

## **Association Between Elevated Blood Glucose and Outcome in Acute Heart Failure: Results From an International Observational Cohort.**

### **Abstract**

#### **OBJECTIVE:**

The aim of this analysis was to assess the association between elevated blood glucose level and mortality in acute heart failure (AHF).

#### **BACKGROUND:**

Elevated blood glucose has been reported to be prognostically meaningful in patients with cardiac diagnoses, such as coronary artery disease. The short-term prognostic impact of hyperglycemia in AHF is unknown, however.

#### **METHODS:**

In a multinational cohort of AHF, we examined the ability of blood glucose concentrations at presentation to predict all-cause mortality by 30 days. Fully adjusted models for prognosis included a previous diagnosis of diabetes mellitus as a covariate.

#### **RESULTS:**

A total of 6,212 subjects with AHF (mean age, 72 years; 52.5% male) were studied; the median blood glucose concentration on arrival at the hospital was 7.5 mmol/l (135 mg/dl), and 41% had a previous diagnosis of diabetes mellitus (DM). After 30 days, 618 patients (10%) had died. Compared with survivors, decedents had significantly higher median blood glucose concentrations (8.9 mmol/l vs. 7.4 mmol/l;  $p < 0.0001$ ). In the fully adjusted model, an elevated blood glucose level was an independent predictor of 30-day mortality in AHF (odds ratio: 2.19; 95% confidence interval: 1.69 to 2.83;  $p < 0.001$ ). The risk associated with an elevated blood glucose level appeared consistent across all subgroups of patients, including patients with preserved (hazard ratio: 5.41; 95% confidence interval: 2.44 to 12.0;  $p < 0.0001$ ) and impaired systolic function (hazard ratio: 2.37; 95% confidence interval: 1.57 to 3.59;  $p < 0.0001$ ). Furthermore, in reclassification analyses, elevated blood glucose added significant prognostic information to clinical parameters alone (4.4% net reclassification improvement;  $p = 0.01$ ).

#### **CONCLUSIONS:**

Among patients with AHF, blood glucose concentrations at presentation are powerfully prognostic for 30-day mortality, independent of a diagnosis of diabetes mellitus or other clinical variables. Because blood glucose is easily modifiable, it may represent a valid target for therapeutic intervention.

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