



2025 Transforming Quality Conference

Encore Series

August 7, 2025

Champions for Children's Health

Tackling the Social Drivers of Health
with Texas Children's Hospital

- Aired July 31, 2025

**Meet TABBICAT: A Framework for
Advancing Mental Health Services** with
Akron Children's Hospital

- Aired August 5, 2025

**AI-Driven Insights: Uncovering Patient
Safety Trends with ChatGPT** with
Stanford Medicine Children's Health

- August 7, 2025, at 1 p.m. ET

**Leveraging REaL Data to Shine the
Light on Health Disparities** with
Children's National, Seattle Children's and
CHA

- August 12, 2025, at 2 p.m. ET



Transforming Quality Conference Encore Webinar Series

Explore the Best of TQC 2025

CHA's Transforming Quality Conference offers children's hospitals the opportunity to connect and collaborate on care and system improvements impacting child health outcomes. This encore series highlights the top-rated presentations from the 2025 conference.



EVENT —

Tackling Social Drivers of Health

Explore how Texas Children's Hospital's tiered public health model addresses social drivers of health to reduce health disparities and improve outcomes.

July 31, 2025 | 2 p.m. ET

2025 Annual Leadership Conference

Registration Opens: August 11th

Date of Conference: November 3-5, 2025

Location: Gaylord Pacific Resort & Convention Center in Chula Vista, CA

For more information, contact Rachael Green at Rachael.Green@childrenshospitals.org or Samantha Hayes at Samantha.Hayes@childrenshospitals.org



We'd love to hear from you!



Thank you for
completing the
survey!



AI-Driven Insights: Uncovering Patient Safety Trends with ChatGPT

Kiley Rogers, MSN - Director of Patient Safety & Professional Practice Evaluation
Kevin Chen, DO – Clinical Instructor
August 7, 2025

Disclosures

- We have no financial disclosures to share

Session Learning Objectives

1. Describe how large language models can be utilized to transform patient safety data into meaningful and actionable information
2. Explain how large language models could foster new ideas and opportunities for improvement within patient safety

Stanford Medicine Children's Health (SMCH)

With Lucile Packard Children's Hospital Stanford at its center, SMCH is the only Bay Area network exclusively dedicated to obstetrics and pediatric care.



65+

Bay Area locations

394

licensed beds

700,000+

annual outpatient visits

4,800+

babies delivered each year



Our Level I Pediatric Trauma Center is one of only five in California

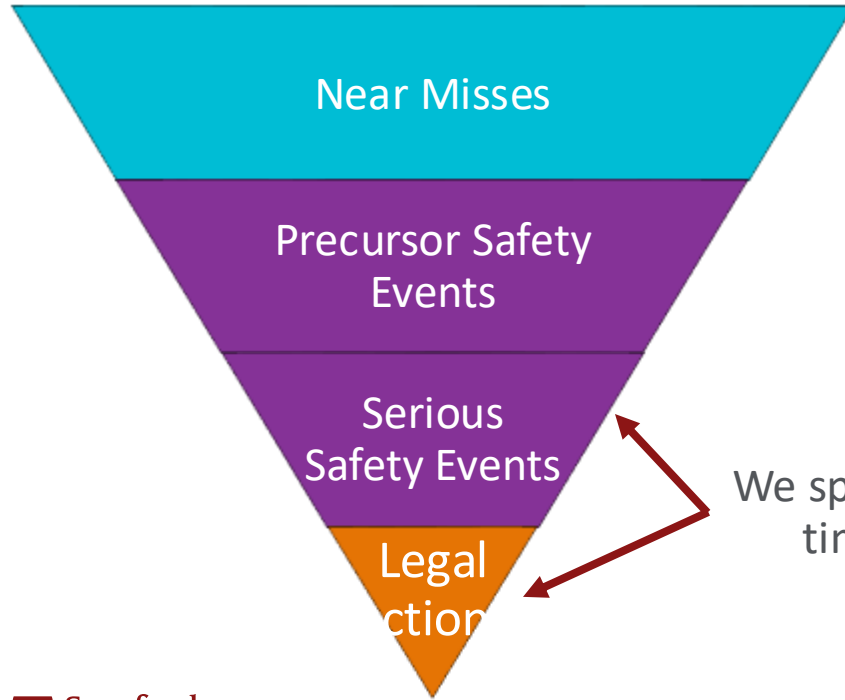
Pediatric teaching hospital of the **Stanford University School of Medicine**



