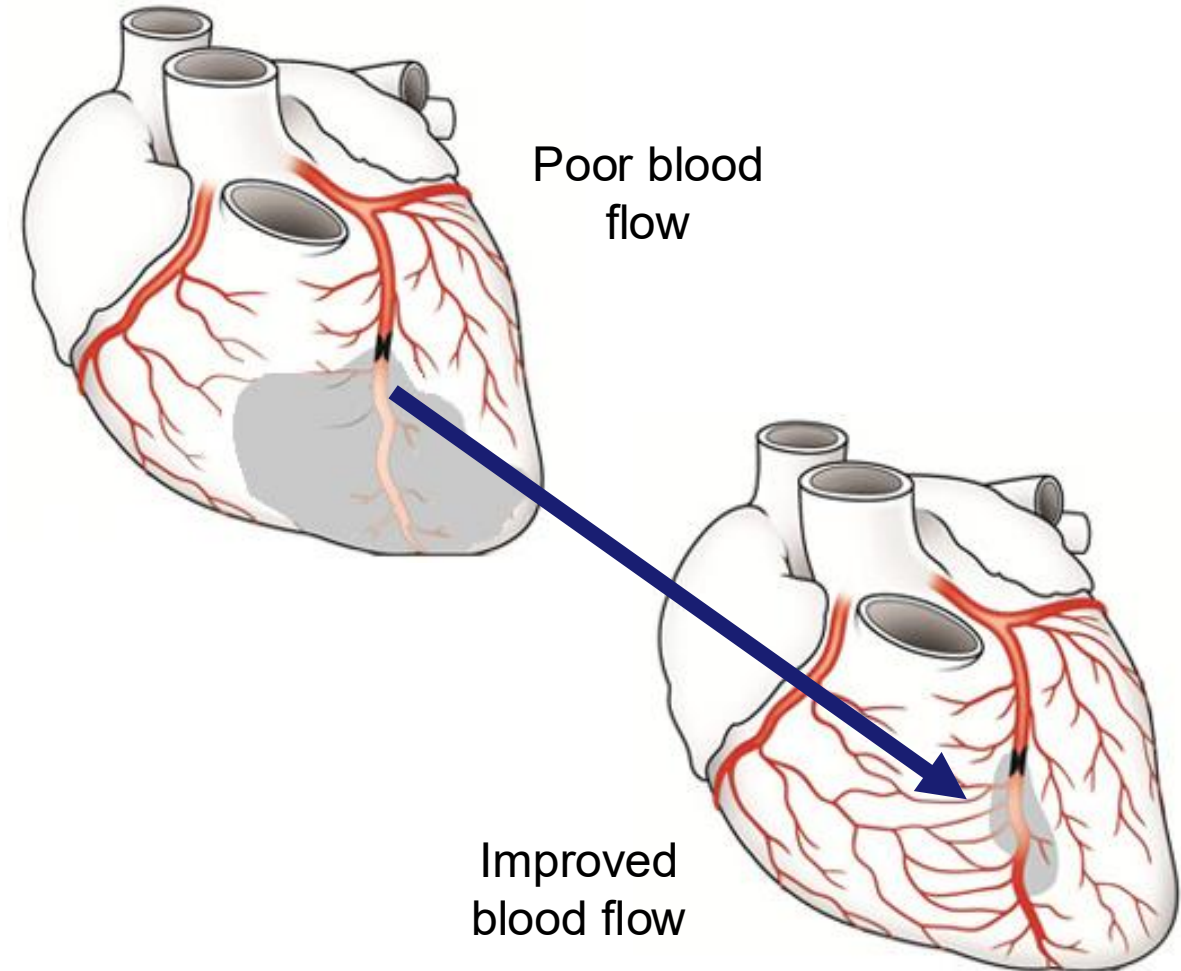
[WWW.GETHEARTHEALTHY.CA](http://WWW.GETHEARTHEALTHY.CA)

# HOW CARDIOVASCULAR REHAB WORKS

# EXERCISE IMPROVES BLOOD FLOW

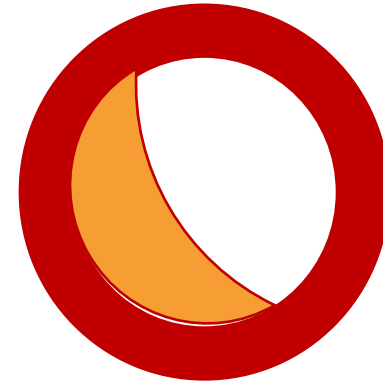
Exercise stimulates the growth of new blood vessels.

Improves blood flow in heart and all body organs

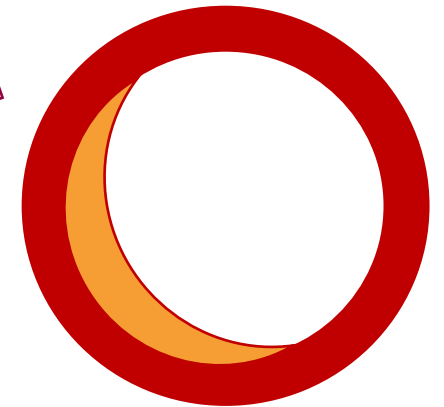
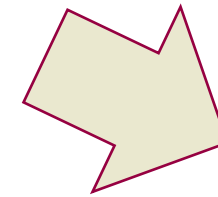


# EXERCISE OPENS ARTERIES

Reduces ASCVD Burden



**Artery before**  
exercise, diet  
and medication  
intervention

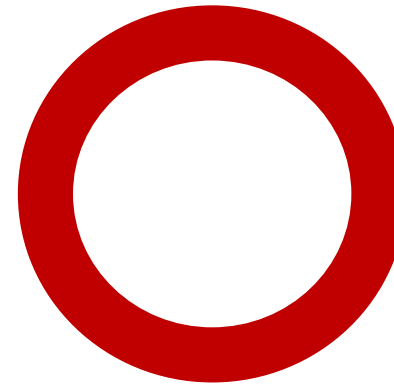


**Artery after**  
exercise, diet and  
medication intervention

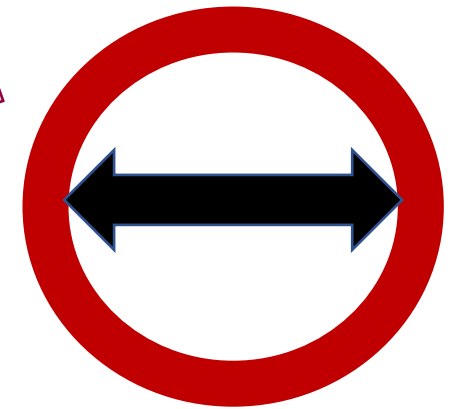
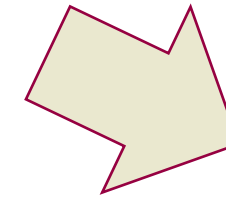
# EXERCISE LOWERS BLOOD PRESSURE

Exercise improves blood pressure control.

Reduced pressure prevents artery damage.



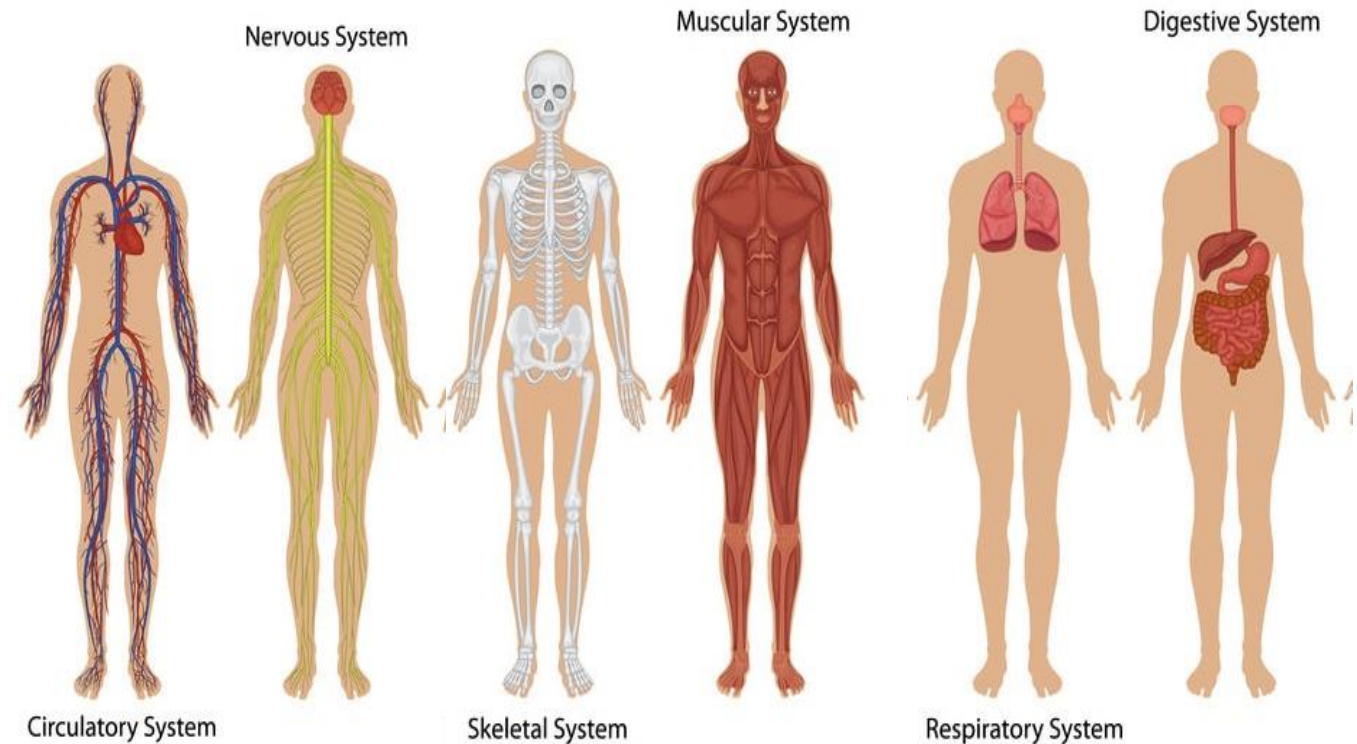
**Artery before**  
exercise, diet and  
medication  
intervention



**Artery after**  
exercise, diet and  
medication intervention

# Every Organ Benefits

Exercise improves every system including the, brain, lungs, kidneys, and bones.



**OUR RESEARCH  
CONFIRMS THE VALUE  
OF CARDIAC REHAB**

# CR POPULATION OUTCOME RESEARCH

## 2017 The Central East Population Outcome Research Group Forms\*

Joe Ricci	Medical Director CE CR service
Neville Suskin	Professor medicine, ICES scientist, Western University
Stephanie Frisbee	Professor, Epidemiology, Western University
Saverio Stranges	Professor, Epidemiology, Western Ontario
Adam Pierce,	Manager, CE CR services
Thiru Appasamy	Data Analyst, Cardiac Care Program



# Applied Health Research Question (AHRQ)

## Reduced Cardiac Events

- ✓ emergency visits,
- ✓ Hospitalization
- ✓ length of stay
- ✓ death

## Increased Provider Visits

- ✓ primary care
- ✓ specialists

## Low Cost 24 Visit – 6 Month Service

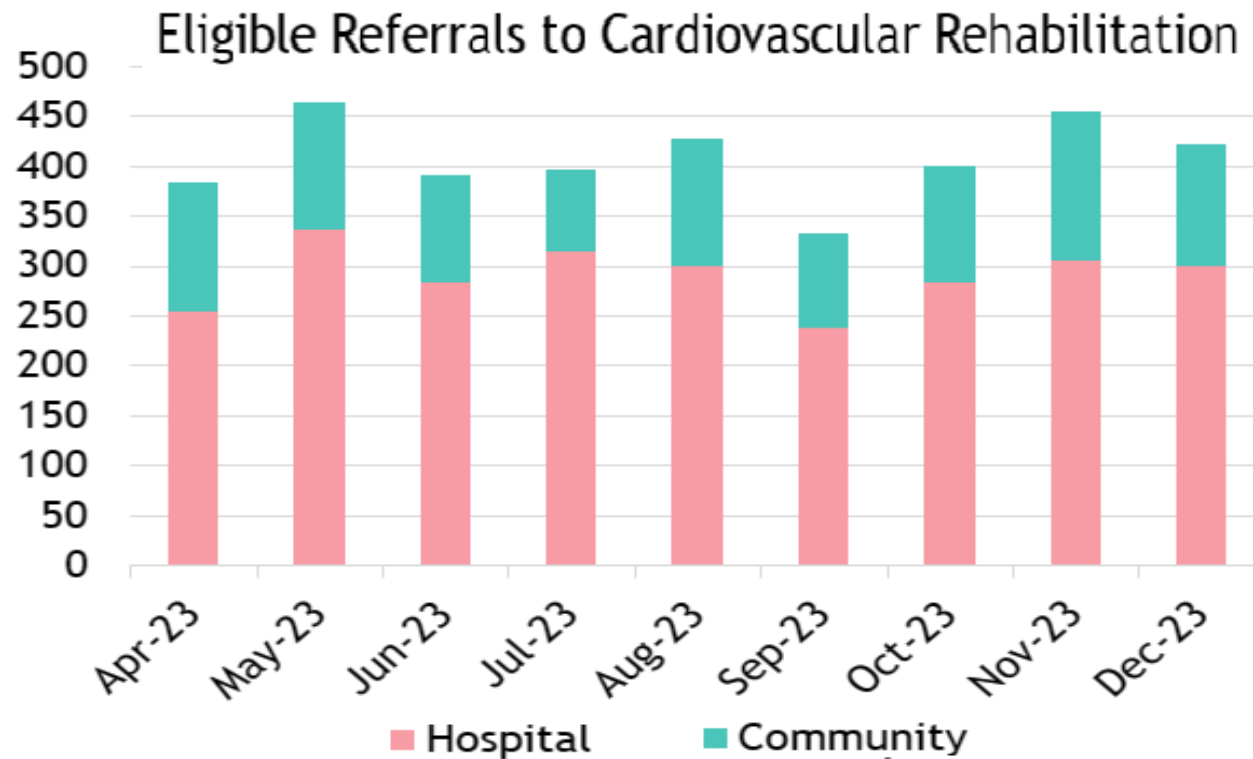
- ✓ \$880 per patient
- ✓ No Ohip paid services

## Reduces Health System Costs

- ✓ \$5,860 saving per participant in first 3 years
- ✓ ROI 670% in first 3 years

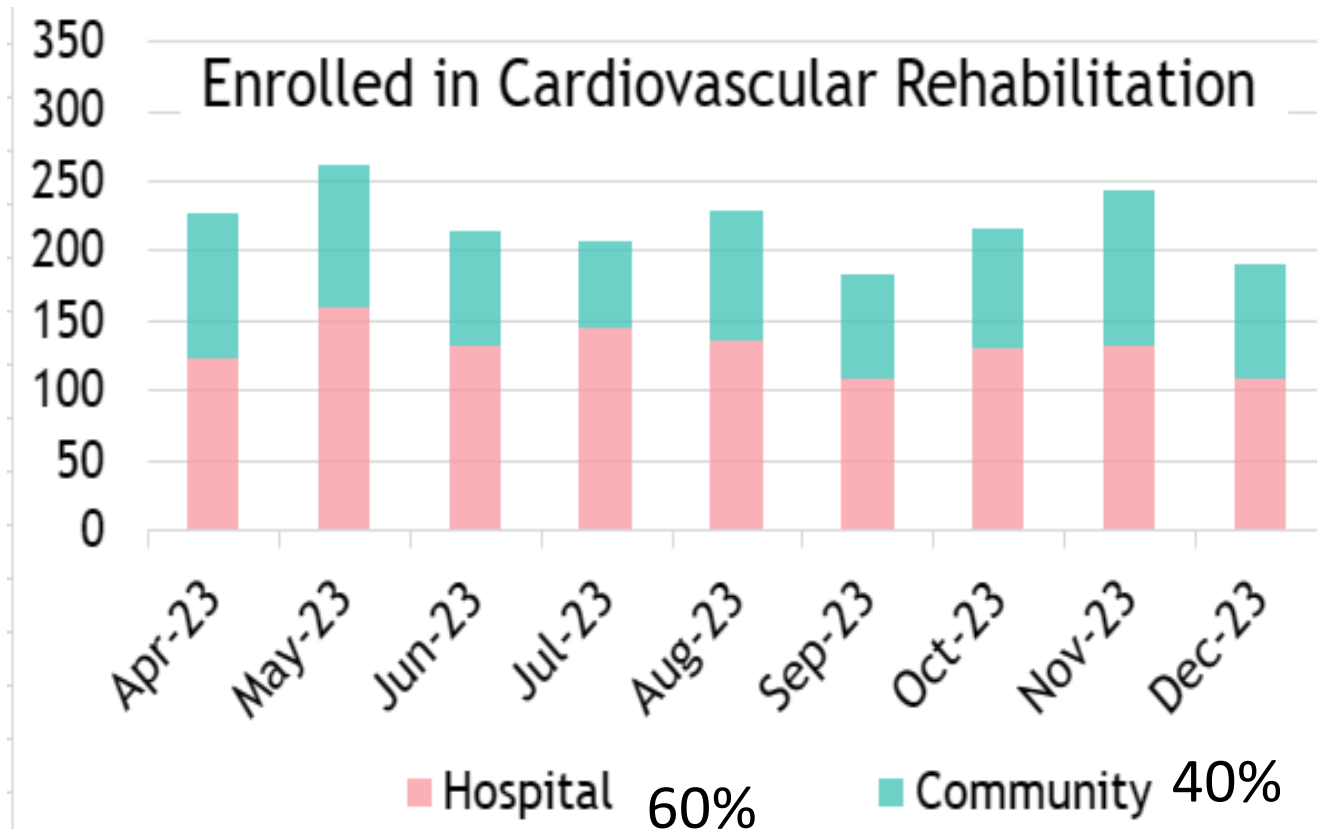


# High Referral Rates



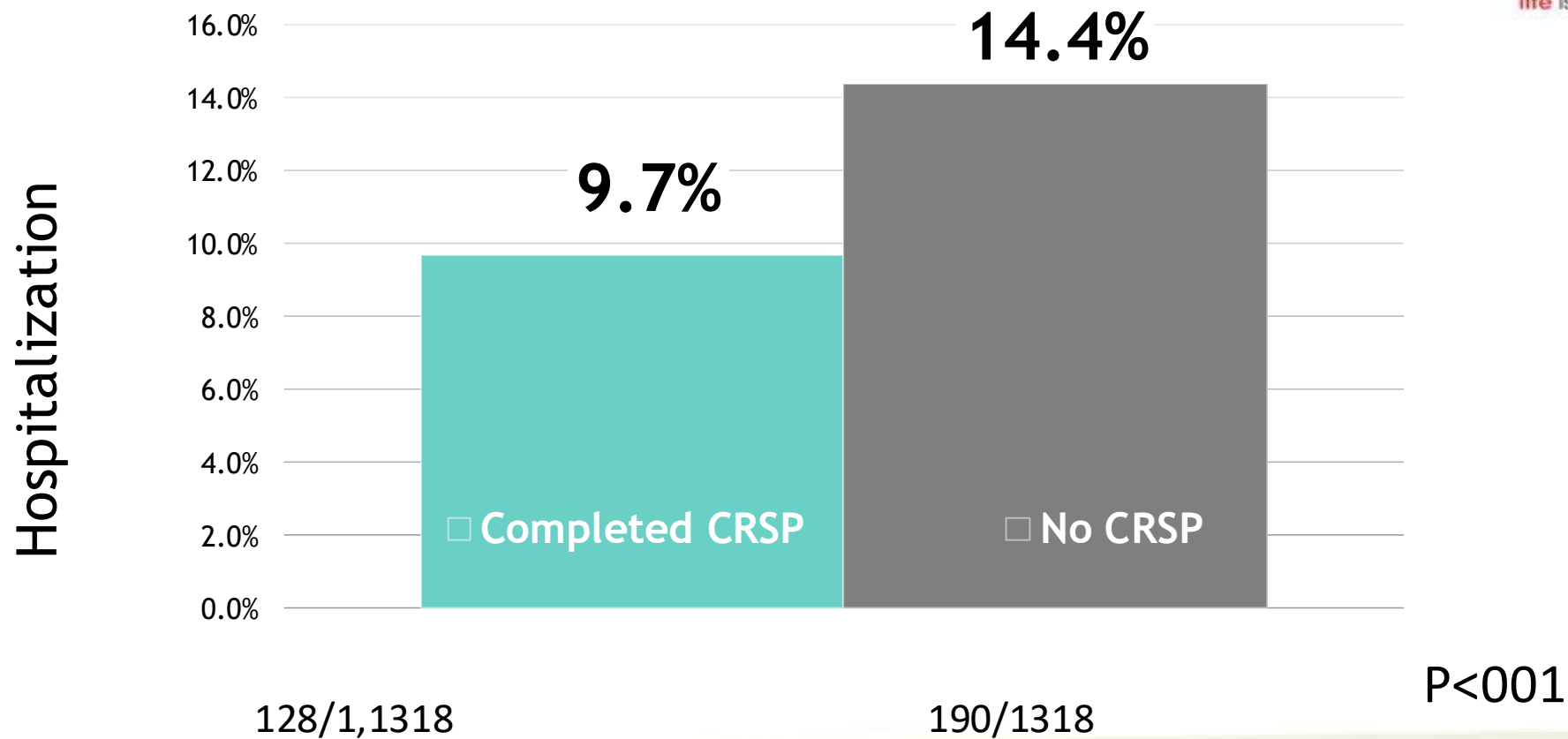
Automatic Hospital referral  
For Cardiovascular admissions  
including ACS and Heart failure

