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38TH ANNUAL MEETING

September 13-15, 2023 ✨ MILWAUKEE, WI

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38TH ANNUAL MEETING

Highlights in Cardiovascular Care 2022-2023

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Cardiovascular Disease Prevention and Rehabilitation Program

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Disclosures

- Paul Oh
 - Research Funding: Apple
 - Consulting: Novartis
 - Research Chair: UHN Foundation and GoodLife Fitness



Objectives

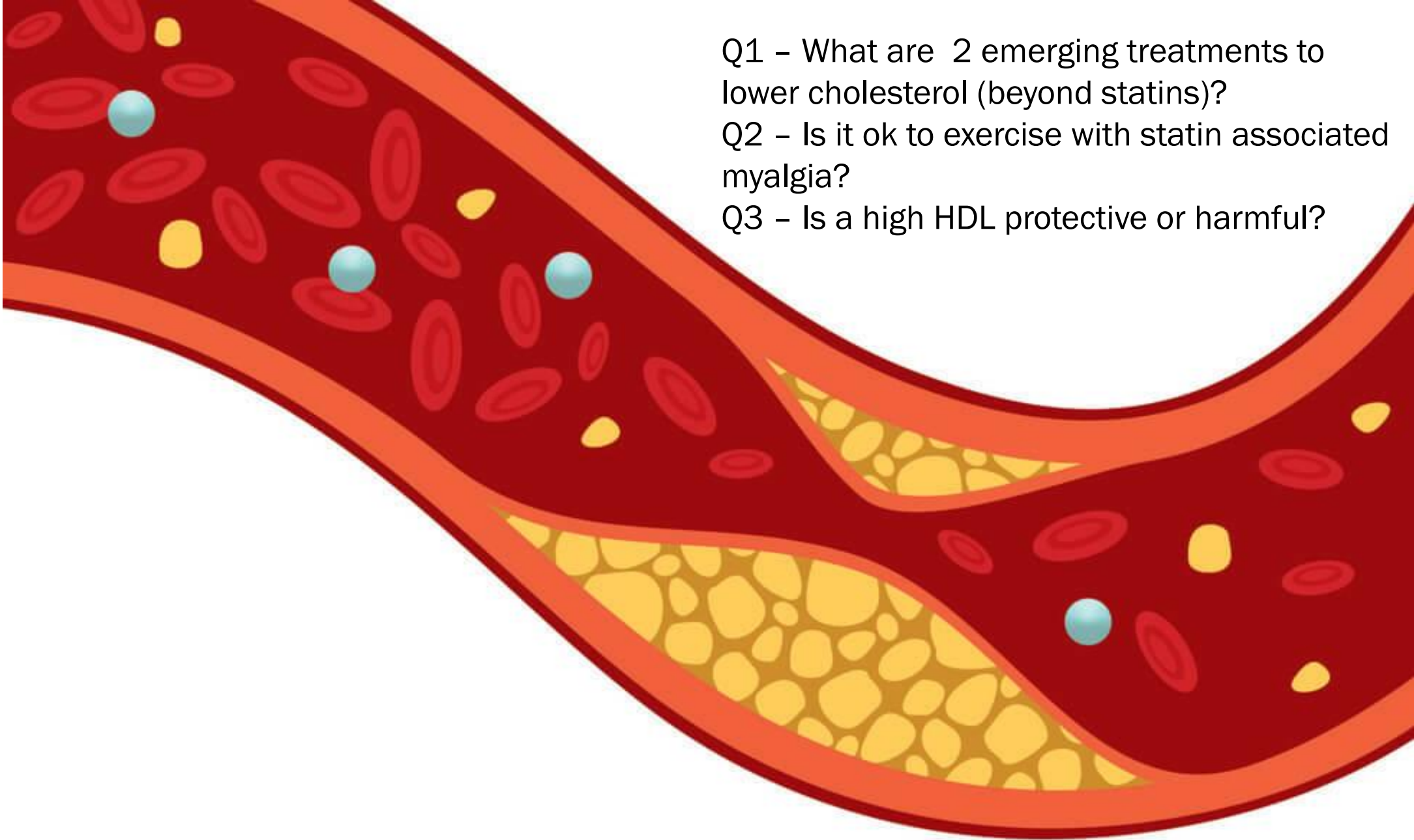
- Share ~20 things I've learned from the literature over the last year relevant to cardiovascular rehabilitation



Guiding Principles

- “major” medical journals with high impact and relevance to cardiac care
 - e.g., NEJM, Circulation, JACC, EJPC
 - JCRP VERY relevant but not included (separate session at conference (I hope))
- North American and International perspectives
- Addressing core components of cardiac rehab
 - Risk factors, preventative therapies, women and CVD, Impact of race and ethnicity, CR for specific cardiac conditions, CR models, climate and environment, COVID, policy
 - Exercise addressed by Dr. Squires
- There are many excellent papers that I won't be discussing today!





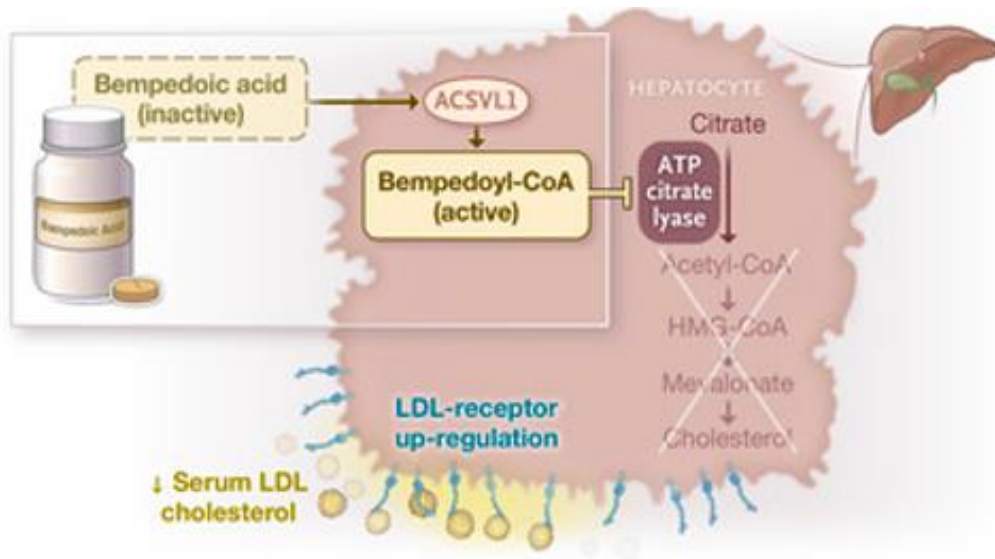
Q1 - What are 2 emerging treatments to lower cholesterol (beyond statins)?

Q2 - Is it ok to exercise with statin associated myalgia?

Q3 - Is a high HDL protective or harmful?

Bempedoic Acid and Cardiovascular Outcomes in Statin-Intolerant Patients

Steven E. Nissen, M.D., A. Michael Lincoff, M.D., Danielle Brennan, M.S., Kausik K. Ray, M.D., Denise Mason, B.S.N., John J.P. Kastelein, M.D., Paul D. Thompson, M.D., Peter Libby, M.D., Leslie Cho, M.D., Jorge Plutzky, M.D., Harold E. Bays, M.D., Patrick M. Moriarty, M.D., *et al.*, for the CLEAR Outcomes Investigators*



April 13, 2023

N Engl J Med 2023; 388:1353-1364

DOI: 10.1056/NEJMoa2215024

Bempedoic acid, an ATP citrate lyase inhibitor, reduces low-density lipoprotein (LDL) cholesterol levels and is associated with a low incidence of muscle-related adverse events; its effects on cardiovascular outcomes remain uncertain.

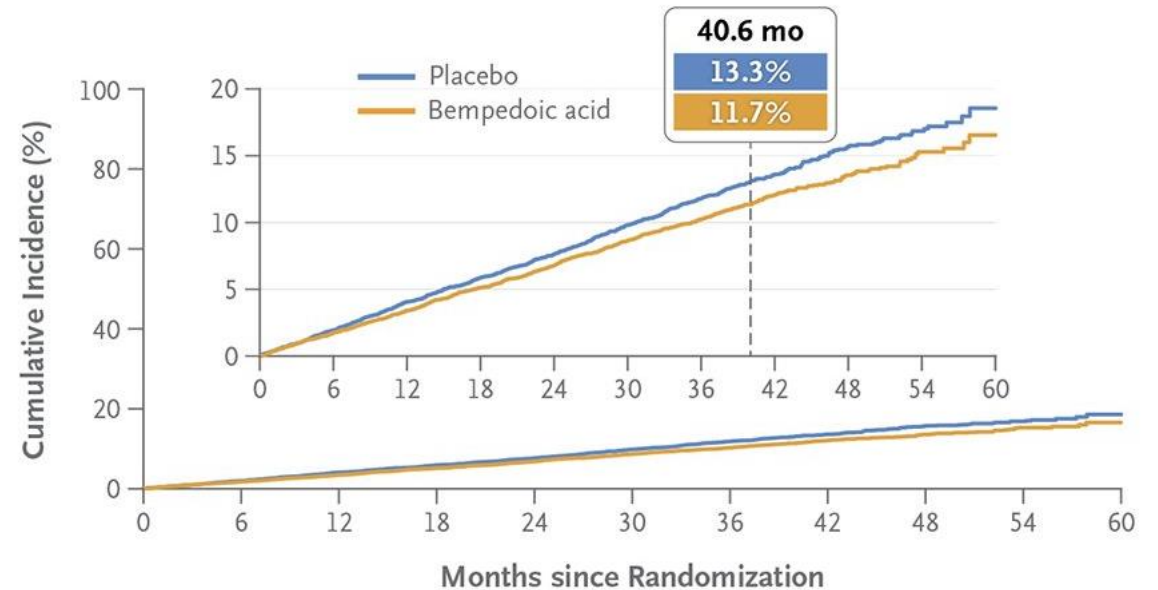


Bempedoic Acid and CV Outcomes

- A total of 13,970 patients (unable or unwilling to take statin and at high risk for CVD) underwent randomization
- LDL lower by 21%
- The incidence of a primary end-point event was significantly lower with bempedoic acid than with placebo (819 patients [11.7%] vs. 927 [13.3%]; hazard ratio, 0.87; 95% confidence interval [CI], 0.79 to 0.96; P=0.004)
- The incidences of gout and cholelithiasis were higher with bempedoic acid than with placebo (3.1% vs. 2.1% and 2.2% vs. 1.2%, respectively),

Four-Component Composite of Major Adverse Cardiovascular Events

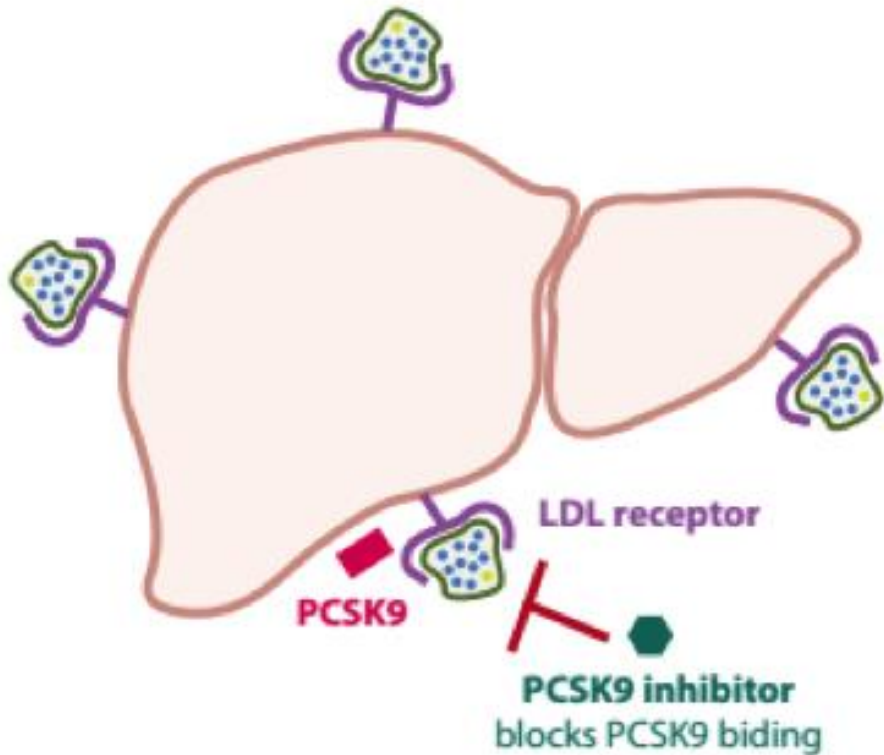
HR, 0.87 (95% CI, 0.79–0.96); P=0.004



Niseen et al. N Engl J Med 2023; 388:1353-1364

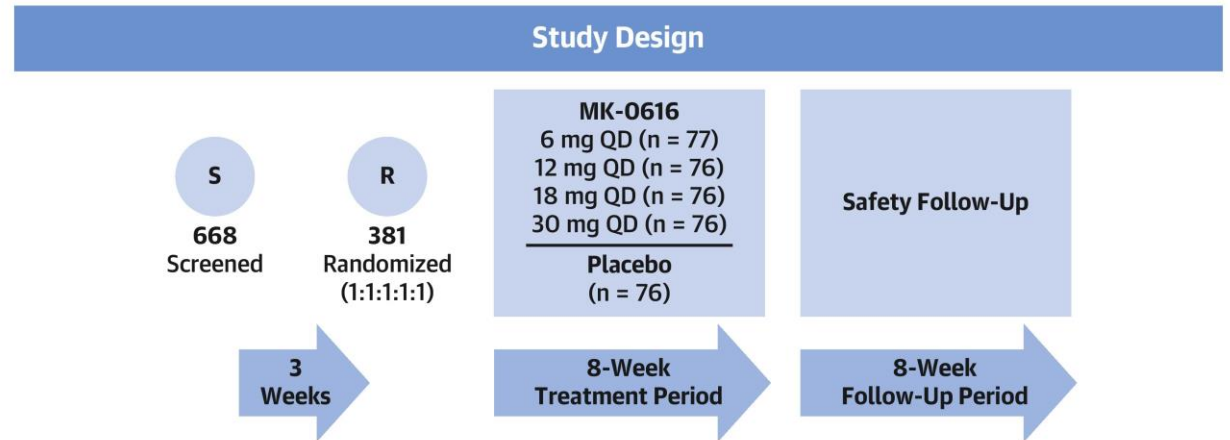


Oral PCSK9 inhibition



From:
<https://sitn.hms.harvard.edu/flash/2015/a-potential-new-weapon-against-heart-disease-pcsk9-inhibitors/>