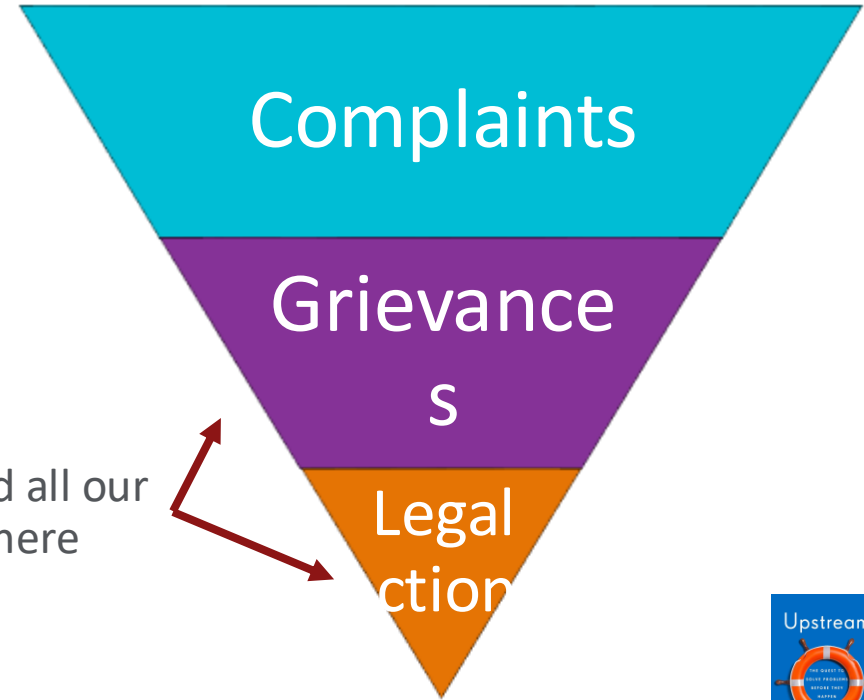
Children's Health

Advancing towards Proactive Safety

Quality and Safety



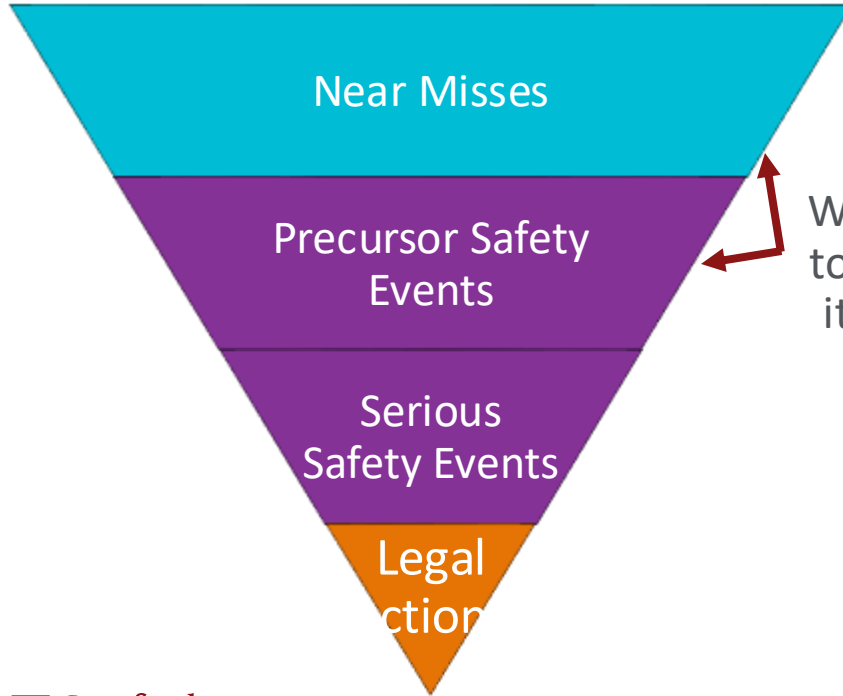
Patient Experience



We spend all our time here

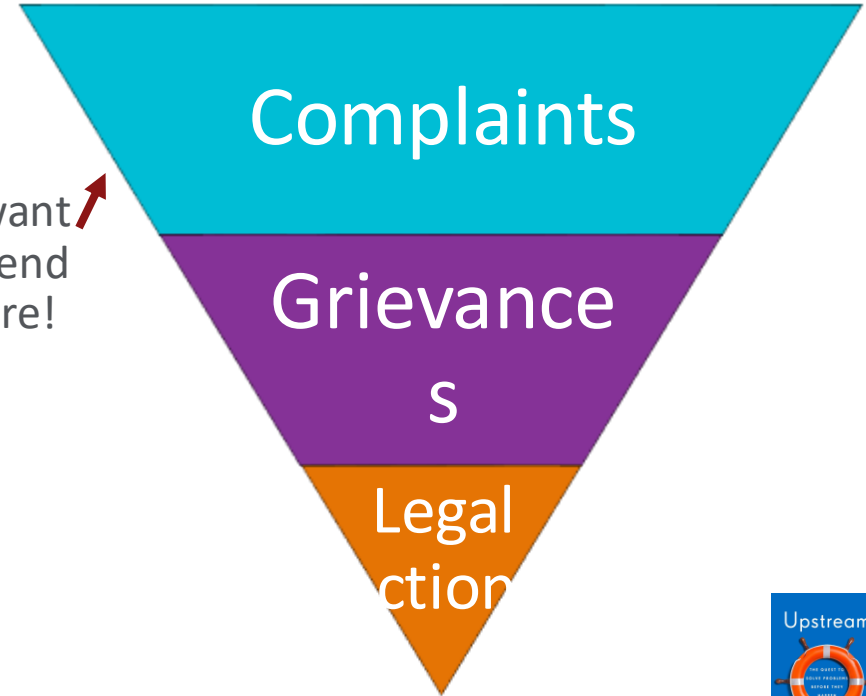
Advancing towards Proactive Safety

Quality and Safety



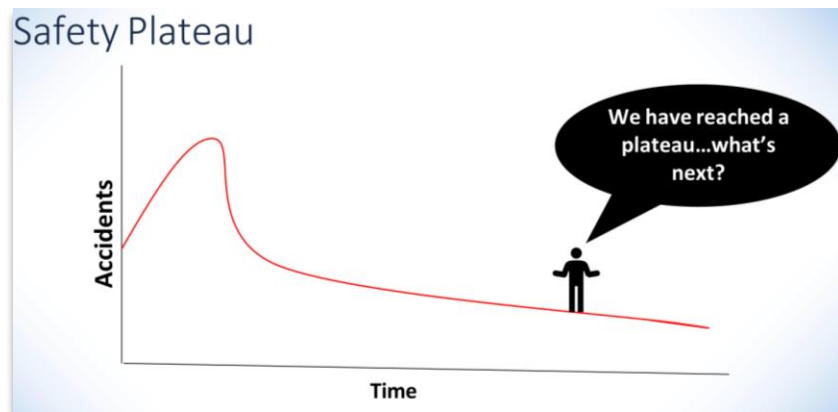
We want
to spend
it here!

