Objective: Contrast outcomes of CRA and CA for high-risk refractory VT at a high-volume center.

Methods: Single-center, IRB-approved case series of patients with refractory VT who had failed at least one prior CA (or were unfit for CA) treated with CRA and CA. Demographics, treatment-related (probably, definitely) serious adverse events (SAEs), and rates of survival (OS) and freedom from shock or storm (FFSS, with 6 week blanking period) were collected. Formal statistical comparisons were not performed due to limited patient numbers.

Results: From 2015-2020, 22 patients were treated with CRA (18 with prior CA, 4 unfit for CA) for high-risk refractory VT. A cohort of 21 equivalent patients treated with repeat CA (21 with prior CA) were identified from 2015-2017 (dates chosen to balance use of contemporary CA techniques with potential selection bias of increasing CRA use in recent years). Overall, CRA and CA patients had similar proportions of male sex (91%), and median NYHA class (III), LVEF (25%), and prior CA (1). In contrast, CRA patients were numerically older (median 64.5 vs 59 years), more likely to have a “High Risk” I-VT score (64% vs. 52%) and have higher median PAINESD scores (median 18.5 vs. 17). Median follow-up was 28.2 months. One-year treatment-related SAEs were 14% vs 38% (CRA vs CA). Most CA-related SAEs occurred within the first month, with 4/5 (80%) early CA deaths occurring immediately after a SAE. Median OS (Figure 1) was 28.2 vs 12.2 months (CRA vs CA). One-year OS was 72.7% vs 53% (CRA vs CA). Median FFSS (Figure 2) was 8.2 vs 9.7 months (CRA vs CA) and 1-year FFSS was 42.4% vs 45.7% (CRA vs CA).

Conclusion: In patients with high-risk refractory VT, CRA was associated with numerically fewer treatment-related SAEs and higher rates of median and 1-year OS, with equivalent rates of clinically relevant VT control (FFSS). These results suggest the principal benefit of CRA may be in avoidance of early SAEs associated with CA. Long-term follow-up will be required to assess late SAEs and efficacy. Further research is underway to develop methods to improve longer-term VT suppression with CRA.

ABSTRACT DH-576:
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DH-576-01
USE OF HEALTHCARE DATA COLLECTED BY APPLE WATCH TO PREDICT ATRIAL FIBRILLATION ATTACKS
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Background: The incorporation of digital healthcare big data collected by wearable devices as a personal health record into medical care is expected to lead to early detection.

Objective: We analyzed the characteristics of digital healthcare data related to atrial fibrillation (AF) attacks.

Methods: Ninety-three patients with AF (69 males, mean age 64±12 years) attending Keio University Hospital wore a 2-week-Holter ECG to detect AF attacks. We created an iPhone application to collect health care data by wearing the Apple Watch during the day and asleep, and by answering a questionnaire upon waking. The period assessed as sedentary by Apple Watch was defined as the analyzable resting state, and AF recorded by ECG for more than 30 seconds was defined as an AF attack.

Results: Resting AF attacks were recorded in 69 patients (74.2%), with a total of 2,529 hours. The mean heart rate recorded by the Apple Watch during AF attacks was significantly higher than that during non-attacks by a mean of 10.2±4.0 bpm (p<0.001). The number of steps walked per day measured by the Apple Watch was significantly higher on attack days than on non-attack days (5,889 vs. 5,100 steps, p=0.030). 52.3% of patients with AF attacks had consumed alcohol the day before, and the presence of alcohol consumption the day before significantly increased attacks the following day (odds ratio: 1.438, 95% confidence interval: 1.132-1.827, p=0.003).

Conclusion: Our results suggested that it was possible to predict AF attacks by integrating medical records, a large amount of unconsciously recorded digital healthcare data, and subjective questionnaire data.

DH-576-02
EKG AS A NON-FUNGIBLE TOKEN: IMPLICATIONS OF BLOCKCHAIN TECHNOLOGY FOR THE ELECTROPHYSIOLOGIST, THE PATIENT, AND HEALTH SYSTEMS
Bishoy Hanna MD; Neal A. Chatterjee MD, MS and Nazem Akoum MD, MS, FHRS

Background: Third-generation cryptocurrencies with smart-contract capability have allowed for the creation of non-fungible tokens, or NFTs. While NFTs of multi-million-dollar art have been popularized recently in the media, there are several potential use-cases for NFTs that could be relevant to electrophysiology and medicine as a whole. The security, immutability, decentralization,
anonymity, and permanence of blockchain technology may be ideal for the secure storage of electrophysiologic media such as EKGs, ablation maps, or Holter data. NFTs can be used to uniquely identify patient data while allowing for global access to the data on the blockchain with the patient’s unique wallet address, creating recent interest in their use for this purpose. No real-world examples of using an NFT to store a record of a patient’s EKG have been published. As a proof of concept, here we create an NFT of an EKG.