CENTRAL ILLUSTRATION: A Phase 2b Study of MK-0616, an Oral PCSK9 Inhibitor



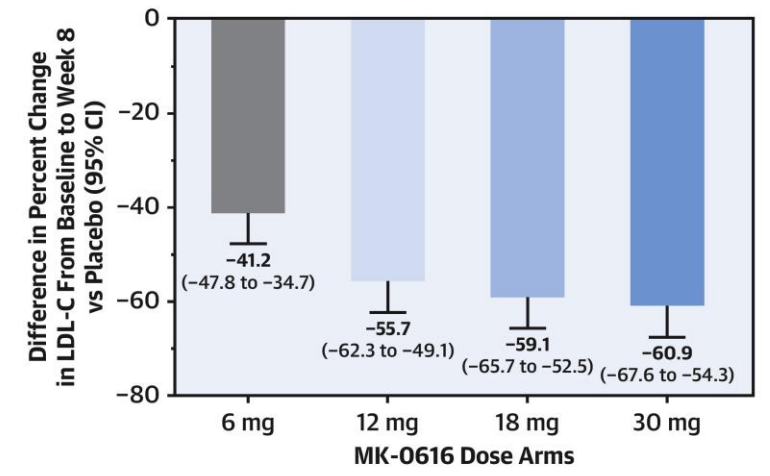
Baseline Participant Characteristics (n = 381 Randomized Participants)

Female: 49.3%
Mean LDL-C: 119.5 mg/dL

ASCVD Risk Category:
Clinical ASCVD: 38.6%
Intermediate/High ASCVD Risk: 56.4%
Borderline ASCVD Risk: 4.7%

Statin Intensity:
No Statin: 39.4%
Low-to-Moderate Intensity: 34.6%
High Intensity: 26.0%

Efficacy (n = 380 Treated Participants)



Key Points

- All doses of MK-0616 demonstrated statistically superior reductions in LDL-C vs placebo with up to 60.9% placebo-adjusted reduction from baseline values
- MK-0616 was well tolerated with no overall trends in AEs across treatment groups



Prolonged Moderate-Intensity Exercise Does Not Increase Muscle Injury Markers in Symptomatic or Asymptomatic Statin Users GET ACCESS

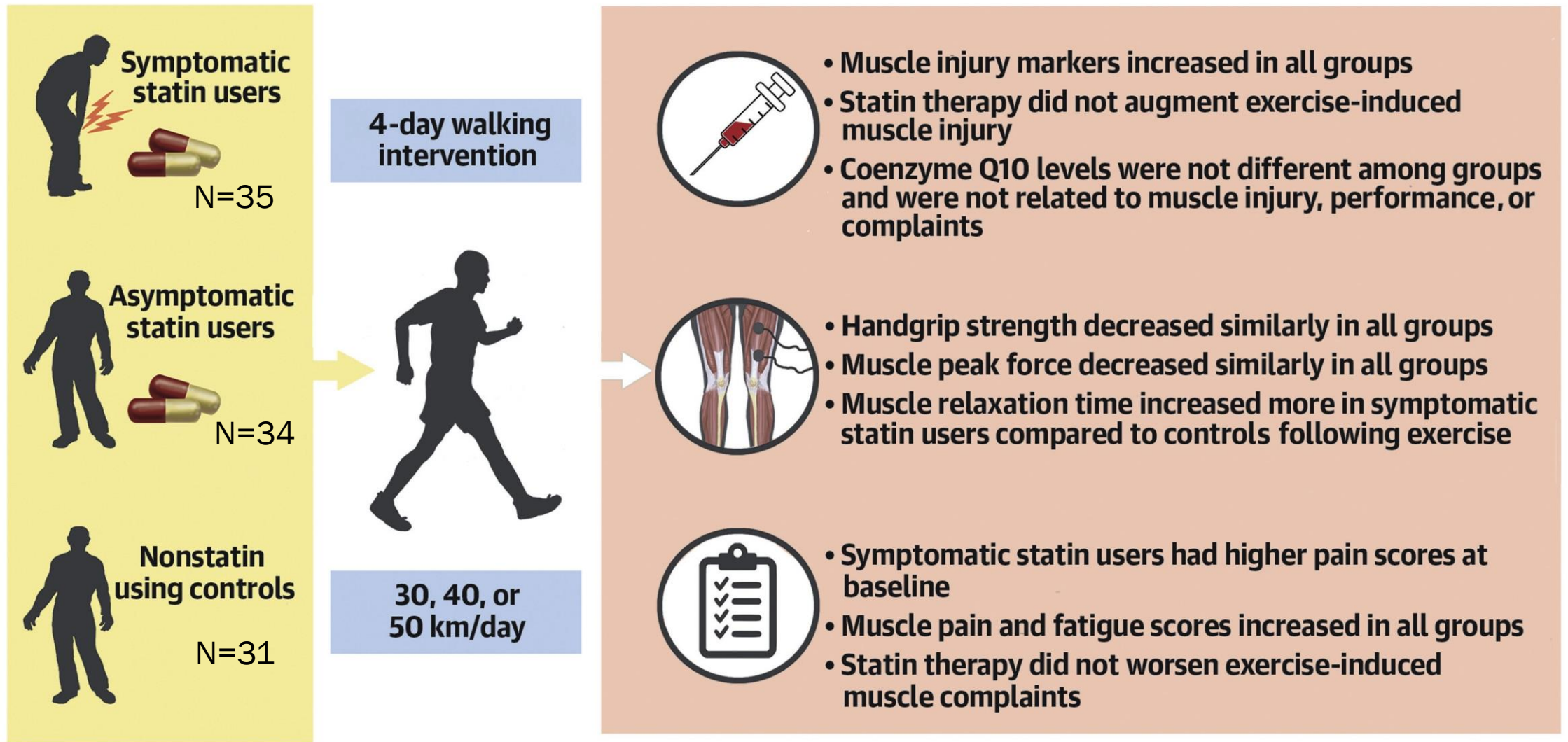
Original Investigation

Neeltje A.E. Allard, Lando Janssen, Bart Lagerwaard, Malou A.H. Nuijten, Coen C.W.G. Bongers, Richard J. Rodenburg, Paul D. Thompson, Thijs M.H. Eijsvogels, Willem J.J. Assendelft, Tom J.J. Schirris, Silvie Timmers, and Maria T.E. Hopman

J Am Coll Cardiol. 2023 Apr, 81 (14) 1353–1364




CENTRAL ILLUSTRATION: Exercise-Induced Muscle Injury in Chronic Statin Users



Allard NAE, et al. J Am Coll Cardiol. 2023;81(14):1353-1364.

HDL cholesterol and clinical outcomes in diabetes mellitus

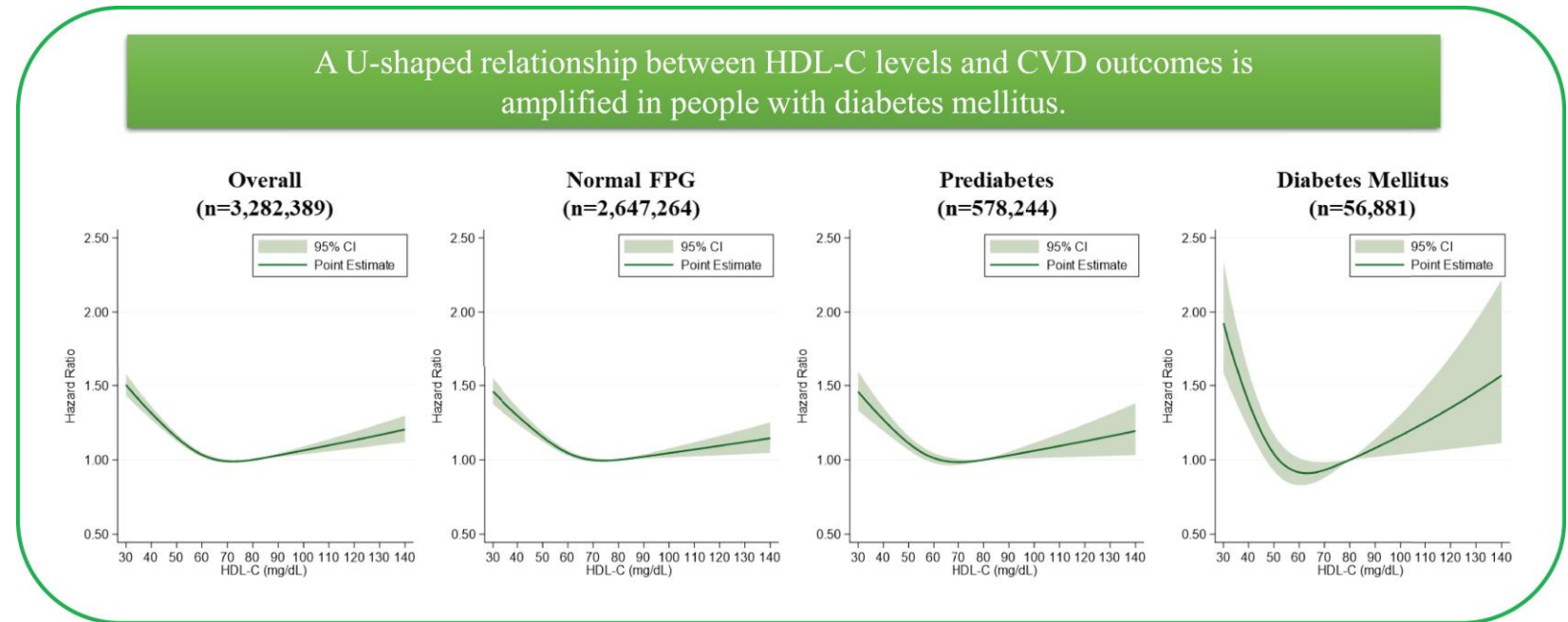
Takuma Ishibashi, Hidehiro Kaneko , Satoshi Matsuoka, Yuta Suzuki, Kensuke Ueno, Ryusei Ohno, Akira Okada, Katsuhito Fujiu, Nobuaki Michihata, Taisuke Jo ... [Show more](#)

[Author Notes](#)

European Journal of Preventive Cardiology, Volume 30, Issue 8, June 2023, Pages 646–653, <https://doi.org/10.1093/eurjpc/zwad029>

Q4. Is HDL good or bad?

- Low HDL is bad
- High HDL may be a marker of risk in people with DM (high level but dysfunctional)





From: www.cardiaccollege.ca



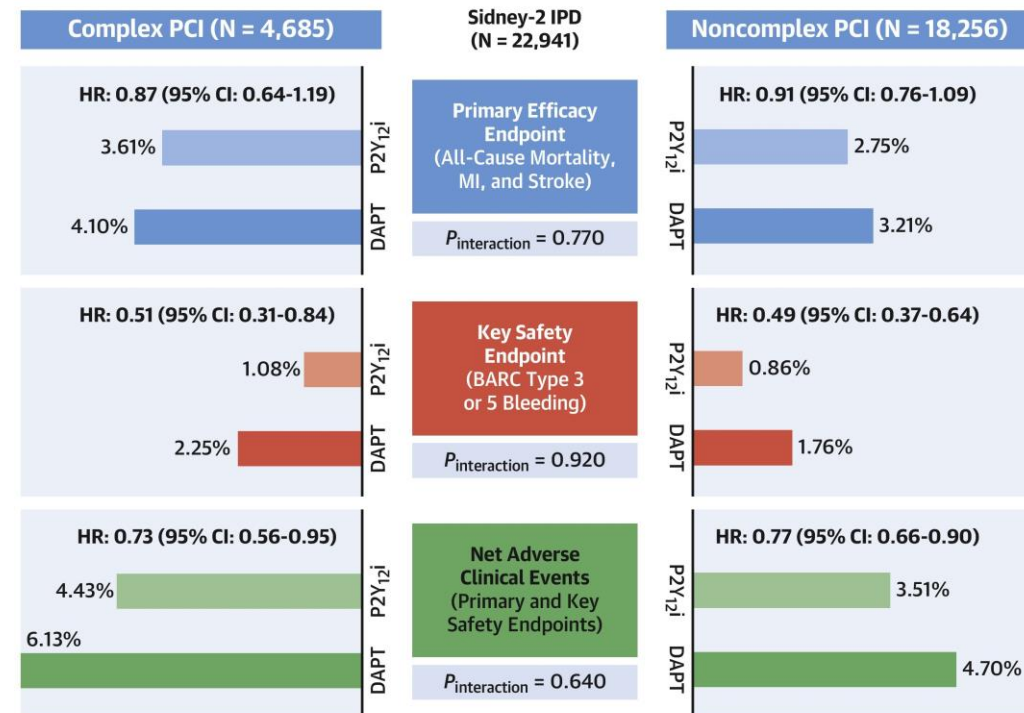
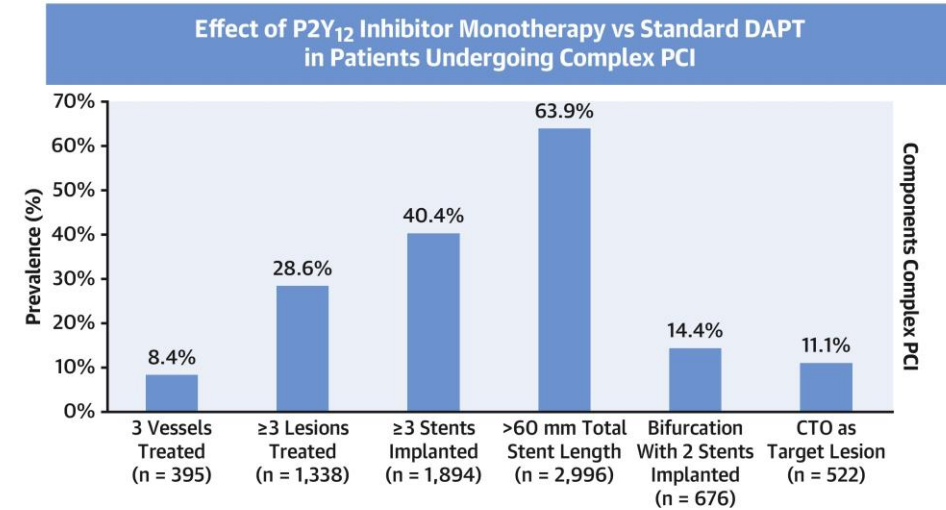
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Q5. Should we treat with P2Y₁₂ or DAPT?

