Remote monitoring reduces heart failure hospitalizations and improves quality of life, shows study

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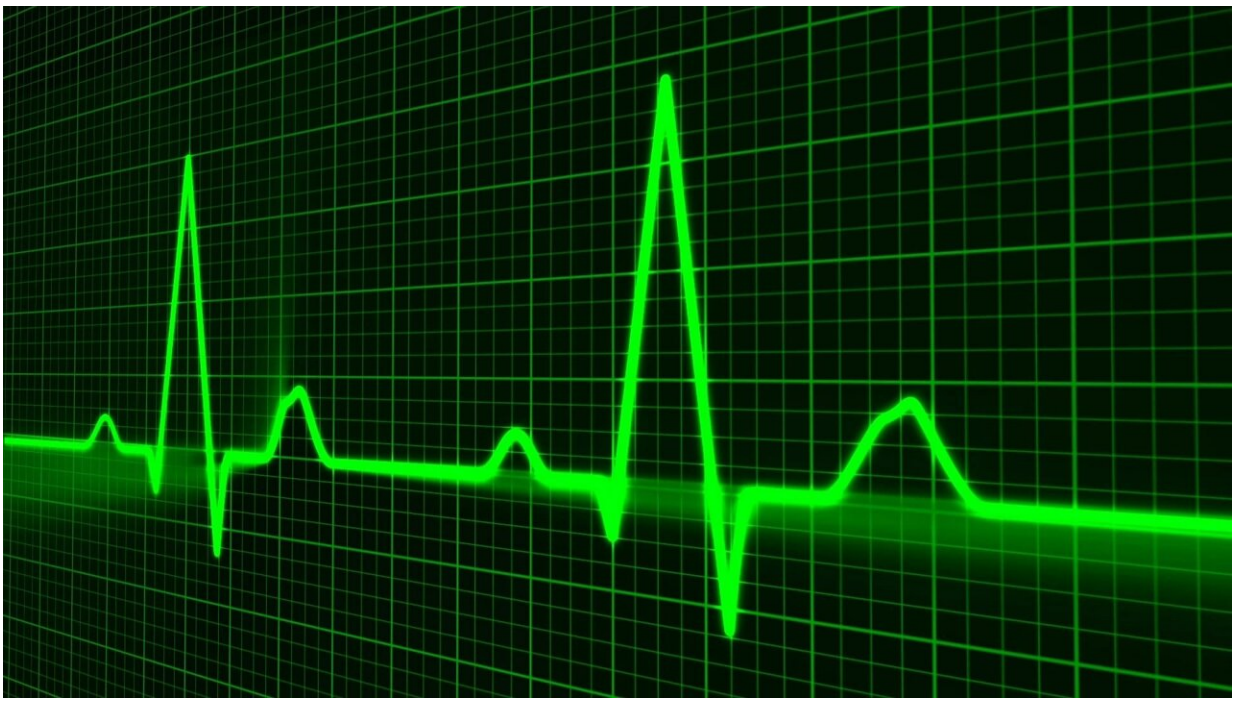

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The first investigator-initiated study of remote pulmonary artery pressure monitoring has found that it improves quality of life and reduces heart failure hospitalizations in patients with chronic heart failure. The findings are presented today in a late breaking science

session at Heart Failure 2023, a scientific congress of the European Society of Cardiology (ESC), and published in *The Lancet*.

Principal investigator Dr. Jasper Brugts of Erasmus University Medical Centre, Rotterdam, the Netherlands said, "Pulmonary artery pressure is a marker of hemodynamic congestion, which occurs several weeks before symptoms develop, providing a window of opportunity to prevent overt congestion and subsequent hospitalization. In MONITOR-HF, physicians set a hemodynamic monitoring target which enabled them to provide tailored therapies such as diuretics and other medications."

Several questions remained after two previous trials of pulmonary artery pressure monitoring in patients with chronic heart failure in North America. The CHAMPION trial, published in 2011, showed a positive result in patients with New York Heart Association (NYHA) class III heart failure, an average ejection fraction of 30%, a previous heart failure hospitalization, and relatively low levels of background guideline-directed medical therapy.

GUIDE-HF, published in 2021, had a neutral result in the overall analysis which may have been related to enrolling a broader and lower risk population, or modification by COVID-19. A pre-specified subgroup analysis limited to follow-up preceding the COVID-19 pandemic yielded a positive result.

Heart failure guidelines state that pulmonary artery pressure monitoring has uncertain value but may be considered (level IIb); uptake in Europe is therefore marginal. European data were needed comparing pulmonary artery pressure monitoring to standard of care with high levels of background medical therapy. MONITOR-HF tested the effect of hemodynamic monitoring on quality of life and heart failure hospitalizations against contemporary standard of care in the Netherlands.

The trial enrolled 348 patients from 25 centers in the Netherlands. Patients had chronic heart failure, any ejection fraction, NYHA class III symptoms and a previous heart failure hospitalization or urgent visit requiring intravenous diuretics in the past 12 months. The average age was 69 years, 25% were women, and the mean ejection fraction was 30%.

Participants were randomly allocated 1:1 to pulmonary artery pressure monitoring on top of usual care or usual care alone (including access to regular lab measurements such as natriuretic peptides and yearly echocardiography). All patients were followed up for at least 12 months. The average duration of follow up was 18 months and the maximum was 48 months.

Patients in the monitoring group had a small, wireless, battery-free sensor implanted into the pulmonary artery via the femoral vein. A pressure measurement was taken every morning in about 18 seconds and readings were sent to a secure website. Physicians accessed the data and set a target pressure for each patient which would indicate the need to review drug treatment.

The primary endpoint was the change in quality of life measured by the Kansas City Cardiomyopathy Questionnaire (KCCQ) at 12 months and the secondary endpoint was the number of heart failure hospitalizations and/or urgent visits requiring intravenous diuretics during follow-up.

At 12 months, the average change in the KCCQ overall summary score was +7 points in the monitoring group and -0.2 points in the usual care group, yielding a mean difference between groups of 7.1 points in favor of monitoring (p=0.013). During a mean follow-up of 1.8 years there were 117 heart failure hospitalizations or urgent visits in the monitoring group and 212 in the usual care group, which represents a 44% reduction with monitoring (hazard ratio 0.56; 95% confidence interval 0.38–0.84;

p40%. The procedure was relatively safe and reliable with a 97.7% freedom from device or system related complications and 98.8% freedom from sensor failure during follow-up.

Dr. Brugts said, "More than 85% of participants with heart failure with reduced ejection fraction were on beta-blockers, renin-angiotensin system inhibitors and mineralocorticoid receptor antagonists."

"The uptake of angiotensin receptor-neprilysin inhibitors (ARNI) and sodium-glucose co-transporter-2 inhibitors (SGLT2) was high and increased during the course of follow-up, with 60% of controls on ARNI and 30% on SGLT2 inhibitors at 12 months. This level of treatment means that any additional benefit of pulmonary artery pressure monitoring was really on top of appropriate levels of guideline directed medical therapy."

He concluded, "Pulmonary artery pressure monitoring showed a substantial and significant effect on quality of life and heart failure hospitalizations which is highly relevant for patients, physicians and hospitals. The principle of management by exception ensures that physicians only need to respond to patients outside their threshold window, making this an efficient method with a low time requirement."

More information: *The Lancet* (2023).

Provided by European Society of Cardiology