



Customer Success Story:  
**DETECTING PATIENT DETERIORATION AT  
ARNOT OGDEN MEDICAL CENTER**

# Early Detection of Patient Deterioration Triggers Quick Interventions

**ENHANCING PATIENT OUTCOMES WITH CONTACT-FREE, CONTINUOUS MONITORING.**

## THE CHALLENGE

Arnot Ogden uses traditional telemetry devices and methods in its four cardiology units to monitor patients' vital signs. The clinical team wanted to provide this added layer of protection to other hospital patients without incurring the cost of installing telemetry systems.

Up to 17% of inpatient admissions experience clinical deterioration.<sup>1</sup> Respiratory and heart rate are recognized as the most accurate vital sign predictors associated with patient deterioration.<sup>2</sup> Changes in vital signs can often be identified six to eight hours before a deterioration event occurs, however, respiratory and heart rate are routinely taken and recorded every four to six hours, leaving a lapse in time when early recognition and intervention could make a difference.<sup>3</sup>


The 26-bed medical-surgical unit at Arnot Ogden was already equipped with Hillrom™ Centrella® Smart+ beds, so the clinical team decided to integrate the contact-free, continuous monitoring solution, powered by EarlySense, available on the beds to provide real-time information and alerts on patient respiratory and heart rates. Sensors under the mattress record



## OVERVIEW

### PROFILE

Arnot Ogden Medical Center is a not-for-profit 266-bed tertiary medical facility providing cardiovascular care, cancer care, women's health services, emergency medicine and surgical services. The vision at Arnot is to be recognized as the premier regional health care system delivering high-quality, safe, cost-effective, socially responsible health care services.



these measures, so if the respiratory and heart rates fall outside preset measurement parameters, the bed “alerts” using lights and sounds, automatically sends a notification through nurse call to the appropriate nurse, and records trends at the bedside.

## BENEFIT TO THE CUSTOMER

The unit began using contact-free, continuous monitoring technology in August 2019. Nurses collected data for every bed alert to evaluate the system’s effectiveness in detecting early deterioration and triggering appropriate interventions. During the first two weeks of use, the clinical team responded to several patient events, including recognition of opioid-induced respiratory depression, choking, agitation related to pain management and sleep apnea.<sup>1</sup> Earlier recognition of deterioration led to earlier intervention, including medication optimization for treatment of respiratory depression, pain management and airway management.

**“Continuous monitoring is so important because it just takes a minute for a patient’s condition to change. Heart monitoring only checks heart rhythm. If the patient goes into respiratory distress, that won’t show up on the heart monitor right away.”**

**– Jan Linderberry, MSM, RN  
Unit Director at Arnot Ogden**

**“It’s nice to have another set of ‘eyes,’ so to speak, on the patient. Maybe they are a little tachycardic because they have pain but haven’t asked for pain meds yet. Maybe respiration declines a bit, and the alert gets us right to the bedside.”**

**– Shelley Derr, BSN, RN  
Clinical Coordinator at Arnot Ogden**

Soon after the initial trial began, Arnot Ogden administrators decided to add the contact-free, continuous monitoring technology to all Centrella Smart+ beds in two other medical-surgical units and an observation telemetry unit. A poster presentation at the Institute of Healthcare Technology conference in December 2019 presented the early case series data.<sup>4</sup>

## CONCLUSION

Studies have shown contact-free, continuous monitoring of respiratory and heart rate on a medical-surgical unit decreases length of stay, ICU length of stay and code blue rates.<sup>3</sup> The use of contact-free, continuous monitoring to detect patient deterioration early and drive appropriate interventions is proven and effective. Arnot Ogden Medical Center recognized many patient benefits, even within the short time since the technology has been installed.

To learn more about Centrella® Smart+ beds with contract-free, continuous monitoring powered by EarlySense, contact your local Hillrom representative or visit us at [Hillrom.com](http://Hillrom.com).

<sup>1</sup> Ben-ari J, Zimlichman E., Adi N., Sorkine P. Contactless respiratory and heart rate monitoring: validation of an innovative tool. J Med Eng Technol. 2010;34(7-8):393-8.

<sup>2</sup> Churpek M.M., Adhikari R., Edelson D.P. The value of vital sign trends for detecting clinical deterioration on the wards. Resuscitation. 2016;102:1-5.

<sup>3</sup> Brown H., Terrence J., Vasquez P., Bates D.W., Zimlichman E. Continuous monitoring in an inpatient medical-surgical unit: a controlled clinical trial. Am J Med. 2014;127(3):226-32.

<sup>4</sup> Linderberry, J. and Derr, S. Identifying Patient Deterioration Early Using Contact-Free Continuous Monitoring on an Inpatient Medical-Surgical Unit. IHI 2019

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