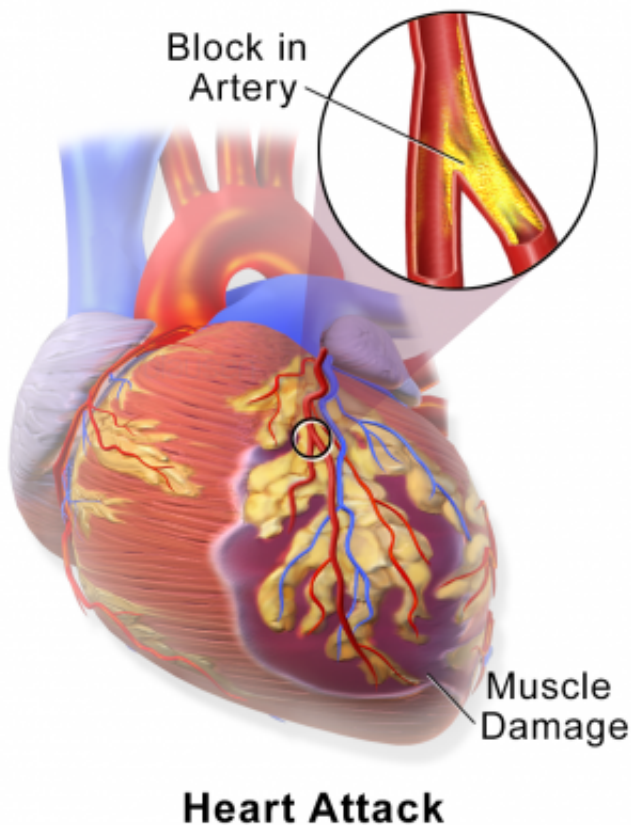


Low dose beta-blockers as effective as high dose after a heart attack

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Myocardial Infarction or Heart Attack. Credit: Blausen Medical Communications/Wikipedia/CC-A 3.0

In a surprising new finding, heart attack patients treated with a substantially lower dosage of beta-blockers than used in earlier clinical trials showing their effectiveness survived at the same rate, or even better, than patients on the higher doses used in those trials.

In fact, patients who received one-fourth of the original clinical trial dose had up to a 20 to 25 percent decrease in mortality compared to the full dose group.

About 90 percent of patients who have had a heart

attack currently receive beta-blockers, a class of drug commonly prescribed to improve survival and prevent future heart attacks. Beta-blockers block the effects of adrenaline on the heart, reduce irregular heartbeat (arrhythmia) and help prevent heart failure.

No one was more surprised at the results than lead investigator Dr. Jeffrey Goldberger. He launched the study when he discovered [heart attack patients](#) were being treated with much lower doses of beta-blockers than were used in [clinical trials](#).

"I thought that was terrible quality of care," said Goldberger, a professor of medicine in cardiology at Northwestern University Feinberg School of Medicine and a cardiologist at Northwestern Memorial Hospital. "We set out on a mission to show if you treat patients with the doses that were used in the clinical trials, they will do better. We expected to see patients treated with the lower doses to have worse survival. We were shocked to discover they survived just as well, and possibly even better."

New research should be conducted to determine the most appropriate beta-blocker dose for individual patients to get the optimal benefit, said Goldberger, also the director of the program in cardiac arrhythmias at the Center for Cardiovascular Innovation at Feinberg. The earlier clinical trials did not assess the effects of different doses.

The study will be published Sept. 21 in the *Journal of the American College of Cardiology*.

Patients are treated with lower doses for a variety of reasons. There may be concern about possible side effects that may include fatigue, sexual dysfunction and depression. In addition, when patients are started on conservative, low doses in the hospital after a heart attack, they return home so quickly, there is little time to adjust the dosage,

Goldberger said.

The study examined data in a multicenter registry on 6,682 patients who had a heart attack. About 90 percent were receiving beta-blockers. All the patients on beta-blockers survived longer than those who did not receive the drugs. The raw, unadjusted data showed that of the people who received the full dose, 14.7 percent died within two years; of those receiving the half dose, 12.9 percent died; for the quarter dose, 9.5 percent died and for the one-eighth dose, 11.5 percent died.

OBTAIN (Outcomes of Beta-Blocker Therapy After Myocardial Infarction) is an observational multicenter registry in which beta-blocker dosing information was collected in patients with an [acute heart attack](#) at participating centers to assess the effect of dose on survival.

"There is probably not one right dose for every single patient," Goldberger said. "It doesn't make sense that the same dose will work for an 80-year-old frail man who had a small heart attack as a burly 40-year-old man with a huge heart attack."

"We now need to figure out how to dose it in individual [patients](#)," Goldberger said. "That's something no one has considered in the decades that we have been using this medication. This huge gap in knowledge has been completely unexplored. Since this is medicine we use in every single [heart attack](#) patient, we ought to figure out how to use it properly."

More information: Effect of Beta-Blocker Dose on Survival After Acute Myocardial Infarction, *Journal of the American College of Cardiology*, 2015.

Provided by Northwestern University

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