Patient Experience

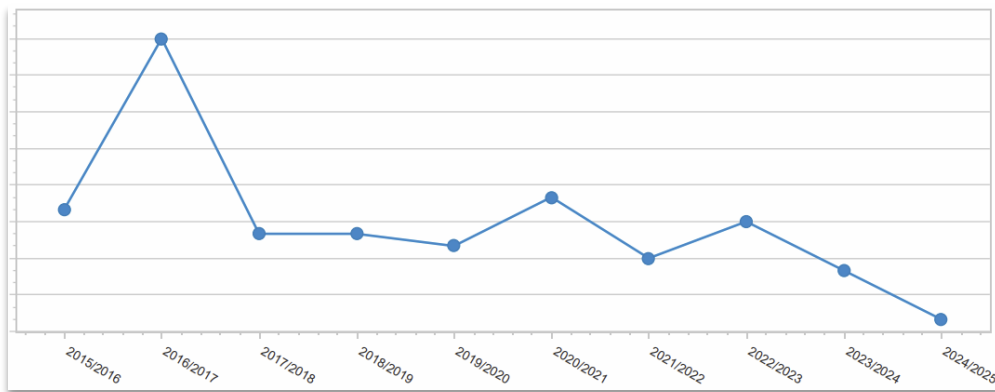


Solutions for Patient Safety (SPS): Proactive Safety

SPS Cause for Change



SMCH Serious Safety Events



Expanding the Lens of Learning

Figure 1. Analysing Rare Events

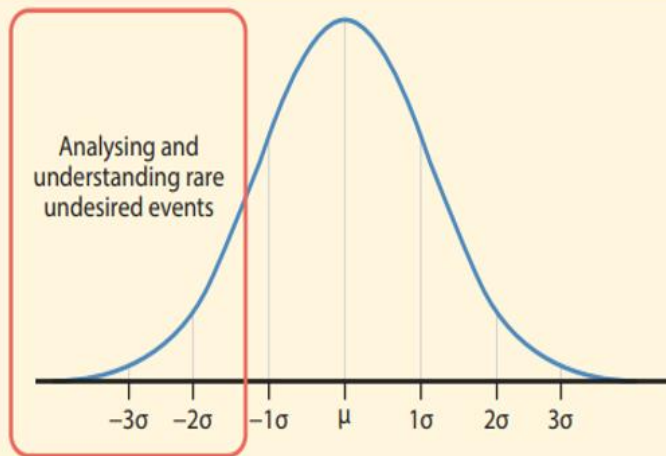
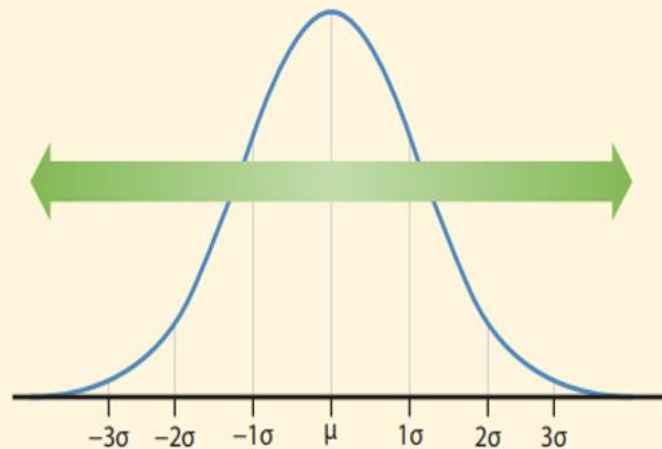
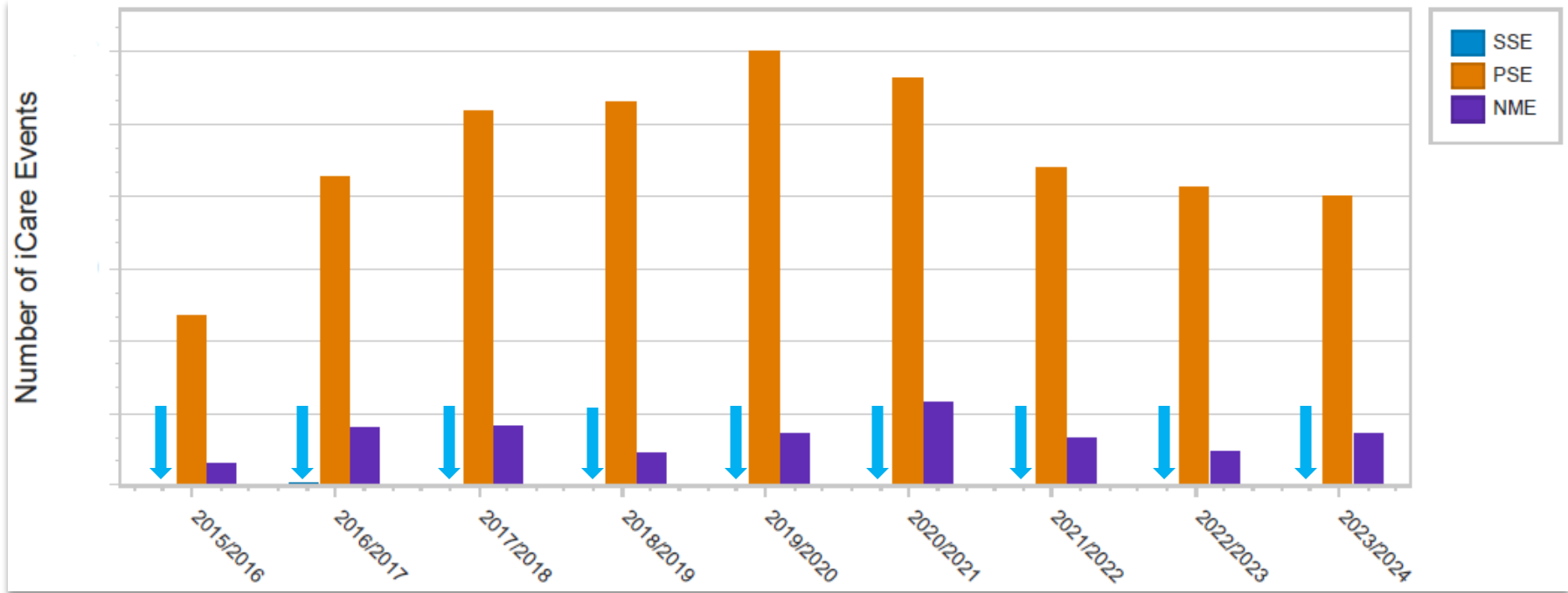


