

# A Genetic Risk Score Is Associated with Atrial Fibrillation in the Malmö Prevention Project

## Background

- Atrial fibrillation (AF), a common heart rhythm disorder, is a significant risk factor for disabling or fatal ischemic stroke and systemic embolism.<sup>1</sup>
- Age, family history of AF, and genetic predisposition increase risk of AF.<sup>1,2</sup>
- An AF genetic risk score (AF-GRS) comprising 12 single-nucleotide polymorphisms (SNPs) was associated with 2-fold greater risk of incident AF among middle-aged participants of the Malmö Diet and Cancer study.<sup>2</sup> However, this association has not been explored in elderly patients.
- **Objective:** To evaluate the association between the 12-SNP AF-GRS and incident AF among elderly participants in the Malmö Prevention Project.

## Methods

- Of the 18,240 participants enrolled in the Malmö Prevention Project between 2002 and 2006, 4,678 without prevalent AF were randomly selected for analysis (median age, 68.2 years; interquartile range, 66.5-73.0 years).
- The association between AF-GRS and incident AF was evaluated using Cox proportional hazards models that adjusted for age, sex, body mass index, systolic and diastolic blood pressure, use of antihypertensive medication, smoking, diabetes, coronary events, and heart failure.
- Hazard ratios (HRs) and 95% confidence intervals (CIs) were calculated for participants in the highest AF-GRS quintile vs those in the lowest AF-GRS quintile for all participants. The same analysis was carried out for those above and for those below the median age.

## Results

- During a median follow-up of 8.2 years, 524 participants had a first AF event.
- Participants in the highest AF-GRS quintile had roughly twice the risk of a first AF event compared with those in the lowest quintile (HR, 2.03; 95% CI, 1.54-2.67;  $P < 0.001$ ).
- AF-GRS was associated with incident AF in both those above and below median age:
  - HR = 2.68 (95% CI, 1.58-4.55;  $P < 0.001$ ) for participants below the median age of 68.2 years, and
  - HR = 1.82 (95% CI, 1.31-2.52;  $P < 0.001$ ) for participants above the median age.

## Conclusions

- The 12-SNP AF-GRS used in this study was associated with a higher risk of incident AF among elderly participants in the Malmö Prevention Project.
- This AF-GRS may help identify elderly patients at greater risk for developing AF, allowing for implementation of preemptive measures and aggressive monitoring.

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### Authors

Dov Shiffman,<sup>1</sup> Marketa Sjögren,<sup>2</sup> Judy Z Louie,<sup>1</sup> Lance A Bare,<sup>1</sup> Tord Juhlin,<sup>3,4</sup> Latif Sarabi,<sup>3,4</sup> Mariusz Kitlinski,<sup>3,4</sup> James J Devlin,<sup>1</sup> Olle Melander<sup>2</sup>

### Affiliations

<sup>1</sup> Quest Diagnostics Nichols Institute, San Juan Capistrano, CA

<sup>2</sup> Skåne University Hospital Clinical Research Center, Malmö, Sweden

<sup>3</sup> Department of Clinical Sciences, Faculty of Medicine, Lund University, Malmö, Sweden

<sup>4</sup> Department of Cardiology, Skåne University Hospital, Malmö, Sweden

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### References

1. Marinigh R, Lip GY, Fiotti N, et al. *J Am Coll Cardiol*. 2010;56:827-837.
2. Tada H, Shiffman D, Gustav Smith J, et al. *Stroke*. 2014;45:2856-2862.