

<https://www.wsj.com/articles/hospitals-medical-errors-how-they-reduce-them-edfa257f>

JOURNAL REPORTS: HEALTHCARE

Why Hospitals Still Make Serious Medical Errors—and How They Are Trying to Reduce Them

Some medical mistakes have been stubbornly hard to eliminate. Now, hospitals hope technology can make a difference.

By Laura Landro

March 12, 2023 at 10:00 am ET



Hospitals are using technology in a new effort to target medical errors. ILLUSTRATION: JON KRAUSE

Hospitals are turning to technology to address one of the most intractable risks their patients face: medical errors.

More than two decades after the launch of a national patient-safety movement to tackle the alarming toll of medical mistakes, preventing those errors has proved much harder than expected. Despite research that shows some improvement over time, hospitalized patients are still at substantial risk of medication mishaps, hospital infections, breakdowns in nursing care, and complications from surgery and other procedures.

The most persistent problems, which add billions to healthcare costs, were apparent even before the Covid pandemic threw hospitals into chaos, reversing or erasing prior safety gains. According to a study of 2018 data from 11 Harvard Medical School-affiliated Massachusetts hospitals, so-called adverse events—which cause serious harm, prolong hospital stays and contribute to death—affected nearly one in four patients admitted to hospital. Approximately a quarter of those adverse events were preventable with well-known checklists and other safety measures.

“Harm is still distressingly frequent in hospitals, but with wider adoption of robust interventions, many of which use new technology, we can make hospitals safer for patients,” says lead study author David Westfall Bates, medical director of clinical and quality analysis for Mass General Brigham, a hospital system in Boston affiliated with Harvard Medical School.

Now hospitals are harnessing their electronic medical records in new ways to do what previous interventions have failed to do. Of course, success requires buy-in from clinicians who are already overwhelmed and can resist perceived interference with their own judgment. But because the systems are often being designed and tested by fellow doctors and nurses, such innovations may have a greater chance of acceptance.

Here are some of the biggest problems that caregivers are trying to address with technology.

Preventing medication mishaps

Medications are the most common preventable sources of patient injury; in addition to the risk of getting the wrong drug or the wrong dose, medications that patients need can have unanticipated effects.

Hospitals have traditionally relied on voluntary reporting of adverse events by staff, including medication errors, which research shows captures less than 10% of overall safety events. But nurses and doctors must document some actions they take, such as ordering a new medication to treat or reverse a previous mishap. That leaves a trail of information in electronic medical records that are now in use.

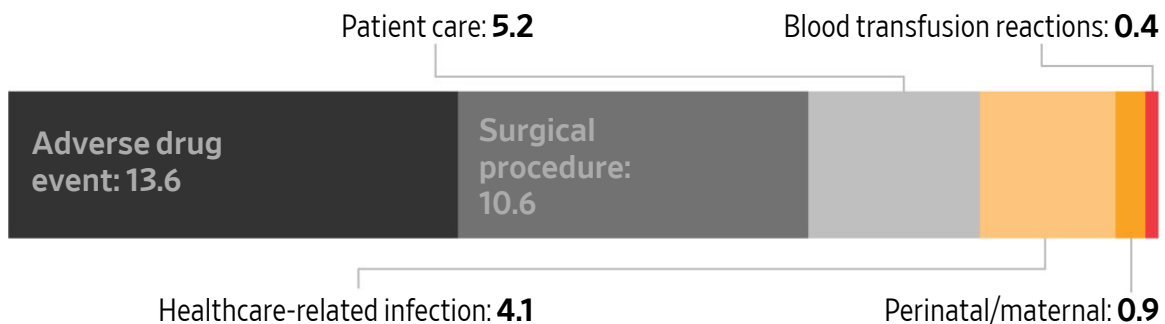
One such scenario is patients who become oversedated if they are on medications to sedate

them and treat pain and anxiety. Nurses will then treat oversedation, which can be life-threatening, by administering the drug naloxone to reverse drug overdoses. Naloxone must be ordered from the pharmacy through the medical-record system—so even if nurses don't report the event, there will be a record in the system that points toward possible oversedation.

