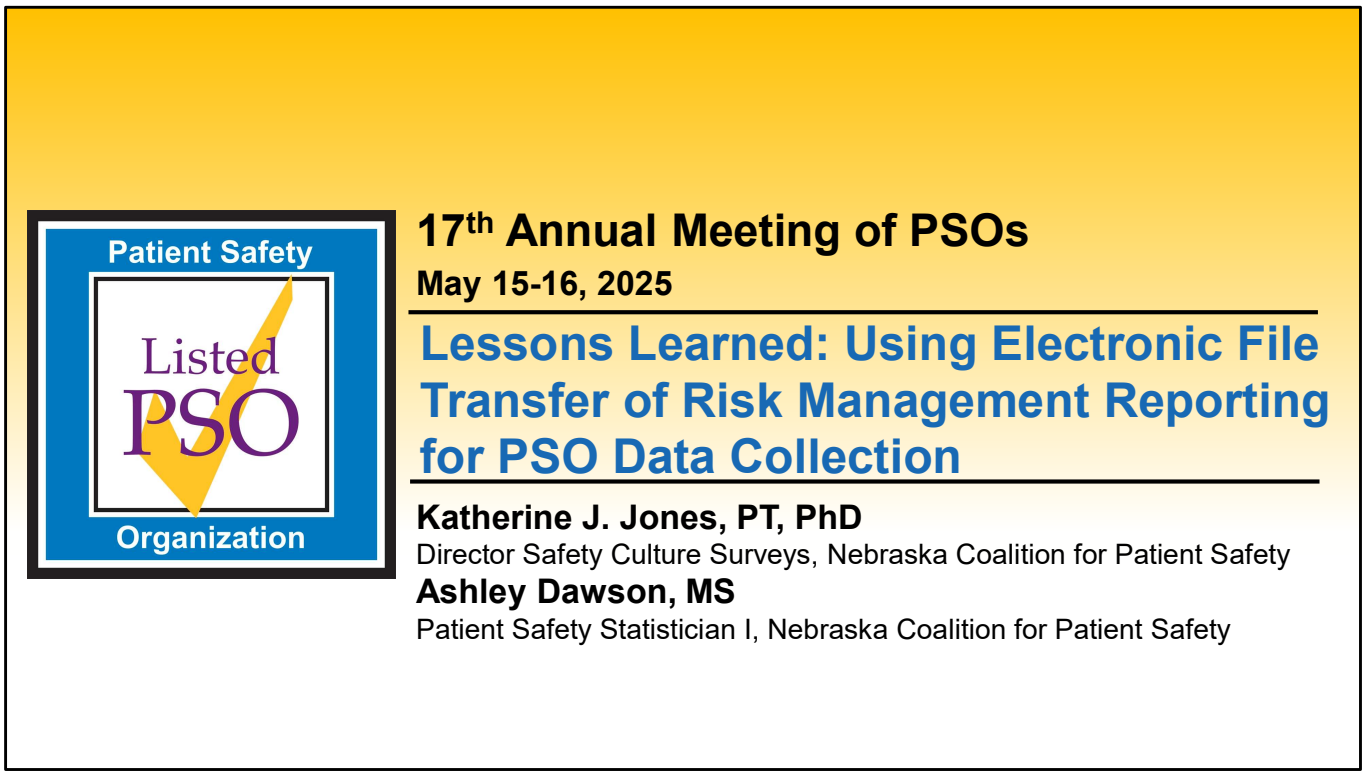


I'm Katherine Jones, Director of Safety Culture Surveys at the Nebraska Coalition for Patient Safety. Ashley Dawson, our patient safety statistician is joining us virtually and will begin the presentation.

Thank you for this opportunity to share what we at the Nebraska Coalition for Patient Safety have learned from data that our members have electronically transferred from their risk management systems.

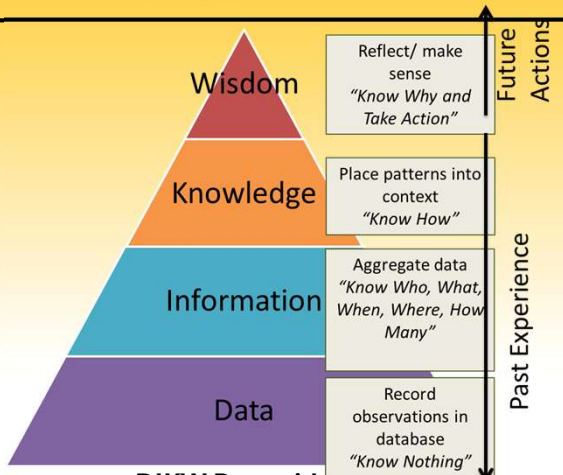
Disclaimer

The opinions expressed in this presentation are those of the presenter and do not reflect the official position of the Department of Health and Human Services (HHS), the Agency for Healthcare Research and Quality, or the Office for Civil Rights.

