Canadian Cardiology Today

Rising Stars in Cardiology Conference – 2026

Event Summary

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catalytic health
medical minds meet here

In This Report

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Acronyms

A1C	GLYCATED HEMOGLOBIN
ACC	AMERICAN COLLEGE OF CARDIOLOGY
ACS	ACUTE CORONARY SYNDROME
ACSVL1	VERY LONG-CHAIN ACYL-COA SYNTHETASE 1
AJV	ATRIOVENTRICULAR JUNCTION ABLATION
ApoB	APOLIPOPROTEIN B
ARNI	ANGIOTENSIN RECEPTOR–NEPRILYSIN INHIBITOR
ASA	ASPIRIN
ASCVD	ATHEROSCLEROTIC CARDIOVASCULAR DISEASE
BMI	BODY MASS INDEX
BP	BLOOD PRESSURE
bpm	BEATS PER MINUTE
CABG	CORONARY ARTERY BYPASS GRAFTING
CAC	CORONARY ARTERY CALCIUM
CCS	CANADIAN CARDIOVASCULAR SOCIETY
CHA2DS2-VASc	A CLINICAL SCORE USED TO ESTIMATE STROKE RISK IN PATIENTS WITH ATRIAL FIBRILLATION
CKD	CHRONIC KIDNEY DISEASE
CRT	CARDIAC RESYNCHRONIZATION THERAPY
CT	COMPUTED TOMOGRAPHY
CV	CARDIOVASCULAR
DAPT	DUAL ANTIPLATELET THERAPY
ECG	ELECTROCARDIOGRAM/ELECTROCARDIOGRAPHY
eGFR	ESTIMATED GLOMERULAR FILTRATION RATE
FDA	FOOD AND DRUG ADMINISTRATION
FRS	FRAMINGHAM RISK SCORE
GDMT	GUIDELINE-DIRECTED MEDICAL THERAPY
GIP	GLUCOSE-DEPENDENT INSULINOTROPIC POLYPEPTIDE
GLP-1	GLUCAGON-LIKE PEPTIDE-1

Acronyms Continued

HDL	HIGH-DENSITY LIPOPROTEIN
HFpEF	HEART FAILURE WITH PRESERVED EJECTION FRACTION
HFnrEF	HEART FAILURE WITH NON-REDUCED EJECTION FRACTION
HFrEF	HEART FAILURE WITH REDUCED EJECTION FRACTION
hHF	HYPERTENSIVE HEART FAILURE
HFH	HEART FAILURE HOSPITALIZATION
HRT	HORMONE REPLACEMENT THERAPY
HR	HAZARD RATIO
hsCRP	HIGH-SENSITIVITY C-REACTIVE PROTEIN
HTN	HYPERTENSION
IL	INTERLEUKIN
JAMA	JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
KCCQ	KANSAS CITY CARDIOMYOPATHY QUESTIONNAIRE
LAD	LEFT ANTERIOR DESCENDING ARTERY
LDL	LOW-DENSITY LIPOPROTEIN
LDL-C	LOW-DENSITY LIPOPROTEIN CHOLESTEROL
LED	LIGHT-EMITTING DIODE
LLT	LIPID-LOWERING THERAPY
Lp(a)	LIPOPROTEIN(a)
LU	LIMITED USE
LV	LEFT VENTRICULAR
LVEF	LEFT VENTRICULAR EJECTION FRACTION
MACE	MAJOR ADVERSE CARDIOVASCULAR EVENTS
MI	MYOCARDIAL INFARCTION
MR	MITRAL REGURGITATION
MRA	MINERALOCORTICOID RECEPTOR ANTAGONIST
NEJM	NEW ENGLAND JOURNAL OF MEDICINE
ND-CCB	NON-DIHYDROPYRIDINE CALCIUM CHANNEL BLOCKERS
NNH	NUMBER NEEDED TO HARM

Acronyms Continued

NNT	NUMBER NEEDED TO TREAT
NSTEACS	NON-ST-ELEVATION ACUTE CORONARY SYNDROME
NSTEMI	NON-ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION
NYHA	NEW YORK HEART ASSOCIATION
OMT	OPTIMAL MEDICAL THERAPY
PAC	PREMATURE ATRIAL CONTRACTIOn
PAF	PAROXYSMAL ATRIAL FIBRILLATIOn
PCI	PERCUTANEOUS CORONARY INTERVENTION
PCSK9	PROPROTEIN CONVERTASE SUBTILISIN/KEXIN TYPE 9
PPG	PHOTOPLETHYSMOGRAPHY
P2Y12	PLATELET P2Y12 RECEPTOR
RCT	RANDOMIZED CONTROLLED TRIAL
SGLT2	SODIUM-GLUCOSE COTRANSPORTER 2
SIHD	STABLE ISCHEMIC HEART DISEASE
SMuRF	STANDARD MODIFIABLE CARDIOVASCULAR RISK FACTOR
STEMI	ST-ELEVATION MYOCARDIAL INFARCTION
SVT	SUPRAVENTRICULAR TACHYCARDIA
T2D	TYPE 2 DIABETES
TEER	TRANSCATHETER EDGE-TO-EDGE REPAIR
TIA	TRANSIENT ISCHEMIC ATTACK
TMVR	TRANSCATHETER MITRAL VALVE REPLACEMENT
TR	TRICUSPID REGURGITATION
TTVR	TRANSCATHETER TRICUSPID VALVE REPLACEMENT
UTI	URINARY TRACT INFECTION
VLDL	VERY-LOW-DENSITY LIPOPROTEIN

Conference Objectives

- Provide current and high-quality information on the latest developments in the management of cardiac disease
- Create collegial learning opportunities to enable clinicians to share real-world experience and to directly apply new insights to their practice
- Foster discussions that allow for the sharing of knowledge and experience among delegates and industry representatives
- Respond to emerging professional needs for specific and in-depth information on the latest treatment approaches for cardiac disease in the Canadian market

Keynote: Inflammation and Where We Stand Now

DR. PAUL RIDKER

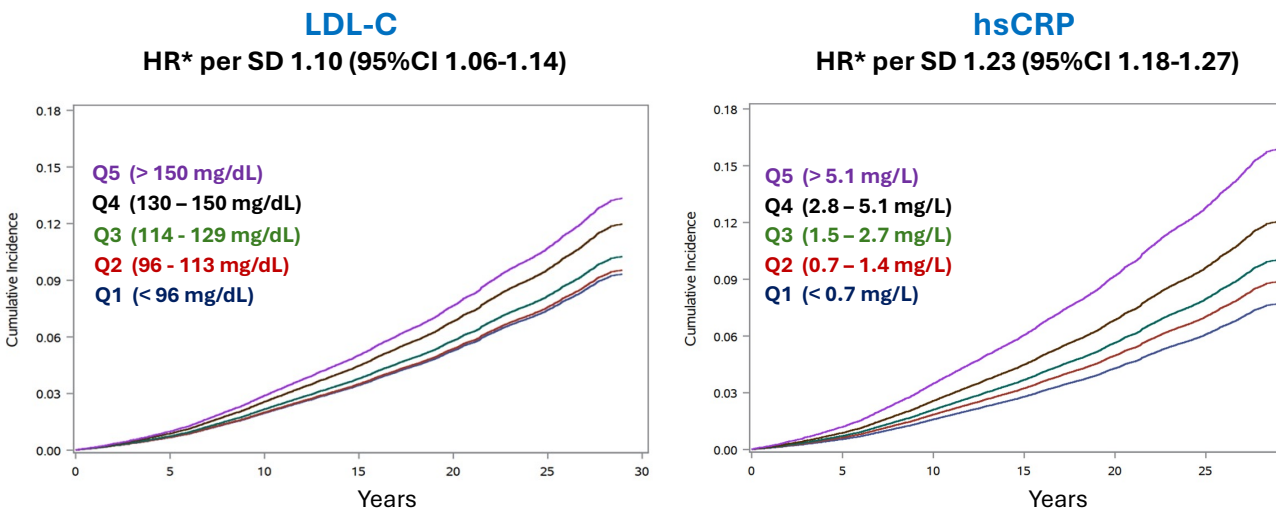
Dr. Ridker framed inflammation as a clinically actionable target in cardiovascular disease. He shared the 2025 ACC statement on inflammation and cardiovascular disease, which stated, "the evidence linking inflammation with atherosclerotic cardiovascular disease is no longer exploratory but is compelling and clinically actionable. The time for taking action has now arrived." The ACC argued that the finding of persistently elevated hsCRP levels should lead to the initiation or intensification of statin therapy, irrespective of LDL-C.

Presenting a systematic review involving more than 31,000 statin-treated patients published in *Lancet* in 2023, Dr. Ridker explained that hsCRP is a stronger predictor of cardiovascular death than LDL-C. Patients in the highest hsCRP quintile had a 2.68-fold higher risk of cardiovascular death compared with those in the lowest hsCRP quintile, while those in the highest LDL-C quintile had a 1.27-fold higher risk of cardiovascular death than those in the lowest LDL-C quintile. The findings indicate that, after the initiation of statin therapy, residual inflammation is a more important driver of cardiovascular risk than cholesterol.

Reviewing evidence in primary prevention, Dr. Ridker shared a retrospective study of more than 20,000 subjects, published in the *NEJM* in 2024, that demonstrated that hsCRP had the largest relative association with 30-year cardiovascular risk, followed by LDL-C and Lp(a). A UK Biobank study of almost 450,000 patients found that hsCRP was more important to cardiovascular risk than BMI, LDL-C, high blood pressure, and diabetes.

The JUPITER trial, published in 2008, followed 8,278 SMuRF-less people with low LDL-C but elevated hsCRP and compared placebo with rosuvastatin. The trial showed that patients benefited substantially from statin therapy, with a 44% reduction in myocardial infarction, stroke, arterial revascularization, hospitalization for unstable angina, or death from cardiovascular causes. More recently, a 2026 trial published by Dr. Ridker and colleagues demonstrated that initially healthy SMuRF-less women with high baseline

30-Year Covariable Adjusted* Hazard Ratios (HR) and Cumulative Incidence for First Major Adverse Cardiovascular Events in 27,939 Initially Healthy American Women According to Baseline Quintile of LDL-C and hsCRP



*HR adjusted for age, treatment assignment, smoking status, diabetes, blood pressure, eGFR, HRT use, and BMI

levels of hsCRP (>3 mg/L) had a substantially higher cumulative incidence of coronary heart disease events than those with lower baseline hsCRP levels (<1 mg/L), with an HR of 1.7. A *European Heart Journal* study published in 2026 replicated this association in "SMuRF-less but inflamed" healthy men. Dr. Ridker argued that universal hsCRP screening could identify patients who would benefit from lifestyle changes and statin therapy, despite not having other important cardiovascular risk factors.

