# Results from a nationwide atrial fibrillation screening effort in Belgium

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**Introduction:** Atrial Fibrillation (AF) is associated with an increased risk of stroke that can be mitigated with anticoagulation therapy. Opportunistic screening for AF for primary stroke prevention is recommended in subjects above 65. However, the paroxysmal and asymptomatic nature of AF hampers early detection with a single time point screening. Multiple time point measurements are superior to single time point measurements for the detection of AF. New technologies such as photoplethysmography (PPG) enable large scale AF screening with repetitive measurements at low-cost using only a smartphone.

**Purpose:** To explore an entirely online AF screening program in subjects with an elevated stroke risk.

**Methods:** The Belgian Heart Rhythm Association launched a digital marketing campaign, to promote AF screening during "The Belgian Week of the Heart Rhythm". Candidates were referred to an online questionnaire to calculate their CHADS-VASC score. Subjects older than 18 with a CHADS-VASC score of 2 or more were allowed to enter the screening program. AF screening was performed with a PPG-based smartphone application. A 60-second PPG trace is captured by placing a fingertip on the smartphone's camera. The smartphone application analyses the PPG trace with an artificial intelligence software. Subjects were instructed to perform measurement twice daily and while experiencing symptoms over the course of 7 days. Measurements were classified as AF or non-AF by the algorithm and were reviewed by medical technicians.

**Results:** Of the 12.602 candidates who completed the questionnaire, 6.020 subjects met the inclusion criteria and were offered screening. However, only 2.111 (35%) participated in the screening program. The mean age of participants was 63±11 years, 37.3% was male, median CHADS-VASC was 2 (2–3). 257 participants (12.2%) were previously known with AF. In total 25.362 PPG recordings of 60 seconds were performed of which 258 demonstrated AF. AF was detected in 56 participants (2.7%). This was a new finding in 36 participants (1.7%) meaning that 64.3% of participants demonstrating AF were not previously known with AF. The number needed to screen was 58.6 to detect AF in a population without a history of AF and the number needed to invite was 167.2. Only 20 participants (7.8%) with a history of AF demonstrated AF during the screening program.

**Conclusions:** AF screening in subjects with an elevated stroke risk is feasible with an entirely online screening program without the need for medical hardware or medical personnel with an acceptable number needed to screen. However, this approach failed to target subjects in the highest age groups and since almost two thirds of the subjects interested in the screening program failed to commence screening, approaches to increase this response (specifically in high-risk groups) needs to be explored.

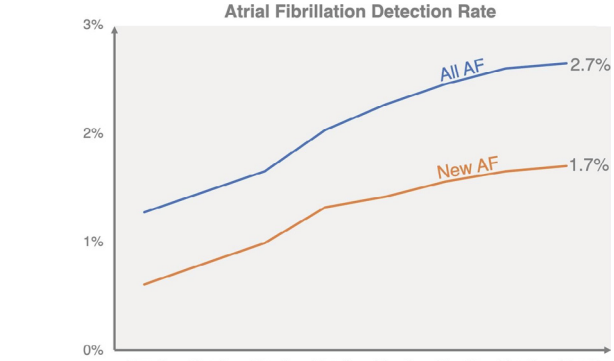


Figure 1

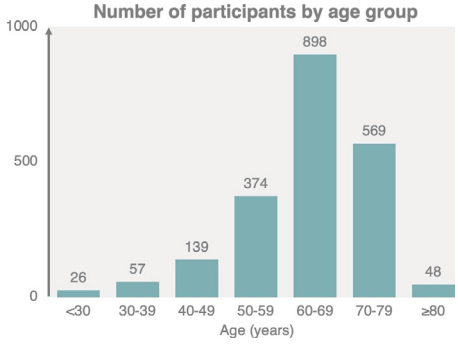


Figure 2