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Issue 3

SEPTEMBER 2007 IN THIS ISSUE

The study, "Estimating cost savings from regionalizing cardiac procedures using hospital discharge data" appeared in the June 2007 issue of *Cost Effectiveness and Resource Allocation*. The authors are: Vivian Ho, Ph.D., (Baker Institute, Rice University, and Department of Medicine, Baylor College of Medicine) and Laura A. Petersen, M.D., M.P.H., (Division of Health Policy and Quality, Houston VA Center for Quality of Care and Utilization Studies, and Department of Medicine, Baylor College of Medicine).



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James A. Baker III Institute for Public Policy-Baylor College of Medicine
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Can Centralization of Cardiac Procedures Yield Large Cost Savings?

"No," says Vivian Ho, James A. Baker III Institute Chair in Health Economics. "Economies of scale certainly exist in the provision of cardiac procedures. However, the cost savings that result from these economies are small in proportion to the overall costs of cardiac care, even in environments with more centralized care."

Ho and her colleagues analyzed data from 439 hospitals that performed open heart surgery and 491 hospitals that performed coronary angioplasty between the years 1988 and 2000. The dataset was obtained from the Agency for Healthcare Research and Quality, and it is designed to be representative of all hospitals in the United States. Hospitals that performed more of either cardiac procedure on an annual basis were found to have lower costs per patient. For example, a 10 percent increase in the number of open heart surgeries per year reduced costs per patient by 2.8 percent. Each 10 percent increase in a hospital's coronary angioplasty procedure volume reduced average costs per patient by 0.7 percentage points.

"We have two theories for why higher hospital procedure volume is associated with lower costs," says Ho. "First, we know from past studies that high-volume hospitals tend to achieve better patient outcomes. Therefore, the lower costs may be a result of fewer post-surgery complications such as bleeding and infection. Second, higher-volume hospitals can spread the fixed costs of care, such as the cost of maintaining operating rooms and intensive care units, over more patients, which lowers the cost per patient."

Nevertheless, centralizing cardiac care to the extent recommended by clinical experts will not yield significant cost savings. Current professional guidelines recommend that hospitals perform at least 450 open heart surgeries and at least 400 coronary angioplasties per year if they are to maintain proficiency

in these procedures. In the year 2000, 8.7 percent of open heart surgery patients and 13.4 percent of angioplasty patients received their care in hospitals that did not meet these volume criteria. The predicted cost savings from treating these patients in hospitals that met the minimum volume criteria would have been \$252.8 million for open heart surgery and \$63.1 million for angioplasty. Although these dollar amounts are high, they represent only 3.5 percent and 1.1 percent of the total costs of performing open heart surgery and angioplasty respectively in 2000.

Ho recommends that health care policymakers focus on the health benefits of centralizing complex cardiac procedures. "Many health care professionals are urging patients to seek out higher-volume providers, because volume is a signal of higher quality. Physicians at high-volume hospitals are also working with hospitals that lack advanced cardiac technology to quickly transfer heart attack patients, in order to save more lives," says Ho. "These efforts are highly worthwhile. Our analysis suggests that we should be cautious about centralizing procedures to the point where we see substantial cost reductions. If only a select number of very high-volume hospitals are permitted to treat patients, then hospitals with cardiac care could become dispersed too few and too far between. The cost savings from centralizing care must be carefully weighed against the value of lives saved from insuring that these technologies are accessible to those who need them."

Funding for the study was provided by the National Heart, Lung and Blood Institute.

Cost Effectiveness and Resource Allocation 2007, 5:7
doi:10.1186/1478-7547-5-7

Access to the full article is available on the Baker Institute Web site at http://bakerinstitute.org/Program_View.cfm?PID=3.

HEALTH POLICY research presents a summary of findings on current health policy issues. It is provided by the James A. Baker III Institute for Public Policy's Health Economics Program in collaboration with the Baylor College of Medicine's Health Policy and Quality Division.

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Volume 2, Issue 3, September 2007

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