

# What You Need to Know

Our quarterly special editions feature articles, stories, interviews, and more from our journal, *Patient Safety*. In this newsletter you will read how artificial intelligence could benefit healthcare, best practices for visual display design, stories of patient safety heroes, and more.

## Patient Safety Alert: Methylprednisolone and Patients With Hypersensitivity to Cow's Milk Components



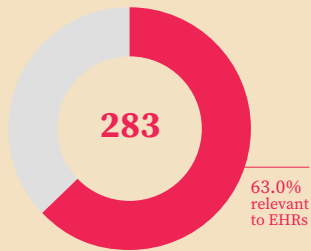
**Milk isn't just for breakfast:** Some medications contain lactose, so be aware if a patient has a milk allergy. In a recent harm event, one [patient with a known hypersensitivity to milk experienced an anaphylactic reaction after receiving an intravenous dose of methylprednisolone](#) (drawn from 40 mg vials), a steroid used to treat allergies and their effects, such as swelling, inflammation, and other conditions.. Following the event, the facility reviewed the drug package insert, which included a contraindication and warning for patients with known or suspected hypersensitivity to cow's milk or its components.

Fortunately, events like this can be prevented. One step that facilities can take is to check their formulations of methylprednisolone for the presence of lactose monohydrate; it's important to check each vial size, as they may contain different components. It's also important to review and update patients' allergies, including food allergies, at every encounter and document the date and type of manifestation as appropriate.

## Informing Visual Display Design of Electronic Health Records: A Human Factors Cross-Industry Perspective

This study review the visual display guidelines from three high-risk industries— **automotive, aviation, and nuclear**—for their applicability to electronic health record (EHR) design and safety.

Of the 449 guidelines extracted from the industry documents, 283 (63.0%) were deemed **relevant to EHRs**



**These included the following guidelines:**



**12**  
Automotive



**43**  
Aviation



**228**  
Nuclear

**Guidelines Categories:**

- Alphanumeric
- Color
- Brightness
- Contrast and luminance
- Comprehension
- Design characteristics

Multiple stakeholders, including vendors, healthcare facilities, and policymakers, can apply these guidelines to design **new EHRs** and **optimize systems already in use.**

Pruitt ZM, Howe JL, Bocknek LS, et al. Informing Visual Display Design of Electronic Health Records: A Human Factors Cross-Industry Perspective. *Patient Safety*. 2023;5(2):32–39. <https://doi.org/10.33940/001c.77769>



### Original Articles — Informing Visual Display Design of Electronic Health Records



**Electronic health records (EHRs) are commonplace**, but so are design flaws that make them harder to use and read—contributing to clinical staff burnout and diagnostic errors that may result in harm to patients. To help improve the way complex patient information is presented in EHRs, human factors researchers studied the visual display guidelines of industries that, like healthcare, are considered high-risk: automotive, aviation, and nuclear.

From hundreds of documents, they gleaned **best practices that could be applied to EHRs and categorized them** according to alphanumeric; color, brightness, contrast, and luminance; comprehension; design characteristics; symbols, pictograms, and icons; and tables, figures, charts, and lists. Healthcare facilities, EHR vendors, and policymakers can apply these recommendations to improve the usability, efficiency, and—most importantly—safety of EHR visual displays.

## Learn to Write a Quality Improvement Study

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[patientsafetyj.com](https://patientsafetyj.com)

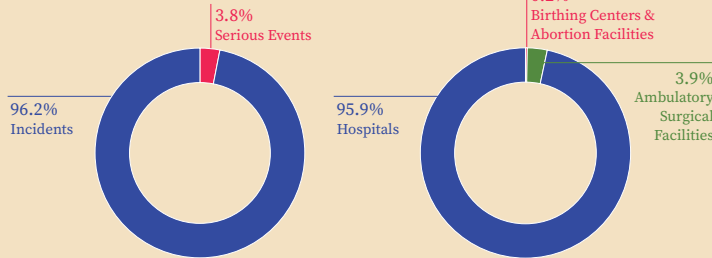
# Patient Safety Trends in 2022: An Analysis of 256,679 Serious Events and Incidents From the Nation's Largest Event Reporting Database

**4.5+ million acute care event reports**



The Pennsylvania Patient Safety Reporting System (PA-PSRS) is one of the largest repositories of patient safety data in the world.