Figure 2. Learning Across the Entire Performance Distribution



Serious Safety, Precursor Safety & Near Miss Events per Year

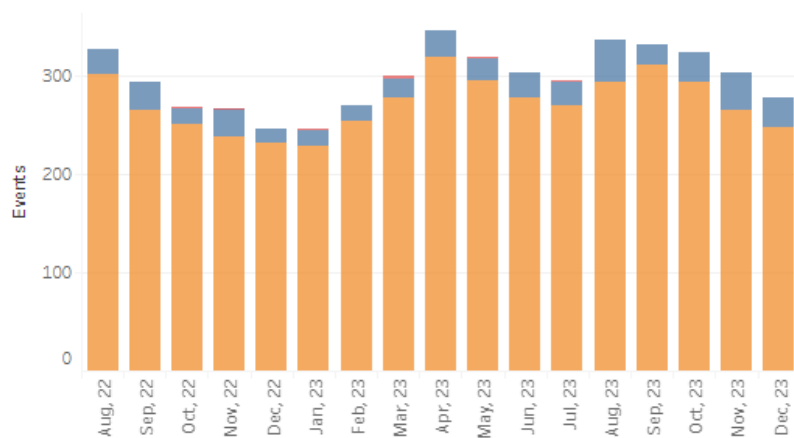


Serious Safety Events = 0.2%

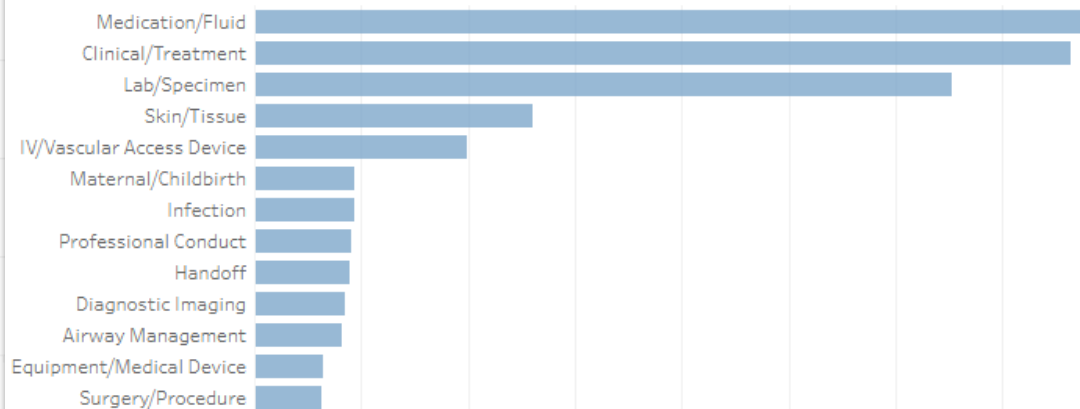
Precursor/Near Miss Events = 99.8%

Current State: Quality, Safety and Service Dashboard

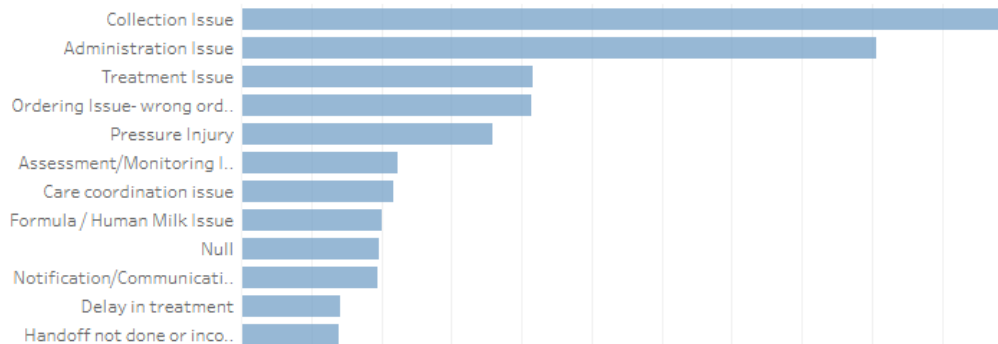
iCare Events Reported by Event Date



General Event Types



Specific Event Types



Current State of Safety Reports

[illegible]

- Dense manual analysis
- Subjective trend identification

Current State: Staff Quotes

there's so much good content in there...If you're just doing a pivot table of general event types, that's not going to get you much.

*Please help me...*one of my least favorite parts of my job is reviewing iCares and summarizing it at the end of the month.

the house-wide report can be *over 30 pages*, which is hard to review, or to even identify trends.

team members are doing *separate spreadsheets* or figuring out some external tracking method because the current system is *really hard to find information*.

it's a pretty *laborious process* for team members to find information in an efficient way.

