

Timely Intervention for VF Detection and Therapy in the Setting of Antiarrhythmic Medication Nonadherence

A Steward Medical Group + PaceMate™ Collaboration

INTRODUCTION

Continuous remote monitoring technology has transformed cardiovascular implantable electronic device (CIED) patient care models and offers patients numerous clinical advantages. However, this technology has opened the floodgates for the continuous flow of data to device clinics. Review, triage, and management of this data contributes to increasingly more burden on staffing resources as they experience around-the-clock receipt of alert transmissions.

BACKGROUND

REMOTE MONITORING CLINIC BURDEN

Approximately 74% of remote transmissions are received between 5:00 p.m. and 9:00 a.m.¹ In a study examining remote monitoring alert burden in a population of >26,000 patients, O'Shea and colleagues found that 40.2% of the analyzed RM transmissions were alerts. Of the 78,862 alerts analyzed, 95.2% were low acuity alerts (yellow alerts) and 4.8% were high acuity alerts (red alerts), with most red alerts coming from implantable cardioverter defibrillators (ICDs).² Most device clinics lack sufficient staffing resources to monitor multiple vendor websites 24/7/365. Staff availability during traditional clinic hours only provides 25% coverage for alert monitoring of vendor websites in a typical week.

CASE DESCRIPTION

- > 60-year-old female
- > Past medical history of hypertension, tobacco use, migraines, mixed anxiety and depression disorder, ADHD
- > Experienced sudden cardiac arrest (SCA) on the front lawn of her home
- > Prompt bystander CPR administered by a relative
- > Patient was resuscitated and subsequently hospitalized
- > No deficits noted post arrest
- > Post-SCA event cardiac catheterization and electrophysiology study were negative
- > Cardiac MRI and echocardiogram confirm preserved ejection fraction (EF) of 55%
- > No known obstructive coronary artery disease

After shared decision making, the patient and medical team proceeded with Medtronic Chrome VR ICD implant on July 28, 2021. The following clinic, as part of Steward Medical Group in Brockton, Massachusetts, utilizes PaceMate™'s end-to-end software+service solution for remote CIED monitoring.

- > Discharged on titrating dose of amiodarone 200 mg qd, lisinopril 40 mg, and metoprolol succinate ER 25 mg qd
- > Usual post-implant care with incision assessment, patient education, and initiation of continuous remote monitoring via CareLink

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CASE REPORT

On August 23, 2021, the PaceMate™ clinical services team received a critical alert for this patient. VF at 300 bpm, lasting 18 seconds, was detected and terminated successfully with one 40J shock. The clinic's customized alert settings automatically applied the red flag alert. The device technician was notified immediately and called the patient but received no answer. EMS was called by the device technician, and the patient was thankfully found alive. At the hospital, the patient informed the hospitalist that she had stopped taking her medications. Medications were resumed, and there have been no further ventricular arrhythmia detections.

- › Ejection fraction remains at 60%
- › Amiodarone was discontinued
- › Current medications include Sotalol 80 mg bid, lisinopril 40 mg qd, metoprolol succinate ER 25 mg qd, and atorvastatin 20 mg qd
- › Patient remains adherent to medical therapy



DISCUSSION

PaceMate™'s proprietary alerts engine prioritized the VF alert condition across all vendor and device types and immediately flagged the alert to the top of the transmission list for the PaceMate™ clinical team to assess and triage to the clinic. PaceMate™'s display of both the red flag and the reason for the alert—"Episode - VF" and "Shock x1"—enabled the PaceMate™ clinical team to quickly identify the alert, review the transmission, and notify the clinic.

The phone call to the clinic was an essential factor in this case as the clinic device staff were performing in-person evaluations and were not currently monitoring on the PaceMate™ platform. PaceMate™'s customer-facing audit log shows that VF was detected and therapy was delivered at 1:59 PM, the transmission was received at 2:01 PM, and the clinic was notified at 2:16 PM, with immediate calls to the patient and EMS placed by the clinic device technician. Timely intervention for this patient was critical as recurrence of VF was likely in the setting of nonadherence to antiarrhythmic therapy.



CONCLUSIONS

Clinically relevant alerts require timely notification. Remote monitoring alert management cannot be limited to regular clinic business hours and should not be delayed until business hours resume. In this case, prompt notification of the critical alert reduced detection-to-intervention time. This quick notification coupled with the device technician's persistence to contact the patient may have prevented a poor outcome.



PACEMATE™ SERVICE

This case study report demonstrates the effectiveness of PaceMate™LIVE's alerts engine and the clinical expertise and partnership between the PaceMate™ and Steward Medical Group clinicians to facilitate timely intervention for a patient experiencing post-ICD implant recurrent ventricular fibrillation (VF).

PaceMate™'s proprietary clinical alerts engine, embedded in the PaceMate™LIVE software platform, allows users to customize and prioritize every alert beyond device and vendor settings. PaceMate™LIVE supports reduced detection-to-intervention time for clinically actionable alerts. PaceMate™'s software+service solution, available 24/7/365 or "On Demand," promotes patient safety, quality of care, and reduction in liability for the practice.