Topic Brief: Preventing Secondary Cardiovascular Events

Date: 6/1/2023
Nomination Number: 1025

Purpose: This document summarizes the information addressing a nomination submitted on October 28, 2022 through the Effective Health Care Website (link to nomination). This information was used to inform the Evidence-based Practice Center (EPC) Program decisions about whether to produce an evidence report on the topic, and if so, what type of evidence report would be most suitable.

Issue: The nominator is interested in understanding how risk factor mitigation, testing, and medication use may be best implemented to prevent secondary cardiovascular events, such as heart attack and stroke, and want an evidence report that could be used for patient and provider education.

Findings: The EPC program will not develop a new systematic review because we found two recent systematic reviews that answer the questions posed by this nomination.

───

Background

According to the Centers for Disease Control and Prevention (CDC), heart disease is the leading cause of death for men, women, and people of most racial and ethnic groups in the United States. In fact, in 2021, approximately one in every five deaths was due to heart disease – a total of 697,000 people. Coronary artery disease is the most common type of heart disease and makes up about half of America's heart disease deaths.[1] A statistical brief from the Agency for Healthcare Research and Quality's Medical Expenditure Panel Survey found that, in 2017, heart disease treatment accounted for approximately 7% of total annual healthcare expenditures, and treatment costs in the adult non-institutionalized population were $108.7 billion for that year alone.[2]

Per the CDC, every year in the United States, around 805,000 people have a heart attack, and of these, nearly one fourth happen to people who have previously had a heart attack.[1] Around 20 percent of people aged 45 and older will have another heart attack within five years of their first.[3] The American Heart Association (AHA) recommends taking the following steps to prevent a secondary heart attack: taking medications as prescribed; attending follow-up appointments; participating in cardiac rehabilitation; getting support from loved ones and/or other heart attack survivors; and managing risk factors such as high blood pressure, high cholesterol, and diabetes.[3] Recent guidelines that address best practices for screening and treatment are available, including a 2022 guideline from the AHA and American Stroke Association that deals with the prevention of secondary stroke,[4] and a 2022 guideline from the AHA and the American College of Cardiology Foundation that addresses the prevention of secondary heart attack as part of the management of heart failure.[5]

Scope

1. What is the effectiveness of screening and interventions to increase use of preventive measures to reduce secondary heart attacks and strokes?

Table 1. Key Question and PICO (population, intervention, comparator, and outcomes)

Question	1. Effectiveness of screening and interventions to reduce secondary heart attacks and strokes
Population	Adults (>18 years) who have had previous heart attack or stroke Stratify by age and patient characteristics (e.g., comorbidities, sex)

Interventions	• Screening for secondary heart attacks and strokes (include schedules of screening)
	• Interventions to increase adherence to preventive treatment
	    ○ Statin treatment adherence
	    ○ Intervention to increase adherence to lifestyle changes (e.g., self-management tools) to reduce LDL-C (e.g., stress management, diet, exercise, weight loss, smoking cessation, sleep)

Comparators	Placebo, TAU
Outcomes	Additional instances of myocardial infarction or stroke, all-cause mortality

Abbreviations: LDL-C=low density lipoprotein cholesterol; PICOS=population, intervention, comparator, outcome, and setting; TAU=treatment as usual.

Assessment Methods
See Appendix A.

Summary of Literature Findings
We identified two systematic reviews that cover the nomination's question. The first is a 2022 systematic review[6] that included randomized controlled trials (RCTs) that addressed the efficacy of statins on total mortality and cardiovascular outcomes and strokes in adults. All included RCTs had a planned duration of at least 2 years, included over 1,000 participants, and whose comparator was either placebo or usual care. The search for this review was limited to studies from January 1987 to June 2021. The review found that absolute risk reductions were minimal compared to the relative risk reductions for all-cause mortality, myocardial infarction, and stroke. However, there was significant heterogeneity amongst the study groups, limiting the interpretation of the systematic review and meta-analysis.

The second is a 2020 systematic review[7] completed for the U.S. Department of Veteran's Affairs, which included RCTs, systematic reviews, and cohort studies conducted in a range of settings and addressed interventions for improving statin tolerance and adherence in adults who were at risk for cardiovascular disease or already had dyslipidemia. Interventions included strategies for screening and assessment, tools for risk prediction, pharmacologic therapies, supplements and nutraceuticals, and lifestyle interventions. The search for this review was limited to studies from December 2013 to May 2020. From a qualitative synthesis of 141 articles, the authors concluded that there are interventions to improve statin adherence for patients at risk of CVD (education, telephone interactions with providers, pharmacy programs and interventions specific for reasons of nonadherence). Limited information was found on rechallenging patients with same or different statin or nondaily statin. For most patients the benefits of statins outweighed the risk of harms.

See Appendix B for detailed assessments of all EPC selection criteria.

