



**BETSY  
LEHMAN  
CENTER**  
for Patient Safety

# Pilot of an automated adverse event monitoring system in Massachusetts

April 26, 2024

# About the Betsy Lehman Center

The Betsy Lehman Center is a non-regulatory Massachusetts state agency that catalyzes the efforts of providers, patients and policymakers to advance the safety and quality of health care in all settings



# Impetus for our work

In one year in Massachusetts:<sup>1</sup>



- Across all health care settings
- **>1%** of state's Total Health Care Expenditures
- **Conservative estimates**

**>1 in 5 MA residents** experienced a medical error in the previous 5 years<sup>1</sup> and report:

- Long-lasting physical, emotional, and financial harms
- Loss of trust in providers and the health care system
- Avoidance of health care

1. Betsy Lehman Center for Patient Safety. [The Financial and Human Cost of Medical Error and How Massachusetts Can Lead the Way on Patient Safety](#). 2019

# A statewide, collaborative response

## The Massachusetts Health Care Safety and Quality Consortium



# Roadmap to Health Care Safety for Massachusetts

Released in April 2023, the *Roadmap* is a **long-term, phased** approach that:



**Recognizes that everyone plays a role in safety**

- Providers, patients and families, payers, policymakers



**Is adaptable and scalable to diverse settings**

- All sizes and complexity
- Across the care continuum



**Targets barriers to improvement**

- Low awareness of safety as a systemic challenge
- Misaligned incentives, lack of accountability
- Inadequate public/private investment in safety improvement
- **Data gaps and silos on safety performance and progress**

# 30+ action steps powering 3 drivers of change

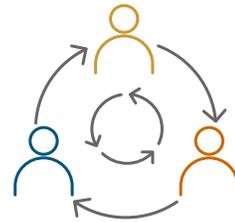


## Information

**That builds awareness, knowledge and skills** and enables everyone to carry out their unique roles in safety

Why

Leaders, managers, and staff need a shared understanding of the foundations of safety to work as a team



## Implementation Support

**Tools, peer learning opportunities, and other resources** that help provider organizations advance safety

Why

Knowledge alone is not enough to build a safety culture and improve outcomes



## Incentives

**That motivate everyone to prioritize and invest in safety improvement,** particularly those in leadership roles

Why

Accountability structures and incentives that reward leadership engagement will accelerate change

# The lynchpin: A pilot of automated adverse event monitoring

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## Action

Pilot automated adverse event monitoring in a diverse cohort of 6-8 Massachusetts acute care hospitals.

- Run **automated triggers** against hospital EHR data to routinely detect many more harm events than hospitals can identify through current systems
- Provide **daily, validated analytics** on safety events to power hospitals' safety improvement and risk management work
- Complement with **expert coaching** on how to use the data to improve



## Objectives

Target a leading barrier to safety improvement — the lack of **timely, actionable data**

- Help hospitals achieve and sustain **significant reductions in preventable harm**
- **Reduce costs** associated with preventable harm events at the individual hospital level and statewide

# The state of the field: Beliefs and reality

## Beliefs

- ✘ We know about most of our harm events
- ✘ We know how each harm happened
- ✘ We understand root causes of harms
- ✘ Claims data can identify patterns, outliers
- ✘ Improving culture & predictive analytics will solve patient safety problems

## Reality

- ✓ Voluntary reporting misses ~95% of harm events
- ✓ Voluntary reporting highly retrospective, lower severity
- ✓ Root cause analysis conducted on ~5% of harm reported
- ✓ Claims data limited in accuracy, actionability & value
- ✓ Culture necessary but not sufficient; validated outcomes required for applying AI to this domain

*Relying largely on voluntary event reporting and claims data is inadequate – we need clinically validated adverse event outcomes based on real-time EHR data (AE Outcomes)*