**Objective:** To create an NFT of an EKG as a proof-of-concept on the Solana blockchain, the blockchain of the Solana Network, a third-generation cryptocurrency that is the third-largest in the world by market cap (over 67 billion USD as of 11/21/2021).

**Methods:** The Solana Programming Language command-line interface (SPL CLI) was used to create a non-fungible token (fig 1). A pull request was made after modifying the code of solana.tokenist.json on https://github.com/solana-labs/token-list to rename the token “EKG NFT HRS 2022” and link it to the EKG image.

**Results:** The existence of “EKG NFT HRS 2022” can be verified via a first or third-party Solana blockchain explorer by looking up the wallet address (93Pm9G8s3nDA4GifEJX5E7J1kk1Fhmiqoo9DxUMuNERR) containing the NFT or the NFT token address. The entire cost of the creation of this non-fungible token was approximately $1.20 USD and could easily be automated. While web-hosting was required to actually house the media file, in the near-future decentralized storage using blockchain technology can be used to securely house the file. Changing EKGs to high-quality ASCII representations using algorithms created for that purpose would be an immediate way to store the data permanently on the blockchain itself.

**Conclusion:** NFTs may be a way to securely and more permanently store globally-accessible electrophysiologic media for patients at minimal cost in the near future.

**DH-576-03**

**PATIENT ENGAGEMENT AND EXPERIENCE WITH USE OF DIGITAL NAVIGATION PATHWAYS FOR CARDIAC ELECTROPHYSIOLOGY PROCEDURES**

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**Background:** Patients referred for a cardiac electrophysiology (EP) procedure require education about what happens before, during, and after the procedure. Digital Navigation Pathways (DNPs) are designed for this purpose; however, patient acceptance and the clinical impact of DNPs are not understood.

**Objective:** To measure patient engagement with DNPs and assess patient perception of the impact on their clinical care.

**Methods:** In this prospective study, a procedure specific DNP was dispensed to all patients scheduled for an EP procedure. DNPs were designed using the Rx.Health (New York, NY) platform and consisted of preparation instructions, reminders, hospital directions, micro-learning videos, and educational messaging delivered via text or email. Following their procedure, patients were asked to respond to an experience survey evaluating the impact of DNPs on their clinical care using a five-point Likert scale. Engagement was defined as the proportion of patients clicking or replying within the DNP.

**Results:** A DNP was prescribed to 704 patients, most commonly for catheter ablation (41%) or a device procedure (41%, Figure). The engagement rate was 86.9%. There was a high degree of comfort using the DNPs; in addition, patients felt that the DNP improved their understanding of their procedure and reduced pre-procedural anxiety (Figure). Importantly, 80% of patients agreed that the available information reduced their need to call the office for further instructions.

**Conclusion:** For the first time, the utility of DNPs, prescribed at time of procedure scheduling, to a cohort of over 700 patients in an EP practice was assessed. Our data show a high degree of engagement with DNPs and a favorable impact on care as reported by patients.

**DH-576-04**

**CORRELATION OF ATRIAL FIBRILLATION DETECTION USING OURA RING WITH PHOTOPLETHYSMOGRAPHY IN COMPARISON TO THE APPLE WATCH ELECTROCARDIOGRAPHY ALGORITHM**

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**Background:** Oura Ring (OR) is a ring-based wearable device with an infrared photoplethysmography (PPG) based atrial fibrillation (AF) detection algorithm not yet commercially available. PPG and electrode AF detection currently exists on Apple Watch Series 4 (AW). OR PPG rhythm detection has not been compared to AW.

**Objective:** To review the accuracy of sinus rhythm (SR) and AF detection between OR PPG and AW ECG in patients who have undergone cardioversion or AF ablation to SR in which both devices were tested simultaneously.

**Methods:** A technology validation study with OR and AW enrolled patients (n = 18, 88% male) scheduled for electrical (11/18), chemical (6/18), or ablative (6/18) rhythm control strategies. An OR was placed on a patient’s finger and an attempt at ideal external lighting conditions with minimal movement for OR PPG