Researchers find beta blockers reduce death risk but impair function after heart attack

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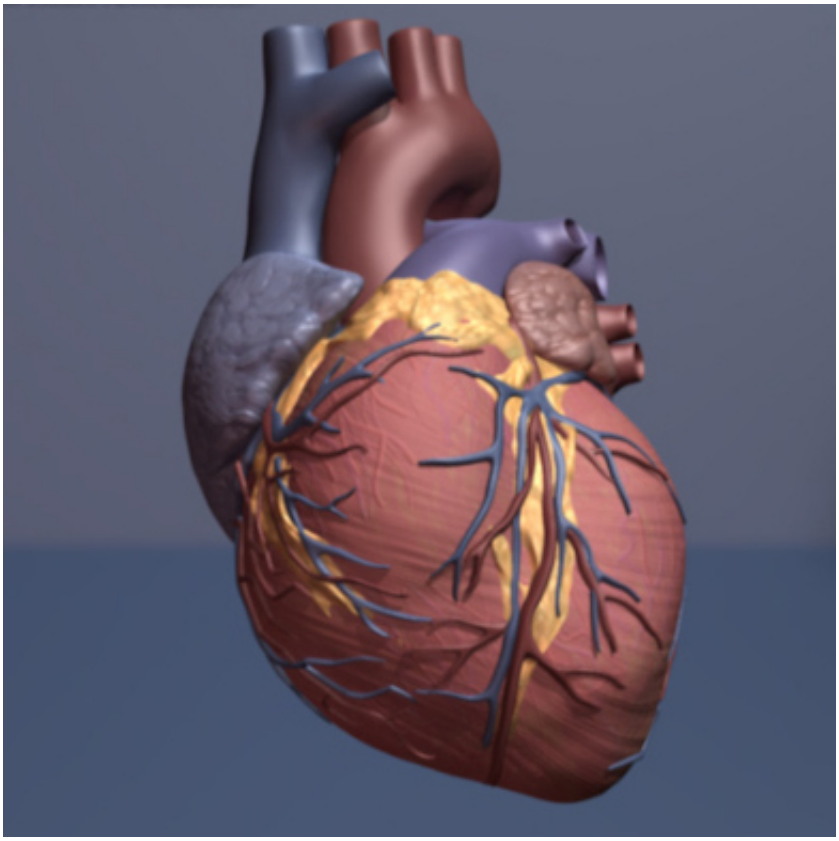

Human heart. Credit: copyright American Heart Association

Beta blockers are effective in reducing the risk of death in older nursing home residents after a heart attack, but may impair their ability to perform daily functions independently, according to a new study by researchers at UC San Francisco. They recommend that clinicians weigh

potential benefits with risks before prescribing these medications.

Their study, which appears Dec. 12, 2016, in *JAMA Internal Medicine*, assessed nearly 11,000 nursing home residents who had suffered a heart attack, half of whom received beta blocker drugs afterwards, and analyzed mortality, as well as hospital readmissions and quality of life. While the drugs reduced the death toll by about a quarter, they also were associated with up to a 34 percent increase in the risk of impaired function among residents with moderate or severe dementia.

"There is a lot of interest in the potential harms of drugs in older adults and how they affect one's quality of life by contributing to problems such as fatigue, dizziness and a general sense of being off," said senior author Michael Steinman, MD, professor of geriatrics at UCSF and the affiliated San Francisco VA Health Care System. "Our results present a paradigm for thinking about how the potential mortality benefits of drugs can be balanced by harms to quality of life in older adults and how to manage that risk-benefit tradeoff."

Beta blockers are widely prescribed to treat high blood pressure, congestive heart failure, abnormal heart rhythms and chest pain. Randomized trials have shown their use after a heart attack reduces mortality by 25-30 percent, and many observational studies have found a similar level of mortality reduction in adults 85 and older and in those with functional impairments such as difficulty in bathing, getting out of a chair and dressing themselves.

Despite the benefits of beta blockers across the age span, they are less often prescribed to older adults. There also are little data on potential adverse effects, such as dizziness with standing, fatigue and depression, in frail and highly vulnerable elders, which can negatively impact daily functioning and quality of life.

The dilemma of beta blocker benefits vs. harms is particularly important for the estimated 1.4 million Americans in nursing homes, who are at high risk of functional decline and often strongly value preserving their remaining functional independence.

In the *JAMA Internal Medicine* study, Steinman and his colleagues conducted an observational study of nursing home residents age 65 and older who were hospitalized for a heart attack between May 1, 2007, and March 31, 2010, using national data from the Minimum Data Set (MDS), the Online Survey Certification and Reporting System (OSCAR), and Medicare Part A and D (prescription drug benefit) claims. The MDS comprises assessments made on nearly all U.S. nursing home residents. OSCAR provides facility-level information on nursing home characteristics, staffing and quality indicators.

With an average patient age of 84, the study cohort included 5,496 new beta blocker users and an equal number of non-users. Qualifying patients had resided in a nursing home for at least 30 days prior to hospitalization, were not using a beta blocker for at least four months prior to hospitalization and returned to a nursing home after discharge.

Steinman and his team analyzed patients who used a beta blocker in the immediate post-hospital period in relation to functional decline. This decline was defined as a certain drop in a validated scale of independence in activities of daily living between the pre-hospital baseline and first available assessment following hospitalization, up to three months after discharge. Also measured were death and re-hospitalization.

Overall, beta blockers reduced 90-day mortality by 26 percent in all types of nursing home residents. But their use increased the odds of functional decline by 14 percent.

These harms to daily functioning were concentrated in nursing home residents who had substantial levels of cognitive or functional impairment at baseline. Specifically, beta blockers increased the odds of functional decline by 32-34 percent in patients with moderate or severe dementia, and in those who were highly dependent on others to do basic daily activities such as dressing and bathing.

In contrast, beta blockers had no impact on daily functioning among people who had normal cognition or mild dementia, and in people who were not highly dependent on others to perform basic daily activities.

For nursing home residents with extensive functional dependency or moderate to severe dementia, the decision to use beta blockers should depend on patient preferences, either expressed directly or through surrogate decision-makers, Steinman said. For cognitively or functionally impaired nursing home residents who are more concerned about functional decline than death, avoiding treatment may be preferred.

"Randomized controlled trials are often ideal for studying the effects of treatments like beta blockers," said author Andrew Zullo, PharmD, ScM, investigator in health services, policy and practice at Brown University School of Public Health. "But, conducting a trial would be difficult for nursing home residents with a myocardial infarction. In the absence of a trial, our rigorous observational study is critical for providing necessary evidence about the trade-off between longevity and functioning when starting a beta blocker medication."

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