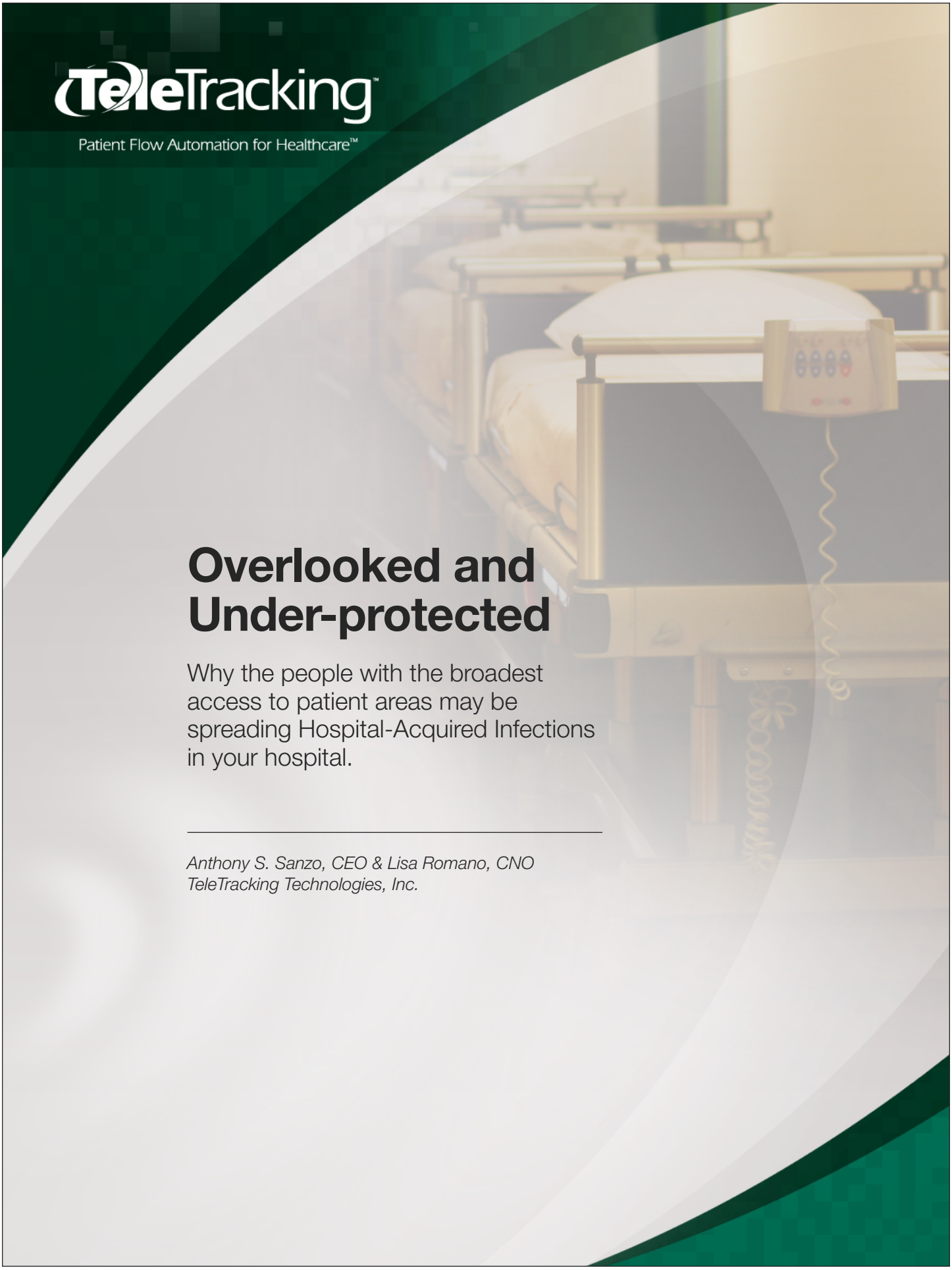
TeleTracking

Patient Flow Automation for Healthcare™



Overlooked and Under-protected

Why the people with the broadest access to patient areas may be spreading Hospital-Acquired Infections in your hospital.