Read verbatim.

Our Mission as a PSO: Translate Data into Knowledge and Take Action to Support Members

"Patient Safety Organizations (PSOs) collect and analyze data voluntarily reported by healthcare providers to help improve patient safety and healthcare quality. PSOs provide feedback to healthcare providers aimed at promoting learning and preventing future patient safety events." (AHRQ, https://pso.ahrq.gov)



DIKW Pyramid
(Ackoff, 1989)

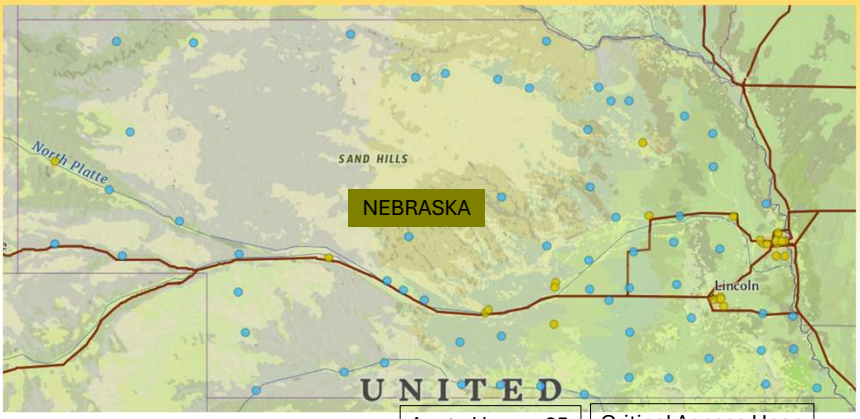
Our mission as a PSO is to collect and analyze data voluntarily reported by healthcare providers to help improve patient safety and healthcare quality. To achieve this mission, we must translate aggregate data into information and knowledge that helps our members take action to improve their systems of care.

Nebraska Coalition for Patient Safety (NCPS)

NCPS serves a high proportion of rural hospitals that have limited resources; 29% of 93 NE counties are without a hospital

- 2005—NCPS established by state statute without funding
- 2009—Federally-listed PSO
- 2023—69 members
  - ✓ 77% of licensed beds
  - ✓ 89% of Acute Care Hospitals
  - ✓ 60% of Critical Access Hospitals

2024 Population 2,005,465 (United States Census)



https://www.nebraskamap.gov/datasets/nebraska::dhhs-hospitals/explore?location=41.367882%2C-99.634338%2C7.07

Acute Hosp > 25 beds (n = 27)

Critical Access Hosp ≤ 25 beds (n=62)

(NE DHHS)

First, we would like to share some background information about NCPS. Nebraska is a rural state with a population of just over 2 million people. The yellow dots on the map indicate the locations of the 27 acute care hospitals that have more than 25 beds. The blue dots indicate the location of the Critical Access Hospitals that are licensed for 25 beds or less; 29% of our 93 counties are without a hospital.

In 2005, NCPS was established by state statute without funding. In 2009, NCPS became a Federally-listed PSO. In 2023, we had 69 members. These members accounted for

- 77% of licensed beds
- 89% of Acute Care Hospitals
- 60% of Critical Access Hospitals

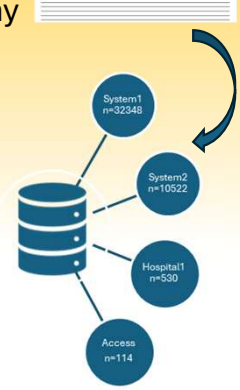
*****

- ✓ 5284 (77%) of 6885 lic. beds
- ✓ 24 (89%) of 27 Acute Care Hospitals (Yellow)
- ✓ 37 (60%) of 62 Critical Access Hospitals (Blue)

Evolution of NCPS Data Collection

(Jones et al., 2023)

- 2006-2007—Developed paper reporting form based on National Quality Forum (NQF) never events and National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) severity taxonomy
- 2008-2021—Transitioned to fillable pdf; data manually entered into Access database
- 2021—Received Patient Safety Cash Fund—biannual state license renewal fees for physicians ($50) and PAs ($20)
- 2022—Subscribed to PressGaney Patient Safety Organization (PGPSO) reporting platform using funds from Patient Safety Cash Fund
- 2022-present—Two systems and one community hospital transfer data from their risk management reporting systems to the PGPSO platform
- 2022-present—NCPS merges data from Access and PGPSO for analysis



In 2006, we began developing a system to collect and analyze data that relied on a paper form and manually entering data into an Access database. In 2022, we transitioned to a combination of manually entered data and electronic file transfer using the PressGaney PSO Platform.