# Preventable injury and death materially missed, increasing costs and impacting financial performance

**Clinically**, the standard “See Something Say Something” event reporting not reliable:



95%

of patient harm goes  
unreported

**Financially**, in care delivery systems these unreported events negatively impact financials:

2X



Death Risk



Length of Stay



Readmission Risk



Delivery Cost



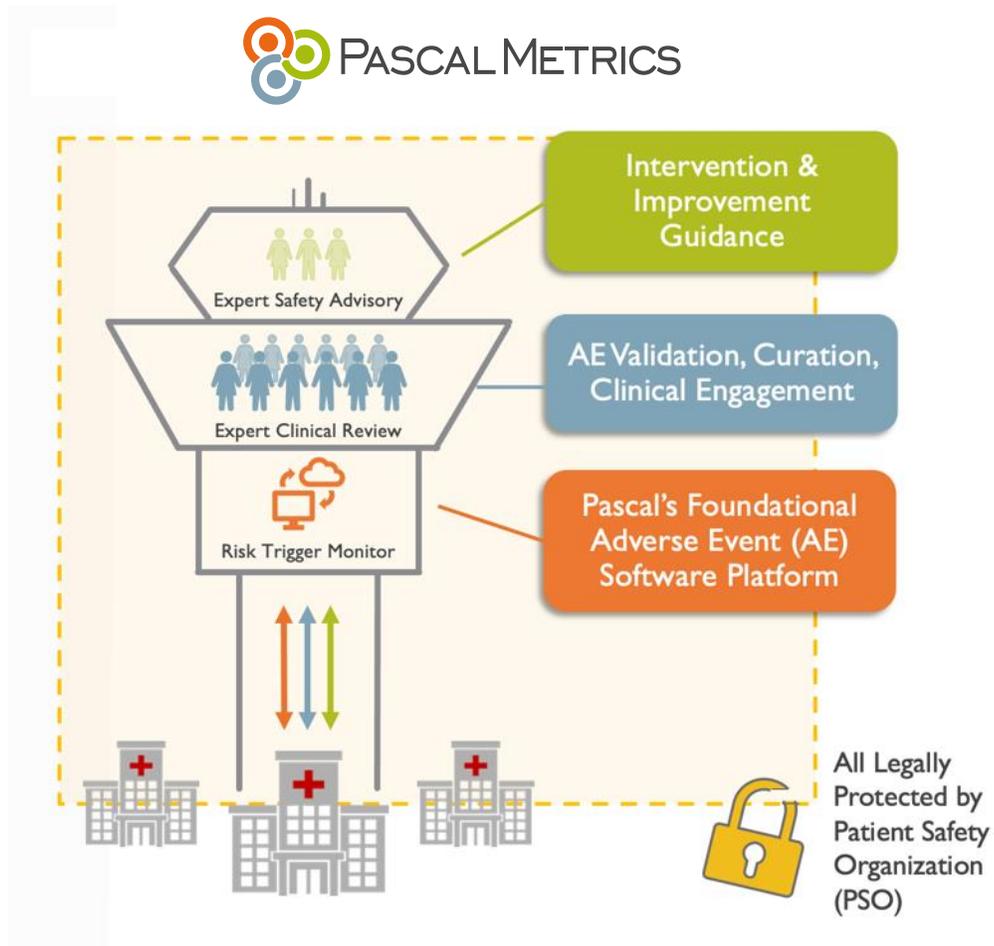
Payor Penalties



Med-Mal Costs

Sources: James JT: A new evidence-based estimate of patient harms associated with hospital care, *Journal of Patient Safety* 9:122-128, 2013. Classen et al., 'Global trigger tool' shows that adverse events in hospitals may be ten times greater than previously measured. *Health Affairs* (Millwood). 2011; 30:581-9. U.S. Department of Health & Human Services, Office of Inspector General, "Hospital Incident Reporting Systems Do Not Capture Most Harm, 2012. Adler et al, *Journal of Patient Safety*, March 2015. AHRQ Quality Indicators Case Study: Yale New Haven at [https://www.qualityindicators.ahrq.gov/Downloads/Resources/Case\\_Studies/AHRQ\\_QI\\_YNHHS\\_Case\\_Study.pdf](https://www.qualityindicators.ahrq.gov/Downloads/Resources/Case_Studies/AHRQ_QI_YNHHS_Case_Study.pdf). Pascal Metrics U.S. Community Collaborative member data.

# Monitor, measure and manage adverse events all the time for all patients



## Pascal's Virtual Patient Safety Solution:

### Software

- ✓ Risk Trigger Monitor Subscription

### Services

- ✓ Expert Clinical Review Subscription
- ✓ Expert Safety Advisory Subscription
- ✓ PSO Protection Subscription

### Consulting

- ✓ Technical Integration (one-time)

# Pascal enables health systems to integrate and improve patient safety, risk and related outcomes

## Our Virtual Patient Safety (VPS) Solution...

- ✓ Finds far more harm than traditional methods
- ✓ Surveils every patient at least 1x every 24 hours
- ✓ Conducts safety epidemiology & analytics across all patients
- ✓ Delivers common cause analytics on every harmed patient
- ✓ Generates EHR-based complication analytics by provider
- ✓ Enables identifying risk of legal liability during patient care
- ✓ And much more

