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Case Study

Ekahau RTLS for Home of the Innocents Gives Pediatric Patients More Mobility

The Home of the Innocents Combines the Ekahau Real-Time Location System (RTLS) with Cardiopulmonary Corporation's Mobile Ventilator Monitoring Solution to Ensure Pediatric Patient Safety in Hospital

The Challenge

The Home of the Innocents is a 131 year-old private facility in Louisville, Kentucky, delivering care to thousands of sick and severely autistic children. As the facility expanded, it created the Rainforest Trail wing, designed to be a home-away-from-home for children using ventilators or requiring other life-sustaining technologies and equipment. Despite their reliance on medical machinery, pediatric patients are surprisingly mobile. With the assistance of ventilator-equipped wheelchairs, patients attend classes, go to physical therapy, visit the multi-sensory room and aquatics center, and attend appointments with specialty doctors in nearby buildings on campus.

Unfortunately, greater patient mobility presented many safety challenges for hospital staff and administrators. In main patient rooms, a bedside nurse would be able care for multiple children. However, once mobile, these children needed caregivers by their side at all times, in order to ensure that ventilators were working and that their vital signs remained stable. If even one child patient left his or her bed to go to other rooms, hospital policy dictated that the child would have to be accompanied by a nurse or respiratory therapist. Thus, this policy required the Home of the Innocents to increase their staffing levels to deliver higher quality of care.

Bernoulli™ Software and Ekahau RTLS Offer Mobile Patient Monitoring

Before the new Rainforest Trail wing opened, the Home of the Innocents began seeking solutions that would provide monitoring for mobile child patients. What they discovered was that the Bernoulli® Enterprise software for patient safety surveillance from Cardiopulmonary Corp., equipped with location tracking technology from Ekahau, could not only enhance safety, but enable staff to be more productive —monitoring children's condition

and locating a child anywhere in the facility. The Ekahau RTLS solution uses the existing Wi-Fi infrastructure to deliver location capabilities to Bernoulli® software.

Creating a virtual safety net with instant location tracking and alerting would not only enhance patient mobility, but it could also improve the level of care delivered to vulnerable children. "We wanted a wireless system that could communicate comprehensive alarm and patient information, including their location," said Milton Schmidt, respiratory therapy manager at Home of the Innocents. "Traditional transport and monitoring solutions had significant shortcomings and are not able to monitor ventilators."

Patient Mobile Monitoring over the Existing Cisco Wi-Fi Network

Ventilators and pulse oximeters remain at the childrens' beds or attached to their wheelchairs, and Bernoulli® software provides continuous monitoring of vital patient information over the facility's Wi-Fi network, sending alarms to a central monitoring station, as well as to nurses' and respiratory therapists' mobile devices. Ekahau RTLS real-time location system then enables caregivers to pinpoint the location of the child whose alarm is sounding, facilitating a faster response by clinicians. Ekahau RTLS tags attached to each wheelchair, send precise, real-time location data which is combined with Bernoulli vital sign data to any browser, central monitoring station or COW. Much like Bernoulli® software, the Ekahau location-tracking solution also works over Home of the Innocents' Cisco standard, enterprise Wi-Fi network.

Together, the Bernoulli® and Ekahau RTLS solution for location tracking have improved patient care. With the assurance of knowing a child's condition and location at any time, staff are now able to transport the children to other locations within the hospital without the accompaniment by a nurse or respiratory therapist; primary caregivers can easily monitor the children's vital signs for any abnormalities and know exactly where the child is at all times.

Operational Efficiencies Gained Throughout the Hospital

"When an alarm is sounded on a moving child, we are able to intervene earlier and improve the outcome since our nurses and respiratory therapists can now arrive at the patient's side prepared for the situation," Schmidt said. Although the hospital maintained previous staffing levels, caregivers can now attend to and provide better care to a larger number of core patients.

The initial deployment of the patient monitoring and location tracking solution from Cardiopulmonary Corp. and Ekahau serves child patients on ventilators or those who have undergone tracheotomies, ranging from 18 months to 15 years old.

"We've seen a great development in our facility, with respect to the fact that children needing our service are more independent and mobile than in the past," Schmidt noted. "Just based on the RTLS component, we may add more tracking devices in the future to assist in providing care. I don't believe we're the 'typical' client for this type of location tracking solution, but it is certainly very useful to our ability to provide excellent care for our unique patient population."

Ekahau East Coast
(Headquarters)
1851 Alexander Bell Drive
Suite 105
Reston, VA 20191
Tel: 1-866-4EKAHAU
Fax: 1-703-860-2028
sales-americas@ekahau.com

Ekahau Europe
(Sales, R&D, Product Management)
Hiilikatu 3
00180 Helsinki, Finland
Tel: +358-20-743 5910
Fax: +358-20-743 5919
sales-europe@ekahau.com

Ekahau APAC
(Regional office)
B38, Tower 8, Imperial Cullinan
10 Hoi Fai Road, Tai Kok Tsui
Hong Kong
Tel: +852 9227 8406
sales-asia@ekahau.com

Global Tech Support: www.ekahau.com/support

www.ekahau.com