

Editorial

Community screening for atrial fibrillation in the era of smart devices

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Atrial fibrillation (AF) associated strokes can be effectively prevented by oral anticoagulant therapy, but patients often miss opportunities for adequate thromboprophylaxis due to lack of symptoms or electrocardiographic (ECG) documentation of AF. Early identification of AF has become an important issue not only from the healthcare perspective but also in the social aspect, given the burden of disabling stroke related to this common arrhythmia. The latest guidelines have therefore recommended the opportunistic screening for AF by pulse palpation or single-lead ECG in individuals aged >65 years or in individuals with symptoms suggestive of AF [1,2]. In one systematic review, overall AF prevalence could be increased from 2.3% to 4.4% through current AF screening efforts, which could identify 1.4% of the population ≥65 years with previously undiagnosed AF [3]. Approximately two thirds of patients with previously undiagnosed AF were at high risk of stroke [3]. Given the default is to offer stroke prevention unless they are 'low risk', most of these patients would benefit from oral anticoagulants to prevent stroke [4].

During the last decade, the rapid development and application of various diagnostic and treatment techniques led great changes in the management of AF [5]. When applying smart device technologies to the AF screening process, instant ECG documentation by mobile point-of-care smart device may potentially be more objective and accurate than pulse palpation, and no additional ECG documentation to confirm AF is required in many cases. In addition, because of the smart device's better accessibility than the previous single lead ECG, the possibility of confirmative ECG recording (s) can be increased in terms of prompt ECG documentation during the presence of symptom.

Especially in rural areas where people with undiagnosed AF are mostly older, less-educated and less-aware of AF, smart devices assisted by trained village health workers might demonstrate higher screening efficiency than the untrained public in urban areas where people may be more-educated and aware of AF.

Via this approach, *Apurv Soni* et al. demonstrate a marked increase in AF prevalence over a short span of time [6]. Despite brief screening of rural areas in India, estimated overall prevalence was comparable to that from screening in western community settings (1.6% vs. 1.9%) [3], and was also consistent with trends from Western countries in which AF prevalence increases with age. Although most of these successful screening results come from the application of smart devices, to establish a target area specific screening strategy that can effectively solve a particular healthcare problem is perhaps just as important (Fig. 1).

This important study can serve as a good example for countries in a situation similar to India. The use of smart devices can be considered as an attractive and efficient solution for AF screening given the increased population growth and ageing. It might be possible to maximize the efficiency of AF screening by targeting patients at high risk of incident AF using clinical risk stratification [7,8].

Characteristics of suitability for particular screening strategies in specific settings are summarised and compared in Table 1. In adopting new smart devices to our AF screening scheme, sufficient verification, ethical issues, privacy issues, and security issues must be taken into consideration.

In conclusion, rather than adhering to the standardized screening methods outlined in the guidelines, application of screening methods that meet the requirements of a particular community might greatly improve screening efficiency. This may actually be the smart way to apply smart technologies.

Conflict of interest

The authors report no relationships that could be construed as a conflict of interest.

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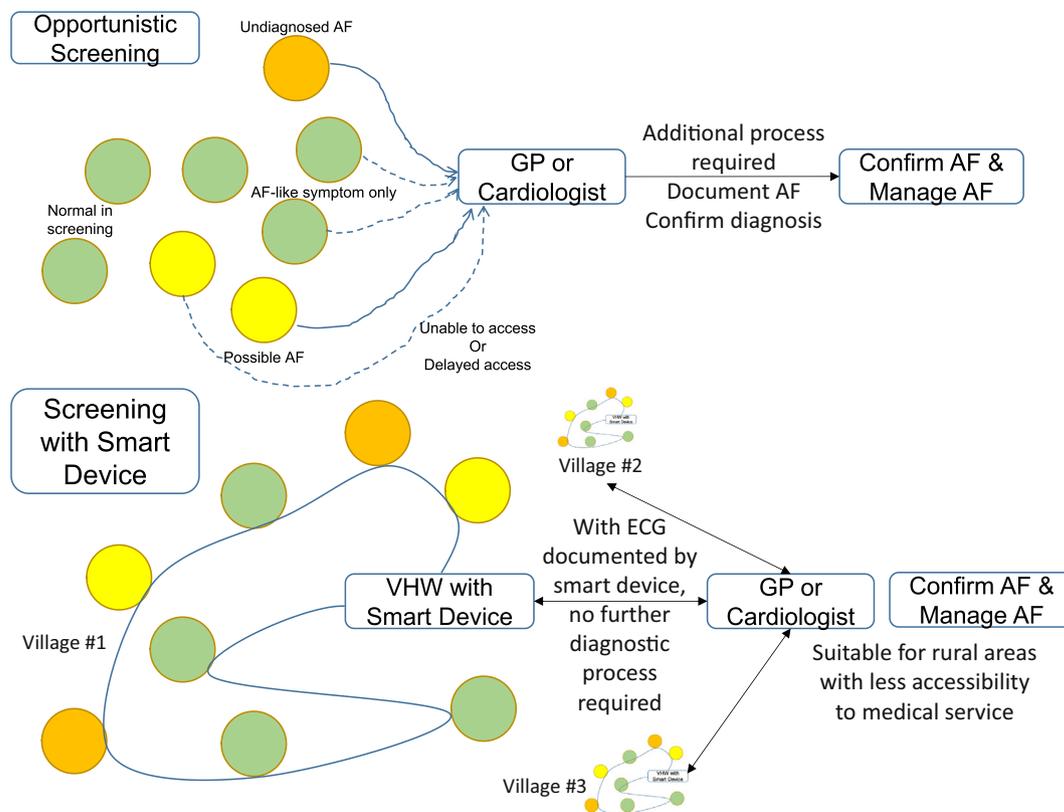


Fig. 1. Schematic comparison between opportunistic screening and smart device assisted screening AF = atrial fibrillation, GP = general practitioner, VHW = village health worker. Green circle indicates normal people in screening test or normal in screening test with AF-like symptoms. Yellow circle indicates patients with screening test showing possible AF. Orange circle indicates patients with undiagnosed AF. In opportunistic screening (upper), people with various AF associated conditions need to decide whether to meet a doctor or not according to their own judgement. After meeting a doctor, additional process to confirm AF is necessary. In screening with smart device (lower), VHW visits every candidate who is scattered in a large rural area and documents ECG with smart device. According to the documented ECG, they can be linked to immediate diagnosis and treatment without any additional process.

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Table 1
Comparison between opportunistic screening and screening with smart device.

	Opportunistic screening	Screening with smart device ^a
Modality	Pulse palpation or ECG	ECG recorded by smart device
Community health workers	Absent	Present
Medical service accessibility	Easy	Hard
Additional ECG documentation	Required to confirm AF	Not necessarily
Target area	Urban area	Rural area
Age	Younger	Older
Population	High density	Low density
Prevalence	Low	High
AF awareness	High	Low
Education of target population	High	Low
Screening efficiency	Low	High
Compatibility to community	Fair	Good

ECG: electrocardiography, AF: atrial fibrillation.

^a This detailed characterization is limited to the screening method used in this study.