AiRISTA FLOW

Six Ways to Improve Staff Safety in Healthcare

Table of Contents

Executive Summary

In any healthcare environment, staff safety is a pivotal concern. Providing excellent patient care is paramount but so is ensuring good health and well-being for employees and colleagues. Staff endangerment, predictable incidents, and unforeseen situations or accidents can negatively impact patient safety, the efficiency of patient flow, and even business profitability.

There are many ways to improve staff safety, and all healthcare organizations should strive to foster a culture of safety not only for patients, but also for employees. This paper examines the most common threats to staff safety based on current trends in healthcare. It also offers six areas that healthcare organizations can examine for potential improvements in staff safety. These areas include:

- promoting a culture of safety
- employing sound safety protocols
- improving patient handling
- enhancing record-keeping
- optimizing staff levels and schedules, and
- implementing safety-oriented IT systems

One IT system that can make a measurable, positive impact on staff safety is the Real-Time Location System (RTLS). These solutions provide location-based information for staff, patients, and important medical equipment. A solid RTLS can direct employees and authorities to staff members in duress, enable nurses to quickly locate equipment, and improve patient flow more efficiently—all without the need for additional staff or a costly IT infrastructure.

Are Your Healthcare Professionals in Danger?

Unfortunately, healthcare is a very dangerous profession—and particularly for direct patient care professionals practicing in hospitals, psychiatric facilities, and nursing facilities. According to the Occupational Health and Safety Agency (OSHA), in 2011, employees suffered 253,700 work-related injuries and illnesses in hospitals. This equals a rate of 6.8 injuries and illnesses for every 100 full-time employees.[1]

Healthcare workers are hurt on the job at nearly double the rate of private industry, as a whole, and even more often than construction workers!

> "Healthcare workers are hurt on the job at nearly double the rate of private industry. . . even more often than construction workers!""

What Is Staff Safety?

Staff safety programs and protocols help to protect healthcare workers from workplace violence, dangerous patients, work-related injuries, infections, illnesses, and natural disasters. The goal of staff safety is to keep doctors and nurses, aides, administrators, housekeeping, and other employees safe, so they can help patients achieve better clinical outcomes.

Top Causes of Injury among Hospital Workers

The majority of injuries to healthcare workers come from straining through overexertion (often when moving patients), falling down, or running into something. Illness in health workers can be caused by infectious disease, needle-sticks, and coming into contact with allergy-causing substances.

Violence from patients is cause for serious concern among healthcare professionals. A study of emergency departments found that over an average week of work, 12.1% of emergency nurses experienced physical violence.[2]

---

[1] Bureau of Labor Statistics, 2013. Referenced by OSHA in "Worker Safety in Your Hospital: Know the Facts."
[2] Jill Walsh, Altair Juarez, and Leslie Gates, "Emergency Department Violence Surveillance Study," Emergency Nurses Association, November 2011.

Patients were the perpetrators in 97.8% of cases. Mental health workers are particularly frequent victims of workplace violence, measured at a rate that was second only to law enforcement (21 incidents per 1,000 employees from 2003-2009).[3]

Top 5 Causes of Injury among Hospital Workers
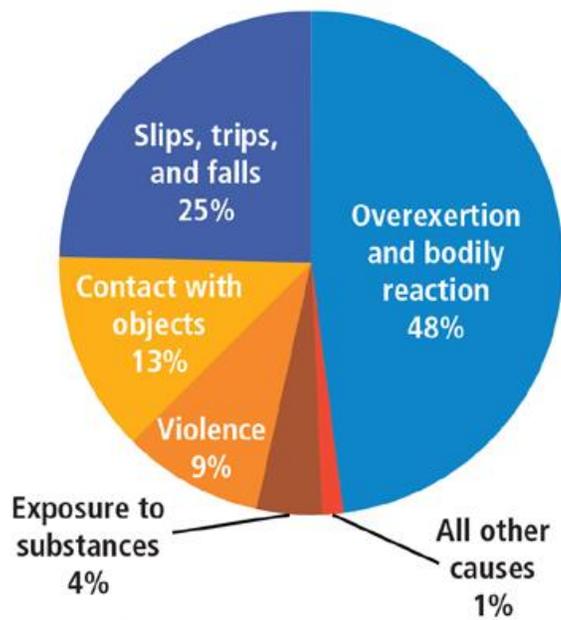
Data source: Bureau of Labor Statistics, 2011 data

---

[3] Erika Harrell, "Special Report: Workplace Violence, 1993-2009," Bureau of Justice Statistics, March 2011, p.4.

