Rural patients less likely to receive cardiovascular care, more likely to die from certain heart conditions

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Rural Americans are less likely to have health insurance, have less access to healthcare services for urgent conditions and are more likely to encounter lower quality care than their urban counterparts, according the Centers for Disease Control and Prevention. These factors combined with others mean the 46 million people, or 15 percent of Americans, who live in rural places are more likely to die of cancer, respiratory diseases and cardiovascular diseases than urban Americans.

In a nationwide study of Medicare beneficiaries, researchers at Beth Israel Deaconess Medical Center (BIDMC) evaluated differences in procedural care and mortality for acute cardiovascular conditions between rural and urban hospitals. The physician-scientists found significant disparities, demonstrating that older adults initially presenting at rural hospitals are less likely to receive important procedures and treatments for heart attack and stroke. Mortality rates were also higher at rural hospitals for patients presenting with heart attack, heart failure or stroke than at urban hospitals. The findings are published in the *Journal of the American College of Cardiology*.

"Although public health and policy efforts to improve rural health have intensified over the past decade, our findings highlight that large gaps in clinical outcomes for cardiovascular conditions remain in the United States," said corresponding author Rishi K. Wadhera, MD, MPP, MPhil, a cardiologist at BIDMC and section head of health policy and equity research at the Smith Center for Outcomes Research in Cardiology. "These disparities suggest that rural adults continue to face challenges accessing the care they need for urgent conditions, an issue that has likely been magnified by the rapid rise in rural hospital closures over the last decade."

"Our findings highlight that ongoing public health, policy, and clinical efforts are needed to close the gaps in outcomes for urgent cardiovascular conditions, such as heart attacks and stroke," said first author Emefah C. Loccoh, MD, an investigator in the Smith Center and a physician at Brigham and Women's Hospital.

In this retrospective cross-sectional study, Wadhera, Loccoh, and colleagues looked at data from more than 2 million Medicare beneficiaries age 65 or older who were hospitalized with acute cardiovascular conditions at more than 4,000 urban and rural hospitals across the US from 2016 to 2018.

Medicare beneficiaries presenting with acute cardiovascular conditions at rural hospitals were older, more likely to be female and more likely to be white than their urban counterparts. These patients were less likely to receive procedural care, such as

cardiac catheterization for patients experiencing heart attack or thrombolysis and endovascular therapy for those having a stroke. Moreover, mortality rates were higher among patients presenting at rural hospitals than those at urban hospitals—a pattern the researchers saw both at 30 days after initial presentation and 90 days after.

The researchers suggest several factors that may be contributing to worse outcomes in rural areas, despite significant public health and policy efforts to reduce rural-urban inequities. Even as the rate of uninsured rural Americans declined over recent years, a spate of rural hospital closures over the last decade has resulted in longer travels times and delays in emergency medical services and treatments that adversely affected outcomes for emergent cardiac conditions.

"One bright spot is that we found that the subgroup of older adults who present to rural hospitals with a very severe type of a heart attack—known as a ST elevation myocardial infarction, or STEMI—experience similar outcomes as their urban counterparts," said Wadhera, who is also an assistant professor of medicine at Harvard Medical School. "This is good news, and suggests that concerted public health initiatives over the past decade, like regional systems of care and transfer protocols, have helped eliminate the rural-urban gap in outcomes for the most emergent type of heart attack."

In addition, rural areas have experienced a decline in primary care physicians and specialties which may make access to follow-up care after discharge more difficult. These challenges, coupled with worse access to cardiac rehab and important rehab services after stroke may contribute to worse outcomes in rural areas and may disproportionately affect minorities.

Beyond challenges with access to care, the researchers site a relative lack of "intensity of care," or a lack of resources and infrastructure in the rural setting, as another factor that may contribute to these rural-urban disparities.

"The rural-urban disparities in stroke treatment that we observed may reflect gaps in the availability of tele-stroke services that are secondary to financial constraints and a lack of high-speed internet in rural areas," said Loccoh.

Within rural areas, the researchers saw significant disparities in care received at critical access hospitals (CAHs) versus non-critical care access hospitals. Federally designated as part of the Medicare Rural Hospital Flexibility Program, critical access hospitals are intended to improve health care and emergency services in remote, rural areas. However, Wadhera and colleagues found that Medicare beneficiaries were actually less likely to receive procedural care for heart attack or stroke when initially presenting to CAHs than they were at non-critical access sites. The risk of mortality was higher among patients presenting at CAHs as well.

More information: Eméfah C. Loccoh et al, Rural-Urban Disparities in Outcomes of Myocardial Infarction, Heart Failure, and Stroke in the United States, *Journal of the American College of Cardiology* (2022). DOI: 10.1016/j.jacc.2021.10.045

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