

Study finds sex-based disparities in outcomes after cardiac surgery

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New research suggests that women who develop postoperative atrial fibrillation (poAF) after cardiac surgery are at greater risk of death than men. A study led by Mass General Brigham researchers found that women may have protective factors against the development of poAF,

but once it develops, they may be more vulnerable to its associated long-term morbidities.

The researchers suggest that more vigilant monitoring and long-term follow-up care for women who develop poAF is needed. Their results are [published](#) in *JAMA Network Open*.

"Our goal is to understand the protective factors that may reduce the incidence of postoperative atrial fibrillation in women, as well as the reasons for their heightened vulnerability once this complication occurs, all to improve patient outcomes and tailor care strategies," said lead author Sergey Karamnov, MD, a cardiothoracic anesthesiologist in the Department of Anesthesiology, Perioperative and Pain Medicine at Brigham and Women's Hospital.

"The sex-based disparities we uncover likely represent a larger issue that health care systems must work to address, and the first step in doing so is to look for these sex-based differences in outcomes."

It is already known that [female patients](#) face higher risks of complications and mortality following [heart surgery](#). However, the impact of sex on poAF, the most common complication after [cardiac surgery](#) associated with increased long-term mortality, has up until this point remained unclear.

The new study works to close this gap by investigating two key questions. First, the researchers asked whether sex influences the development of poAF. Second, they set out to determine whether long-term mortality of associated poAF differs between women and men.

Study participants included 21,568 adult patients, all of whom underwent [open heart surgery](#) at two Mass General Brigham hospitals—Massachusetts General Hospital (MGH) and Brigham and

Women's Hospital (BWH). Data were collected from hospital records covering surgeries from October 1, 2016 until January 1, 2022, with mortality follow-up through December 2022.

After multivariate analysis, women were found to have a lower risk of poAF compared to men. However, over the follow-up period, women with poAF had a significantly higher adjusted risk of mortality than men, 31 vs. 17% respectively.

There were some study limitations. First, the patient sample was limited to one geographical region. Second, results are based only on patients who underwent certain open-heart procedures. Third, most patients were 50–90 years of age and were overwhelmingly white (92%).

Lastly, while the research team controlled for a comprehensive list of over 20 covariates, it's possible that some sex-related variables not present in the dataset and unaccounted for could explain the observed differences.

Karamnov believes the results highlight the importance of including diverse study participants, particularly in terms of sex-based diversity, in [clinical research](#).

One plausible explanation for the lower poAF incidence in women is the beneficial effect that estrogen has in reducing inflammation and mitigating endothelial dysfunction. Also, potential relationships between poAF and social determinants of health may help to further explain the links among sex, poAF, and long-term [mortality](#).

"Future studies could help us understand the exact mechanisms responsible for the sex-based disparities we observed," said Karamnov. "Our study highlights the importance of taking a [holistic approach](#) to [patient care](#) and taking into account the diversity of backgrounds of

patients undergoing cardiac surgery."

More information: The Association of Sex, Atrial Fibrillation, and Long-Term Mortality After Cardiac Surgery, *JAMA Network Open* (2024). DOI: [10.1001/jamanetworkopen.2024.26865](https://doi.org/10.1001/jamanetworkopen.2024.26865).
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