

## Case Study Description:

- 89 years old male, as part of a pilot project in reputable Hospital in Israel, he was monitored continuously with a single lead ECG monitor (Heartbook) and a pulse oximeter (CheckMe O2 Max).
- SURE platform raised an alert on changes in the patient's heart rate.
- The ECG waveform showed an arrhythmia.
- Later the patient was connected to ECG Holter by a cardiologist, and the results indeed showed a **Mobitz type II Arrhythmia**. Findings were confirmed!

### 1. Heart Rate values that triggered the alerts:

12/08/2022 19:15:06	71	Mintti heartbook	12/08/2022 19:19:25	43	Mintti heartbook	12/08/2022 19:23:54	46	Mintti heartbook
12/08/2022 19:15:11	61	Mintti heartbook	12/08/2022 19:19:30	43	Mintti heartbook	12/08/2022 19:23:59	46	Mintti heartbook
12/08/2022 19:15:17	61	Mintti heartbook	12/08/2022 19:19:36	43	Mintti heartbook	12/08/2022 19:24:05	46	Mintti heartbook
12/08/2022 19:15:23	54	Mintti heartbook	12/08/2022 19:19:41	45	Mintti heartbook	12/08/2022 19:24:10	46	Mintti heartbook
12/08/2022 19:15:29	48	Mintti heartbook	12/08/2022 19:19:46	45	Mintti heartbook	12/08/2022 19:24:15	45	Mintti heartbook
12/08/2022 19:15:35	49	Mintti heartbook	12/08/2022 19:19:52	45	Mintti heartbook	12/08/2022 19:24:21	45	Mintti heartbook
12/08/2022 19:15:40	44	Mintti heartbook	12/08/2022 19:19:57	45	Mintti heartbook	12/08/2022 19:24:26	45	Mintti heartbook
12/08/2022 19:15:45	44	Mintti heartbook	12/08/2022 19:20:02	45	Mintti heartbook	12/08/2022 19:24:31	57	Mintti heartbook
12/08/2022 19:15:51	45	Mintti heartbook	12/08/2022 19:20:08	45	Mintti heartbook	12/08/2022 19:24:37	56	Mintti heartbook
12/08/2022 19:15:56	45	Mintti heartbook	12/08/2022 19:20:13	45	Mintti heartbook	12/08/2022 19:24:43	73	Mintti heartbook
12/08/2022 19:16:01	45	Mintti heartbook	12/08/2022 19:20:18	45	Mintti heartbook	12/08/2022 19:24:49	61	Mintti heartbook
12/08/2022 19:16:07	44	Mintti heartbook	12/08/2022 19:20:24	45	Mintti heartbook	12/08/2022 19:24:55	47	Mintti heartbook
12/08/2022 19:16:12	44	Mintti heartbook	12/08/2022 19:20:29	44	Mintti heartbook	12/08/2022 19:25:00	44	Mintti heartbook
12/08/2022 19:16:18	44	Mintti heartbook	12/08/2022 19:20:35	44	Mintti heartbook	12/08/2022 19:25:05	45	Mintti heartbook
12/08/2022 19:16:23	44	Mintti heartbook	12/08/2022 19:20:40	55	Mintti heartbook	12/08/2022 19:25:11	45	Mintti heartbook
12/08/2022 19:16:28	44	Mintti heartbook	12/08/2022 19:20:46	48	Mintti heartbook	12/08/2022 19:25:17	45	Mintti heartbook
12/08/2022 19:16:34	44	Mintti heartbook	12/08/2022 19:20:51	53	Mintti heartbook	12/08/2022 19:25:23	46	Mintti heartbook
12/08/2022 19:16:39	44	Mintti heartbook	12/08/2022 19:20:56	60	Mintti heartbook	12/08/2022 19:25:28	46	Mintti heartbook
12/08/2022 19:16:45	44	Mintti heartbook	12/08/2022 19:21:02	60	Mintti heartbook	12/08/2022 19:25:33	87	Mintti heartbook
12/08/2022 19:16:50	44	Mintti heartbook	12/08/2022 19:21:07	52	Mintti heartbook	12/08/2022 19:25:39	81	Mintti heartbook
12/08/2022 19:16:56	55	Mintti heartbook	12/08/2022 19:21:14	60	Mintti heartbook	12/08/2022 19:25:44	82	Mintti heartbook
12/08/2022 19:17:02	48	Mintti heartbook	12/08/2022 19:21:20	47	Mintti heartbook	12/08/2022 19:25:49	71	Mintti heartbook
12/08/2022 19:17:07	48	Mintti heartbook	12/08/2022 19:21:25	53	Mintti heartbook	12/08/2022 19:25:54	72	Mintti heartbook
12/08/2022 19:17:14	61	Mintti heartbook	12/08/2022 19:21:30	59	Mintti heartbook	12/08/2022 19:25:59	70	Mintti heartbook
12/08/2022 19:17:19	47	Mintti heartbook	12/08/2022 19:21:35	60	Mintti heartbook	12/08/2022 19:26:04	69	Mintti heartbook
12/08/2022 19:17:24	47	Mintti heartbook	12/08/2022 19:21:40	42	Mintti heartbook	12/08/2022 19:26:09	84	Mintti heartbook
12/08/2022 19:17:31	54	Mintti heartbook	12/08/2022 19:21:46	43	Mintti heartbook	12/08/2022 19:26:14	69	Mintti heartbook
12/08/2022 19:17:36	54	Mintti heartbook	12/08/2022 19:21:51	43	Mintti heartbook	12/08/2022 19:26:19	70	Mintti heartbook
12/08/2022 19:17:41	62	Mintti heartbook	12/08/2022 19:21:56	44	Mintti heartbook	12/08/2022 19:26:25	73	Mintti heartbook
12/08/2022 19:17:47	60	Mintti heartbook	12/08/2022 19:22:02	44	Mintti heartbook	12/08/2022 19:26:30	75	Mintti heartbook
12/08/2022 19:17:52	60	Mintti heartbook	12/08/2022 19:22:07	44	Mintti heartbook	12/08/2022 19:26:36	88	Mintti heartbook