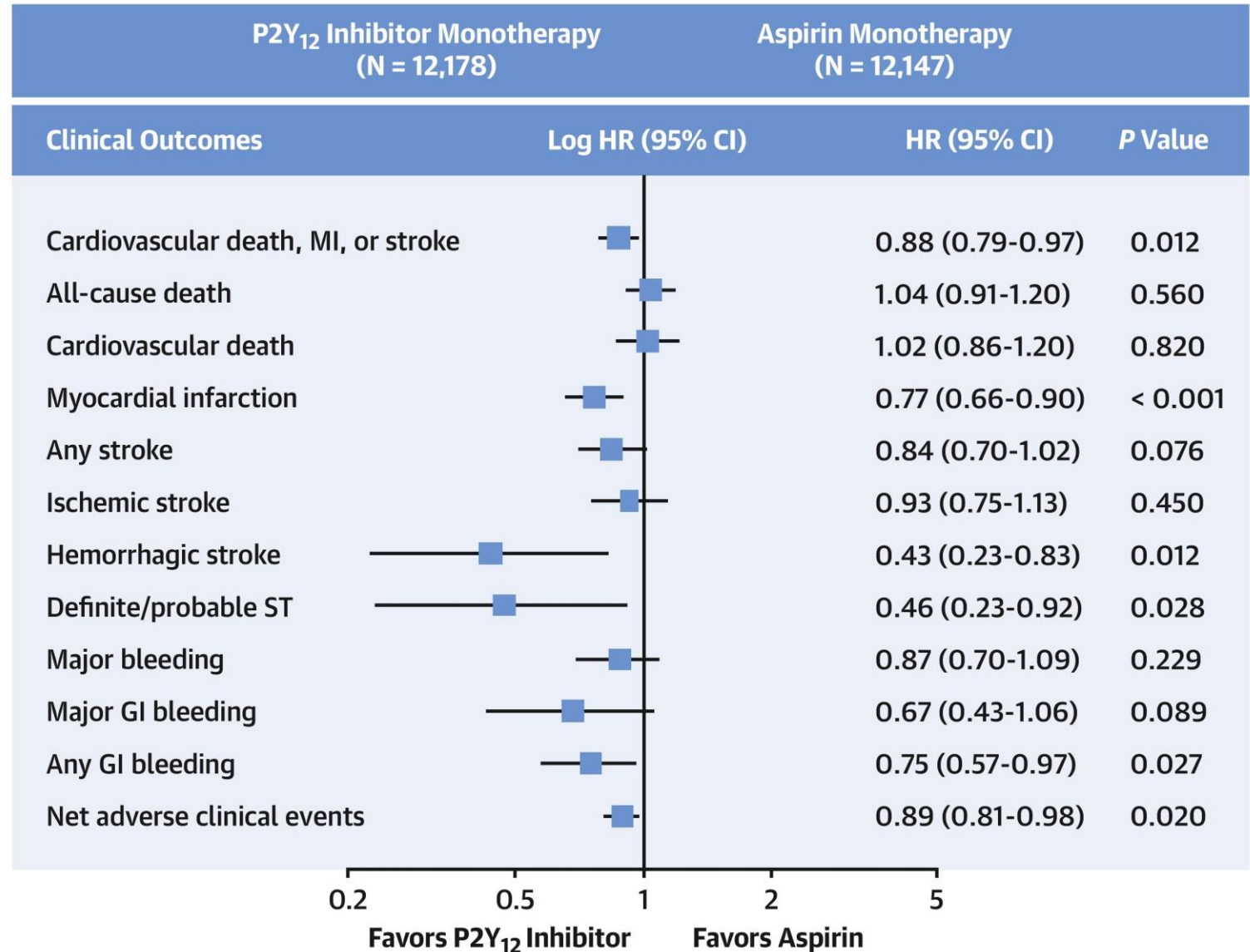
- 22,941 patients undergoing PCI from 5 trials
- Primary efficacy (MACE) similar for both
- Bleeding lower with P2Y₁₂

CENTRAL ILLUSTRATION: P2Y₁₂ Inhibitor Monotherapy vs Standard DAPT After Complex PCI



Q6. Should we treat with P2Y₁₂ or ASA in stable CAD?

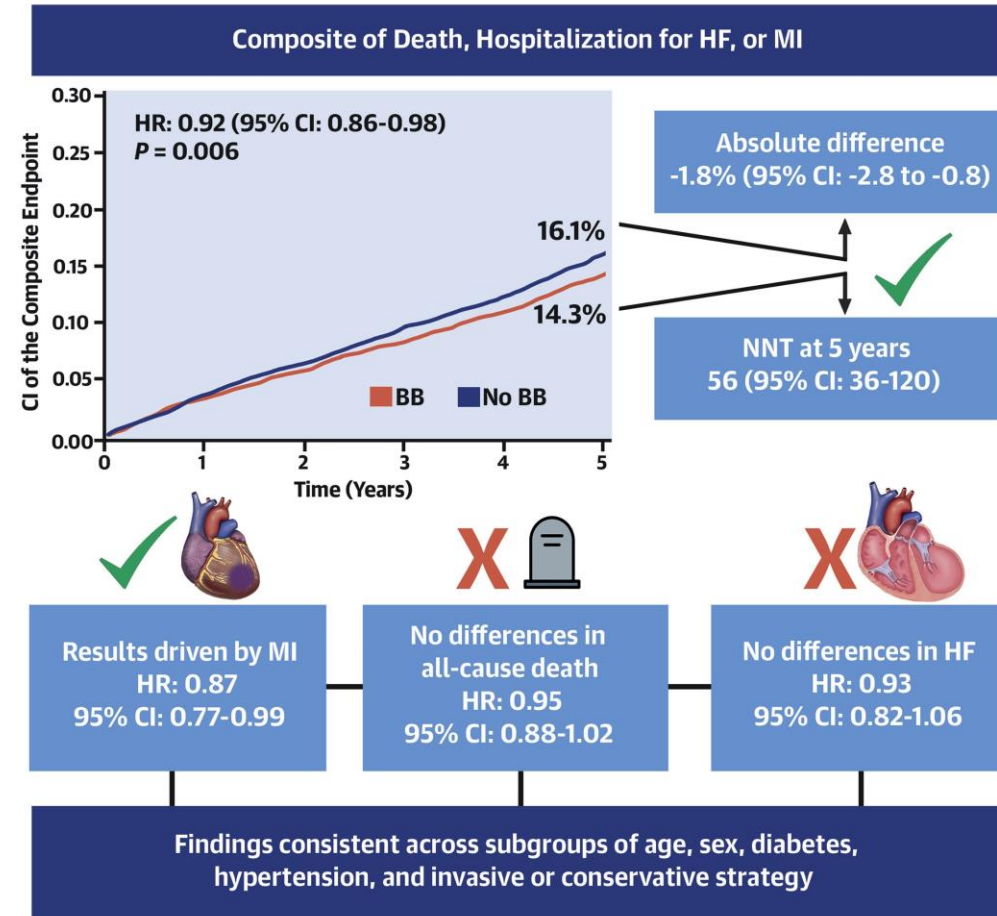
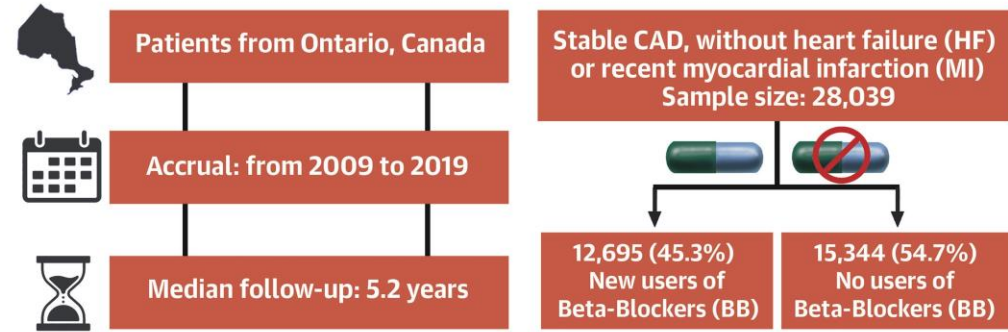
CENTRAL ILLUSTRATION: P2Y₁₂ Inhibitor Monotherapy Versus Aspirin Monotherapy in Patients With Coronary Artery Disease



Q7. Are Beta-blockers helpful in stable CAD?

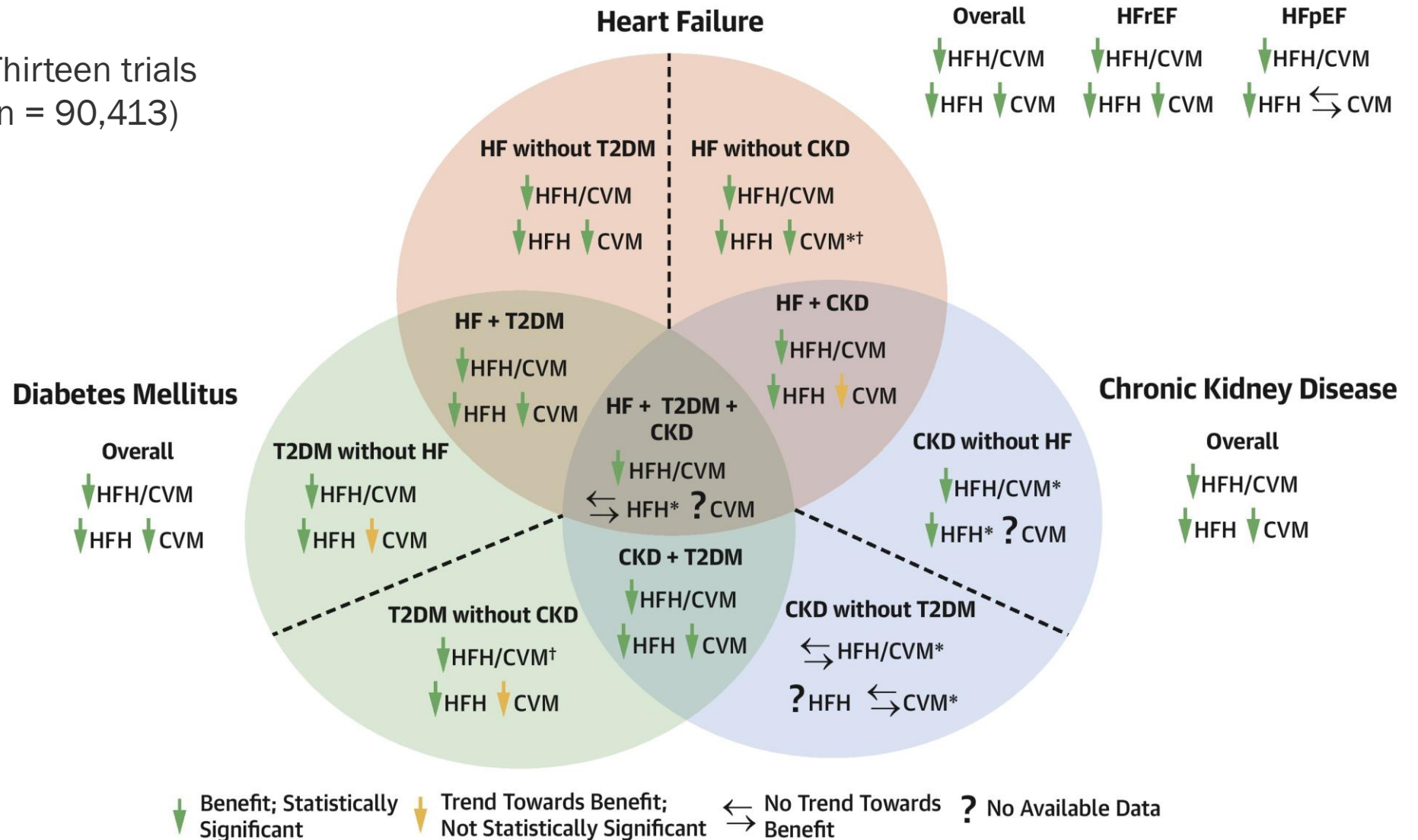
- In patients with angiographically documented stable CAD without heart failure or a recent myocardial infarction, beta-blockers were associated with a small but significant reduction in cardiovascular events at 5 years.