Benefits to Hospitals of Additional Investment in Staff Safety

Healthcare systems are discovering that improving staff safety delivers a lot of additional benefits beyond reducing injuries. Research has shown that good staff safety plans and protocols can reduce costs and unplanned leave, improve patient satisfaction and outcomes, and protect the reputation of healthcare organizations.

A Safe Family of Colleagues

First and foremost, safety protocols can save lives. Though most safety mishaps cause only temporary illnesses or injuries some incidents are far more serious. A trip and fall can cause permanent, painful disability. An improper sharps protocol can lead to a needle stick and a fatal illness. The biggest benefit of investment in employee safety will always be a safe and healthy staff.

Lower Workers' Compensation Costs

Most hospitals and healthcare systems self-insure, so they bear the full cost of workers' compensation claims when employees are injured on the job. A survey of hospitals revealed that from 2006 to 2011, the average workers' compensation claim was $15,860.[4] According to risk management firm Aon, the severity of workers' compensation claims, including medical, indemnity, and expense costs, has been increasing at a trend rate of 2% per year. The firm predicted healthcare systems would experience an annual loss rate of $.79 per $100 of employee payroll.[5] A similar study by Beecher found that while the frequency of claims resulting in lost time from work has gone down, claim severity for non-zero claims increased by 10% from 2007-2011.[6] Six percent of non-zero claims cost more than $25,000.

Patient Safety and Outcomes

When healthcare workers are safe and healthy, they can deliver better care to patients. It's well established that having adequate nurse staffing has a direct impact on patient safety and outcomes. But what effect does worker safety have on patient outcomes? First,

---

[4] Aon Risk Solutions, "2012 Health Care Workers Compensation Barometer: Actuarial Analysis," September 2012.
[5] Aon Risk Solutions.
[6] Beecher Carlson, "2013 Hospital Workers' Compensation Benchmark Study," 2013, p. 1.

hospitals with greater levels of employee injury are more likely to have nursing shortages, and this can lead to poorer patient outcomes.[7] In hospitals where nurses and aides suffer more injuries, nurse turnover rates are often higher. A recent study about nurse and patient injuries concluded that "safety climate was associated with both patient and nurse injuries, suggesting that patient and nurse safety may actually be linked outcomes. The findings also indicate that increased unit turnover should be considered a risk factor for nurse and patient injuries."[8]

Hospital Reputation and Patient Satisfaction

The safety of your healthcare staff is inexorably tied to the reputation of your healthcare business. A dramatic example of this has been witnessed in 2014 with the small-scale outbreak of Ebola virus disease (EVD) in Dallas, Texas. When two nurses became sick after treating a patient with EVD who died at the hospital, negative press and public fear drove revenue down by 25% over the ensuing 20 days.[9]

But it doesn't take a dramatic event for staff safety and well-being to have an impact on patient satisfaction. A 2011 study of nurses and working conditions found that "nurse burnout and job satisfaction had a statistically significant effect on patient satisfaction," as measured by whether patients would be willing to recommend the hospital to others.[10]

Six Key Areas for Improving Staff Safety

There are many ways to improve staff safety in hospitals and other healthcare settings. Careful consideration for these six areas will help healthcare organizations identify opportunities to strengthen existing safety protocols.

Create a Culture of Safety

Staff safety begins to improve when everyone understands that it is a top priority, from top executive leadership down to front line employees. Managers must "walk the talk" about

---

[7] William Charney and Joseph Shirmer, "Nursing Injury Rates and Negative Patient Outcomes: Connecting the Dots," Workplace Health & Safety (formerly AAOHN Journal), November 2007, pp. 470-475.