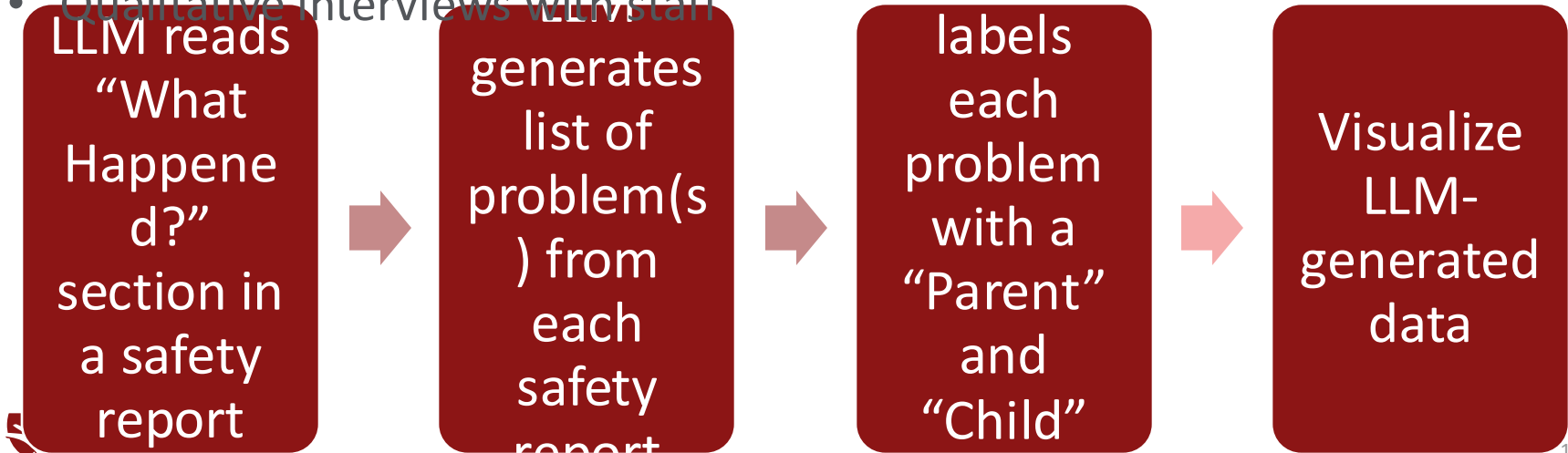
Goal & Objectives

Utilize pre-existing data to proactively identify safety risks and facilitate quick implementation of harm prevention interventions

- Develop an AI-driven approach to analyze patient safety data and identify trends
- Evaluate the accuracy and feasibility of AI in safety event analysis
- Identify facilitators and barriers to adopting AI-generated insights

Methods

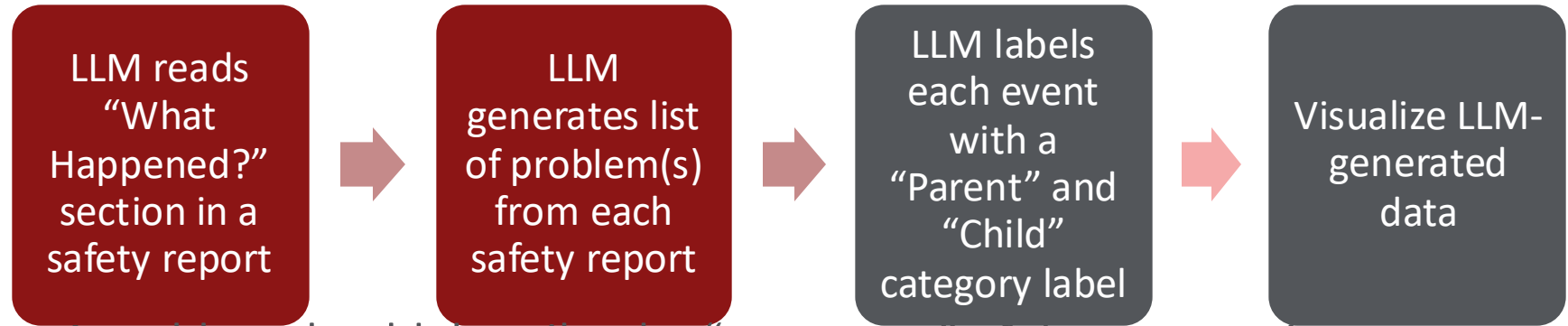
- PHI-compliant OpenAI's ChatGPT-4o (large language model, LLM)
- Tableau
- Validation by subject matter experts
- Qualitative interviews with staff



AI-Driven Approach: Overview

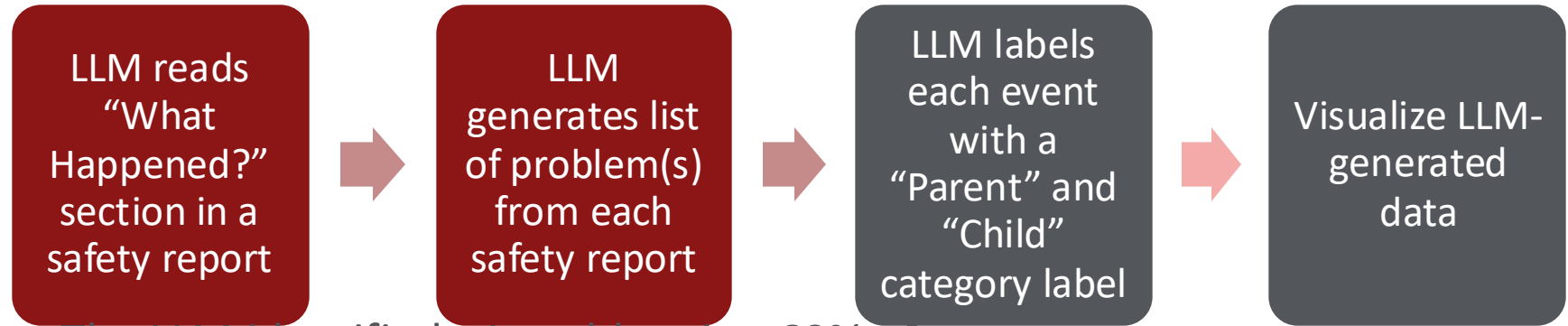
Current State			Future State		
General Event Type	Specific Event Type	What Happened	Problem List	Parent Category	Child Category
Clinical/ Treatment	Notification/ Comm Issue	1. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00. 2. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00. 3. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00.	Decision to discharge patient made without parental involvement and at shift change.	Patient Admission, Transfer, and Discharge Issues	Discharge Errors
		4. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00. 5. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00. 6. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00.	Discrepancy in the Lantus dose given to the patient compared to the patient's home regimen.	Medication Errors	Incorrect Dosage
		7. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00. 8. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00. 9. 12/28/2017, attending RN: 1 patient discharge order was initiated at 12:00 p.m. Patient stated she did not know of home at 12:00. RN: 1, asked if patient was going home at 12:00. Patient stated she was going home at 12:00.	No MD to RN order was put in regarding holding the Lantus dose.	Medication Errors	Prescription Errors

