

New research findings may lead to improved care for patients with heart valve disease

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As people get older, the heart can start to wear out. One of the more common manifestations of this kind of age-related heart condition is aortic valve stenosis, a progressive stiffening of the aortic valve that renders it unable to fully open, compromising blood flow in and out of the organ.

Most patients eventually need surgical intervention to replace the affected [valve](#), either with [open heart surgery](#) or minimally invasive catheter-based [valve replacement](#).

A new study led by Harvard Medical School investigators based at Massachusetts General Hospital may help improve tests that determine when patients with heart valve disease need surgery. The results are published in the *Journal of the American College of Cardiology*.

"It is vital to know when the right time to perform valve replacement is because too early and you subject the patient to the risks of a procedure or operation unnecessarily, too late and the patient is at risk of death from the valve disease before the replacement occurs," said lead study author Mayooran Namasivayam, HMS research fellow in medicine and advanced echocardiography at Mass General.

The current guidelines for determining when it's time for replacement involves calculating the aortic valve area, which is done by measuring blood flow through the valve using cardiac ultrasound imaging. A valve area of less than 1 cm^2 is considered to be severe aortic stenosis.

Under the supervision of senior author Judy Hung, HMS professor of medicine and director of the Echocardiography Laboratory at Mass General, Namasivayam and colleagues looked to see if [blood flow](#) rate impacts the prognostic value of aortic valve area measurements in patients with aortic stenosis. Flow rate is defined as the ratio of a volume of blood to the time over which that volume is expelled from the heart.

When the team analyzed information on 1,131 patients from Mass General who had aortic stenosis, they found that if the aortic valve area was measured below the 1 cm^2 guideline threshold at a [flow rate](#) below 210 mL/s, then the aortic valve area did not accurately predict death.

If, on the other hand, the aortic valve area was less than 1 cm^2 at a flow rate greater than 210 mL/s, then the aortic valve area was highly prognostic for death.

"That is, not all aortic valve areas less than 1 cm^2 are the same: the flow rate at which the aortic valve area was measured must be known," said Namasivayam. When the investigators looked at information on 939 patients from a hospital in Quebec, they observed similar results.

"We believe that these findings provide new and important data, improving accuracy on how we diagnose aortic stenosis" Namasivayam said. "The results are highly relevant to all practitioners evaluating and managing aortic stenosis, from primary care physicians to cardiologists and cardiac surgeons."

More information: Mayooran Namasivayam et al. Transvalvular Flow Rate Determines Prognostic Value of Aortic Valve Area in Aortic Stenosis, *Journal of the American College of Cardiology* (2020). [DOI: 10.1016/j.jacc.2020.02.046](https://doi.org/10.1016/j.jacc.2020.02.046)

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