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Summary

Even the best infection control precautions fail when all employees are not alerted about potential exposure to infection. Right now, housekeepers, transport personnel and other staff can easily walk into a hospital room without knowing an infected person recently had been discharged from there. This happens because, in many hospitals, infection control nurses still prepare lists of isolation rooms manually. Those lists can be outdated before the nurses leave their office. Inadvertent exposure endangers Nursing, Environmental Services (EVS) and Transport workers and the entire hospital population because both workers and inadequately sanitized equipment become infection carriers. According to the Centers for Disease Control (CDC), almost 100,000 lives are lost in America each year due to infection. The estimated annual cost of infection to U.S. hospitals ranges up to $45 billion. Many experts believe much of this loss in lives and revenue is preventable. One way is to better protect the employees who travel most widely through a hospital facility. To proactively stop the infection spread, it's critical to look at the problem as a breakdown in communication around patient flow.

At 12:34 pm, Emma walks into room 403E to perform a routine bed turnover and cleaning. While she is there, Sean comes in to retrieve a litter which had been left behind when the last patient was discharged. In 35 minutes, Emma is finished with room 403E and moves on to another one of the four remaining rooms she will clean that day. In those 35 minutes, Sean has delivered the litter and wheeled two patients to a discharge pickup station. He will repeat that process another 15 times before his workday ends.

They don't discover until the following day that they had entered an isolation room. Both are inadvertently exposed to a new strain of MRSA five times more lethal than previous strains. This happens because no isolation notice was posted in time to warn them and service personnel don't have access to medical records. In the 24 hours after their exposure, they come into contact with nearly two dozen people, including their own loved ones. Four other rooms are contaminated by Emma. The litter Sean retrieved from room 403E carries six more patients before the error is discovered. The wheel chair is still rolling, un-sanitized, through the hospital's corridors.

Scenarios like this play out every day in hospitals which still rely on a multi-step manual process to put an infected patient into isolation. Tragically, these exposures aren't always discovered. So the very employees who are most likely to cover the most area of the hospital on any given day often become unwitting carriers of the most dangerous bacteria now facing humankind. And so does the equipment they use.

Perhaps this is why Hospital Acquired Infections (HAIs) such as MRSA are spreading from acute care areas into the general hospital population. According to the CDC, last year, over 60 percent of hospital-based MRSA cases reported in the U.S. were in general medical wards, up from just two percent in 1970.

For a 500-bed hospital at the current infection rate, this means 194 unnecessary deaths and $28 million in unnecessary costs per year. Nationwide, direct annual costs from HAIs could range as high as $45 billion.

The World Health Organization says MRSA is a leading public health threat, even in the best hospitals in the most advanced nations. In the U.S., the annual human toll from MRSA is now greater than AIDS. Infections here have increased from 2,000 in 1993 to 94,000 in 2005. Nearly one in five infected patients die. Now a new threat has emerged. Acinetobacter baumannii, a gram-negative bacteria brought home from the Iraq War by GIs, apparently is resistant to all antibiotics now on the market.

HAIs are the fourth largest killer in the United States, with nearly two million infections and over 100,000 related deaths a year. HAI victims are seven times more likely to die than the average patient.

The financial toll is staggering. The CDC reports that MRSA-related hospital stays tripled since 2000 and increased nearly ten-fold since 1995. HAIs patients have an average length of stay of 20.6 days versus 4.5 for infection-free patients. Duke University researchers report that surgical site MRSA infections cost as high as $60,000 per case. The average infection case costs $15,275. For a 500-bed hospital at the current infection rate, this means 194 unnecessary deaths and $28 million in unnecessary costs per year.