This transition to electronic file transfer was supported by the Patient Safety Cash Fund which was established by the Nebraska Legislature in 2019. This fund is supported by biannual license renewal fees paid by physicians and PAs.

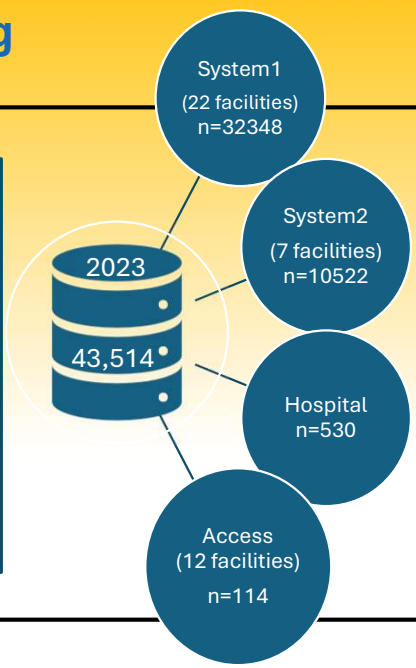
For events occurring in 2023, 29 facilities within two large health care systems plus one community hospital transferred data from their risk management reporting systems to PressGaney.

We downloaded the raw files from PressGaney and then merged them with data reported by those 12 facilities not using PressGaney.

Implications of Electronic Transfer to PGPSO: Need for Extensive Data Cleaning

- 43,926 events from three risk management systems occurred 2023
  - ✓412 removed due to inaccurate date or event concerned employee, visitor or property
  - ✓33% missing severity
  - ✓26% missing description of event
- 43,514 events in clean data set after merging 114 record from Access
  - 58 unique patient safety conditions
  - 330 unique contributing factors in multi-select field with multiple delimiters

GOAL: Clean data and map patient safety conditions and contributing factors to standard taxonomies to allow merging, aggregate analysis, and learning.



A major implication of using electronic transfer of risk management data from different systems is the need for extensive data cleaning and mapping to merge data collected using different taxonomies. The two systems and one community hospital reported 43,926 events that occurred in 2023.

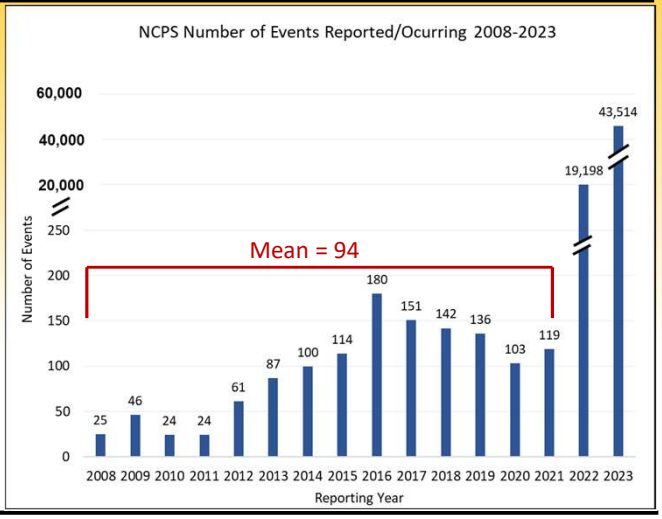
We removed 412 events due to inaccurate dates or the event concerned an employee, visitor, or property and not a patient.

We found that the severity and description of the event were frequently missing.

As the graphic indicates, our final dataset for events occurring in 2023 contained 43,514 events from 42 unique facilities. Nearly 99% of the events were from two large systems.

Implications of Electronic Transfer to PGPSO: Increased Volume of Reports and Expanded Settings of Care

- Benefits...
  1. 400-fold increase in reported events occurring in 2023 as compared to previous 15 years (avg. 94 – 43,514) (Jones et al., 2023)
  2. Expanded reporting beyond acute hospital to ambulatory and specialty hospital settings
- Limitation...99.7% of events transferred to PGPSO platform by 29 facilities within 2 systems and 1 hospital



There are two major benefits to using electronic transfer of risk management data for data collection:

