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Review IJC

Primary Prevention of Cardiovascular Diseases (CVDs): A Review

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Abstract

Cardiovascular diseases are the significant cause of frequent deaths in recent days across the globe and also rapidly rising cases in India, irrespective of age group, caste, creed, economic status, lifestyle, etc. Globally, cardiovascular diseases account for 31% of the mortality rate. According to findings from the Global Burden of Disease study, India exhibits an age-standardized cardiovascular disease death rate of 272 per 100,000 individuals, which surpasses the global average of 235. In England, cardiovascular diseases are responsible for nearly 34% of all deaths, while the European Union sees this figure rise to approximately 40%. The global prevalence of cardiovascular disease is anticipated to escalate due to the increasing incidence of risk factors in regions previously considered low-risk. Presently, 80% of cardiovascular disease-related deaths occur in developing nations, with cardiovascular disease expected to become the primary cause of mortality in most developing countries by 2030. The World Health Organization approximates that over 75% of premature cardiovascular disease cases can be prevented through the mitigation of risk factors, thereby offering a means to alleviate the escalating burden of cardiovascular disease on individuals and healthcare systems.

Keywords: Cardiovascular diseases, coronary artery diseases, age, gender, lifestyle, exercise, diet pattern, mortality, World Health Organization, sedentary lifestyle, prevention

INTRODUCTION

Cardiovascular diseases (CVDs) are one of the leading causes of death across the globe and are estimated as 17.9 million lives each year. CVDs encompass a range of conditions affecting the heart and blood vessels, such as coronary artery diseases (CAD), rheumatic heart diseases, and others [1–3].

WORLD HEALTH ORGANIZATION REPORT ON CVD IN INDIA

According to the World Health Organization, India is responsible for 20% of global CVD deaths, particularly among the younger demographic. The Global Burden of Disease study highlights that India's age-standardized CVD mortality rate stands at 272 per 100,000 individuals, significantly exceeding the worldwide average of 235 [4].

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CVDs encompass a range of conditions affecting the heart and blood vessels, including:

- Coronary heart disease involves the narrowing of the vessels that provide blood to the heart muscle.
- Cerebrovascular disease concerns the vessels that supply blood to the brain.
- Peripheral arterial disease affects the vessels that carry blood to the arms and legs.
- Rheumatic heart disease, which results from rheumatic fever caused by *Streptococcal* bacteria, leads to heart muscle and valve damage.

- Congenital heart disease, which are heart defects present at birth affecting normal heart function [5–7].
- Deep vein thrombosis and pulmonary embolism are conditions where blood clots form in the veins of the legs and can travel to the heart and lungs (Figure 1).