While statins have an anti-inflammatory effect, more recent research has assessed canakinumab, an interleukin-1 beta inhibitor, in secondary prevention. The CANTOS trial published in the *NEJM* in 2017 found that canakinumab reduced hsCRP and IL-6 by 35% to 40% without changing LDL-C, providing proof of principle that targeting inflammation can reduce atherosclerotic risk. Dr. Ridker also discussed colchicine, noting that trials including COLCOT, CONVINCE, LoDoCo2 and CLEAR demonstrated meaningful cardiovascular risk reductions with low-dose colchicine.

Looking forward, Dr. Ridker identified IL-6 inhibition as a particularly promising frontier. In CANTOS, clinical benefit appeared linked to downstream reductions in IL-6, suggesting that IL-6 may be a preferred therapeutic target. He noted that ongoing trials, including ZEUS, HERMES, ARTEMIS, and POSIBIL6ESKD, could define the next phase of inflammation-targeted cardiovascular therapy.

Dr. Ridker concluded by recommending both aggressive lipid lowering and inflammation-lowering therapy, while continuing to emphasize diet, weight loss, exercise, and smoking cessation, all of which reduce both vascular inflammation and cardiovascular risk. He stated that abundant prior data support broad screening for hsCRP along with LDL-C in both primary and secondary prevention. Biomarker testing can direct cardiologists to choose between focusing on LDL-lowering therapy or inflammation-lowering therapy, or both.

Anti-platelet Therapy in 2026: Guidelines and Beyond

DR. JEAN-FRANCOIS TANGUAY

Dr. Tanguay discussed guideline-directed management of patients with ACS. He highlighted the importance of aspirin loading even in patients already taking low-dose aspirin, as well as the use of a loading dose of a P2Y12 inhibitor. In patients undergoing PCI for STEMI or NSTEACS, more potent agents such as ticagrelor or prasugrel, in combination with aspirin, are generally preferred. However, for patients who require CABG, antiplatelet therapy may need to be interrupted while aspirin should be continued. He emphasized that restarting antiplatelet therapy after surgery remains an important gap in practice. In fibrinolytic-treated STEMI, bolus dosing must be adjusted carefully according to age. Even if the artery reopens and the patient does not undergo angioplasty or stenting, they still require an appropriate course of antiplatelet therapy, such as clopidogrel plus aspirin.

If urgent CABG is needed after antiplatelet therapy has been initiated, clinicians may sometimes need to proceed before the guideline-recommended waiting period. In these cases, individualized judgment is needed, in collaboration with the surgeon and patient to balance ischemic urgency against bleeding risk. Dr. Tanguay said that for urgent CABG, ticagrelor, clopidogrel and prasugrel should be interrupted for at least 24 hours.

Another practical area was intravenous antiplatelet therapy. Cangrelor may be useful when oral P2Y12 therapy cannot be administered, such as in intubated patients or those arriving acutely to the catheterization laboratory. Dr. Tanguay stressed the importance of understanding drug interactions: ticagrelor can be started during the cangrelor infusion due to a difference in binding dynamics, whereas clopidogrel or prasugrel should be given after the infusion ends.

For patients at high-risk of bleeding, Dr. Tanguay emphasized shorter DAPT, potentially 1 to 3 months in carefully selected patients. Before moving to short-duration DAPT, clinicians must consider the risk of stent thrombosis; patients who have undergone complex PCI or have a prior history of stent thrombosis may not be suitable for abbreviated therapy. He also noted that the evidence supporting shorter DAPT is less clear in STEMI patients, because

Anti-platelet therapy in ACS

Dosing Considerations for Oral Antiplatelet Therapy in Patients With ACS

Agent	Setting	Dosing Considerations
Aspirin	NSTE-ACS or STEMI	Loading dose 162-325 mg orally. Aspirin (nonenteric coated) should be chewed, when possible, to achieve faster onset of antiplatelet action. Loading dose should be administered for patients already on aspirin therapy. Maintenance dose 75-100 mg orally daily (nonenteric coated)
Clopidogrel	NSTE-ACS or STEMI without fibrinolytic	Loading dose 300 or 600 mg orally Maintenance 75 mg orally daily
	STEMI with fibrinolytic	Loading dose 300 mg orally if age ≤75 y; Initial dose 75 mg orally if age >75 y Maintenance 75 mg orally daily
Prasugrel	NSTE-ACS or STEMI without fibrinolytic, and undergoing PCI	Loading dose 60 mg orally Maintenance dose 10 mg orally daily if body weight ≥60 kg and age <75 y Maintenance dose 5 mg orally daily if body weight <60 kg or age ≥75 y (use caution)
Ticagrelor	NSTE-ACS or STEMI without fibrinolytic	Loading dose 180 mg orally Maintenance dose 90 mg orally twice daily

DR. JEAN-FRANCOIS TANGUAY

relatively few patients in the trials underlying these recommendations had STEMI as the indication for PCI.

De-escalation from ticagrelor or prasugrel to clopidogrel after 1 to 3 months may also be considered, although the evidence is not very strong. For patients requiring oral anticoagulation, Dr. Tanguay summarized evidence supporting a short duration of triple therapy, followed by dual therapy with an oral anticoagulant and clopidogrel as the P2Y12 inhibitor of choice.

Routine pretreatment with P2Y12 inhibitors is not recommended for SIHD before coronary angiography and not recommended for NSTEACS if the procedure is expected to occur within 24 hours, but pretreatment is recommended in STEMI and in NSTEMI when this procedure will be delayed, such as over a weekend. In elective PCI when the anatomy is known and CABG is not considered, Dr. Tanguay emphasized that pretreatment remains important before starting the PCI.

For patients on oral anticoagulation, he emphasized minimizing aspirin exposure because of bleeding risk. Triple therapy could be shortened to 1 week for elective or simple PCI cases, with about 1 month considered reasonable for complex or high-risk PCI to reduce bleeding, while longer triple therapy may be considered only in exceptional cases with very high stent thrombosis risk. After the first year without recurrent events, current CCS antiplatelet and atrial fibrillation guidance generally supports stopping antiplatelet therapy and continuing oral anticoagulation alone.

Chronic Coronary Syndromes Using Lipid Lowering Therapies in 2026

DR. GEORGE THANASSOULIS

Dr. Thanassoulis emphasized that, in 2026, cardiovascular risk assessment and treatment should move beyond LDL-C alone. He began with the case of a 45-year-old man with diabetes and a family history of premature cardiovascular disease. Although the patient's standard risk factors appeared reasonably controlled, more detailed testing revealed extremely elevated Lp(a) (720 nmol/L) and high ApoB (1.30 g/L). Coronary CT angiography showed mild plaque, 50% stenosis in the LAD, and 50-70% stenosis in the ramus. Dr. Thanassoulis highlighted that the patient had significant subclinical coronary disease and used this case to show that clinicians should not rely primarily on LDL-C when assessing lipid-related risk.

Dr. Thanassoulis argued that non-HDL

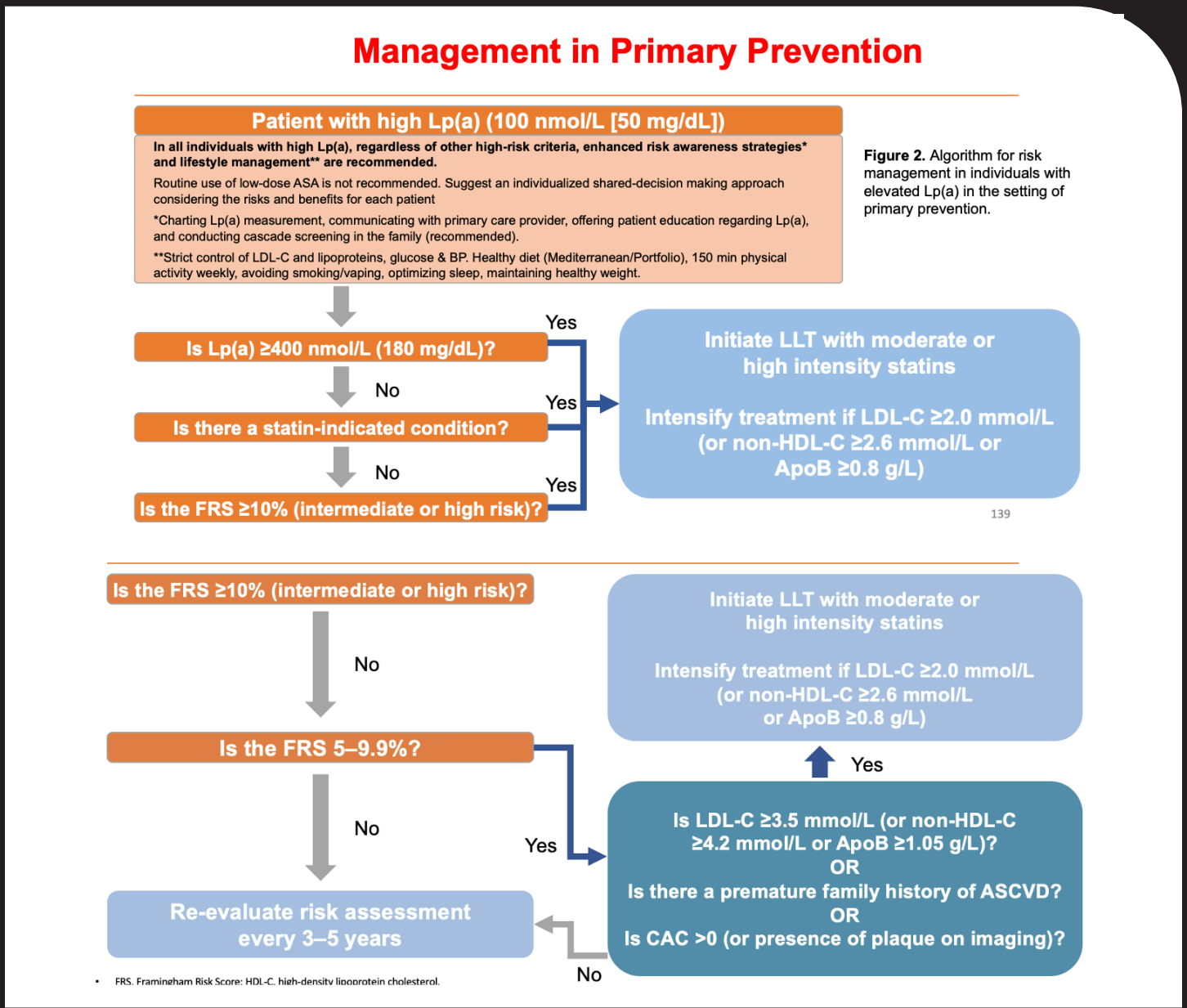


Figure 2. Algorithm for risk management in individuals with elevated Lp(a) in the setting of primary prevention.