AI-Driven Approach: Steps 1 & 2 Methods



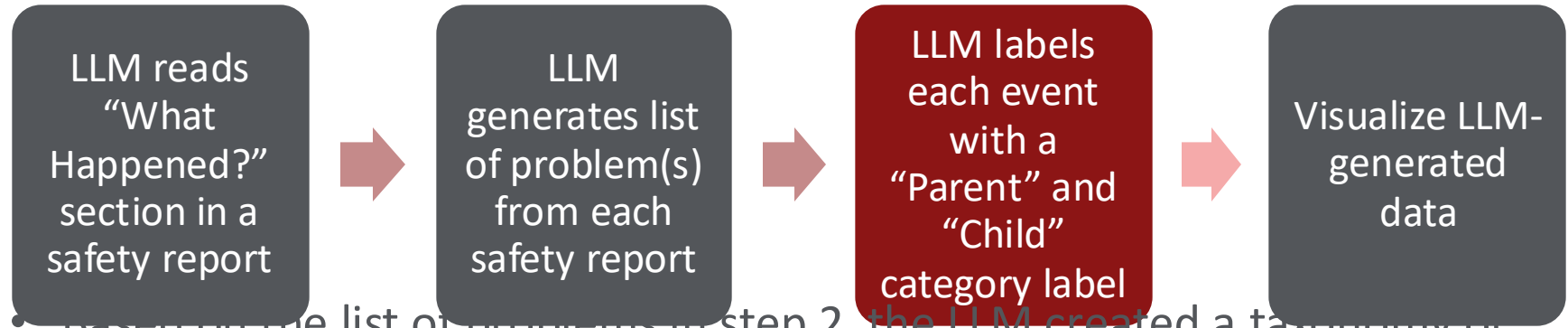
- A problem should describe the “root cause” of the event or issue
- There could be more than 1 problem per report
- Ignore the improvement recommendations suggested in the report
- Problem should be explicitly stated in the text

AI-Driven Approach: Steps 1 & 2 Validation Results



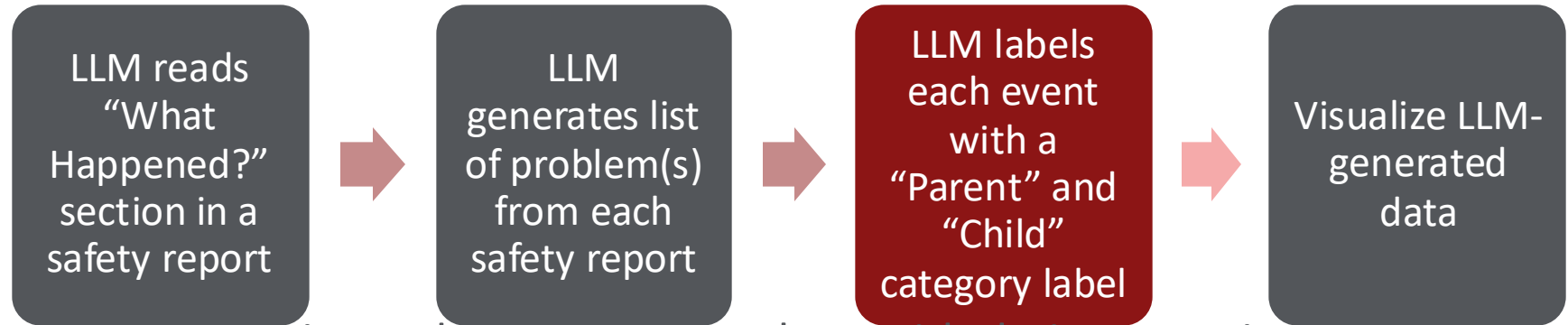
- The LLM identified >1 problem in ~60% of reports
- Out of the 158 problems, 3 independent reviewers agreed the identified problem was accurate 93.3% of the time
- At least one reviewer agreed 98% of the time

AI-Driven Approach: Step 3 Methods



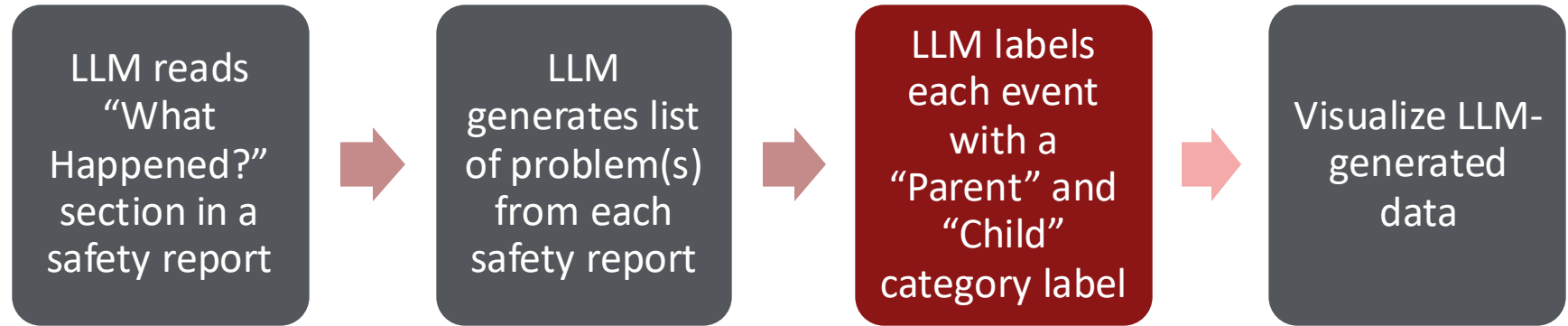
- Based on the list of problems in step 2, the LLM created a taxonomy of topics with main categories and subcategories
- Each category should be concise and not overlap
- Each category had a corresponding detailed definition
- The taxonomy creation task was repeated multiple times due to variations in each run