**10X**

More serious harm identified

**>25%**

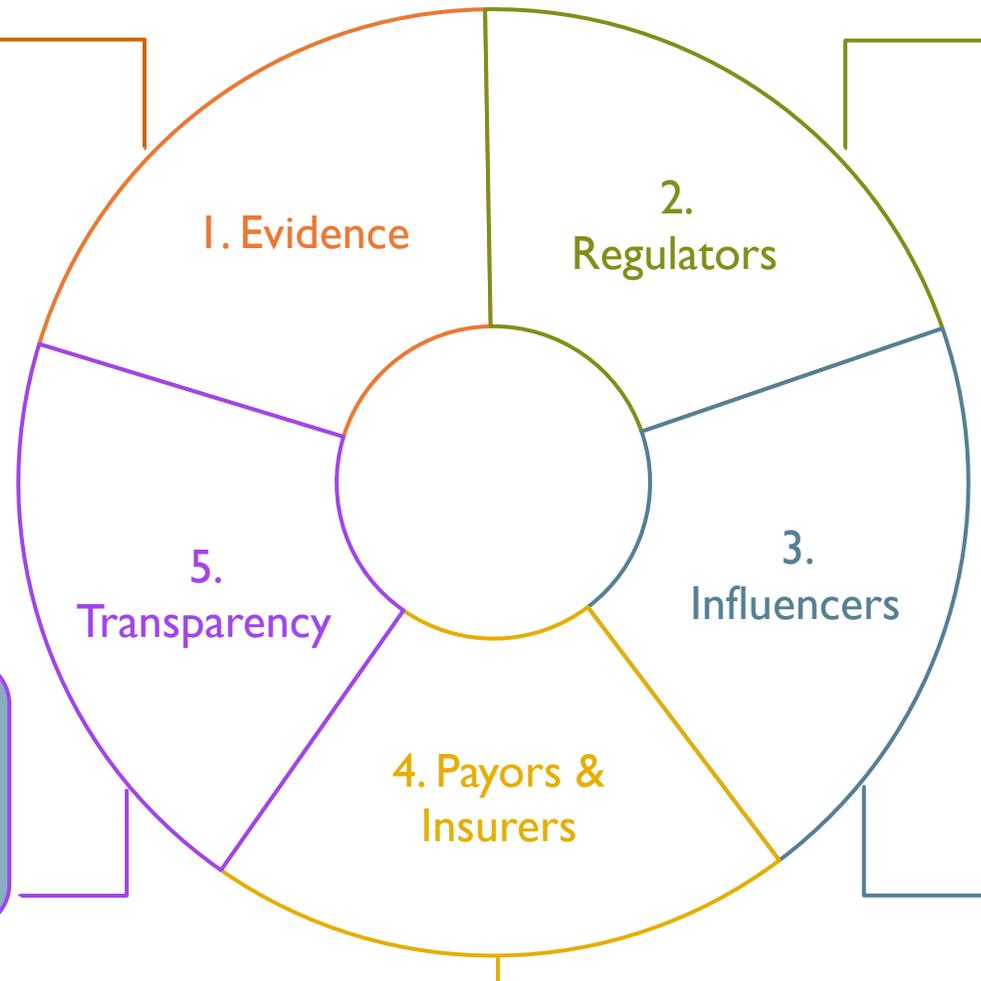
Reduction in all harm

**-\$15mm**

Validated annual *safety-only* cost reduction at Pascal client\*

\*Based on client validation of ~\$5.5k of direct variable cost per harmed patient, a cohort of >25k harmed patients, and >25% harm reduction. To be published.

# Multiple drivers accelerating adoption nationwide



# Decades of evidence continue to mount demonstrating clinical trigger effectiveness ...

By David C. Classen, Roger Resar, Frances Griffin, Frank Federico, Terri Frankel, Nancy Kimmel, John C. Whittington, Allan Frankel, Andrew Seger, and Brent C. James

## 'Global Trigger Tool' Shows That Adverse Events In Hospitals May Be Ten Times Greater Than Previously Measured

**ABSTRACT** Central to prioritizing testing which adverse events from three methods today—vol Quality's P methods are more confi adverse e voluntary r misleading care system

Department of Health and Human Services  
**OFFICE OF INSPECTOR GENERAL**

**ADVERSE EVENTS IN HOSPITALS: NATIONAL INCIDENCE AMONG MEDICARE BENEFICIARIES**

Daniel R. Levinson  
Inspector General  
November 2010  
OIG-09-00960

IN THE NEW ENGLAND JOURNAL OF MEDICINE

SERIALS SECTION

**Temporal Trends in Rates of Patient Harm Resulting from Medical Care**

Christoph P. Landrigan, M.D., M.P.H., Carolyn J. Ryan, M.D., Catherine A. Burns, M.D., Andrew D. Hartzler, M.D., Donald A. Goldman, M.D., and Paul J. Sheehy, M.D., M.P.H.

**ABSTRACT**

**BACKGROUND:** In the past, most publications of the Institute of Medicine's report "To Err is Human" have focused on the need for safety. The report of these authors offers a new perspective on patient safety. The report of these authors offers a new perspective on patient safety. The report of these authors offers a new perspective on patient safety.

**RESULTS:** We conducted a retrospective study of a stratified random sample of 50 hospitals in North Carolina. A total of 100 admissions per quarter from January 2002 through December 2007 were reviewed in random order by trained reviewers blind to the hospital's national assessment and outside the hospital's internal quality-improvement efforts. We identified 77 harms not previously identified by the hospital's internal quality-improvement efforts. We identified 77 harms not previously identified by the hospital's internal quality-improvement efforts. We identified 77 harms not previously identified by the hospital's internal quality-improvement efforts.