cholesterol is an important measure because it captures all atherogenic particles, not only LDL-C. He highlighted evidence from Johanessen et al (2020) showing that ApoB is the most important risk factor for cardiovascular disease and mortality, followed by non-HDL cholesterol, and then LDL-C.

Reviewing treatment intensification, Dr. Thanassoulis highlighted European guidelines, which have moved toward more aggressive targets for high-risk patients with diabetes (LDL-C below 1.8 mmol/L) and very high-risk patients with diabetes (LDL-C below 1.4 mmol/L). These guidelines are supported by the VESALIUS-CV trial, which enrolled patients with high-risk diabetes and patients with subclinical vascular or coronary disease who had not yet had a cardiovascular event. Patients were randomized to evolocumab or placebo. Evolocumab reduced LDL by 55% and led to a 25% relative risk reduction in three-point MACE and a 19% reduction in four-point MACE. Dr. Thanassoulis interpreted these findings as evidence that aggressive LDL and ApoB lowering can reduce events even before a first cardiovascular event in appropriately selected high-risk patients. All-cause mortality was 9.7% in the placebo group versus 7.9% in the evolocumab arm.

Another therapeutic option is bempedoic acid, which is activated by a naturally occurring enzyme, ACSVL1, found in the liver, and is undetectable in skeletal muscle and therefore not associated with muscle-related side effects. Dr. Thanassoulis highlighted a 13% reduction in cardiovascular events in the CLEAR Outcomes trial, making it useful for patients who need additional LDL lowering or patients who cannot tolerate statins.

Discussing elevated triglycerides, Dr. Thanassoulis discussed data that was presented at the most recent ACC meeting showing that olezarsen reduced triglycerides as well as VLDL, remnant, and non-HDL cholesterol but did not reduce plaque in imaging. Dr. Thanassoulis noted that it is possible follow-up beyond 1 year is necessary to show an effect on plaque. A trial of pemafibrate published in the *NEJM* similarly showed that although pemafibrate lowered triglycerides, it had no effect on cardiovascular risk. Therefore, Dr. Thanassoulis argued that triglycerides should not be treated as a cardiovascular risk-reduction target currently.

Finally, Dr. Thanassoulis discussed Lp(a), noting that it is 5 to 10 times more atherogenic than other ApoB particles. He shared the Canadian Practical Framework for managing high Lp(a) in clinical practice, noting that on a case-by-case basis, many patients who had a family member die of a cardiovascular event prefer starting aspirin, despite the bleeding risk.

Chronic Coronary Syndromes: Addressing Residual Risk

DR. KIM CONNELLY

Dr. Connelly explained that a substantial proportion of patients seen by cardiologists have excess adiposity, yet cardiologists often do not measure or discuss obesity with their patients. Globally, an estimated 11% of adults were obese in 2010, compared with 16% in 2025.

Explaining that obesity drives inflammation, Dr. Connelly argued that obesity should be considered the fifth modifiable cardiovascular risk factor, alongside high blood pressure, high blood lipids, smoking and physical inactivity. Across studies, increased BMI and central adiposity are associated with higher risks of heart failure, atrial fibrillation, chronic kidney disease, angina, stroke, transient ischemic attack, and all-cause mortality. Dr. Connelly rejected the idea of "healthy excess weight," noting that the association between healthy excess weight disappears after accounting for confounding factors, such as cancer.

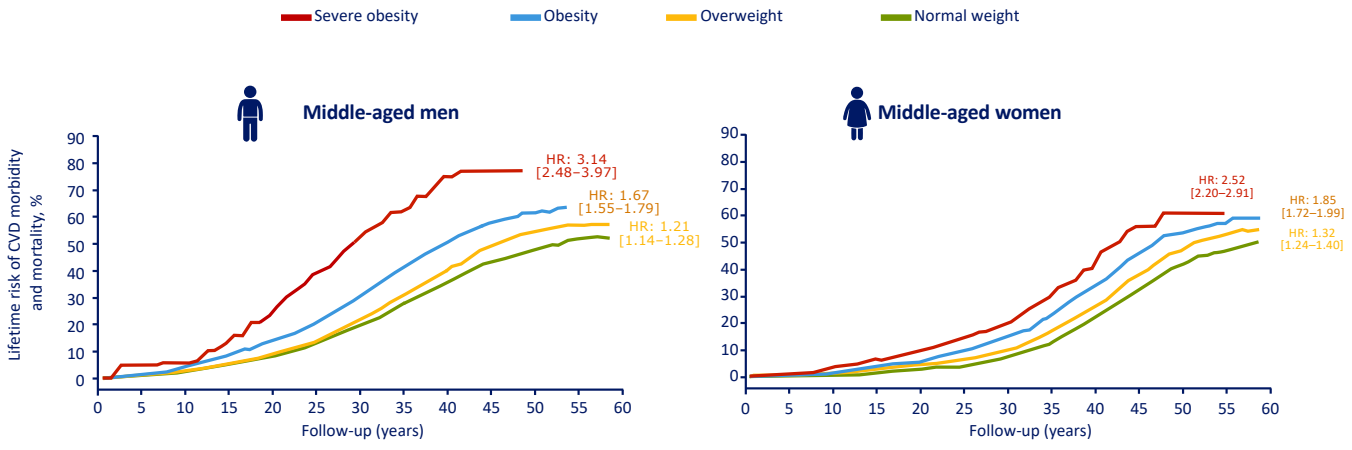
Dr. Connelly then addressed why sustained weight loss is difficult for patients. He explained that the body responds to weight loss through adaptive mechanisms that increase hunger, decrease energy expenditure, and decrease satiety. Obesity should therefore be approached as a chronic disease requiring long-term management, not moral judgment. All patients with obesity should receive lifestyle management counselling, while pharmacotherapy should be pursued in patients with a BMI >30 kg/m^2 or in patients with adiposity-related complications and a BMI of >27 kg/m^2. Surgery can be considered in patients with a BMI as low as 30 kg/m^2 when optimal medical and behavioural management has been insufficient.

Reviewing GLP-1 receptor agonists, Dr. Connelly described the SELECT landmark trial, which enrolled patients with established cardiovascular disease and BMI of over 27 kg/m^2. Semaglutide reduced MACE by 20% and also showed a reduction in all-cause mortality.

Importantly, he emphasized that the cardiovascular benefit was not solely dependent on the degree of weight loss, suggesting a weight-loss-independent mechanism. It is therefore important to

Increased risk of CV events with increasing BMI

Cardiovascular Disease Lifetime Risk Pooling Project (N=190,672)



Under bracket numbers indicate 95% CI. Remaining cumulative lifetime risk estimates for total CVD events (adjusted for competing risk of non-cardiovascular death) in middle-aged men and women stratified by BMI groups; HRs are for CVD incidence, compared with normal weight.
BMI, body mass index; CI, confidence interval; CVD, cardiovascular disease; HR, hazard ratio.
Adapted from Khan SS et al. JAMA Cardiol 2018;3(4):280–7.

explain to patients that the drug is being prescribed primarily for cardiovascular risk reduction, rather than primarily for weight loss, to promote adherence. An observational study from Sweden published in *JAMA* in 2012 demonstrated significant reductions associated with bariatric surgery versus conventional therapy in cardiovascular death, MI and stroke. The ongoing BRAVE study is the first randomized trial to test bariatric surgery versus medical weight management in patients with severe obesity (BMI 35 kg/m² or higher) who have cardiovascular disease including heart failure.

Presenting the rapidly expanding pipeline of obesity therapies, Dr. Connelly highlighted higher-dose semaglutide, the recently FDA-approved orforglipron, as well as GLP-1 agonist combinations with glucose-dependent insulinotropic polypeptide, glucagon, and amylin. Dr. Connelly explained that combinations result in larger weight reductions and that 15% weight loss may be a key threshold for substantial cardiovascular benefit.

He concluded by recommending that clinicians ask permission before discussing weight, because many patients have experienced stigma, and combine lifestyle management with emerging pharmacologic and surgical strategies. He emphasized that treating adiposity may become one of the most important ways to reduce residual cardiovascular risk in the coming years.

Diabetes for the Cardiologist: What You Need to Know

DR. ALICE CHENG

Dr. Cheng began her presentation by highlighting the multimodal "ABCDESSS" framework from Diabetes Canada, which includes A1C, blood pressure and cholesterol lowering, medications for organ protection, exercise, diet, smoking cessation, screening for complications, and lifestyle management. To illustrate that multifactorial care works, she highlighted the STENO-2 trial, which enrolled only 160 people with type 2 diabetes and microalbuminuria – randomized to receive multifactorial intervention or conventional care at the time. After 8 years, the intervention group had significant reduction in meaningful diabetes complication outcomes. After the initial 8-year trial period, both groups received the multifactorial intervention and the groups were observed for an additional 13 years. After 21 years of follow-up, participants originally enrolled in the multifactorial intervention group had a 62% lower risk of cardiovascular mortality than those initially enrolled in the conventional care arm.