Summary of Selection Criteria Assessment

Secondary heart attack and stroke are dangerous and costly health conditions that impact many people in the United States. The nominators requested a review of strategies to increase the use of known evidence-based interventions to prevent secondary heart attacks and strokes. Two systematic reviews together addressed the nominator's evidence needs.[6, 7]

Please see Appendix B for detailed assessments of individual EPC Program selection criteria.

References

1. Centers for Disease Control and Prevention. Heart Disease Facts. 2021. https://www.cdc.gov/heartdisease/facts.htm. Accessed on May 24 2023.
2. Muhuri PK. Healthcare Expenditures for Heart Disease amont Adults Age 18 and Older in the U.S. Civilian Noninstitutionalized Population, 2017 Agency for Healthcare Research and Quality. Statistical Brief #531. 2020. https://meps.ahrq.gov/data_files/publications/st531/stat531.shtml?_gl=1*1igxjts*_ga*MjA4MTk3NjUzNS4xNjQzMzkzMjUz*_ga_1NPT56LE7J*MTY4NDk1NDQzMi40MC4wLjE2ODQ5NTQ0MzIuNjAuMC4w
3. American Heart Association. Life After a Heart Attack. 2016. https://www.heart.org/en/health-topics/heart-attack/life-after-a-heart-attack. Accessed on May 24 2023.
4. Ford B, Peela S, Roberts C. Secondary Prevention of Ischemic Stroke: Updated Guidelines From AHA/ASA. Am Fam Physician. 2022 Jan 1;105(1):99-102. PMID: 35029929.
5. Heidenreich PA, Bozkurt B, Aguilar D, et al. 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: Executive Summary: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol. 2022 May 3;79(17):1757-80. doi: 10.1016/j.jacc.2021.12.011. PMID: 35379504.
6. Byrne P, Demasi M, Jones M, et al. Evaluating the Association Between Low-Density Lipoprotein Cholesterol Reduction and Relative and Absolute Effects of Statin Treatment: A Systematic Review and Meta-analysis. JAMA Intern Med. 2022 May 1;182(5):474-81. doi: 10.1001/jamainternmed.2022.0134. PMID: 35285850.
7. Reston JT, Buelt A, Donahue MP, et al. Interventions to Improve Statin Tolerance and Adherence in Patients at Risk for Cardiovascular Disease : A Systematic Review for the 2020 U.S. Department of Veterans Affairs and U.S. Department of Defense Guidelines for Management of Dyslipidemia. Ann Intern Med. 2020 Nov 17;173(10):806-12. doi: 10.7326/M20-4680. PMID: 32956601.

Author
Charli Armstrong
Robin Paynter

Emily Gean

Appendix A: Methods

We assessed nomination for priority for a systematic review or other AHRQ Effective Health Care report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix B for detailed description of the criteria.

Appropriateness and Importance
We assessed the nomination for appropriateness and importance.

Desirability of New Review/Absence of Duplication
We searched the AHRQ Effective Health Care Website for relevant systematic reviews published in the last three years (February 2020-February 2023). Additional sources were not searched when a relevant systematic review was identified.

Impact of a New Evidence Review
The impact of a new evidence review was qualitatively assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether it was possible for this review to influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.).

Appendix B. Selection Criteria Assessment

Selection Criteria	Assessment
1. Appropriateness	
1a. Does the nomination represent a health care drug, intervention, device, technology, or health care system/setting available (or soon to be available) in the United States?	Yes.
1b. Is the nomination a request for an evidence report?	Yes.
1c. Is the focus on effectiveness or comparative effectiveness?	Yes.
1d. Is the nomination focus supported by a logic model or biologic plausibility? Is it consistent or coherent with what is known about the topic?	Yes.
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	Yes. Heart disease is the leading cause of death for men, women, and people of most racial and ethnic groups in the United States. In 2021, approximately one in every five deaths was due to heart disease – a total of 697,000 people. Coronary artery disease is the most common type of heart disease and makes up about half of America's heart disease deaths.[1]
2b. Is of high public interest; affects health care decision making, outcomes, or costs for a large proportion of the United States population or for a vulnerable population	Yes. Heart disease is the leading cause of death for men, women, and people of most racial and ethnic groups in the United States. In 2021, approximately one in every five deaths was due to heart disease – a total of 697,000 people. Coronary artery disease is the most common type of heart disease and makes up about half of America's heart disease deaths.[1]
2c. Incorporates issues around both clinical benefits and potential clinical harms	Yes.
2d. Represents high costs due to common use, high unit costs, or high associated costs to consumers, to patients, to health care systems, or to payers	Yes. In 2017, heart disease treatment accounted for approximately 7% of total annual healthcare expenditures, and treatment costs in the adult non-institutionalized population were $108.7 billion for that year alone.[2]
3. Desirability of a New Evidence Review/Absence of Duplication	
3. A recent high-quality systematic review or other evidence review is not available on this topic	No. Two recent systematic reviews met the nominator's evidence needs.