### 2. ECG exports from SURE Platform









### 3. Events on the Holter Report that was performed by the hospital and demonstrate the Arrhythmia

A 24-hrs ECG Holter test was performed on the patient by the hospital and verified our system's findings. Sample events from the Holter report are shown below.

Cardiology Department	
<b>Patient Information</b>	
ID: [REDACTED]	Weight: Height:
Last Name: [REDACTED]	Address: shikum gr a
First Name: [REDACTED]	Referring organization:
Date of Birth: [REDACTED] Age: [REDACTED] Gender: [REDACTED]	Referring Physician:
<b>Medications</b>	<b>Indications</b>

#### Holter Summary Report

General			Heart Rate Variability			
	Recorded	Analyzed	Time Domain		Frequency Domain (ms²)	
Duration (hh:mm)	23:58	19:21	SDNN (ms)	48.37	ULF[0-0.003Hz]	1088.83
Start	18/08/2022 10:35	18/08/2022 10:37	SDANN (ms)	32.59	VLF[0.003-0.04Hz]	534.54
Stop	19/08/2022 10:33	19/08/2022 05:59	RMSSD (ms)	43.81	LF[0.04-0.15Hz]	660.71
Channels	I, II, III, aVL, aVR, aVF, V1, V2, V3, V4, V5, V6	I, II, III, aVL, aVR, aVF, V1, V2, V3, V4, V5, V6	HRV triang.index	14.22	HF[0.15-0.4Hz]	750.42
Ventricular Ectopy			Heart Rate			
	Total			Total	Time	
Beats ( % of total beats)	35 ( <0.1 % )		Total Beats	102503		
Isolated	35		Average HR	88		
Bigeminy	0		Max HR	104	18/08/2022 19:19:37	
Trigeminy	0		Min HR	57	18/08/2022 11:40:53	
Couplet	0		Bradycardia (< 60 bpm)	1		
Triplet	0		Longest		18/08/2022 11:40:47	
V.Tachycardia	0		Tachycardia (> 100 bpm)	0		
Fusion	15		Longest			
Supraventricular Ectopy			Pause (> 2000 ms)	0		
Isolated	314		Min RR (ms)	548	18/08/2022 12:58:57	
Pair	11		Max RR (ms)	1620	18/08/2022 11:40:51	
Run (>=3)	4		Atrial Fibrillation	0	0 % of analysed time	
			Longest			
Relative ST Analysis			Holter Events			
Max Elevation (> 1.00 mm)	0.00			Total		
Max Depression (> 1.00 mm)	0.00		Pacer (Detection was On )	0		
Reference ST: I -0.1 mm   II 0.7 mm   III 0.8 mm   aVL -0.5 mm   aVR -0.3 mm   aVF 0.7 mm   V1 -0.1 mm   V2 0.2 mm   V3 0.5 mm   V4 0.6 mm   V5 0.6 mm   V6 0.5 mm			Symptoms Button	0		