Moving to the modern era of SGLT2 inhibitors and GLP-1 receptor agonists, Dr. Cheng explained that the EMPA-REG OUTCOME trial was the first antihyperglycemic trial to show a reduction in MACE and cardiovascular death, causing physicians to stand up and clap when the trial was presented in Stockholm in 2015. Since then, multiple meta-analyses have demonstrated that SGLT2 inhibitors reduce heart failure and sudden cardiac mortality as well as all-cause mortality. Discussing the mechanisms of GLP-1 agonists, Dr. Cheng explained that GLP-1 and GIP signal the pancreas to increase insulin, the liver to reduce glucose production, the stomach to slow emptying, and the brain to register satiety. In type 2 diabetes, a meta-analysis published in *Diabetes Care* in 2025 showed that GLP-1 agonists are associated with reductions in three-point MACE, cardiovascular death, myocardial infarction, stroke, all-cause mortality, and heart failure hospitalization.

Dr. Cheng then discussed tirzepatide and the SURPASS-CVOT study, published in December 2025. This trial enrolled 13,000 people with type 2 diabetes,

Summary of Positive Outcome Data Among Patient Types (2026)

Co-morbidities	↓ MACE	↓ CV death	↓ Stroke	↓ hHF	↓ Kidney outcomes *
Cardiovascular disease	( )	( )	( )	( )	( )
CKD	( )	( )			( )
Heart failure				HFpEF	
Risk factors + T2D (HTN, lipids and/or smoking)	( )			( )	( )

= GLP1 receptor agonists† = SGLT2 inhibitors‡ = GIP/GLP1 receptor agonist ( ) = in T2D only

*Composite renal endpoint: Doubling of serum creatinine, end-stage renal disease or renal death; †dulaglutide, liraglutide and semaglutide; ‡canagliflozin, dapagliflozin, empagliflozin. CV: cardiovascular; CVOT: cardiovascular outcome trial; MACE: Major adverse cardiovascular events (MI, stroke, CV death); MI: myocardial infarction; SGLT2: sodium-glucose linked transporter-2

established ASCVD, and a BMI of at least 25 kg/m², comparing tirzepatide with dulaglutide rather than placebo. Dr. Cheng emphasized that dulaglutide, as the active comparator, already has proven cardiovascular benefit. Tirzepatide, a dual GIP/GLP-1 receptor agonist, was superior for A1C and weight reduction and met non-inferiority for cardiovascular outcomes in the SURPASS-CVOT trial compared with dulaglutide, which has been shown to reduce the incidence of cardiovascular events as compared with placebo.

Reviewing SGLT2 inhibitors, Dr. Cheng said genital mycotic infections, volume-related adverse events, and diabetic ketoacidosis risk are real safety considerations, while concerns about UTIs, amputations, fractures, and acute kidney injury are not well-supported by evidence. She recommended that the decision to initiate an SGLT2 inhibitor in a patient with type 1 diabetes on insulin should be deferred to the patient's diabetes specialist. For GLP-1 therapies, nausea, vomiting, diarrhea, and constipation are common but manageable with smaller meals, avoiding fatty and spicy foods, staying hydrated, gradually increasing dosing, and using an antiemetic. Gallbladder events, including gallstones and cholecystitis, are a real but small risk; gallbladder disease is not a contraindication for a GLP-1 agonist but requires additional counselling. Due to the potential increased risks of thyroid and pancreatic cancer and pancreatitis, Dr. Cheng advised against GLP-1 agonists in patients with a personal or family history of medullary thyroid cancer or multiple endocrine neoplasia, as well as in patients with active pancreatitis.

Dr. Cheng closed by recommending that cardiologists use SGLT2 inhibitors for patients with heart failure as well as for those with ASCVD and type 2 diabetes. She advised cardiologists to prescribe GLP-1 receptor agonists for patients with ASCVD with type 2 diabetes or a BMI ≥27 kg/m², and in HFpEF-type populations with BMI of ≥30 kg/m². She recommended dual agonists for patients with ASCVD and type 2 diabetes, recommending that physicians reduce sulfonylurea before initiating these medications when A1C is <8%. She added cardiologists should screen admitted hospital patients for diabetes and reinforce the importance of lowering A1C and weight loss (particularly visceral fat loss) for heart health.

Vascular Prevention Panel Discussion

DR. ALICE CHENG
DR. BASEM ELBAROUNI
DR. ERIC KAPLOVITCH

Dr. Bainey: Let's start by discussing a patient who has recently been discharged after an ACS, with elevated LDL-C and elevated Lp(a). What is your lipid-lowering strategy?

Dr. Elbarouni: I would start with a high-dose statin and arrange a follow-up in about 3 months.

Dr. Kaplovitch: I usually send patients home with a requisition to have their lipid panel checked just before the follow-up visit, which I typically schedule 6 to 8 weeks post-discharge.

Dr. Bainey: Many clinicians think they need to wait 3 months to see the full effect, but the maximal LDL-C reduction from statin therapy is generally seen within about 1 month.

Dr. Cheng: Patients may return to primary care saying they were prescribed atorvastatin 80 mg and do not want to be on "the highest dose." Primary care physicians then have to manage that concern. Cardiologists can help by clearly explaining at discharge that the high dose is intentional: the patient has just had a major event and deserves the most effective therapy.

For an ACS patient with diabetes, if they're not already on an SGLT2 inhibitor, this is often easier to start at discharge than a GLP-1 receptor agonist due to access issues.

Dr. Bainey: What if the patient is not diabetic and says, "Doctor, I do not want to get diabetes from my statin"?

Dr. Elbarouni: That is a real and practical issue. There is a lot of misinformation about statin side effects and claims that LDL-C does not matter, especially on social media. Education is essential. The evidence clearly shows that statins improve cardiovascular outcomes and mortality.

Dr. Cheng: There is some evidence, including from animal models, that statins may slightly increase insulin resistance. In someone who already has prediabetes, high-dose statins may raise blood sugar modestly. But diabetes is treatable and modifiable. I tell patients that avoiding a statin to prevent crossing a threshold the patient may have crossed anyway does not make sense when the statin is reducing major cardiovascular risk. That is usually how I explain it to patients.

Dr. Bainey: We all believe lowering LDL-C is beneficial. Does it make a difference whether this is achieved through statins, evolocumab, inclisiran, or bempedoic acid, for example?

Dr. Kaplovitch: I think tolerability matters most. The medication the patient will take is often the best medication. Side effects, particularly with high-dose statins, are challenging for some patients. Many discontinuations happen after discharge because patients feel worse.

Dr. Bainey: Recent observational data suggest that rapid LDL-C reduction after ACS reduces cardiovascular events, stabilizes plaque, and increases fibrous cap thickness. Recent data from VICTORION-INCEPTION suggest that rapid LDL-C lowering after ACS is achievable with inclisiran in addition to usual care. Traditionally, we may have aimed for a target of 6 months or a year, but I am increasingly impressed by the data supporting rapid LDL-C reduction.

Dr. Kaplovitch: In addition, trials comparing low-dose and high-dose statins immediately after vascular events have shown early reductions in cardiovascular outcomes.

Dr. Connelly: At our centre, the treating physician identifies patients for intensive lipid lowering at discharge. We are using the CCS post-discharge algorithm. An inpatient pharmacist acts as the champion and completes the paperwork. Patients are discharged with a requisition for follow-up bloodwork at 4 to 6 weeks. Based on the LDL-C result at follow-up, we either intensify therapy with ezetimibe or, for many patients whose LDL-C remain at or above the 2.2 mmol/L threshold, we use the LU code to pursue evolocumab. I would be happy to share our treatment program and algorithm with anyone interested.

DR. ALICE CHENG
DR. BASEM ELBAROUNI
DR. ERIC KAPLOVITCH

Audience member: At what LDL-C level would you start combination therapy with a statin and ezetimibe in hospital before discharge?

Dr. Bainey: In the cardiac intensive care unit, I now routinely start both a high-dose statin and ezetimibe in ACS patients. In selected patients with very high baseline LDL-C, for example around 4 mmol/L, I will also recommend a PCSK9 inhibitor prescription before discharge. One point I took from the morning lectures is that our 2021 Canadian lipid guidelines are very outdated. Until updated Canadian guidance is available, we should pay attention to American and European recommendations, which support aggressive and rapid LDL-C lowering.

Dr. Marquis-Gravel: The timing of LDL-C measurement during hospitalization matters. At the Montreal Heart Institute, we prospectively enrolled 100 patients admitted with myocardial infarction and measured their LDL-C on day 0 and day 2. LDL-C dropped by about 0.5 mmol/L between day 0 and day 2. This may relate to fasting, medication initiation, or other factors. In Quebec, PCSK9 inhibitor approval is easier when LDL-C is above a specific threshold. We should therefore consider measuring LDL-C at admission.

Dr. Bainey: After a thrombotic event, are you using hsCRP or Lp(a) as biomarkers of risk?

Dr. Cheng: In Ontario, Lp(a) can be ordered, and I am seeing more referrals to lipid clinics for elevated Lp(a), which suggests that primary care colleagues are ordering it more often. However, I am also seeing it ordered repeatedly, which is not recommended. Lp(a) generally needs to be measured once. hsCRP is less relevant in my practice because my patients with diabetes are already considered high risk.

Dr. Kaplovitch: Lp(a) is still under-ordered at my centre. I do not use hsCRP as much, but Lp(a) is a useful part of the risk assessment toolkit. I usually measure it once and reassess after menopause if I am following patients long-term. It changes the risk category for a variety of anti-thrombotic treatments.

Dr. Bainey: The VESALIUS trial is interesting because it addresses patients who fall between traditional primary and secondary prevention categories. Alice, in patients with diabetes who are at high cardiovascular risk, are you thinking about evolocumab?

Dr. Cheng: Yes, I would consider a PCSK9 inhibitor but the challenge is access. In Ontario, we have LU codes for familial hypercholesterolemia and ACS, but not broadly for high-risk diabetes without those criteria. Private payer access is also challenging. I hope data from trials such as VESALIUS will eventually influence payers.