**256,679 reports submitted in 2022**

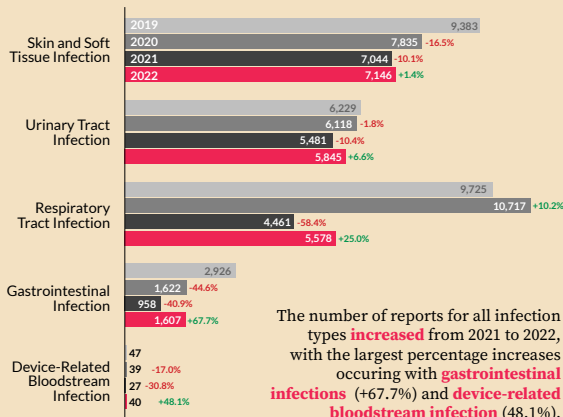


- Most common event type across **all reports** was Error Related to Procedure/Treatment/Test
- Most common event type for **serious events** was Complication of Procedure/Treatment/Test

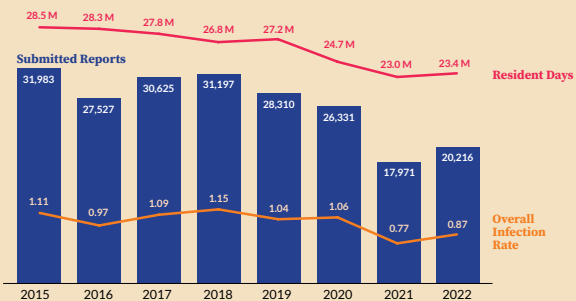
Kepner S, Jones R. Patient Safety Trends in 2022: An Analysis of 256,679 Serious Events and Incidents From the Nation's Largest Event Reporting Database. *Patient Safety*. Published online April 28, 2023;6-19. <https://doi.org/10.33940/001c.74752>



## Long-Term Care Healthcare-Associated Infections in 2022: An Analysis of 20,216 Reports



The **Pennsylvania Patient Safety Reporting System (PA-PSRS)** is the largest repository of patient safety data in the United States. In addition to over 4.5 million acute care records, PA-PSRS has collected more than 396,000 long-term care (LTC) healthcare-associated infection reports since 2009.



Kepner S, Bingman C, Jones R. Long-Term Care Healthcare-Associated Infections in 2022: An Analysis of 20,216 Reports. *Patient Safety*. Published online April 28, 2023;20-31. <https://doi.org/10.33940/001c.74494>



## 2022 in Patient Safety

**In conjunction with the Patient Safety Authority's 2022 annual report**, we published two articles in *Patient Safety* analyzing 2022 data from the Pennsylvania Patient Safety Reporting System (PA-PSRS), the nation's largest event reporting database of its kind.

In "Patient Safety Trends in 2022," PSA data analysts take a close look at the 256,679 incidents and serious events reported by acute care facilities last year, while "Long-Term Care Healthcare-Associated Infections in 2022" examines 20,216 HAI reports from long-term care facilities last year. They supplement the data overview in the annual report with a comprehensive review and analysis of events reported in 2022, as well as insights into patient safety in Pennsylvania and how we may continue to improve it together.

## Continuous Monitoring of Vital Signs After Hospital Discharge: A Feasibility Study



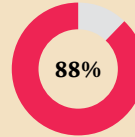
Increasing demand for inpatient beds limits capacity and poses a challenge to the healthcare system. In recent years telemedicine has been a priority due to its potential to relieve healthcare professionals and identify deterioration of patients earlier.

