**Results:** The Area Under the Curve Receiver Operating Characteristic (AUC) of the different models to differentiate DPP6 positive from negative family members, was 0.69-0.85. The best performing DL models were a 1D CNN (AUC 0.85) using raw waveform data and a 2D CNN (AUC 0.82) using an image of the mean P-QRS-T complex of each lead. 2D CNN GradCAM showed the QRS complexes of leads I and V5, among other activated ECG regions, to be most important (Figure 1).

**Conclusion:** In contrast to previous standard ECG analyses, DL models can detect the DPP6 IVF risk haplotype with good accuracy. In addition, GradCAM uncovered that lateral lead QRS complexes were of most importance, matching with the inferred pathophysiological mechanism of increased Ito in Purkinje. It is important to take into consideration that the saliency of heat-map patterns in I and V5 is not the consequence of a targeted optimization, but the emergent result of training the model to perform the binary decision task, highlighting the most relevant information for this task. However, ultimately, DL models might be able to identify pre-symptomatic IVF patients in and outside the DPP6 risk haplotype, enabling patient tailored pre-symptomatic treatment.

**PO-631-04**

**ACCURACY OF A SMARTWATCH ECG TO DIAGNOSE ATRIAL FIBRILLATION AND NORMAL SINUS RHYTHM**

Hugo-Pierre Racine MD; Marc Strik MD, PhD; Théo CAILLOL; Saer Abu-Alrub MD; F. Daniel Ramirez MD, MS; Hugo Marchand MD; Samuel BULIARD MD; Michel Haissaguerre MD, PhD; Sylvain Ploux MD, PhD and Pierre BORDACHAR MD, PhD

**Background:** Select smartwatches offer the ability to record a single-lead ECG with automated detection of atrial fibrillation (AF). The growing use of these devices by consumers is accompanied by mass screening of AF. However, the accuracy of the smartwatch automatic diagnosis (SWAD) of AF has only been validated in limited number of patients, often excluding patients with comorbidities or low/high heartrates.

**Objective:** We assessed the ability of SWAD to correctly detect AF or normal sinus rhythm (NSR) with a 12-lead ECG expert diagnosis in a large cohort of patients with various ECG anomalies.

**Methods:** 734 consecutive hospitalized patients (without exclusion criteria) underwent a 30-seconds Apple Watch recording and a simultaneous 12-lead ECG. The SWAD (“normal”, “AF” or “inconclusive”) was compared with the smartwatch ECG and 12-lead ECGs as interpreted by two cardiologists.

**Results:** Of the 734 patients, 547 were in NSR (75%) and 187 were in supraventricular tachycardia (SVT, 25%) including AF, atrial flutter (AFL) or atrial tachycardia (AT). Overall, the SWAD was NSR in 455 (62%), AF in 137 (19%) and inconclusive (IC) in 142 patients (19%). For the whole cohort, sensitivity and specificity for AF and AFL/AT was respectively 70% and 81%. For patients in NSR, 105 were classified as AF or IC. Of these false positives, 27 (26%) had sinus node dysfunction, 19 (18%) had second or third degree AV block, 18 (17%) had premature ventricular contractions (PVCs), 18 (17%) had an intraventricular conduction delay (IVCD) and 9 (9%) had a ventricular paced rhythm. For patients in SVT, 58 were classified as NSR or IC. Among these false negatives, 21 (36%) had IVCD, 7 (12%) had a ventricular paced rhythm, and 5 (9%) had PVCs. Moreover, for patients in AFL/AT the SWAD identified “AF” in only 1/22 patients. When excluding patients with IVCD, PVCs and paced rhythm, sensitivity and specificity for AF was 77% and 83%.

**Conclusion:** In 734 patients with various ECG anomalies, the SWAD failed to identify patients with AF and AFL/AT in a significant proportion of patients. The clinician needs to take these limitations into consideration when using smartwatch automatic diagnosis for the detection of AF.

**PO-631-05**

**A MOBILE APP FOR IMPROVING THE COMPLIANCE TO REMOTE MONITORING OF PATIENTS WITH CARDIAC IMPLANTABLE DEVICES: A MULTICENTER EVALUATION IN CLINICAL PRACTICE**

Carlo Lavalle MD; Vincenzo Coscia MD; Ernesto Ammendola MD; Giuseppe Busacca MD; Carmen Adduci MD; Ermenegildo de Ruvo MD; Luca PANCHETTI MD; STEFANO VIANI MD; Giuseppe Ammirati MD; Giampaolo Sanna MD; Giulio Molon MD; Fabio Quartieri MD; Rita Di Rosa MD; Sergio Valsecchi and Valter Bianchi MD

**Background:** The use of remote patient monitoring (RPM) is recommended for patients with cardiac implantable electronic devices (CIEDs). The continuity of monitoring is crucial, indeed patients who consistently transmit data using RPM were shown to be at substantially lower risk of death and readmission. The MyLATITUDE Patient App (Boston Scientific) has been developed to encourage patient compliance to RPM by providing him with information about communicator setup and troubleshooting, connection status of the communicator, scheduled transmissions, status of the implanted device battery.