Dr. Bainey: Indeed, ongoing studies and provincial coverage discussions may expand access to agents such as inclisiran and evolocumab. Thank you to the panelists and audience for an excellent discussion.

PAF on Holter Monitoring: What Does it Mean and What Do We Do?

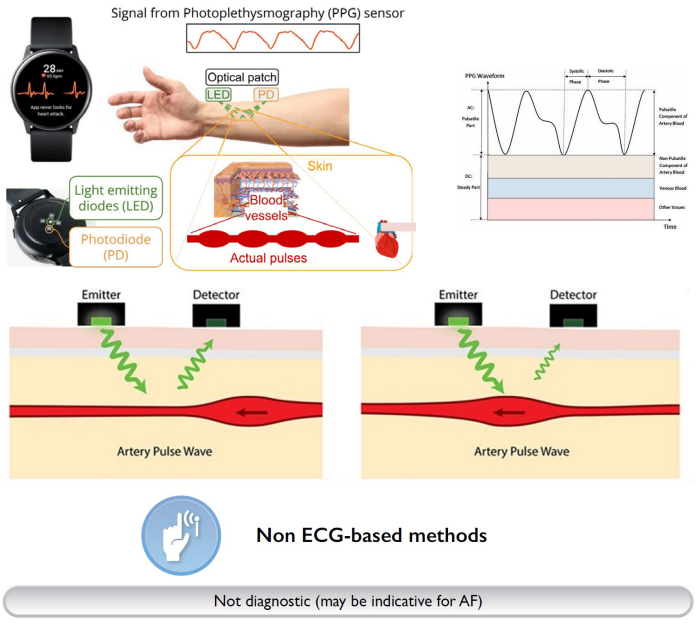
DR. PAUL ANGARAN

The prevalence of atrial fibrillation is rising, with lifetime risk projected to be approximately one in three. Atrial fibrillation is associated with heart failure, ischemic stroke, cognitive impairment, and all-cause mortality. Dr. Angaran emphasized that Holter monitoring samples a dynamic arrhythmia, and that atrial fibrillation burden can fluctuate substantially and correlate imperfectly with symptoms. When completing Holter reports, Dr. Angaran encouraged cardiologists to confirm atrial fibrillation on rhythm strips to rule out artifact, very frequent PACs, or other possibilities including atrial tachycardia, atrial flutter, and SVT. He recommended assessing not simply the presence of atrial fibrillation but the pattern (such as paroxysmal, persistent, or "throughout the monitoring period" if Holter monitoring was performed for <7 days). He also recommended noting the overall burden as a percentage, episode number, total duration, longest episode, mean ventricular response, and associated pauses, if present.

Dr. Angaran then discussed wearable-detected atrial fibrillation. PPG-based devices such as the Apple Watch and Garmin emit LED light, which is absorbed by hemoglobin. The device then measures changes in reflected light as blood volume changes with each heartbeat. These PPG-based devices allow for passive monitoring, but need to be confirmed with an ECG. With the Apple Watch, a patient wearing the watch on the left wrist can place a finger from the right hand on the crown of the Apple Watch, completing a lead I circuit between the two arms. Other ECG-based devices such as KardiaMobile 6L can record additional limb leads. These systems rely heavily on algorithms, signal processing, and proprietary technology. Although these PPG-based devices are imperfect, Dr. Angaran said their performance is reasonably strong. For example, in the Apple Heart Study published in 2019, which included more than 400,000 participants, the positive predictive value of an irregular pulse notification was 84% compared with a simultaneously worn ECG recording device.

Photoplethysmography (PPG)-based Devices

- "Photo-" (light) + "Plethysmogram" (measures changes in volume)
- Change in blood volume in arteries from each cardiac cycle is measured by LED light that is reflected back to a photodiode
- Passive and near-continuous pulse signal processing



Dr. Angaran summarized the advantages of wearables as their ability to monitor patients over long periods, provide rapid symptom-rhythm correlation, and place some monitoring capacity directly in patients' hands. They are popular among patients and relatively inexpensive from a health-system perspective, though not always inexpensive for patients themselves. Limitations include the fact that they do not provide continuous ECG monitoring, and other rhythms such as premature atrial contractions, premature ventricular contractions, or non-sustained atrial arrhythmias and artifacts can generate false-positive alerts.

Turning to recent evidence, Dr. Angaran reviewed NOAH-AFNET 6 and ARTESiA, which studied patients with device-detected atrial high-rate episodes. Patients were randomized to receive edoxaban versus placebo/ASA in the NOAH-AFNET 6 trial, while the ARTESiA study evaluated apixaban versus aspirin. The NOAH-AFNET 6 trial found no difference in cardiovascular, stroke and systemic embolism between the two groups, while the edoxaban arm had higher bleeding rates. The ARTESiA trial demonstrated lower rates of stroke and systemic embolism in the apixaban group (HR 0.63) and higher rates of major bleeding in the apixaban group (1.71% vs. 0.94%). Subgroup analyses of the ARTESiA trial demonstrated that in patients with CHA_2DS_2-VASc >4, apixaban had clearer benefit, with an NNT of 25 and an NNH of 59, while the NNT to prevent one stroke was 2,500 and the NNH was 78 in patients with CHA_2DS_2-VASc score <4. Dr. Angaran shared his practical approach, explaining that atrial fibrillation episodes <5–6 minutes usually do not require anticoagulation, with consideration given to risk factor optimization and longer monitoring. Treatment for episodes between 6 minutes to 24 hours should be individualized based on CHA_2DS_2-VASc scores and shared decision-making, while episodes >24 hours should be treated similarly to clinical atrial fibrillation in most cases.

Dr. Angaran emphasized that routine assessment of a patient with atrial fibrillation should include history and symptoms, risk factors for AF, ECG, echocardiography, and relevant laboratory testing. He emphasized risk factor modification is a critical and often overlooked/underused, but highly impactful intervention. Patients should be encouraged to reduce alcohol intake, achieve meaningful weight loss, and exercise, while physicians should treat hypertension and diabetes and screen for sleep apnea where appropriate.

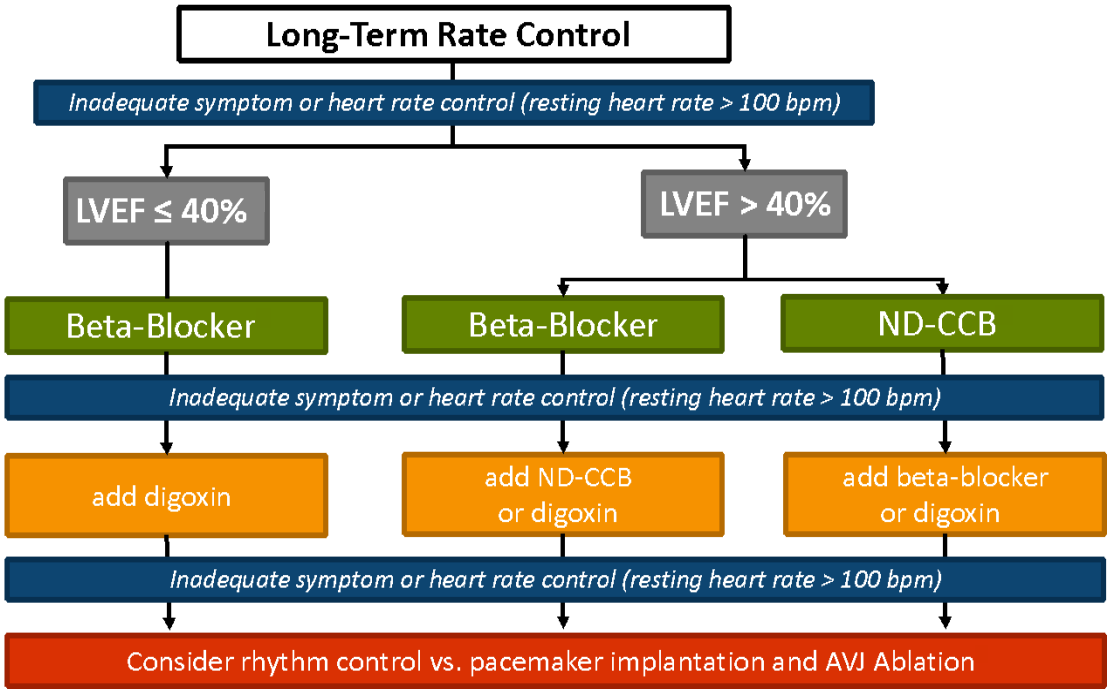
Atrial fibrillation: Rate vs Rhythm in Treating the Patient in Your Office

DR. JASON ANDRADE

Approximately one in three adults will develop atrial fibrillation, which is associated with an increased risk of death, stroke, and heart failure. Reviewing the historical pendulum between rate and rhythm control, Dr. Andrade outlined the two major treatment strategies for atrial fibrillation. Controlling the heart rate with medications or procedures slows the ventricular response, with a goal of a resting heart rate <100 beats/minute. Controlling the heart rhythm, using anti-arrhythmic medications and/or procedures converts atrial fibrillation to a normal rhythm.

Reviewing the 2020 Canadian guideline, Dr. Andrade explained that patients presenting with persistent atrial fibrillation should first receive rate control to slow down the ventricular response. Beta blockers are commonly the first-line default because they are safer than other options and broadly usable across patient groups, including those with reduced ejection fraction. The current heart-rate target is generally less than 100 beats per minute at rest, reflecting evidence that lower targets can result in overtreatment with multiple agents and higher doses. If symptoms do not resolve or resting heart rate exceeds 100 beats per minute, calcium channel blockers may be appropriate in patients with preserved ejection fraction or hypertension and can be better tolerated, especially when higher doses are needed. Digoxin may be useful as an adjunct in selected, often older and more sedentary patients, but it is less reliable in younger patients because sympathetic tone can override its effect.

Dr. Andrade stressed that symptoms should not determine whether atrial fibrillation is taken seriously, since asymptomatic patients face the same risks of stroke, heart failure, and death. Asymptomatic patients may be at higher stroke risk if atrial fibrillation has been previously undetected and untreated. For asymptomatic patients, Dr. Andrade recommended initiating rate control and then doing a trial of cardioversion; many patients only realize how atrial fibrillation



DR. JASON ANDRADE

was affecting them after rhythm is restored. In these cases, it may be appropriate to focus on rhythm control. If patients do not feel better after cardioversion, continuing with rate control may be more appropriate.