Hospitals are now scanning electronic medical records with artificial-intelligence algorithms to look for such clues, or triggers, so they can review each case and detect any patterns or system failures that lead to repeat errors that are avoidable, such as not monitoring sedated patients closely enough. They can also notify clinicians of potential harm in real time by, for example, catching changes in lab results that show a medication may be causing harm to the kidney.

Persistent Problems

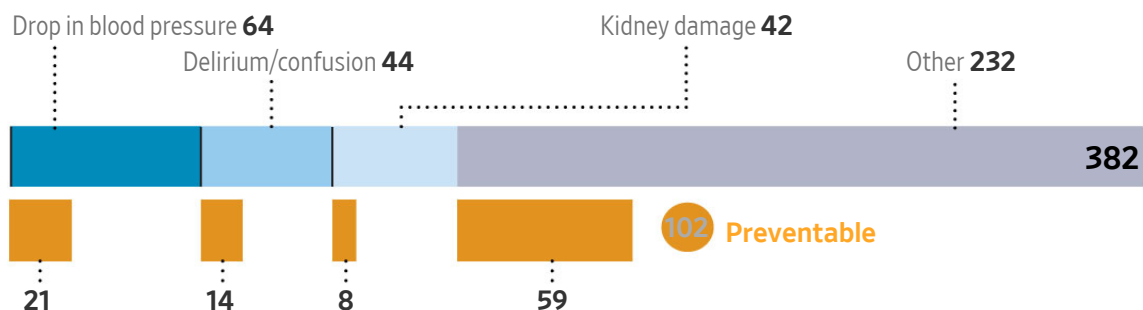
A random sampling of admissions at 11 Massachusetts hospitals found that adverse events occurred at a rate of 34.8 per 100 admissions. The rate by type of event:



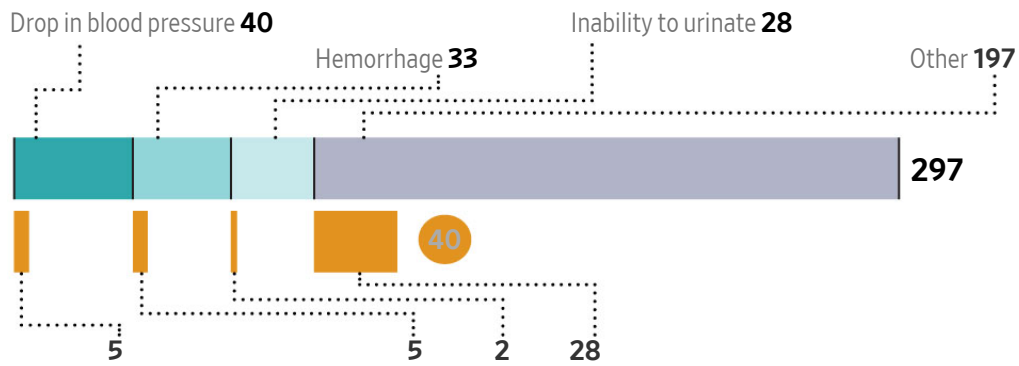
Where Errors Occur

How adverse events broke down by category in the study of Massachusetts hospitals, and how many of them were considered **preventable**