CENTRAL ILLUSTRATION: Summary of the Main Study Results



CENTRAL ILLUSTRATION: Effect of Sodium-Glucose Cotransporter-2 Inhibitors on Cardiovascular Outcomes Across Different Patient Populations

Thirteen trials
(n = 90,413)



Q8. Are SGLT2 inhibitors helpful in HF, DM or CKD?



Women and CVD

- Q9. Are there differences in women vs. men in CV presentation, risk assessment, care, QoL and outcomes?

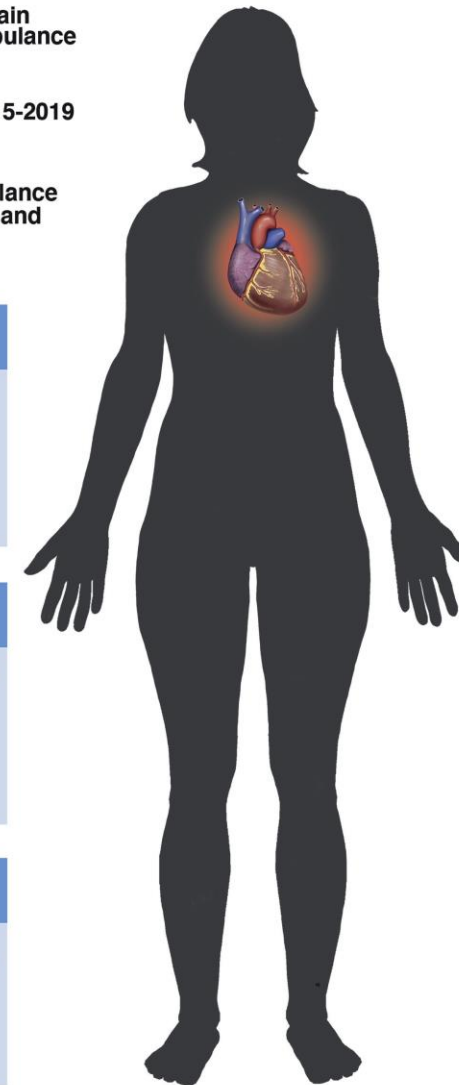
CENTRAL ILLUSTRATION: Sex Differences in Acute Chest Pain Presentation, Care, and Outcomes

Acute Chest Pain Presentation, Care, and Outcomes in Women

 256,901 acute chest pain presentations via ambulance

 Victoria, Australia 2015-2019

 Data linkage of ambulance emergency, hospital, and mortality records



Epidemiology

- Women higher incidence <50 years
- Men higher incidence ≥50 years

Presentation in Women

- Younger and fewer comorbidities
- ↔ Clinical observations and pain severity
- ↑ Number and diversity of symptoms

Diagnoses

- Lower rates of CV causes and ACS
- Higher rates of HF, PE, and arrhythmia

Prehospital Care

- Less likely to receive:
- Transport to hospital
 - Aspirin and analgesia
 - ECG and IV cannulation

Hospital Care

- Delays in time to:
- ED clinician review
 - EMS off-load

Acute Coronary Syndrome (ACS) Care

- Less likely to receive:
- EMS 12-lead ECG and IV cannula
 - Coronary angiography
 - CCU or ICU admission
 - Timely EMS arrival, off-load, and ED review

Outcomes

- ↑ STEMI mortality and re-presentation
- ↑ CVD and NSTEMI re-presentation
- ↓ Overall mortality and re-presentation

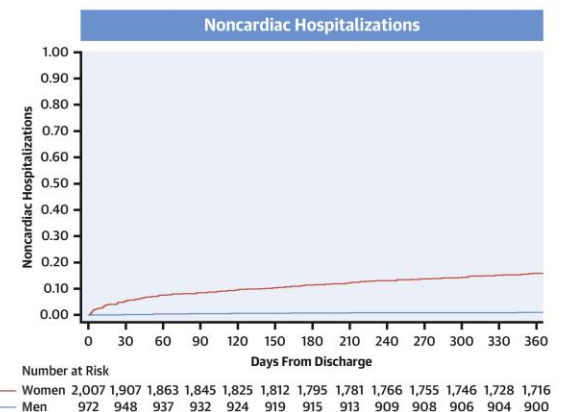
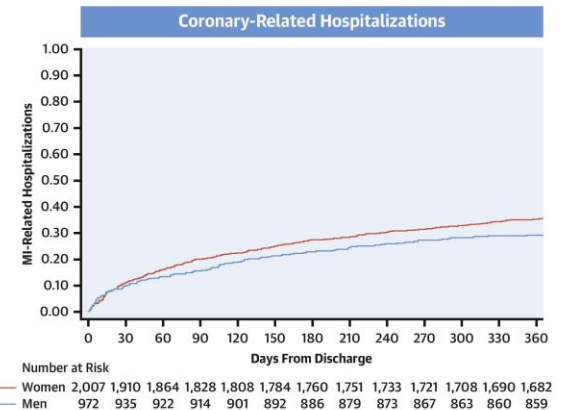
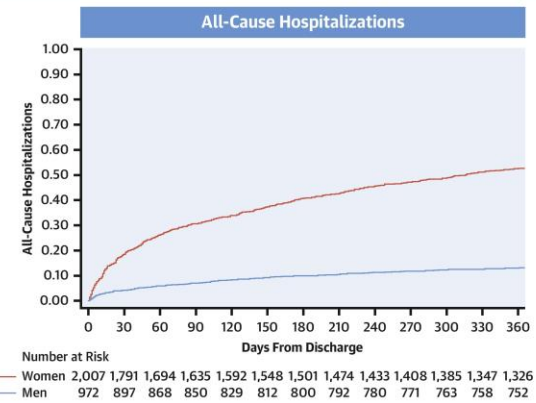
Sex Difference in Outcomes of Acute Myocardial Infarction in Young Patients  GET ACCESS

Original Investigation

Mitsuaki Sawano, Yuan Lu, César Caraballo, Shiwani Mahajan, Rachel Dreyer, Judith H. Lichtman, Gail D’Onofrio, Erica Spatz, Rohan Khera, Oyere Onuma, Karthik Murugiah, John A. Spertus, and Harlan M. Krumholz

J Am Coll Cardiol. 2023 May, 81 (18) 1797–1806

- Data from the VIRGO (Variation in Recovery: Role of Gender on Outcomes of Young AMI Patients) study, which enrolled young patients with AMI across 103 U.S. hospitals
- N=2,979
- Young women with AMI experience more adverse outcomes than men in the year after discharge



Sex and age as predictors of health-related quality of life change in Phase II cardiac rehabilitation

Get access >

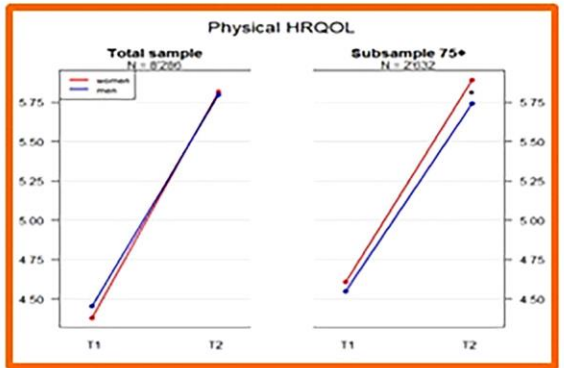
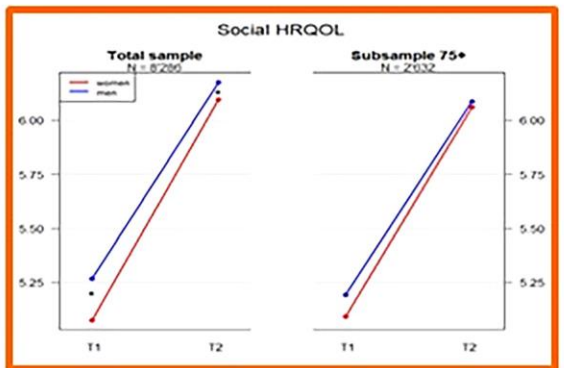
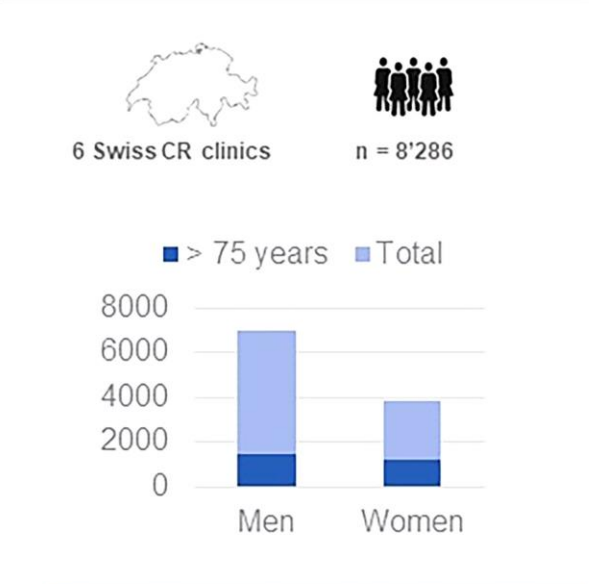
Lena Jellestad ✉, Bianca Auschra, Claudia Zuccarella-Hackl, Mary Princip, Roland von Känel, Sebastian Euler, Matthias Hermann

European Journal of Preventive Cardiology, Volume 30, Issue 2, February 2023, Pages 128–136, <https://doi.org/10.1093/eurjpc/zwac199>

Women and CVD

Sex and age as predictors of HRQOL changes in cardiac rehabilitation

Cohort	Results
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CONCLUSION: Women report poorer emotional and social HRQOL at CR entry compared to men, but in turn particularly benefit from CR. Indeed, female sex predicts greater changes in emotional and social HRQOL throughout CR.

- Women have poorer QoL at baseline, but improve more with CR

Women and CVD

- Updated review on assessing CV risk in women, including race and ethnicity considerations

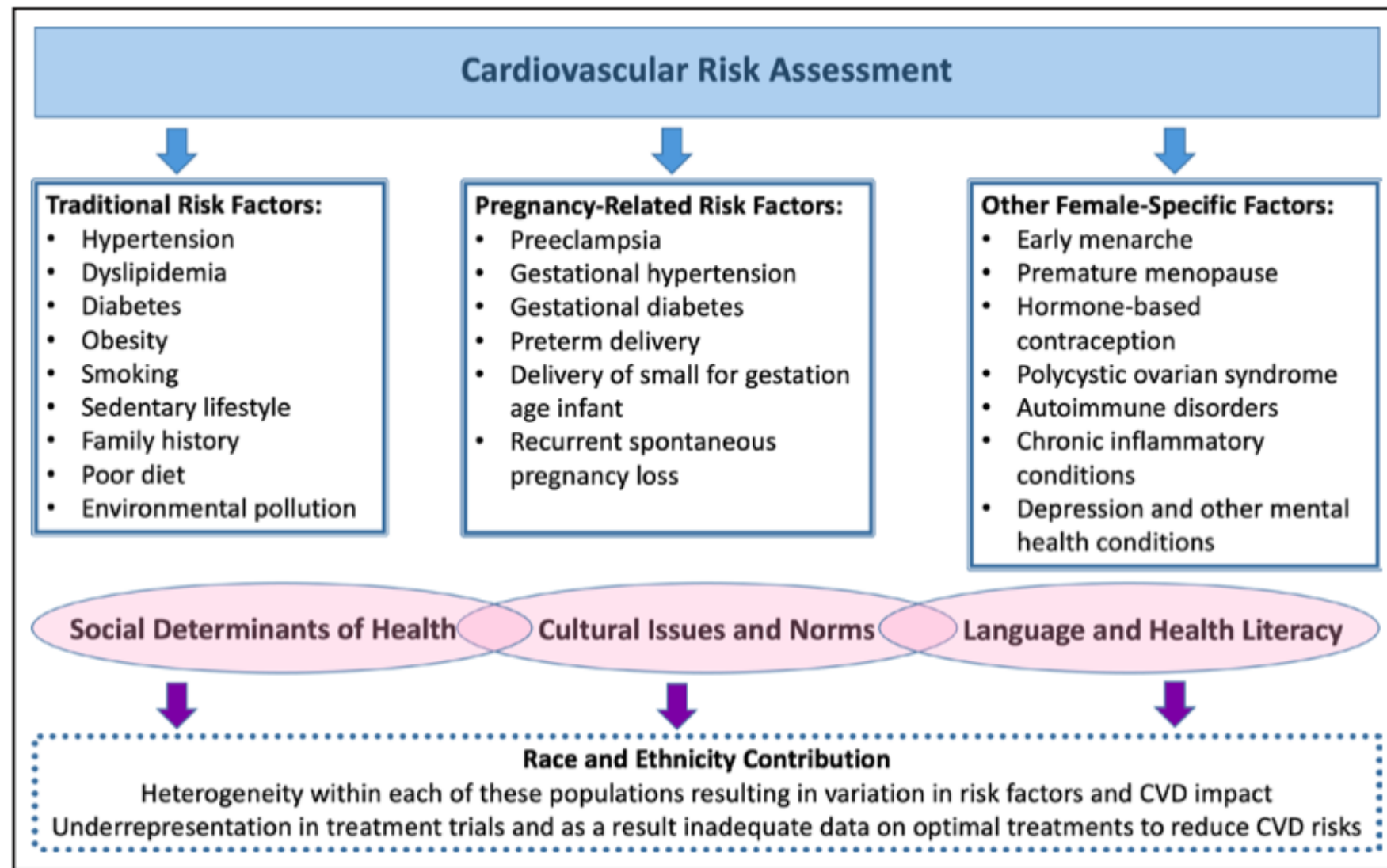


Figure 1. Cardiovascular risk factors in women and the impact of race and ethnicity contribution.
CVD indicates cardiovascular disease.