[8] J.A. Taylor, F. Domenici, J. Agnew, D. Gerwin, L. Morlock, and M.R. Miller, "Do nurse and patient injuries share common antecedents? An analysis of associations with safety climate and working conditions."

[9] Gary Jacobsen, "Revenue drops 25 percent at Presbyterian Dallas, ER visits decline 50 percent after Ebola case," Dallas Morning News, October 22, 2014.

[10] M.D. McHugh, A. Cutney-Lee, J.P. Cimiotti, D.M. Sloane, and L.H. Aiken, "Nurses' Widespread Job Dissatisfaction, Burnout, And Frustration With Health Benefits Signal Problems For Patient Care," Health Affairs, February 2011, pp. 201-210.

employee safety in the same way they've been emphasizing patient safety over the past years. Conduct regular safety meetings within teams and create safety drills as needed.

Healthcare organizations can encourage better employee engagement in safety initiatives by forming a Safety Committee. The committee should include front-line caregivers as well as members of the management team. The purpose of the safety committee is to "review all incidents and ensure that root causes have been found and that corrective actions have been taken." Committee meetings should be on the clock, paid time and should "foster a culture of prevention."[11]

Make staff safety goals public. Encourage employee participation in the culture of safety by actively soliciting employee input and suggestions. Continually measure performance against staff safety goals, and post visible measures of safety progress for everyone to see.[12]

Review Safety Procedures and Offer More Training

When safety situations arise, training kicks in. It's essential that hospitals and healthcare systems have a solid training program that helps employees review important safety procedures on a regular basis. Training programs should be proactive, not reactive. Staff safety depends on it.

Thoroughly train new employees on your facility's safety procedures and process for reporting any workplace injuries or illnesses. Offer annual refresher training to support staff safety that includes:

- injury and illness prevention

---

[11] Lori Severson, "10 Steps to Enhance Healthcare Employees' Safety," Lockton Companies, LLC, October 2011.
[12] The Joint Commission, "Improving Patient and Worker Safety: Opportunities for Synergy, Collaboration and Innovation," November 2012, p. 29.

- patient handling and ergonomics
- security and workplace violence prevention
- infection prevention and control
- emergency response for fire and natural disasters
- hazardous materials and chemical safety
- equipment safety

Improve Patient Handling

Moving patients causes some of the most serious and lasting injuries to healthcare workers. Safe patient handling is an area that many hospitals have invested heavily in and the resulting return on investment has been impressive.

The age of the average healthcare worker is increasing, and with age, employees become more susceptible to injury. Combined with the increasing percentage of obese patients, it is no wonder that 48% of injuries resulting in days away from work are caused by activities related to patient handling, including over-exertion such as lifting, bending, or reaching.[13]

The average non-zero workers' compensation claim for injuries sustained while moving patients was $10,127—the most expensive type of injury claim.[14]

Patient lifting equipment, trained lift teams, and good ergonomic patient handling procedures have enabled hospitals to lower workers' compensation claims and experience fewer lost days of work by nursing staff. Many hospitals now employ a "zero lift" policy, using only patient lifting equipment to move patients.

Patient safety is also enhanced by good patient handling protocols. Patients fall less often and have fewer resulting injuries such as skin tears or contusions when facilities follow good safety protocols. Heavier patients report greater feelings of dignity when lifted with equipment than by straining nurses. Because it is easier to move patients, they are moved more often, reducing the number of patient pressure ulcers and the associated costs.

Enhance Injury and Incident Record Keeping

Every healthcare facility employs policies and procedures for recording injuries, illnesses, and violent incidents that happen to employees. Some types of injuries and illnesses are

---

[13] Bureau of Labor Statistics, 2013. Referenced by OSHA in "Worker Safety in Your Hospital: Know the Facts."
[14] Beecher Carlson, "2013 Hospital Workers' Compensation Benchmark Study," 2013, p. 10.

required to be reported to OSHA and state agencies. Compliance with worker safety laws requires that healthcare organizations keep good records.

