

**Title:** *Enhancing the Cardiac Diagnostic Yield through Rate, Rhythm, QRS Morphology and P-wave Analysis*

*Matching Technology to the Patient's Needs*

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*CardioPAL™ SAVI  
Case Study*

## Profile

Female patient, 29 years of age, 28 weeks pregnant presented with complaints of an irregular heart beat described as, “racing on and off” throughout the past few months. “It usually happens everyday and lasts for just a few seconds, and then subsides spontaneously,” was the description of symptoms the patient provided to the clinical practice.

Past Medical History: Unremarkable except for asthma for a short time period  
 Past Surgical History: Laparoscopy for endometriosis  
 Family History: Positive for CAD, hypertension, and diabetes  
 Social History: Patient does not smoke, does not drink  
 Allergies: No known drug allergies  
 Medications: Vitamins

Physical Examination	Diagnostic Results
<b>Vital Signs</b>	Blood Pressure: 100/80
<b>Weight</b>	153 lbs
<b>Head and Neck</b>	No JVD with a mild thyroid enlargement
<b>Lungs</b>	Clear to auscultation
<b>Heart</b>	Regular Rhythm with mild systolic murmur
<b>Abdomen</b>	Soft, no tenderness
<b>Extremities</b>	Peripheral pulses are palpable
<b>12-lead EKG</b>	Revealed normal sinus rhythm with no acute ST-T changes, with possible mild LVH and mild left atrial enlargement
<b>24-hr Holter</b>	Revealed a few PACs

## Indication

### Assessment & Plan

Due to the inconclusive results from the 24-hour Holter and the 12-lead EKG, and in consideration of both the high-risk pregnancy and the underlying diagnostic dilemma, an order was placed for an Echocardiogram and a cardiac Event monitor. A *CardioPAL SAVI™* 30-Day transtelephonic Event monitor with auto-capture technology from Medicomp, Inc. (Melbourne, FL) was prescribed. The patient was further instructed to discontinue all medications during the testing period. The physicians committed to follow up with the results, and instructed the patient to follow up with her Gynecologist for her pregnancy and possibly consider a thyroid hormone check.

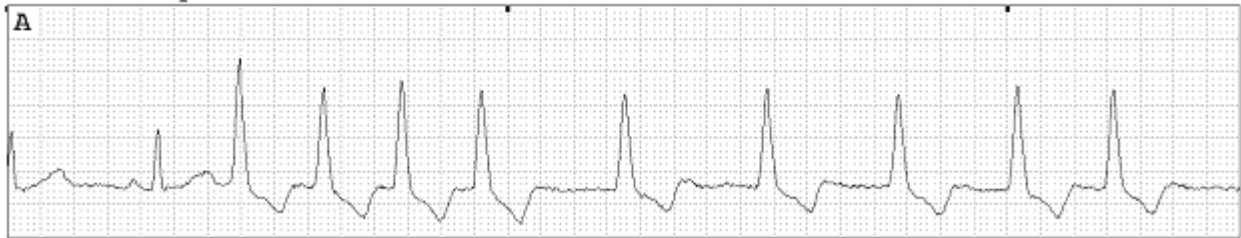
## Results

Over the 30-day period, the patient manually activated and transmitted on 43 separate occasions, identifying symptoms of chest tightness, dizziness, irregular heart beats, and occasional shortness of breath. The diagnostic results showed NSR, Sinus Tachycardia with Ventricular Ectopy, and frequent PVCs.

On thirteen separate occasions, the *CardioPAL SAVI™* auto-captured an asymptomatic event. All auto-captures were determined to be clinically significant as they displayed Ventricular Ectopy, SVPBs, SV Couplets and Triplets, as well as PVCs. One of these recordings satisfied our physician's pre-specified **notification criteria**.

NSR, Sinus Tachycardia, VE Run vs. Aberrant Conduction (six-beat run), one episode of Aberrant Conduction (eight-beat run), and **one episode of a VE Run (nine-beat run)**, as illustrated below:

ECG 2 AutoCapture: 9 Beat Run



The results of the 30-day Cardiac Event monitor provided clinical justification to proceed to the next step, which included performing an MRI (without contrast). The MRI showed evidence of inflammatory signal seen within the anterior septum and anterior wall of the myocardium, possibly indicating underlying myocarditis.

Following the initial 30-day testing period, our physician retained Medicomp's monitoring services for an additional 30-day period as a precautionary measure, keeping the safety of both patient and baby in mind. Once again, an auto-capture that satisfied our notification criteria was identified, and the patient was transported to the local Medical Center.

**VE (six-beat run) vs. (Rapid) QRS Conduction Change** as illustrated below:

ECG 1 AutoCapture: 6 Beat Run of VT vs Aberrant Conduction



## Clinical Practice Commentary

*We have utilized other manufacturers' monitors in the past and did not experience the diagnostic success or patient compliance that we desired. Medicomp's latest auto-capture technology (SAVI) provided our clinical practice a beat-to-beat surveillance of Rate, Rhythm, QRS Morphology, and P-wave abnormalities. The underlying foundation for the four pillars of analysis is made possible by capitalizing on the same operating system as found in their intelligent Holter monitor. In fact, our physician refers to Medicomp's CardioPAL technology as "a 30-day Holter that only keeps the relevant information".*

*In our opinion, had we selected an event technology that relies strictly on manual activation, or one that does not independently and concurrently evaluate Rate, Rhythm, QRS Morphology and P-Wave Analysis, significant asymptomatic cardiac abnormalities would have been missed.*