

Study examines outcomes among patients treated in universal health care system

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Among hospitals in Ontario, Canada, those with higher levels of spending, which included higher intensity nursing and greater use of specialists and procedures, had an associated lower rate of deaths, hospital readmissions, and better quality of care for severely ill hospitalized patients, according to a study in the March 14 issue of *JAMA*.

Studies have investigated whether higher [health care spending](#) produces better patient outcomes and higher quality of care, with conflicting evidence in the United States and other countries. "The extent to which better spending produces higher-quality care and better [patient outcomes](#) in a universal [health care system](#) with selective access to medical technology is unknown," according to background information in the article.

Therese A. Stukel, Ph.D., of the Institute for Clinical Evaluative Sciences, Toronto, and colleagues examined whether acute care patients admitted to Canadian hospitals that treat patients more intensively (and at higher cost) have lower mortality and readmissions and higher quality of care. The study population was comprised of adults (older than age 18 years) in Ontario, Canada, with a first admission for [acute myocardial infarction](#) (AMI; heart attack) (n = 179,139), [congestive heart failure](#) (CHF) (n = 92,377), hip fracture (n = 90,046), or [colon cancer](#) (n = 26,195) during 1998-2008, with follow-up to 1 year. A hospital's spending intensity index was its end-of-life expenditure index, calculated as the average adjusted spending on hospital, emergency department

(ED), and physician services provided to decedents in their last year of life.

Adjusted spending intensity varied about 2-fold across hospitals, with the end-of-life expenditure index ranging from U.S. \$21,978 - \$44,955 and acute care expenditure index from U.S. \$19,281 - \$32,548 per capita per year. Higher-spending hospitals tended to be higher-volume teaching or [community hospitals](#); be located in urban areas; be associated with regional cancer centers, and have specialized services. Attending physicians in these hospitals were more likely to be specialists or to care for a higher volume of patients with that condition. Patients admitted to higher-spending hospitals had longer lengths of stay, were less likely to be admitted to an intensive care unit, and had more medical specialist visits during the index episode. Cardiac patients admitted to higher-spending hospitals were more likely to receive cardiac interventions and evidence-based discharge medications.

The researchers found that in the highest- vs. lowest-spending hospitals, respectively, the age- and sex-adjusted 30-day mortality rate was 12.7 percent vs. 12.8 percent for AMI, 10.2 percent vs. 12.4 percent for CHF, 7.7 percent vs. 9.7 percent for hip fracture, and 3.3 percent vs. 3.9 percent for colon cancer. "The age-and sex-adjusted 30-day major cardiac event rate was 17.4 percent vs. 18.7 percent for patients with AMI and 15.0 percent vs. 17.6 percent for those with CHF. The age- and sex-adjusted 30-day readmission rate was 23.1 percent vs. 25.8 percent for patients with [hip fracture](#) and 10.3 percent vs. 13.1 percent for those with colon cancer. In higher-spending hospitals, age- and sex-adjusted mortality and readmission rates were lower for all cohorts," the authors write. Results for 1-year mortality, readmissions, and major cardiac events were similar.

"Higher-spending hospitals had higher nursing staff ratios, and their patients received more inpatient medical specialist visits, interventional

(AMI cohort) and medical (AMI and CHF cohorts) cardiac therapies, preoperative specialty care (colon cancer cohort), and postdischarge collaborative care with a cardiologist and primary care physician (AMI and CHF cohorts)."

The authors add that to place the study in context, the United States has a 3- to 4-times higher per capita supply of specialized technology, such as computed tomography and magnetic resonance imaging scanners, but a similar supply of acute care beds and nurses. "Ontario 2001 population rates of cardiac testing and revascularization lagged behind corresponding 1992 U.S. rates and paralleled the supply of cardiologists and catheterization facilities. It is therefore possible that Canadian hospitals, with fewer specialized resources, selective access to medical technology, and global budgets, are using these resources more efficiently, especially during the inpatient episode for care-sensitive conditions. Canada's health care expenditures per capita are about 57 percent of those in the United States. At this spending level, there might still be a positive association between spending and outcomes."

"These results suggest that it is critical to understand not simply how much money is spent but whether it is spent on effective procedures and services," the researchers conclude.

Karen E. Joynt, M.D., M.P.H., and Ashish K. Jha, M.D., M.P.H., of the Harvard School of Public Health, Boston, write in an accompanying editorial that "the relationship between cost and quality is entirely dependent on whom and what are examined and how the money is spent."

"In regions of the United States where the delivery system is fragmented, the resulting care is, in aggregate, of poor quality and very high cost. At the systems level, high costs may represent spending on wasteful, inefficient, and duplicative services. Yet this appears less true for

individual clinicians and health care centers. For instance, many physicians and hospitals that are 'expensive' may in fact be spending money directly on patient care, with resultant better outcomes. This is not to suggest that there are not inefficiencies in [hospital](#) care. It simply suggests that when hospitals spend more, the expenditures often involve resources for nurses, specialists, and technology— all of which in aggregate improve the outcomes of acutely ill patients."

More information: *JAMA*. 2012;307[10]:1037-1045.
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