Many healthcare executives question: are employees truly encouraged to report incidents and injuries? The study of patient violence toward ER nurses revealed that most nurses do not formally report physical violence or verbal abuse from patients. Instead, they opt to "notify security personnel (65.7%), an immediate supervisor (64.2%), other emergency nurses (63.2%), and/or emergency physicians (54.6%)."[15] Unfortunately, when reporting systems are underutilized, it's impossible for healthcare administrators and executives to get a complete picture of staff safety issues.

The same study showed that nurses faced lower odds of becoming victims of physical violence when they worked for healthcare systems with zero-tolerance policies for violence and mandatory reporting policies. Healthcare organizations should make sure that management encourages employee reporting of any injuries or incidents, and that the system for doing so is easy to understand.

Optimize Staff Levels and Schedules

Healthcare professionals often work long hours, and deciding how to schedule your staff— especially nurses—can have a huge impact on their safety, as well as patient safety. According to the American Nurses Association (ANA), proper nurse staffing has been shown to "reduce medical and medication errors, decrease patient complications, decrease mortality, improve patient satisfaction, reduce nurse fatigue, and decrease nurse burnout."

Shift Length

It's not unusual for nurses to work 10, 12 or even 13 hour shifts, day after day. The ANA reports that 96 out of 100 nurses report feeling fatigued at the beginning of their shifts.[16] Data from the "Staff Nurse Fatigue and Patient Safety Study," revealed that fatigued nurses commit significantly more errors or "near misses" than well-rested nurses.[17] They are also more likely to experience regret about decisions made while treating patients.[18]

---

[15] Jill Walsh, Altair Juarez, and Leslie Gates, "Emergency Department Violence Surveillance Study," Emergency Nurses Association, November 2011.
[16] American Nurses Association, "Nurse Staffing," website. Accessed on October 22, 2014.
[17] Ann E. Rogers, *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*, R.G. Hughes, April 2008, chapter 40.
[18] L.D. Scott, C. Arslanian-Engoren, and M.C. Engoren, "Association of Sleep and Fatigue with Decision Regret Among Critical Care Nurses," *American Journal of Critical Care*, January 2014, pp. 13-21.

In addition to patient and nurse safety concerns, hospitals might consider scheduling shorter shifts for another reason—job satisfaction and turnover. Nurses working long shifts were up to two and a half times more likely to suffer from burnout and dissatisfaction than nurses who worked eight to nine hour shifts.[19]

Nurse-to-Patient Ratios

When nurses take care of fewer patients, they suffer fewer injuries. California now mandates minimum nurse-to-patient staffing ratios, and a recent study at UC Davis discovered that injuries to nurses and LPNs dropped by 32% and 34% respectively, during the first year that the new mandate was implemented.[20]

Night Shifts

In any 24-hour care environment, having a night shift is necessary, but there are several employee safety considerations when scheduling night shifts. In psychiatric care settings, there are significantly more incidents of physical aggression by patients against their nurses at night.[21] From a long term health perspective, night shift work increases nurses' risk profile for chronic illnesses, especially over age 25.[22]

Rotating between day and night shifts seems to have the worst effect on circadian rhythms and fatigue. According to a study published in the *American Journal of Public Health*, "in comparison to nurses who worked only day/evening shifts, rotators had more sleep/wake cycle disruption and nodded off more at work. Rotators had twice the odds of nodding off while driving to or from work.[23]

Implement Safety-Oriented Information Systems

Another way to help protect your employees is to ensure that your IT systems support and enhance worker safety. As discussed above, this includes having a reliable system for

---

[19]Amy Witkoski Stimpfel, Douglas M. Sloane, and Linda H. Aiken, "The Longer the Shifts for Hospital Nurses, the Higher the Levels of Burnout and Patient Dissatisfaction," *Health Affairs* 31, no.11 (2012):2501-2509.

[20] J.P. Leigh, C.A. Markis, A. Iosif, and P.S. Romano, "California's nurse-to-patient ratio law and occupational injury," *International Archives of Occupational and Environmental Health*, September 2014.

[21] M. Ridenour, M. Lanza, S. Hendricks, D. Hartley, J. Rierdan, R. Zeiss, and H. Amandus, "Incidence and risk factors of workplace violence on psychiatric staff," *Work*, May 2014.