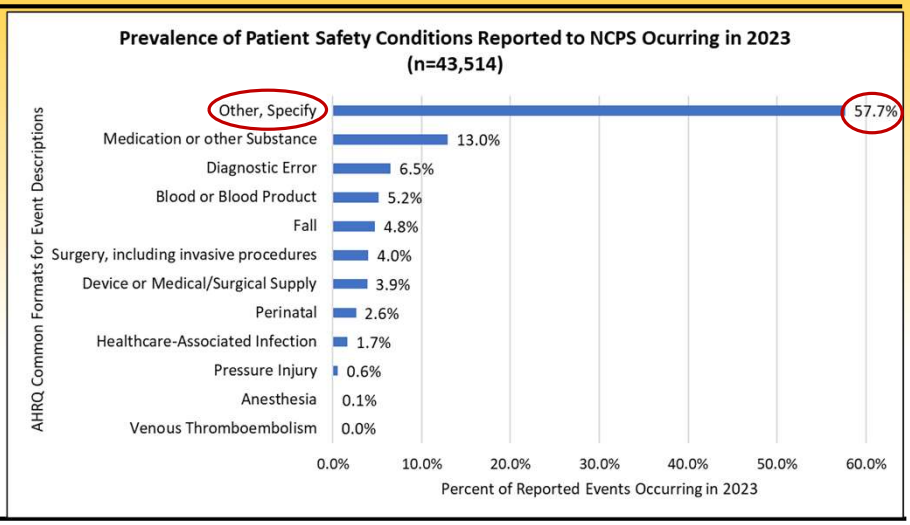
1. The significant increase in the volume of reported events. We experienced a 400-fold increase in reported events occurring in 2023 as compared to the 14 years prior to using PressGaney when we received an average of 94 events each year.
2. The inclusion of events occurring in ambulatory and specialty hospital settings.

A limitation to using electronic transfer of risk management data, is that the data may not be representative of all members as nearly 99.7% of the data was reported by 29 facilities within two large systems and one community hospital.

Implications of Electronic Transfer: Need for Extensive Mapping

Mapping the 58 unique patient safety conditions to the 12 AHRQ Common Format Event Descriptions resulted in significant loss of information because nearly 58% of events were categorized as "Other"

(PSO Privacy Protection Center)

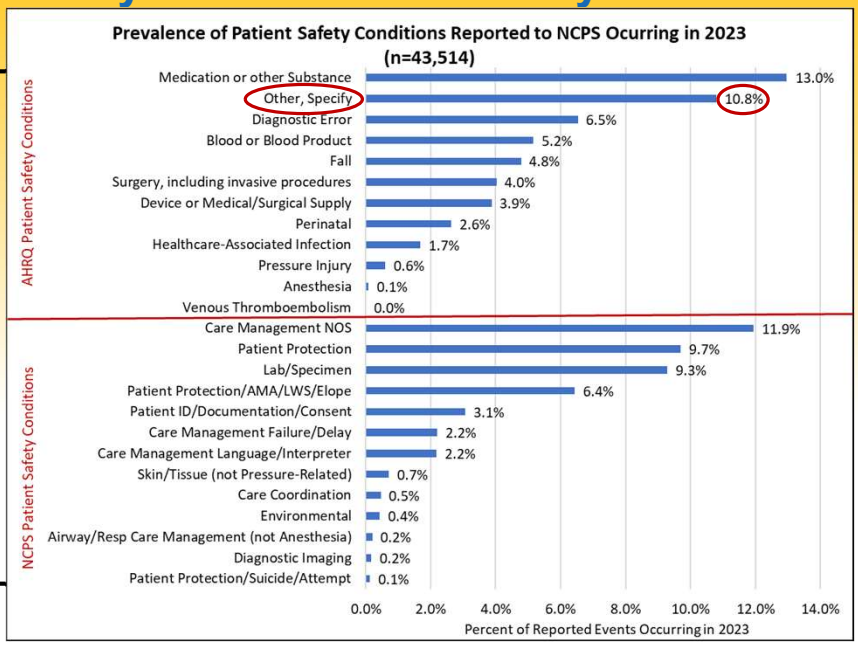


To transform the data into actionable information we began by mapping the 58 unique patient safety conditions to the 12 AHRQ Common Format event descriptions. This mapping resulted in a significant loss of information because nearly 58% of events did not fit a common format event description and so were categorized as "other"

Implications of Electronic Transfer: Need for Hybrid Patient Safety Condition Taxonomy

Mapping to a hybrid taxonomy of the 12 AHRQ Common Format Event Descriptions AND 13 conditions used by NCPS members added information because less than 11% of events were categorized as “Other”

(PSO Privacy Protection Center; Jones et al., 2023)



To avoid this significant loss of information, we included 13 patient safety conditions currently used by our members and that reflected the NQF never events.