# High Participation Rates 60%+

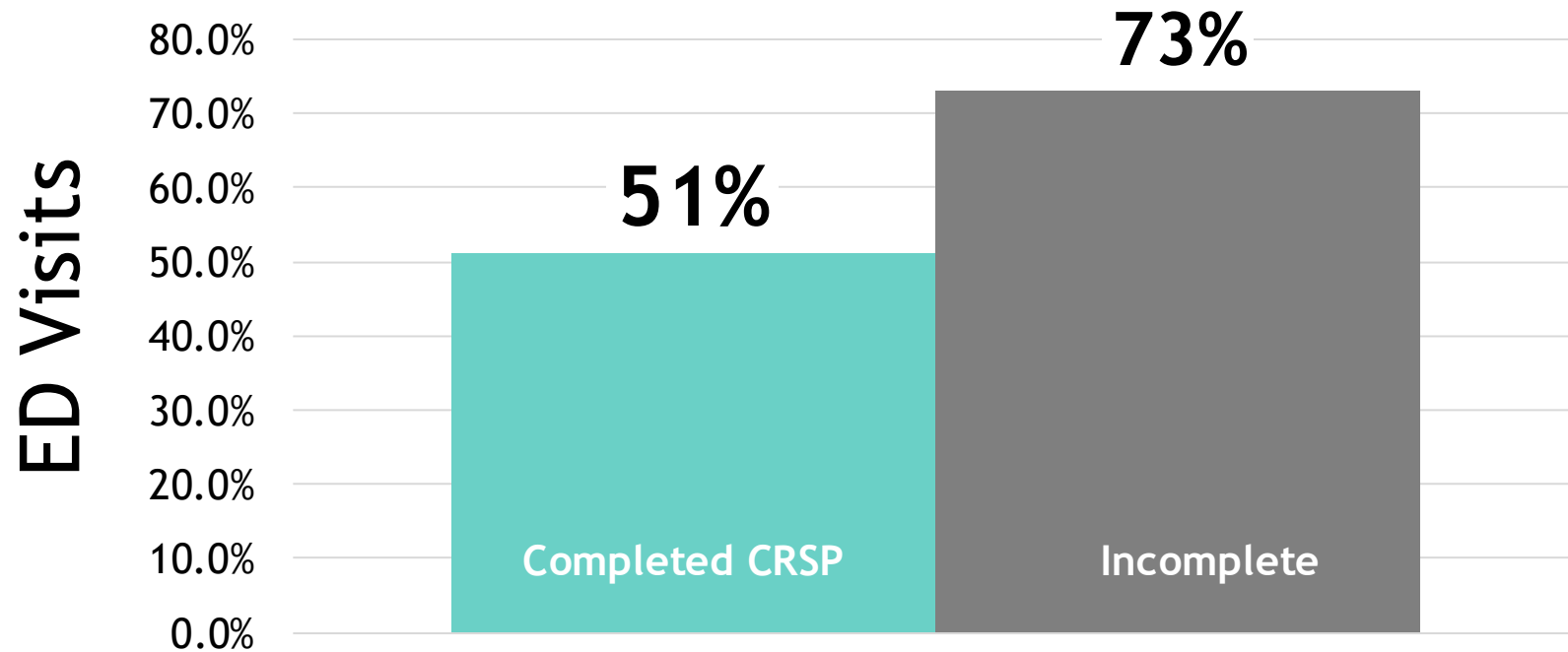


Increased Growth of Outpatient Referrals by Primary Care and Specialists

# REDUCES HOSPITAL ADMISSIONS



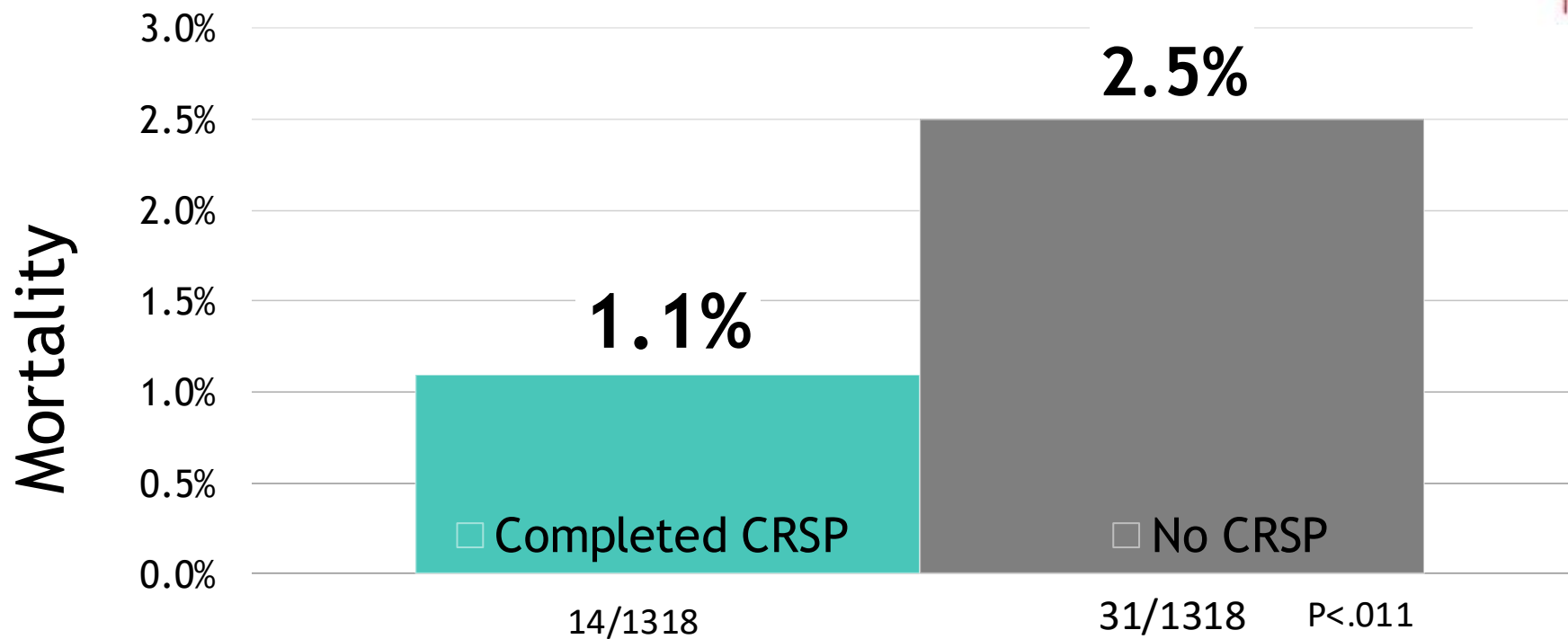
# REDUCES EMERGENCY VISITS



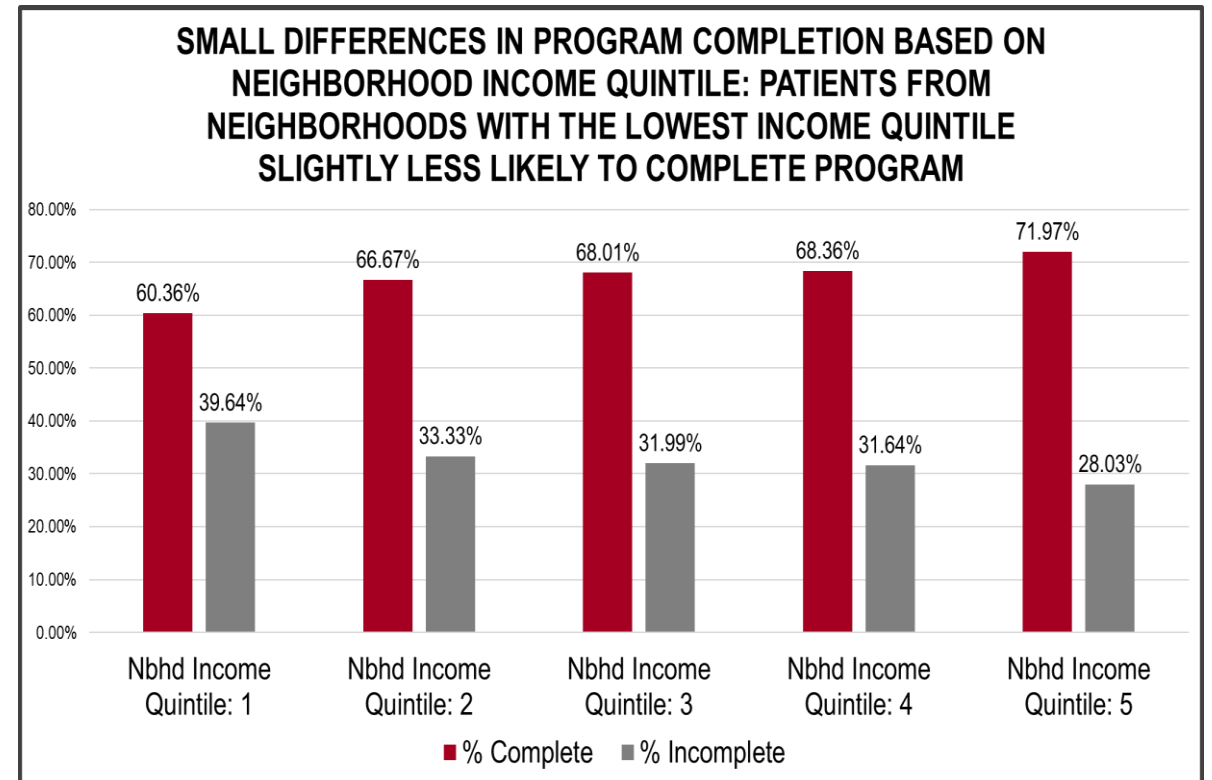
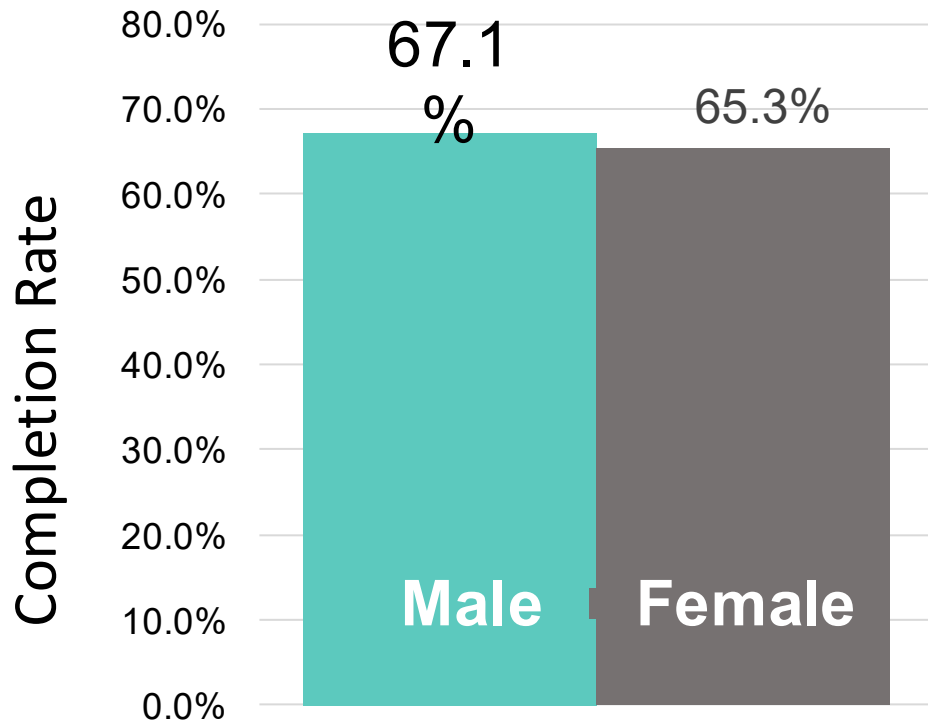
# REDUCES RISK OF DEATH



**QCOR** <sup>20</sup>/<sub>18</sub>  
April 6-7  
Arlington, VA



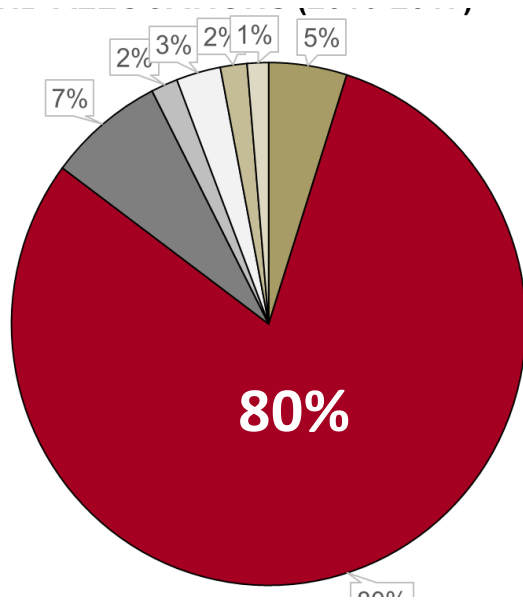
# NO BARRIERS: Age, Sex, Income



**REHABILITATION  
REDUCES HEALTH  
CARE SYSTEM COST**

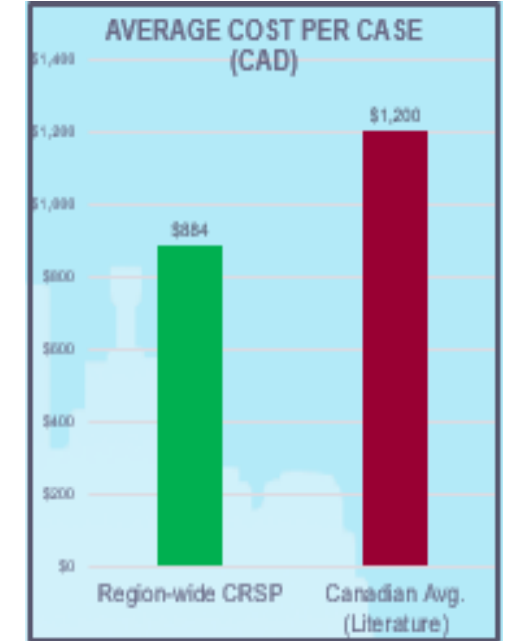
Joseph Ricci, MD<sup>1</sup>; Stephanie J. Frisbee, PhD, MSc<sup>2</sup>; Neville Suskin, MBChB, MSc<sup>3</sup>; Saverio Stranges, MD, PhD<sup>2</sup>; Terry Fair<sup>1</sup>, Thiru Appasamy<sup>1</sup>, Adam Pierce, BAsc<sup>1</sup>

<sup>1</sup>Central East LHIN Regional Cardiac Rehabilitation Service & Scarborough Rouge Hospital, Scarborough, ON; <sup>2</sup>University of Western Ontario, London, ON; <sup>3</sup>University of Western Ontario & St. Joseph's Health Care, London, ON



- Management Cost
- Staffing Costs
- Call Centre Cost
- Staff - Travel Costs and Expenses
- Equipment
- Supplies and Other
- Facilities Cost

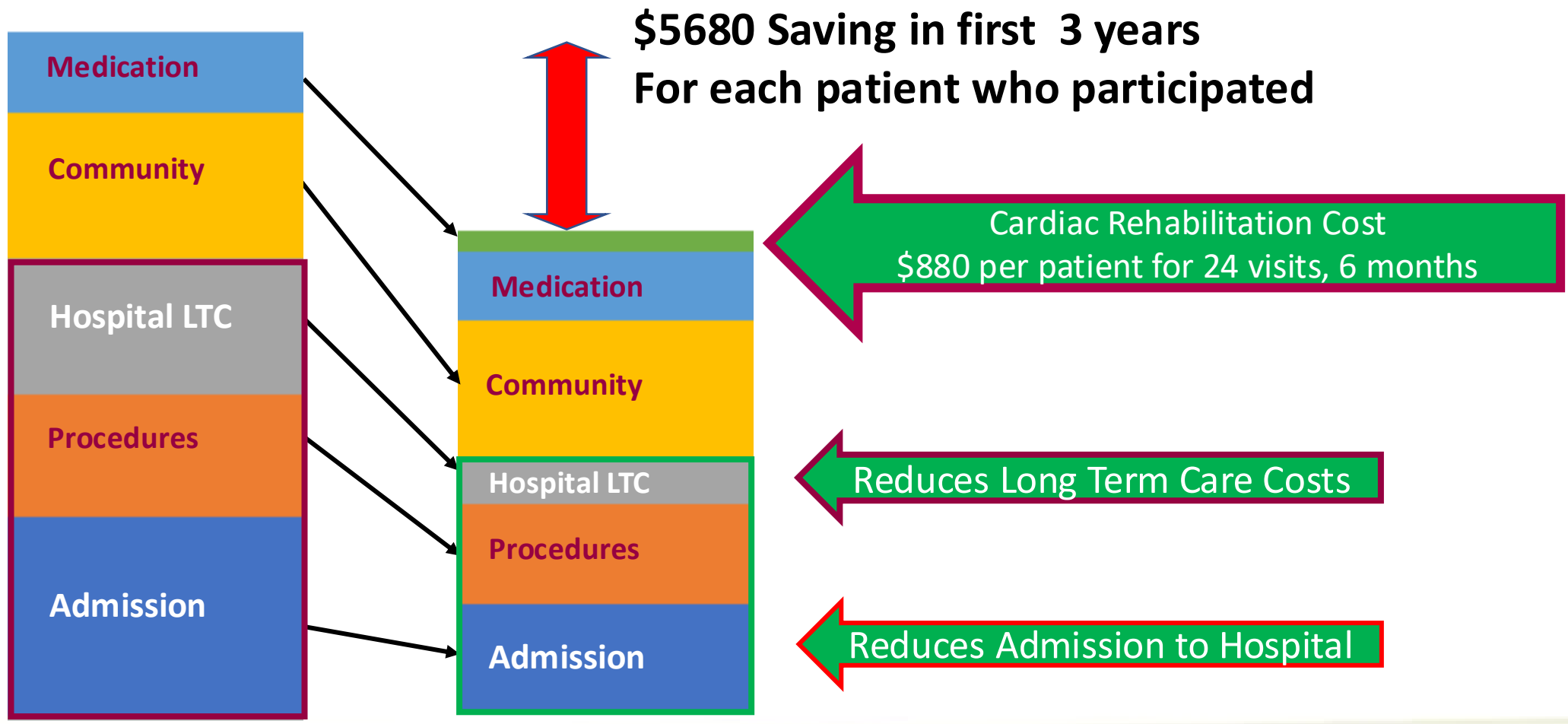
Cost Center	Fiscal Year 2016-2017
Management Cost	\$13,000
Staffing	\$2,378,292
Call Center	\$194,002
Staff travel costs	\$44,481
Equipment	\$73,931
Supplies & other	\$44,317
Facilities	\$35,602
<b>Total Cost</b>	<b>\$2,900,626</b>
Volume	3283
<b>Cost per Case</b>	<b>\$884.00</b>