Outlining rhythm-control medications, Dr. Andrade explained that patients with no or minimal signs of structural disease should start with a class 1C medication such as propafenone or flecainide, although dronedarone and sotalol are also options. Patients with coronary artery disease, significant valvular heart disease or abnormal left ventricular hypertrophy can be prescribed dronedarone, sotalol, or amiodarone. For patients with significant left ventricular dysfunction, amiodarone is the only option. Catheter ablation is a treatment option for all above scenarios, with the choice between medical or ablation therapy typically made by the patient, with informed decision-making.

Dr. Andrade then described how newer evidence has revived interest in rhythm control. Observational Quebec data suggested that rhythm control may show benefits over a longer time horizon than earlier trials captured. In addition, in 2020, the EAST-AFNET study demonstrated that patients treated with early rhythm control lived longer and had lower stroke and death rates than patients treated with usual care. In Canada, the EAST-AFNET trial results have informed guidelines that favour rhythm control in patients with recently diagnosed atrial fibrillation, highly symptomatic atrial fibrillation or recurrent atrial fibrillation as well as patients in whom it is difficult to achieve rate control, and those with arrhythmia-induced cardiomyopathy.

For patients with paroxysmal atrial fibrillation, Dr. Andrade recommended observation or the "pill-in-the-pocket" strategy, in which patients manage episodes with antiarrhythmic medication, with the first dose administered in hospital with monitoring. For those with a high recurrence burden, Dr. Andrade explained that maintenance antiarrhythmic medications are important. For patients who do not respond to medication, catheter ablation is highly effective, leads to symptomatic improvement, improves quality of life, reduces emergency department visits and cardioversions, and can slow progression to persistent atrial fibrillation. Procedure risks have declined in modern practice, with severe complications now under 2% in recent trial analyses.

Arrhythmia Panel Discussion

Dr. Marquis-Gravel: I'm interested in the panel's views on whether an Apple Watch diagnosis of atrial fibrillation is enough to guide oral anticoagulation decisions. Are there situations where you would still ask for a Holter or additional testing before starting oral anticoagulation?

Dr. Cheung: That is a great question, and there is a lot of grey area. In general, before starting anticoagulation, I would want to see the corresponding ECG. The Apple Heart Study included approximately 400,000 participants, but only 150 new atrial fibrillation diagnoses were identified. So, the irregular rhythm notification works, but it still needs to be confirmed with an ECG or another rhythm-monitoring strategy.

Dr. Chew: I agree. This is less of an issue with newer versions of the Apple Watch because many now include the ECG app. If a patient says their Apple Watch detected possible atrial fibrillation based on PPG, I would ask them to record an ECG on the Apple Watch the next time they feel symptoms. In terms of Holter monitoring, if the patient has an Apple Watch with ECG capability, I do not think Holter monitoring is necessary. The ECG quality from Apple Watches is quite good now, and the device is more accessible and continuous.

Dr. Cheung: The Apple Watch irregular rhythm notification typically checks every couple of hours for a few minutes, so it may miss paroxysmal atrial fibrillation. It is probably better at detecting persistent atrial fibrillation. It also does not work during exercise, and it will not capture events overnight if the patient is not wearing it.

Audience question: In a relatively young patient with a remote STEMI who was reperfused early, with no infarct on previous scans and normal wall motion, would that history exclude use of a class 1C agent if the patient developed symptomatic paroxysmal atrial fibrillation? Second, what about a middle-aged woman with mitral valve prolapse and moderate-to-severe MR?

Dr. Andrade: Realistically, both patients could potentially receive a class 1C agent. However, if there is demonstrable scar, I would be very hesitant to use a class 1C agent.

Dr. Kay: Echocardiograms and nuclear imaging may not always detect scar. If there has been a definite infarct, I tend to stay away from class 1C therapy. However, recent registry data suggest flecainide may be safer than we previously thought and may be underused.

Audience member: In a patient with symptomatic HFpEF, would you still use a class 1C agent?

Dr. Kay: I would. If the ejection fraction is normal, the heart failure is likely related to elevated filling pressures. The patient may have left atrial enlargement, atrial dysfunction, or atrial

cardiomyopathy, but if LV systolic function is normal, I would not have hesitation using a class 1C agent.

Dr. Bainey: In a patient with HFrEF, for example, ischemic cardiomyopathy that is not tachycardia-mediated, is ablation going to save that patient's life?

Dr. Andrade: We do not know. We are starting the OPTIMAL trial in Canada and the U.S., which will enroll patients with LVEF under 40% and any type of atrial fibrillation, randomizing them to medical therapy or first-line catheter ablation. The endpoints include death, stroke, and heart failure events, with a target enrolment of roughly 1,100 patients. The trials done to date have been small, and each has limitations. Even if you pool them, there are still fewer patients than in AF-CHF. We need a larger trial to answer this question properly.

Dr. Bainey: I have seen phase 2 RCT data supporting GLP-1 therapy in reducing atrial fibrillation recurrence.

Dr. Andrade: Yes, but we still have very little randomized trial evidence in atrial fibrillation. Recent lifestyle trials have shown improvements in atrial fibrillation burden, symptoms, and quality of life with weight loss, but it is difficult to know whether the benefit comes from weight loss itself, direct effects on atrial fibrillation, or both. I think it is a reasonable treatment approach, but there is not currently strong data to support it.

Dr. Marquis-Gravel: Some patients not previously known to have atrial fibrillation who undergo cardiac surgery develop atrial fibrillation postoperatively, and may be prescribed amiodarone, often with no clear follow-up plan. Usually, if the patient has been asymptomatic, I stop the amiodarone and sometimes order a Holter. How do you respond?

Dr. Kay: I generally stop the amiodarone and then arrange monitoring or follow-up, since most of the patients I see have risk factors, simply because they have coronary disease and often some degree of ischemic cardiomyopathy.

Dr. Chew: Most of these patients have elevated CHA_2DS_2-VASc scores anyway, so I often recommend anticoagulation in the short term. After 3 months, I reassess. I may discontinue amiodarone and monitor for recurrence. If there is no recurrent atrial fibrillation, I may stop anticoagulation. That said, this population remains at high long-term risk for atrial fibrillation recurrence.

Approach to HFpEF: Diagnostic Testing and Management

DR. EILEEN O'MEARA

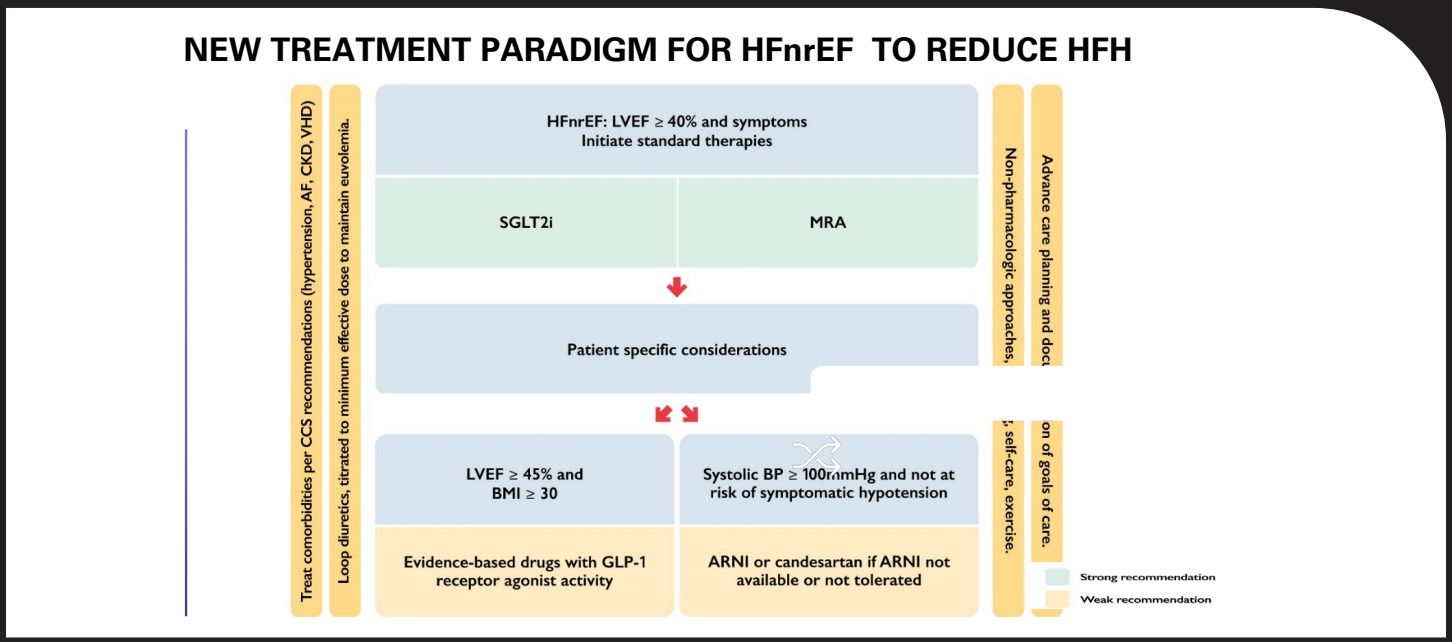
HFnrEF, which is rising in prevalence, carries a substantial individual and health system burden. One-year mortality after any heart failure hospitalization for HFnrEF is approximately 27%. Treatments are limited and about 20% of patients hospitalized for heart failure are readmitted within 30 days.

Beginning with the diagnosis, Dr. O'Meara explained that HFnrEF is diagnosed based on signs and symptoms of heart failure; LVEF >40%, as assessed by dedicated cardiac imaging; and evidence of elevated cardiac filling pressures, demonstrated by elevated natriuretic peptide levels, structural heart disease or diastolic dysfunction, or hemodynamic confirmation. Investigations should include ECG, echocardiography, chest X-ray when appropriate, and laboratory testing, including natriuretic peptides.

