

Quality toolkit improves care in Indian hospitals

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The city of Munnar, located in southern Kerala, India. Credit: Northwestern University

A simple toolkit of checklists, education materials and quality and performance reporting improved the quality of care but not outcomes in

hospitals in the south Indian state of Kerala and may have the potential to improve outcomes of heart attacks and other major cardiovascular disease events in other settings, according to a new Northwestern Medicine study published in the *Journal of the American Medical Association (JAMA)*.

Previous studies had identified gaps in the quality of care in Kerala, so an international consortium including Northwestern University and several Indian public health and professional institutions recruited more than 21,000 patients from 63 hospitals between 2014 and 2016 to try and improve heart attack care. The Acute Coronary Syndrome Quality Improvement in Kerala (ACS QUIK) study represents the largest randomized trial in cardiovascular medicine in India to date, an important milestone in a country that has more heart attacks than any other.

Over the course of the study, hospitals were first assigned to deliver usual care, but were then randomly assigned to implement a [quality improvement](#) toolkit that included audit and feedback reporting, checklists, patient education materials and linkage to emergency cardiovascular care training, which are all common strategies in the United States.

The investigators used a complex, yet useful, method known as a "stepped wedge" design, which improves investigators' understanding of the effects of complex interventions. This method was first used in the implementation and evaluation of Gambia's hepatitis B vaccination program in the late 1970s, yet has been rarely used because of its logistical challenges.

Over the course of the study, the investigators measured the quality of care delivered by physicians, as well as patients' rates of major cardiovascular events including death, heart attack, stroke or major

bleeding 30 days after hospital discharge.

The study found that the intervention group experienced higher rates of key in-hospital and discharge medications. The intervention group also experienced lower rates of major cardiovascular events at 30-day follow-up compared with the usual care group—5.3% versus 6.4%—but after accounting for variables including time trends, those findings failed to reach the level of statistical significance.

While most studies would have determined that the intervention led to these differences in outcomes, the stepped wedge design used by the ACS QUIK team allowed for adjustment of important variables such as time trends.

The overall results suggest favorable trends in outcomes among heart attack patients in Kerala, which have improved over the past decade based on the team's prior work and are similar to outcomes among US [heart attack patients](#).

"While we hoped that our trial would achieve its primary outcome, we demonstrated a high level of baseline care in Kerala. Without using the stepped wedge design, we would have incorrectly determined that our intervention was more effective than it was, which is important for setting policies to improve heart attack care," said Mark Huffman, MD, MPH, associate professor of Preventive Medicine in the Division of Epidemiology and co-first author of the study.

The other co-first author was P.P. Mohanan, MBBS, MD, DM, director of Cardiology at Westfort Hi-Tech Hospital in Kerala, India. Mohanan is also a member of the Cardiological Society of India, Kerala chapter.

"Over the past decade, patients in Kerala with a higher-risk form of heart attack, known as a ST-segment elevation myocardial infarction, are

twice as likely to survive their heart attack to hospital discharge, a survival rate that now exceeds 95 percent, which is similar to countries like the United States. These improvements in the quality and safety of cardiac care reflect the tireless efforts of not only the CSI-K but also its collaborators," Mohanan said.

The overall results of the study suggest favorable trends in outcomes among [heart attack](#) patients in Kerala, Huffman said.

The improvements in several process-of-care measures for patients having heart attacks, including restoring blood flow to tissue or opening closed arteries with medicine or stents, demonstrated the toolkit's potential for improving the quality of care delivered at Indian hospitals, including those with lower baseline performance, according to the authors.

"The Keralan cardiologists are leaders in creating a culture that values quality and safety in Indian healthcare," said Huffman, also an associate professor of Medicine in the Division of Cardiology. "We are interested in exploring the effects of this type of intervention in other states and conditions."

This project also served as a hub for four of Feinberg's Fogarty Global Health Fellows over the past three years, including Kyle Yoo, fourth-year medical student, Smitha Sarma, fourth-year medical student, Anubha Agarwal, MD, incoming fellow in the Cardiovascular Disease Fellowship Program in the Department of Medicine and Amisha Patel, MD, MS, former cardiology fellow who is now an assistant professor of Medicine at Columbia University Medical Center in New York.

Most recently, Yoo adapted the World Management Survey to survey 91 nurses, cardiologists and administrators about their management practices, finding low quality of management practice, particularly in

goal-setting.

"The ability to set goals in quality improvement work is essential," Yoo said.

Huffman believes these results could be used to shape future interventions.

"Global health is an area of strategic focus for Northwestern University," Huffman said. "This large trial shows the institution's commitment to improving the health and healthcare of people in limited resource settings."

The ACS QUIK toolkit was developed and tested by an international consortium consisting of investigators from Northwestern University, the Centre for Chronic Disease Control in Delhi, India and members of the Cardiological Society of India—Kerala Chapter.

"The ACS QUIK study is a great example demonstrating the utility of simple health system interventions. Not only is it a model for replication in improving patient care but is also an exemplar of collaborative research involving several cardiologists from Kerala, the Centre for Chronic Disease control in Delhi and Northwestern University Feinberg School of Medicine," said co-author Dorairaj Prabhakaran, MD, DM, MS, professor of Epidemiology at the London School of Hygiene and Tropical Medicine, executive director of the Centre for Chronic Disease Control and vice president of research and policy at the Public Health Foundation of India.

More information: Mark D. Huffman et al, Effect of a Quality Improvement Intervention on Clinical Outcomes in Patients in India With Acute Myocardial Infarction, *JAMA* (2018). [DOI: 10.1001/jama.2017.21906](https://doi.org/10.1001/jama.2017.21906)

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