Mapping to this hybrid taxonomy resulted in only 11% of events classified as “other.”

These added conditions include events concerning Care Management in general and delays or failures of Care Management, Patient Protection, and Lab/Specimen.

Lessons Learned: Similarities and Differences in Prevalence of Patient Safety Conditions by Care Setting

Patient Safety Condition

Setting	Airway/Resp Care Mgt	Anesthesia	Blood or Blood Product	Care Coordination	Care Mgt Failure/Delay	Care Mgt Language/Interpreter	Care Mgt NOS	Device or Medical/Surgical Supply	Diagnostic Error	Diagnostic Imaging	Environmental	Fall	Healthcare-Associated Infection	Lab/Specimen	Medication or other Substance	Other, Specify	Pt ID/Documentation/Consent	Pt Protection	Pt Protection/AMA/LWS/Elope*	Pt Protection/Suicide/Attempt	Perinatal	Pressure Injury	Skin/Tissue (not Pressure-Related)	Surgery/invasive procedures	Total
Ambulatory (n=4275)	0.0%	0.0%	0.2%	0.0%	0.1%	13.6%	14.9%	2.7%	8.4%	0.1%	0.0%	3.0%	0.8%	14.3%	7.6%	19.0%	9.1%	3.2%	1.6%	0.2%	0.2%	0.0%	0.2%	0.7%	100%
Ambulatory Surgery Center (n=13)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.8%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	46.2%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	100%
Critical Access Hospital (n=1693)	0.0%	0.1%	0.8%	0.0%	0.0%	0.4%	15.1%	3.1%	14.7%	0.0%	0.0%	5.0%	1.4%	8.4%	21.1%	17.7%	3.2%	1.1%	4.5%	0.0%	0.7%	0.2%	0.5%	2.1%	100%
Community Hospital (n=10307)	0.0%	0.0%	1.9%	0.7%	0.0%	1.2%	13.0%	4.9%	6.2%	0.0%	0.0%	3.7%	1.1%	7.9%	13.1%	18.4%	0.7%	4.5%	13.0%	0.0%	2.6%	0.2%	0.6%	6.0%	100%
Large Urban Hospital (n=25729)	0.3%	0.1%	7.8%	0.5%	3.7%	0.8%	10.5%	3.8%	6.1%	0.3%	0.7%	5.3%	2.2%	9.5%	13.1%	5.8%	3.0%	12.7%	4.6%	0.1%	3.3%	0.9%	0.9%	4.0%	100%
Specialty-Behavioral Hospital (n=862)	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	17.1%	0.5%	0.3%	0.0%	0.0%	10.3%	0.5%	0.3%	10.2%	12.1%	0.7%	33.9%	12.6%	0.8%	0.0%	0.0%	0.3%	0.2%	100%
Specialty-Heart Hospital (n=635)	0.0%	0.0%	3.5%	0.0%	0.0%	2.7%	18.3%	5.0%	5.4%	0.0%	0.0%	5.8%	0.6%	4.6%	21.4%	16.2%	4.7%	3.6%	3.6%	0.2%	0.0%	0.0%	0.2%	4.3%	100%

Key: 0 .1-4.9% | 5.0-9.9% | ≥ 10.0%

*AMA, Against Medical Advice; LWS, Left without being Seen

- This table reveals similarities and differences in the prevalence of patient safety conditions by setting. The column headings are the 24 patient safety conditions, and the row headings are the seven different settings of care. Cells shaded in peach accounted for 10% or more of the reported events in a setting.

- Similarities in the prevalence of patient safety conditions across settings are indicated by the three downward pointing red arrows:
    1. Care Mgt/not specified events accounted for > 10% of events in every setting (the majority of these events involved not following policy/procedure)
    2. Medication events accounted for > 10% of events in every setting except ambulatory care.
    3. The proportion of events categorized as “other” ranged from 6% in large urban hospitals to 19% in the ambulatory setting. This latter finding reflects the fact that the event descriptions were developed for the acute hospital and not the ambulatory setting.