SINUS RHYTHM, average HR 88

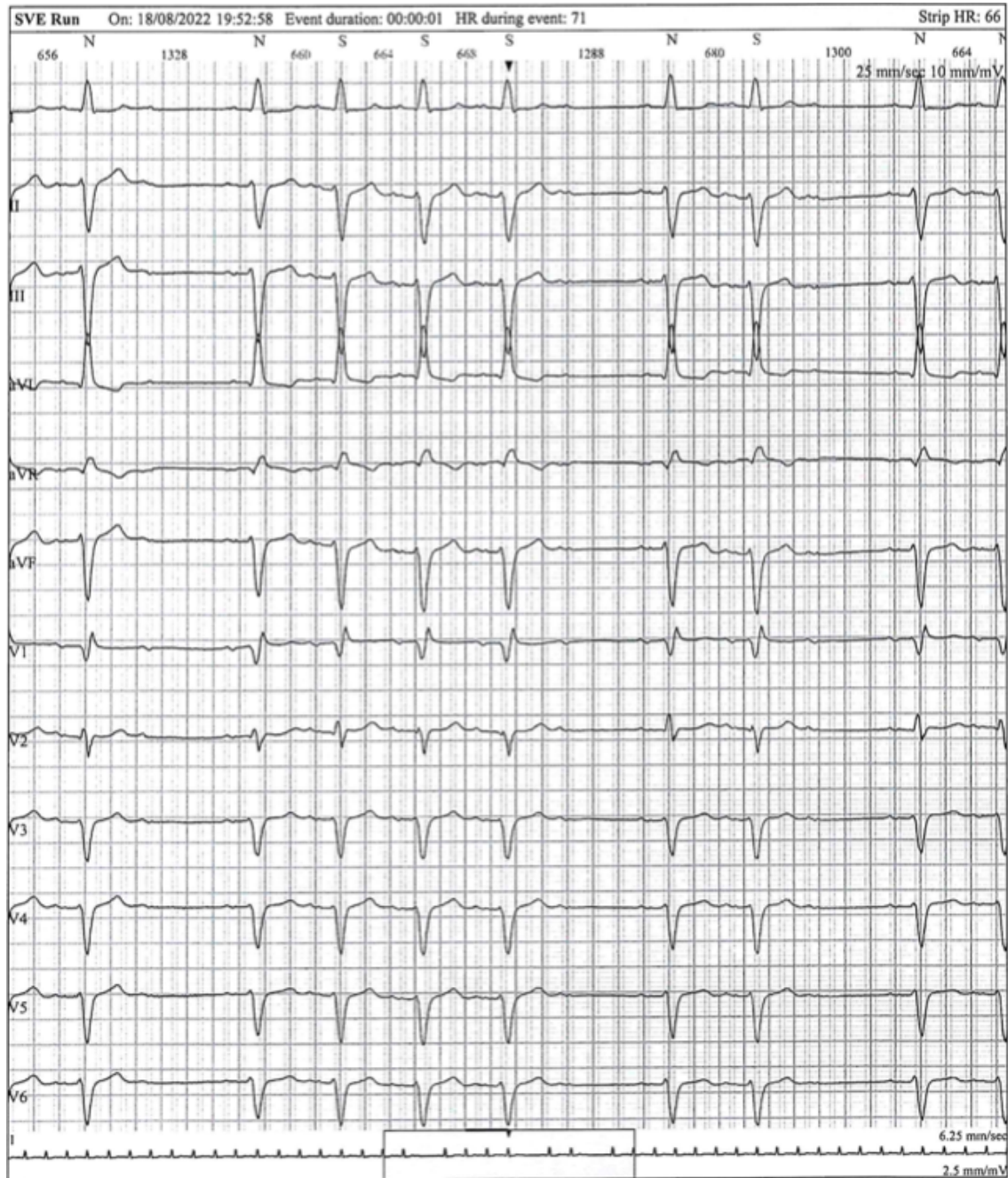
RBBB