[22] C. Ramin, E.E. Devore, W. Wang, J. Pierre-Paul, L.R. Wegrzyn, and E.S. Schernhammer, "Night shift work at specific age ranges and chronic disease risk factors," *Occupational and Environmental Medicine*, September 2014.

[23] D.R. Gold, S. Rogacz, N. Bock, T.D. Tosteson, T.M. Baum, F.E. Speizer, and C.A. Czeisler, "Rotating shift work, sleep, and accidents related to sleepiness in hospital nurses," American Journal of Public Health, July 1992, pp. 1011-1014.

recording information about staff injuries and illnesses. Aside from being mandated in cases of certain medical reimbursement eligibility, implementing electronic health records (EHR) for patients can contribute to staff safety by ensuring that important information about a patient's infectiousness, aggressive behavior, or mobility problems is easy for the entire care staff to access and understand ahead of interacting with the patient.

Real-Time Location Systems (RTLS) are an important system for improving staff safety. RTLS tracks the exact location of staff, patients, and important assets such as IV pumps or ventilators. The most popular form of RTLS uses active radiofrequency identification (active RFID) technology to track dynamic, real-time location information—giving hospital employees and security personnel the ability to locate any staff member (or patient) instantly, at any moment.

How a Real-Time Location System Greatly Enhances Staff Safety

RTLS can be deployed to track employees and assets over an existing Wi-Fi infrastructure, making it an easy-to-manage, low cost system that does not require a lot of additional IT resources. RTLS can make an immediate impact on the security and safety of your employees, as discussed below. It also provides many additional benefits that help hospitals experience a good return on investment (ROI).

Provide an Instant, Silent Alarm for Staff Duress

Healthcare facilities often require nurses, social workers, and maintenance staff to enter secluded areas such as patient rooms or storage facilities. Low-traffic, low visibility areas such as these are prime locations for violence against medical staff since the incident is unlikely to be observed or interrupted.

One of the best ways to protect staff from assault and violence is to equip them with wearable panic button devices that sound an alert and pinpoint the location of the incident to facilitate a rapid response. The RTLS constantly tracks these devices and reduces emergency response times by allowing security teams and other staff members to know the location of the caller, without dialing or map look ups, from anywhere in the hospital.

Respond Rapidly by Sending Staff in Closest Proximity to Help

When help is needed, it's important to send the right person to assist. The right person is not only someone trained for the situation, but also someone who can get to the situation quickly. When a staff member is in duress, seconds matter. An RTLS with the capability to produce proximity-based messages can send alerts to specific staff members, or teams, who have the appropriate training and are also closest to the incident.

Proximity-based messages also help overcome the issue of alarm fatigue in hospitals. Such an overload of alarms can cause them to be ignored, resulting in potentially serious consequences. An analysis of alarms at The John Hopkins Hospital, Baltimore, Maryland, revealed a total of more than 59,000 alarm conditions over a 12-day period, which equates

to about 350 alarms per patient per day.24 Proximity-based messaging reduces the overall number of alarms received by any one staff member, thus reducing alarm fatigue. Rather than hearing a constant drone of messages and alerts coming over the PA system, an RTLS can send custom alerts to only the relevant staff.

Monitor the Location of Patients in Real Time

RTLS enables caregivers to monitor patients on the go without physically supervising them at every moment. If patients enter an area that is prohibited to them the RTLS can notify the appropriate staff, lowering the risk of patients surprising a staff member or injuring themselves. This is extremely helpful in reducing elopement incidents and other proximity related breeches.

RTLS also helps keep patients safer. Patients can have a button to summon help instantly, regardless of their location within the facility. A wireless RTLS system can be configured to alert staff if a patient hasn't moved in a set period of time, enabling staff to more rapidly respond and provide necessary wellness checks.

Use RTLS Information to Improve Efficiency and Patient Flow

Wireless RTLS helps healthcare facilities track how patients, equipment, and staff move through the caregiving workflow. Hospitals can identify areas for efficiency improvement and increasing patient throughput. If delays in care are caused by lack of equipment or a shortage of nurses, RTLS can help identify those needs at an administrative level. This type of business intelligence can guide management on how to best address important facility design/layout, operational, procedural, or staffing related matters.