"HAI: The next asbestos?"

Nationwide, direct annual costs from HAIs could range as high as $45 billion, according to R. Douglas Scott II, of the Center for Disease Control. With Medicare and Medicaid now refusing payment for treating "reasonably preventable" infections and private insurers expected to follow suite, HAIs are becoming a major cost issue.

The real wild card is litigation. The legal and healthcare communities historically believed HAI's were inevitable and unpreventable. Now plaintiff's attorneys are calling HAIs the next "asbestos." The shift was largely the result of a 1999 Institute of Medicine report called "To Err is Human," which said up to 98,000 deaths in U.S. hospitals could be prevented annually. This placed broad focus on the apparent failure of hospitals to keep patients safe from harmful events.

The typical hospital is the target of seven HAI-related lawsuits per year with an average settlement of $1.5 million. Now plaintiff's attorneys are calling HAIs the next "asbestos."

Today, the typical hospital is the target of seven HAI-related lawsuits per year with an average settlement of $1.5 million, or a total of $10.5 million. Now that 27 states have enacted laws requiring them to report data related to HAIs, the frequency and amount of jury awards may climb steeply, driven by expanded media attention.

Another factor which may fuel higher awards is the fact that the U.S. lags behind several other countries in the prevention of HAIs, a major reason being our reliance on antibiotics over rigorous hygiene to combat infection.

England's Broomfield Hospital totally eradicated MRSA in one year with meticulous hand washing, frequent garment changes for physicians, removing jewelry from caregivers, rigorous cleaning and restriction of wheelchair movement.

Norway saw it coming

Norway has all but eliminated MRSA because they recognized the problem in the 1980s and launched an aggressive campaign to sharply cut the use of antibiotics. Many newer antibiotics aren't even registered there. Today, all patients are tested for MRSA and those testing positive are isolated. Norwegian medical personnel must stay home if they test positive and all workers are paid to stay home if they or their children have any infection.

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Universal testing has proven effective in England, Japan and even the United States. MRSA testing at a Pittsburgh Veterans' Administration (VA) Hospital was so successful that all 155 VA medical centers now do it, and have cut MRSA infections by 50 percent. At Chicago's Evanston Northwestern Healthcare System, screenings reduced MRSA infections 70% over two years, according to a study in the Annals of Internal Medicine.

Ironically, the solution for inadvertent exposure already exists. It is embedded into computer-automated technology which is currently being used to manage patient flow.

Unfortunately, many hospital officials say broad screening is burdensome and unnecessary, or that they lack the staff, resources and space to increase testing or isolate the large number of patients which might result. Others fear lawsuits because testing would reveal who was contaminated after admission. Still others argue that dedicating limited resources to one germ undermines overall patient safety.

This simple diagnostic test, which could help save countless lives, is quick, painless and costs about $20.

What else should be done?

Yet, all the testing and hand washing in the world won't be enough to stop HAIs if some employees don't get the word about isolation rooms. By continuing to contaminate highly mobile support service employees and equipment, infection will spread anyway.

Why are the people with the broadest access to patient areas being overlooked and under-protected in hospital infection plans and inadvertently spreading HAIs? It's not intentional. It has more to do with the outmoded nature of infection control alerting procedures. The traditional manual process

In TeleTracking's Capacity Management Suite, for example, the alert safeguard is based on a feature called Patient Placement Indicators (PPIs).

As a patient is "enrolled" in the patient flow system, the staff member entering the patient's information is prompted to select the appropriate needs for that patient. If appropriate, that would include infection type, status and the need for an isolation room. The infection flags automatically are relayed to all staff levels – not just the clinical level.

When a page goes out assigning environmental staff to clean an isolation room they also receive an automatic alert

to the presence of infection, so they know to bring the proper clothing, equipment and cleaners for their own protection and optimal hygiene. A similar alert is carried in pages to transporters.

