

Improved Diagnostic Work-up of Patients Presenting to the Cardiologist with Symptoms of Suspected Obstructive Coronary Artery Disease: Gender Specific Results From the IMPACT (Investigation of a Molecular Personalized Coronary Gene Expression Test on Cardiology Practice Pattern) Trial

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Background: Better methods are needed to more accurately evaluate patients for likelihood of coronary artery disease (CAD), particularly among women as current methods overestimate CAD presence. In this gender-based analysis, we hypothesized that gene expression score (GES) results would improve the diagnostic assessment of women presenting to the cardiologist with symptoms suggestive of obstructive CAD.

Methods: The IMPACT Trial enrolled 88 prospective patients presenting with chest pain and related symptoms without a history of CAD who were referred to six cardiologists for evaluation. The cardiologist's diagnostic strategy was evaluated before and after GES testing. The GES is a validated, quantitative blood-based diagnostic test, measuring peripheral blood cell expression levels of 23 genes to determine the likelihood of obstructive CAD (at least one vessel with $\geq 50\%$ angiographic coronary artery stenosis). As previously reported, the negative predictive value (NPV) among patients with low GES (≤ 15) is 96%. The primary outcome was the change in diagnostic testing before/after GES testing as measured by sign test. In this post-hoc analysis, we focused on the assessment of women in this prospective cohort.

Results: There were 83 patients eligible for primary endpoint analysis, including 57 (69%) women, mean age 53 ± 12 years, and mean GES 7.6 ± 6 . Chest pain was evaluated as typical, atypical, and non-cardiac in 12%, 37%, and 51% of pts ($n=7, 21, \text{ and } 29$), respectively. Following GES, a change in recommended treatment was noted in 34/57 women [60%, CI =46% to 72%]. The intensity of diagnostic testing was reduced in 91% ($n=31$) and increased in 9% ($n=3$) of patients ($p<0.001$). In particular, 94% (29 of 31) of women with decreased testing had low GES (≤ 15), while 100% (3 of 3) of women with increased testing had elevated GES ($p<0.001$). At 6 months of follow-up, no major adverse cardiac events were noted.

Conclusion: The GES showed feasibility of use in discriminating which women patients should be recommended for additional testing. Specifically, the GES was associated with an overall relevant reduction in diagnostic test utilization among women with low GES with no impact on adverse events.

Reference: McPherson J, Davis K, Yau M, et al. Improved Diagnostic Work-Up of Patients Presenting to the Cardiologist with Symptoms of Suspected Obstructive Coronary Artery Disease: Gender Specific Results From the IMPACT (Investigation of a Molecular Personalized Coronary Gene Expression Test on Cardiology Practice Pattern) Trial. *J Am Coll Cardiol.* 2013;61:E1163.