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HEALTH CARE

THEIR BATTLE: SLOW THE GROWTH OF HEART DISEASE


How Triangle cardiologists are employing AI as a 'decision-enhancer' to improve mortality rates

Dr. Manesh Patel, chief of cardiology at Duke Health, says AI will help to better personalize medicine.

MEHMET DEMIRCI



By **Connie Gentry** – Freelance Writer, Triangle Business Journal
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Think of three people you love, and then realize one of them will likely die from heart disease. And more importantly, there's a good chance that their cardiovascular disease possibly could have been prevented.

Heart disease has been the leading cause of death in the U.S. since 1921, reports the National Institutes of Health, but in the years leading up to the pandemic, cardiovascular disease (CVD) mortality rates were stabilizing, even declining.

From 2010 to 2019, **age-adjusted CVD mortality declined 8.9 percent**. But then the pandemic hit and a decade of progress reversed. From 2020 to 2022, the number of CVD deaths was 9 percent greater than trends of the preceding decade foretold.

“What we've seen with Covid, other inflammatory infections and the stressors of life is that we've lost some of the gains we had in improving cardiovascular health,” said Dr. Manesh Patel, an interventional cardiologist, researcher and chief of cardiology at Duke Health. “One in three people will pass away from cardiovascular disease, whether that's heart attack, stroke or other cardiovascular causes like heart failure.”

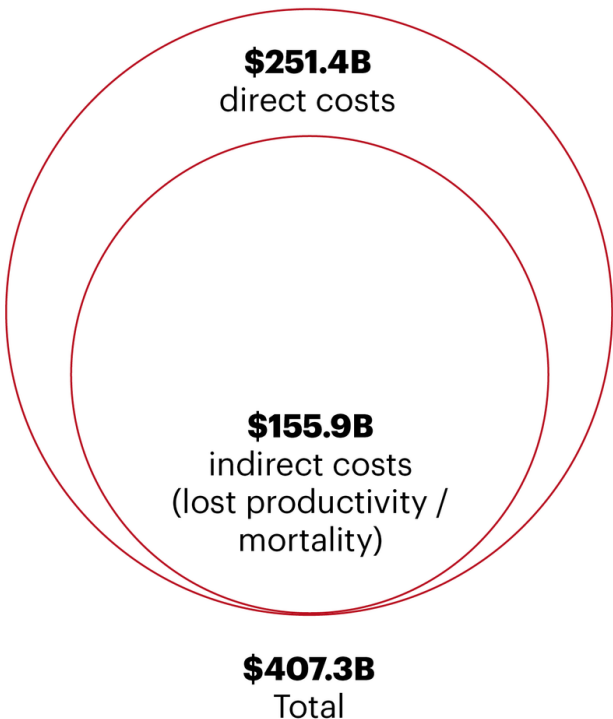
On a positive note, Patel – the 2023 American Heart Association Physician of the Year – is seeing more people focus on heart and brain health post-pandemic, and more people seeking the care they need.

Dr. Christopher Kelly, chief of cardiology at UNC Rex in Raleigh and Cary, is seeing comparable increases in patient engagement at North Carolina Heart and Vascular, and with a disturbing caveat: CVD patients are younger.

“Even though your chance of surviving a heart attack or your years of life after being diagnosed with heart failure are a lot better because of the many treatments that have been developed, the risk factors for developing those things are becoming more prevalent and doing so at younger ages,” Kelly said.

CVD IS NO. 1 KILLER

Cardiovascular disease remains the leading cause of death in the U.S. It accounted for 928,741 deaths in 2020.



1 in 3

U.S. adults die from cardiovascular disease

34 seconds

On average, someone in the U.S. dies from cardiovascular disease every 34 seconds

3:17

On average, someone in the U.S. dies from a stroke every 3 minutes, 17 seconds

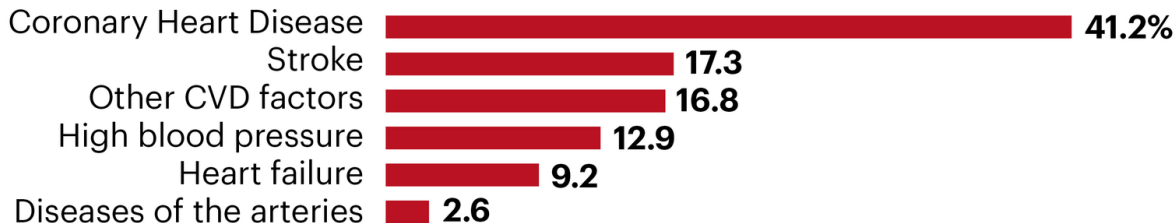
47%

of U.S. adults have hypertension

25.50%

of U.S. adults have high LDL-C (Cholesterol \geq 130 mg/dL)

Deaths attributed to CVD



Source: American Heart Association "Heart Disease & Stroke Statistics 2023 Update"

SLEEP MATTERS

In terms of cardiovascular disease, too much sleep can be as detrimental as too little sleep.