Because any authorized staff member can insert infection alerts into the patient flow system, a patient's status can be updated at any point infection is discovered and any employees who are subscribed to the alerts receive instant notification.

By linking infection control to automated patient flow, several steps in the traditional communications chain are simultaneously eliminated and hazardous gaps in the chain are closed.

requires several steps, including patient evaluation, testing, notations into the medical record, requests for infection kits, and notifications to nursing staff, bed management, infection control, transporters, and housekeeping. Each step requires time for phone calls or on-site visits. And each step represents an opportunity for failure.

The backbone of a modern infection control program is fast, effective communications. Manual infection control processes, which can involve a dozen steps or more, unintentionally create a gap in communications if one step fails. Ironically, the solution for such inadvertent exposure already exists. It is embedded into computer-automated technology which is currently being used to manage patient flow and reduce overcrowding in hospitals

It is the real-time nature of patient flow automation, combined with special alert features for all pertinent personnel, which closes this critical communications gap. Deployment of alerts is instantaneous, greatly reducing the chance of inadvertent exposure to support personnel as well as clinical staff.

Avoiding "mismatching"

Automated patient flow also permits placement staff to avert "mismatching" non-infected patients with infected ones. This process can be extremely difficult in overcrowded hospitals. Patient flow automation helps by providing real-time knowledge of bed status throughout the institution, reducing the likelihood that the wrong patient goes into the wrong room at the wrong time.

Alternatively, PPIs are used to cohort patients with similar infections. When a placement nurse enters a patient with a specific infection, the patient flow system's "search" function returns only those rooms occupied by patients with similar infections.

The same technology automatically creates an audit trail that records where patients have been. This means if a patient's infection is detected some time after entering the hospital, staff members who had contact with that patient prior to detection can be notified.

Some healthcare providers are taking "inadvertent exposure" very seriously.

For example, as of this July 1st, Methodist Healthcare System in San Antonio will not assign a bed to any patient unless the "Isolation & Type" fields are addressed in their computerized bed management system.

And at the University of Virginia Medical Center, infection control nurses now are in the patient flow loop, having been given exclusive control over isolation indicators in UVA's automated patient flow system.

Susan Sewell, RN, Methodist's Vice President of Patient Management, said that "bed assignments will come to a hard stop if that information isn't filled in. A bed field won't even come up on the screen if isolation status isn't addressed."

Methodist regularly tests at-risk patients (from nursing homes, for example) for MRSA and other antibiotic-resistant infections prior to admission. However, bed assignments were being made before those tests results were returned.

"We struggled when we first started the system to include that field when placing patients in beds. The question was, if the results were positive, who was supposed to change the isolation attribute in the system," Ms. Sewell noted.

"The silos were barriers. There was no communication between departments. Handoffs are critical, but we had tried all sorts of ways to remind people to communicate infection status and they weren't working consistently.

"Often in the hospital setting, we are good at communicating in a silo, but we often forget that other people need to know specific data about a patient," she says. "A patient may be well documented as an infection case within the unit, but transportation personnel may not be told when moving someone to, say, radiology. If they aren't aware, the transporter will move along to the next floor taking the dirty wheelchair, and the infection, with them.

Now, we have made infection control our number one priority, supported by placing a hard stop on bed requests before infection status is known."

When the isolation attribute is addressed to continue with the admissions process, an icon will represent that attribute next to the patient's number on Methodist's electronic bed boards. Once the bed request is put through, the system searches for available beds at any of Methodist's six hospitals that fit the attributes included with the patient, starting first with private rooms and then looking for other patients with similar diseases or attributes.

"It creates a cohort of patients within the hospital," Ms. Sewell says.

"Anytime those patients move through the system, the attribute moves with them," she says. "And when housekeeping personnel get a page to clean their rooms, the page carries an automatic alert about the isolation status."

"This is a nationwide problem," she says, referring to the communication problems between hospital silos which can put both patients and employees at risk for hospital-acquired infections and many other problems. "TeleTracking is really helping us to overcome that."