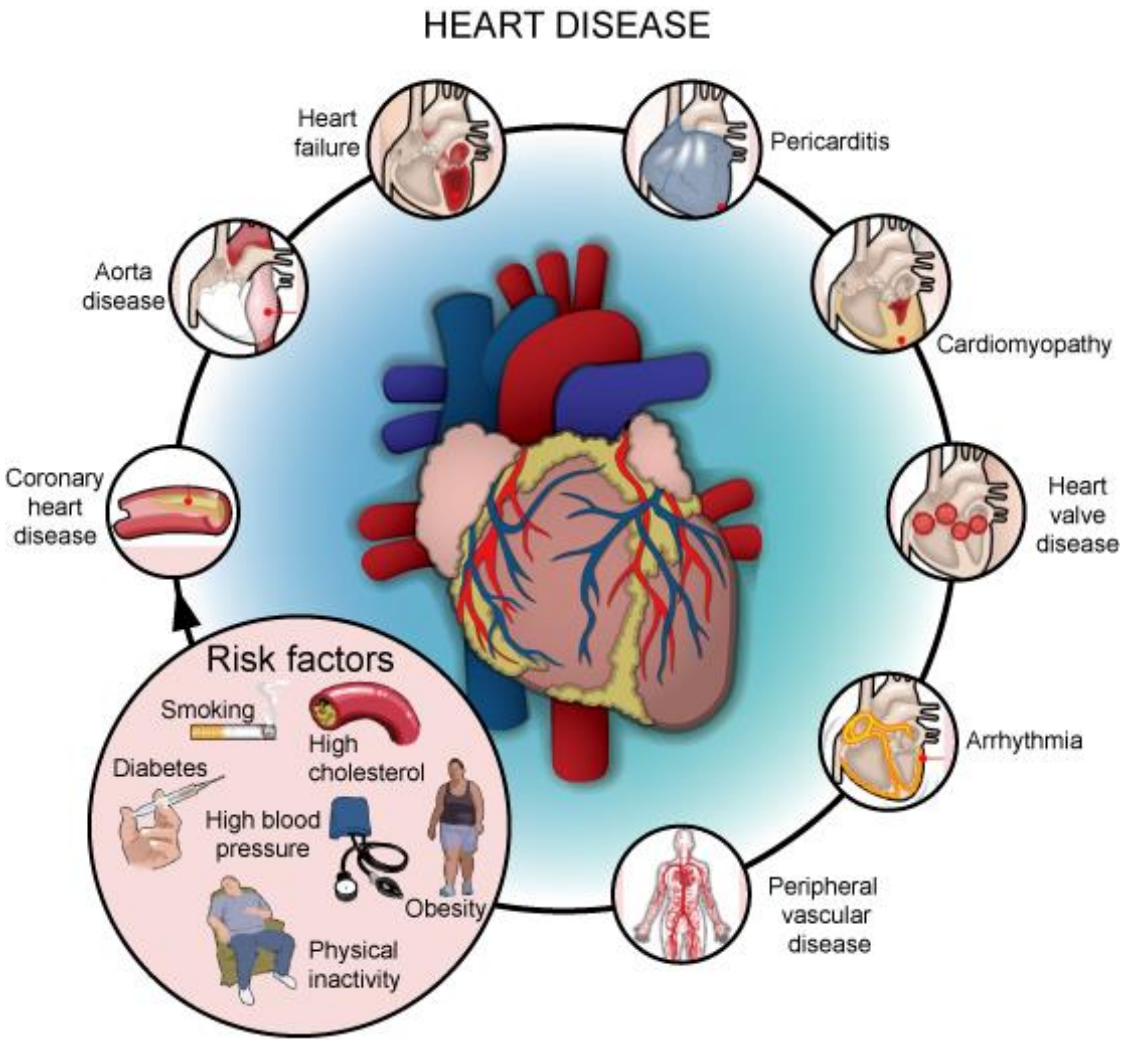

Figure 1. Important types of heart disease and risk factors.

What are the symptoms of CVDs?

- Chest pain or discomfort
- Fatigue
- Nausea/vomiting
- Shortness of breath
- Heartburn like feeling
- Palpitations
- Fainting/unconsciousness
- Severe headache with no cause
- Sweating
- Unusual tiredness
- Numbness of face, arm, leg, etc.
- Radiating pain to the shoulder, hand, wrist, etc.
- Anxiety [8]

Preventive Measures for CVDs

- Government/university/medical colleges/nursing colleges must create awareness among the people regarding the early identification of CVD symptoms and their risk factors. It is also a major concern regarding the prevention aspect of CVDs.
- A stress-free environment in the workplace is much more vital for CVD prevention. It's time to use cereals, pulses, vegetables, and fruits more in routine dietary patterns instead of fast foods, preserved drinks, and preserved foods.
- Alcohol is to be minimized consumption alternately, and smoking must be strictly prohibited to prevent CVDs.
- Playing with kids as a part of routine activity for at least 30 minutes may be beneficial to the individual to get relaxed and stress-free and can reduce the impact of CVDs.
- The NGO's role is vital in the prevention of CVDs because most of the time, they focus on different diseases, but it is the right time to focus on CVD prevention.
- The age-group above 40+ must undergo routine checkups such as complete blood count, lipid profile test, echocardiography, electrocardiography, thyroid function test, renal function test, random blood sugar, blood pressure, etc.
- Regularly, 30–45 minutes of brisk walking, yoga, and cycling also proved to be a significant reduction in CVDs or can prevent CVDs effectively.
- Reduce meat consumption.
- Avoid smoking.
- Have a habit of swimming at least 60 minutes per week.
- Avoid or reduce the consumption of fat-rich food such as ghee, butter, oily food, etc.
- Maintain ideal body weight.
- Meditation is necessary to get free from stress; at least 15–20 minutes of meditation is required as a part of routine activities.
- Check for blood pressure and glucose levels at least once every 6 months after 35 years of age.
- Prevent obesity [9].
- Identification of high-risk persons in the early stage (Figure 2).

DISCUSSION

CVDs remain a major worldwide health issue, contributing significantly to both illness and death rates. Primary prevention, defined as interventions aimed at preventing the development of CVDs in individuals without existing cardiovascular conditions, plays a pivotal role in mitigating the burden of these diseases). This discussion delves into the various facets of primary prevention strategies, addressing both lifestyle modifications and medical interventions [10–14].

