

High vs. low hospital volume for angioplasty finds little difference in death rates

November 24 2009

A study based on a contemporary registry of patients with myocardial infarction (heart attack) indicates that even though hospitals that perform a higher number of angioplasties are more likely to follow evidence-based guidelines and have shorter times to the angioplasty procedure, there appears to be no significant difference in outcomes such as length of hospital stay or risk of death, according to a study in the November 25 issue of *JAMA*.

Several studies have shown an inverse relationship between hospital [primary angioplasty](#) volume and the risk of death in patients with ST-segment elevation [myocardial infarction](#) (STEMI; a certain pattern on an electrocardiogram following a [heart attack](#)). Based on the results of various studies, current American College of Cardiology/American Heart Association (ACC/AHA) guidelines recommend that primary angioplasty in patients with STEMI be conducted by cardiac catheterization laboratories performing at least 36 primary angioplasties a year, as well as at least 200 total angioplasties a year, according to background information in the article.

"The majority of these studies were conducted before the regular use of stents and the routine use of newer adjunctive pharmacotherapy, such as dual antiplatelet therapy and glycoprotein IIb/IIIa inhibitors, both of which have been associated with better outcomes in these patients. However, more contemporary data supporting a relationship between hospital primary angioplasty volume and outcomes are not available," the authors write.

Dharam J. Kumbhani, M.D., S.M., of the Cleveland Clinic, and colleagues examined the relationship between hospital primary angioplasty volume and patient outcomes and quality of care measures for 29,513 patients presenting with STEMI at 166 angioplasty-capable hospitals across the United States. Patients received angioplasty between July 2001 and December 2007. Hospitals were divided into groups based on their annual primary angioplasty volume (less than 36 procedures per year, 36-70 procedures per year, and greater than 70 procedures per year).

The authors included various measures in the analysis, including door-to-balloon (DTB; arrival at hospital till angioplasty) times, length of hospital stay, adherence with evidence-based quality of care measures and in-hospital mortality.

Among the findings, compared with low- and medium-volume centers, median (midpoint) DTB times were the lowest in high-volume centers (98 vs. 90 vs. 88 minutes, respectively). The proportion of patients meeting ACC/AHA guidelines of DTB time of 90 minutes or less was highest in the high-volume centers. Compared with high-volume hospitals, patients presenting to low-volume hospitals but not medium-volume hospitals were less likely to achieve a DTB time of 90 minutes or less.

Average (4.6 vs. 4.5 vs. 4.7 days) and median (3 days each) lengths of stay were similar between low-, medium-, and high-volume hospitals, respectively. High-volume centers were more likely than low-volume centers to follow evidence-based guidelines at discharge.

The researchers found that overall in-hospital mortality was 3.2 percent (incidence rate, 3.9 percent vs. 3.2 percent vs. 3.0 percent for low-, medium-, and high-volume centers, respectively), with analysis indicating no statistically significant difference between the three groups

and the adjusted mortality.

"Our results, especially with respect to in-hospital mortality, are contrary to other published registry studies in patients with STEMI. One of the main differences is that our study reflects more contemporary practice. Angioplasty techniques and adjunctive pharmacotherapy have seen substantial improvements over the past few years, and there has been a significant standardization of these practices nationwide. In addition, evidence-based therapies are much more widely adopted and practiced," the authors write.

The authors add that one of the reasons their findings are important is that procedural volume is increasingly being used as a surrogate for quality of care. "Some organizations have set standards for urban hospitals to meet before they would contract the care of their employees with them. These include minimum volumes for several procedures including angioplasty. Our study makes a case against such volume criteria."

More information: *JAMA*. 2009;302[20]:2207-2213.

Source: JAMA and Archives Journals ([news](#) : [web](#))

Citation: High vs. low hospital volume for angioplasty finds little difference in death rates (2009, November 24) retrieved 9 April 2024 from <https://medicalxpress.com/news/2009-11-high-hospital-volume-angioplasty-difference.html>

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