Exercise Therapists 17.5 FTE  
Clerical support 4 FTE

**\$880 for 24 weekly visits over 6 months**  
**80% of costs to direct care**  
**No OHIP Charges for Physician or testing billing**

# REDUCES COSTS TO THE HEALTH CARE SYSTEM



# Research Roadmap

**Papers in progress:**      System design and outcomes  
CR prescription with Clinical Assessment vs Stress Testing  
Impact of CECR on measured risk factors  
Cost effectiveness

**New Initiatives**      **‘Pre-Hab’ trial 2024-25**

# THE ROAD FORWARD

- Center of Excellence***    Formalize recognition by SHN
- Expand services:**            Participation by full spectrum of ASCVD  
Automate Inpatient referral for Neurovascular, Vascular, Renal Cohorts  
Increase Community referral (target 50+%)
- Increase capacity:***        *Increase capacity from current 4000 to 5000 per million population/ year*
- Enhance Content:***        *Develop cultural contextual patient resources*
- Advocacy***                      *CECR as a province wide model of Care*
- Research***                      *Increase population outcomes research*


# How to Start Your Patients Journey

# How To Refer

Who: Patients with ASCVD or Heart Failure

- How:
1. Automatic referral on admission
  2. Fax or email referral form
  3. EMR forms
  4. Ocean referral
  5. Call: 1-855-448-5471 or 416-281-7022
  6. [www.GetHeartHealthy.ca](http://www.GetHeartHealthy.ca)

Result: Patient contacted within 5 days  
Participation starts in 2-4 weeks

 Central East  
**REGIONAL  
CARDIOVASCULAR  
REHAB**

**Regional Cardiovascular Rehab Referral**

**Patient Information**

Last name: \_\_\_\_\_ First name: \_\_\_\_\_ Gender:  Male  Female  
Street address: \_\_\_\_\_ City: \_\_\_\_\_ Postal code: \_\_\_\_\_  
Health card number: \_\_\_\_\_ Date of birth (DDMMYY): \_\_\_\_\_  
Phone number: \_\_\_\_\_ Email: \_\_\_\_\_

**Indication for Referral (Established vascular disease or heart failure)**

<input type="checkbox"/> Coronary artery disease	<input type="checkbox"/> Congestive heart failure	<input type="checkbox"/> Peripheral vascular disease
<input type="checkbox"/> Angina	<input type="checkbox"/> Cardiomyopathy	<input type="checkbox"/> Non-debilitating stroke or TIA
<input type="checkbox"/> Angioplasty or Bypass surgery	<input type="checkbox"/> Heart transplant	<input type="checkbox"/> Carotid stenosis
<input type="checkbox"/> Myocardial infarction	<input type="checkbox"/> Valve surgery	<input type="checkbox"/> Renovascular disease
<input type="checkbox"/> Admission acute coronary syndrome	<input type="checkbox"/> Pacemaker/Defibrillator	<input type="checkbox"/> Diabetes > 55yo + 2 <sup>+</sup> risk factors

**Risk Factors**

<input type="checkbox"/> Family history	<input type="checkbox"/> Diabetes	<input type="checkbox"/> Hypertension	<input type="checkbox"/> Hyperlipidemia
<input type="checkbox"/> History of smoking	<input type="checkbox"/> Obesity	<input type="checkbox"/> Sedentary	

**Referral by**

Referred by: \_\_\_\_\_ Date: \_\_\_\_\_  
Name (print please): \_\_\_\_\_  
Phone number: \_\_\_\_\_ Fax number: \_\_\_\_\_ Work email: \_\_\_\_\_

Referral to cardiovascular rehab includes a fitness assessment

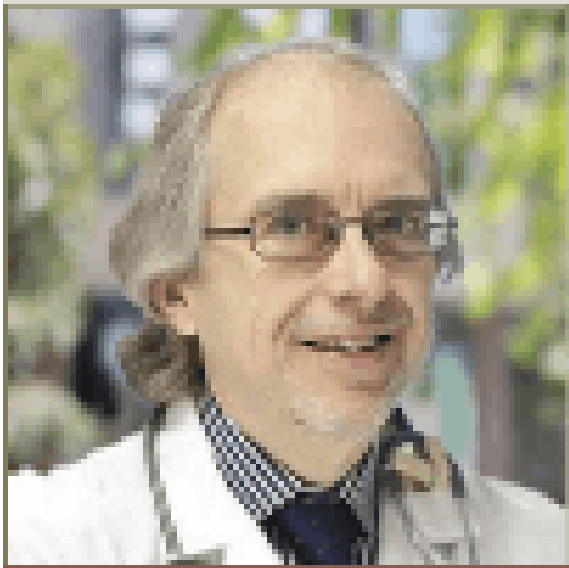
Please send completed referral and clinical notes to [cardiacrehabbooking@shn.ca](mailto:cardiacrehabbooking@shn.ca)  
or fax to 416-281-7280  
Please use One Mail Direct or password encryption for email transmission  
For any other enquiries, please phone 416-281-7022 or (Toll Free) 1-855-448-5471  
[gethearthealthy.ca](http://gethearthealthy.ca)



# Community & CECR Staff

## A Great 'Team'





Dr. Robert Hegele

# Lipids: What's new for 2026?

# Program Disclosure for Commercial Support

I have relationships with for-profit & not-for-profit organizations over the past 2 years:

NATURE OF RELATIONSHIP	NAME OF THE FOR-PROFIT OR NOT-FOR-PROFIT ORGANIZATION	DESCRIPTION OF RELATIONSHIP
Any direct financial payments including receipt of honoraria	N/A	N/A
Membership on advisory boards or speakers' bureaus	Acasti, Akcea-Ionis, Amgen, Arrowhead, Boston Heart, HLS Therapeutics, Pfizer, Novartis, Regeneron, Sanofi, UltraGenyx	Scientific or medical advisor
Funded grants of clinical trials	Acasti, Akcea/Ionis, Arrowhead, LIB Therapeutics, Medicines Company, Regeneron, Novartis, Pfizer	Clinical trial site
Patents on a drug, product or device	N/A	N/A
All other investments/relationship that could be seen as having the potential to influence the content of the educational activity	N/A	N/A

# Canadian Guidelines: A Remarkable Achievement



**Canadian  
Cardiovascular  
Society**

Canadian Journal of Cardiology 37 (2021) 1129–1150

## Society Guidelines

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

Glen J. Pearson, PharmD,<sup>a,†</sup> George Thanassoulis, MD,<sup>b,†</sup> Todd J. Anderson, MD,<sup>c</sup>  
Arden R. Barry, PharmD,<sup>d</sup> Patrick Couture, MD, PhD,<sup>e</sup> Natalie Dayan, MD,<sup>f</sup>  
Gordon A. Francis, MD,<sup>g</sup> Jacques Genest, MD,<sup>b</sup> Jean Grégoire, MD,<sup>h</sup> Steven A. Grover, MD,<sup>f</sup>  
Milan Gupta, MD,<sup>i</sup> Robert A. Hegele, MD,<sup>j</sup> David Lau, MD, PhD,<sup>k</sup> Lawrence A. Leiter, MD,<sup>l</sup>  
Alexander A. Leung, MD,<sup>m</sup> Eva Lonn, MD,<sup>n</sup> G.B. John Mancini, MD,<sup>o</sup> Priya Manjoo, MD,<sup>p</sup>  
Ruth McPherson, MD, PhD,<sup>q</sup> Daniel Ngui, MD,<sup>r</sup> Marie-Eve Piché, MD, PhD,<sup>s</sup>  
Paul Poirier, MD, PhD,<sup>s</sup> John Sievenpiper, MD, PhD,<sup>t</sup> James Stone, MD, PhD,<sup>u</sup>  
Rick Ward, MD,<sup>v</sup> and Wendy Wray, RN, MScN<sup>w</sup>

# Canadian Guidelines at a Glance



**Canadian  
Cardiovascular  
Society**



## AT A GLANCE: 2021 CCS Guideline for the Management of Dyslipidemia in Adults

### 1. Who to screen with fasting or non-fasting TC, TG, HDL-C, calculated LDL-C and non-HDL-C with ApoB when appropriate and Lp(a) once:

- Men  $\geq 40$  yrs old; Women  $\geq 40$  yrs old or postmenopausal; at younger age in Indigenous and South Asian individuals
- At any age in patients with:
  - Clinical ASCVD
  - Evidence of preclinical ASCVD (e.g., CACS or carotid ultrasound abnormalities)
  - Abdominal aortic aneurysm (AAA)
  - Diabetes
  - Arterial hypertension
  - Currently smoking
  - Signs of dyslipidemia: tendinous xanthomas (also corneal arcus, xanthelasma) if  $< 40$  yrs old
  - Family history of premature CVD in first degree relative (male  $< 55$  yrs old, female  $< 65$  yrs old)
  - Family history of dyslipidemia (including elevated Lp(a), especially  $> 50$  mg/dL or  $\geq 100$  mmol/L)
  - Chronic kidney disease (eGFR  $\leq 30$  mL/min/1.73 m<sup>2</sup> or ACR  $\geq 3$  mg/mmol)
  - Obesity (BMI  $\geq 30$  kg/m<sup>2</sup>)
  - Inflammatory diseases (e.g., RA, SLE, PsA, AS, IBD)
  - HIV infection
  - Erectile dysfunction
  - Chronic obstructive pulmonary disease
  - Pregnancy-related complications: hypertensive disease of pregnancy, gestational diabetes, pre-term birth, stillbirth, low birthweight infant, placental abruption

### 2. Who to treat based on clinical factors (Framingham Risk Score [FRS] not needed):

- Statin-indicated conditions:
  - Diabetes mellitus if  $\geq 40$  yrs old, or  $\geq 30$  yrs old with microvascular disease or  $> 15$  years duration
  - Chronic kidney disease (non-dialysis, eGFR  $< 60$  mL/min or urine ACR  $\geq 3.0$  mg/mmol)
  - FH or LDL-C  $\geq 5.0$  or non-HDL-C  $\geq 5.8$  mmol/L or ApoB  $\geq 1.45$  g/L
- Patients with very high TG  $\geq 210$  mmol/L and/or history of TG-related pancreatitis.

### 3. Who to treat based on FRS:

- High FRS ( $\geq 20\%$ /10 yrs)
- Intermediate FRS (10-19.9%/10 yrs) and LDL-C  $\geq 3.5$  mmol/L or non-HDL-C  $\geq 4.2$  mmol/L or ApoB  $\geq 1.69$  g/L
- Intermediate FRS (10-19.9%/10 yrs) and LDL-C  $< 3.5$  mmol/L or non-HDL-C  $< 4.2$  mmol/L or ApoB  $< 1.69$  g/L, and other risk modifiers FHx, Lp(a)  $\geq 50$  mg/dL [or  $\geq 100$  mmol/L] or CAC  $> 0$  AU)
- Low FRS (5-9.9%/10 yrs) with LDL-C  $\geq 3.5$  mmol/L or non-HDL-C  $\geq 4.2$  mmol/L or ApoB  $\geq 1.69$  g/L or other risk modifiers FHx, Lp(a)  $\geq 50$  mg/dL [or  $\geq 100$  mmol/L] or CAC  $> 0$  AU)

### 4. Factors not in FRS suggesting that calculated risk may be underestimated:

- From RCTs:
  - JUPITER: CRP  $> 2.0$  mg/L
  - HOPE-3: Waist/hip ratio  $> 0.85$  (women) or  $> 0.90$  (men), IFG/IGT, (pre-diabetes, metabolic syndrome)
  - ASCOT: in hypertensives, LVH/other EKG abnormalities
- From epidemiology (consider ethnicity and factors g – p Step 1)

### 5. Factors not in FRS suggesting that calculated risk may be overestimated:

- CAC = 0 AU in moderate FRS patients

### 6. What to monitor:

- If TG  $> 1.5$  mmol/L, monitor treatment with LDL-C, non-HDL-C or ApoB (fasting or non-fasting)
- If TG  $\geq 1.5$  mmol/L, monitor treatment with non-HDL-C or ApoB (fasting or non-fasting)

### 7. What to use:

- Behavioural advice to optimize diet (including alcohol use), weight, and activity levels and to promote smoking cessation (including specific pharmacotherapy when warranted)
- Maximally tolerated statin for those described in Tables 2 and 3
- In CV primary prevention of patients with FH, using threshold of LDL-C  $\geq 2.5$  mmol/L, non-HDL-C  $\geq 2.2$  mmol/L, ApoB  $\geq 0.85$  g/L, or  $< 50\%$  lowering of LDL-C, consider adding PCSK9 inhibitor, with/without ezetimibe
- In other settings of CV primary prevention, using threshold of LDL-C  $\geq 2.0$  mmol/L, non-HDL-C  $\geq 1.6$ , ApoB  $\geq 0.80$  g/L, or  $< 50\%$  lowering of LDL-C, consider use of ezetimibe (or bile acid sequestrant)
- Add therapy in CV secondary prevention, using thresholds of LDL-C  $\geq 1.8$  mmol/L, non-HDL-C  $\geq 1.4$ , ApoB  $\geq 0.70$  g/L
  - Ezetimibe  $\pm$  PCSK9 inhibitor (if LDL-C 1.8 – 2.2 mmol/L, non-HDL-C 1.4 – 1.8 mmol/L, or ApoB 0.7 – 0.8 g/L, ezetimibe may suffice)
  - PCSK9 inhibitor  $\pm$  ezetimibe (PCSK9 inhibitor particularly if LDL-C  $> 2.2$  mmol/L, non-HDL-C  $> 1.8$  mmol/L or ApoB  $> 0.8$  g/L) or in very high risk patients who derive the most benefit from PCSK9 inhibitors, e.g., ACS within 1 year, diabetes mellitus or metabolic syndrome, poly-vascular disease, MI within 2 years, recurrent MI, prior coronary artery bypass surgery, symptomatic peripheral arterial disease, FH or residual LDL-C  $\geq 2.5$  on maximal statin, elevated Lp(a)  $\geq 50$  mg/dL)
- Icosapent ethyl in primary prevention patients with diabetes and an additional risk factor or secondary prevention patients when, in both instances, TG is  $\geq 1.5$  mmol/L and  $\leq 5.6$ , on maximally tolerated statin
- When icosapent ethyl is not indicated but TG requires management (e.g., very high TG  $\geq 10$  mmol/L or concern about TG-related pancreatitis), use micronized fenofibrate

# Thought Question: What Would You Do?



49-year-old previously well farmer

Only risk factor: Multiple relatives with myocardial infarction

Admitted following a STEMI with RCA angioplasty

Medication: DAPT, Atorvastatin 20 mg, Ramipril 5 mg

LDL 3.9 TG 1.9 HgA1c 6.4 Lp(a) 215

Asymptomatic

# Canadian Guidelines from 10,000 feet

- ‘Statin Indicated Patient’
- Screening using Non fasting LDL or apoB
- Thresholds replace targets
- Streamlined Algorithms
- The High-Risk Patient
- Hereditary Contributors to Risk: FH and LPa



# The Guidelines: Still out!

X Fish oils

X Vitamin D

X Moderate alcohol consumption

X Niacin

# Diagnosis and Screening

# Who Is The Statin Indicated Patient?

## Atherosclerotic Cardiovascular Disease (ASCVD)

### Coronary artery disease

- Acute coronary syndrome (ACS)
- Myocardial infarction (MI)
- Stable or unstable angina
- CAD documented by any means

### Cerebral Vascular Disease

- Stroke
- Transient ischemic attack (TIA)
- Carotid disease

### Peripheral artery disease

- Peripheral vascular disease
- Abdominal aortic aneurysm
- Erectile dysfunction

## High-risk primary prevention of ACSVD

- diabetes and at least one additional risk factor
- chronic kidney disease
- Severe hyperlipidemia LDL  $\geq$ 5.0
- familial hypercholesterolemia