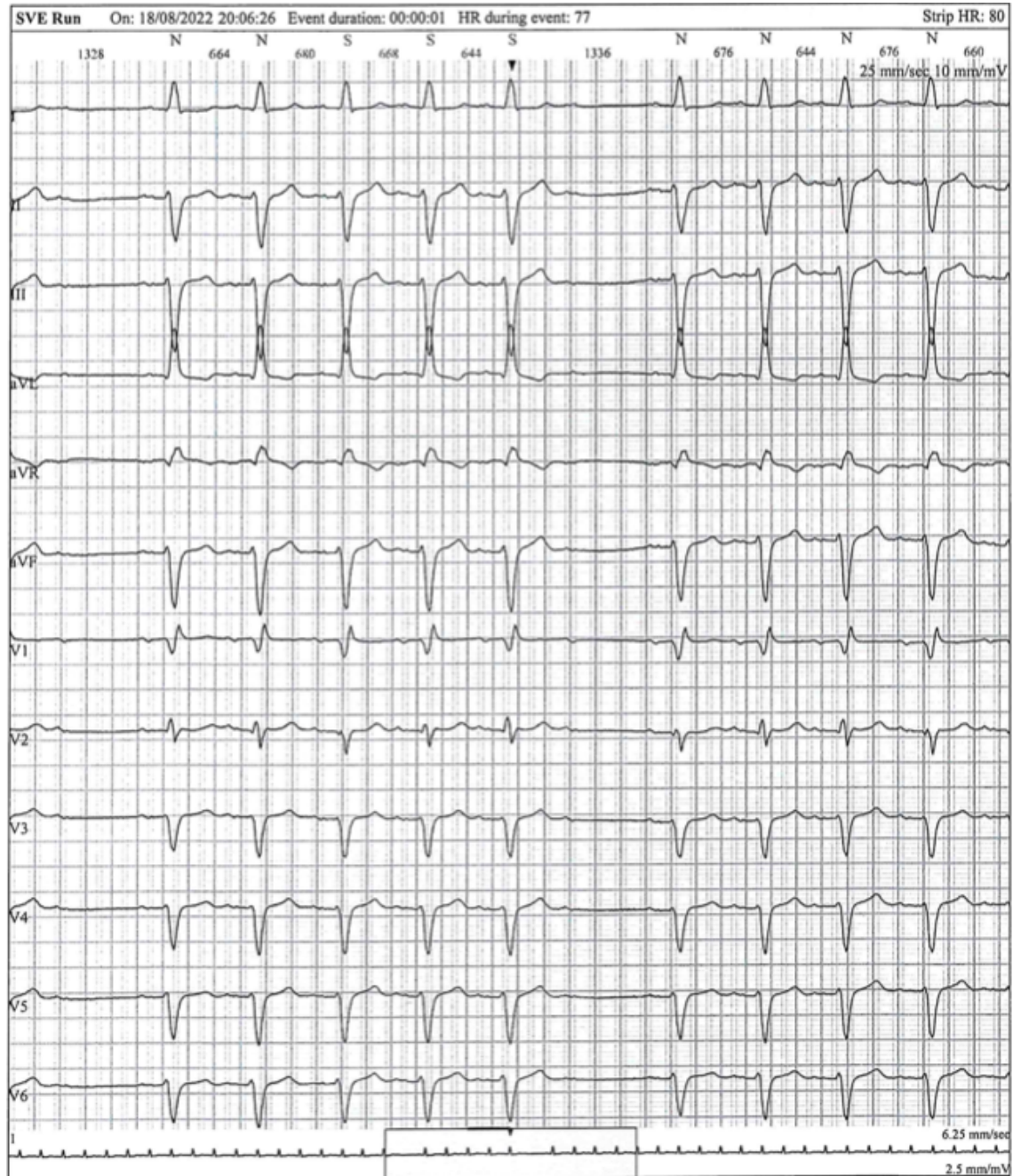
episodes of MOBIZ II - high degree AVB

VPB'S, few