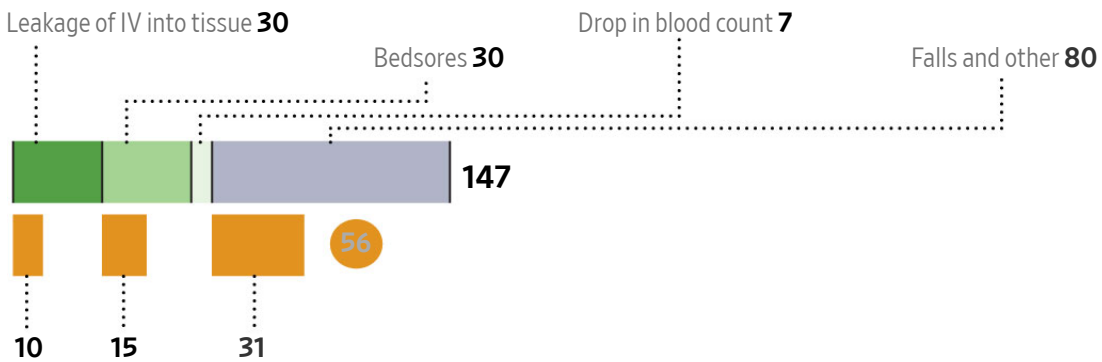
Adverse drug event



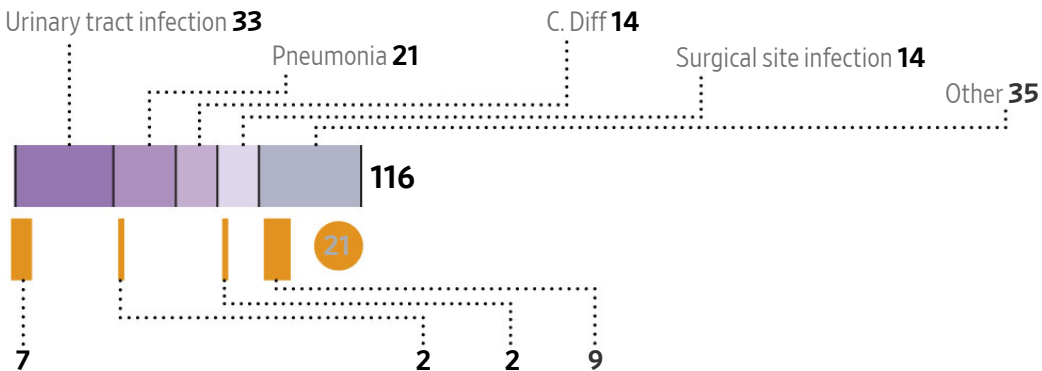
Surgical procedure



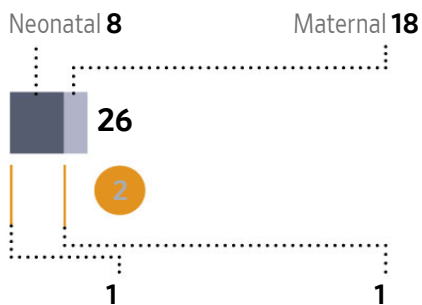
Patient care



Healthcare-associated infection



Perinatal/maternal



Blood transfusion reactions:



Note: Figures may not sum to totals for categories because of weighting and rounding.
Source: New England Journal of Medicine, David W. Bates et al.

Cook Children’s Medical Center turned to patient-safety-risk software from Pascal Metrics, which enabled it to focus on 41 triggers that could prevent or identify an adverse event, such as abnormal lab results or whether a patient had to be transferred to the ICU.

One common concern is how to mitigate kidney damage that might occur from medications that children need for treatment. The electronic trigger tool identified children on three or more medications that are potentially toxic to the kidneys, enabling pharmacists to notify physicians that a patient is at risk and discuss modifying the drug dose, changing medications or stopping medications. The pharmacist also requests that the doctor order more frequent blood tests for rising levels of creatinine, an early sign of kidney damage.

“This allows us to not only intervene but to look for trends and things that might be happening across the system,” says Joann Sanders, chief quality officer. The program has been well received by clinicians as an extra aid in providing safe care, with the understanding, “It’s not Big Brother watching, we know how hard your job is and we’ve got your back,” Dr. Sanders says.

Reducing falls

Some of the most preventable mishaps are classified as problems under the broad idea of “patient care,” which is essentially things that can happen in the daily course of a hospital stay. They involve close attention to preventive steps by nurses, who may be swamped with patient tasks.