**CONCLUSIONS:** In a study of 50 North Carolina hospitals, we found that harms rates were 10 times greater than previously measured. These findings are consistent with other studies that have used the Global Trigger Tool to measure patient safety. These findings are consistent with other studies that have used the Global Trigger Tool to measure patient safety.

Source: Joint Commission Journal on Quality and Patient Safety, March 2017. U.S. HHS OIG, 2012. Classen et al, Health Affairs, April 2011.

**ARTICLE IN PRESS**

The Joint Commission Journal on Quality and Patient Safety 2017; ■■■■-■■■

**Developing and Evaluating an Automated All-Cause Harm Trigger System**

Christine Sommer, DPH, RN, Susan Anninette Nelson, RN, BSN, MSHSA

**ARTICLE IN PRESS**

The Joint Commission Journal on Quality and Patient Safety 2017; ■■■■-■■■

**PERFORMANCE MEASURES**

**Casting a Wider Safety Net: The Promise of Electronic Safety Event Detection Systems**

Eric S. Kirkendall, MD, MBI

**Background:** From 2009 through 2014, the Global Trigger Tool method for of harm demonstrated opportunities fiscal resources required to continue addition, there was growing concern intervention during the hospital stay. Identification.

**Methods:** The AHS PSO and another that allowed for real-time bedside inners harm measurement. A sociotechnical the same electronic health record plat evaluated.

**Results:** 67 harms not previously identified by the hospital's internal quality-improvement efforts. We identified 67 harms not previously identified by the hospital's internal quality-improvement efforts.

**Conclusion:** deeper understanding of the epidemiology of safety issues occurring in health care systems. We must first understand the frequency, nature, and severity of the harm that

Quality (AHRQ) Patient Safety Indicator 90 program.<sup>17</sup> They were also able to detect events that occurred outside the care delivered in a health care facility. These findings are encouraging for many reasons. The

Health care reports, and *Creating a 21st Century*,<sup>18</sup> addressed the hospitals and Safety and Quality of Care. The Office of Inspector General has recommended that the (AHRQ) and (CMS) harm—what harm, or a bar

**Conflicts of Interest.** The author declares no conflicts of interest.

**Eric S. Kirkendall, MD, MBI,** is Associate Chief Medical Information Officer, Information Services, Cincinnati Children's Hospital Medical Center, and Associate Professor, Departments of Pediatrics and Biomedical Informatics, University of Cincinnati. Please address correspondence to Eric S. Kirkendall, [eric.kirkendall@cchmc.org](mailto:eric.kirkendall@cchmc.org).

# ... Including for pediatric, outpatient, oncology and other settings

**Cancer**  
Original Article

## Preventable and Mitigable Adverse Events in Cancer Care: Measuring Risk and Harm Across the Continuum

Allison Lipitz-Snyderman, PhD<sup>1</sup>, David Pfister, MD<sup>1</sup>, David Classen, MD, MS<sup>2,3</sup>, Coral L. Alleen Killen, RN, PhD, CPPS<sup>4</sup>, Andrew S. Epstein, MD<sup>5</sup>, Christopher Anderson, MD<sup>6</sup>, Elizabeth Saul N. Weingart, MD, MPP, PhD<sup>4,5</sup>

**BACKGROUND:** Patient safety is a critical concern in clinical oncology, but the ability to measure adverse events is limited by a narrow focus on treatment-related toxicities. The objective of this study was to assess AEs among cancer patients across inpatient and outpatient settings. **METHODS:** This was a retrospective of patients selected by stratified random sampling who had breast (n = 128), colorectal (n = 136), or lung cancer at a comprehensive cancer center in 2012. Candidate AEs, or injuries due to medical care, were identified by trial of the course of 1 year from medical records and safety-reporting databases. Physicians determined the AE had a hood of preventability and harm mitigation. **RESULTS:** The 400-patient sample represented 133,358 days of care. Four AEs were identified for an overall rate of 2.3 events per 1000 patient days (91.2 per 1000 inpatient days and 1.4 per 1000 outpatient days). Thirty-four percent of the patients had 1 or more AEs (95% confidence interval, 29%-39%), and 10% had 2 or more AEs. The most common AEs were falls, medication errors, and laboratory abnormalities. The rate for preventable or mitigable AEs (95% confidence interval, 13%-20%). The AE rate for patients with breast cancer was higher than for colorectal or lung cancer (P < .001). The preventable or mitigable AE rate was 0.6, 0.6, and 0.6 percent of AEs and 4% of preventable AEs resulted in serious harm. Examples included lymphedema, a fall, and a medication error. **CONCLUSIONS:** A heavy burden of AEs, including preventable or mitigable events, has been identified. Future risk and improvement strategies for reducing their burden. **Cancer 2017;000:000-000.** © 2017 American Society of Clinical Oncology

