



Staff Matters

- EDITORIAL, *C. MAROLT*
- WORKPLACE CONFLICT, *C.M. PATTON*
- ON HIRING, *L. ADLER*
- THE SIMU-LEADER PROGRAMME, *M. ROSEN ET AL.*
- CRITICAL COMPASSION, *T. CUNNINGHAM*
- HUMAN FACTOR APPROACHES: IMPROVING EMR USABILITY AND SATISFACTION, *R. DUNSCOMBE*
- WILL ROBOTS TAKE YOUR JOB IN HEALTHCARE? *B. HYACINTH*
- ESTABLISHING COMPETENCE IN RADIOLOGY: A UK PERSPECTIVE, *W. RAMSDEN & C. RUBIN*
- THE POWER OF THE #HASHTAG, *A. BRINDLE*
- CAPTIVATE STAFF WITH ANIMATION, *M. KEEN*

HOW THE SIMPLE INGREDIENT OF DELIGHT CAN TRANSFORM HEALTHCARE, *K. KAS*

HOW CAN RADIOLOGISTS ADAPT TO THE KNOWLEDGE AGE? *P. CHANG*

PUTTING THE PATIENT AT EASE: 10 STEPS TO BETTER COMMUNICATION, *M. EVENTOFF*

THE BOUNDARYLESS HOSPITAL, *M.C. VON EIFF & W. VON EIFF*

HOW ARCHITECTURAL DESIGN IS BREAKING DOWN HEALTHCARE SILOS, *L. NELSON HOPKINS*

THE NEED AND SPEED OF COOPERATION INSTEAD OF COMPETITION IN RESEARCH, *P. KAPITEIN*

SPACE TECHNOLOGY MEETS HEALTHCARE, *E. GRAVESTOCK*

CLINICAL DIAGNOSTIC REFERENCE LEVELS IN MEDICAL IMAGING, *J. DAMILAKIS & G. FRIJA*

SUCCESSFUL QUALITY MANAGEMENT SYSTEM IN A RADIOLOGY DEPARTMENT, *N. STAVER & D. CARAMELLA*

FOLLOW-UP BREAST CANCER IMAGING WIDELY VARIABLE, U.S. STUDY FINDS, *C. PILLAR*

THE HEALING POWER OF DIGITAL ART IN HOSPITAL ENVIRONMENTS, *K. KIM*



Capture atrial fibrillation using Preventicus applications with >95% accuracy

International validation study published in *Europace*

The European Journal of Pacing, Arrhythmias and Cardiac Electrophysiology of the European Heart Rhythm Association (EHRA) of the European Society of Cardiology (ESC).

Early detection of atrial fibrillation (AF) is essential for stroke prevention. Emerging technologies such as smartphone cameras and smartwatches using photoplethysmography (PPG) are effective for atrial fibrillation screening.

The study DETECT AF PRO compared a PPG-based algorithm against a cardiologist's ECG diagnosis to distinguish between AF and sinus rhythm (SR). The Germany-based company Preventicus GmbH provided the application for analysis of plethysmographic raw data of the study participants. The application Preventicus® Heartbeats™, a CE-marked medical device in the EU, takes pulse recordings by smartphone camera or optical sensors inside standard smartwatches and wearables.

The results of the DETECT AF PRO trial (ClinicalTrials.gov ID: NCT02949180) were introduced for the first time at the European Heart Rhythm Association Congress (EHRA 2018) in Spain and are now published in *Europace – the European Journal of Pacing, Arrhythmias and Cardiac Electrophysiology* of the European Heart Rhythm Association (EHRA) of the European Society of Cardiology (ESC).

DETECT AF PRO is a prospective, double-blinded, international study; a total of 592 patients with at least 1 minute of sufficient PPG signal quality and interpretable iECG were included for final analysis. Total accuracy of the smartphone camera application to detect atrial fibrillation was 96.5% with a positive predictive value of 99.3% compared to the ECG-based diagnosis of two cardiologists by mutual agreement.

The results of the WATCH AF trial, the world's first international, prospective and double-blinded clinical trial (ClinicalTrials.gov ID: NCT02956343) evaluating the accuracy of a smartwatch to detect atrial

fibrillation were also presented at the EHRA 2018 in Spain. Preventicus GmbH also provided the application for blinded analysis of 1 minute plethysmographic raw data (recorded with Samsung Gear Fit II smartwatch) of the study participants. Total accuracy of the application was 95.7% with a positive predictive value of 97.8% in comparison to the ECG-based diagnosis of two cardiologists by mutual agreement.

The smartwatch application Preventicus Nightwatch® incorporates that algorithm. It can continuously 24/7 analyse plethysmographic raw data and document atrial fibrillation events lasting at least one minute. The application is launched in Europe as a certified medical device (CE mark class IIa).

Why screening of AF with smart devices makes sense and helps prevent strokes

Stroke is the second most common cause of death and is strongly associated with undetected or untreated AF—the most common sustained cardiac arrhythmia. AF may come and go and is often not noticed (silent AF). Its sporadic occurrence is the main reason why it is so difficult to capture. Chances to detect sporadic AF with 'classic' methods (e.g. 24h-Holter-ECG) are around 25% only. It is estimated that every ten seconds a stroke happens in combination with unknown or untreated AF. Only when AF is detected and confirmed, can for example pharmaceutical treatment be started and the rate of strokes be significantly reduced. This is why smartwatches and smartphone camera applications now aim to close a gap. They are considered as new AF screening tools in a recent EHRA consensus statement and make AF population screening—to prevent strokes—available to patients and medical professionals. ■