# Whom to Screen?

- Age 40+

- Regardless of age

Evidence of ASCVD

Risk factors for ASCVD

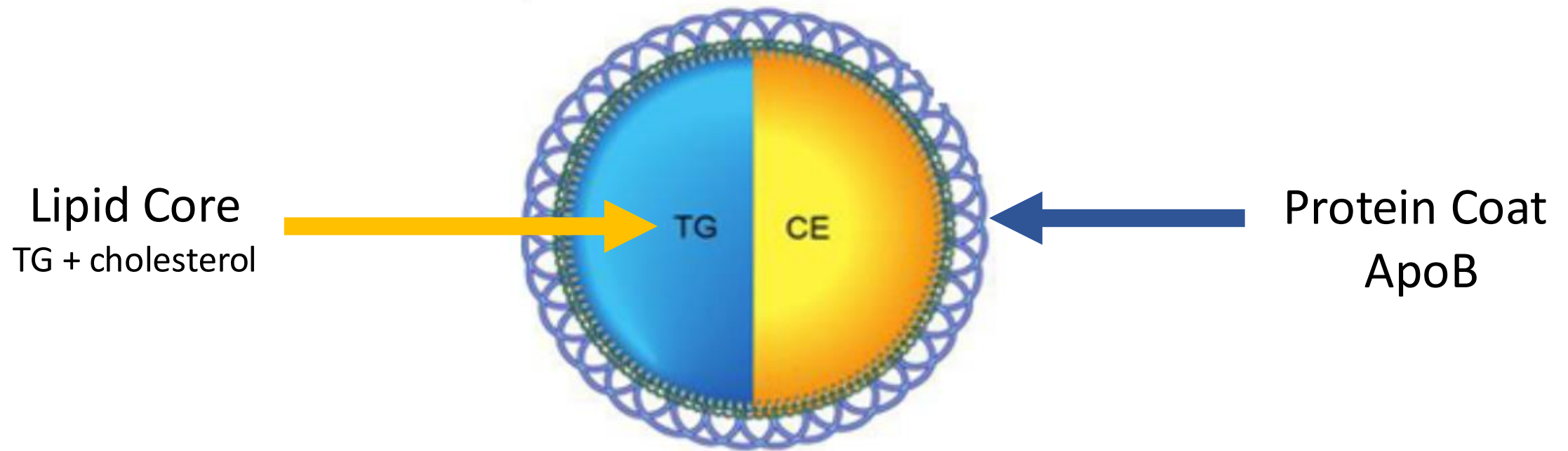
Family history

- FH
- Lp(a)
- High risk ethnic groups

High Risk Conditions

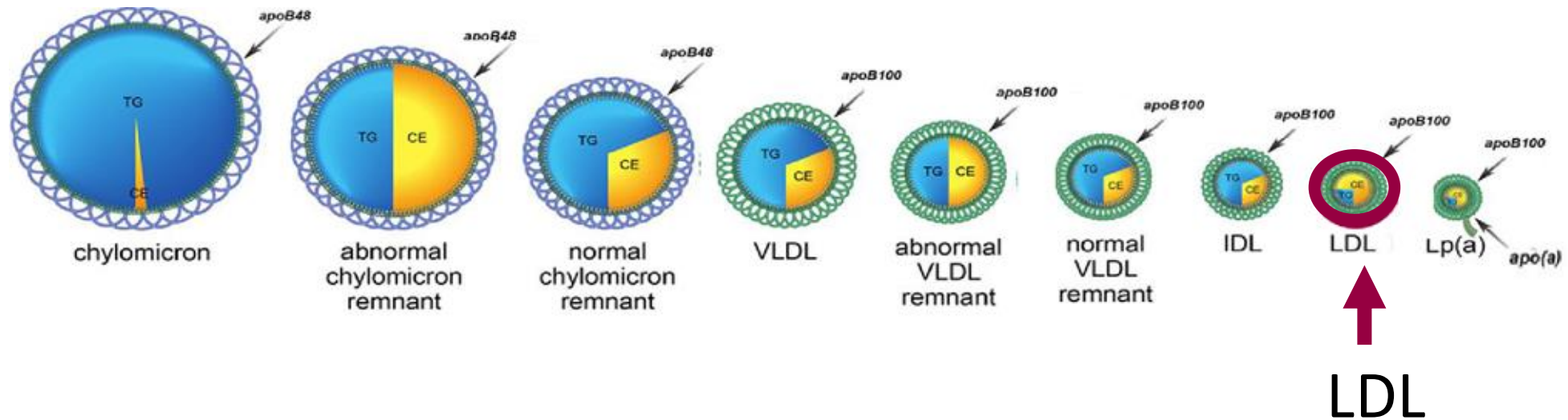
- CKD
- Chronic inflammatory disease (RA, SLE, PSA, AS, IBD)
- COPD
- High risk pregnancy

# What are 'Lipo' 'Proteins'?



# What are 'Lipo' 'Proteins'?

## The Universe of Apo-B lipoproteins



# What to Screen With ?

- Cholesterol
  - LDL or
  - ApoB or
  - Non HDL-C
- Triglycerides
- Lipoprotein(a) (once per lifetime)

# 5 Things to know about ApoB

1. Component of all lipoproteins
2. No fasting required (Not affected by Triglycerides)
3. Measured (not calculated like LDL)
4. Strong and equal measure of risk
5. Cheap (~\$10) & covered by the Ontario Ministry of Health

# Where ApoB is the Test of choice!

Where the TG > 1.5 mmol/l

We Recommend Instead of LDL

- **non-HDL-C or**
- **apo B**

(Strong Recommendation; High Quality Evidence)

# Thresholds

**(Not Targets)**

# “Thresholds” for Intensifying Lipid Lowering Therapy



- a) LDL-C > 1.8 mmol/L
- b) ApoB > 0.7 mmol/L
- c) Non HDL cholesterol > 2.4

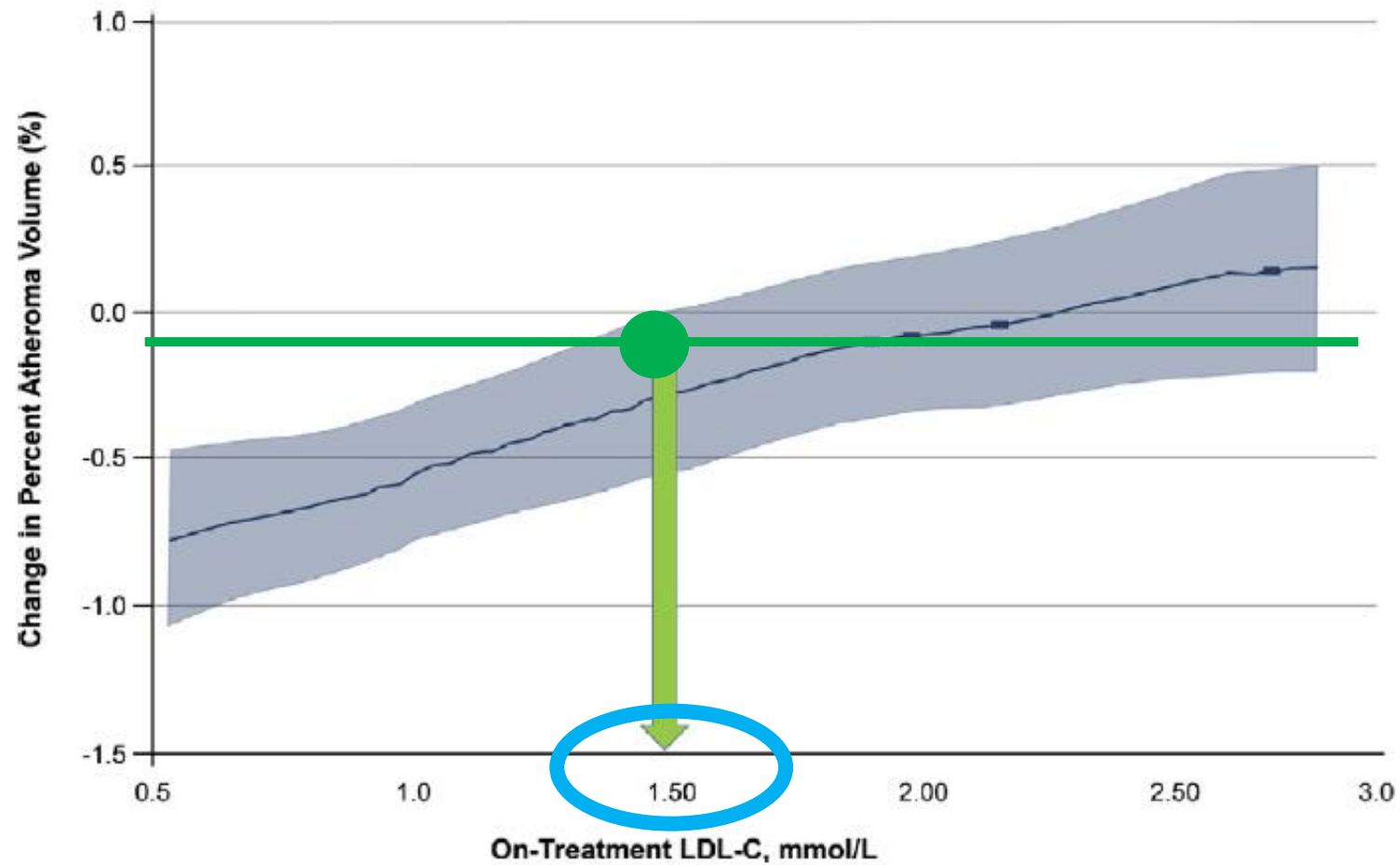
# The Rationale For Thresholds

Goal: Reduce LDL to reduce ASCVD events

Evidence: Outcomes are improved as LDL levels fall

Trials evaluated patients above a threshold LDL not the target achieved

# LDL Reduction can Reduce Plaque



# Real World Evidence of Regression



**2015**  
**LDL-C 2.95 mmol/L**



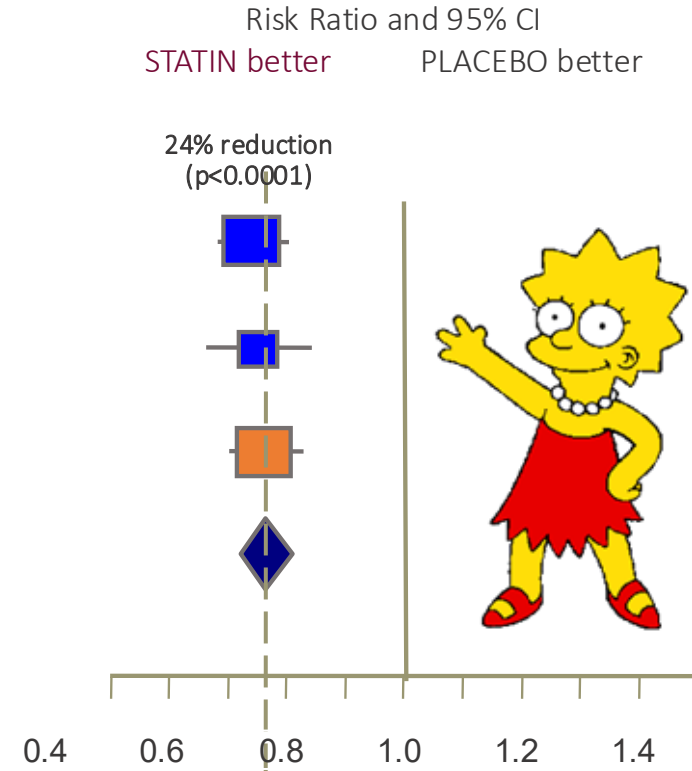
**2019**  
**LDL-C 1.24 mmol/L**

# All ASCVD, not only Cardiac

## The Health Protection Study

Vascular Event

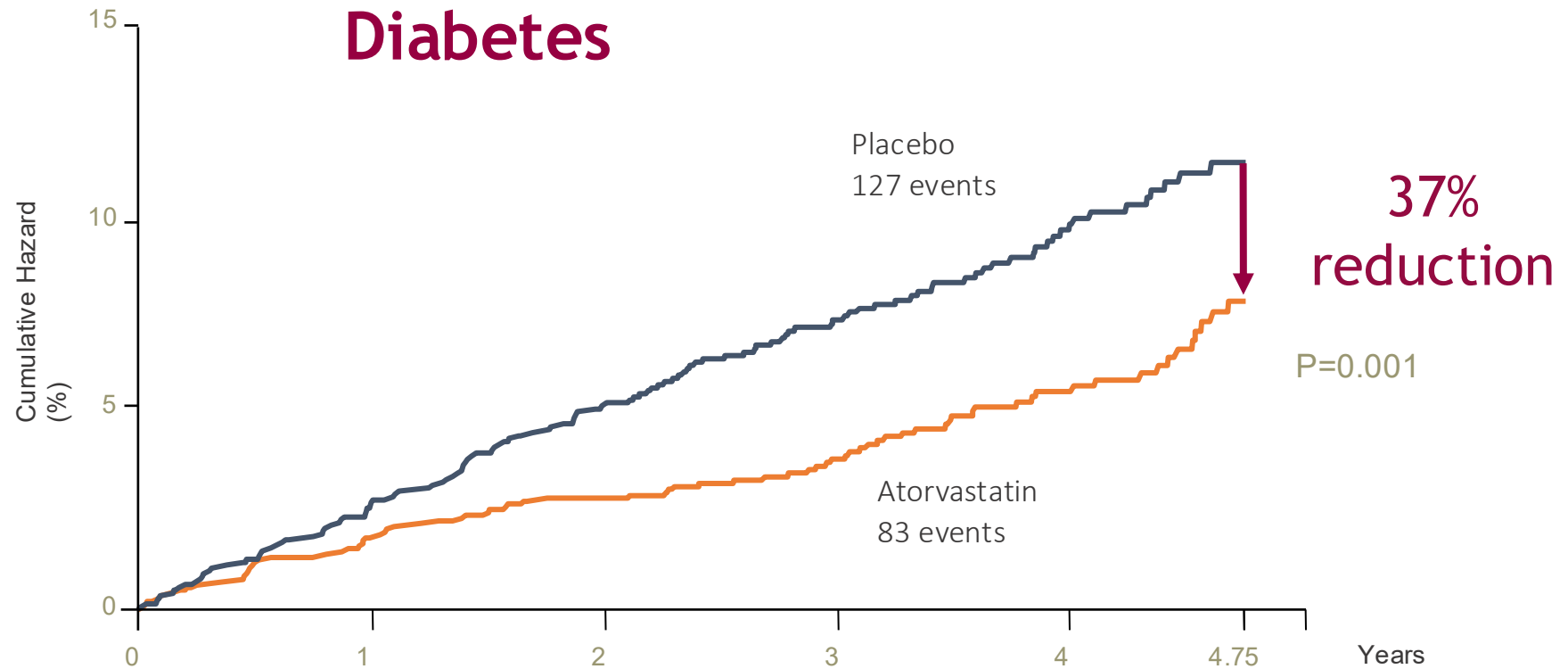
	Simvastatin (10269)	Placebo (10267)
Major coronary event	898	1212
Any stroke	444	585
Any revascularization	939	1205
MAJOR VASCULAR EVENT	2033	2585
	19.8%	25.2%



*hps*

# High Risk Patients benefit more

## The CARDS Study



# Guideline Based Management

# Thought Question



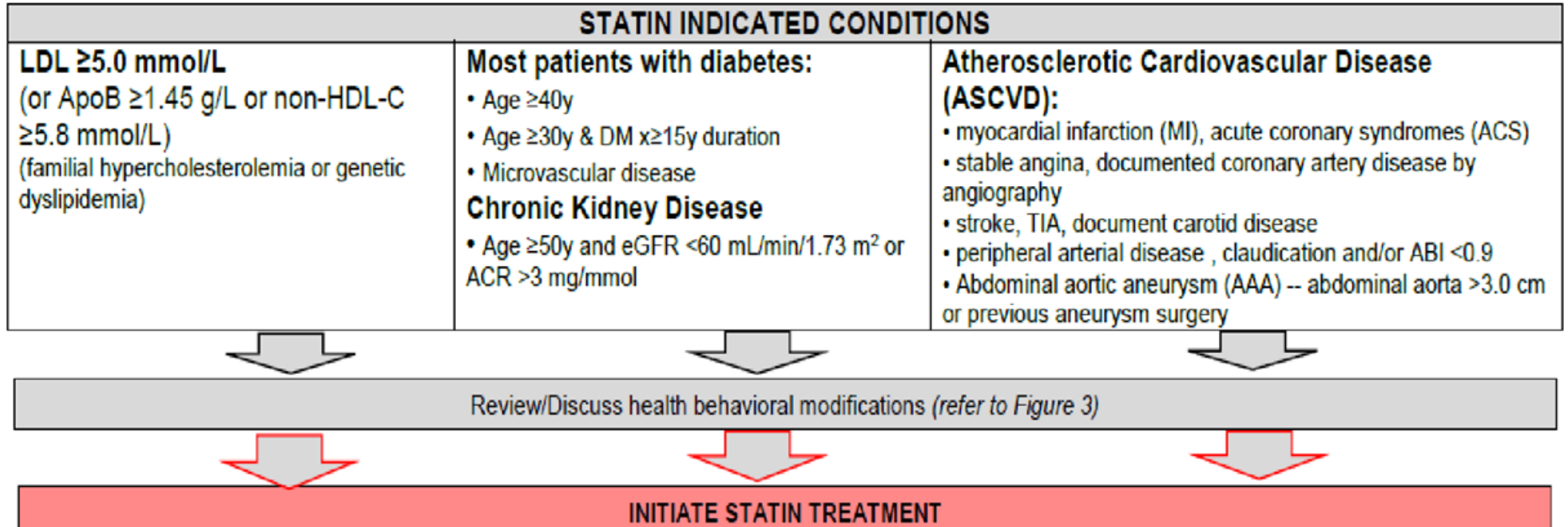
Medication: Atorvastatin 80 mg

Lab Results: LDL 3.9 TG 1.9

HgA1c 6.4 Lp(a) 215

**Why was he started on full dose Statin in Hospital?**

# Statin Indicated Condition



# The Primary Objective

High Intensity Statin recommended

"For patients who do not tolerate a high-intensity statins, we recommend the maximally tolerated statin dose "

Strong Recommendation; High-Quality Evidence

# LDL Threshold < 1.4 in High-Risk Patients

Recent ACS event

ASCVD with any of

- Polyvascular disease (2 vascular beds)
- Diabetes or metabolic syndrome
- Symptomatic PVD
- MI in last 2 years or recurrent
- Prior bypass surgery
- Lp(a) > 100

