Redefining heart disease risk, prevention and management

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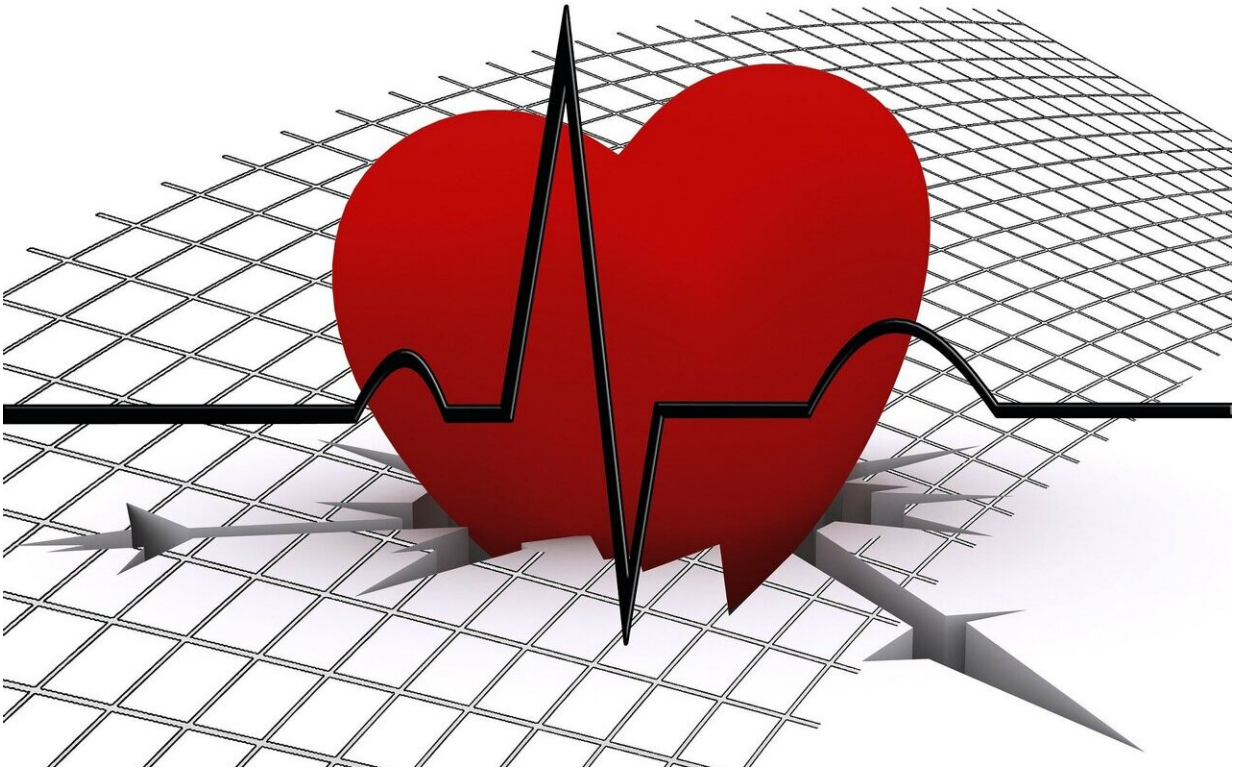

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Health experts are redefining cardiovascular disease (CVD) risk, prevention and management, according to a new American Heart Association presidential advisory published today in the journal

Circulation.

Various aspects of cardiovascular disease that overlap with kidney disease, type 2 diabetes and obesity support the new approach. For the first time, the American Heart Association defines the overlap in these conditions as cardiovascular-kidney-metabolic (CKM) syndrome. People who have or are at risk for cardiovascular disease may have CKM syndrome.

The new approach detailed in the presidential advisory includes:

- CKM syndrome stages ranging from 0, or no risk factors and an entirely preventive focus, to Stage 4, the highest-risk stage with established cardiovascular disease. Stage 4 may also include kidney failure. Each stage correlates to specific screenings and therapies.
- Screening for and addressing social factors that impact health.
- Collaborative care approaches among multiple specialties to treat the whole patient.
- Suggested updates to the algorithm, or risk calculator, that helps health care professionals predict a person's likelihood of having a heart attack or stroke. The update adds a risk prediction for heart failure, which estimates risk for "total cardiovascular disease"—heart attack, stroke and/or heart failure.
- The writing group suggest the updated algorithm provide both 10- and 30-year cardiovascular disease risk estimates.