Lifestyle Modifications

Dietary interventions: Adopting a heart-healthy diet characterized by low saturated fats, reduced sodium intake, and an emphasis on fruits, vegetables, and whole grains is fundamental. Dietary patterns such as the Mediterranean or dietary approaches to stop hypertension (DASH) have demonstrated efficacy in reducing CVD risk.

Regular physical activity: Participating in consistent physical activity is known to play a key role in primary prevention, aiding in managing weight, regulating blood pressure, and enhancing lipid profiles. Tailoring exercise regimens to individual preferences and health conditions is crucial for long-term adherence.

Tobacco cessation: Smoking remains a major modifiable risk factor for CVDs. Smoking cessation programs, including counseling and pharmacotherapy, are integral to primary prevention efforts. Comprehensive anti-smoking campaigns are essential for creating awareness and promoting behavioral change.

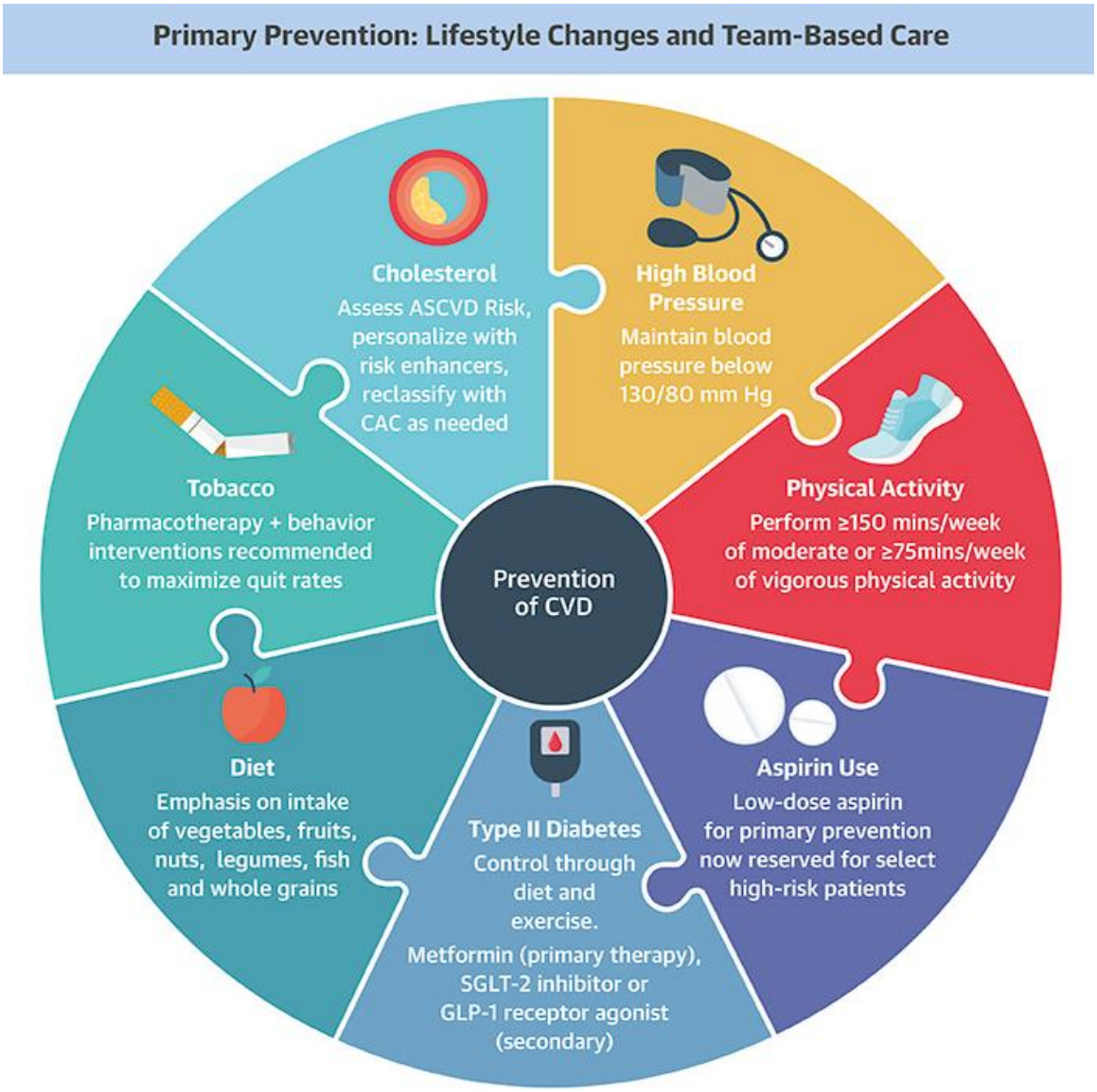

Figure 2. CVD prevention [15].
Source: Journal of the American College of Cardiology vol. 74, no. 10, 2019 © 2019