For example, as many as one million patients fall in the hospital in the U.S. each year, sustaining fractures, cuts and internal bleeding—extending their stay in the hospital at a cost researchers have estimated in the range of \$35,000 to \$65,000 per patient.

A program developed at Brigham and Women’s Hospital in Boston in 2007 called Fall Tips, for Tailoring Interventions for Patient Safety, was shown to reduce falls, but when patients did fall they were still sustaining serious injuries, likely because they weren’t adhering to

preventive plans such as not getting up to go to the bathroom without help.

To get patients and families more involved, and make sure nurses fully advised them of their own role in prevention, Brigham and Women's, part of Mass General Brigham, collaborated with New York hospital system Montefiore-Einstein and other institutions to enhance Fall Tips.

Nurses calculate each patient's risk using a fall scale of six common predictors such as medications that might make a patient vulnerable to falling or lower limb weakness, and then electronic medical records can automatically link each risk factor to the right preventive actions, such as scheduling assisted bathroom visits. Posters detailing the risks and prevention plan can then be printed out and hung at the bedside or shown on an electronic bedside display.

The plans are reviewed with the patient and family at admission and reiterated to the patient during each shift change. The approach was especially helpful for younger patients who are used to being independent and often didn't realize that less activity coupled with medications and other treatments could make them weak.

"As patients become more knowledgeable about their risk factors and plans, they are less likely to fall," says nurse scientist Patricia Dykes, research program director at Brigham and Women's Center for Patient Safety, Research and Practice.

At Montefiore, since 2016, Fall Tips has resulted in a 35% reduction in total falls with injury, a 29% reduction in total falls and \$6.5 million in savings, according to Maureen Scanlan, a co-author of a 2020 study on the revised Fall Tips program and a senior vice president and chief nurse executive at Montefiore.

The Falls Tips program is audited regularly and includes patient interviews to measure patient engagement in their prevention plan. When a fall does happen, leaders huddle with staff and review the incident with nursing leadership.

Another preventable risk tied to nursing care is pressure ulcers, or bedsores, which can lead to serious and costly infections. They are also among the most preventable—but only if nurses continually follow such protocols as skin checks on patients, moving them in their beds and making sure they aren't malnourished. But existing methods of determining

which patients are at risk have limited accuracy, research has shown.

Using a database of nursing assessments of patients with pressure injuries from five hospitals, a team that included researchers at Mass General Brigham and Columbia University developed machine-learning models that accurately predicted the development of pressure ulcers to help nurses identify patients who need more care.

“We can and should use nursing assessment data from our health records in novel ways to predict patient risk and display those predictions to all members of the care team to help increase situational awareness and actions for follow-up,” says Sarah C. Rossetti, associate professor of biomedical informatics and nursing at the Columbia University Medical Center.

Avoiding surgical complications

Surgeons have long used checklists before surgery to avoid mistakes such as leaving a sponge in a patient or operating on the wrong limb. Even so, a study of 24 procedure types found postoperative complications in as many as 15.5% of surgeries, increasing hospital costs by more than \$19,000 compared to those without complications.

The American College of Surgeons offers a free risk calculator, and hospitals are developing calculators customized to their patient population. At the University of Florida, researchers designed an artificial-intelligence system called MySurgeryRisk to help surgeons predict which patients are at higher risk for complications after surgery, and need more attention or care during and after surgery.

The aim is to help surgeons before an operation, to avoid complications with steps such as discontinuing certain medications, switching anesthetics that might be risky to a patient or increasing fluids during the procedure, according to Dr. Azra Bihorac, senior associate dean for research affairs at the University of Florida College of Medicine.

Surgeons get a risk profile on their patients each day before they begin procedures on a mobile device which displays the risk of postoperative complications, and they can also see how a patient compares to others with similar cases in the cohort used to train the algorithm.