**KEYWORDS:** adverse events, harm, medical error, oncology, patient safety.

**INTRODUCTION**  
Patient safety is a key focus in clinical oncology. Successful therapy requires a thoughtful balance of efficacy and long-term recurrence-free survival. The management of toxicities is a core competency, and advances in therapeutics have relied heavily on innovations in symptom management. Oncology lags other specialties in its ability to measure the

**PEDIATRICS**  
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

July 2018, VOLUME 142 / ISSUE 1

## Adverse Events in Hospitalized Pediatric Patient

David C. Stockwell, Christopher P. Landrigan, Sara L. Toomey, Samu Ashrafzadeh, Michelle J. Wang, Melody Wu, Paul J. Sharek, David C. Schuster, for the GAPPSS Study Group

<sup>1</sup>Tufts Medical Center, Boston, Massachusetts; <sup>2</sup>Tufts University School of Medicine, Boston, Massachusetts; <sup>3</sup>Alleen Killen's current address: American International Group, New York, New York; <sup>4</sup>Christopher Anderson's current address: Columbia University, New York, New York; <sup>5</sup>Additional supporting information may be found in the online version of this article.  
DOI: 10.1002/zo.30916. Received: June 23, 2017; Accepted: June 28, 2017; Published online Month 00, 2017 in Wiley Online Library (wileyonlinelibrary.com)

Cancer Month 00, 2017

Original Contribution FOCUS ON QUALITY  
ReCAP

The full version of this article may be viewed online at DOI: 10.1200/JOP.2015.006874

**Original research**

## Signal and noise: applying a laboratory trigger tool to identify adverse drug events among primary care patients

Stacey Brenner,<sup>1</sup> Alissa Detz,<sup>2</sup> Andrea López,<sup>1,3</sup> Claire Horton,<sup>1</sup> Urmilma Sarkar,<sup>1,3</sup>

**ABSTRACT**  
The extent of potential adverse drug events (ADEs) remains unclear. Trigger tools are used as a screening method to identify care episodes that may be ADEs, but their value in a population with high chronic-illness burden remains unclear. **Methods:** The authors used six abnormal laboratory triggers for identifying ADEs among adults in outpatient care. Eligible patients were included if they were >18 years, sought primary or urgent care between November 2008 and November 2009 and were prescribed at least one medication. The authors then used the clinical administrative database to identify patients with these triggers. Two physicians conducted in-depth chart review of any medical records with identified triggers. **Results:** The authors reviewed 1342 triggers representing 827 unique episodes among 516 patients. The trigger tool identified 91 (15%) ADEs. Of the 91 ADEs included in the analysis, 49 (54%) occurred during medication monitoring, 41 (45%) during patient self-administration, and one could not be determined. 90% of abnormal international normalized ratio triggers were ADEs, followed by 72% of abnormal blood urea nitrogen triggers, 9% of abnormal alanine aminotransferase triggers, 8% of abnormal serum creatinine triggers and 3% of aspartate aminotransferase triggers. **Conclusions:** The findings imply that other tools such as text triggers or more complex automated screening rules, which combine data hierarchically are needed to effectively screen for ADEs in chronically ill adults seen in primary care.

**INTRODUCTION**  
An adverse drug event (ADE) is defined by the Institute of Medicine as "an injury resulting from medical intervention related to a drug."<sup>1</sup> It is estimated that 2.4 of every 1000 emergency department visits per year are attributed to ADEs, with approximately 0.32% of hospitalized patients incurring fatal ADEs.<sup>2-6</sup> Recent research estimates between 24.9 and 56.1 ADEs occur per 1000 person months.<sup>7-9</sup> Approximately 20% of ADEs identified are thought to be preventable and a significant proportion are serious, life-threatening or fatal.<sup>9</sup> Unfortunately, even though most medical care occurs in the outpatient setting, the incidence of ADEs among ambulatory patients is unknown. A recent study estimated that approximately 4.5 million ambulatory visits per year in USA are related to ADEs, making this a significant public health concern.<sup>10</sup> However, the full burden of outpatient ADEs remains unclear, because of our inability to detect and monitor these events, especially those that occur when patients are at home between visits. ADEs are normally detected by voluntary reporting and tracking of errors. It is estimated that only 10-20% of all errors are reported.<sup>11</sup> In-depth chart review captures significantly more ADEs than voluntary reporting, but this is time consuming and expensive.<sup>7,8</sup> An ADE trigger tool may make chart review more efficient.<sup>12</sup> Triggers allow for targeted chart review by identifying possible ADEs via abnormal laboratory values, text phrases, or automated "rules" combining multiple data elements available in medical records. Charts identified to have a specific trigger can then be reviewed for ADEs. Trigger tools have been studied in their ability to detect ADEs and research has shown that computerized and non-computerized trigger tools are more time-effective than complete chart review and more sensitive than voluntary reporting.<sup>13-14</sup> Most research on trigger tools used to identify ADEs has focused on hospitalized patients.<sup>15-17</sup> In one of the first studies of

**UNLOCKED**  
This paper is freely available online under the [CC-BY 4.0 International license](http://creativecommons.org/licenses/by/4.0/). See <http://creativecommons.org/licenses/by/4.0/> for full text details.