As part of the WARD (Wireless Assessment of Respiratory and circulatory Distress) project, 80 patients admitted with an acute medical disease were monitored at home during the first four days after discharge.



- Oxygen desaturation <88% was observed in **92% of the patients** and lasted for 6.3% of total monitoring time.
- Oxygen desaturation <85% was observed in **83% of the patients** and lasted 4.2% of total monitoring time.
- 61% had a respiratory rate >24/minute.

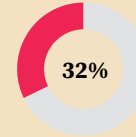
### Valid monitoring time per device



chest patch  
measuring heart rate  
and respiratory rate



pulse oximeter  
measuring oxygen  
saturation



blood  
pressure monitor



Continuous monitoring of vital signs was feasible at home with a high degree of valid monitoring time. Oxygen desaturation was commonly observed.

Songthawornpong N, Vijayakumar T, Saïd Vang Jensen M, et al. Continuous Monitoring of Vital Signs After Hospital Discharge: A Feasibility Study. *Patient Safety*. 2023;5(2):53–63. <https://doi.org/10.33940/001c.77776>



## Continuous Monitoring of Vital Signs After Hospital Discharge: A Feasibility Study

**With beds continuing to be in high demand in hospitals everywhere**, telemedicine use is on the rise and facilities are finding innovative ways to care for patients and keep them healthy. A team of researchers in Denmark wondered if hospital admissions could be reduced by discharging patients early and continuing to monitor their vital signs from home. To assess the feasibility, **they studied 80 acute care patients equipped with three wireless sensors to monitor heart and respiratory rate, oxygen levels, and blood pressure.**

After four days of monitoring, they found that when patients actually wore the sensors, valid monitoring time was high for chest patches and pulse oximeters (59% to 89%); however, only about half of patients wore the blood pressure monitor—which is comparable to monitoring in the hospital. Adherence to wearing the monitors also decreased over time, perhaps due to patient discomfort or lack of motivation. Most of the patients experienced periods deviating vital signs and oxygen desaturation. While home monitoring proved feasible and shows promise for improving patient safety and giving patients more freedom to move around and engage in daily activities, more study and definition of acceptable monitoring standards is needed.

## Patient Safety Initiative — I AM Patient Safety 2023 Annual Achievement Awards



**Given the daily demands and challenges of healthcare,** it's important to take a moment to celebrate those who go above and beyond for their patients. Since the Patient Safety Authority introduced the I AM Patient Safety awards in 2013, this annual contest has recognized hundreds of teams and individuals for their advancements, outcomes, and commitment to patient safety.

The awards are judged by a cross-section of national and regional healthcare executives; patient safety advocates; and government, university, and patient representatives. These judges evaluated nominations from healthcare facilities throughout Pennsylvania and nationwide for innovation, impact, sustainability, and scalability. In addition to the honorees in 10 juried categories, PSA Executive Director Regina Hoffman, MBA, RN, selected a Choice Award winner for special recognition.

[Read and share the accomplishments of this year's contest winners in the new issue of \*Patient Safety\*.](#)

## Perspective — Artificially Intelligent? Machine Learning in Healthcare and Why It May Not Be As Advanced As You Think



**Have you heard of ChatGPT and Midjourney?** Artificial intelligence is on everyone's minds these days, but is it truly "intelligent"? *Patient Safety* managing editor, Caitlyn Allen, sat with Dr. Avishek Choudhury, AI healthcare researcher, [to discuss the promise and limitations of machine learning, its current place in healthcare, and why it's unlikely computers can ever truly replace humans in hospitals.](#)

Dr. Choudhury points out that AI "can only highlight the presence of a new pattern. The onus then falls on a human clinician to deduce what this novel pattern signifies. This underlines one of the inherent limitations of AI—it can't independently discover or invent, but rather is fundamentally reliant on the data it's been trained on. This is why the human element in healthcare will always be essential, to interpret and investigate when AI encounters the unknown."



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