# When a Statin is Not Enough

8 weeks Later: LDL 2.4 mmol/l

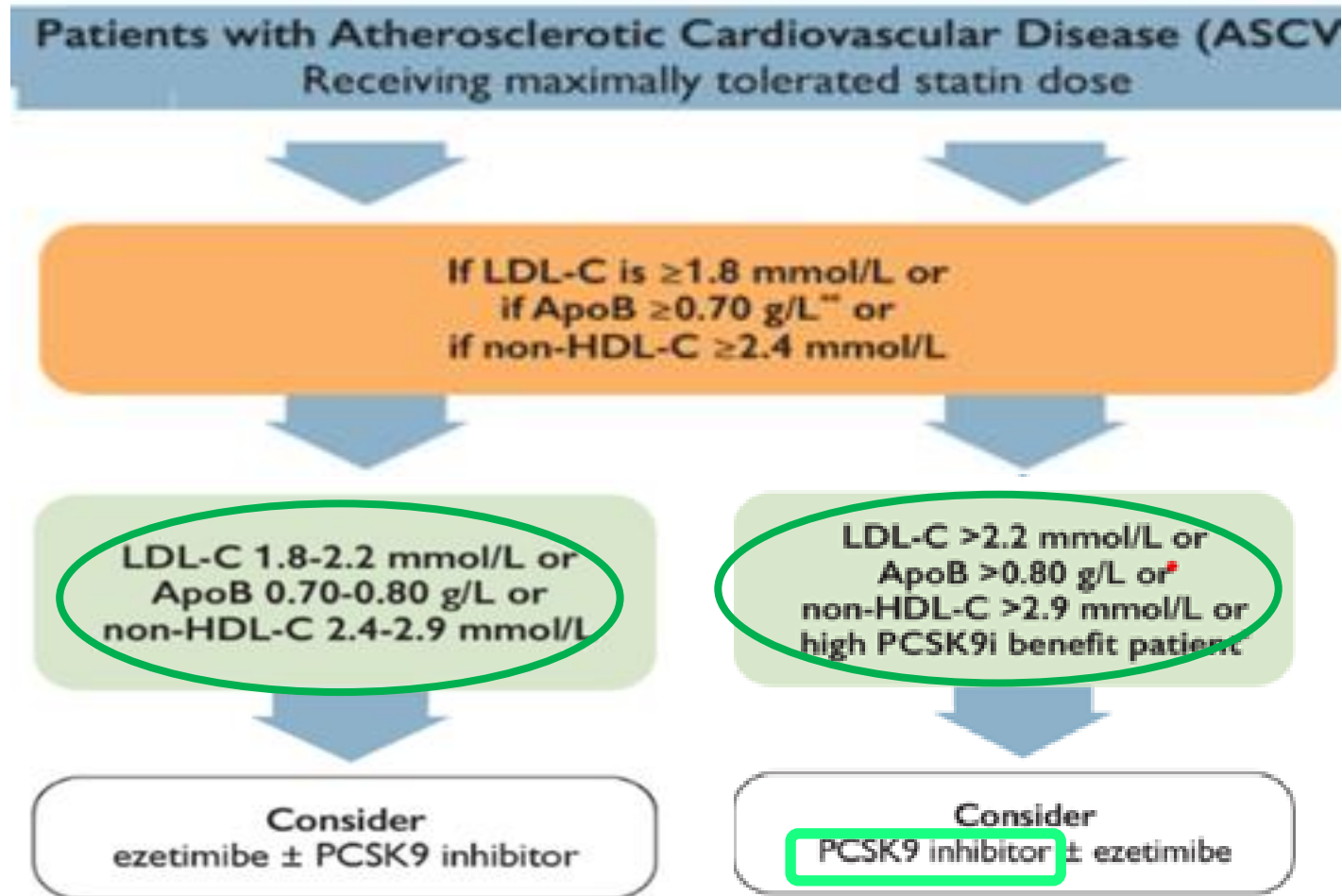


Medication: Atorvastatin 80 mg

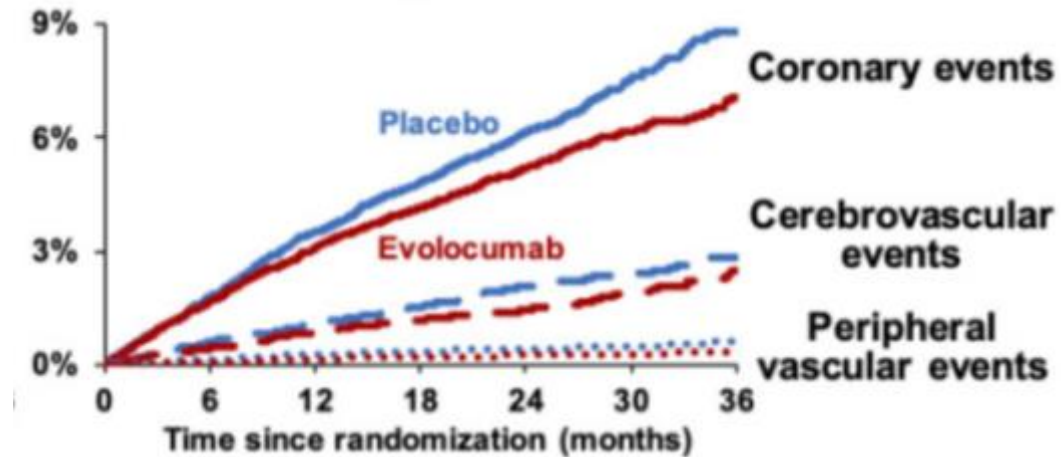
Lab Results: **X** LDL 2.4 TG 1.9

HgA1c 6.2 Lp(a) 215

# Treatment Intensification



# PSK9i Reduce ASCVD Events Across ALL Vascular Territories



## Acute coronary events

(CHD death, MI, or urgent coronary revascularization)

↓ **17%** (First event)

HR 0.83 (95% CI 0.75-0.91)

## Acute cerebrovascular events

(Ischemic stroke, TIA, or urgent cerebral revascularization)

↓ **23%** (First event)

HR 0.77 (95% CI 0.65-0.92)

## Acute peripheral vascular events

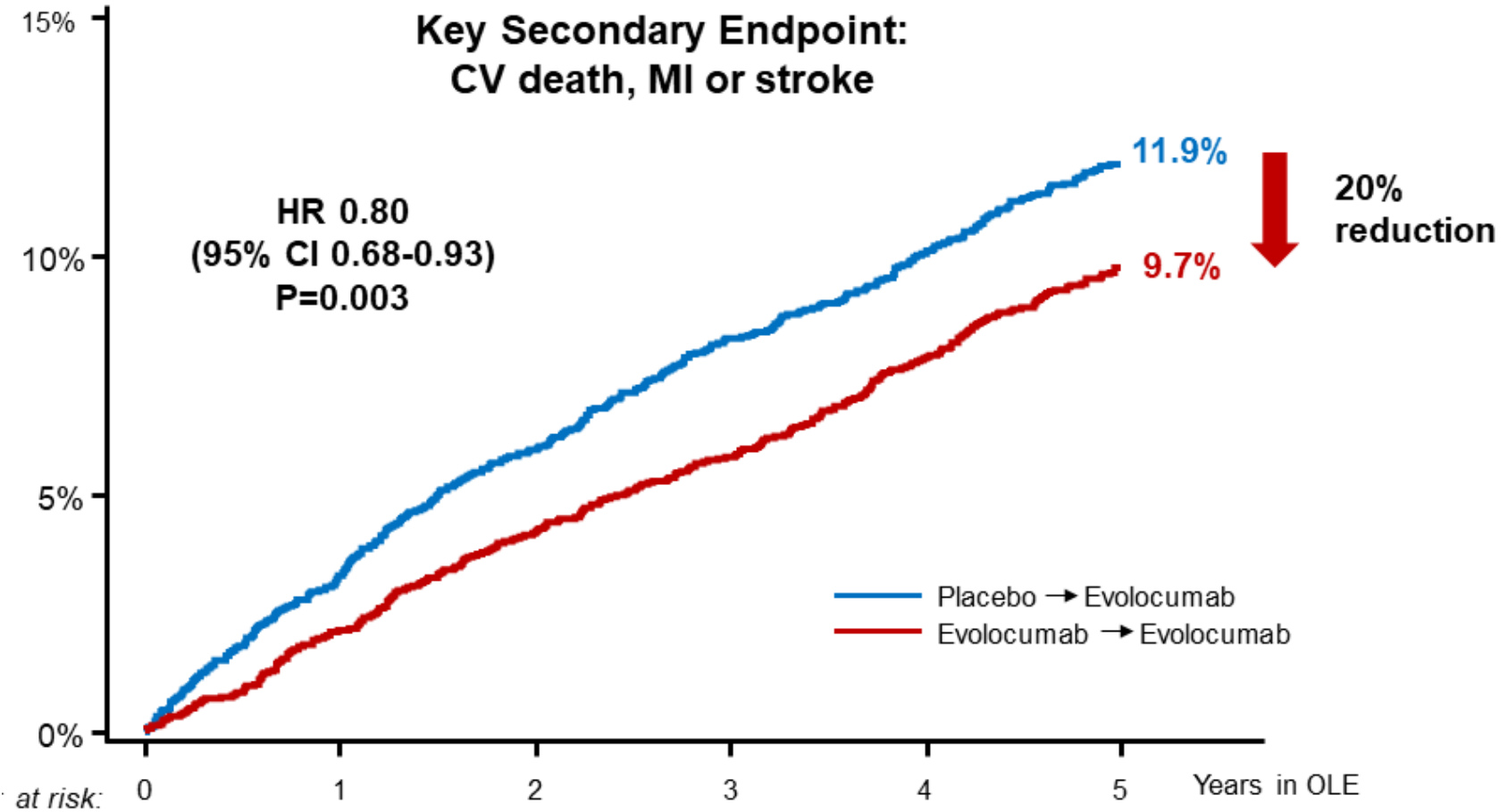
(ALI, major amputation, or urgent peripheral revascularization)

↓ **42%** (First event)

HR 0.58 (95% CI 0.38-0.88)

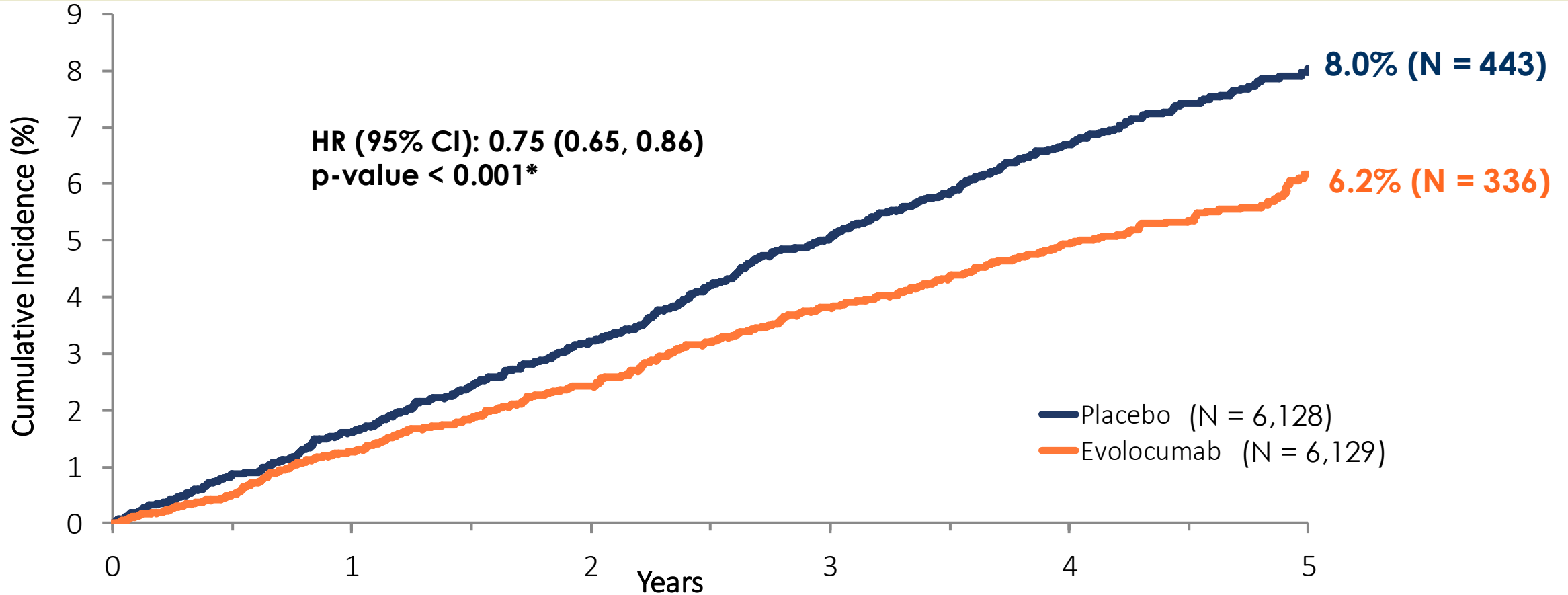
# Efficacy of PCSK9i in Fourier

fourier-OLE



# Evolocumab in primary prevention

3-Point MACE (Time to first occurrence of CHD death, MI, or ischemic stroke)<sup>1</sup>

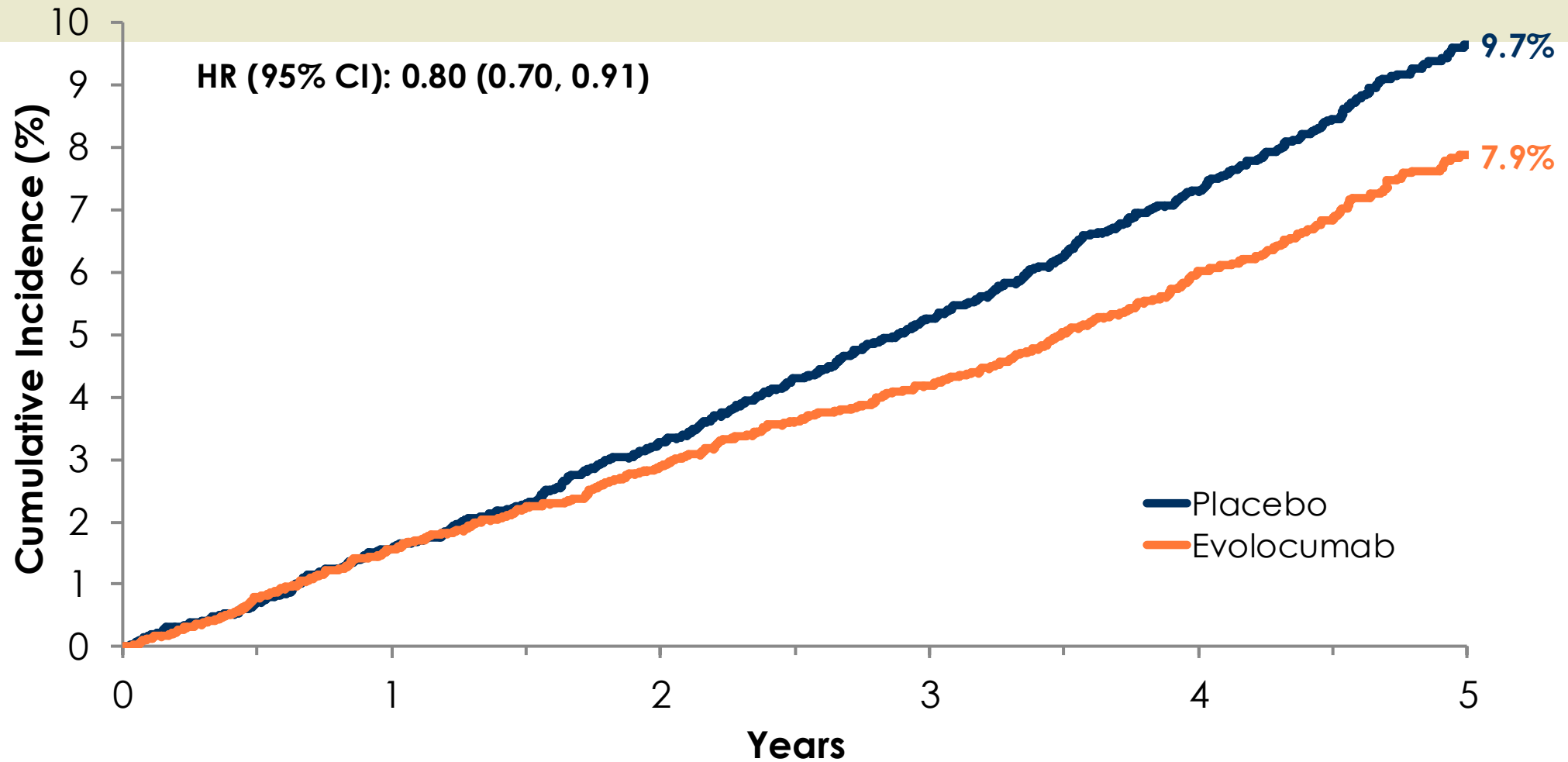


**Evolocumab reduced the relative risk of composite 3-point MACE by 25%**

\*P-value based on the log-rank test stratified by the randomization stratification factors. Hazard ratio and 95% CI were estimated from the Cox model stratified by the randomization stratification factors.  
CHD, coronary heart disease; MI, myocardial infarction; MACE, major adverse cardiovascular event.

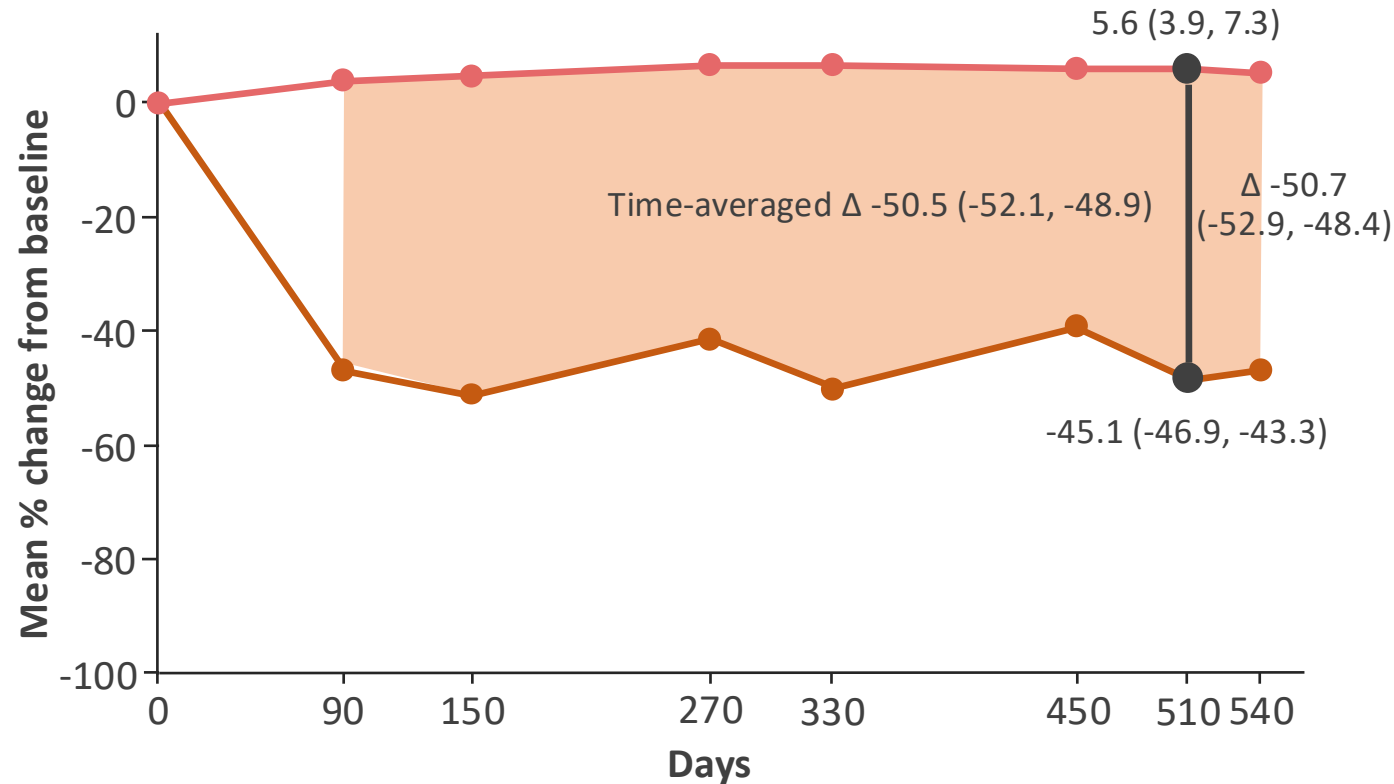
1. Bohula E, et al. Oral presentation presented at: American Heart Association; November 7-10, 2025; New Orleans, LA. 2. Bohula EA, et al. *N Engl J Med*. 2025; DOI: 10.1056/NEJMoa2514428.

# Evolocumab: all cause death



CHD death was not statistically significant, therefore, subsequent secondary endpoints, including all-cause death, were not formally tested and should be interpreted as exploratory.

# Inclisiran provided effective and sustained LDL-C lowering over 18 months vs. placebo



Inclisiran as an adjunct to diet and maximally tolerated statin therapy

The pooled analysis of 3660 patients (ORION-9, ORION-10, ORION-11)

# Is Low LDL Safe ?

**Maximum Tolerated Statin  
is a good and Safe Strategy**

# Very Low LDL Is Safe

LDL-C is the final product of remodeling lipoproteins in the endothelium

Brain is behind the blood brain barrier isolated from circulating lipoproteins

Individuals with genetically low LDL < 0.5 mmol/L are healthy

Ebbinghaus study showed no cognitive effect

# Safety Concerns

10,000 patients receiving effective statin therapy for 5 years and lowered LDL-C by 2 mmol/L would result in:

Major vascular events prevented	Muscle pain or weakness	Myopathy (symptoms + CK > 10xULN)	Rhabdomyolysis (if statin not stopped upon myopathy)	New-onset diabetes	Haemorrhagic stroke
1,000	50-100	~ 5	~ 1	~ 50	~ 5

CTT Collaboration meta-analyses of 22 trials RCT (n =135,000) comparing routine statin therapy to placebo and 5 trials (40,000 patients) comparing more versus less intensive statin therapy.