In a study, 67 surgeons used the system and made initial predictions, then viewed the predictions generated by the algorithm. Physicians were more likely to underestimate the risk for prolonged intensive-care stay, blood-clot formation and acute kidney injury in cases where complications did occur. And they overestimated the risk of cardiovascular complications and severe sepsis in cases where complications didn't occur. Compared with their initial risk assessment, the accuracy of the surgeons' repeated risk assessment improved after interacting with the algorithm.

Half the surgeons found the algorithm helpful, 25% were neutral and the rest found it not helpful.

Preventing the most dangerous infections

Hospital infections of many types rose during the pandemic, as swamped and overworked staffers found it hard to adhere to prevention protocols. Among the most common are urinary-tract infections resulting from catheters and central-line infections linked to the soft, flexible tubes that stay in hospitalized patients' bodies to deliver medicines, fluids and nutrients.

Germs can travel down the lines and get into the bloodstream, which can cause serious illness and death. Following a checklist of steps has been shown to prevent such infections, including keeping insertion sites clean with antibacterial wipes and removing lines as soon as possible. But adherence can be challenging in a busy hospital ward.

"If we rely on the heroism of clinicians rather than technology to make sure a checklist is used, then harm will occur," says Dr. Peter Pronovost, who developed checklists used to prevent infection and is chief quality and clinical transformation officer at Cleveland-based University Hospitals.

Philadelphia-based Jefferson Health embedded a Quality and Safety Dashboard in its electronic medical record to help mitigate the risks of infections related to central lines and urinary catheters. From January 2020 to December 2022, central-line infections were reduced by 25%, according to Oren Guttman, an anesthesiologist and enterprise vice president for high reliability and patient safety.

With easy-to-interpret meters on the dashboard screen, clinicians can identify in real time

when caregivers aren't following best practices. "Hospital units are able to quickly assess which clinical risks are in need of attention and rescue patients from the unintended and unanticipated complexity of daily work, which has gotten even more unpredictable with Covid," Dr. Guttman says.

To engage patients and families, Jefferson provided educational tipsheets in plain language about the risks of the central line and the importance of keeping the insertion site clean, and urged people to ask doctors and nurses daily if they still needed the central line and when it will be removed.

Jefferson also held daily huddles for its medical units, where they pulled up the dashboard to review which patients had central lines. If, for example, a nurse hasn't documented that a patient received a required antibacterial wipe bath by shift change, the team can assign another nurse to complete the task.

"The machines are no longer our tools, they are our partners," says Dr. Guttman.

Ms. Landro, a former Wall Street Journal assistant managing editor, is the author of "Survivor: Taking Control of Your Fight Against Cancer." She can be reached at reports@wsj.com.

Appeared in the March 13, 2023, print edition as 'Why Hospitals Still Make Serious Medical Errors—and How They Are Trying to Reduce Them'.

Next in Journal Reports: Health Care

Want to Reduce Binge Drinking Among Teens? Try Taxing E-Cigarettes

By Lisa Ward

March 11, 2023 at 5:00 PM ET

New research also found that a tax on electronic cigarettes reduced drunken-driving deaths for teenagers.



More Journal Reports: Health Care Articles

When My Husband Had Surgery, Our Social Network Made All the Difference (for Both of Us)

By Beth DeCarbo / Photographs by Mike Belleme for The Wall Street Journal

March 11, 2023 at 3:00 PM ET





JOURNAL REPORTS: HEALTH CARE

If We Knew Then What We Know Now About Covid, What Would We Have Done Differently?

By Betsy Morris

March 11, 2023 at 1:00 PM ET



JOURNAL REPORTS: HEALTH CARE

Sea Moss Is the Hot New Wellness Ingredient. Does It Live Up to the Hype?

By Rina Raphael | Photographs by Elizabeth Renstrom for The Wall Street Journal

March 10, 2023 at 5:00 PM ET

[VIEW ALL](#)