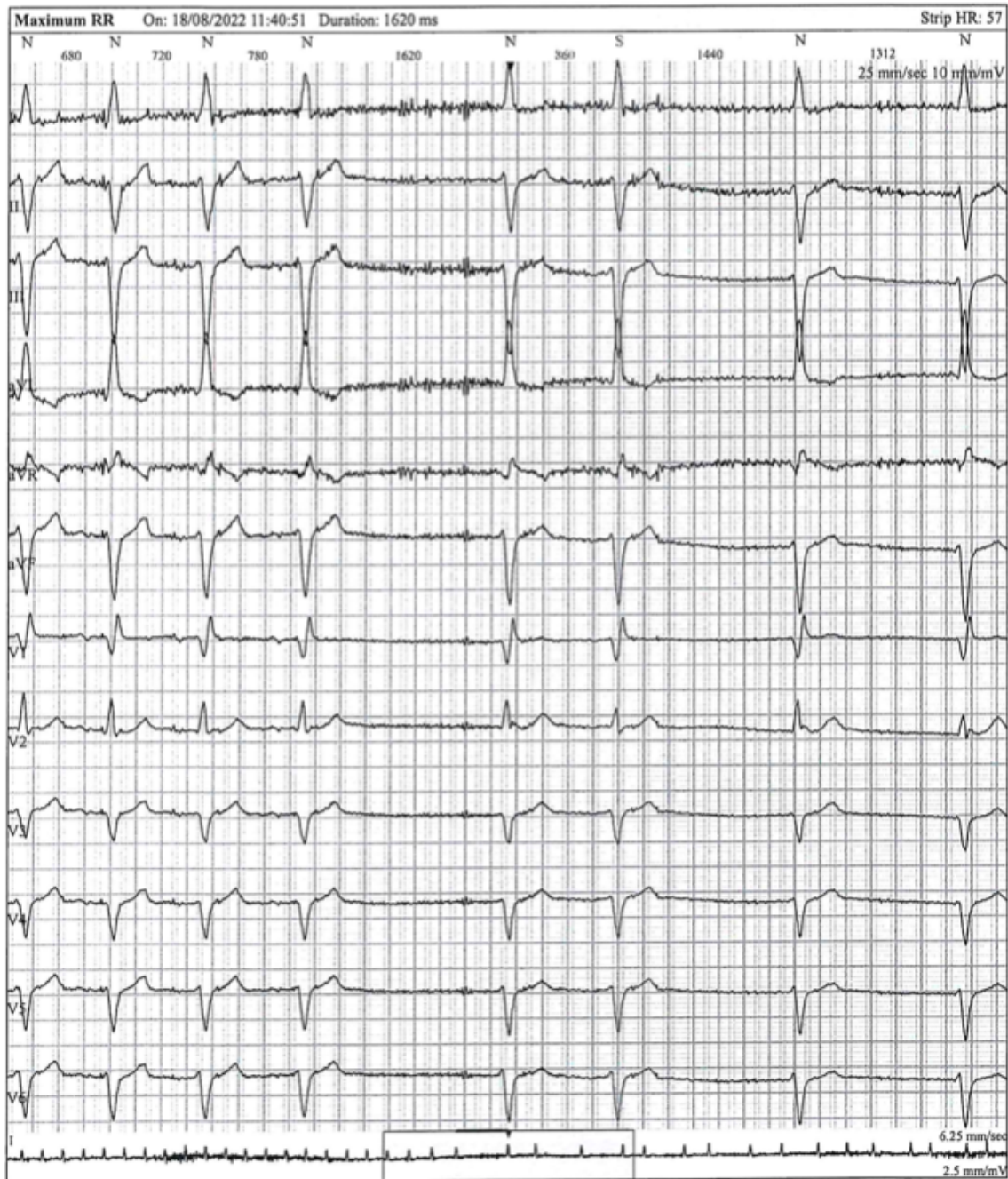
No significant pauses  
for urgent EP consultation