# Very low LDL-C is safe

<b>CANTAB Tests</b>	<b>P<sub>trend</sub></b>
Executive function	0.11
Working memory	0.61
Episodic memory	0.61
Reaction Time	0.47
<b>Global Score</b>	<b>0.30</b>

<b>Everyday Cognition Self Survey</b>	<b>P<sub>trend</sub></b>
Memory	0.11
Executive function	0.12
Planning	0.27
Organization	0.98
Divided attention	0.038
<b>Total Score</b>	<b>0.017</b>

**Better scores at lower  
achieved LDL-C**

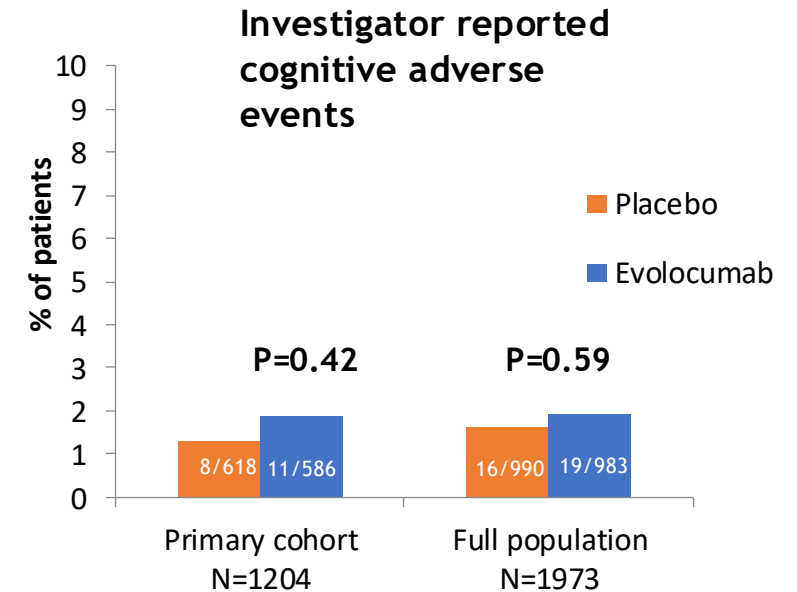
# Very Low LDL Does Not Cause Harm



## No evidence for cognitive impairment Ebbinghaus sub trial of the Fourier PCSK9i trial

Patient self-report: 23 questions regarding everyday cognition

All patients	Placebo N=781 mean (SD)	Evolocumab N=800 mean (SD)	P-value
Memory	1.16 (0.39)	1.17 (0.39)	0.81
Executive functioning total score	1.11 (0.32)	1.12 (0.32)	0.28
Planning	1.08 (0.31)	1.10 (0.32)	0.20
Organization	1.09 (0.32)	1.10 (0.33)	0.57
Divided attention	1.15 (1.42)	1.16 (0.41)	0.54
Total score	1.13 (0.33)	1.14 (0.33)	0.42



# The Statin Indicated Patient When to Think Twice ?

## Limited Quality of Life Years Gained

- Limited life expectancy
- Limited QOL
- CHF end stage

## Limited Cost Effectiveness

- Low CV risk (Framingham risk < 10%)
- End-stage renal disease
- Non ischemic heart failure

# Triglycerides Elevated > 1.7 mmol/l



Medication: Atorvastatin 80 mg

Lab Results: + LDL 0.9      **X** TG 2.1

HgA1c 6.2

Lp(a) 215

# Triglycerides Still Elevated

## Optimize

- BMI
- Diet Carbohydrates
- Exercise
- Diabetes



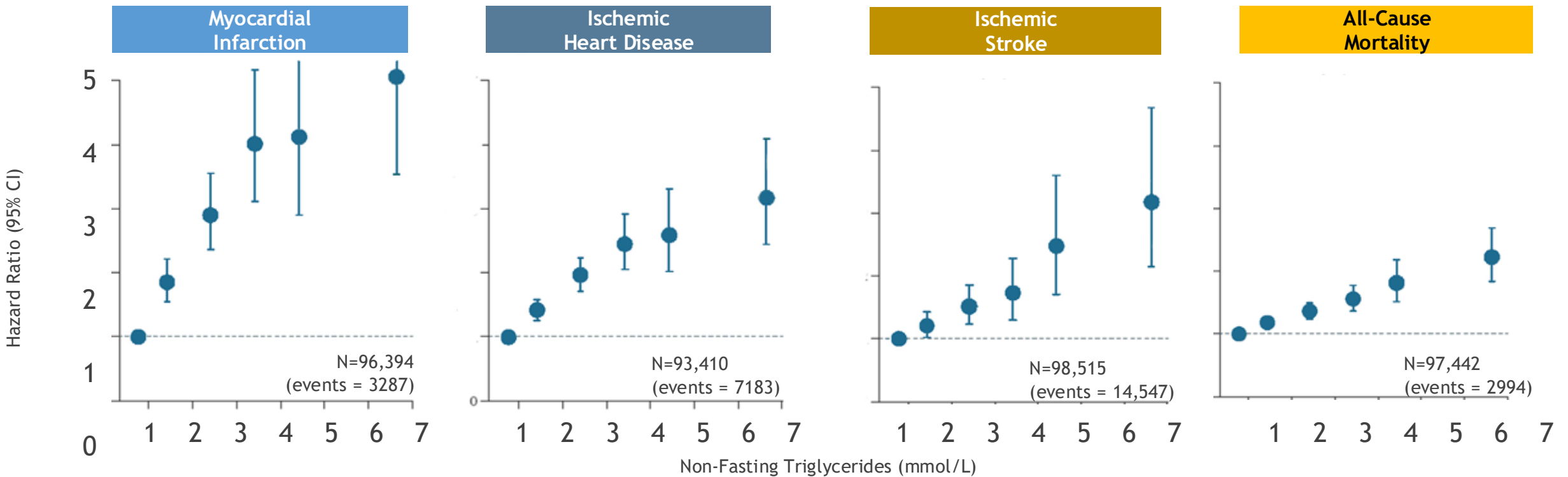
**If TG is  $\geq 1.5$  to 5.6 mmol/L**



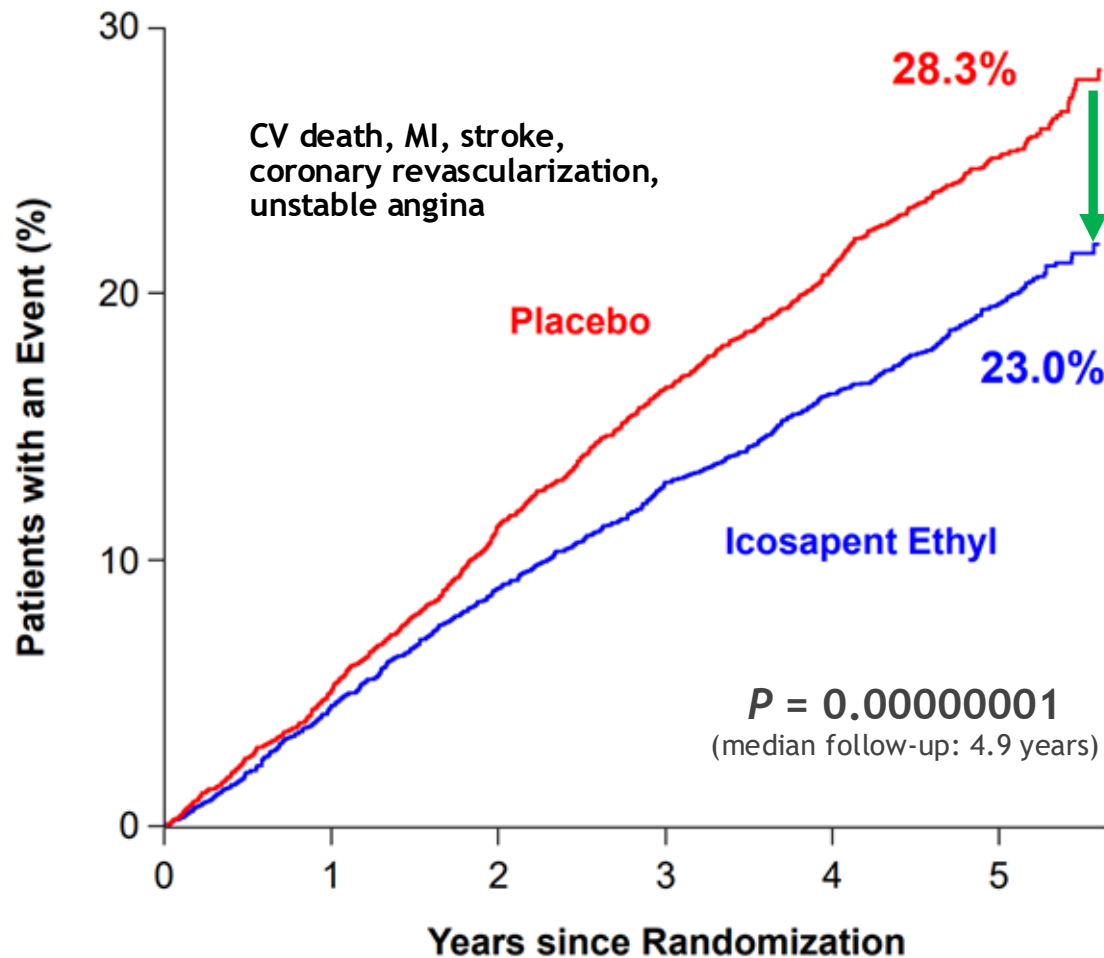
**Consider  
Icosapent ethyl 2000 mg BID<sup>†</sup>**

# Triglycerides and ASVD risk

## Copenhagen City Heart Study and Copenhagen General Population Study



# Icosapent Ethyl in Diabetes with ASCVD

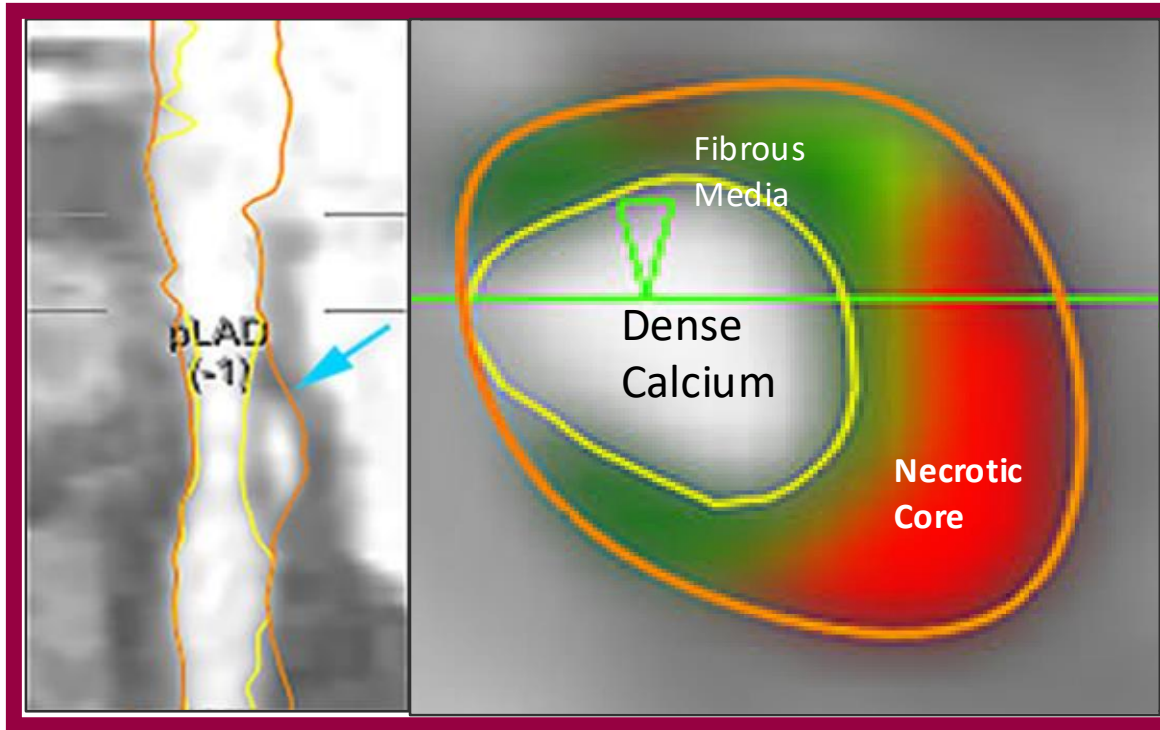


Primary Endpoint  
5-Point MACE

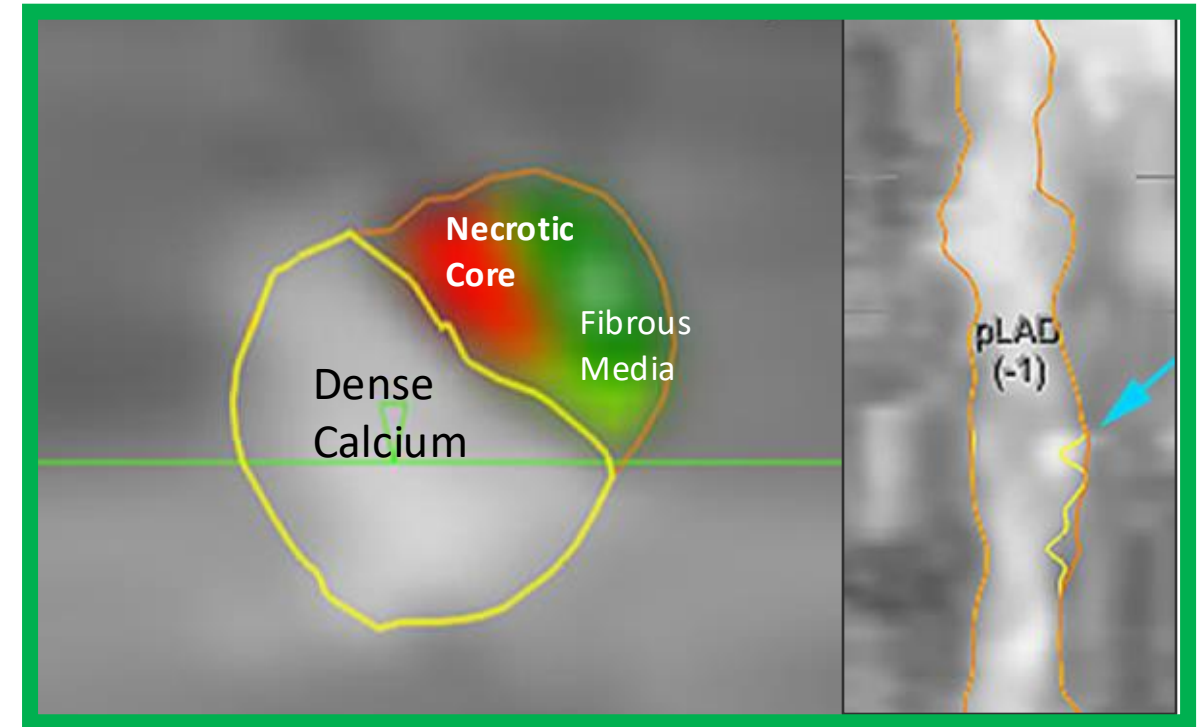
**25%** Risk Reduction  
**NNT = 21**

# Icosapent Ethyl: Regression of Plaque

Baseline



IPE: 18-Month Follow-Up



- proximal left anterior descending (LAD) artery
- 54-year-old male with diabetes, hypertension, and hyperlipidemia
- Optimal statin therapy randomized to IPE and followed for 18 months

# Fish Oil is Out

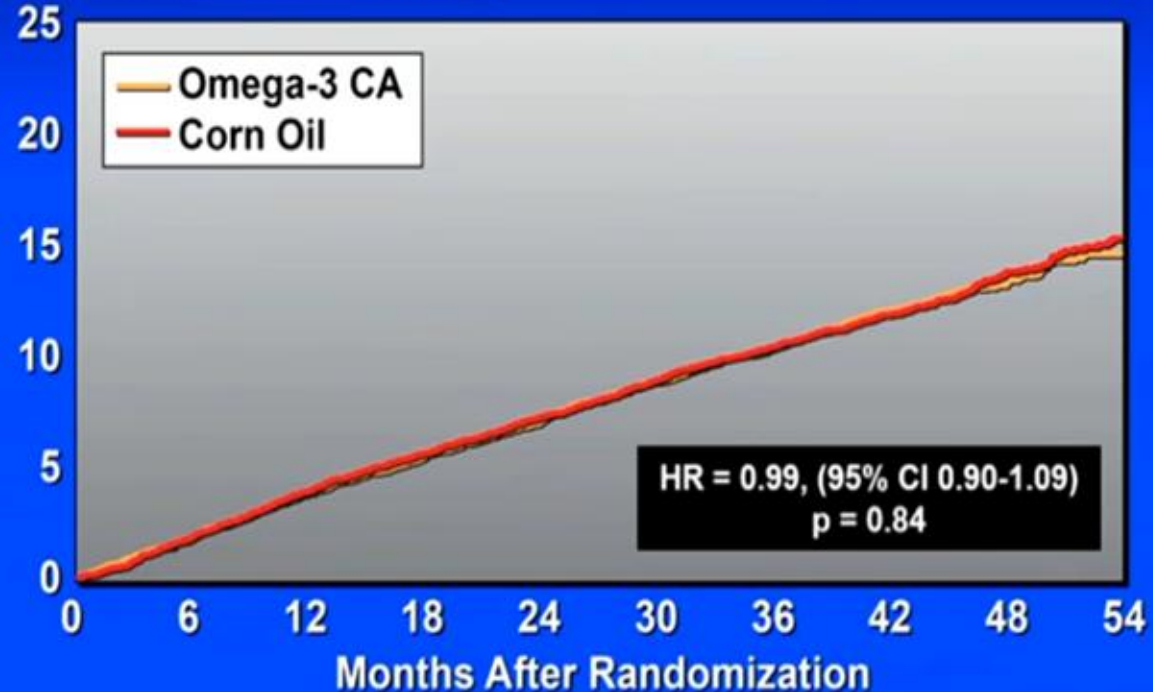
Effect of High-Dose Omega-3 Fatty Acids vs Corn Oil on Major Adverse Cardiovascular Events in Patients at High Cardiovascular Risk  
The STRENGTH Randomized Clinical Trial



**TRIAL  
STOPPED  
EARLY FOR  
FUTILITY**

**1° Endpoint – CV Death, MI, Stroke, Coronary Revascularization, or Hospitalization for Unstable Angina**

Patients with an Event (%)