Dr. O'Meara summarized the benefits of SGLT2 inhibitors, including reductions in intravascular volume and blood pressure through osmotic diuresis and natriuresis, enhanced myocardial efficiency, and anti-inflammatory and antifibrotic effects. The DELIVER and EMPEROR-PRESERVED trials demonstrated relative reductions of approximately 20% in composite heart failure outcomes among patients with LVEF >40%, with benefits driven primarily by reductions in worsening heart failure events and heart failure hospitalizations. Dr. O'Meara lamented that patients with heart failure too often are not prescribed a SGLT2 inhibitor when indicated. The CCS recommends the use of SGLT2 inhibitors for people with symptomatic heart failure and LVEF >40% to reduce the risk of heart failure hospitalization.

Turning to MRAs, Dr. O'Meara highlighted that by blocking the binding of aldosterone to mineralocorticoid receptors, MRAs may interrupt pathways involved in endothelial dysfunction, myocardial fibrosis, and pathologic cardiac remodeling. The CCS recommends the use of MRAs for people with symptomatic heart failure and LVEF > 40% to reduce the risk of heart failure hospitalizations. When discussing HFnrEF MRA trials, Dr. O'Meara highlighted the FINEARTS-HF trial, which enrolled approximately 6,000 participants and demonstrated a 16% reduction in cardiovascular death or first worsening heart failure event.

Her practical tips for MRA prescribing included close monitoring of renal function and potassium levels, as both steroidal and nonsteroidal MRAs are associated with a risk of hyperkalemia, and



tailoring treatment to the patient's individual risk of hyperkalemia and renal dysfunction. She recommended monitoring serum creatinine and potassium within 1 week of treatment initiation or dose change. If eGFR is <30 mL/min/1.73 m^2, Dr. O'Meara recommended avoiding spironolactone and eplerenone; if eGFR is <25 mL/min/1.73 m^2, finerenone should be avoided; and if the serum or plasma potassium level is >5 mmol/L, all MRAs should be avoided. She added that finerenone may be the MRA of choice in patients with diabetic kidney disease.

The combined use of an MRA and a SGLT2 inhibitor in patients with LVEF ≥40% is expected to provide greater benefits than either therapy alone. The ongoing BALANCED-HF and CONFIRMATION-HF randomized controlled trials are investigating the combination of MRAs with SGLT2 inhibitors to reduce hyperkalemia.

Dr. O'Meara then turned to ARNI therapy, which the CCS suggests for people with symptomatic heart failure and LVEF >40% who are at low risk of symptomatic hypotension to reduce the risk of heart failure hospitalization. Dr. O'Meara summarized that ARNIs are more effective than enalapril at decreasing cardiovascular death, heart failure hospitalization, and symptom burden, in patients with either de novo or chronic HFrEF. However, robust cost-effectiveness modeling is needed to determine whether universal access to ARNI therapy for patients with HFnrEF is cost-effective at a system level. Similarly, the evidence for GLP-1 receptor agonists is still evolving, and future studies should better define the subgroups of patients who benefit from GLP-1 receptor agonists. The CCS suggests evidence-based drugs with GLP-1 receptor agonist activity for people with symptomatic HF, LVEF ≥45%, and BMI ≥30 kg/m^2 to reduce the risk of heart failure hospitalization and to improve quality of life.

In closing, Dr. O'Meara recommended using SGLT2 inhibitors and MRAs in patients with heart failure unless contraindicated, monitoring potassium early, considering ARNI and GLP-1 therapy in selected patients, managing comorbidities aggressively, and reviewing ECG and imaging findings carefully for evidence of alternative cardiomyopathies.

Heart Failure Management and Valvular Intervention

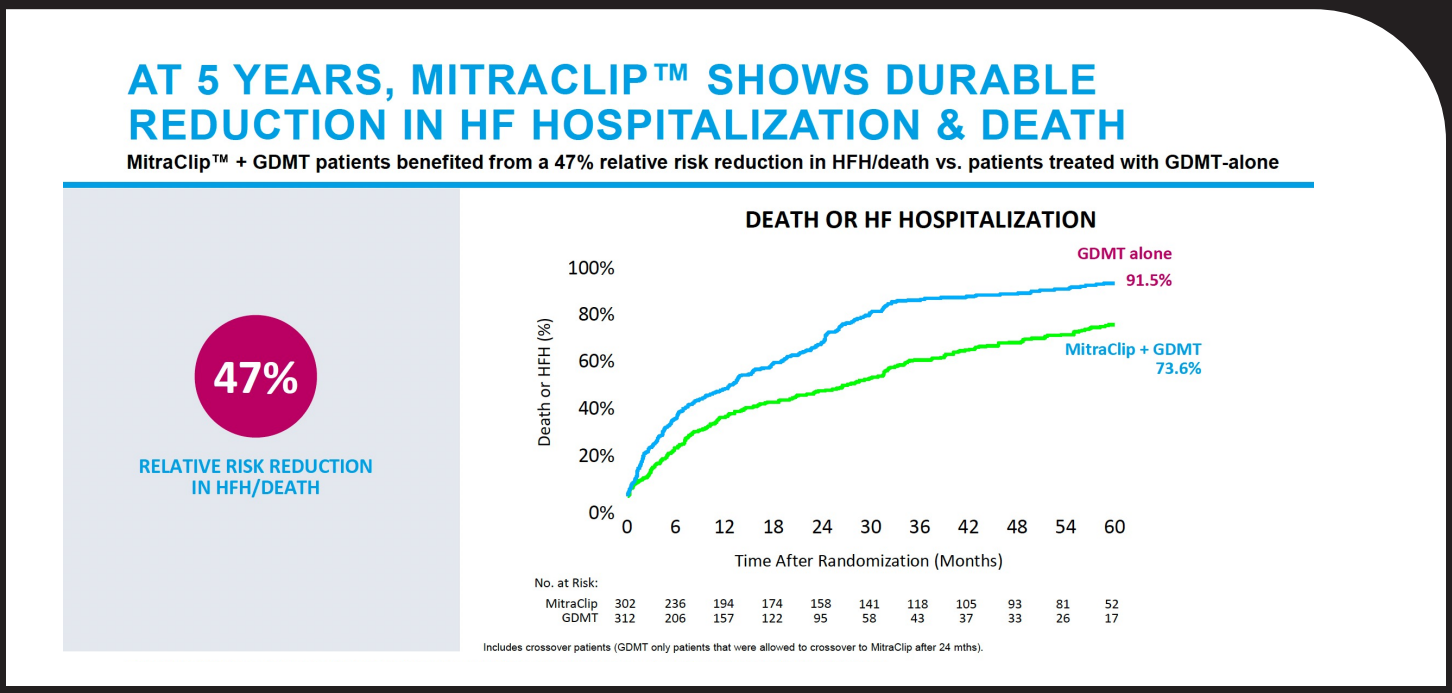
DR. ROBERT BOONE

Dr. Boone framed valvular disease as an increasingly important issue, particularly as cardiologists care for older patients with overlapping atrial fibrillation, heart failure, MR, and other complications. He emphasized that 1-year mortality in patients with significant secondary MR and HFnrEF is estimated to be as high as 57% (Cioffi et al, 2005). Patients with severe TR have debilitating symptoms, including fatigue, weakness, peripheral edema, and frequent hospitalizations.

Beginning with MitraClip, Dr. Boone shared the results of the prospective, real-world EXPAND G4 study, which followed patients through 5 years with primary or secondary MR that was ≥3+ at baseline. At 1 year, 87.2% of patients with primary MR and 94.5% of patients with secondary MR had mild or less MR. Another option is the PASCAL device, which differs from MitraClip by incorporating a central spacer and the ability to elongate the device, which may help with navigating dense chordae. However, Dr. Boone explained that head-to-head studies have not yet shown a significant difference in outcomes between PASCAL and MitraClip procedures.

Randomized controlled trials support the use of TEER in addition to GDMT. The COAPT trial compared GDMT versus MitraClip plus GDMT in patients with moderate to severe secondary MR and demonstrated a 38% reduction in death at 2 years in the MitraClip group, with an NNT of 6. At 5 years, the risk of heart failure hospitalization or death was 73.6% in the MitraClip plus GDMT group versus 91.5% in the GDMT alone group, showing that even though MitraClip improved outcomes, patients treated for severe MR nonetheless faced serious health challenges. The RESHAPE-HF2 trial similarly showed reductions in mortality and heart failure hospitalization, demonstrating that MR 3+/4+ in a patient with NYHA class II-IV despite GDMT/CRT may be an important treatable target. He noted that MR reduction allows better uptitration of GDMT, and it remains unclear to what extent benefit comes from the device versus improved heart failure management.

Shifting to TMVR, Dr. Boone reviewed several TMVR platforms, focusing especially on SAPIEN M3, which was recently approved in Europe and the US. The ENCIRCLE trial, which enrolled 287 patients with MR 3+ or 4+ demonstrated that 96% of patients had MR of 0/1+ after 1 month. The trial demonstrated a reduction of heart failure hospitalization at 1 year of 16.7% and a reduction in all-cause death to 13.9%. Dr. Boone also highlighted AltaValve as a promising



system, describing it as technically easier than other alternatives.

The TRIGISTRY study of 2,413 patients showed the poorest outcomes in patients with unsuccessful transcatheter valve repair, when compared with patients who received conservative management, surgery, or a successful procedure. Thus, patient selection for edge-to-edge repair is crucial.
Dr. Boone recommended the GLIDE score, a tool used to assess whether TR anatomy is favourable for edge-to-edge repair.

The TRILUMINATE trial randomized patients with severe TR to medical therapy or tricuspid edge-to-edge repair. The study showed that TR could be substantially reduced but the major benefit was improvement in symptoms and quality of life rather than mortality or hospitalization. He explained the 15-point improvement in KCCQ score demonstrated by the trial was clinically meaningful and may correspond to a large improvement in functional capacity, including a potential 200 metre increase in the 6-minute walk distance. A mortality benefit may be achieved with tricuspid TEER, as the French TRI-FR study demonstrated a mortality benefit with tricuspid TEER plus OMT compared with OMT alone.