670 *BMJ Qual Saf* 2012;21:670-675. doi:10.1136/bmjqs-2011-009643

Original Contribution FOCUS ON QUALITY  
ReCAP

The full version of this article may be viewed online at DOI: 10.1200/JOP.2015.006874

## Detection of Potentially Avoidable Harm in Oncology From Patient Medical Records

Allison Lipitz-Snyderman, PhD<sup>1</sup>, David Pfister, MD<sup>1</sup>, David Classen, MD, MS<sup>2,3</sup>, Coral L. Alleen Killen, RN, PhD, CPPS<sup>4</sup>, Andrew S. Epstein, MD<sup>5</sup>, Christopher Anderson, MD<sup>6</sup>, Elizabeth Saul N. Weingart, MD, MPP, PhD<sup>4,5</sup>

**BACKGROUND:** Patient safety is a critical concern in clinical oncology, but the ability to measure adverse events is limited by a narrow focus on treatment-related toxicities. The objective of this study was to assess AEs among cancer patients across inpatient and outpatient settings. **METHODS:** This was a retrospective of patients selected by stratified random sampling who had breast (n = 128), colorectal (n = 136), or lung cancer at a comprehensive cancer center in 2012. Candidate AEs, or injuries due to medical care, were identified by trial of the course of 1 year from medical records and safety-reporting databases. Physicians determined the AE had a hood of preventability and harm mitigation. **RESULTS:** The 400-patient sample represented 133,358 days of care. Four AEs were identified for an overall rate of 2.3 events per 1000 patient days (91.2 per 1000 inpatient days and 1.4 per 1000 outpatient days). Thirty-four percent of the patients had 1 or more AEs (95% confidence interval, 29%-39%), and 10% had 2 or more AEs. The most common AEs were falls, medication errors, and laboratory abnormalities. The rate for preventable or mitigable AEs (95% confidence interval, 13%-20%). The AE rate for patients with breast cancer was higher than for colorectal or lung cancer (P < .001). The preventable or mitigable AE rate was 0.6, 0.6, and 0.6 percent of AEs and 4% of preventable AEs resulted in serious harm. Examples included lymphedema, a fall, and a medication error. **CONCLUSIONS:** A heavy burden of AEs, including preventable or mitigable events, has been identified. Future risk and improvement strategies for reducing their burden. **Cancer 2017;000:000-000.** © 2017 American Society of Clinical Oncology

**KEYWORDS:** adverse events, harm, medical error, oncology, patient safety.

**INTRODUCTION**  
Patient safety is a key focus in clinical oncology. Successful therapy requires a thoughtful balance of efficacy and long-term recurrence-free survival. The management of toxicities is a core competency, and advances in therapeutics have relied heavily on innovations in symptom management. Oncology lags other specialties in its ability to measure the

**QUESTIONS (AEs) are not across improved.**

**SUMMARY**  
Our objective was to assess the performance of a trigger tool for identifying adverse events in oncology.

**METHODS**  
We performed a retrospective cohort study to assess the performance of an oncology medical record screening tool at a comprehensive cancer center. The study cohort included 400 patients age 18 years or older diagnosed with breast (n = 128), colorectal (n = 136), or lung cancer (n = 136), observed as in- and outpatients for up to 1 year.

**RESULTS**  
We identified 790 triggers, or 1.98 triggers per patient (range, zero to 18 triggers). Three hundred forty unique AEs were identified from medical record reviews and existing AE databases. The overall positive predictive value (PPV) of the original tool was 0.40 for total AEs and 0.15 for preventable or mitigable AEs. Examples of high-performing triggers included return to the operating room or interventional radiology within 30 days of surgery (PPV, 0.88 and 0.38 for total and preventable or mitigable AEs, respectively) and elevated blood glucose (> 250 mg/dL; PPV, 0.47 and 0.40 for total and preventable or mitigable AEs, respectively). The final modified tool included 49 triggers, with an overall PPV of 0.48 for total AEs and 0.18 for preventable or mitigable AEs.

**CONCLUSION**  
A valid medical record screening tool for AEs in oncology could offer a powerful new method for measuring and improving cancer care quality. Future improvements could optimize the tool's efficiency and create automated electronic triggers for use in real-time AE detection and mitigation algorithms.

**COMPANION ARTICLES**  
No companion articles

**ARTICLE CITATION**  
DOI: 10.1200/JOP.2016.016634 (*Journal of Oncology Practice* 13, no. 3 (March 2017) e223-e230). PMID: 2895173

**WHAT'S POPULAR**  
**Most Read** Most Cited  
Developing Effective Communication Skills  
The State of Cancer Care in America, 2017: A Report by the American Society of Clinical Oncology  
2016 Updated American Society of Clinical Oncology/Oncology Nursing Society Chemotherapy Administration Safety Standards, Including Standards for Pediatric Oncology  
Neuss et al.  
Strategic Planning: Why It Makes a Difference, and How to Do It  
High Cancer Drug Prices in the United States: Reasons and Proposed Solutions  
Kantarjian et al.

