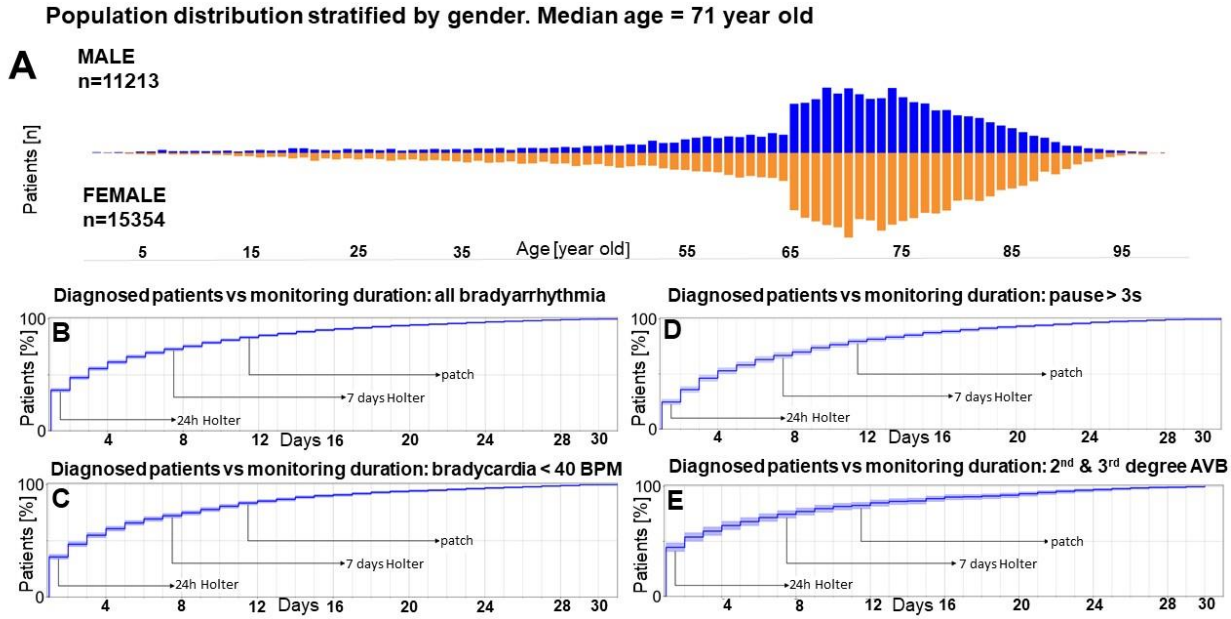
Optimizing the Duration of Monitoring with the Diagnostic Yield for Bradyarrhythmias Using a Next Generation, Full-Disclosure Mobile Cardiac Telemetry Device

Background: Full-disclosure, mobile cardiac telemetry (MCT) devices provide continuous ECG data transfer and rhythm identification for up to 30-days providing newer methods to identify high risk patients. Determining the optimal monitoring duration has significant healthcare quality and cost implications.

Methods: The dataset is a collection of all MCT recordings that were made with PocketECG system in 2017. The cumulative diagnostic yield (DY) on the composite outcome of a clinically relevant bradyarrhythmia defined as a pause >3s, 2nd and 3rd degree atrioventricular block (AVB), or bradycardia with average rate <40 beats per minute was analyzed using Kaplan-Meier estimator and compared to short (24 hours, 7 days and 11 days) monitoring, using the same dataset.

Results: We analyzed 26,567 MCT studies and identified 3,325 patients with bradyarrhythmia [pause >3s = 1,223; AVB = 618; HR<40 = 1,997]. The median age was 71. Overall, the cumulative diagnosis of bradyarrhythmia was 1,207 at 24 hours, 2,423 at 7 days, and 2,776 at 11 days. The DY of MCT was 175% (95% CI: 162% - 188%, p<0,001); 37% (95% CI: 34% - 40%, p<0,001); and 19% (95% CI: 17% - 22%, p<0,001) higher than 24 hours, 7 days and 11 days of monitoring, respectively. The DY of MCT was also higher for each bradyarrhythmia individually.

Conclusion: Full-disclosure MCT monitoring is associated with higher DY compared to short monitoring. Optimizing the monitoring duration to long-term will enhance approaches to identify patients at risk for bradyarrhythmia.



A: Population distribution; **B:** All bradyarrhythmia: 1,207 at 24h; 2,423 at 7 days; and 2,776 at 11 days; **C:** Bradycardia < 40 BPM: 713 at 24h; 1,444 at 7 days; and 1,668 at 11 days; **D:** Pause > 3s: 301 at 24h; 818 at 7 days; and 975 at 11 days; **E:** AVB: 276 at 24h; 461 at 7 days; and 511 at 11 days