Finally, Dr. Boone summarized evidence that, while TTVR can produce better results than TEER, with possible mortality benefit at 2 years, replacement carries significant safety concerns, including severe bleeding and high pacemaker rates. He emphasized that TR is complex, and further research is needed to understand the ideal timing of intervention.

The Role of Revascularization for HFrEF

DR. PETER LIU

Dr. Liu opened by discussing the importance of rapid titration of HFrEF therapy. He shared evidence from the STRONG-HF trial, in which patients were randomized to the optimal GDMT dose within two weeks or usual care. The trial demonstrated that optimizing GDMT quickly improves event-free survival compared with delaying full-dose GDMT, driven by fewer recurrent heart failure hospitalizations and lower mortality.

From there, Dr. Liu assessed the evidence comparing CABG versus medical therapy, PCI versus medical therapy, and CABG versus PCI. The STICH trial evaluated CABG plus medical therapy versus medical therapy alone in patients with ischemic left ventricular dysfunction. The study enrolled over 1,200 patients with left ventricular ejection fraction of ≤35% who were anatomically suitable for surgery. Five-year follow up did not show a mortality benefit with CABG due to surgery-related mortality. However, extended 10-year follow-up in STICHES showed that CABG resulted in a 16% reduction in all-cause mortality and significantly lowered cardiovascular and heart failure-related hospitalizations compared with medical therapy alone. The study demonstrated that patients below 60 years of age saw a greater benefit with CABG, which is likely due at least partly to higher surgical mortality in older patients. Other subgroups with greater benefit from CABG include patients with three-vessel coronary disease, lower left ventricular ejection fraction, and larger left ventricular volume.

Dr. Liu then reviewed the REVIVED-BCIS2 trial, which compared PCI plus medical therapy with medical therapy alone in patients with left ventricular ejection fraction <35%, anatomy suitable for PCI, and evidence of myocardial viability. The results were disappointing as PCI did not reduce death or heart failure hospitalization compared with medical therapy. A real-world comparison of CABG versus PCI, published in *JAMA Cardiology* in 2020, examined more than 12,000 Ontario-based patients with coronary disease and left ventricular ejection fraction under 35% who underwent either CABG or PCI. After propensity matching, PCI was associated with worse estimated long-term survival outcomes than CABG after 5 years (HR 1.6). The largest

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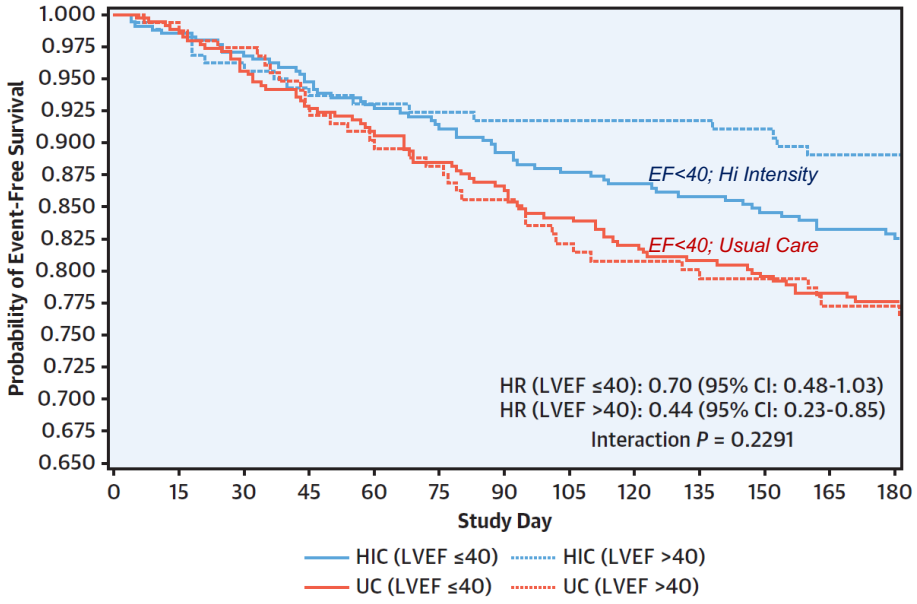
STRONG-HF
CONTEMPORARY POST-DISCHARGE MANAGEMENT IN HEART-FAILURE

STRONG-HF: Focus on HFrEF

FIGURE 1 Kaplan-Meier Curves for the Primary Endpoint



Pagnesi, Mebazza, Davison, et al. JACC 2023; 81:2131-2144

differences were observed in recurrent myocardial infarction and need for repeat revascularization. Dr. Liu interpreted this as suggesting that PCI may treat the lesions that trigger dysfunction but may not address the broader burden of atherosclerosis as CABG does.

Dr. Liu presented a pooled analysis of individual participant data from the STICHES and REVIVED-BCIS2 trials, published in the *European Heart Journal* in 2025, which demonstrated higher all-cause death and hospitalization for heart failure among propensity-matched patients enrolled in the older STICHES trial, compared to the REVIVED trial. These results underscore how much heart failure medical therapy has improved over the past decade. Modern quadruple therapy has changed the baseline prognosis of HFrEF, which affects how much incremental benefit revascularization may be able to show.

Next, Dr. Liu discussed viability testing, noting that the STICH trial showed that the presence of viable myocardium did not predict a survival advantage after CABG. However, observational data and meta-analyses suggest that patients with viable myocardium have lower mortality rates. Dr. Liu said that viability testing should not be performed routinely in every patient with HFrEF but may be useful in select, complex patients when it is unclear how much coronary anatomy is contributing to left ventricular dysfunction or when there may be underlying cardiomyopathic, valvular, or scar-related processes. Dr. Liu explained that CABG is preferred when anatomy is appropriate and the patient is a surgical candidate, while PCI is reasonable for poor surgical candidates.

Heart Failure Panel Discussion

Dr. Abramson: Given the data presented by Dr. Boone on mitral valve repair are so convincing, why has this not taken off more widely?

Dr. Boone: In Canada, the low uptake is largely due to resources. Referral-to-treatment delays have been a major barrier. In British Columbia, for example, the referral-to-treatment wait is about 12 months. People get frustrated. When we started in 2013, our results were not as robust, and that affected enthusiasm.

Dr. Liu: In the early days, especially during the randomized trials, the devices were still evolving, and it was not always clear which patients would benefit most. Now we have a better understanding. You need to maximally treat the patient first, including with cardiac resynchronization therapy where appropriate, and then determine how much of the patient's clinical status is being driven by the valve lesion. If the patient remains very symptomatic despite optimization and has suitable anatomy with significant regurgitation, that is the patient who can benefit. When we select patients carefully, we can get good results.

Dr. Almufleh: I practice in Kingston, Ontario, where we are growing our MitraClip program. One challenge in getting referrals is the perception that this is a high-risk procedure. With fifth-generation technology, outcomes are quite good. I also think there can be some ageism. A patient in their late 80s who is symptomatic but otherwise functional may still benefit. Education is needed, not only for cardiologists but also for internists who are following these patients. Echocardiograms should be repeated every 6 or 12 months. If mitral regurgitation remains severe, pulmonary pressures are rising, and LV function is worsening, we need to encourage earlier referral.

Dr. Tremblay-Gravel: It can be difficult to determine when to use MitraClip first versus moving directly to a ventricular assist device. How do you make these decisions at your centres? Do you have multidisciplinary discussions for more advanced cases?

Dr. Boone: At our centre, I am invited to the heart failure rounds to discuss these patients. These can be difficult decisions. In general, if a patient is 65, they should probably receive a ventricular assist device and be considered for transplant. However, if they are in their early 50s, I would want to try MitraClip to possibly avoid the lifestyle restrictions and complications associated with ventricular assist devices.

Dr. Liu: We have a multidisciplinary round at my hospital that includes valve specialists, surgeons, imaging experts, the heart failure team, and the transplant team. Most importantly, we make sure to have a nuanced discussion with the patient and family. Patient preference makes a major difference in how we proceed.

Audience member: I have several patients

who are asymptomatic from an angina standpoint but are admitted with heart failure exacerbation and demand ischemia. What is your approach to deciding whether to pursue revascularization in these patients?

Dr. Liu: I would start by looking carefully at the patient's overall status. If the patient is doing well on medical therapy, and has reasonable functional capacity, I would generally not pursue revascularization. However, if there are signs of unstable coronary disease, then we would start the conversation about revascularization.

Dr. Tremblay-Gravel: I would use hospitalization as an opportunity to define the anatomy. For example, I would order a coronary angiogram and potentially obtain a surgical consult. But if the patient has severe LV dysfunction and is not yet optimized on medical therapy, even if the surgeons are willing to operate, I would propose 2 or 3 months of medical therapy first. If the patient ultimately goes to surgery, optimizing therapy means they will be in better condition to tolerate surgery and have better postoperative outcomes. If they have ACS, of course, the calculation changes.

Dr. Almufleh: This is a common scenario. Suppose you treat the patient medically, see them in follow-up, and they are doing reasonably well. You refer them to surgery, and the surgeon finds a reason not to operate. What happens then? Should we consider PCI, assuming it is a relatively low-risk procedure for the patient?

Dr. Boone: There is no single right answer. When we perform PCI, we injure the endothelium. I tell patients that PCI creates a "road rash" inside the blood vessel. The longer the stent and the more bifurcation involved, the more endothelial injury we create. If a patient has two simple type A lesions, both 4 mm in diameter and requiring short 12-mm stents, those patients can do very well with PCI. But patients with complex lesions and good surgical targets are likely to do very well with surgery. For me, anatomy is a major part of the decision.

Dr. Hawkins: If a patient is turned down for surgery, I do not necessarily see PCI as an alternative. I do not think you are doing the patient a disservice by continuing medical therapy if the surgical team declines surgery. The original 5-year STICH follow-up was negative, although the 10-year follow-up did show benefit. That means we need to discuss a 10-year horizon for benefit with patients versus upfront procedural risk.

Dr. Tremblay-Gravel: I would add that, in the analysis comparing STICHES and REVIVED, patients treated with medical therapy in REVIVED actually did better than patients treated with CABG in STICHES. That illustrates the safety of treating patients medically. That said, STICH and REVIVED should not be viewed as directly comparable, because they studied different patient populations and, with modern PCI tools now available, further trials are essential.

About the Organizer

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