AI-Driven Approach: Step 3 Methods



- The categories and subcategories along with their respective description were reviewed by the patient safety team
- The categories were modified for accuracy and relevance
- From the revised taxonomy, the LLM labeled each problem with a "parent", "child" or "other" category

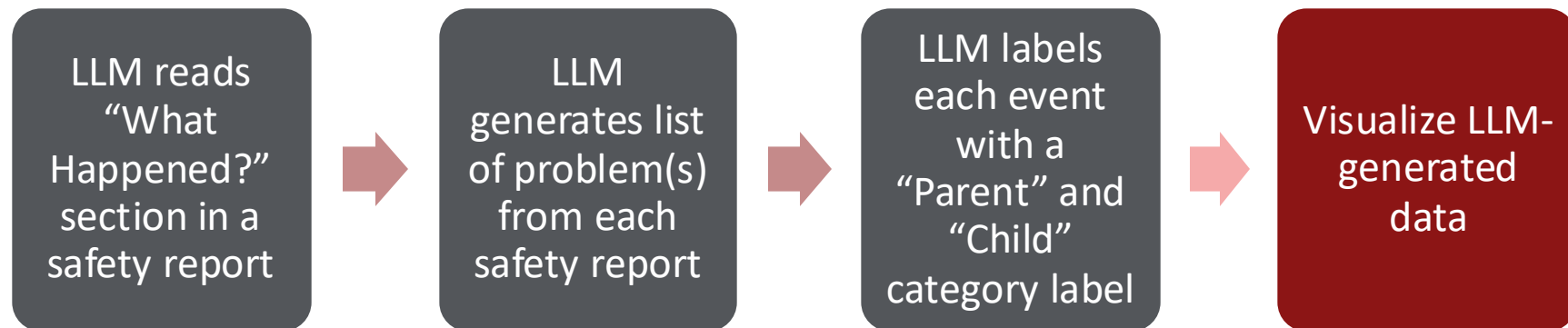
AI-Driven Approach: Step 3 Validation Results



In a sample of 220 problems, reviewers agreed the LLM correctly assigned:

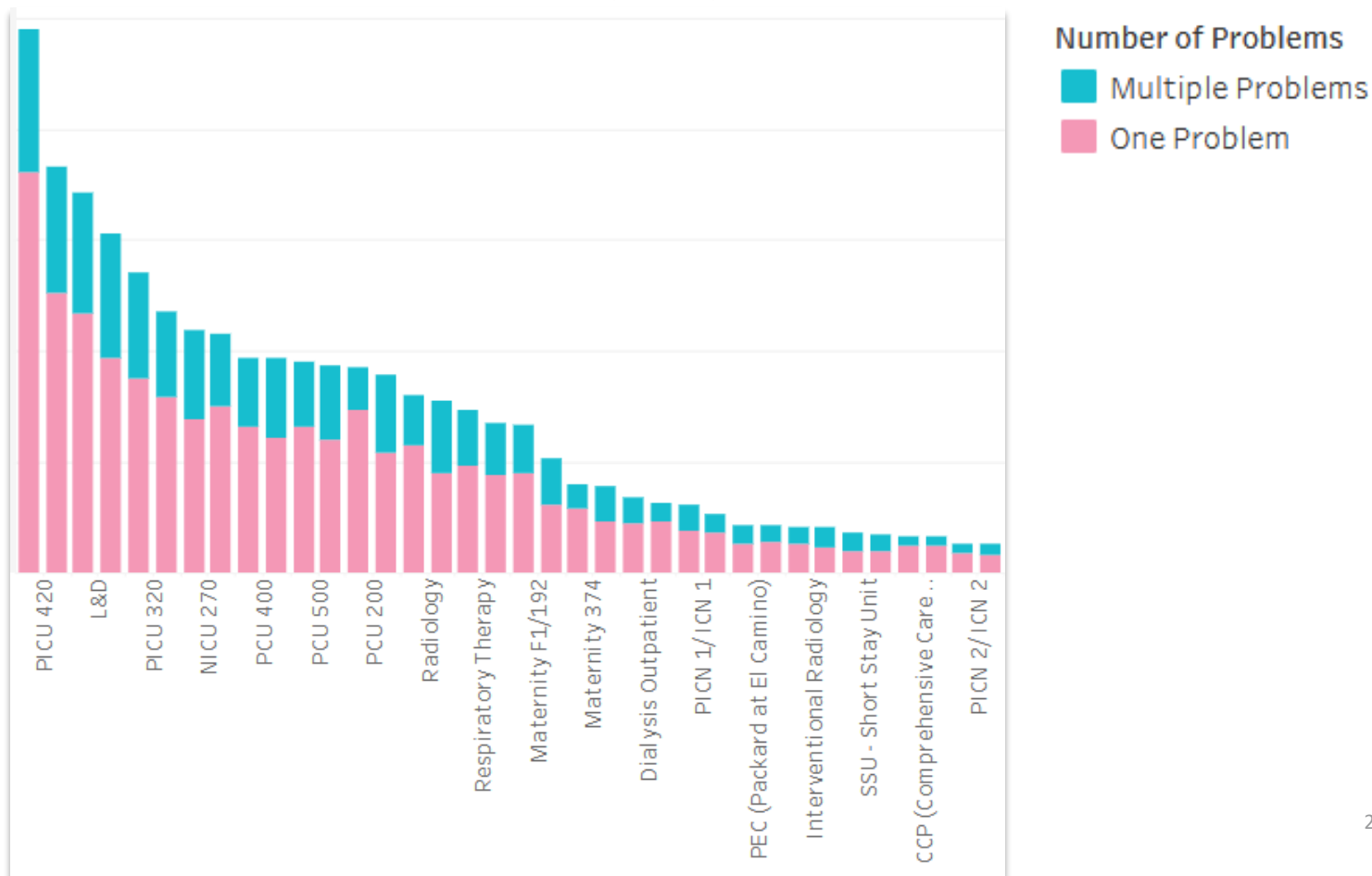
- a "parent" category 91.3% of the time; at least one agreed 97.7%
- a "child" category 82.9% of the time; at least one agreed 92.7%

