

Using RTLS to Protect Different Patient Populations

By Anne M. Bugge

In healthcare, real-time location systems (RTLS) have for a long time been thought of primarily as asset-tracking systems, useful mainly for keeping track of equipment such as wheelchairs, gurneys, and infusion pumps. But RTLS systems are now being used to protect the safety of healthcare patients, from infants to sufferers of Alzheimer's disease.

The flexibility of these systems, which can be used to track a single IV pump or to help streamline workflow in a bustling emergency department, means they are frontline tools for meeting the variety of pressures facing today's providers—and nothing is more pressing than keeping patients safe.

Here are a few of the ways RTLS is being used to protect patient safety:

Infection Control for Vulnerable Inpatients

Consistent and effective hand washing is the bread-and-butter of most infection prevention programs. "Assessing hand hygiene practices" (or, as the Mayo Clinic website puts it so succinctly, "Wash Your Hands" [2012]) is the CDC's top-level recommendation for preventing MRSA infections in healthcare settings (Jernigan & Kallen, 2010). Hand-washing protocols and monitoring are the foundation of prevention efforts for most healthcare-associated infections (HAIs); RTLS is a high-tech way to promote and monitor this low-tech solution.

After putting responsive tags on to individuals or equipment, RTLS systems track those tags' movements as they change location. Some tracking signals refresh as quickly as once per second

(low latency), hence the term "real time." With this technology, departments can watch as staff members stop at set locations to wash their hands before and after their contact with a patient. This capability enables hospital administrators to prove compliance with hand-washing regulations, and can also help identify where they need to improve.

The CDC's most recent "HAI Progress Report," in 2012, indicated significant reductions for most healthcare-associated infections, but only "minimal decreases for both hospital-onset *C. difficile* infections and hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections"—prompting the need for "additional prevention efforts to meet the 5-year goals for these infections." RTLS offers a clear way to bolster these efforts.

In addition to these inpatient safety functions, RTLS can be set up to monitor temperature of various items. With a temperature-sensitive tag applied to temperature-dependent drugs and supplies of blood or plasma—anything for which a consistent temperature is critical—hospital pharmacies and labs can better prevent contamination of important resources.

Wandering Prevention for Patients with Dementia or Alzheimer's

According to the Alzheimer's Association (n.d.), three out of five people with Alzheimer's will wander into potentially unsafe environments. The dangers they could encounter outside of the home include getting injured by a vehicle, getting caught in troubling weather, or

even becoming a victim of crime. The stakes in preventing such occurrences are high for private long-term care facilities, in which families have placed their trust and to whom they have invested considerable financial resources. Public facilities, too, have a mandate to protect this vulnerable population.

RTLS can help these facilities fulfill their mission by monitoring patient location in real time, allowing staff to track their movements and protect them from dangerous situations. The tracking function can also be synced with the building's entrance and exit system to prompt an automatic lockdown in the event of patient wandering—a critical safeguard for certain elderly patients.

This same RTLS-enabled lockdown function can be used in certain mental health settings as well.

Stopping Infant Abduction

Infant abduction from healthcare facilities is thankfully rare. But these data, from the National Center for Missing and Exploited Children, show that birth centers haven't entirely eliminated this threat (2014): Infant and newborn abductions from healthcare facilities [by non-family members] between 1983-2013: 132 (45.4% of the total).

Most centers today employ tags for parents and newborns that are scanned upon any break and any resumption in contact. These tags have to match in order for the infant to be transferred to the adult. RTLS adds a level of security to these existing safeguards by linking up directly to a lockdown feature in the building system.



Fall Detection

Between 700,000 and 1 million patients per year suffer falls in U.S. hospitals, according to AHRQ. RTLS systems are capable of detecting falls immediately and alerting hospital staff members that a specific patient in a specific place has fallen to the floor and needs immediate assistance. As 31 to 50% of falls result in injury, timely response can be a matter of life and death. While the causes of falls can be complex, one cause is well known. When nurse calls are not promptly responded to, patients often fall when leaving their beds to seek attention or use the toilet.

Nurses are often overburdened and deal with operational and clinical inefficiencies that distract and diminish the time that can be spent with and responding to patients. An example of this is their wasteful search for equipment such as infusion pumps. It is estimated that a typical nurse spends more than one hour per day trying to find equipment. Today, RTLS systems provide real-time visibility to equipment. This significantly reduces time wasted hunting blindly so that nurses can respond to patients in a timely manner, which will bring down the incidence of patient falls.

As patient safety issues persist, including patient wandering, the spread of HAIs, patient falls, and a variety of other factors that threaten patient safety, RTLS systems are demonstrating that they can become an important tool to mitigate risk. ■

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