# Hereditary High Risk Groups

**Lp(a)**  
**Familial hypercholesterolemia**

# Lp(a)

# What is it? What Do I Do?



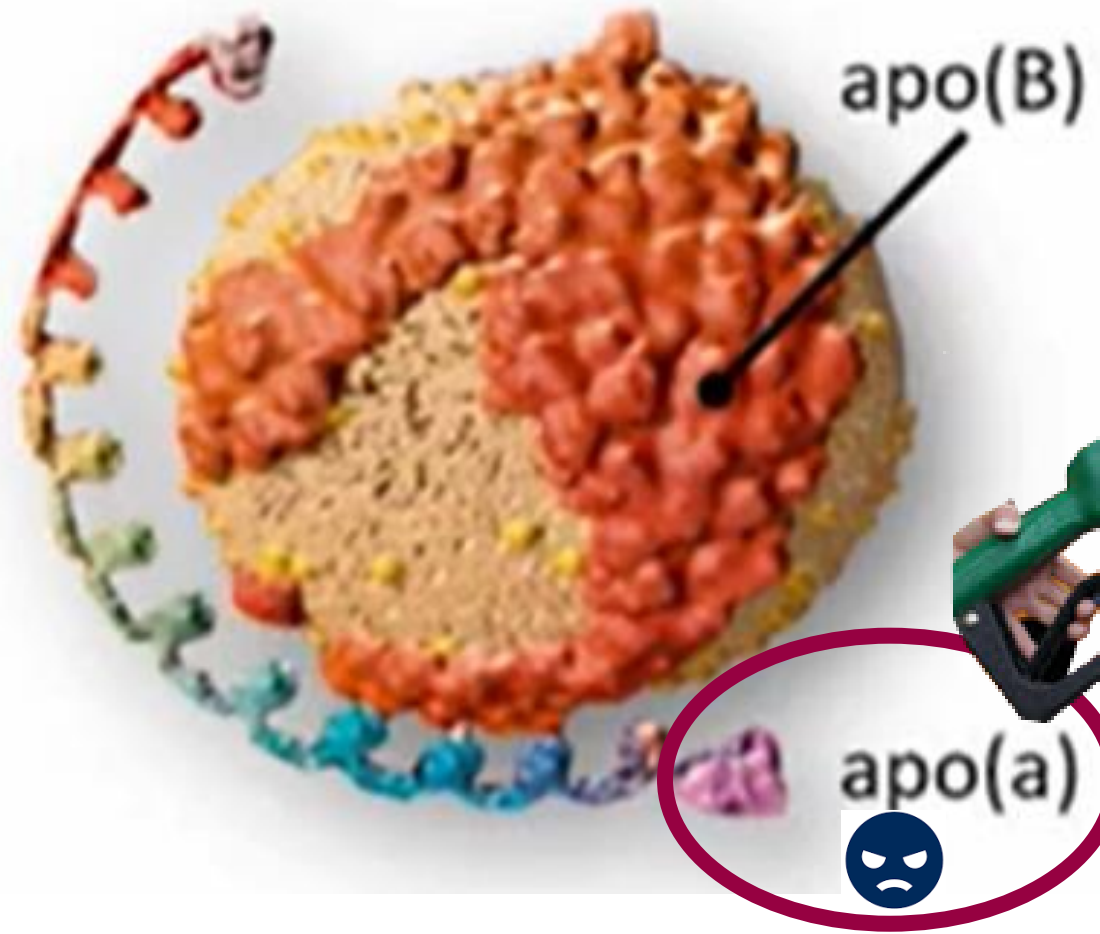
Medication: Atorvastatin 80 mg

Lab Results: LDL 1.0 TG 1.5

HgA1c 5.9

**X Lp(a) 215**

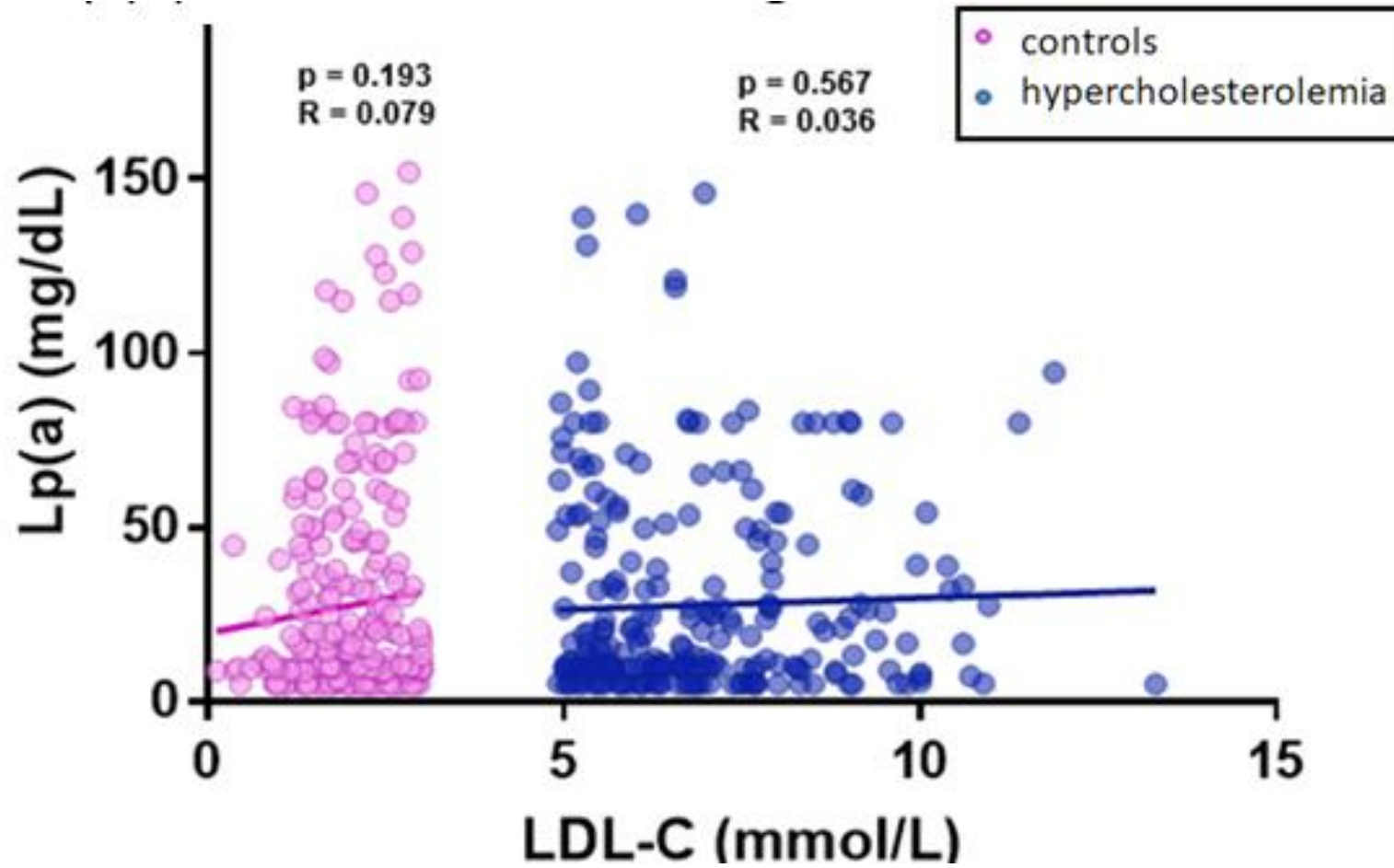
# Lp(a): is LDL Cholesterol's Evil Cousin



Promoter of Inflammation and Thrombosis

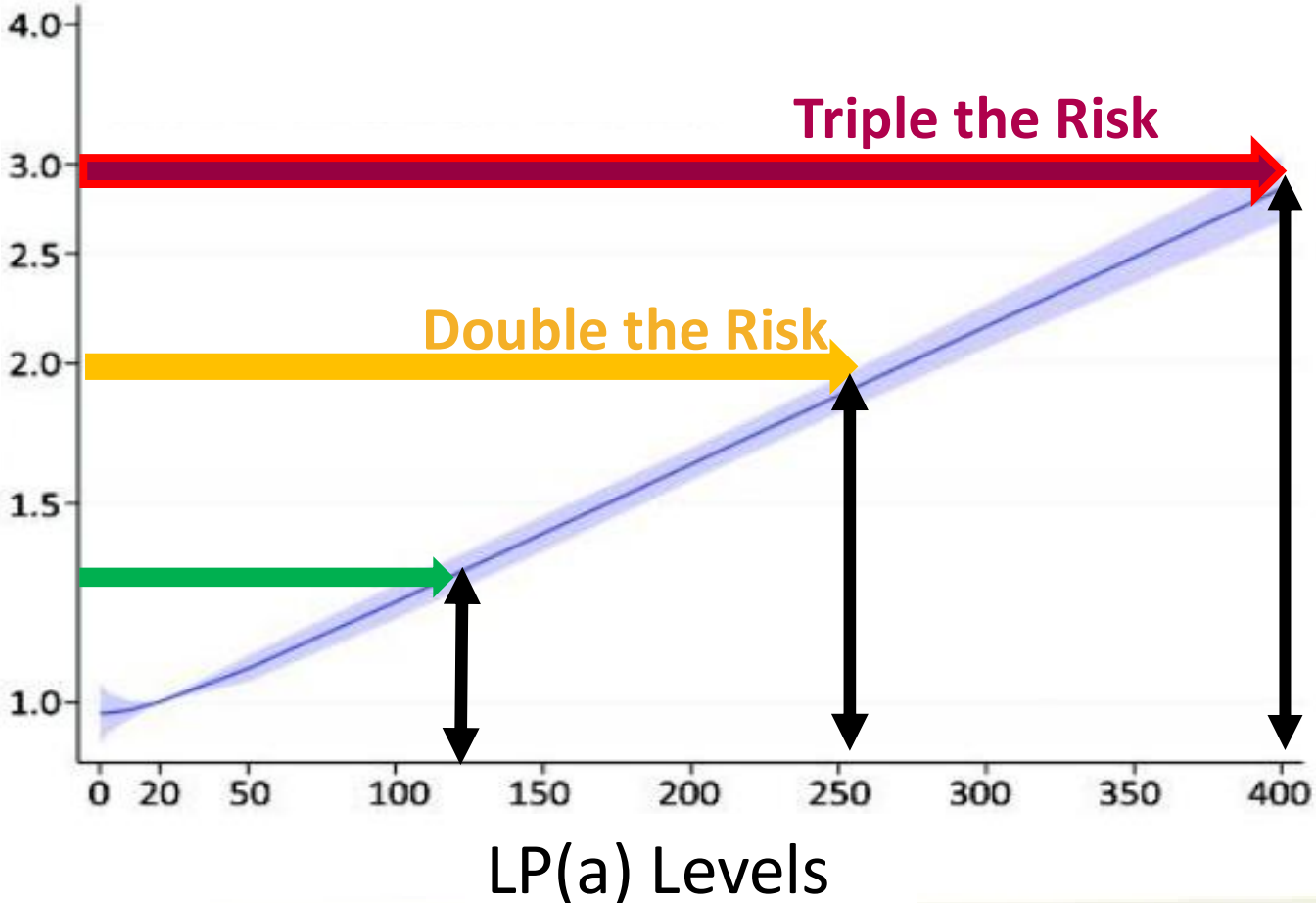


# Lp(a) is Not Correlated with LDL or FH

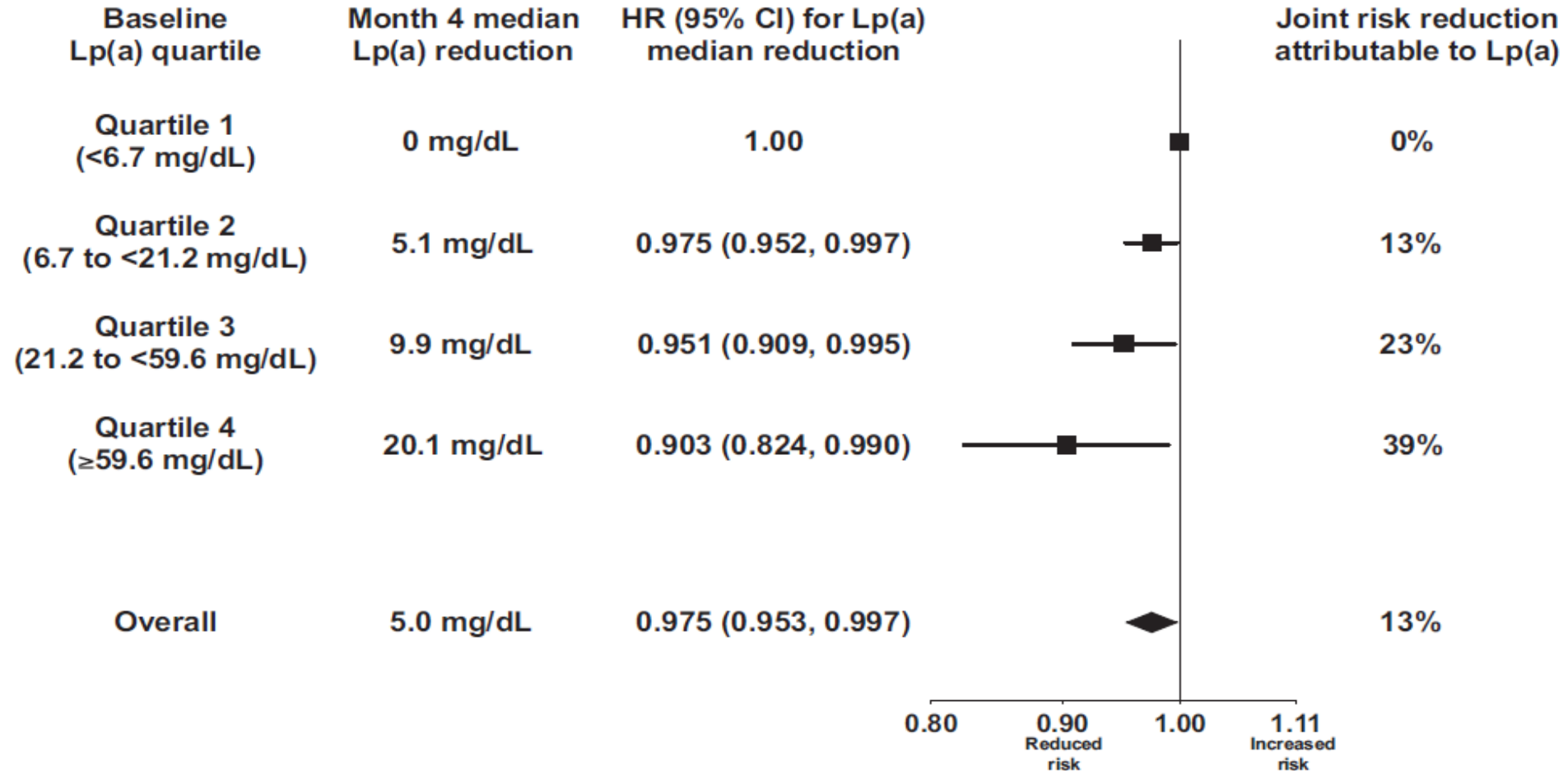


# Lp(a) increases the Risk of Cardiovascular Disease

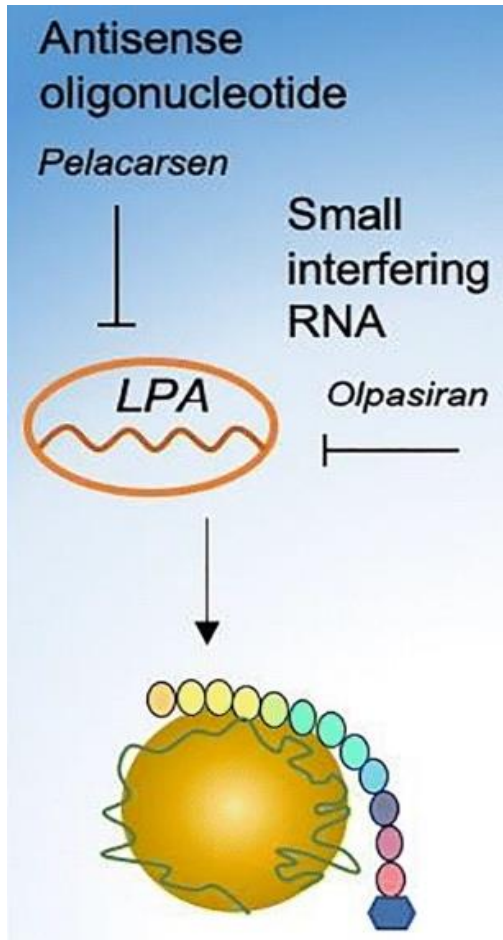
Lifetime Risk Of Major Cardiovascular Events



# Alirocumab, Lp(a) levels, ASCVD risk



# Drugs in Late Phase RCT for Lp(a)



Name	Company	Drug class	Status
<b>Pelacarsen</b>	Novartis/Ionis	Antisense therapy	Phase 3 HORIZON trial expected to be completed in 2025
<b>Olpasiran</b>	Amgen	siRNA therapy	Phase 3 OCEAN(a) trial expected to be completed in 2026
<b>LY3819469</b>	Eli Lilly	siRNA therapy	Phase 2 trial ongoing
<b>SLN360</b>	Silence Therapeutics	siRNA therapy	Phase 2 trial launching soon

