# Hospitals that send the most heart patients to the ICU get the worst results, study finds

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Patients who suffer heart attacks, or flare-ups of congestive heart failure, can be cared for in a variety of hospital locations. But a new study suggests that they'll fare worse in hospitals that rely heavily on their intensive care units to care for patients like them.

In fact, depending on where they go, they may be half as likely to get certain proven tests and treatments—and less likely to survive a month after their hospital stay.

The findings add to growing evidence that the use of ICU beds in America varies widely. But for the first time in heart care, the study shows that hospitals that send the highest percentage of their patients to the ICU perform worst on measures of health care quality.

This suggests that more standardization in deciding which patients need an ICU, and more focus on quality of care in hospitals with the highest ICU use, could benefit patients nationwide, according to the authors of the new paper published online in the journal *CHEST*.

First author Thomas Valley, M.D., M.Sc., and his colleagues at the University of Michigan Medical School made the findings by looking at Medicare records from more than 570,000 hospital stays that took place in 2010.

Of the more than 150,000 hospitalizations at nearly 1,700 hospitals for acute myocardial infarction, or heart attack, 46 percent included care in

an ICU. A lower, but still sizable, 16 percent of the more than 400,000 hospitalizations for heart failure also included an ICU stay, at one of 2,199 hospitals.

Valley and his colleagues used the federal government's Hospital Compare website, which publicly reports hospital performance, to examine how well each hospital did at providing high-quality care, and what percentage of their patients died or ended up back in the hospital within a month of the hospital stay. They divided all the hospitals into five groups, from lowest ICU use to highest.

"In this country, we still have an open question of what to use the ICU for, and when, and very little evidence to guide physicians," says Valley, a critical care specialist who takes care of patients in the U-M Health System's Critical Care Medicine Unit. "Is it for those who were already sick and got worse, or is it a place to send people proactively when we think they might get sicker? And the answer can vary on different days, or based on how many beds are available right then. We hope to build a body of evidence about how to use this valuable resource in the most effective way."

## Differences in care, differences in outcomes

The new results show that hospitals with the highest percentage of patients admitted to the ICU tended to be those with the smallest numbers of heart attack and heart failure patients over all, perhaps suggesting a lack of familiarity with these conditions. They were also more likely to be for-profit hospitals. Patients treated in them were more likely to be from low-income ZIP codes.

While overall quality of care tended to be good and the differences in evidence-based care were relatively small, it still meant tens of thousands of patients received suboptimal care.

For instance, the high-ICU hospitals were less likely to give heart attack patients aspirin when they arrived and other drugs that are known to improve outcomes after heart attacks. They performed as well as other hospitals on several other quality measures.

In heart failure, the high-ICU hospitals were less likely to give important medications, perform key tests of heart function, and counsel patients on stopping smoking. They performed as well as other hospitals on educating patients about caring for themselves after they left the hospital.

But the biggest difference was in the risk of dying within 30 days of discharge; Heart attack patients treated in high-ICU hospitals were 6 percent more likely to die than patients admitted to low-ICU hospitals, and the difference was about 8 percent for heart failure patients. There were no differences in the odds of being hospitalized again, or in total spending on care.

Co-author Michael Sjoding, M.D., M.Sc., had previously led a study that showed a similar pattern among patients hospitalized for pneumonia. The hospitals that sent the most such patients to the ICU had the lowest quality performance on that condition, too.

## Taking the findings forward

"These studies suggest that hospitals using the ICU frequently could be targets for improvement. If we find out why hospitals are using ICU beds more often for these patients, we could intervene to improve care overall," says Valley.

For the meantime, Valley and his colleagues note that patients and families of people hospitalized for heart attack and heart failure need to speak up about the patient's wishes for the intensity of care they should

receive.

"It's important to understand why you or your loved one are being admitted to the ICU, and talk about whether it's in line with your or their wishes," says Valley. "It's important to understand both the benefits and risks of an ICU stay," like the closer monitoring from nurses but also the risk of infections and complications resulting from the more invasive nature of care provided in an ICU.

The group will continue to study data from large groups of patients to determine which ones benefit most from ICU-level care—and what characteristics of ICU care could be safely tried on general hospital floors. Specially trained team members from many professions - doctors, nurses, respiratory therapists, pharmacists - may be able to improve results in those settings as they have in the ICU. And that may make physicians more comfortable when deciding whether to send any given patient to an ICU or general ward.

**More information:** Thomas S. Valley et al, Intensive care use and quality of care for patients with myocardial infarction and heart failure, *Chest* (2016). DOI: 10.1016/j.chest.2016.05.034

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