

# Researchers say patient gender may influence nuclear stress test referrals

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New research from cardiologists at Rhode Island and The Miriam hospitals suggests a possible gender disparity in how patients are referred for nuclear stress tests, an imaging technique that measures blood flow to the heart muscle both at rest and during periods of stress, such as exercise.

According to the study, published online by the *Journal of Nuclear Cardiology*, nuclear stress tests ordered for [women](#) are less likely to meet national "appropriate use criteria" than they are for men. Created by the American College of Cardiology Foundation, appropriate use criteria are designed to help physicians determine which patients would benefit from testing and when such imaging might be unnecessary.

Cardiovascular disease is the number one killer of both men and women in the United States. Atypical [heart attack](#) symptoms, such as arm pain or [nausea](#), are more common in women than in men, which is one reason why women have historically received fewer stress tests and cardiac catheterizations even when they presented with the same symptoms as men, such as crushing chest pain.

Lead author Aarti Gupta, M.D., a cardiology fellow at Rhode Island Hospital, notes that in the last decade or so, this has created a push for more testing of women when they present with any symptoms that could indicate [cardiovascular disease](#).

"However, our study shows that of the women who do undergo nuclear

stress testing, a number of those studies are classified as having been done inappropriately compared to men," said Gupta. "So that means in our fear of missing [heart disease](#), we are testing too many women indiscriminately."

Known medically as myocardial perfusion imaging, nuclear stress tests are able to detect more accurate information about [coronary disease](#), a condition that develops when the coronary arteries become damaged or diseased. However, the authors point out there are both positive and negative aspects of nuclear stress imaging, including the expense of the test, the time it takes to conduct the test and patients' exposure to radiation.

"Women whose tests are categorized as inappropriate are exposed to all of these risks without the benefit, which is why more research and data are needed to help identify women who are at higher risk and are good candidates for cardiac imaging," said senior author Peter Tilkemeier, M.D., interim director of the division of cardiology at Rhode Island and The Miriam hospitals and director of nuclear cardiology at The Miriam Hospital.

Researchers analyzed 314 nuclear stress imaging studies to determine whether they followed appropriate use criteria. The vast majority of these studies (96 percent) were ordered for chest pain. Overall, 263 studies appeared to follow appropriate use criteria, 34 were deemed inappropriate and 17 were uncertain, meaning it was unclear based on current data if that study was appropriate. Women represented 68 percent of the inappropriate studies, while inappropriate studies were conducted in only 32 percent of men. Uncertain studies were also more likely to be ordered in women than in men (82 percent compared to 18 percent).

The study also suggests that the medical specialty of the ordering

physician can play a role in whether nuclear stress tests are ordered appropriately. Based on study data, primary care physicians ordered the most nuclear stress tests overall, but were less likely to order them appropriately compared to cardiologists (74 percent vs. 92 percent).

[Cardiologists](#) were found to order nuclear [stress tests](#) in women appropriately 86 percent of the time, compared to 71 percent of primary care physicians. In both ordering groups, men had more appropriate tests than women.

"These findings indicate a continuing need for education among primary care providers for appropriate test ordering, particularly for women," said Gupta.

In an accompanying editorial by Rupa Mehta, M.D., from the University of Chicago Medical Center, and Kim Allan Williams, M.D., from the Wayne State University School of Medicine, the study suggests that physicians have a lower "threshold" to order a stress test in women even when it does not fall into an appropriate ordering classification. "This may reflect an understanding and appreciation for the atypical presentation of female cardiac patients," they write.

Provided by Lifespan

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