Medical Interventions

Blood pressure management: Controlling hypertension is a cornerstone of primary prevention. Antihypertensive medications, combined with lifestyle modifications, significantly reduce the risk of CVDs. Regular blood pressure monitoring and early intervention contribute to optimal outcomes.

Lipid-lowering medications: Statins, in particular, have proven efficacy in reducing cholesterol levels and preventing atherosclerotic cardiovascular events. Prescribing statins based on individual risk assessments ensures targeted primary prevention.

Diabetes control: Individuals with diabetes are at an elevated risk of CVDs. Effective management of blood glucose levels through lifestyle modifications and medication is crucial for primary prevention.

Risk Assessment and Personalized Approaches

Global risk assessment: Employing instruments like the Framingham Risk Score or the American College of Cardiology/American Heart Association (ACC/AHA) risk calculator aids in assessing an

individual's likelihood of experiencing cardiovascular events over a 10-year period. This aids in tailoring preventive strategies based on the calculated risk.

Age and gender considerations: Recognizing that age and gender influence CVD risk, especially in postmenopausal women, allows for targeted interventions. Hormone replacement therapy considerations and individualized risk assessments are imperative.

Health Policy and Public Health Initiatives

Education and awareness: Public health campaigns focusing on cardiovascular risk factors, symptoms, and preventive measures enhance community awareness. Educational initiatives empower individuals to make informed lifestyle choices.

Access to healthcare: Guaranteeing equal access to healthcare services and preventive measures is crucial. Removing barriers to health resources, particularly in underserved populations, contributes to more widespread primary prevention.

The primary prevention of CVDs requires a multifaceted approach encompassing lifestyle modifications, medical interventions, personalized risk assessments, and public health initiatives. Integrating these strategies into comprehensive healthcare systems and fostering a culture of prevention is imperative for reducing the global burden of CVDs. Continued research, coupled with community engagement and policy advocacy, will further refine and enhance primary prevention strategies, ultimately promoting cardiovascular health across diverse populations [16–18].

CONCLUSION

In navigating the landscape of CVDs, the pivotal role of prevention emerges as a beacon of hope. This conclusion underscores the fundamental premise that CVDs are eminently preventable, and this prevention hinges on the triumvirate of a health-conscious lifestyle, stress reduction strategies, and proactive medical surveillance.

Lifestyle as the Cornerstone

Routine exercises and a health-conscious dietary pattern stand as the bedrock of cardiovascular health. Regular physical activity, encompassing aerobic exercises and strength training, not only bolsters cardiovascular fitness but also contributes to weight management and metabolic equilibrium. Consuming a diet abundant in fruits, vegetables, whole grains, and lean proteins promotes excellent heart health by mitigating risk factors such as hypertension and raised cholesterol levels.

Stress Reduction through Meditation

The intricate interplay between stress and cardiovascular health is increasingly recognized. Incorporating stress reduction activities, such as meditation and mindfulness practices, provides a holistic approach to prevention. By mitigating the physiological responses to chronic stress, individuals can shield themselves from one of the insidious contributors to CVD development. Meditation, in particular, has demonstrated efficacy in improving mental well-being and positively influencing cardiovascular outcomes.

Regular Heart Health Checkups

Initiative-taking medical surveillance through regular heart health checkups emerges as a cornerstone in the preventive paradigm. Routine screenings, encompassing blood pressure assessments, lipid profiles, and other relevant diagnostic tests, enable early detection of potential cardiovascular issues. This preemptive approach allows healthcare professionals to intervene promptly, thereby mitigating the progression of cardiovascular conditions.

The Synergy of Prevention

The synergy between lifestyle modifications, stress reduction activities, and regular medical checkups epitomizes a comprehensive preventive strategy. When woven seamlessly into the fabric of

daily life, these interventions create a shield against the multifaceted risk factors contributing to CVDs. It's not merely about averting the onset of diseases but fostering a robust foundation for enduring cardiovascular health.