Mehta et al. *Circulation*. 2023;147:1471–1487.





Canadian Journal of Cardiology 38 (2022) 1786–1798

Guidelines

Women-Focused Cardiovascular Rehabilitation: An International Council of Cardiovascular Prevention and Rehabilitation Clinical Practice Guideline*

Gabriela Lima de Melo Ghisi, PT, PhD,^a Susan Marzolini, R. Kin, PhD,^{a,b}
Jennifer Price, RN, PhD,^c Theresa M. Beckie, RN, PhD,^{d,e} Taslima Mamataz, MD, MSc,^{a,b}
Aliya Naheed, MD, PhD,^f and Sherry L. Grace, PhD, CRFC^{a,b,g}

^aKITE-Toronto Rehabilitation Institute, University Health Network, University of Toronto, Toronto, Ontario, Canada; ^bFaculty of Health, York University, Toronto, Ontario, Canada; ^cWomen's College Hospital, Toronto, Ontario, Canada; ^dCollege of Nursing, Division of Cardiovascular Sciences, University of South Florida, Tampa, Florida, USA; ^eCollege of Medicine, Division of Cardiovascular Sciences, University of South Florida, Tampa, Florida, USA; ^fInitiative for Non-Communicable Diseases, Health System and Population Studies Division, International Centre for Diarrheal Diseases Research Bangladesh, Dhaka, Bangladesh; ^gPeter Munk Cardiac Centre, University Health Network, University of Toronto, Toronto, Ontario, Canada

Ghisi et al. Canadian Journal of Cardiology 38 (2022) 1786e1798





Women-Focused Cardiovascular Rehab: Practice Guideline

Methods



Initial Recommendations

Based on the results of the first systematic review with meta-analysis on women-focused CR. Rated using GRADE.



Writing Panel Composed

Comprised of experts with diverse geographic representation, including multidisciplinary healthcare providers, a policy-maker to support recommendation implementation, and patient partners.



Delphi Panel – Survey and Call

Comprised of corresponding authors from articles included in the review and of programs delivering women-focused CR; asked to rate each recommendation on a 7-point Likert scale in terms of positive impact and implementation feasibility.



External Review

The draft underwent external review from CR societies internationally and was posted for public comment.



Recommendations

Recommendations relate to:

- **referral** (i.e., automatic and encouragement),
- **setting** (e.g., choice of mode, environment, tailoring, staff training) and
- **delivery** (e.g., session timing options, preferred forms of exercise, psychosocial assessment and care, education on women and heart disease).

GRADE

Overall, certainty of evidence for the final recommendations was **low to moderate**, and strength **mostly strong**.

Ghisi, ... Grace; CJC 2022

Ghisi et al. Canadian Journal of Cardiology 38 (2022) 1786e1798



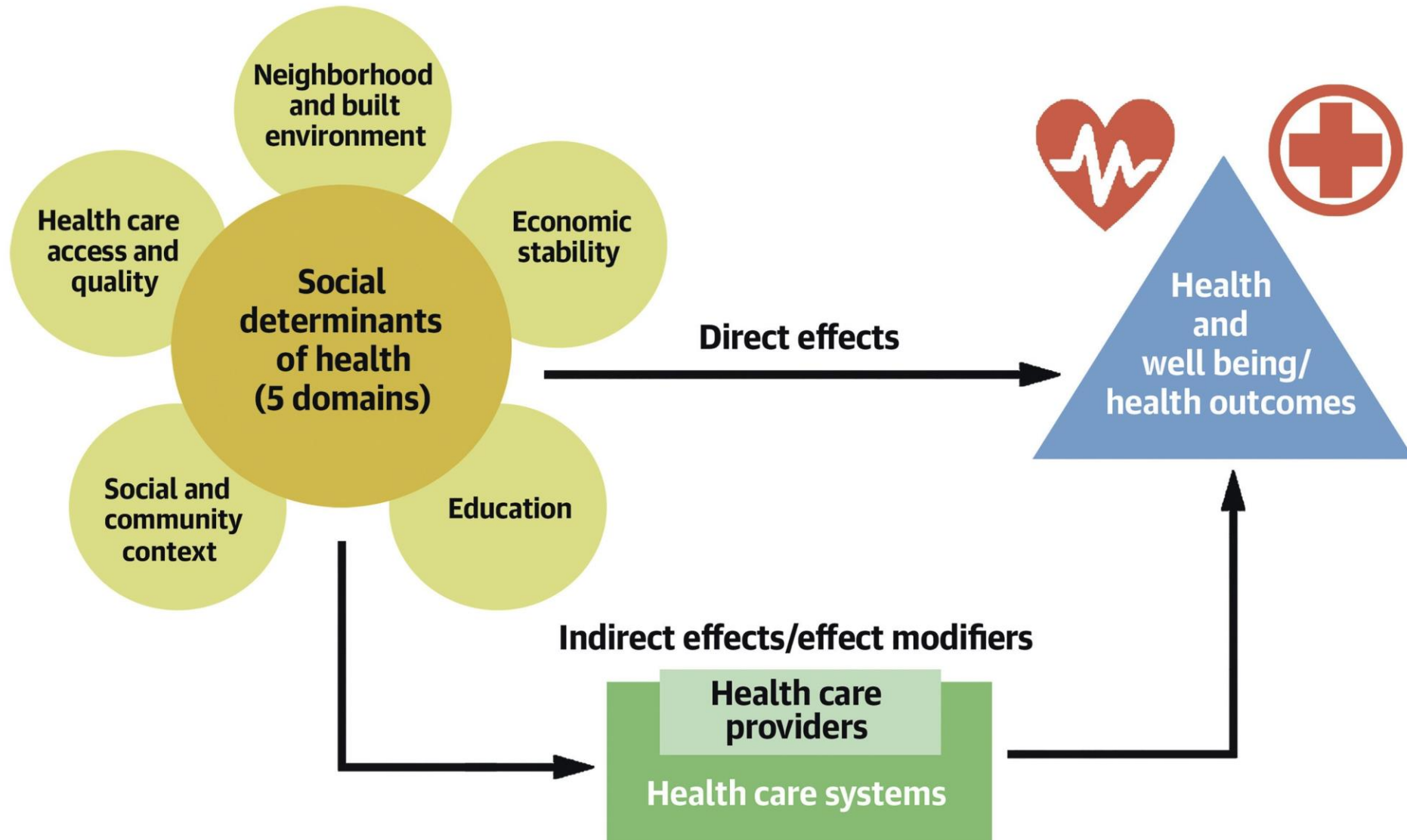
Q10. Which social determinants impact on CVD?

- Social determinants of health (SDOH) are the social conditions in which people are born, live, and work.
- SDOH offers a more inclusive view of how environment, geographic location, neighborhoods, access to health care, nutrition, and socioeconomics are critical in cardiovascular morbidity and mortality.
- 5 domains of SDOH: economic stability, education, health care access and quality, social and community context, and neighborhood and built environment.
- Recognizing and addressing SDOH is an important step toward achieving equity in cardiovascular care.

Brandt et al. JACC 2023;81(14):1368-1385



CENTRAL ILLUSTRATION: Impact of Social Determinants of Health on Health Through Health Care Providers and Systems



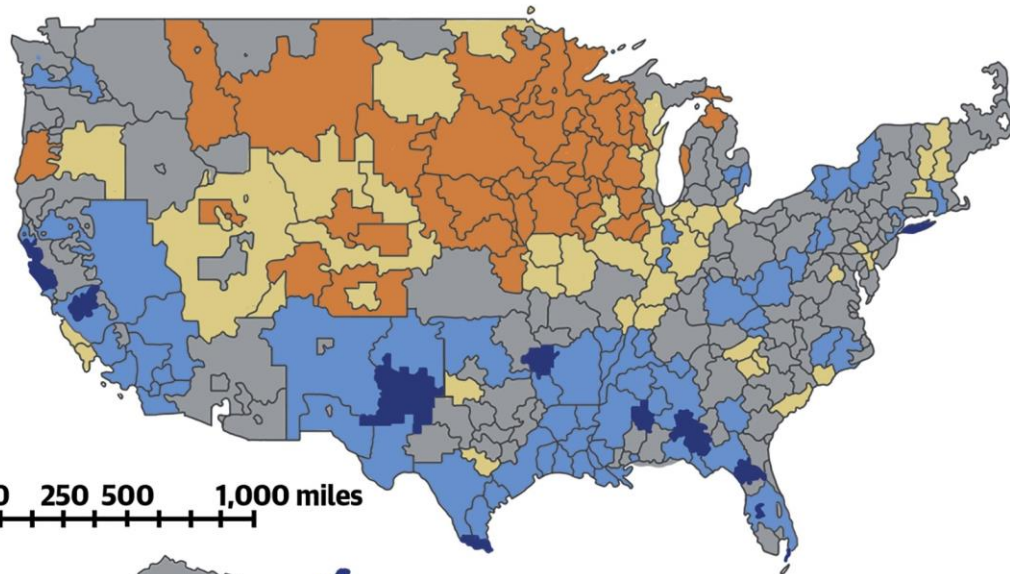
Q11. Are there geographic variations in CR delivery?

Density of Cardiac Rehabilitation Centers



1,133,657 Medicare beneficiaries eligible for CR from 2014 to 2017

Eligibility Diagnosis



Distance to Cardiac Rehabilitation Center



Cardiac Rehabilitation Deserts



Proportion of Eligible Medicare Beneficiaries Initiating Cardiac Rehabilitation

- <10%
- 10%-20%
- 20%-30%
- 30%-40%
- >40%

Duncan MS, et al. J Am Coll Cardiol. 2023;81(11):1049-1060.



Q12. Is climate change bad for the heart?

From: <https://www.alberta.ca/wildfire-status>

Circulation

ORIGINAL RESEARCH ARTICLE



Associations Between Extreme Temperatures and Cardiovascular Cause-Specific Mortality: Results From 27 Countries

Alahmad et al. *Circulation*. 2023;147:35–46. DOI: 10.1161/CIRCULATIONAHA.122.061832

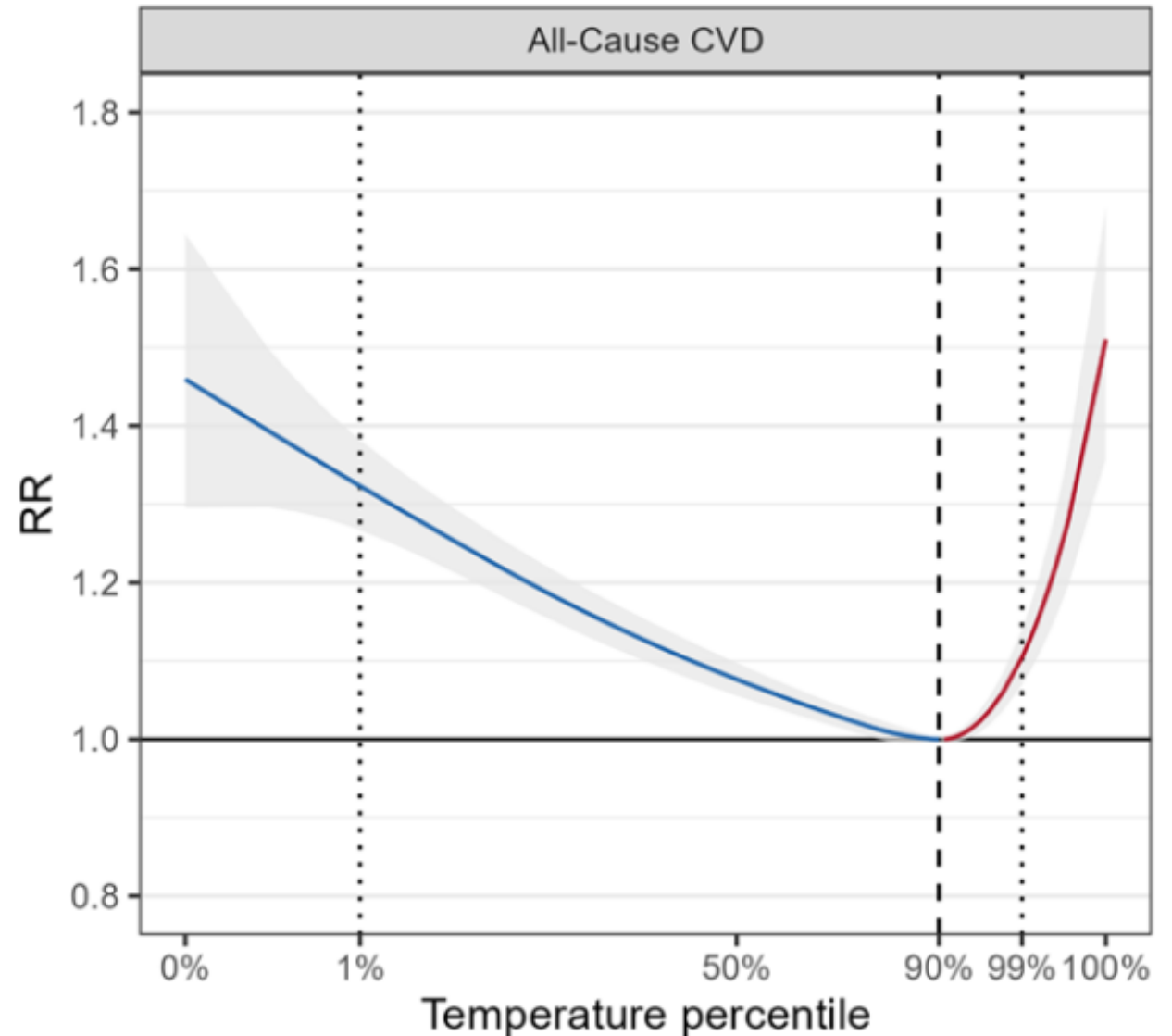


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Temperature and CVD

- This study provided evidence from the largest multinational dataset ever assembled on cardiovascular outcomes and environmental exposures.
- Extreme hot and cold temperatures were associated with increased risk of death from any cardiovascular cause, ischemic heart disease, stroke, and heart failure.
- For every 1000 cardiovascular deaths, 2 and 9 excess deaths were attributed to extreme hot and cold days, respectively.