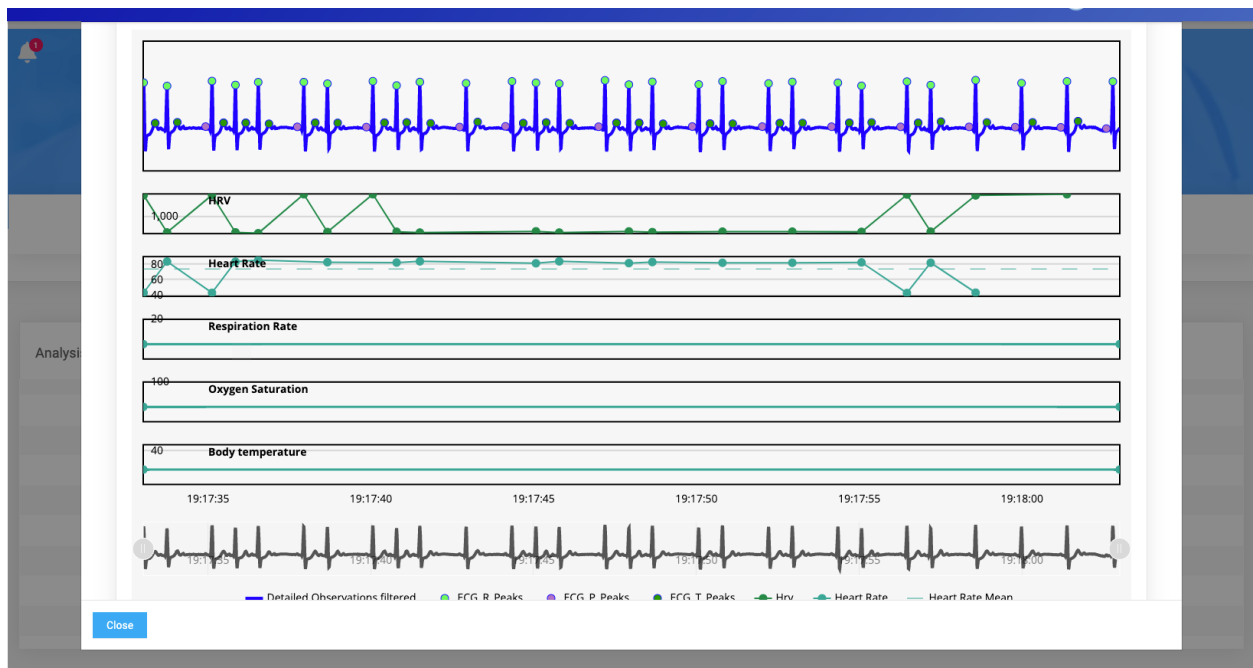
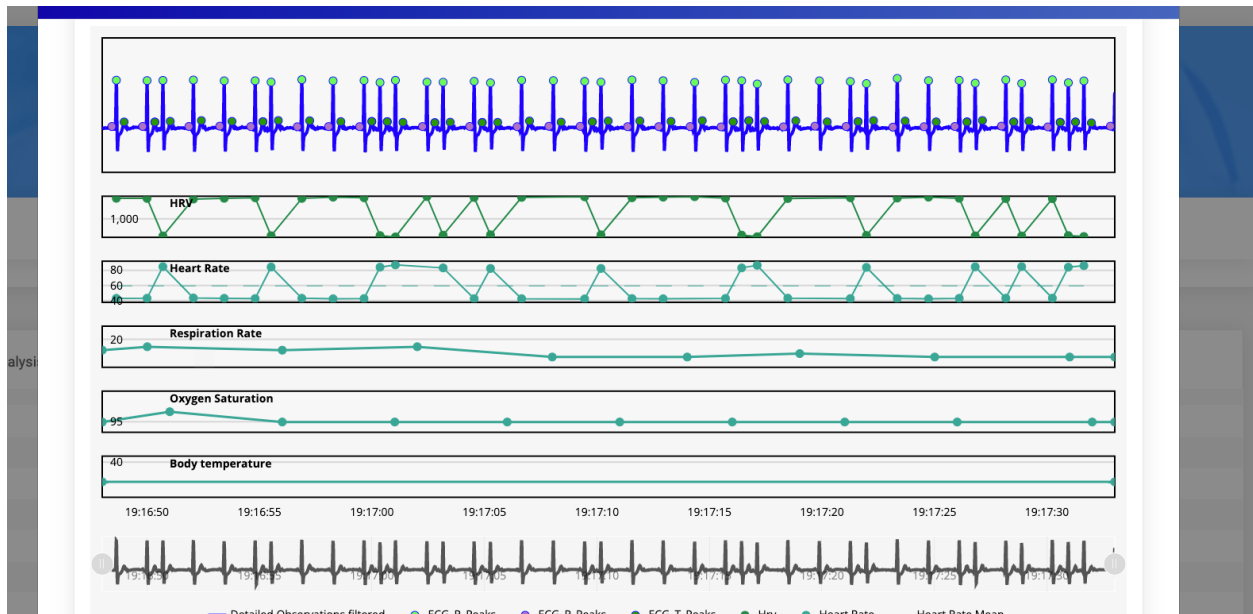