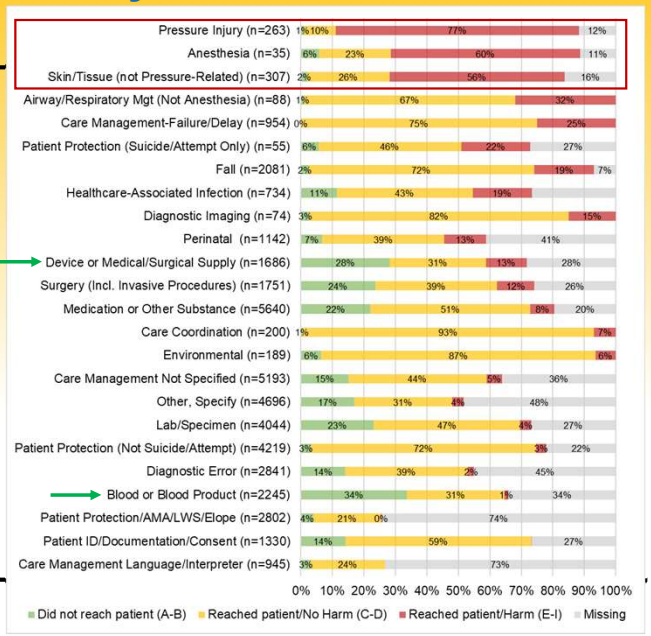
- Differences in the prevalence of patient safety conditions are indicated by the red circles:
    1. Care Mgt/Language Interpreter events and Lab/Specimen events were most prevalent in Ambulatory settings; each accounted for nearly 14% of events in the ambulatory setting.
    2. Diagnostic Errors were most prevalent in Critical Access Hospitals; accounting for nearly 15% of events. (These errors were primarily due to delays in lab and diagnostic imagining)
    3. Falls were most prevalent in the Specialty-Behavioral Health Hospital; accounting for over 10% of events.
    4. Leaving against medical advice or leaving without being seen were most prevalent in Community Hospitals and the Specialty-Behavioral Health hospital, and accounted for about 13% of events in both settings.

Lessons Learned: Association Between Patient Safety Conditions and Severity of Outcome

- Conditions most likely to result in harm
  - Pressure Injuries (77%)
  - Anesthesia (60%)
  - Skin/Tissue (56%)
  - Airway/Respiratory Mgt (32%)
  - Care Management/Failure Delay (25%)

- Conditions most likely to be intercepted before reaching the patient
  - Blood or Blood Product (34%)
  - Device or Medical/Surgical Supply (28%)

*AMA, Against Medical Advice; LWS, Left without being Seen



This bar chart illustrates the association between each patient safety condition and the severity of the outcome to the patient. The chart is sorted in descending order by the prevalence of harm.

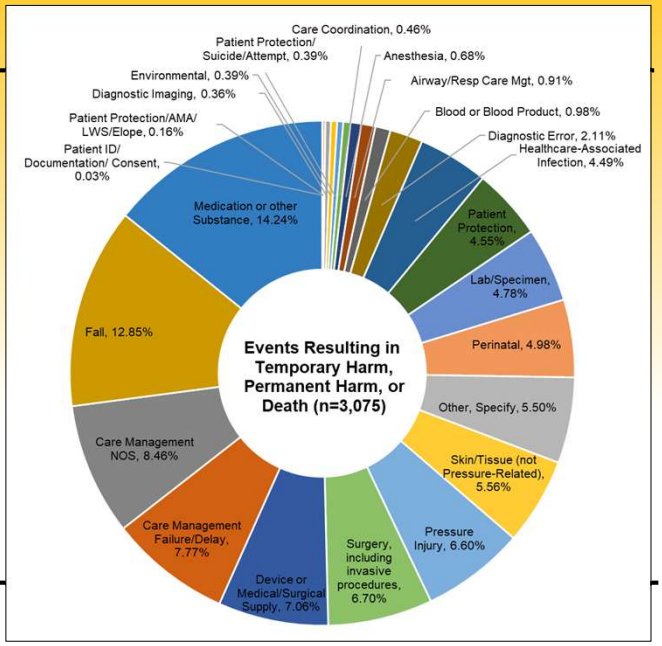
For each condition, the green portion of the bar is the proportion of the condition that did not reach the patient, the yellow portion is the proportion that reached the patient but did not result in harm, and the red portion is the proportion that reached the patient and resulted in temporary harm, permanent harm, or death. Gray is the proportion for which severity was not reported.

As highlighted by the red rectangle, pressure injuries, anesthesia events, and skin/tissue events were most likely to result in. As indicated by the relative absence of green, processes to mititagate these conditions need to improve.

As highlighted by the green arrows, blood/blood product conditions and device or medical/surgical supply conditions rarely resulted in harm and were often intercepted before reaching the patient. What can we learn from the processes for delivering blood products that supports intercepting errors before reaching the patient (standardization and independent double checks??)