Alahmad et al. *Circulation*. 2023;147:35–46. DOI: 10.1161/CIRCULATIONAHA.122.061832



The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

Air Pollution and Mortality at the Intersection of Race and Social Class

Kevin P. Josey, Ph.D., Scott W. Delaney, Sc.D., J.D., Xiao Wu, Ph.D.,
Rachel C. Nethery, Ph.D., Priyanka DeSouza, Ph.D., Danielle Braun, Ph.D.,
and Francesca Dominici, Ph.D.

Josey et al. N Engl J Med 2023;388:1396-404.DOI: 10.1056/NEJMsa2300523



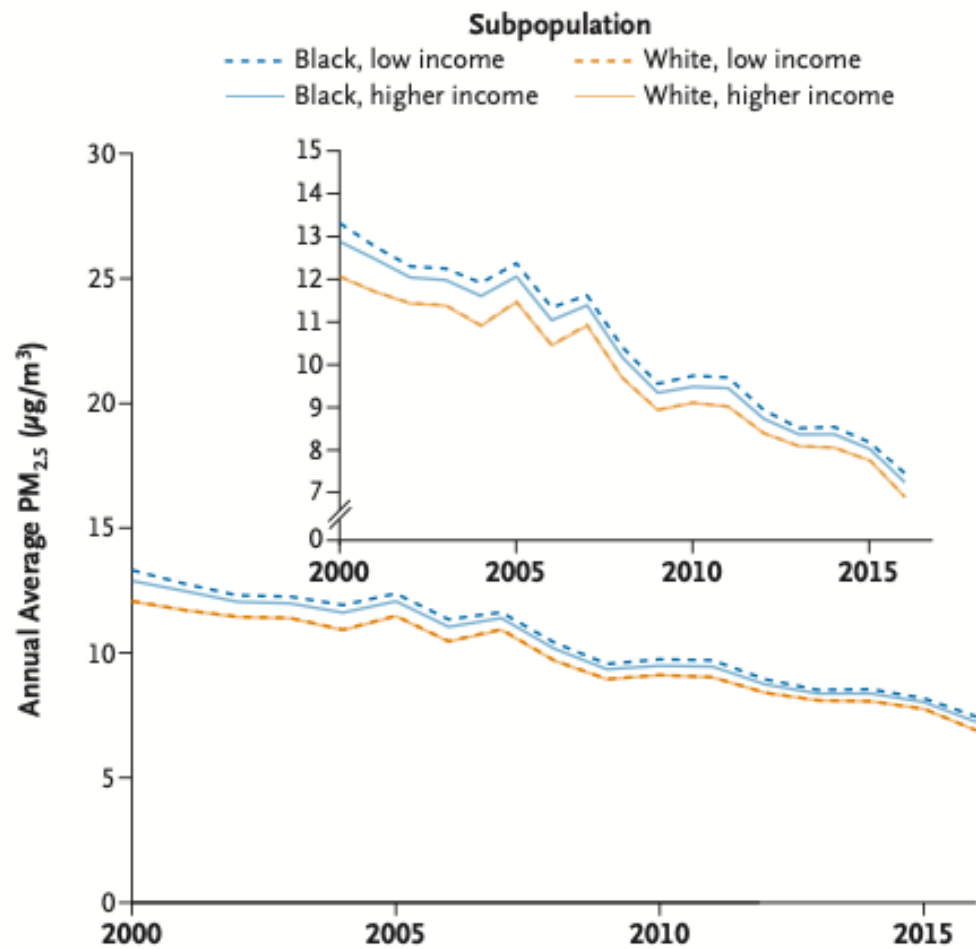


Figure 1. PM_{2.5} Exposure during the Study Period.

Shown is the annual average exposure to fine particulate matter (particles with an aerodynamic diameter of $\leq 2.5 \mu\text{m}$ per cubic meter [PM_{2.5}]) for Black higher-income persons (blue solid line), Black low-income persons (blue dashed line), White higher-income persons (orange solid line), and White low-income persons (orange dashed line) from 2000 through 2016. The orange dashed and solid lines overlap substantially, which indicates that the White higher-income and low-income persons were exposed to similar levels of PM_{2.5} pollution. The inset shows the same data on an enlarged y axis.

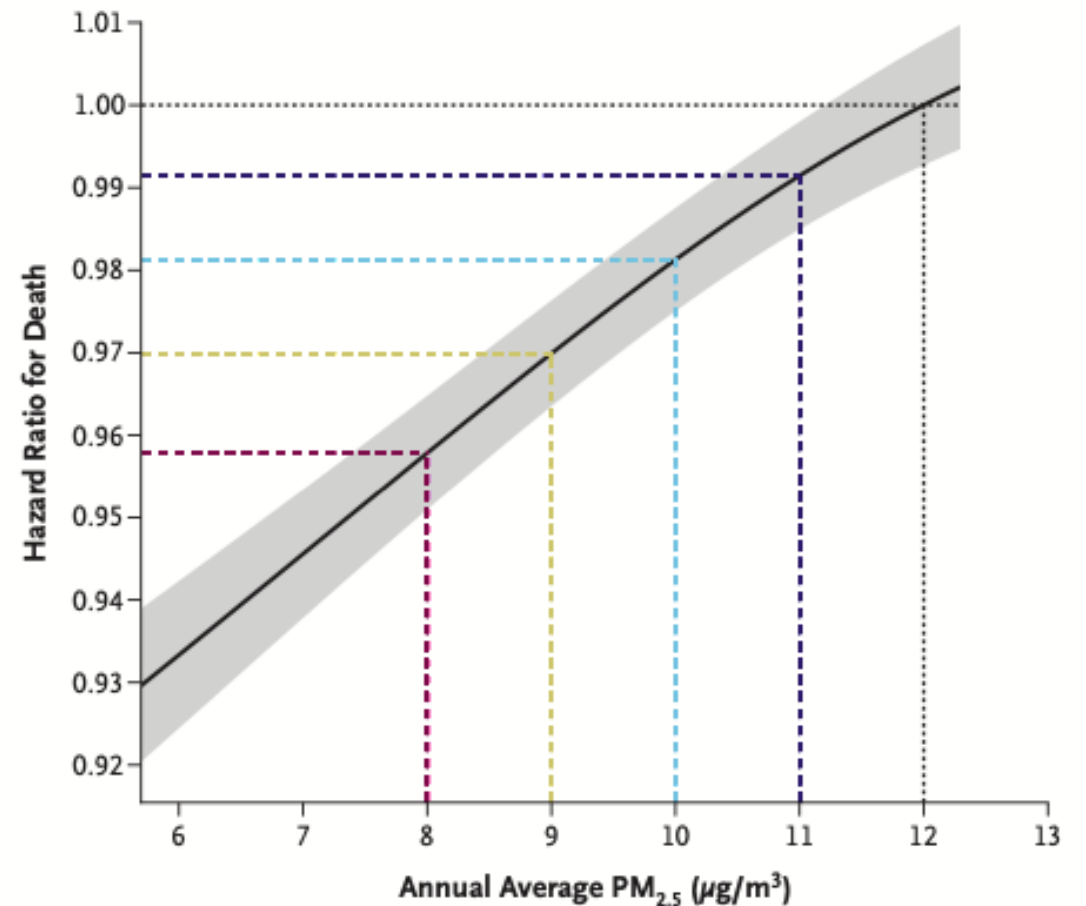
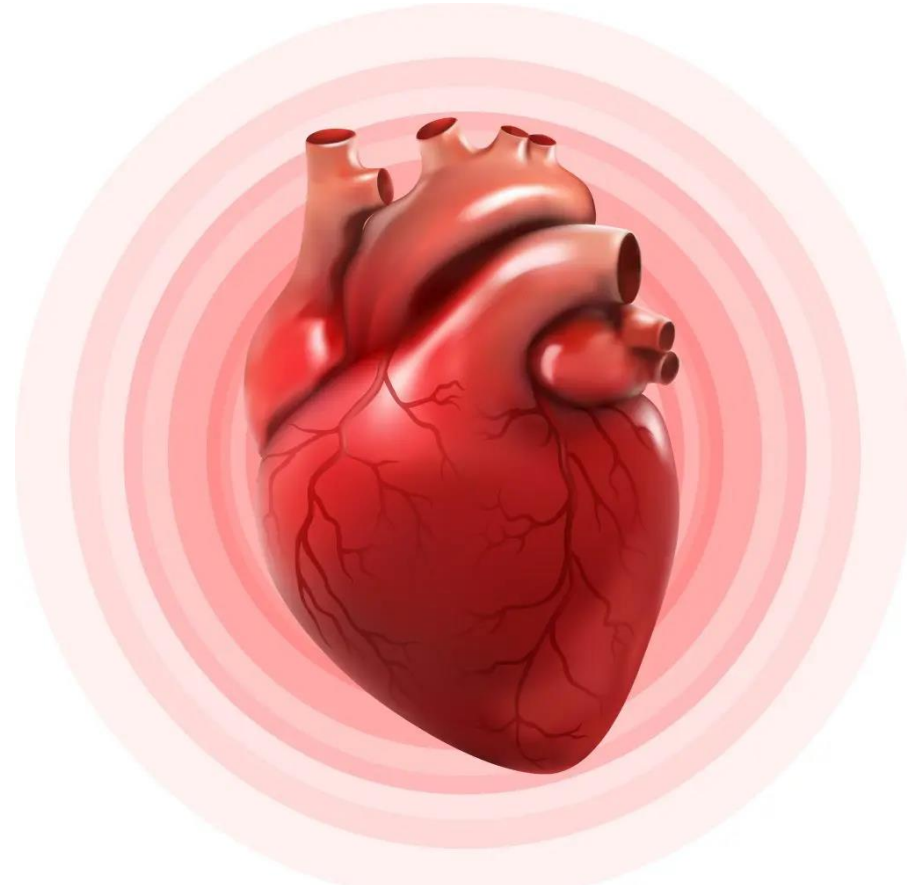


Figure 2. Exposure–Response Curve for PM_{2.5} Exposure and Mortality among the Full Medicare Population.






Shown are the point estimate (solid line) and 95% confidence interval (gray shaded area) of the hazard ratio for death corresponding to decreases in annual average PM_{2.5} exposure (to 6 to 11 μg per cubic meter) with respect to 12 μg per cubic meter on average for the full population. Estimates below 6 μg per cubic meter are not shown in order to focus attention on plausible ranges for PM_{2.5} pollution policy. Confidence intervals were not adjusted for multiplicity; therefore, they should not be used in place of hypothesis testing.

Does cardiac rehab help in heart failure?



From: <https://www.myamericannurse.com/heart-failure-updated-guidelines/>

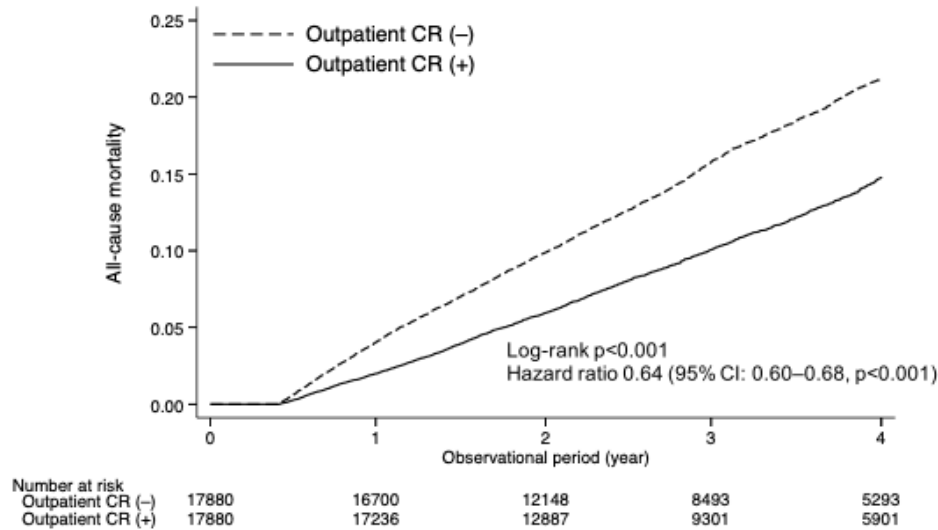
Multifactorial effects of outpatient cardiac rehabilitation in patients with heart failure: a nationwide retrospective cohort study

Koshiro Kanaoka ^{1,2}, **Yoshitaka Iwanaga** ¹, **Michikazu Nakai** ^{1,3},
Yuichi Nishioka⁴, **Tomoya Myojin**⁴, **Shinichiro Kubo**⁴, **Katsuki Okada**^{5,6},
Tatsuya Noda ⁴, **Yasushi Sakata** ⁵, **Yoshihiro Miyamoto**⁷, **Yoshihiko Saito**^{2,8},
and **Tomoaki Imamura**^{4*}

- This nationwide retrospective cohort study in Japan.
- Patients with acute HF who underwent inpatient CR between April 2014 and March 2020 were included.
- The association between outpatient CR participation and all-cause mortality, rehospitalization for HF, use of medical resources, and medical costs was analysed using propensity score matching analysis.
- Of 250 528 patients, 17 884 (7.1%) underwent outpatient CR.