For an infection control effort to work, executive management needs to be brought on board. "You need buy-in from the top down," Ms. Sewell says. "We had reluctance when we decided to put a full-stop on bed placement before infection attributes were defined, but when we showed our C-suite and nursing directors the impact, they supported our decision."

According to Maggie Short, administrator of UVA's bed center, on any given day about 100 patients in their 600-bed main facility are in isolation for some form of infection.

She says UVA has created over 50 different isolation indicators for their computerized placement system and that "everyone who needs to know is made aware of isolation by the indicator and flags on our electronic bed boards."

Returning patients with prior infection histories are flagged at admission, then isolated while multiple cultures are run. Bed placement can assign an isolation room if a patient is suspected of having an infection, but only infection control practitioners are permitted to activate the proper infection indicator. They do this upon seeing a flagged patient on the bedboard and ordering the cultures. This is done in real time with no need for a phone call and no paper lists which can become quickly outdated. With infection control manning the indicator feature, none of the highly coveted private isolation rooms are taken up by "false positive" patients feigning infection to get the single room.

Infection control has a "shared drive" in which they document a patient's status and eligibility for cohorting. Others have access to this drive on a need-to-know basis.

In much the same manner, asset location technologies such as sensor networks can create an audit trail for equipment. This can help facilities managers and infection control personnel determine which equipment may have come in contact with an infected patient and where it currently is located.

Conclusion

Hospitals can't wait for a medical breakthrough. The very presence of HAIs disproves the theory that there is a silver bullet for infection. It's going to take a great deal of effort on many fronts.

Infection prevention should be everyone's job. Hospital boards need to make sure the infection prevention process is designed properly. Senior executives, especially chief financial officers must know the real costs of HAIs and drive change. The perception of infection control should shift from that of a cost center to a profitability enhancer.

Why are the people with the broadest access to patient areas being overlooked and under-protected in hospital infection plans?

Some U.S. hospitals are exploring new avenues, using antibiotic-coated catheters, computer-based surveillance systems to track outbreaks, gloves that release disinfectants, ultraviolet readers to test for microorganisms on surfaces, germicidal surface wipes, microfiber mops to scrub bacteria out of crevices, germicidal irradiation (UVGI), airborne ozone and hydrogen peroxide vapor decontamination systems to sterilize rooms.

As hospitals reawaken to the role environmental services can play with a host of new cleaning products, devices and techniques, hospital executives must also realize that for everyone's safety, support staff must be aware in advance, without fail, before being exposed to these life-threatening diseases. Virtually anything near a colonized patient or health care worker can become a germ "hot spot" – bedrails, doorknobs, keypads, telephones. MRSA can survive for weeks on almost any surface. C. Diff can live for years on surfaces. Yet those surfaces won't be cleaned if EVS personnel don't get the word that they're entering an isolation room.

If used as designed, patient flow technology can automatically alert personnel to the presence of infection. Communicating isolation data in real-time, reducing overcrowding and smoothing out patient flow are powerful weapons that hospitals cannot ignore in the war against HAIs.

Questions to ask your team:

- How many steps does it take to get an infected patient placed?
- About how long does the process take?
- How are non-clinical staff (EVS and transport personnel) currently alerted to isolation rooms?
- How often per month are those personnel inadvertently exposed to infection?
- Do you have a record of where equipment has moved?
- What is your current process for communicating patient-related infection information? Is it effective? Are there opportunities for failure?
- Why are your infection-control nurses preparing manual lists for isolated patients?
- Does your transport staff know that the patient they are moving around in the wheel chair is infected, and precautions and special cleaning need to occur to stop the spread of HAIs?
- How does your EVS staff know to use the right chemicals when cleaning a room that an infected C-diff patient just left?
- Are you including all patient flow processes and personnel in your HAI patient safety plan?