

Data-driven intervention reduces cardiovascular risk across North Carolina

October 29 2020, by Mark Derewicz

UNC-Chapel Hill researchers and collaborators including the North Carolina Area Health Education Centers (AHEC) Program and Community Care of North Carolina created a digital intervention using electronic health records to rank 437,556 North Carolinians at 219 primary care clinics according to cardiovascular health metrics and then help practices immediately intervene to reduce risk of heart attacks, stroke, and death among those at greatest risk.

The results, published in *Health Services Research*, show that practices were able to reduce the percent of patients at a high 10-year risk of serious cardiovascular events from 23 percent to 17 percent—a relative reduction of 25 percent of patients. After adjusting for clinical-patient efforts outside this intervention, the 25 percent reduction is essentially equivalent to preventing 6,000 patients from suffering a heart attack or stroke, or dying due to cardiovascular disease within 10 years.

Senior author of the HSR paper Sam Cykert, MD, professor of medicine and member of the Cecil G. Sheps Center for Health Services Research, led this data-driven intervention, which included mobilizing practice facilitators from the North Carolina AHEC Practice Support team to partner with individual clinics and help providers put in place procedures to proactively bring in high risk patients to reduce cardiovascular risk as quickly as possible.

All [electronic health records](#) systems have the capabilities to stratify patient populations, according to a given metric, such as cardiovascular

risk, Cykert said. These capabilities are possible with digital systems, but they are not automatic or easy to use; they take extra time and knowhow clinics don't usually have, and it can be expensive to do the necessary programming.

"Rural primary care clinics make less money than anyone in medicine," Cykert said. "They are really doing God's work. Yet no one provides resources to take the pressure off these clinics so they can truly do the best they can. Right now, everything is on their backs."

Cykert and colleagues were able to help clinics thanks to a \$15-million federal grant from the Agency for Healthcare Research and Quality's (AHRQ) Evidence NOW Program. The goal was to use the latest evidence to improve the heart health of millions of Americans. UNC's Heart Health Now! Advancing Heart Health in NC Primary Care project was one of seven grantees back in 2015.

The first research results from this program were reported in 2018, showing it was possible to build a dashboard of patients in need of risk reduction, based on their cholesterol numbers and other [risk factors](#) even if clinics lacked cholesterol data.

In the current paper, Cykert and colleagues report that using health records coupled with mobilizing practice facilitators, or coaches, could immediately reduce cardiovascular risk based on addressing four metrics: hypertension control, aspirin use, smoking interventions, and statin use.

"The first intervention is to build the stratified risk database," Cykert said. "Then our quality improvement coaches worked with clinics to understand the data and build a system so they could use it. If a clinic has 100 patients at high risk of cardiovascular disease, what's the best way for a clinic to engage and reengage with patients to reduce risk as

quickly as possible?"

Of the more than 400,000 patients age 40-79 at the 219 clinics, about 147,000 were identified as being at high risk of developing [cardiovascular disease](#), suffering a stroke, having a heart attack or dying. With the help of coaches, clinics were able to quickly reduce the degree of risk from 23 percent to 17 percent. This 6 percent reduction was the equivalent of preventing about 9,000 adverse events related to cardiovascular health. When factoring in the steps clinics took to reduce risk aside from this intervention, Cykert said his team's analysis showed the actual reduction due to the intervention was 4 percent, the equivalent of 6,000 adverse health events, such as strokes.

About 50 percent of the 219 clinics were in largely eastern North Carolina, known as the stroke belt. "During our intervention, these practices did as well as more sophisticated practices in more urban settings," Cykert said.

This kind of approach, according to Cykert, could extend beyond cardiovascular health. Such support could help practices with patients in need of social services support, COVID-19 prevention and testing, telehealth needs, life style and health education interventions, and prevention methods to avoid chronic illnesses.

"Think of how good we could be at helping those in most need if we took a holistic population health approach like this, instead of only focusing on medical issues," Cykert said. "Think of what we could accomplish if we took on alcohol and opioid abuse."

Alcohol use is up 40 percent during the COVID-19 pandemic, mostly due to people who had not been drinking alcohol previously or very little. And regardless of the pandemic, alcohol-related deaths are the third biggest cause of preventable death in the United States. Dan Jonas,

MD, MPH, professor at the UNC School of Medicine and member of the UNC Sheps Center, started a project to use the same intervention techniques to help primary practices reduce risky drinking while Cykert is working on the opiate problem in several rural counties.

To create such a data-driven, boots on the ground approach across the entire state or nation, Cykert said state governments could invest in building [health](#) extension centers, similar to agriculture extension centers that help farmers.

"These would be physical places in every region so that multiple small practices could share the same services, the same quality improvement coaches, the same kind of help we need to improve the lives of thousands or even millions of people."

More information: Samuel Cykert et al. A controlled trial of dissemination and implementation of a cardiovascular risk reduction strategy in small primary care practices, *Health Services Research* (2020). [DOI: 10.1111/1475-6773.13571](https://doi.org/10.1111/1475-6773.13571)

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