According to the American Heart Association's 2023 Statistical Update, 1 in 3 U.S. adults have three or more risk factors that contribute to cardiovascular disease, metabolic disorders and/or kidney disease. CKM affects nearly every major organ in the body, including the heart, brain, kidney and liver. However, the biggest impact is on the cardiovascular system, affecting blood vessels and heart muscle function, the rate of

fatty buildup in arteries, electrical impulses in the heart and more.

"The advisory addresses the connections among these conditions with a particular focus on identifying people at early stages of CKM syndrome," said Chiadi E. Ndumele, M.D., Ph.D., M.H.S., FAHA, writing committee chair and an associate professor of medicine and director of obesity and cardiometabolic research in the division of cardiology at Johns Hopkins University in Baltimore. "Screening for kidney and metabolic disease will help us start protective therapies earlier to most effectively prevent heart disease and best manage existing heart disease."

CKM syndrome is a consequence of the historically high prevalence of obesity and type 2 diabetes in both adults and youth, according to the advisory. type 2 diabetes and obesity are metabolic conditions—the "M" in CKM—that are also risk factors for cardiovascular disease. Moreover, the most common cause of death for people with type 2 diabetes and chronic kidney disease is cardiovascular disease.

"We now have several therapies that prevent both worsening kidney disease and heart disease," Ndumele said. "The advisory provides guidance for health care professionals about how and when to use those therapies, and for the medical community and general public about the best ways to prevent and manage CKM syndrome."

With multiple conditions to manage, Ndumele noted fragmented care is a concern in treating patients with CKM syndrome, particularly for those with barriers to care. "The advisory suggests ways that professionals from different specialties can better work together as part of one unified team to treat the whole patient. Additionally, the advisory emphasizes the importance of systematically screening for and addressing social factors that act as determinants, or drivers, of health, such as nutrition insecurity and opportunities for exercise, as key aspects of optimal CKM

syndrome care."

A companion article published with the presidential advisory, a new American Heart Association scientific statement, "A Synopsis of the Evidence for the Science and Clinical Management of Cardiovascular-Kidney-Metabolic (CKM) Syndrome," documents the evidence for the writing committee's proposed approach. The scientific statement brings together evidence from current guidelines and large research studies and describes where gaps remain in knowledge needed to further improve CKM health.

CKM screening, stages and treatment

CKM-related screening is intended to detect cardiovascular, metabolic and kidney health changes early; identify social and structural barriers to care; and prevent progression to the next stage of CKM syndrome.

The advisory addresses care for adults. However, studies suggest CKM syndrome is progressive and begins early in life. Therefore, the advisory aligns with the American Academy of Pediatrics' recommendations for children and youth to have annual assessments of weight, blood pressure, and mental and behavioral health, starting at age 3.

Stage 0—No CKM risk factors. The goal at this stage is preventing CKM syndrome by achieving and maintaining ideal health based on the American Heart Association's Life's Essential 8 recommendations. The recommendations include healthy eating, physical activity and sleep habits; avoiding nicotine; and maintaining optimal weight, blood pressure, blood sugar and cholesterol levels. The advisory suggests screening adults in Stage 0 every three to five years to assess blood pressure, triglycerides, HDL (good) cholesterol and blood sugar.

Preventing unhealthy weight gain is important for CKM syndrome

prevention because of the connection of obesity to type 2 diabetes, high blood pressure and high triglycerides. At all stages, the advisory proposes yearly measurement of waist circumference and body mass index. Healthy lifestyle behaviors are also encouraged at every stage.

Stage 1—Excess body fat and/or an unhealthy distribution of body fat, such as abdominal obesity, and/or impaired glucose tolerance or prediabetes. Support for healthy lifestyle changes (healthy eating and regular physical activity) and a goal of at least 5% weight loss in people with Stage 1 are suggested, with treatment for glucose intolerance if needed. Screening every two to three years is advised to assess blood pressure, triglycerides, cholesterol and blood sugar.

Stage 2—Metabolic risk factors and kidney disease. Stage 2 includes people with type 2 diabetes, high blood pressure, high triglycerides or kidney disease, and indicates a higher risk for worsening kidney disease and heart disease. The goal of care at this stage is to address risk factors to prevent progression to cardiovascular disease and kidney failure.

Treatment may include medications to control blood pressure, blood sugar and cholesterol. In those with chronic kidney disease and in some people with type 2 diabetes, SGLT2 inhibitors are advised to protect kidney function and reduce the risk of heart failure. SGLT2 inhibitors are a class of prescription medicines that are FDA-approved for use with diet and exercise to lower blood sugar in adults with type 2 diabetes.

