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Why is spot checking alone no longer enough?

Help prevent patients from falling through the cracks with **wearable trend monitoring**



The challenge of spot checking alone

The fallout of the pandemic has placed increasing stress on nursing teams. With fewer staff^{1,2} caring for more patients, spot checking non-critical patients every 4-6 hours may not be enough. Patient deterioration may go unnoticed or recognition may be delayed. This significantly increases the chance of an adverse event and puts your patients at risk.

60%

of patients have at least one abnormal vital sign (HR, RR, BP) **less than 4 hours** before in-hospital cardiac arrest³

On a typical 30-bed unit, monitoring vital signs every 4 hours requires

900+

minutes of nursing time **per day**⁴

Wearable trend monitoring can help fill the gaps

Wearable trend monitoring complements and supports routine spot checking. This method tracks trends of non-critical care patients using the best early indicators of patient decline in the hospital – resting respiratory rate, resting heart rate, and skin temperature.

Continuous monitoring with a wearable device can help caregivers:

- **improve patient safety⁵** through accurate, early detection of patient deterioration
- **reduce rapid response team activations⁶** and ICU transfers, helping to **reduce costs⁷⁻⁹**
- let healthcare providers **discharge with confidence¹⁰**
- **improve job satisfaction¹¹** by helping nurses identify and focus on patients needing skilled care

Continuous remote vital sign monitoring[†] has been shown to help caregivers reduce:

↓ **time to rapid response system activation^{12,‡}**

↓ **nurse workload^{12,‡}**

↓ **hospital length of stay^{13,‡}**

↓ **unplanned ICU transfers^{13,‡}**

↓ **code blue rates^{13,‡}**

[†]Consisting of blood pressure, pulse rate, and body temperature with manual respiratory rate.
[‡]Used parameters similar to but not identical to those measured by BioButton[™].



Monitor trends with BioButton®*

The **BioButton®*** multi-parameter wearable is a non-invasive, medical-grade, patient trend remote monitoring solution. It collects minute-by-minute key physiological data to help clinicians prioritize care, simplify workflow, improve patient outcomes, and expand patient monitoring capabilities from in-hospital to hospital-to-home.



Learn more

For a clinical demo or to learn more about trend monitoring with the **BioButton®*** multi-parameter wearable, contact your rep or scan the QR code:



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.

1. American Nurse Foundation. Pulse on the nation's nurses COVID-19 survey series: COVID-19 impact assessment survey – the second year. Nursingworld.org. Published January 2022. Accessed Sept. 1, 2023. <https://www.nursingworld.org/practice-policy/work-environment/health-safety/disaster-preparedness/coronavirus/what-you-need-to-know/covid-19-impact-assessment-survey---the-second-year/>
2. Auerbach DI, Buerhaus PJ, Donelan K, Staiger DO. A worrisome drop in the number of young nurses. Healthaffairs.org. Published April 13, 2022. Accessed Sept. 1, 2023. <https://www.healthaffairs.org/doi/10.1377/forefront.20220412.311784>
3. Görges M, Markewitz BA, Westenskow DR. Improving alarm performance in the medical intensive care unit using delays and clinical context. *Anesth Analg*. 2009 May;108(5):1546-52. doi: 10.1213/ane.0b013e31819bdfbb.
4. Dall'Ora C, Griffiths P, Hope J, Briggs J, Jeremy J, Gerry S, Redfern OC. How long do nursing staff take to measure and record patients' vital signs observations in hospital? A time-and-motion study. *Int J Nurs Stud*. 2021 Jun;118:103921. doi: 10.1016/j.ijnurstu.2021.103921.
5. Weinger, M. B., & Lee, L. A. No Patient Shall Be Harmed By Opioid-Induced Respiratory Depression. APSF Newsletter. 2011;26(2):21.
6. Eddahchouri Y, Peelen RV, Koenenman M, Touw HRW, van Goor H, Bredie SJH. Effect of continuous wireless vital sign monitoring on unplanned ICU admissions and rapid response team calls: a before-and-after study. *Br J Anaesth*. 2022 May;128(5):857-863. doi: 10.1016/j.bja.2022.01.036.
7. Oderda GM, Gan TJ, Johnson BH, Robinson SB. Effect of opioid-related adverse events on outcomes in selected surgical patients. *J Pain Palliat Care Pharmacother*. 2013 Mar;27(1):62-70. doi: 10.3109/15360288.2012.751956.
8. Culler SD, McGuire KJ, Little KM, Jevsevar D, Shea K, Schlosser M, Ambrose KE, Simon AW. Incremental Hospital Cost and Length-of-stay Associated With Treating Adverse Events Among Medicare Beneficiaries Undergoing Cervical Spinal Fusion During Fiscal Year 2013 and 2014. *Spine (Phila Pa 1976)*. 2017 Oct 15;42(20):1578-1586. doi: 10.1097/BRS.0000000000002268.
9. Culler SD, Jevsevar DS, Shea KG, Wright KK, Simon AW. The incremental hospital cost and length-of-stay associated with treating adverse events among Medicare beneficiaries undergoing TKA. *J Arthroplasty*. 2015 Jan;30(1):19-25. doi: 10.1016/j.arth.2014.08.023. Epub 2014 Sep 6.
10. Fuhrmann L, Lippert A, Perner A, Østergaard D. Incidence, staff awareness and mortality of patients at risk on general wards. *Resuscitation*. 2008 Jun;77(3):325-30. doi: 10.1016/j.resuscitation.2008.01.009. Epub 2008 Mar 14.
11. Bellomo R, Ackerman M, Bailey M, et al; Vital Signs to Identify, Target, and Assess Level of Care Study (VITAL Care Study) Investigators. A controlled trial of electronic automated advisory vital signs monitoring in general hospital wards. *Crit Care Med*. 2012 Aug;40(8):2349-61. doi: 10.1097/CCM.0b013e318255d9a0.
12. Han WH, Sohn DK, Hwangbo Y, Park HJ, Kim M, Choi Y, Shin IW, Lee JM, Jeon H, Ryu KC, Yoon T, Kim JH. Effect of a Wireless Vital Sign Monitoring System on the Rapid Response System in the General Ward. *J Med Syst*. 2022 Aug 26;46(10):64. doi: 10.1007/s10916-022-01846-8.
13. Brown H, Terrence J, Vasquez P, Bates DW, Zimlichman E. Continuous monitoring in an inpatient medical-surgical unit: a controlled clinical trial. *Am J Med*. 2014 Mar;127(3):226-32. doi: 10.1016/j.amjmed.2013.12.004. Epub 2013 Dec 14.

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BioButton® multiparameter wearable is manufactured by BioIntelliSense, Inc. 570 El Camino Real, #200 Redwood City, CA 94063. Distributed by Medtronic.

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