Empowering Individuals for Prevention

Empowering individuals with knowledge about the preventability of CVDs is paramount. Educational initiatives, community engagement, and healthcare policies that promote preventive care contribute to a societal shift towards cardiovascular health. This responsibility is shared, ranging from personal decisions to wider systemic transformations.

In crystallizing the conclusion, it becomes evident that the narrative of CVDs is not predetermined. Instead, it is a story shaped by choices, habits, and a commitment to preventive measures. As individuals, communities, and healthcare systems align in the pursuit of cardiovascular health, the prospect of a world where CVDs are effectively prevented becomes not just an aspiration but an achievable reality. Envisioning a future where heart health is not left to fate but is the outcome of deliberate, knowledgeable, and ongoing preventive actions.

Ethical Clearance

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Conflict of interest

None

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REFERENCES

1. Jack Stewart, Gavin Manmathan, Peter Wilkinson. Primary prevention of cardiovascular disease: A review of contemporary guidance and literature. JRSM Cardiovascular Disease. Jan 2017; 6: 2048004016687211. DOI: 10.1177/2048004016687211.
2. Nichols M, Townsend N, Luengo-Fernandez R, et al. European Cardiovascular Disease Statistics. European Cardiovascular Disease Statistics. 2012 edition. Brussels, Belgium: European Heart Network AISBL; 2012.
3. Joep Perk, Guy De Backer, Helmut Gohlke, Ian Graham, Zeljko Reiner, Monique Verschuren, Christian Albus, Pascale Benlian, Gudrun Boysen, Renata Cifkova, Christi Deaton, Shah Ebrahim, Miles Fisher, Giuseppe Germano, Richard Hobbs, Arno Hoes, Sehnaz Karadeniz, Alessandro Mezzani, Eva Prescott, Lars Ryden, Martin Scherer, Mikko Syvänne, Wilma J M Scholte op Reimer, Christiaan Vrints, David Wood, Jose Luis Zamorano, Faiez Zannad; European Association for Cardiovascular Prevention & Rehabilitation (EACPR); ESC Committee for Practice Guidelines (CPG). European Guidelines on cardiovascular disease prevention in clinical practice (version 2012). The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of nine societies and by invited experts). European Heart Journal. Jul 2012; 33(17): 1635–1701. DOI: 10.1093/eurheartj/ehs092.
4. WHO. (2012). The top 10 causes of death. [Online] Available at:https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death.
5. WHO. (2019). Cardiovascular diseases. [Online] Available online at: https://www.who.int/health-topics/cardiovascular-diseases#tab=tab_2.
6. WHO. (2021). Cardiovascular diseases (CVDs). [Online] Available at: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(CVDs).