Lessons Learned: Frequency of Patient Safety Conditions Resulting in Harm or Death

- 7% (3,075/43,514) of reported events resulted in temporary harm, permanent harm, or death
- Most frequent harmful conditions
  - Medication/Other Substance (14%)
  - Fall (13%)
  - Care Mgt/Not Specified (8%)
  - Care Mgt Failure/Delay (8%)
  - Device or Med/Surg Supply (7%)
  - Surgery/Invasive Procedures (7%)
  - Pressure Injury (7%)
  - Skin/Tissue (6%)
- Temporary harm or greater reported by all settings except Ambulatory Surgery Center

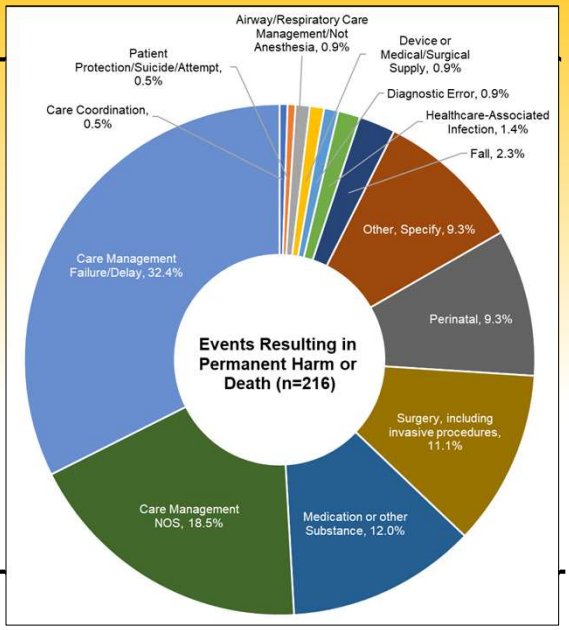


7% (3,075/43,514) of reported events occurring in 2023 resulted in temporary harm, permanent harm, or death.

This pie chart illustrates the frequency of the patient safety conditions that accounted for any harm. These findings are consistent with other sources in that medication errors and falls were the conditions that accounted for the greatest proportion of harm. This finding supports the need to continue to focus improvement efforts on medication errors and falls.

Lessons Learned: Frequency of Patient Safety Conditions Resulting in Permanent Harm/Death

- 0.5% (216) of 43,514 events resulted in permanent harm or death
- Most frequent conditions resulting in permanent harm or death
  - Care Mgt Failure/Delay (32%)
  - Care Mgt/Not Specified (19%)
  - Medication or other Substance (12%)
  - Surgery/Invasive Procedures (11%)
  - Perinatal (9%)
  - Other (9%)
  - Fall (2%)



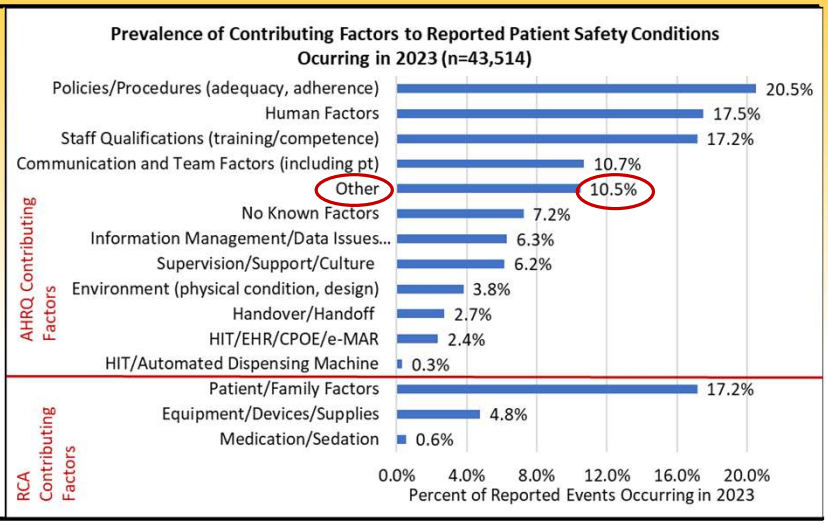
0.5% (216)of 43,514 events resulted in permanent harm or death.

This pie chart illustrates the frequency of the patient safety conditions that resulted in permanent harm or death. Failure, delays, and other care management issues accounted for over half of all events that resulted in permanent harm or death.

