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Research Abstracts

Reimagining Inpatient Physiologic Monitoring: A Pilot of Wearable Activity Monitors After Cardiac Surgery

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Introduction: Noninvasive wearable patient monitoring has the potential to revolutionize inpatient and outpatient surgical management. This pilot study aims to establish the feasibility of using noninvasive wearable activity monitors (wearables) to track key clinical variables in the outpatient setting.

Methods: A single-center descriptive pilot study was conducted. Preoperative cardiac surgery patients were consented, provided with a wearable, and instructed in its use. Activity monitor data was abstracted from the patient's wearable account and clinical information was gathered from the electronic medical record. Descriptive statistical analysis was undertaken to correlate hospital measured heart rate with wearable measured heart rate to validate accuracy and to analyze trends in sleep score and step count over time.

Results: 30 patients were enrolled and issued activity monitors. The average age was 54 years (range 20-85) and 36% were female. Usable data was obtained in 70% of patients. Inpatient heart rate was measured by both the hospital and the wearable device in 8 patients, and the interquartile range for the Spearman correlation was 0.4 to 0.5. There was also significant overlap in the measured heart rates. Dramatic changes occurred with patient activity.

Conclusions: This study demonstrates that wearable noninvasive activity monitors can be used to remotely monitor cardiac surgical patients. These results confirm the unique physiologic data that is available from wearables and allude to the potential for perioperative patient management.

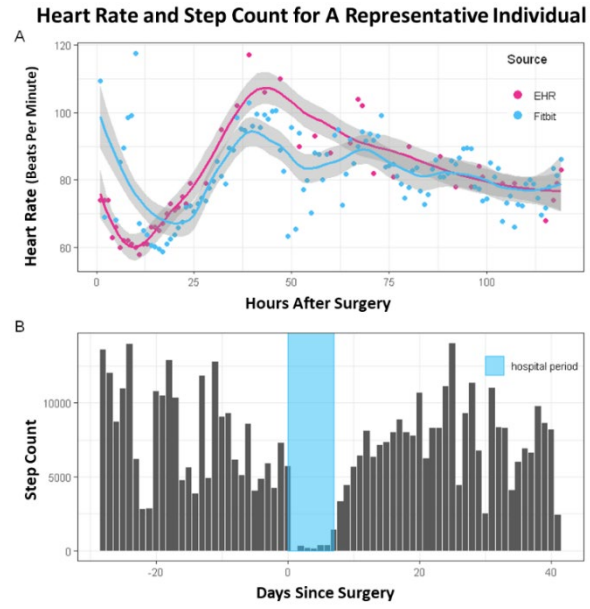


Figure 1. Heart Rate and Step Count for A Representative Individual