Source: *Joint Commission Journal on Quality and Patient Safety*, March 2017. *Journal of Oncology Practice* 13, no. 3 (March 2017) e223-e230. Lipitz-Snyderman et al., *Journal of Oncology Practice* 12, no. 2 (February 2016) e224-e230. *BMJ Qual Saf* 2012;21:670e675.

# NEJM Harvard hospitals study 2023: Trigger method finds 1 out of 4 patients harmed

SPECIAL ARTICLE

The Safety of Inpatient Health Care

JANUARY 12, 2023

EDITORIALS  
Constancy of Purpose for Improving Patient Safety  
— Missing in Action

Donald M. Berwick, M.D., M.P.P.

## Dr. David Bates et al:

- ✓ Trigger method used
- ✓ About 1 out of 4 patients harmed
- ✓ Almost 7% suffered preventable harm
- ✓ 1% suffered preventable serious harm
- ✓ XLOS >2x (5.1 days) with patient harm
- ✓ Harm rates ranged from 0.9 to 10.9 adverse events per 100 admissions

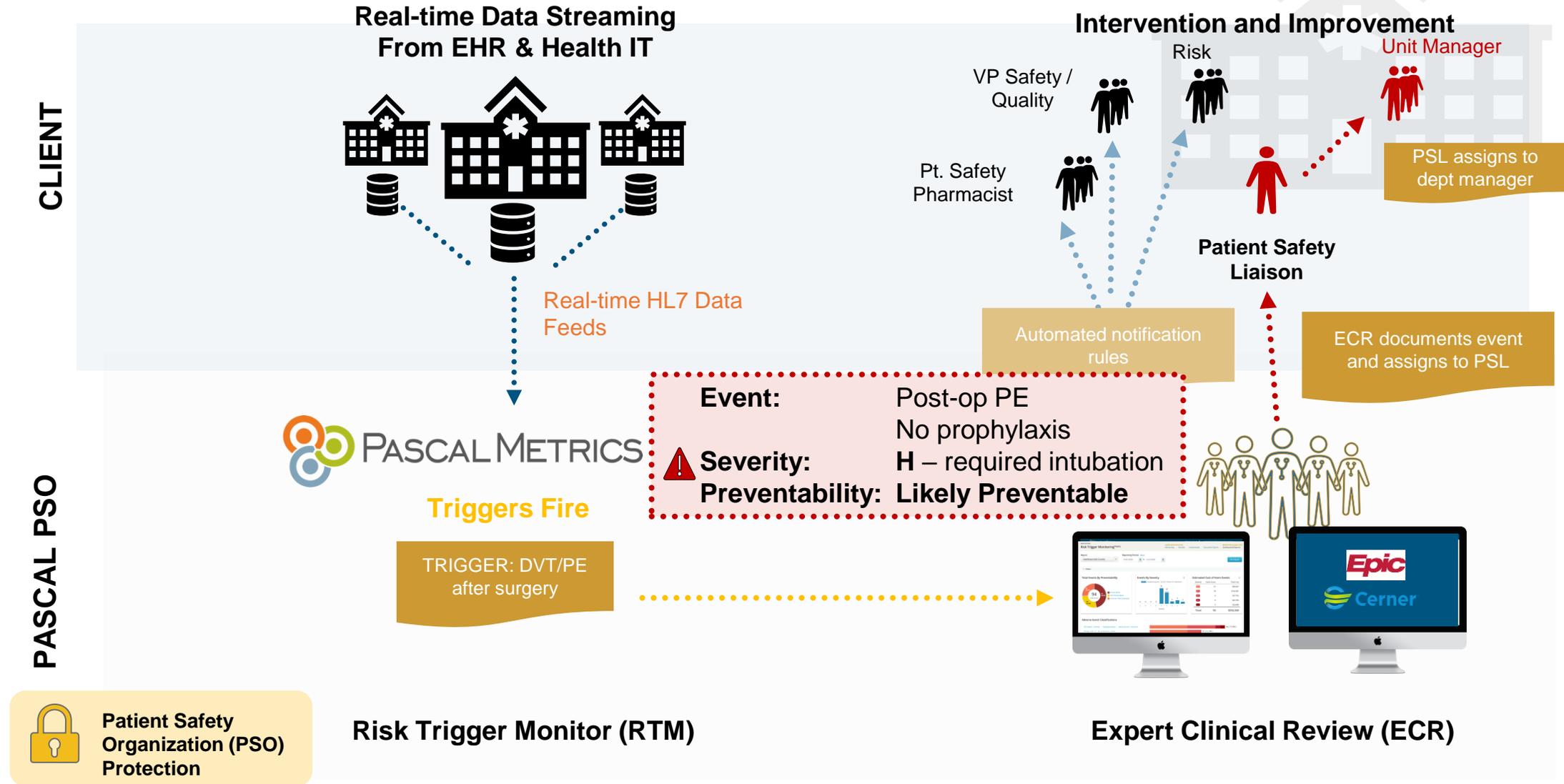
*“Identification of adverse events in EHRs in the future will probably be performed by means of computerization of triggers and also through leveraging of artificial intelligence”*