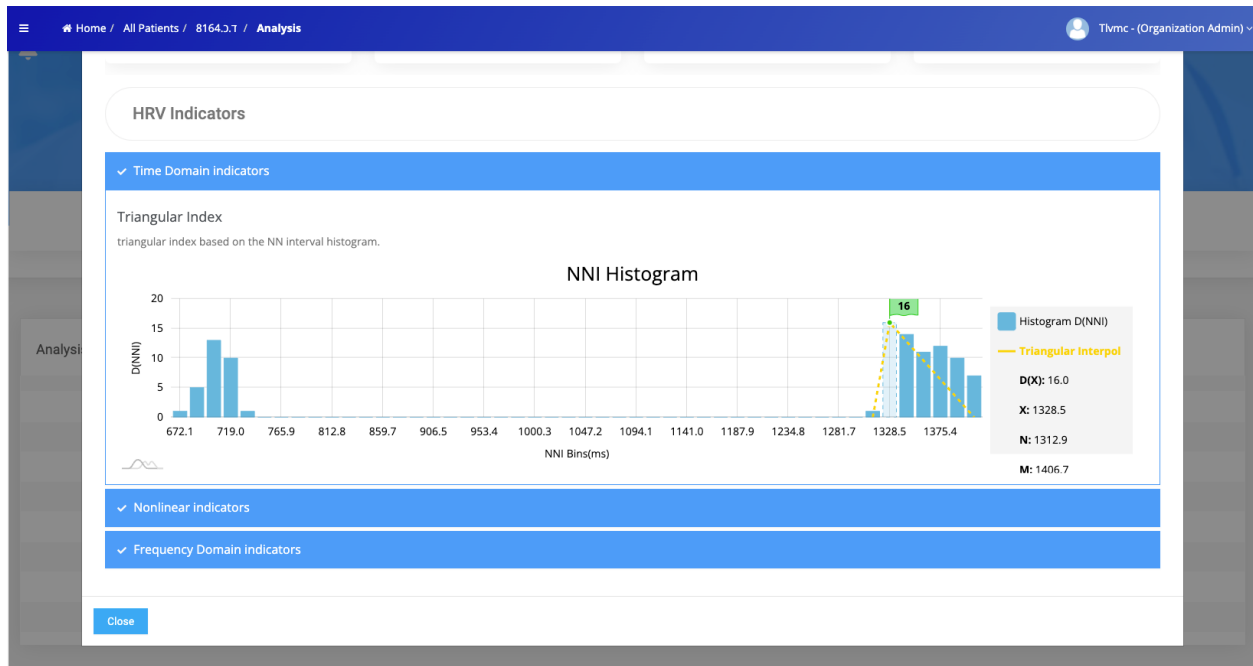
#### 4. Representation of the Arrhythmia on SURE Platform