Q13. Does CR help in HFrEF?

A All-cause mortality



B Rehospitalization for heart failure

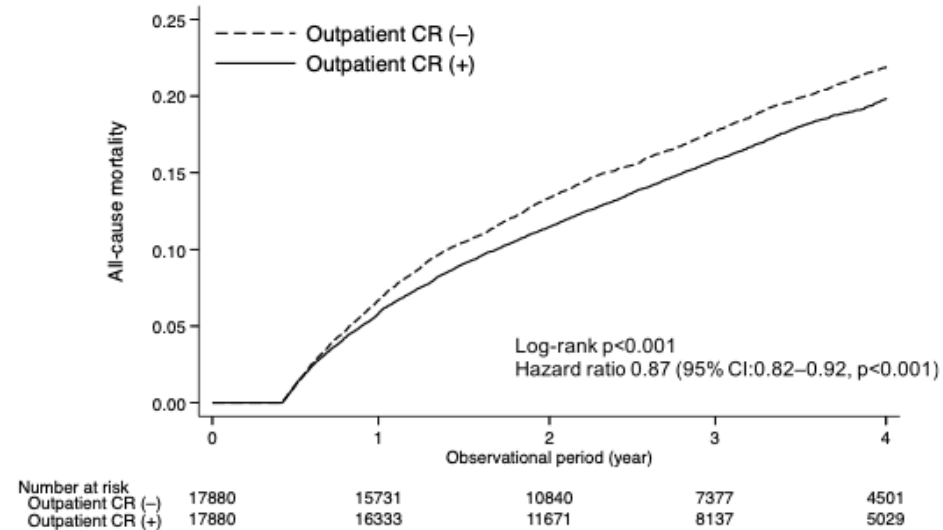


Figure 2 Kaplan–Meier curve for patients with and without outpatient cardiac rehabilitation. (A) All-cause mortality. (B) Rehospitalization for heart failure. CR, cardiac rehabilitation; CI, confidence interval.

Kanaoka et al. EJPC 2023; 30: 442-50



Q13. Does CR help in HFrEF?



ESC

European Society
of Cardiology

European Heart Journal (2023) **44**, 1511–1518

<https://doi.org/10.1093/eurheartj/ehad118>

STATE OF THE ART REVIEW

Heart failure and cardiomyopathies

Cardiac rehabilitation for heart failure: ‘Cinderella’ or evidence-based pillar of care?

Rod S. Taylor ^{1,2,3*}, Hasnain M. Dalal ^{4,5}, and Ann-Dorthe Zwisler ^{3,6,7,8}

¹MRC/CSO Social and Public Health Sciences Unit & Robertson Centre for Biostatistics, School of Health & Well Being, Clarice Pears Building, University of Glasgow, Byres Rd, Glasgow G12 8TA, UK; ²Health Service Research, College of Medicine and Health, University of Exeter, Heavitree Rd, Exeter, EX2 4TH, UK; ³Faculty of Health Sciences and National Institute of Public Health, University of Southern Denmark, Studiestræde 6, 1455, Copenhagen, Denmark; ⁴University of Exeter Medical School, Royal Cornwall Hospital, Truro, UK; ⁵Primary Care Research Group, University of Exeter Medical School, St Luke’s Campus, Exeter, UK; ⁶Department of Cardiology, Odense University Hospital, J. B. Winsløvs Vej 4, 5000, Odense C, Denmark; ⁷REHPA, Vestergade 17, 5800, Nyborg, Denmark; and ⁸Department of Clinical Research, University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark

Received 6 July 2022; revised 19 December 2022; accepted 17 February 2023; online publish-ahead-of-print 11 March 2023



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Cardiac rehabilitation for heart failure (HF) improves health-related quality of life and contributes to reduced hospitalization and is Class I / level A evidence by international (US & EU) Guidelines

Despite this, referral to cardiac rehabilitation for HF is suboptimal and currently ranges from 5% to 50% across countries

Cardiac rehabilitation should be the 5th pillar in HF management alongside drug and medical device provision



Choice of cardiac rehabilitation delivery models (centre-based/home-based \pm digitally supported) should be developed and be available to patients in the future

Taylor et al. European Heart Journal (2023) **44**, 1511–1518

Q14. Does CR help in HFpEF?

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
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AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION
PUBLISHED BY ELSEVIER

VOL. 81, NO. 15, 2023

AHA/ACC SCIENTIFIC STATEMENT

Supervised Exercise Training for Chronic Heart Failure With Preserved Ejection Fraction: A Scientific Statement From the American Heart Association and American College of Cardiology



This statement is endorsed by the Heart Failure Society of America, the American Association of Cardiovascular and Pulmonary Rehabilitation, and the American Association of Heart Failure Nurses.



Cardiac Rehab for HFpEF

- trials of exercise-based interventions have consistently demonstrated large, significant, clinically meaningful improvements in symptoms, objectively determined exercise capacity, and quality of life.
- Exercise may favorably affect the full range of abnormalities—peripheral vascular, skeletal muscle, and cardiovascular—that contribute to exercise intolerance in HFpEF.
- data reviewed in this review demonstrate a comparable or larger magnitude of improvement in exercise capacity from supervised exercise training in patients with chronic HFpEF compared with those with HFrEF, although Medicare reimbursement is available only for the latter group.
- Gaps: exercise setting, training modalities, combinations with other strategies such as diet and medications, long-term adherence, incorporation of innovative and more accessible delivery methods, and management of recently hospitalized patients

Sachdev et al. JACC VOL. 81, NO. 15, 2023 APRIL 18, 2023:1524–1542



Promotion of healthy nutrition in primary and secondary cardiovascular disease prevention: a clinical consensus statement from the European Association of Preventive Cardiology ^{FREE}

Vassilios S Vassiliou, Vasiliki Tsampasian, Ana Abreu, Donata Kurpas, Elena Cavarret Martin O'Flaherty, Zoé Colombet, Monika Siegrist, Delphine De Smedt, Pedro Marques-Vidal ✉ Author Notes

European Journal of Preventive Cardiology, Volume 30, Issue 8, June 2023, Pages 696-706, <https://doi.org/10.1093/eurjpc/zwad057>

Published: 27 February 2023 Article history ▾

Q14. Are there new nutrition guidelines for CVD prevention?

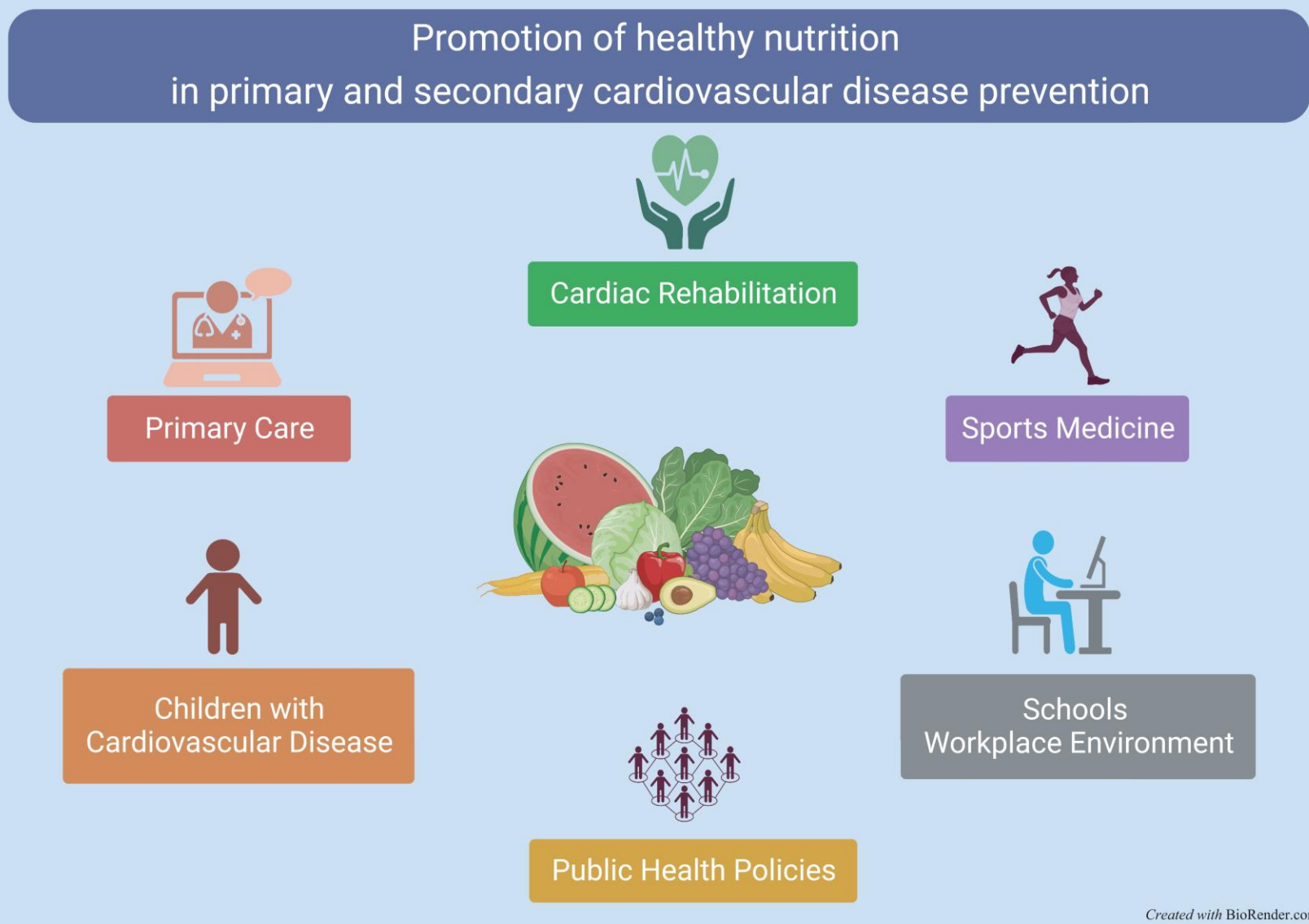


Table 2 - Key messages for the promotion of effective nutritional counselling in cardiac rehabilitation

Healthcare practitioners, as part of the multi-disciplinary team, should aim to:

Undertake a detailed assessment of the patient's dietary habits

- Evaluate daily energy intake and preferred food sources of nutrients
- Assess number of meals, snacks, and, when applicable, cooking habits
- Explore alcohol consumption; where increased, explore psychosocial factors that may have an impact

Encourage and support behavioural changes that will enable healthy eating habits in the long run

- Educate the patient (and, where appropriate, their carers) on the importance of healthy nutrition for cardiovascular risk factor control, with an emphasis on their co-morbidities
- Provide individualized support tailored to the patient's beliefs and preferences
- When possible, cooking classes for patients and their next of kin can be provided

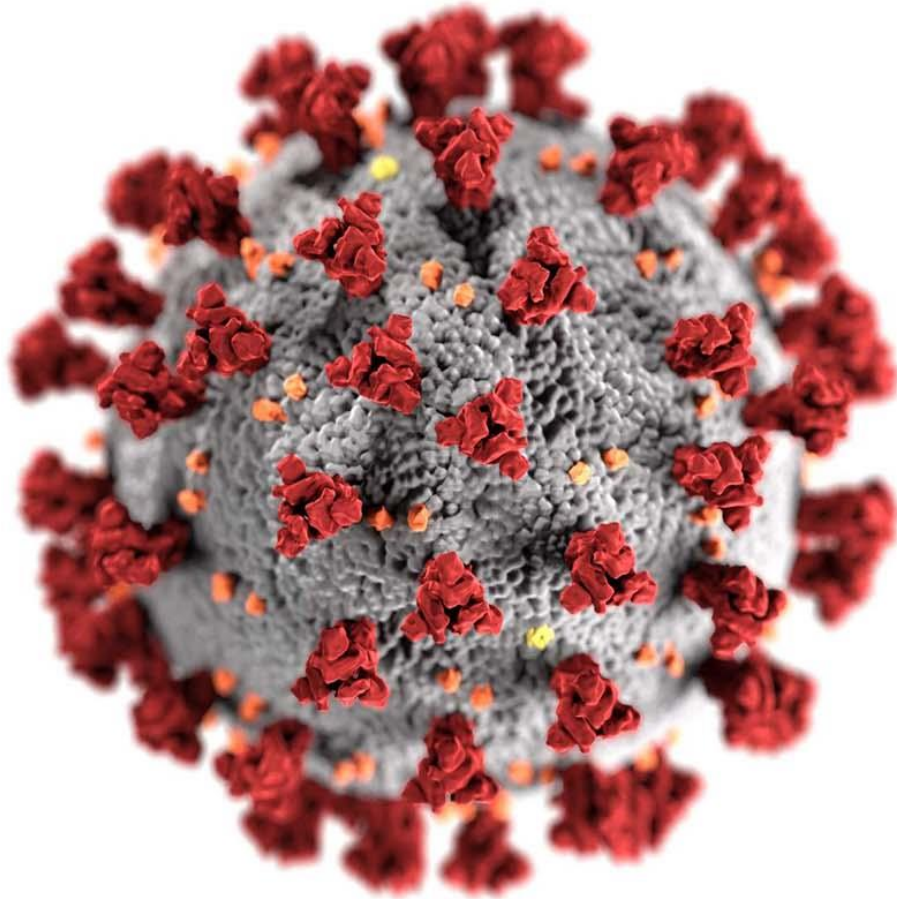
liaise effectively with other members of the team

- Physicians, nurse practitioners, dietitians, and clinical psychologists should collaborate to support the patient's needs and tackle issues that may occur
- Generate individualized nutritional plans that can be adopted in the patient's daily life

Vassiliou et al EJPC 2023; 30(8): 696-706



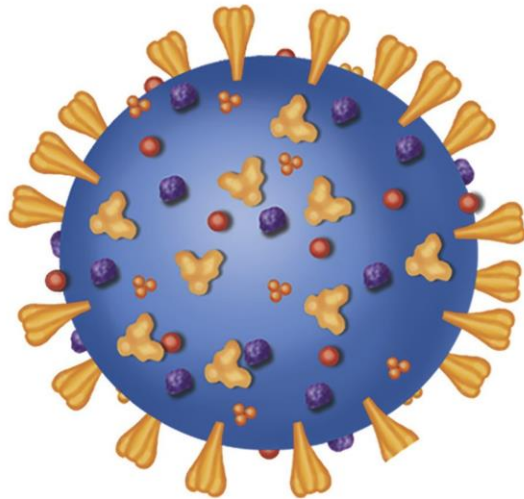
COVID – we aren't done yet!