Help Staff Find the Equipment Needed to Provide Excellent Care

Wireless RTLS is a key system for enhancing staff safety, but it also delivers other important benefits to healthcare organizations. A survey by Nursing Times found that more than one-third of nurses waste an hour per day searching for equipment they need to treat patients.[25] That adds up to as much as 40 hours per month, and 16% of the time, the nurse gave up

---

[24] Sendelbach, S., Funk, M., Tracy, M. Alarm Fatigue: A Patient Safety Concern. *AACN Advanced Critical Care.* (December 2013.) http://www.nursingcenter.com/lnc/JournalArticle?Article_ID=1617134

[25] "Nurses waste 'an hour per shift' finding equipment," *Nursing Times*, February 10, 2009.

the search without finding the needed asset. All of this lost productivity can be avoided with RTLS.

RTLS saves nurses time by eliminating searching and automating some of the routine paperwork associated with medical assets. The system monitors the location of every tagged asset, and employees can search for assets by type, attributes, location (to find the nearest one), department, status, and other criteria. The RTLS can even trigger alerts for producing maintenance work orders (for example, cleaning) when an asset changes status or location.

Monitor and Preserve Climate-Sensitive Assets

Wireless temperature monitoring with RTLS can ensure that refrigerators are functioning properly. Most hospitals incur unnecessary labor costs by sending employees with clipboards to check thermometers and record temperatures. With RTLS, refrigeration units can be monitored and alerts can be sent to personnel or administrators when breach-thresholds have been reached. Monitoring temperature and humidity sensitive assets such as blood samples, medicines, and other biomedical goods with RTLS can help reduce spoilage and other costly outcomes.

Conclusion

Increased staff safety benefits everyone—healthcare workers, the patients they care for, and the organizations they serve. Not only will an investment in safety programs save lives, it also helps hospitals reduce costs associated with workers' compensation, patient claims, and staff turnover. High safety standards bolster a hospital's reputation and patient satisfaction levels.

There are many ways to improve staff safety in hospitals, starting with recognizing the importance of maintaining a culture of safety. Simply put, enhancements in safety training, patient handling, record keeping, and staff scheduling contribute to a safer workplace.

In the information technology realm, a Real-Time Location System (RTLS) can greatly improve staff safety by enabling dynamic tracking of employees, patients, and critical medical equipment at all times. For staff safety, it's important to choose a system that offers silent alarm/distress signals from Personal Safety Devices (for example, a staff badge) and includes two-way messaging capabilities to improve communication among staff. Proximity-based messaging is another important feature, enabling the RTLS to identify and alert the closest staff member or other identified authority to render assistance in staff duress situations.

RTLS delivers many benefits beyond staff safety, including the ability for hospitals to improve patient flow and staff productivity to increase profitability and reduce costs. RTLS solutions that are designed with "RFID over Wi-Fi™" are easy to deploy and extremely affordable, because these systems leverage a hospital's existing Wi-Fi infrastructure for real-time location.

About AiRISTA Flow

AiRISTA Flow is a leader in providing Wi-Fi-based Real Time Location Systems (RTLS), process improvement, and hand hygiene solutions. With innovative products and patented technologies such as RFID-over-Wi-Fi™, AiRISTA Flow delivers superior software, hardware, and services for forward-thinking organizations, globally. AiRISTA Flow hand hygiene solutions help meet FDA regulations while RFID, IR, GPS, and BLE-based tags, accompanied by user-friendly software interfaces, enhance visibility into the location, condition, and status of assets, people, and workflows. Partners include wireless software developers, leading systems integrators, and resellers. Users of AiRISTA Flow solutions include a diverse, international portfolio of healthcare, manufacturing/industrial, retail, and government clients.

Contact

AiRISTA Flow, Americas
913 Ridgebrook Rd.
Suite 110
Sparks, MD 21152
Tel: 844-RTLS-NOW
info@airistaflow.com

AiRISTA Flow, Finland
Vaisalantie 6
02130 Espoo, Finland
Tel: +358-20-743 5910
info@airistaflow.com