##### 1. Detailed View presenting various parameters:

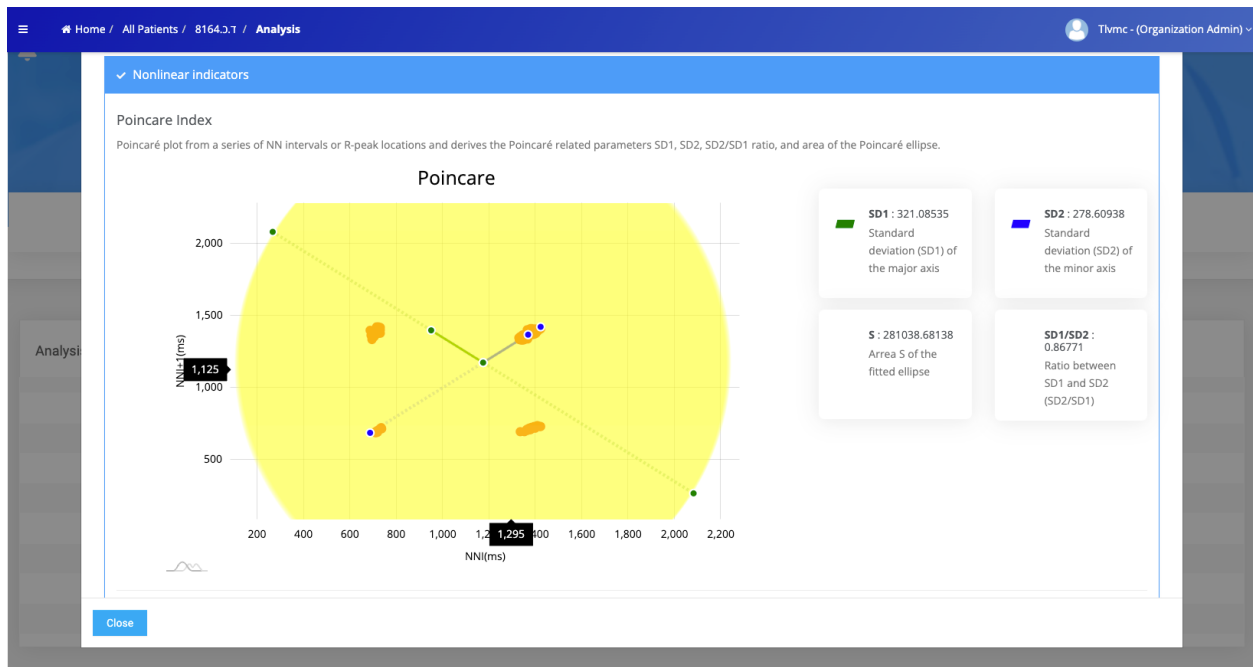


## 2. Heart Rate Variabilities (HRV) Indicators

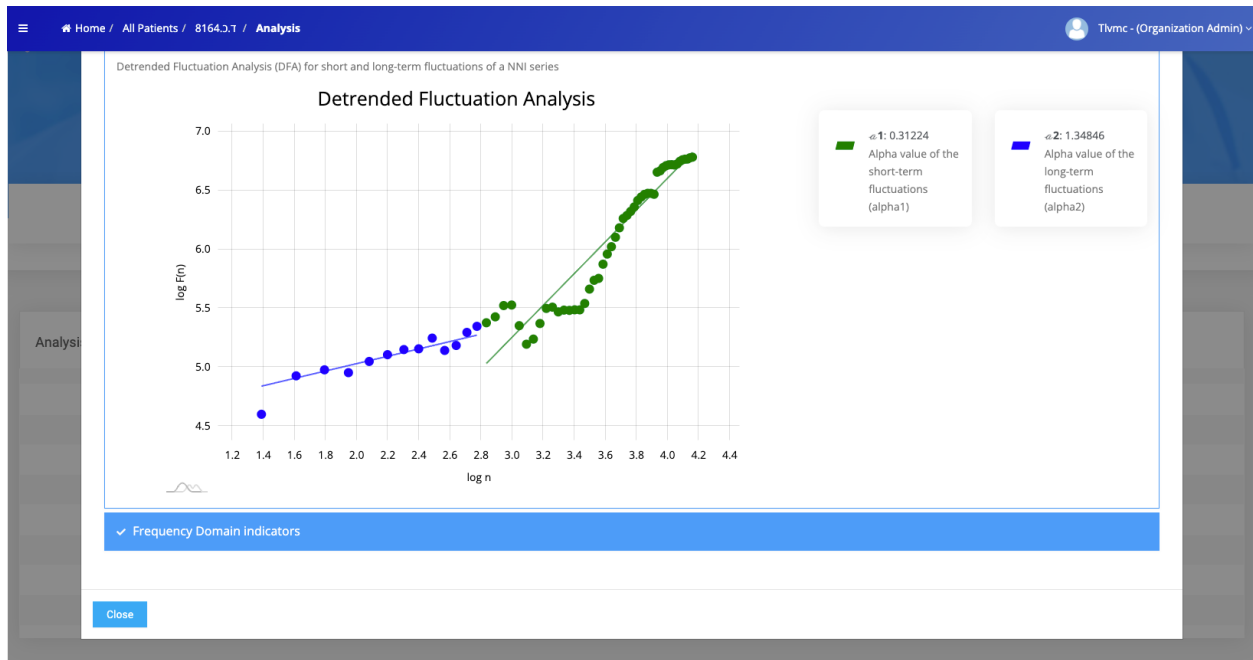
### 1. NNI Histogram



### 2. Poincare Index



### 3. Detrended Fluctuation Analysis



### 4. Spectral Density

