

# Biomarkers help tailor diuretic use in acute heart failure patients

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Adrenomedullin activity predicts which acute heart failure patients are at the greatest risk of death without diuretic treatment post-discharge, according to late breaking research presented today at Heart Failure 2019, a scientific congress of the European Society of Cardiology (ESC).

"Therapy at discharge often remains unchanged for several weeks and even months in acute [heart failure patients](#)," said first author Dr. Nikola Kozhuharov, of the University Hospital Basel, Switzerland. "Our study shows that not re-evaluating the need for diuretics in this critical time period has detrimental consequences for patients."

Acute heart failure is the most common cause of hospitalisation in people over 50 and up to 30% die in the year after discharge. "This is in part due to the challenge of predicting which patients are at the greatest risk of death and the subsequent uncertainty in defining the appropriate intensity of in-hospital and immediate post-discharge management," said Dr. Kozhuharov.

The study aimed to find biomarkers that predict risk levels in acute heart failure patients discharged from hospital and who would benefit from heart failure drugs. The drugs were diuretics, angiotensin-converting enzyme inhibitors or [angiotensin receptor blockers](#), [beta blockers](#), and aldosterone antagonists.

For the biomarkers, the study used two components of adrenomedullin, a peptide hormone that is a vasodilator, meaning it dilates (opens) blood vessels. Adrenomedullin was selected after pilot studies suggested it can quantify dysfunction of small blood vessels and the associated mortality risk. In addition, activity of adrenomedullin reflects residual congestion in acute heart failure patients and the researchers hypothesised that this could be used to guide diuretic therapy at discharge.

The two components used to quantify the activity of adrenomedullin were midregional proadrenomedullin (MR-proADM), a stable precursor, and the biologically active form of adrenomedullin (bio-ADM).

The study enrolled 1,886 acute heart failure patients presenting with acute breathlessness to emergency departments of university hospitals in

the UK, France, and Switzerland. Plasma concentrations of MR-proADM and bio-ADM were assessed within 12 hours of presentation and at discharge from an acute ward.

A total of 514 patients (27%) died during the 365-day follow-up. Patients with bio-ADM levels above the median had significantly lower survival if they were not receiving diuretics at discharge. A similar result was found for MR-proADM. Both associations remained significant after adjusting for age and plasma creatinine concentration at discharge. Associations with the other drugs were not significant after correction for multiple testing.

Patients with bio-ADM plasma concentrations above the median had an 87% increased risk of death during follow-up compared to those with levels below the median. MR-proADM was even more accurate than bio-ADM for predicting death and the combined risk of death and/or acute [heart failure](#) rehospitalisation.

Dr. Kozhuharov said: "The observation that patients with high bio-ADM have much higher mortality rates if not treated with diuretics at discharge has immediate clinical consequences. Reasons for stopping diuretics during hospitalisation included worsening renal function and low blood pressure. Our study shows that patients should be reassessed for contraindications before discharge so that diuretics can be restarted if appropriate, particularly if they have elevated bio-ADM."

**More information:** The abstract 'Activity of the Adrenomedullin system to personalize post-discharge treatment in acute heart failure' will be presented during the session Late breaking trial I - Acute heart failure on Saturday 25 May at 08:30 to 10:00 EEST in the Lambrakis lecture room. [spo.escardio.org/SessionDetail...essId=0&searchQuery=%2fdefault.aspx%3feevtid%3d1439%26days%3d%26topics%3d%26types%3d%26rooms%3d%26freetext%3dlate%2bbreaking%26sort%3d1%](http://spo.escardio.org/SessionDetail...essId=0&searchQuery=%2fdefault.aspx%3feevtid%3d1439%26days%3d%26topics%3d%26types%3d%26rooms%3d%26freetext%3dlate%2bbreaking%26sort%3d1%26)

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