

Researchers devise safer way to dose life-saving heart drug

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Researchers at the University of Illinois at Chicago have taken the dangerous guesswork out of dosing a lifesaving medication for congestive heart failure.

A new formula developed in the UIC College of Pharmacy will help physicians prescribe the proper amount of the powerful heart drug digoxin. The medication helps an injured or weakened heart to work efficiently, strengthening the force of the heart muscle's contractions and helping to restore a normal, steady heart rhythm.

Digoxin can be difficult to dose, and there is a small cushion between a beneficial and a deadly level of the drug, said Jerry Bauman, interim dean of the UIC College of Pharmacy. Bauman was the lead investigator of a study that was recently published in the Archives of Internal Medicine.

"The therapeutic range for digoxin in heart failure has recently changed to become lower and narrower, and the new range is associated with improved mortality," Bauman said. "However, dosing methods have not been modified to reflect this change. In the study, we sought to develop a new method to determine the initial dose of digoxin in patients with heart failure."

Medical records of adult patients who had a steady state of digoxin concentration in their bloodstream were reviewed for six months. An equation was derived using the patients' blood digoxin level, digoxin

dose, kidney function, and ideal body weight.

The new formula was then compared to two older methods frequently used to estimate the initial dose of digoxin, and it was found to be superior. Using the new method, investigators constructed a simple nomogram to help clinicians quickly choose the right dose.

"Because the new therapeutic window of digoxin is associated with improved outcomes, more intensive dosage refinement should be considered," Bauman said. "To this end, we offer new dosing recommendations and a nomogram for determining the initial dose of digoxin in patients with heart failure.

"This is a new way to dose an old drug."

Source: University of Illinois at Chicago

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