6% higher risk of cardiovascular disease	Every 1 hour per night decrease in sleep duration below the recommended 7 to 8 hours per night
12% higher risk of cardiovascular disease	Every 1 hour per night increase in sleep duration above the recommended 7 to 8 hours per night

Source: American Heart Association

While medical professionals are trying to identify why the incidence of some cancers, specifically colorectal cancer, are increasing among young people, cardiologists have a clear perspective of what's causing more heart disease among young people.

“It's the greater prevalence of hypertension, diabetes and obesity among young people, which is the result of poor nutrition, lack of exercise and learning from an early age to drink sodas, eat fast food and watch TV rather than go outside and exercise,” Kelly said. “The seeds of heart disease are planted at a pretty young age, and we see it resulting in heart attacks when people are in their 40s or 30s, even some in their 20s.”

The consensus among cardiologists is that the number of people experiencing heart disease has gone up, even though they will have a better outcome than someone who developed heart disease 20 years ago.

But people have the power to alter the trend of escalating CVD by adopting proactive behaviors that include not smoking, eating a healthy diet rich in vegetables and fruit, exercising regularly and embracing a more active lifestyle – along with regularly assessing their own CVD risk factors by monitoring blood pressure, cholesterol, blood sugar and sleep habits.

The goal, Patel suggests, is to build small habits that can be reproduced.

“If you can build those habits – whether it's activity in the morning, not snacking late or getting good sleep – those will lead to better long-term cardiovascular health,” he said.

The sleep component was added most recently by the American Heart Association as a key determinant for maintaining cardiovascular health. After concluding that seven to eight hours of sleep per night is optimum for adults, the AHA surprisingly determined

that too much sleep can be as detrimental as not enough sleep. For every one hour below the recommended seven-to-eight hours, an adult's risk of CVD increases by 6 percent. Conversely, for every one hour over the recommended eight hours, the risk of developing CVD increases by 12 percent.

Patel's sleep advice is simple: have a regular bedtime, establish a familiar "wind down" routine, avoid eating or drinking and reduce overall stimulus immediately before bed, strive to spend eight hours in bed and commit to a wake-up time.



Dr. Manesh Patel is the 2023 American Heart Association Physician of the Year.

MEHMET DEMIRCI

"Heart attacks are usually years in the making," Kelly said, so cardiologists try to optimize controllable risk factors and for most people that comes down to lifestyle modifications. But genetics and family history pose significant risk factors for CVD that are not controllable.

"Everyone should start having their risk factors examined in their teenage years, and for people with family history, we actually recommend getting checked under the age of 10. Even if your numbers seem fine, if you have a strong family history of a heart attack or

stroke, we recommend seeing a cardiologist by your mid-30s to go through that history and better understand your risks,” Kelly said.

For patients with elevated risk factors, he may recommend getting a calcium score, easily established using a CT scan to see if there’s calcium in or around the arteries on the heart.

“Calcium is a marker of plaque, so the more calcium you have the more plaque you have, and calcium is easy to see on the scan and doesn’t require IV contrast,” he said.

“If the calcium score is high, we worry their risk is higher than it should be so we may get more aggressive about lowering their cholesterol,” Kelly adds. “What might be an okay cholesterol in someone who has no family history might not be so okay in someone with a family history and an elevated calcium score, so maybe we put that person on a statin to bring their cholesterol down.”

An emerging technology is taking the diagnostics a step further with an AI-enabled CAT scan that indicates where plaque and stenosis exist in coronary arteries.

“This newer scan, from a company called Cleerly, can show plaque in more detail and definition, and it uses AI to analyze the scans and categorize the plaque it sees into higher and lower risk categories,” Kelly said. “AI is a decision-enhancer; it’s not just better than what people can do it, it’s doing what people can’t do and it can bring things to your attention you might miss.”

UNC is looking to implement the Cleerly technology and Kelly expects they will be the first in the Triangle to do so. Although it’s been tested on over 40,000 patients and is widely used across the Southeast, primarily in Virginia, D.C. and Maryland, in North Carolina it has only been introduced in Charlotte. Although cleared by the U.S. Food and Drug Administration, insurance approvals are pending, which inevitably slows adoption.

More breakthroughs are on the way.

“In the field of cardiovascular medicine, another reason to be excited is the amount of innovation we have done in 10 years,” Patel said. “At Duke, we do over 160 heart transplants a year and that’s the tip of the iceberg for those failing hearts; there’s a variety of devices and things we can do for people with failing hearts.

“The idea that, while somebody is having a problem, we could go to their heart from outside the body, sometimes through the radial artery, put a wire down and open up the problem, that still feels like you’re landing on the moon, like you’re doing pretty unique stuff. We do 5,000 of those procedures a year, and the idea that without making an incision we can put another valve in your heart is a pretty spectacular concept, another testament to the technology and our ability to move forward.”

Patel also celebrates the potential of AI.

“The future disruption in cardiovascular medicine will be how doctors use augmented intelligence to help patients improve their outcomes. ...” he said. “All of the technologies we’re working on are going to better personalize medicine and make it more effective and safer for patients.”

About this project: *Project Life exists to shed light on executive health and worker wellness. The series includes regular articles on worker stress, work anxiety, depression and addiction-related issues that creep into the workplace and personality features from executives who are on the forefront of this fight for better health in our workplaces.*