

# Digoxin reduces hospital admissions in older patients with chronic heart failure

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Digoxin significantly reduces the likelihood of hospital admission due to all causes among ambulatory older patients with chronic heart failure and reduced ejection fraction (HFrEF), according to research presented today at the American College of Cardiology's 62nd Annual Scientific Session.

Researchers reviewed [patient outcomes](#) from 1995 in the Digitalis Investigation Group (DIG) trial of 6,800 patients with HFrEF—a condition in which the heart is too weak to pump and patients suffer from [breathlessness](#) and fatigue. Patients with HFrEF are at high risk for hospitalization and rehospitalization. The objective of the current study was to examine the effect of digoxin on 30-day all-cause [hospital admission](#) among these patients, aged 21 to 94 years, half of whom were age 65 or older and would be Medicare eligible.

Data show digoxin was associated with a 34 percent reduction in 30-day all-cause hospital admission. Digoxin is part of a group of drugs called positive inotropes that act to strengthen the [heart muscle's contractions](#), thereby making the heart pump better. Unlike other positive inotropic drugs, digoxin does not seem to increase mortality and has been found to block neurohormones in low doses. Experts say this is important as most drugs that reduce mortality and hospitalization in HFrEF also block neurohormones. This study found that treatment with digoxin did not increase all-cause mortality during the first 30 days of follow-up.

"We have an approved drug, which is inexpensive, generally well-

tolerated and known to reduce the long-term risk of hospitalization due to heart failure, that has now been demonstrated to reduce hospital admissions due to all causes within the first 30 days of use," said Ali Ahmed, MD, MPH, professor of medicine and epidemiology in the UAB Divisions of [Geriatrics](#) and Cardiology and Birmingham VA Medical Center, and the study's lead investigator.

While this study assessed rates of hospital admission in older ambulatory [chronic heart failure](#) patients, the researchers believe that these findings suggest that digoxin may also help reduce readmission of older, acute heart failure patients recently discharged from a hospital.

"Because the effect of digoxin was more pronounced in high-risk sicker subgroups, such as those with New York Heart Association class III or IV symptoms or an enlarged heart, the kind of patients who were at a higher risk of hospital admission, and because of digoxin's favorable influence on [heart pump](#) and blood flow, it may be expected that digoxin would also be effective in patients who were recently hospitalized for acute heart failure as they have very high risk for re-admission," Dr. Ahmed said.

This could be significant as earlier studies have found an estimated 27 percent of Medicare beneficiaries with heart failure return to the hospital within 30 days of discharge. All told, nearly one out of three of these readmissions is related to heart failure rather than other reasons.

In addition to improving care and outcomes, the use of digoxin may also help hospitals avoid financial penalties for higher than usual rates of readmission. According to the Centers for Medicare and Medicaid Services, unplanned hospital readmissions alone cost the Medicare program an estimated \$17 billion annually. In an effort to reduce Medicare costs under the Patient Protection and Affordable Care Act, Medicare now penalizes hospitals for higher-than-expected 30-day all-

cause readmissions for patients with heart failure, heart attack and pneumonia, regardless of whether readmission is related to the condition causing the initial hospitalization.

"Hospitalizations account for about a quarter of the nearly \$550 billion annual Medicare spending," said Dr. Ahmed. "Re-hospitalization costs about a sixth of that spending. We all knew that hospital readmission was a big problem for the U.S. health care system, but we only started paying serious attention to it after the new health care reform law made provision for financial penalties."

He adds that each time someone with heart failure goes to the hospital it also raises their risk of dying or having other poor outcomes. Because the present study draws on data from about 20 years ago—before the era of beta blockers and aldosterone antagonists—researchers say further research is needed to reevaluate digoxin among contemporary heart failure patients and to assess its use before [hospital](#) discharge in the acute heart failure setting.

"If we can replicate these results in hospitalized patients with acute heart failure and find that digoxin also reduces 30-day all-cause readmission as it did 30-day all-cause admission, then it provides a very simple, low-cost tool to reduce this burden for the patients and for our health care system," Dr. Ahmed said.

He estimates that one-third of heart failure [patients](#) receive digoxin today compared to two-thirds before the DIG trial was conducted, which he says is in part based on the fact that other heart failure medications such as beta blockers and aldosterone antagonists were subsequently shown to reduce both mortality and hospitalizations, and thus given greater priority. The Food and Drug Administration approved oral digoxin for the treatment of mild to moderate [heart failure](#) in 1997 following the DIG trial.

**More information:** This study will be simultaneously published online in the *American Journal of Medicine* and will appear in the August 2013 print edition.

Dr. Ahmed will present the study "Digoxin Reduces 30-Day All-Cause Hospital Admission in Ambulatory Older Patients with Chronic Heart Failure and Reduced Ejection Fraction" on Monday, March 11 at 11:00 a.m., in Moscone Center, South, Esplanade Ballroom.

Provided by American College of Cardiology

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