7. World Heart Federation. (2024). Prevention. [Online] Available online at: https://world-heart-federation.org/what-we-do/prevention.
8. Up-to-date.com. (2024). Overview of primary prevention of cardiovascular disease. [Online] Available at: https://www.uptodate.com/contents/overview-of-primary-prevention-of-cardiovascular-disease.
9. Donna K Arnett, Roger S Blumenthal, Michelle A Albert, Andrew B Buroker, Zachary D Goldberger, Ellen J Hahn, Cheryl Dennison Himmelfarb, Amit Khera, Donald Lloyd-Jones, J William McEvoy, Erin D Michos, Michael D Miedema, Daniel Muñoz, Sidney C Smith Jr, Salim S Virani, Kim A Williams Sr, Joseph Yeboah, Boback Ziaeian. 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: A report of the American College of Cardiology/American Heart Association Task Force on clinical practice guidelines. J Am Coll Cardiol. Sep 2019; 74(10): e177–e232. DOI: 10.1161/CIR.0000000000000678.
10. Robert H Eckel, John M Jakicic, Jamy D Ard, Janet M de Jesus, Nancy Houston Miller, Van S Hubbard, I-Min Lee, Alice H Lichtenstein, Catherine M Loria, Barbara E Millen, Cathy A Nonas, Frank M Sacks, Sidney C Smith Jr, Laura P Svetkey, Thomas A Wadden, Susan Z Yanovski, Karima A Kendall, Laura C Morgan, Michael G Trisolini, George Velasco, Janusz Wnek, Jeffrey L Anderson, Jonathan L Halperin, Nancy M Albert, Biykem Bozkurt, Ralph G Brindis, Lesley H Curtis, David DeMets, Judith S Hochman, Richard J Kovacs, E Magnus Ohman, Susan J Pressler, Frank W Sellke, Win-Kuang Shen, Sidney C Smith Jr, Gordon F Tomaselli; American College of Cardiology/American Heart Association Task Force on Practice Guidelines. 2013 AHA/ACC guideline on lifestyle management to reduce cardiovascular risk. Circulation. Jun 2014; 129(25 Suppl 2): S76–S99. DOI: 10.1161/01.cir.0000437740.48606.d1.
11. Gerald F Fletcher, Carolyn Landolfo, Josef Niebauer, Cemal Ozemek, Ross Arena, Carl J Lavie. Promoting physical activity and exercise: JACC health promotion series. Journal of the American College of Cardiology. Oct 2018; 72(14): 1622–1639. DOI: 10.1016/j.jacc.2018.08.2141.
12. L J Appel, T J Moore, E Obarzanek, WM Vollmer, LP Svetkey, FM Sacks, GA Bray, TM Vogt, JA Cutler, MM Windhauser, PH Lin, N Karanja. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. New England Journal of Medicine. Apr 1997; 336(16): 1117–1124. DOI: 10.1056/NEJM199704173361601.
13. Jennifer Daubenmier, Jean Kristeller, Frederick M Hecht, Nicole Maninger, Margaret Kuwata, Kinnari Jhaveri, Robert H Lustig, Margaret Kemeny, Lori Karan, Elissa Epel. Mindfulness intervention for stress eating to reduce cortisol and abdominal fat among overweight and obese women: an exploratory randomized controlled study. Journal of Obesity. 2011; 2011: 651936. DOI: 10.1155/2011/651936.
14. Fernández-Jiménez R, Al-Khalil M, Udelson JE. Effect of relaxation music on the psycho-physiological well-being of patients undergoing cardiac catheterization: a randomized controlled trial. American Journal of Medicine. 2018; 131(6): 703–710.
15. Emelia J Benjamin, Salim S Virani, Clifton W Callaway, Alanna M Chamberlain, Alexander R Chang, Susan Cheng, Stephanie E Chiuve, Mary Cushman, Francesca N Delling, Rajat Deo, Sarah D de Ferranti, Jane F Ferguson, Myriam Fornage, Cathleen Gillespie, Carmen R Isasi, Monik C Jiménez, Lori Chaffin Jordan, Suzanne E Judd, Daniel Lackland, Judith H Lichtman, Lynda Lisabeth, Simin Liu, Chris T Longenecker, Pamela L Lutsey, Jason S Mackey, David B Matchar, Kunihiro Matsushita, Michael E Mussolino, Khurram Nasir, Martin O'Flaherty, Latha P Palaniappan, Ambarish Pandey, Dilip K Pandey, Mathew J Reeves, Matthew D Ritchey, Carlos J Rodriguez, Gregory A Roth, Wayne D Rosamond, Uchechukwu K A Sampson, Gary M Satou, Svati H Shah, Nicole L Spartano, David L Tirschwell, Connie W Tsao, Jenifer H Voeks, Joshua Z Willey, John T Wilkins, Jason Hy Wu, Heather M Alger, Sally S Wong, Paul Muntner; American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. Circulation. Mar 2018; 137(12): e67–e492. DOI: 10.1161/CIR.0000000000000558.
16. J Michael Gaziano, Carlos Brotons, Rosa Coppolecchia, Claudio Cricelli, Harald Darius, Philip B Gorelick, George Howard, Thomas A Pearson, Peter M Rothwell, Luis Miguel Ruilope, Michal

Tendera, Gianni Tognoni; ARRIVE Executive Committee. Use of aspirin to reduce risk of initial vascular events in patients at moderate risk of cardiovascular disease (ARRIVE): a randomized, double-blind, placebo-controlled trial. Lancet. Sep 2018; 392(10152): 1036–1046. DOI: 10.1016/S0140-6736(18)31924-X.

17. Antonio J Vallejo-Vaz, Michele Robertson, Alberico L Catapano, Gerald F Watts, John J Kastelein, Chris J Packard, Ian Ford, Kausik K Ray. Low-density lipoprotein cholesterol lowering for the primary prevention of cardiovascular disease among men with primary elevations of low-density lipoprotein cholesterol levels of 190 mg/dl or above: analyses from the WOSCOPS (West of Scotland Coronary Prevention Study) 5-year randomized trial and 20-year observational follow-up. Circulation. 2016; 134(24): 1908–1919.
18. Irwin M Rosenstock. The health belief model and preventive health behavior. Health Education & Behavior. Dec 1974; 2(4): 354–386. DOI: 10.1177/109019817400200405.