Glucagon-like peptide 1 (GLP-1) receptor agonists are also suggested for consideration in people with type 2 diabetes to help reduce high glucose, facilitate weight loss and reduce risk for CVD. Other therapies to prevent worsening kidney function are also advised. Screening suggestions for Stage 2 CKM syndrome align with AHA/ACC guidelines , which include yearly assessment of blood pressure, triglycerides, cholesterol, blood sugar and kidney function.

For those with increased risk of kidney failure based on kidney function assessments, more frequent kidney screening is recommended.

Stage 3—Early cardiovascular disease without symptoms in people with metabolic risk factors or kidney disease or those at high predicted risk for cardiovascular disease. The goal of care in Stage 3 is to intensify efforts to prevent people who are at high risk of progressing to symptomatic cardiovascular disease and kidney failure. This may involve increasing or changing medications, and additional focus on lifestyle changes.

The writing committee advises coronary artery calcium (CAC) measurement in some adults to assess narrowing of the arteries when treatment decisions are unclear. CAC screening is used to guide decisions about cholesterol-lowering statin therapy. Test results indicating asymptomatic heart failure should lead to intensified therapy to prevent heart failure symptoms.

The advisory also describes CKM syndrome regression, an important concept and public health message in which people making healthy lifestyle changes and achieving weight loss may regress to lower CKM syndrome stages and a better state of health. The best opportunity for patients to experience regression is in Stages 1, 2 and 3. Some may see improvements in glucose control, cholesterol and blood pressure levels, weight, kidney function and types of heart dysfunction.

Stage 4—Symptomatic cardiovascular disease in people with excess body fat, metabolic risk factors or kidney disease. Stage 4 CKM syndrome is divided into two subcategories: (4a) for those without kidney failure or (4b) for those with it. In this stage, people may have already had a heart attack or stroke or may already have heart failure. They also may have additional cardiovascular conditions such as peripheral artery disease or atrial fibrillation. The goal of care is

individualized treatment for cardiovascular disease with consideration for CKM syndrome conditions.

Predicting risk

A critical step in assessing risk and managing CKM syndrome is updating the risk prediction algorithm to help health care professionals predict cardiovascular disease in a way that includes CKM components: cardiovascular disease, chronic kidney disease and metabolic disorders.

The Pooled Cohort Equation, the current risk calculator for atherosclerotic cardiovascular disease, established in 2013, estimates the risk of a heart attack or stroke in the next 10 years for people ages 40–75. It includes health and demographic factors about a person and is used to guide lifestyle recommendations and treatment decisions for people at risk for cardiovascular disease. The risk factors are age, sex and race (as white, Black and other); cholesterol levels; and systolic blood pressure. The equation also includes yes/no responses to whether a person is receiving treatment for high blood pressure type 2 diabetes, or smokes cigarettes.

The advisory proposes updating the risk calculator to include measures of kidney function, type 2 diabetes control (using blood test results instead of a yes/no response) and social determinants of health for a more comprehensive risk estimate. Kidney function assessments include a measure of how well the kidneys filter waste from the blood and urine albumin levels, a measure of how well the kidneys reabsorb protein. Individual health measures in addition to demographic information will allow the calculator to produce an individual's total CVD risk estimate.

The writing group recommends the risk calculator updates be expanded to assess risk in people as young as age 30 and to calculate both 10- and 30-year CVD risk. More comprehensive CVD risk assessment at

younger ages will allow for earlier preventive strategies to mitigate progression to advanced stages of CKM syndrome. In the long term, this will help to reduce gaps in treatment and health equity and improve outcomes.

Calls to action

The advisory calls for systemic changes to optimize CKM health.

"There is a need for fundamental changes in how we educate health care professionals and the public, how we organize care and how we reimburse care related to CKM syndrome," Ndumele said. "Key partnerships among stakeholders are needed to improve access to therapies, to support new care models and to make it easier for people from diverse communities and circumstances to live healthier lifestyles and to achieve ideal cardiovascular health."

Investing in research is important for advancing CKM care. Key research gaps include:

1. Better understanding the pathways leading to heart disease in CKM syndrome;
2. Better understanding of why some people may advance more quickly along CKM stages, while others may progress more slowly; and
3. Understanding the best way to use newer therapies with multiple effects on CKM syndrome, including to improve metabolic factors such as obesity and type 2 diabetes, and to reduce worsening kidney disease and prevent heart disease.

More information: Cardiovascular-Kidney-Metabolic Health: A Presidential Advisory From the American Heart Association, *Circulation* (2023). DOI: 10.1161/CIR.0000000000001184