Mobility and improved patient recovery at home

BioButton®* multi-parameter wearable device, paired with BioDashboard™* clinical intelligence solution

Bernie
74-year-old male

Patient overview

- History of hyperlipidemia, hypertension, TIA
- Brought to ED by his wife for severe indigestion and weaknessd

Hospital course

Bernie arrives at the emergency department, where a 12-lead EKG is immediately performed. Tachycardia with ST-segment depression is noted, and he is diagnosed with a non-ST-elevation myocardial infarction (NSTEMI). Bernie receives 325 mg of chewable aspirin and two doses of 0.4 mg sublingual nitroglycerin. Oxygen is administered via nasal cannula, and IV anticoagulation therapy is initiated. Bernie is admitted to the step-down unit to await coronary artery bypass graft (CABG) surgery. Three days later, he undergoes a quadruple bypass procedure, followed by recovery in the cardiothoracic surgery ICU before returning to the step-down unit.

Bernie is pleased to learn his medical team believes he is ready for direct discharge home, even though he lives two hours from the hospital. To ensure continued monitoring, Bernie is equipped with the BioButton®* multi-parameter wearable device, which is adhered to his left upper chest before discharge.

The BioButton®* multi-parameter wearable continuously captures Bernie's resting heart rate, resting respiratory rate, and additional contextual biometrics, including activity levels, transmitting data up to 20 times per hour. Information is wirelessly relayed to the BioHub™* and securely stored in the BioIntellisense BioCloud™*. A remote monitoring clinician reviews Bernie's data and the notifications generated by the BioDashboard™* system.

02:09 p.m.
ED ASSESSMENT
Oral Temp: 36.0° C
HR: 113
RR: 23
BP: 98/67
SpO_2: 89% on room air
High-sensitivity troponin I: 17 ng/L

Home

Bernie arrives home and settles in to recover from surgery. He continues to wear the BioButton®* multi-parameter wearable device. Two weeks after Bernie's discharge, the remote monitoring clinician notes an notification indicating a trending increase in his respiratory rate. She reviews Bernie's respiratory data trends along with his biometrics and observes that he hasn't been very active since returning home. The hospitalist is notified.

The hospitalist contacts Bernie to find he has been complaining of a lot of lower leg swelling, and that he hasn't been very mobile because of the discomfort. He spends most of his day in a recliner. He's feeling discouraged and has been reluctant to take prescribed analgesics due to concerns about dependence. Bernie has also hesitated to contact his care team, not wanting to make the drive back to the hospital.

The hospitalist acknowledges Bernie's apprehension about returning to the hospital and reassures him it's natural to have concerns regarding the potential risks of opioid use. He emphasizes that managing Bernie's pain is a priority and will help him become more comfortable moving around. Bernie's daughter, who serves as his caretaker, is encouraged to help him gradually increase his daily walking. Additionally, the hospitalist ensures that Bernie has an incentive spirometer at home and instructs Bernie's daughter on its proper use. Finally, he requests that Bernie weigh himself at the same time daily and keep a log of his weight. Bernie's daughter agrees to contact the hospitalist if Bernie's weight increases by more than 2 pounds in a day or 5 pounds in a week.

Outcome

The remote monitoring clinician reviewed Bernie's daily activity levels from the BioButton®* multi-parameter wearable device. She was happy to see he was gradually increasing his step count and spending less time sitting. Bernie spoke with the hospitalist a week later during a follow-up call and reported feeling much better since he had started walking more.

Discussion

Patients who have undergone cardiac surgery may experience reduced functional capacity, negatively affecting postoperative outcomes.[1] Early mobility can accelerate the recovery of functional capacity while reducing and preventing pain.[2] Bernie had started experiencing complications related to immobility. Bernie's care team was able to monitor his activity and vital signs through the BioButton®* multi-parameter wearable device, enabling them to guide his family in supporting his recovery. As a result, Bernie experienced a positive outcome, avoided the need for a return hospital visit for symptom management, and was able to recover comfortably at home.

When used in Post Acute Mode, the BioButton®* multi-parameter wearable device provides visualization of resting heart rate, resting respiratory rate, skin temperature, activity level, sleep tracking, step and gait, body position, and incline angle while sleeping.

Please consult the product IFU prior to use. Results and outcomes vary for patients. This story reflects a real patient from an anonymized hospital. Patient monitoring products should not be used as the sole basis for diagnosis or therapy and are intended only as an adjunct in patient assessment.

References:

1. Doyle MP, Indraratna P, Tardo DT, Peeceeyen SC, Peoples GE. Safety and efficacy of aerobic exercise commenced early after cardiac surgery: A systematic review and meta-analysis. *Eur J Prev Cardiol.* 2019;26(1):36-45.
2. Jacob P, Jayaprabha Surendran P, Gupta P, et al. Enhancing early functional independence following cardiac surgery: a quality improvement programme. *BMJ Open Qual.* 2023;12(4):e002190.

Want to learn more about the BioButton®*?
Contact your Medtronic sales representative or visit our site: www.medtronic.com/healthcast_biobutton

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