Implications of Electronic Transfer: Need for Hybrid Contributing Factor Taxonomy

- 43,514 reported events contained 330 unique Contributing Factors; multiple factors in single field with inconsistent delimiters
- Mapping to 12 AHRQ Common Format Contributing Factors AND three factors considered in root cause analyses resulted in less than 11% of contributing factors categorized as “Other”

(PSO Privacy Protection Center, Institute for Healthcare Improvement)

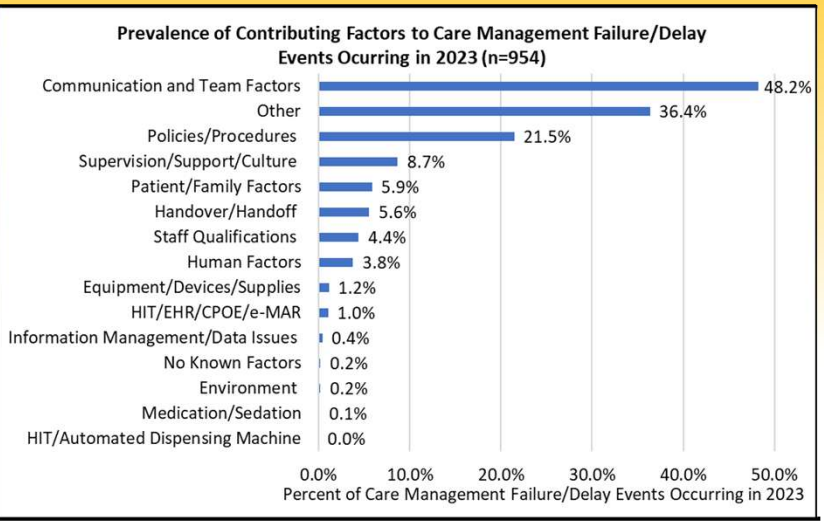


To transform the data into actionable information we mapped the 330 unique contributing factors to 12 AHRQ Common Format Contributing Factors AND three factors considered in root cause analyses. This hybrid taxonomy resulted in less than 11% of contributing factors categorized as “Other”

Contributing Factors to Care Management Failure/Delay

The most frequent contributing factors to Care Management Failure/Delay (regardless of severity)

- Communication and Team Factors (48%)
- Other (36%)
- Policies/Procedures (22%)
- Supervision/Support/ Culture (9%)



Because failures and delays in care management accounted for nearly 1/3 of the events resulting in permanent harm or death, we identified the contributing factors to these events. Surprisingly, Communication and team factors contributed to nearly half of these events.

Lessons Learned: Five Contributing Factors Contributed to Majority of Patient Safety Conditions

Five factors contributed to greater than 10% of events…

1. Policies/Procedures (inadequacy/absence/lack of adherence) (20.5%)
   Care Mgt/Not Specified (56%), Patient ID/Documentation/Consent (42%), Lab/Specimen (41%)
2. Human Factors (17.5%)
   Medication (33%), Patient ID/Doc/Consent (31%), Airway/Resp Care Mgt (30%), Skin/Tissue (28%),
3. Staff Qualifications (17.2%)
   Pressure Inj (62%), Patient ID/Doc/Consent (44%), Airway/Resp Care Mgt (25%), Diagnostic Error (25%)
4. Patient/Family Factors (17.2%)
   Patient Protection Events (62%- 90%), Fall (48%), Pressure Injury (33%), Airway/Resp Care Mgt (24%)
5. Communication/Team Factors (10.7%)
   Care Coordination (52%), Care Mgt/Failure Delay (48%), Diagnostic Imaging Events (39%)

Conclusions

1. Transforming data from different risk management reporting systems into actionable information requires data cleaning and mapping patient safety conditions and contributing factors to standardized taxonomies.
2. Use of hybrid taxonomies revealed
   - Risks to patients in ambulatory settings (i.e., Language/Interpreter, Lab/Specimen)
   - Patient cognitive and physical factors that contributed to Patient Protection events, Falls, Pressure Injuries, and Airway/Respiratory Care Management events
   - Medication errors and falls were the most common causes of all harm (temp/permanent/death), which is consistent with other sources (Bates et al., 2023; Kepner and Jones, 2024)
   - Failure/Delays in Care Mgt were most common (32%) cause of permanent harm/death

Conclusions

3. The five most prevalent contributing factors reveal the need to improve implementation of existing evidence-based patient safety interventions
   - Just Culture principles/strategies to address lack of adherence to policies/procedures and the need to design systems to account for human factors (Marx, 2019; The Just Culture Company); these two factors contributed to 38% of reported events
   - Team strategies and tools (i.e. TeamSTEPPS) to improve communication, manage changing workloads, and serve as a safety net for human fallibility; Communication and Team Factors contributed to half of Care Management Failure/Delay events
   - Credible, thorough, and acceptable root cause analyses that consider staff qualifications and patient factors (IHI)

NEXT STEPS: analyze 2024 events, improve ambulatory taxonomy, develop data briefs by care setting

Questions

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