# Reduce the Impact of Lp(a)

## Maintain a Healthy Lifestyle



Be physically active



Eat A Healthy Diet



Quit Smoking



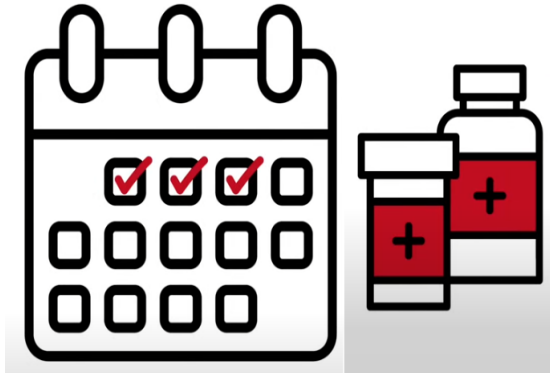
Get Enough Sleep



Maintain healthy body weight

# Reduce the Impact of Lp(a)

Take Preventative Therapies Your Doctor Prescribes



Diabetes



High Blood Pressure



Cholesterol Therapy

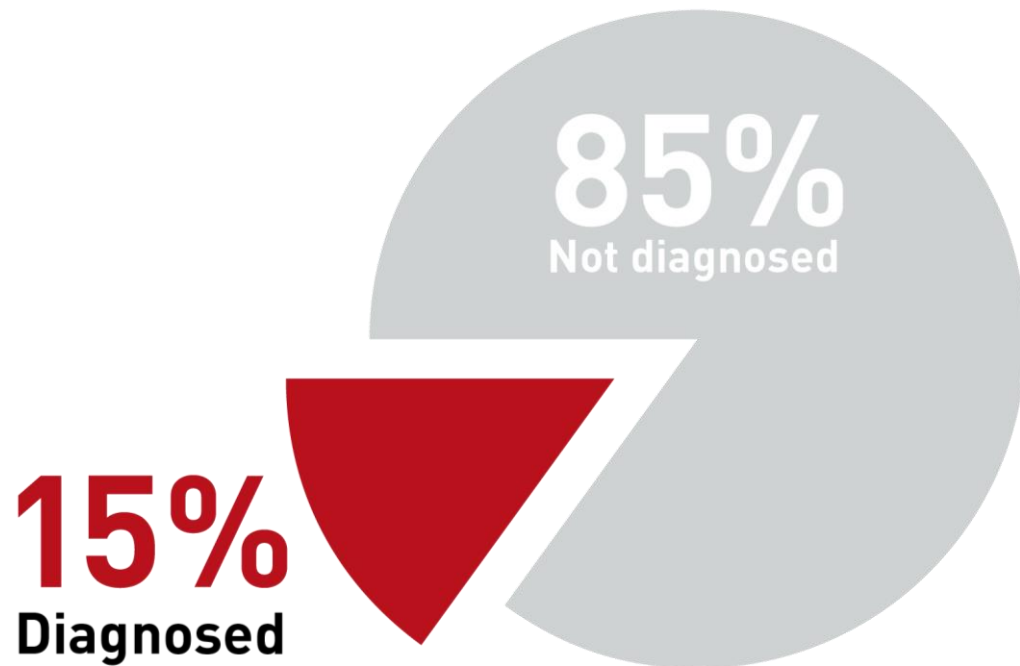


Aspirin

And others

# FH: Not That Rare!

## Estimate of Diagnosis in Canada



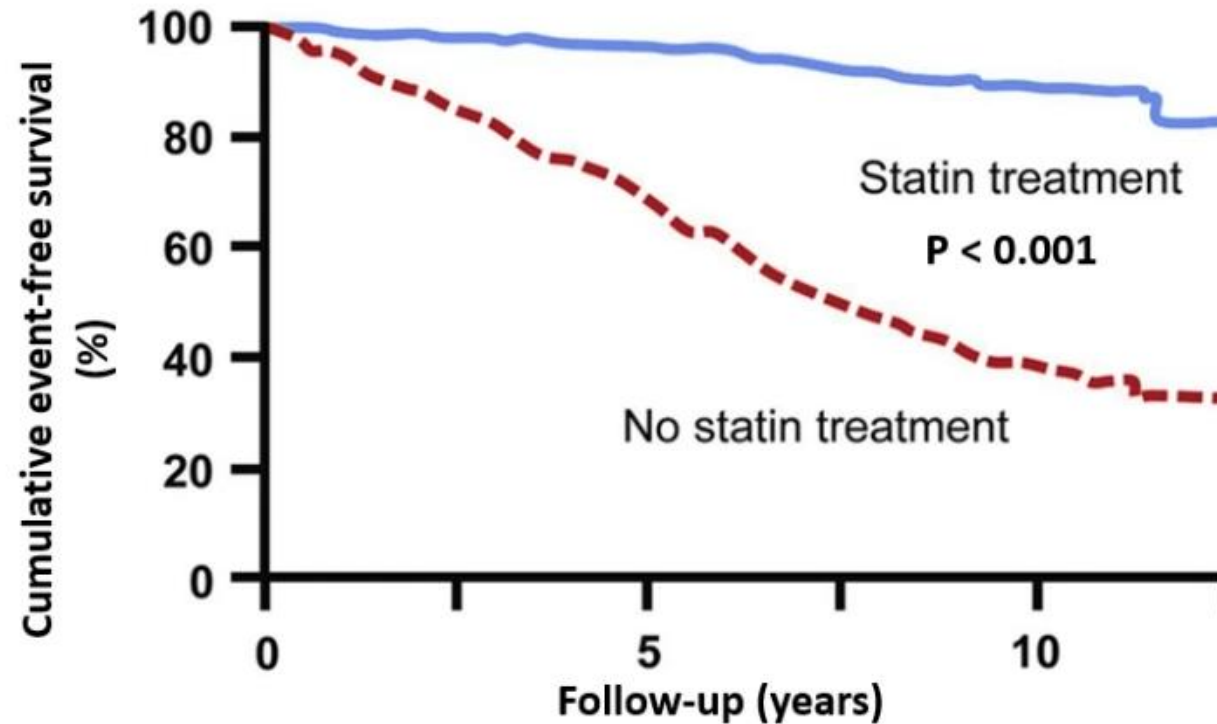
## Heterozygous FH is not rare:

- Canadians - 250-350
- French-Canadians - 150-250

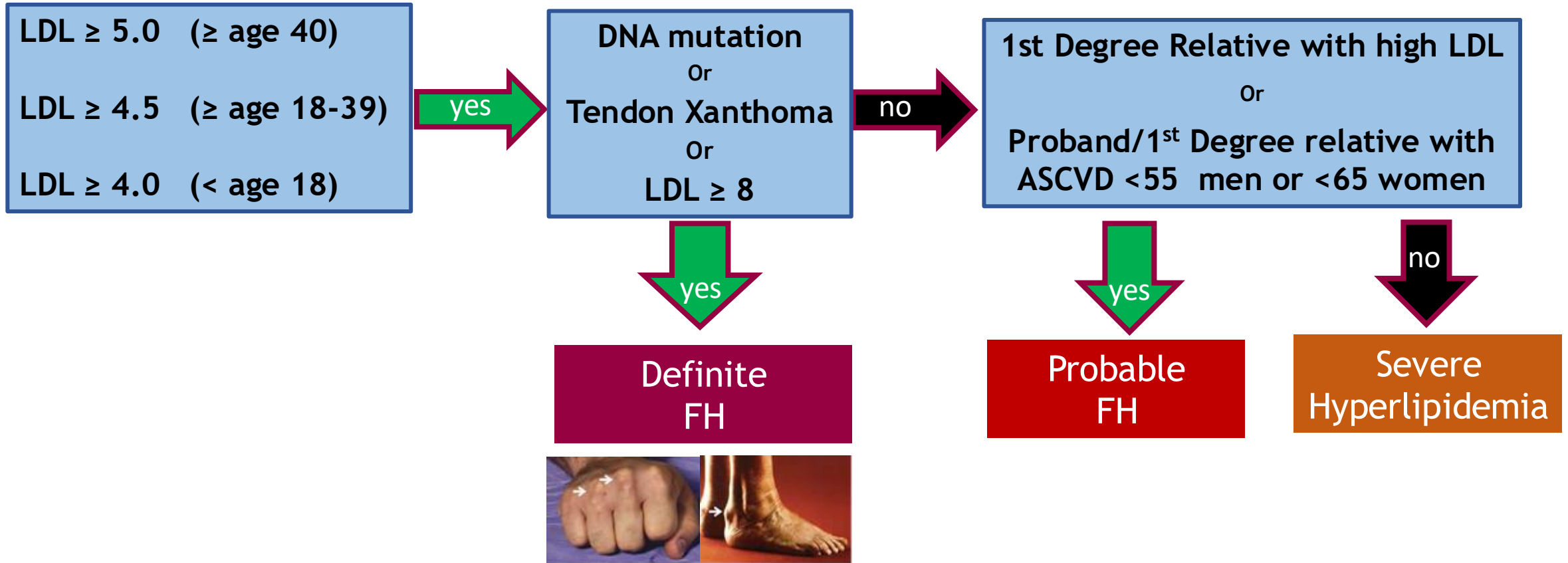
**>85,000 Cases in Canada**

# Familial Hypercholesterolemia: statin effect

## CHD Free Survival Among Individuals with FH According to Statin Treatment



# Canadian Guidelines: Diagnosis of FH



# Any Physician Can Order Genetic Testing in Ontario based on the following

## FAMILIAL HYPERCHOLESTEROLEMIA ONTARIO REQUISITION

LAB USE ONLY	PATIENT INFORMATION (INCOMPLETE REQUESTS WILL BE BANKED)
Received date: <input type="text"/>	Name: <input type="text"/>
Notes: <input type="text"/>	Address: <input type="text"/>
<b>SAMPLE COLLECTION</b>	Date of Birth: <input type="text"/>
Date drawn: <input type="text"/>	Health Card No.: <input type="text"/>
<input type="checkbox"/> EDTA blood (lavender top) (5ml at room temp)	Sex: M <input type="radio"/> F <input type="radio"/> Unknown <input type="radio"/> Unspecified <input type="radio"/>
<input type="checkbox"/> DNA (100ng minimum) <input type="checkbox"/> Other: <input type="text"/>	Birthsex: M <input type="radio"/> F <input type="radio"/> Unknown <input type="radio"/> Unspecified <input type="radio"/>
<b>TEST REQUEST</b>	<b>ELIGIBILITY CRITERIA FOR TESTING</b>
<input type="checkbox"/> Familial Hypercholesterolemia- Focused Panel (8 genes) ABCG5, ABCG8, APOB, APOE, LDLR, LDLRAP1, LIPA, PCSK9	Individual must meet <b>one or more</b> of the following:
<input type="checkbox"/> Carrier testing/ Known Family Mutation LHSC.MDII/Name of index case in the family (include copy of report)	<input type="checkbox"/> 1. Confirmed FH disease-causing pathogenic/likely pathogenic variant in a close blood relative
Date of Birth: <input type="text"/>	<input type="checkbox"/> 2. High LDL-cholesterol level of $\geq 8.5$ mmol/L at any age
Relationship to this patient: <input type="text"/>	<input type="checkbox"/> 3. Untreated elevated LDL-cholesterol level (not due to secondary causes)
Gene: <input type="text"/>	Specify: <input type="text"/> mmol/L
RefSeq:NM: <input type="text"/>	<input type="radio"/> Untreated LDL-cholesterol level $\geq 5.0$ mmol/L for age 40 years and over
Mutation: <input type="text"/>	<input type="radio"/> Untreated LDL-cholesterol level $\geq 4.5$ mmol/L for age 18 to 39 years
	<input type="radio"/> Untreated LDL-cholesterol level $\geq 3.5$ mmol/L for age under 18 years
	<b>AND at least one of the following:</b>
	<input type="radio"/> Tendon xanthomas and/or corneal arcus in proband
	<input type="radio"/> First-degree relative (FDR) with high LDL-cholesterol level (not due to secondary causes)
	<input type="radio"/> Proband or FDR with early onset ASCVD (men under 55 years; women under 65 years)
	<input type="radio"/> Limited family history information (e.g., adopted)
	<input type="checkbox"/> 4. Clinical judgement: Criteria above not met, but suspicion remains
	Describe: <input type="text"/>
<b>REFERRING PHYSICIAN</b> Authorized Signature is Required	<b>CC REPORT TO</b>
Physician Name (print): <input type="text"/>	Name: <input type="text"/>
Signature: <input type="text"/> Email: <input type="text"/>	Address: <input type="text"/>
Clinic/Hospital: <input type="text"/>	Telephone: <input type="text"/>
Address: <input type="text"/>	Fax: <input type="text"/>
Telephone: <input type="text"/> Fax: <input type="text"/>	

Family history of confirmed FH

Extremely high LDL  $\geq 8.5$

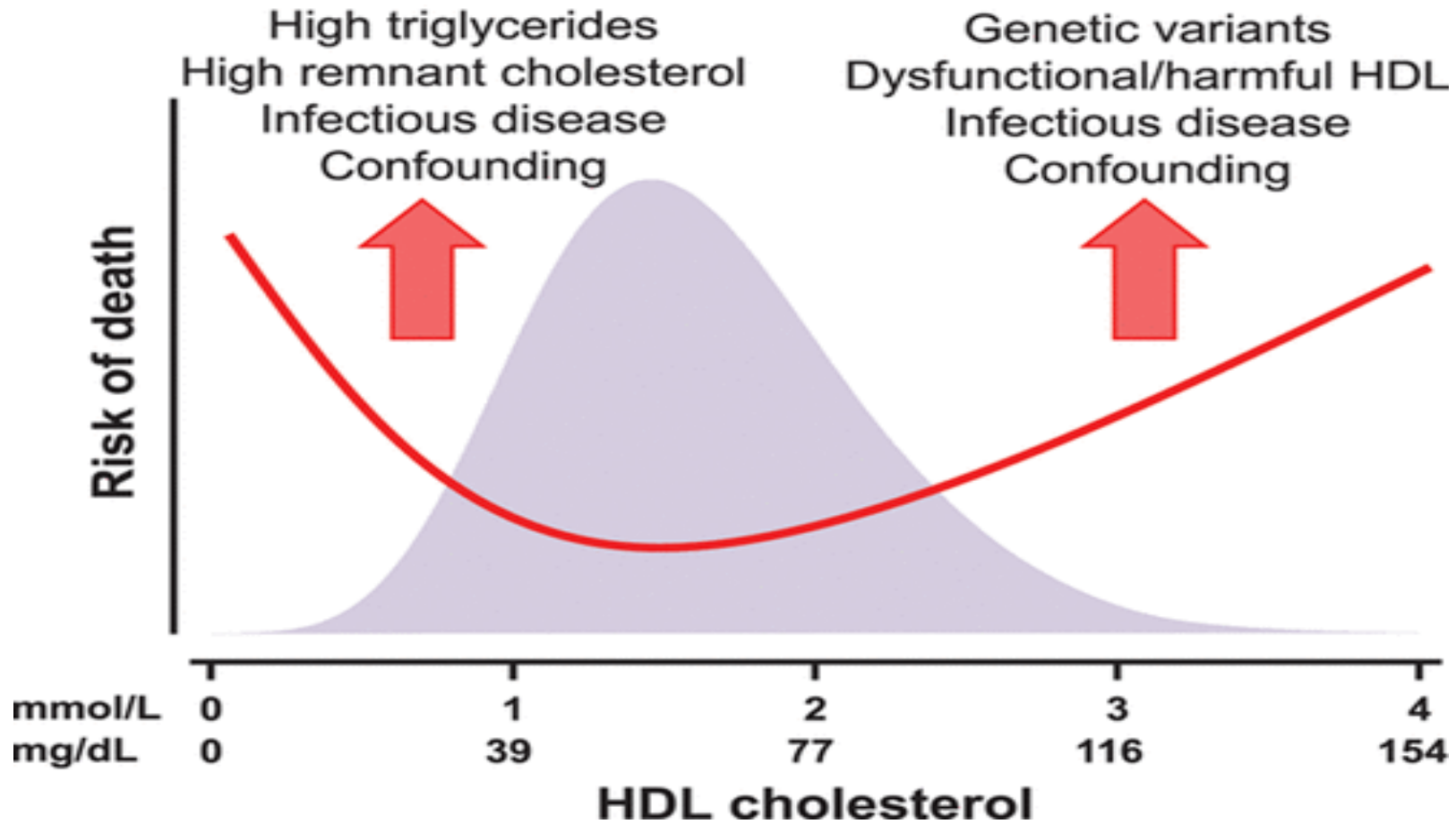
High LDL (age 40+  $\geq 5$ , age 18-39  $\geq 4.5$ , age < 18  $\geq 4.0$ ) with any of

- ✓ Tendon Xanthoma or corneal arcus
- ✓ First degree relative with High LDL
- ✓ First degree relative or proband with premature ASCVD

Clinical judgement

**Where did HDL go?**

# HDL-C and mortality: why?



# What should I do about HDL-C?

Great risk marker but a poor target for treatment

Good ways to raise HDL:

- replace trans and saturated fats, quit smoking, exercise

Bad ways to raise HDL:

- alcohol, a drug that artificially blocks an enzyme

If HDL-C is low, focus on LDL-C, non HDL-C, apo B



# How To Manage Low HDL

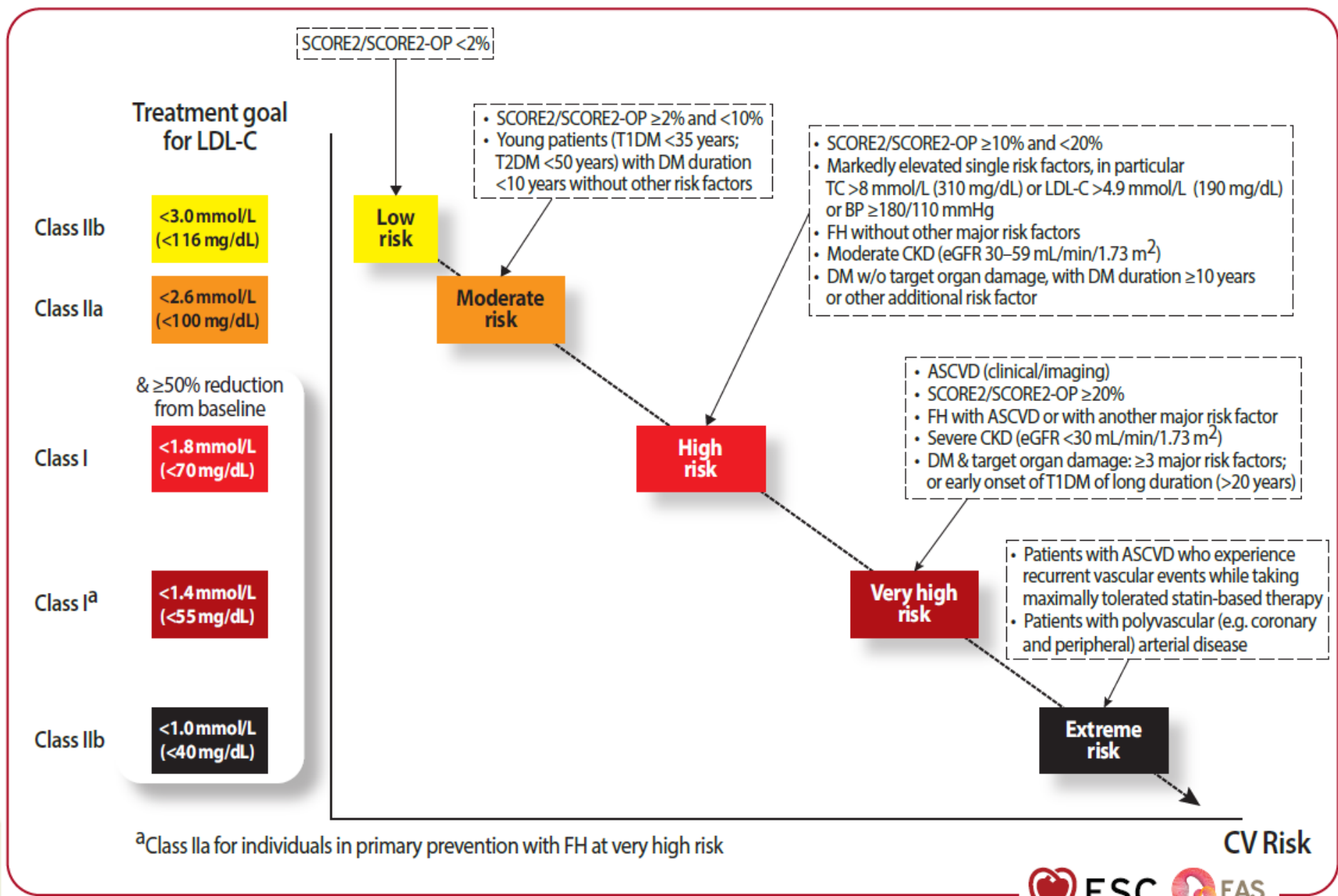
## Good Ways to Manage HDL:

- Focus on Lower LDL
- Lower trans and saturated fats,
- quit smoking
- exercise
- Normalize BMI

## Bad ways to raise HDL:

- Alcohol
- drugs that artificially cause larger HDL

# 2025 ESC guidelines: risk levels



# Resources For You



**Canadian Cardiovascular Society**  
*Leadership. Knowledge. Community.*



<https://ccs.ca>



**CORCARE**  
QUALITY AND EDUCATION PLATFORM

To advance secondary prevention in patients with cardiovascular disease in our community.

- Accredited programming
- Website



<https://corcareeducation.com/>



# PANEL DISCUSSION | Q&A



Break Time

