

# Detection and management of atrial fibrillation

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## Scientific and societal impact

AF is the most common sustained arrhythmia in adults worldwide (1). In the Netherlands about 373,700 people are diagnosed with AF (2). As a result of the high prevalence of AF, the clinical and economic impact of the disease is substantial. Nowadays, AF management focuses on the alleviation of patient symptoms, improvement of patient quality of life, and minimization of the morbidity associated with AF (3-5). Monitoring of heart rate and rhythm are important for the management of AF patients and prevention of AF-related morbidity (6). Over the last decades, many mHealth solutions have become available for heart rate and rhythm assessment, but no standardized infrastructure was available for remote heart rate and rhythm monitoring. Therefore, we developed a remote heart rate and rhythm monitoring infrastructure that is based on PPG technology: TeleCheck-AF (**Chapter 8-12**). The TeleCheck-AF approach presents an alternative and/or supplement to traditional face-to-face consultations with a potential to reduce in-office and unnecessary hospital visits, thereby reducing health care burden, and to improve health care in regions of the world where health care providers are only available at large distances. This mHealth infrastructure showed convenience, broad accessibility, and relatively low costs, which makes it feasible to implement this novel app-based on-demand heart rate and rhythm monitoring infrastructure to efficiently provide teleconsultations in an AF population. However, the lack of standardized reimbursement models for such digital AF care infrastructures was identified as a relevant burden for clinical implementation of TeleCheck-AF. In order to design novel Dutch reimbursement models to accelerate transformation towards telemedicine-based AF management, the MUMC+ together with Dutch health insurances collected data on changes in healthcare utilization and resulting DBC care products during the implementation of the TeleCheck-AF approach in the MUMC+ AF clinic. Our study findings indicated that implementation of TeleCheck-AF was associated with a change in health care utilization, which resulted in a downwards shift from medium weight DBC care products to light weight DBC care products for AF management (7). Since the light weight DBC care products do not cover all costs for implementation of the mHealth-based teleconsultation infrastructure, an optional billing code: Facultatieve prestatie "Telecheck atriumfibrilleren TB/REG-21679-01" for mHealth use was created in the Netherlands. The optional billing code does not reimburse the use of mHealth directly but can be used to partly compensate the resulting potential financial gap resulting from a drop in DBC care product due to AF disease managing through the TeleCheck-AF approach. In addition, based on the experiences from TeleCheck-AF, an educational structured stepwise practical guide on PPG signal interpretation was developed (8). TeleCheck-AF results were also presented on several (inter)national conferences and contributed to the EHRA practical guide on the use of digital devices for arrhythmias, from early detection through management and implementation (9). Furthermore, the TeleCheck-AF infrastructure may improve patient education and patient engagement in their own treatment-decision making which can improve therapeutic adherence and patients' satisfaction with the disease management. The exact scientific and societal impact will be examined in the randomized TeleCheck-AF trial.

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