AI-Driven Approach: Step 4

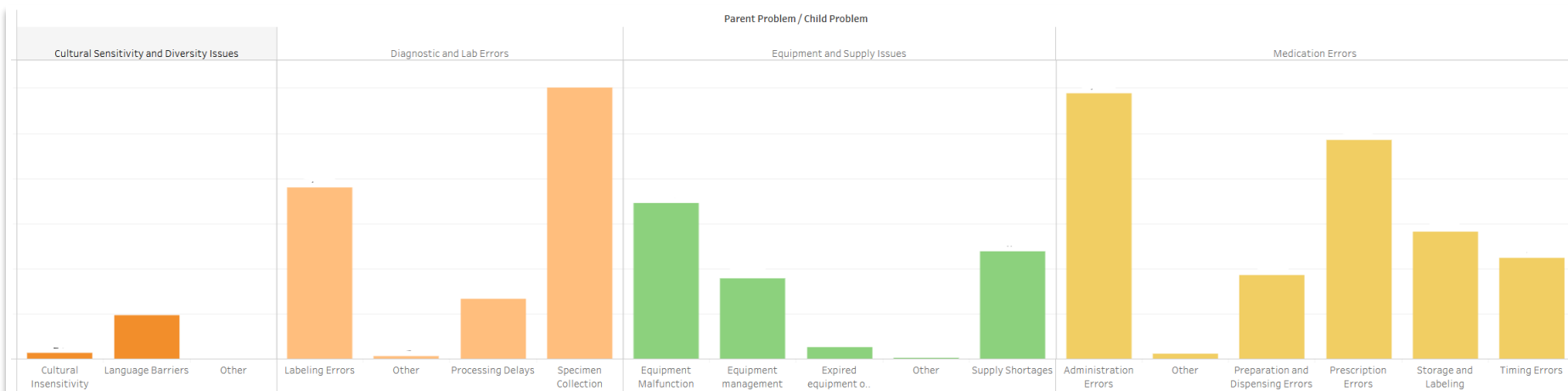


- Partnered with our Analytics and Clinical Effectiveness team to visualize data using Tableau

Multi-dimensional Nature of Safety Reports



Categorization of Problems



Patient Details

File ID	Day of Event Date	Person Affecte..	Type of Person Affe..	Unit Dept	PS Level of Harm Actual	Problem List
			Inpatient		PSE-3 No Detectable Harm	TPN formula changes were not updated to the TPN company.
			Inpatient		PSE-3 No Detectable Harm	Administered medications via JT instead of PO
			Inpatient		PSE-4 No Harm	Delay in delivery of high-importance nitroprusside medication
						Pharmacy not prioritizing STAT medication orders for the ICU
			Inpatient		PSE-2 Minimal Temporary..	Lab specimen was lost
			Inpatient		PSE-3 No Detectable Harm	attempted to give medications that weren't compatible.
						did not understand which medications and cares took priority in a transplant patient.
			Inpatient		PSE-3 No Detectable Harm	Enfalyte bottles are identical to water bottles except for the label

Pre-Implementation Planning: Qualitative Interviews

- Participants: QI manager and advisers, IPC director, Education nurse manager and CNS
- Utilized Proctor's Implementation Outcomes Framework
 - Acceptability
 - Appropriateness
 - Adoption

Pre-Implementation Planning: Qualitative Interviews

Acceptability

- The data is easy to understand and digest
- Visualization of the data could be optimized
- The LLM insights provide valuable additional information that is more succinct and detailed than the current state



AI has essentially summarized the iCare...that is a huge win in no small part



The visuals that you presented were good



I think it's easy to understand what you've done

Pre-Implementation Planning: Qualitative Appropriateness Interviews

LLM insights could...

- identify system-level opportunities across units and services
- be most helpful for nursing and physician leaders focused on quality improvement, but could also be shared broadly
- reduce manual labor to track trends and guide improvement work
- benefit other groups focused on quality and safety

This version can help
us a little more easily
identify system
opportunities

I would hope that this
one can maybe help us
streamline some of that
work that we were
doing manually behind
the scenes

I think everybody, staff
included, you get a
better idea of where at
the bedside you need
to make improvements
too

Pre-Implementation Planning: Qualitative Interviews

Adoption

- Transparency of validation results would help with credibility and ultimately usage
- More frequent and real-time data are critical to usefulness of the data
- There are no major barriers to adoption

I want to use this every week and... use it as information and data for improvement projects

make your accuracy information transparent ... (and) how you're working to improve the model

I could implement this and start using this with the outpatient dialysis team now

Lessons Learned

- Dedicated team and schedule to move things forward
- Dependent on SME's for every step
- Validation takes significant time
- AI team is a limited resource
- Many potential applications can be a distraction

Next Steps

1. Optimize data flow for automated run on a routine cadence
2. Revise category definitions and prompts based on validation data
3. Revise dashboard based on user feedback
4. Share dashboard with key stakeholders across the organization
5. Collaborate with local leaders to develop targeted improvement efforts
6. Understand potential for scale
 - Complaints/Grievances
 - Health Equity
 - Workforce Safety

What Would You Need to Get Started?

- Multidisciplinary team
patient safety leader, physician leader, AI data scientist, executive sponsor, analytics leader
- Access to PHI-compliant LLM
- ~100 hours project time for core team members
- ~85+ hours for validation

References

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Special thanks to the project team

A photograph of a female doctor with blonde hair, wearing a white lab coat and a stethoscope, examining a young girl. The girl has dark skin, curly hair in pigtails, and is wearing a light pink long-sleeved shirt. She is smiling and looking up at the doctor. The doctor's hand is visible, holding the stethoscope against the girl's chest. The background is a soft-focus clinical setting. There are decorative blue and green circles in the bottom right and bottom left corners of the image.

**Thank you for attending
and transforming pediatric
health!**



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