CASE STUDY

Bringing Telemetry Closer to Caregivers using PMD's RespiraSense and Cassia's Bluetooth gateways

BACKGROUND

Today's medical professionals are often challenged with finding the right telemetry solution to provide continuous respiratory rate monitoring for patients at risk of deterioration. In many cases, unexpected changes in respiratory rate provide early warning signs that a patient's condition is deteriorating quickly. In fact, changes in respiratory rate often occur before any other changes in vital signs such as blood pressure and body temperature. Therefore, it's imperative that medical staff are equipped with the right tools and an effective respiratory rate monitoring solution to detect early signs of patient deterioration.

CHALLENGES

Most vital sign monitors lack a sensor for respiration, one of the most important early indicators of patient deterioration. Manually counting breaths and recording a patient's respiratory rate is time-consuming and prone to error due to inaccurate measurement of patient data. Furthermore, monitoring and recording a patient's respiration rate is the last clinical vital sign to be automated. Medical professionals and care staff in the Beaumont Hospital, Dublin, and Cork University hospitals in Ireland needed a precise, high-quality respiratory rate monitoring solution that would allow for continuous and remote monitoring of patients at risk of deterioration. Furthermore, acute care facilities were unable to simultaneously monitor multiple patients in various rooms and accurately record the information in the centralized electronic medical records (EMR).

SOLUTION

PMD Solutions developed RespiraSense, an innovative, high-quality continuous respiratory rate monitoring system designed for use by medical professionals to monitor unstable and at-risk respiratory patients. The RespiraSense system consists of an easy-to-use disposable wearable sensor and a reusable rechargeable transmitter. Patients in the hospital were equipped with the RespiraSense system for a minimum of five days and closely monitored to ensure they were medically stable. The RespiraSense system communicates via Bluetooth to a handheld mobile device, allowing caregivers to review the patient's live data and analyze historical trends.

PMD Solutions has selectively chosen Cassia Network's E1000 Bluetooth gateway and IoT Access Controller (AC) to enable a complete respiratory rate monitoring solution for the hospital. Cassia's gateways are being used to wirelessly transmit a patient's respiratory rate from the RespiraSense sensor to a centralized point of care management dashboard for continuous patient monitoring and analysis. The combination of Cassia's gateways and PMD's RespiraSense allows for a secure means of capturing and centralizing real-time data from multiple patients to provide care staff the ability to continuously monitor for respiratory distress and to effectively manage and treat high-risk patients in busy clinical environments.

Long Range, Multiple Device Connectivity

PMD Solutions is using Cassia's E1000 Bluetooth gateway to provide seamless long-range, multiple device connectivity needed to cover multiple rooms in hospitals in Ireland. Cassia's E1000 Bluetooth gateway can capture data from the wearable sensors and consolidate this patient data into the appropriate electronic point of care dashboard. Cassia's Bluetooth gateway enables as many as 40 simultaneous paired and connected Bluetooth Low Energy (BLE) devices all while providing a range of up to

1000 feet in open space, allowing caregivers the ability to monitor multiple patients in various rooms of the hospital.

Highly Scalable, Flexible and Secure

The powerful capabilities of Cassia's E1000 Bluetooth gateway allow PMD Solutions to deliver a scalable respiratory rate monitoring solution for hospitals in Ireland. Cassia's gateways support advanced encryption security features to safeguard sensitive patient data. In addition to Cassia's gateways, PMD Solutions is using Cassia's IoT AC, a powerful network management solution for easy setup and management of multiple gateways. This provides the flexibility needed for medical staff to remotely monitor multiple patients in various rooms to minimize the need for physical routine checks.

RESULTS

Since partnering with Cassia Networks, PMD Solutions can provide hospitals in Ireland with a scalable and cost-effective respiratory rate monitoring solution that provides care staff with the insights they need to better identify, anticipate and treat at-risk patients.

Elevating patient care with accurate clinical data

The combination of Cassia's E1000 Bluetooth gateways, IoT AC and PMD's RespiraSense provides medical staff with real-time, accurate patient data to detect early signs of patient deterioration. Early intervention based on clinical data improves the quality of care of at-risk patients and also reduces their length of stay in a hospital. Furthermore, the continuous respiratory rate monitoring system reduces the need for medical staff to manually collect and input patient data allowing care teams to focus more on providing efficient and timely patient care.

Improving Efficiency While Reducing Costs

By combining wireless technology, data and analytics into a fully integrated respiratory rate monitoring solution, medical staff is better equipped to deal with and manage at-risk patients. Care staff now have access to accurate respiratory rate patient data via a dedicated platform and will receive real-time alerts in the event a patient's condition begins to deteriorate. Early intervention improves worker efficiency and also reduces medical costs by minimizing the number of care staff needed to perform physical routine checks. Furthermore, because fewer Cassia gateways are needed to cover multiple rooms, PMD Solutions can now offer a lower-cost wireless technology solution allowing the hospitals to benefit from reduced equipment costs and achieve a greater return on investment.

PMD Solutions and Cassia Networks are working together to deliver a scalable and cost-effective respiratory rate monitoring solution for multiple hospitals in Ireland.

"The partnership between Cassia and PMD Solutions enabled the implementation of a remote monitoring solution that met the needs of both patients and healthcare providers. A simple deployment of remote monitoring ensures that by making every breath count, the right patient received the right care at the right time. An effective and safe remote monitoring solution to empower healthcare providers with the earliest sign of deterioration, respiratory rate."

Myles Murray,
Founder and CEO of PMD Solutions

"Cassia is excited to be working with PMD Solutions to provide a complete respiratory rate monitoring solution to effectively treat at-risk patients as well as helping save lives. With the combination of PMD's RespiraSense respiratory rate monitoring system and Cassia's Bluetooth gateways, we can better equip hospitals and care staff with an effective remote patient monitoring solution to deliver the highest level of patient care."

Felix Zhao
CEO of Cassia Networks

ABOUT

Cassia Networks is the leading provider for enterprise Bluetooth IoT products and solutions. Our patented technology provides the most reliable and easy to manage long-range, multiple device connectivity, edge-processing and locationing for Bluetooth IoT networks.

To learn more about Cassia's IoT products and solutions, please visit **www.cassianetworks.com** or contact us at **sales@cassianetworks.com.**

For more information about PMD Solutions, please visit www.pmd-solutions.com.