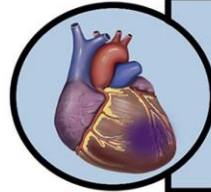
- Q15. What are the most common CV events seen with COVID?

CENTRAL ILLUSTRATION: Acute Cardiac Events Among Adults Hospitalized With Laboratory-Confirmed SARS-CoV-2 Infection

11% of adults had an acute cardiac event while hospitalized with COVID-19



Most prevalent among patients with underlying cardiac disease (23%)



Acute ischemic heart disease and acute heart failure were most frequent events



Associated with doubled risk of intensive care unit admission and in-hospital death

Results are among a probability sample of 8,460 adults aged ≥ 18 years with laboratory-confirmed SARS-CoV-2 infection who were hospitalized during January–November 2021 at an acute-care facility located in the 99-county catchment area of the COVID-19-Associated Hospitalization Surveillance Network (COVID-NET)

Circulation

ORIGINAL RESEARCH ARTICLE



Myocardial Involvement After Hospitalization for COVID-19 Complicated by Troponin Elevation: A Prospective, Multicenter, Observational Study

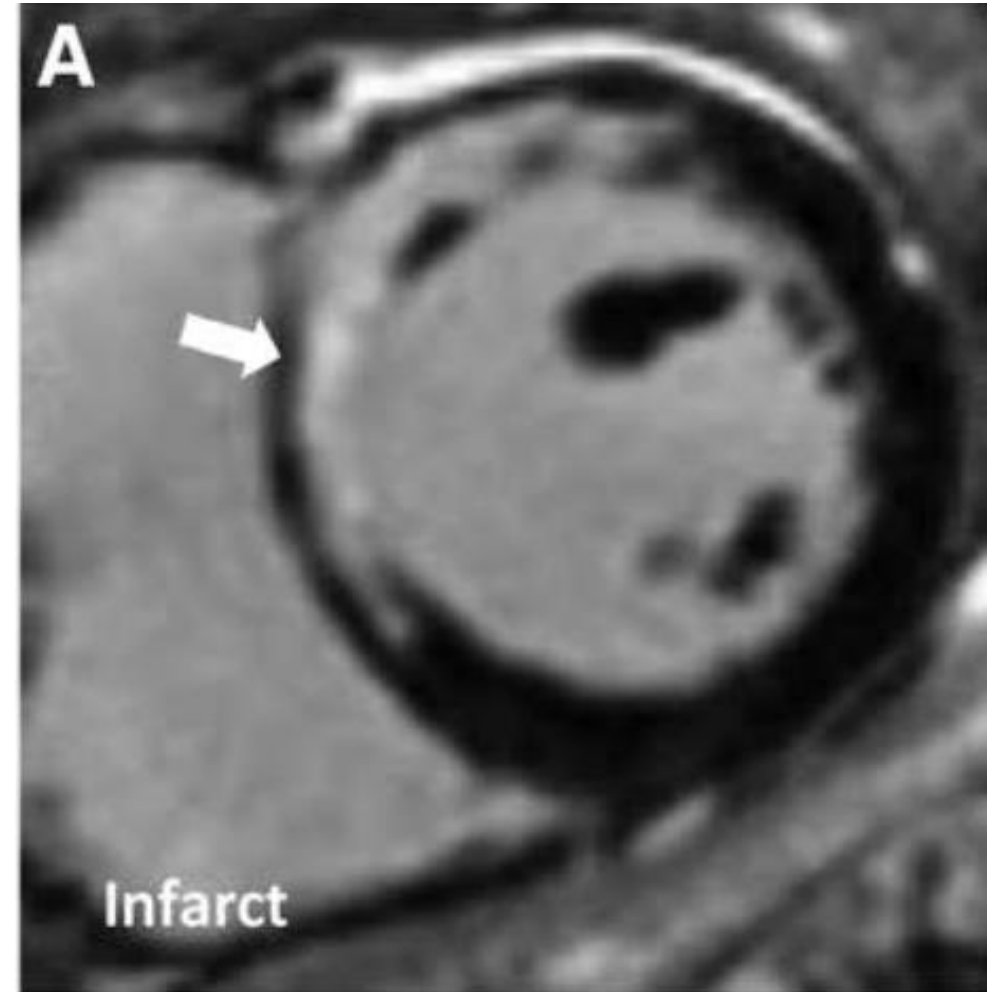
Jessica Artico¹ MD*; Hunain Shiwani¹ BMBS*; James C. Moon, MD*; Mirosława Gorecka, MB; Gerry P. McCann, MD; Giles Roditi, MD; Andrew Morrow, PhD; Kenneth Mangion¹ PhD; Elena Lukaschuk, MSc; Mayoora Shanmuganathan¹ MBBS; Christopher A. Miller¹ PhD; Amedeo Chiribiri, PhD; Sanjay K. Prasad, MD; Robert D. Adam¹ MBBS; Trisha Singh¹ MBBS; Chiara Bucciarelli-Ducci¹ PhD; Dana Dawson¹ PhD; Daniel Knight¹ MD; Marianna Fontana¹ PhD; Charlotte Manisty¹ PhD; Thomas A. Treibel, PhD; Eylem Levelt¹ PhD; Ranjit Arnold¹ MD; Peter W. Macfarlane¹ DSc; Robin Young, PhD; Alex McConnachie¹ PhD; Stefan Neubauer¹ MD; Stefan K. Piechnik¹ PhD; Rhodri H. Davies, PhD; Vanessa M. Ferreira¹ PhD; Marc R. Dweck¹ PhD; Colin Berry¹ PhD; OxAMI (Oxford Acute Myocardial Infarction Study) Investigators; COVID-HEART Investigators†; John P. Greenwood¹ PhD

Artico et al. *Circulation*. 2023;147:364–374. DOI: 10.1161/CIRCULATIONAHA.122.060632



COVID and CVD

- This study is the first large, multicenter, prospective, case-control study investigating the nature and extent of myocardial injury in patients hospitalized with COVID-19 and elevated cardiac troponin level imaged within 28 days of discharge with core laboratory analyses.
- Patients with COVID-19 had a much lower prevalence of probable recent myocarditis than previously reported.
- a new pattern of **microinfarction** on cardiac MRI seen, highlighting the prothrombotic nature of this disease.
- Among hospitalized patients with COVID-19 and elevated cardiac troponin level, the presence of scar was independently associated with cardiovascular outcomes at 12 months.



Artico et al. Circulation. 2023;147:364–374. DOI: 10.1161/CIRCULATIONAHA.122.060632



Circulation

FRONTIERS



A New Era in Cardiac Rehabilitation Delivery: Research Gaps, Questions, Strategies, and Priorities

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Joel W. Hughes, PhD; William E. Kraus^{ID}, MD; Seth S. Martin^{ID}, MD, MHS; Thomas P. Olson, PhD, MS;
Quinn R. Pack, MD, MSc; Haley Stolp^{ID}, MPH; Randal J. Thomas, MD, MS; Wen-Chih Wu^{ID}, MD; Barry A. Franklin, PhD

Beatty et al. *Circulation*. 2023;147:254–266. DOI: 10.1161/CIRCULATIONAHA.122.061046



CR Model

- Q16. Do virtual care models have a role in the current and future delivery of cardiac rehab?

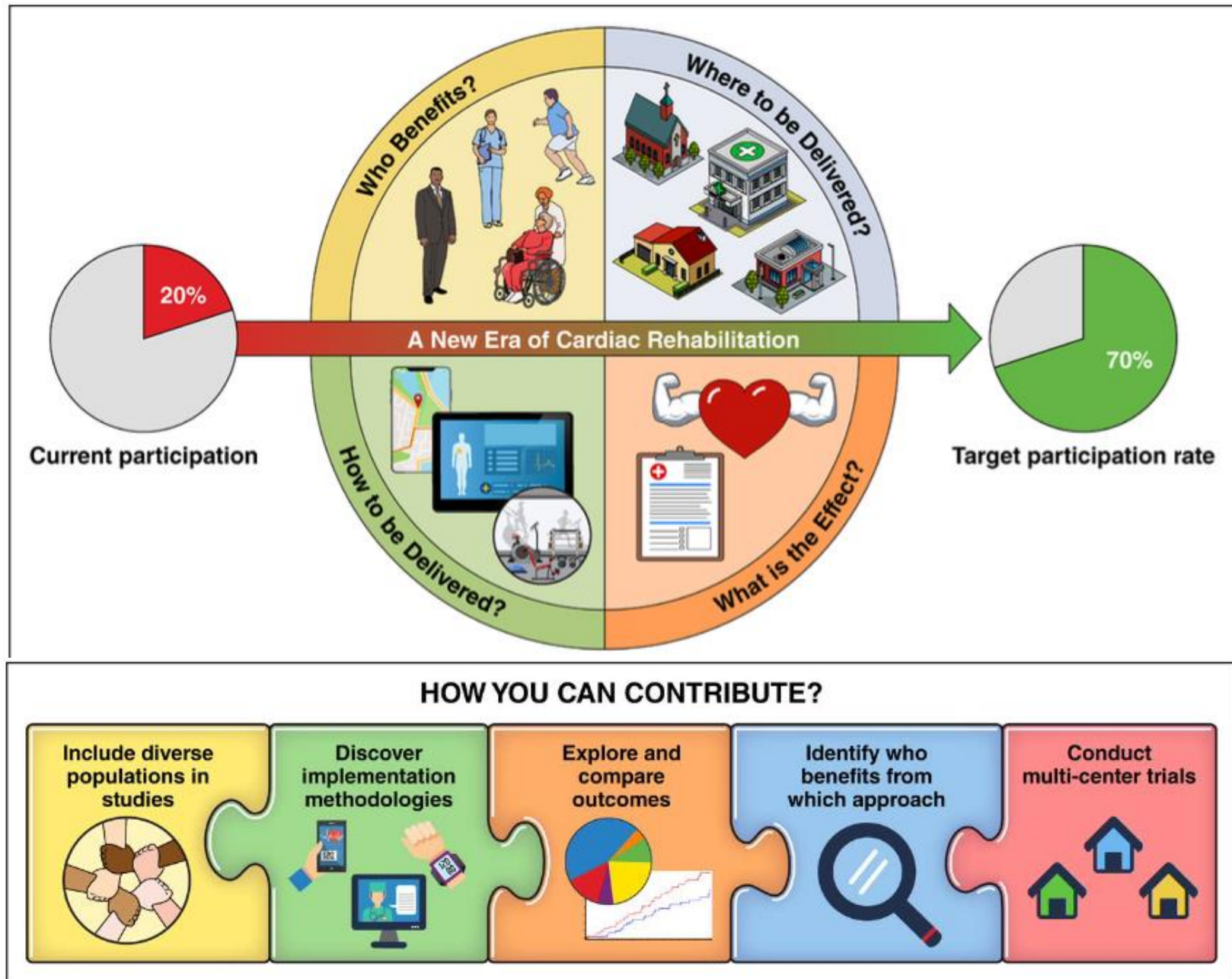


Figure 2. How the research community can contribute to better understanding new approaches to delivery of cardiac rehabilitation.

Summary of Things I Learned

- LDL cholesterol can be lowered in new ways
- Statins can be used safely in people even with myalgias
- Low HDL is bad; high HDL may be a marker of risk in people with DM
- Preventative medications are evolving:
 - DAPT vs P2Y₁₂ vs ASA
 - Role of beta-blockers
 - SGLT2's in HF, DM, renal disease
- Women with CVD continue to face challenges
 - Differences in presentation, risk assessment, access to quality care, QoL, and outcomes
 - New guidelines for risk assessment and CR



Summary of Things I Learned

- Social determinants of health are important and need more attention!
- The world is on fire and it is bad for CVD!
- CR is beneficial in HFrEF; it may be even more beneficial in HFpEF
- New nutrition guidelines in Europe reinforce the importance of dietary assessment and counseling in CR
- the impact of COVID on CV outcomes is still being assessed – excess of ischemic and heart failure events
- Models for CR delivery need to evolve to meet the needs of underserved populations



Thank You!

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