



Sometimes Less Is More: Large Study Confirms Reducing Beta-Blocker Doses Improves Survival for Heart Attack Patients

An international study, led by University of Miami Miller School of Medicine cardiologist Jeffrey Goldberger, M.D., has shown that beta-blockers, which reduce blood pressure and heart rate, improve survival for patients after a myocardial infarction (MI). In addition, smaller doses – 25% to 50% of those shown effective in clinical trials – provided the best protection. The study was published in *The American Journal of Medicine*.



Jeffrey Goldberger, M.D.

“Beta-blockers have been around for about 50 years and were mostly studied in the '70s and '80s,” said Dr. Goldberger, a professor of medicine. “At the time, people thought, ‘If a small beta-blocker dose is good, then more is going to be even better.’ But we’re seeing now that patients actually respond better to the lower doses.”

A collaboration with researchers in Denmark, this retrospective study examined outcomes from more than 65,000 MI patients in the Danish National Patient Registry. This comprehensive data was cross-checked against the Danish



National Database of Reimbursed Prescriptions, which confirmed that the patients were actually taking the beta-blockers they had been prescribed.

The team found that beta-blockers reduced mortality, regardless of dosage. However, patients who received 25% to 50% of the recommended dose, within a year of their MIs, had the best results. Patients who received no beta-blockers had the worst outcomes.

These findings are similar to results from the OBTAIN study, also led by Dr. Goldberger, which showed that patients who received 25% of the targeted dose had the best outcomes.

Lower doses could be a great benefit for MI patients. Because beta-blockers slow the heart, these drugs can also interfere with the heart's normal rhythm, and there is risk that a high dose could stop it from beating. High doses may also cause side effects, such as fatigue.

"The side effects can be a little insidious," said Dr. Goldberger. "We're concerned that, because the higher doses could make people more fatigued, they could be less likely to exercise. Obviously, physical activity is a good thing for heart patients, and we want to encourage it whenever appropriate."

Despite their long pedigree, there is still a lot to be learned about beta-blockers. In their early days, they were used to fight ischemia, inadequate blood flow to the heart. However, in the 2020s, most heart patients receive stents and other interventions to clear blockages and restore flow.

"Theoretically, the beneficial effects of beta-blockers



fighting ischemia should be almost completely gone,” said Dr. Goldberger. “So why is there still benefit?”

He and colleagues believe the drugs may prevent heart rhythm disorders called arrhythmias, as well as reducing heart damage after an attack. They plan to investigate further.

In addition, researchers would like a better understanding of how long patients should be taking beta-blockers after a heart attack. Current guidelines barely touch on that question, but Dr. Goldberger is hoping to find a more definitive answer.

“We’re not good at removing unnecessary treatments,” said Dr. Goldberger. “It often seems risky. But if a cardiac patient has recovered, and they’re already on a statin or aspirin or Plavix, and we could take away a medication, that could be really beneficial.”

Another issue is dosage. The earlier OBTAIN study found that the optimal dose was 25% of recommendations. The current study showed 25% to 50%. Why is there a difference, and how should this information be applied to individual patients?

“There may be differences in each person’s response to the treatment, meaning optimum doses could vary among patients,” said Dr. Goldberger. “Right now, we don’t have the tools to decide, and that’s something we have to figure out.”

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