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NO ELECTROMAGNETIC INTERFERENCE EXISTS BETWEEN THE NEW REMOTE MONITORING SYSTEM AND IMPLANTABLE DEVICES

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Introduction: The BodyGuardian® is a novel remote monitoring platform comprised of a rechargeable module that attaches to an adhesive patch with attached electrodes. ECG, respiration, activity level and other clinical parameters are transmitted via Bluetooth to a smartphone and then to the central cloud platform via cellular or Wi-Fi connection for clinical review (Figure). Although approved for clinical use, potential electromagnetic interference (EMI) precludes its use among patients with implantable devices.

Method: We prospectively recruited 100 patients with permanent pacemaker (PPM) or implantable cardioverter defibrillator (ICD) who were followed in our institution. The patient was monitored during acquisition and transmission of electrocardiogram using the BodyGuardian® remote monitoring system while the implantable device was programmed to usual and maximal sensitivities and observed for EMI.

Results: Of the 100 patients recruited, a single chamber ICD was implanted in 47, dual chamber ICD in 5, single chamber ventricular PPM in 21, atrial PPM in 1, dual chamber PPM in 26, and the rate-responsive mode was turned on in 44. The mean permanently programmed sensitivity was 0.51 ± 0.64 mV for the atrial lead and 1.72 ± 1.88 mV for the ventricular lead, and the maximal sensitivity was 0.06 ± 0.09 mV for the atrial lead and 0.25 ± 0.35 mV for the ventricular lead. The BodyGuardian® module and adhesive electrode strip was applied to the skin, directly over the implanted device in all cases. In 208 successful acquisitions and transmissions of electrocardiogram as verified on the cloud platform, no EMI was detected.

Conclusion: No EMI was detected with PPM or ICD during the use of the BodyGuardian® remote monitoring system. This new system can be safely used in patients with implantable devices or by patients that are in close physical contact with others with implantable cardiac devices.

