Selective use of drug-eluting stents saving millions of health care dollars

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Limiting use of drug-eluting stents to a selected group of patients is cost efficient and did not increase risk of death or heart attack within a year, according to a new analysis published in *Circulation: Journal of the American Heart Association*.

The selective use of drug-eluting stents, which began in 2007, is saving the U.S. healthcare system about $400 million annually, researchers said.

Stents are metal scaffolds inserted into an artery after angioplasty to prop it open. Drug-eluting stents are coated with medicine to help prevent blood clots. Compared to bare-metal stents, drug-eluting stents can reduce recurrent artery narrowing, research shows.

In this analysis, researchers compared the use of drug-eluting stents in 2004-06 to their use in 2007, using data from the Evaluation of Drug-Eluting Stents and Ischemic Events registry. This U.S.-based registry of percutaneous coronary interventions — also known as PCI or angioplasty — included 10,144 patients undergoing angioplasty at 55 medical centers.

The use of drug-eluting stents decreased from 92 percent in 2004-06 to 68 percent in 2007. At the same time, rates of death and heart attack remained virtually unchanged, while procedures to re-treat a blockage at the same coronary artery site increased slightly, from 4.1 percent to 5.1 percent.

"The bottom-line was that using drug-eluting stents in a relatively unselected way was only resulting in marginal improvement compared to more selective use," said David J. Cohen, M.D., M.Sc., senior author and director of cardiovascular research at Saint Luke's Mid America Heart and Vascular Institute in Kansas City, Mo.

In the earlier years of broader use, "we were putting a lot more drug-eluting stents in and we benefited very few additional patients," he said.

Researchers said several studies in late 2006 reported a higher risk of clotting, heart attacks and deaths in patients with drug-eluting stents and as a result, the Food and Drug Administration analyzed the problem. "These concerns led to a stair-step reduction in the use of drug-eluting stents, which had expanded rapidly since their introduction in 2003," said Cohen, also a professor of cardiovascular research at the University of Missouri-Kansas City. "Because of the safety concerns, we were able to verify what many of us had suspected — that using drug-eluting stents in virtually all patients is not that efficient."

While Cohen believes the FDA concern was appropriate at the time, newer evidence with longer follow-up and more data has indicated that drug-eluting stents are safe. "Our current understanding is there is no real excess risk," he said. Later risk of dangerous clots might be balanced by earlier benefits.

Researchers found that when use of drug-eluting stents declined in 2007, the stents were more likely to be placed in patients who were at highest risk of re-blockage — including younger patients with smaller vessels or with longer problem areas in the vessels being treated. "Because we were selectively targeting the highest-risk patients, we were able to use far fewer drug-eluting stents while preserving the clinical benefit," Cohen said.

Researchers estimated that when compared with less selective use of drug-eluting stents in 2004-2006, more selective use in 2007 reduced healthcare costs by an average of $401 per patient. Per-patient cost is magnified into hundreds of millions of dollars each year, given the nearly one million angioplasty procedures performed in the U.S., the authors said.

Policy makers should appreciate that more targeted use of drug-eluting stents produces comparable clinical outcomes at a lower cost, Cohen said. "There are ways that we can enhance this treatment pattern through healthcare policies, professional guidelines or appropriate use criteria."

The new analysis doesn't directly identify which patients are the best candidates for drug-eluting stents, although other studies are currently underway using similar patient registries to answer these related questions. The analysis was also limited to one year, although restenosis usually occurs within that timeframe.

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