## Dr. Don Berwick – “disturbing” but “timely”:

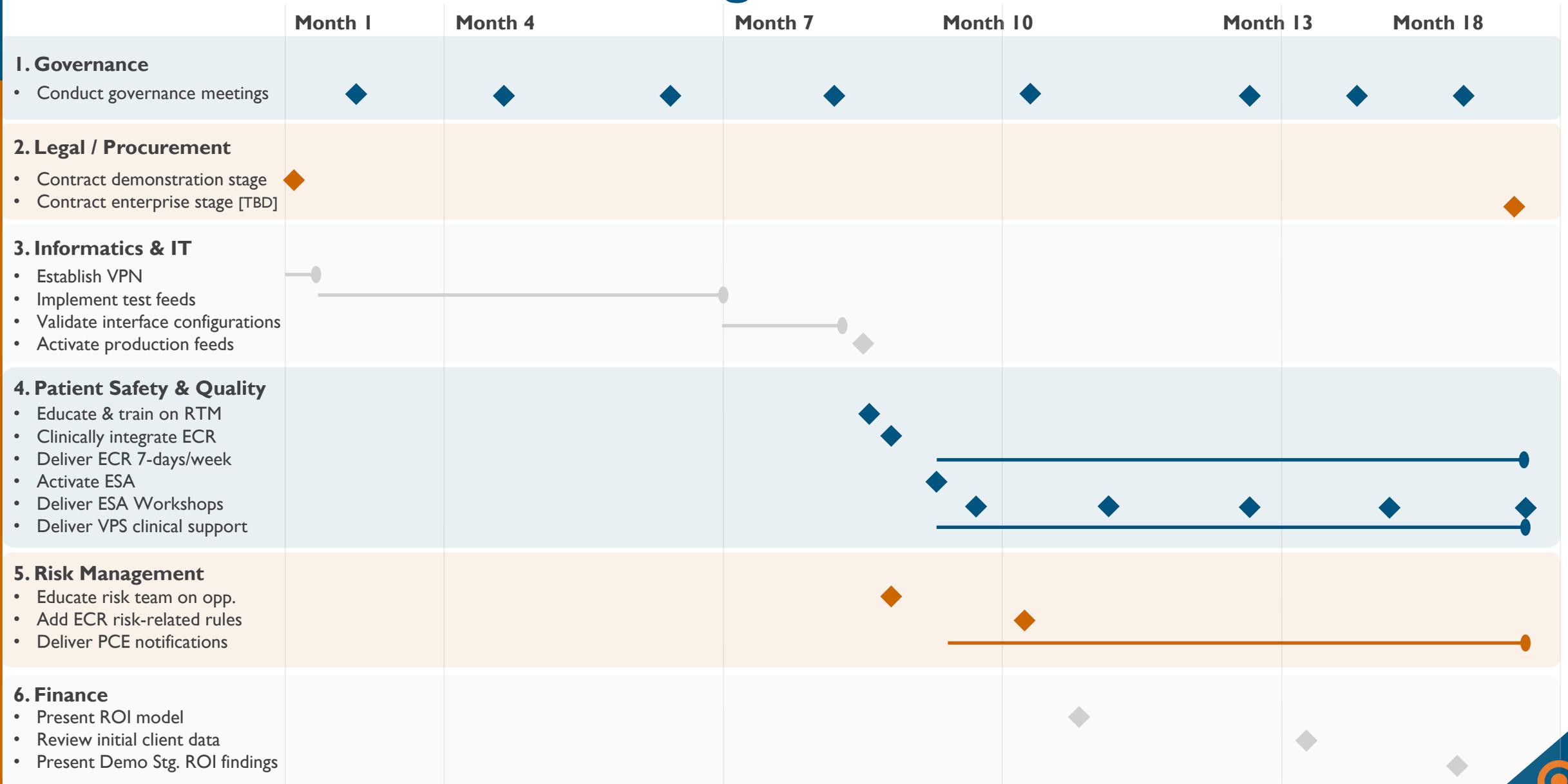
- ✓ Patient safety has “stalled”
  - Little progress from national campaigns, research studies, training programs
- ✓ Voluntary reporting:
  - “nearly worthless in the calculation of rates”
  - “results in substantial undercounting and, in some cases, misleading reports of zero harm”
- ✓ “Regard all injuries as potentially preventable”
- ✓ Some health systems\* are doing efficient, automated harm detection – more should

\* Referencing health systems in Pascal Community Collaborative in Classen DC, Griffin FA, Berwick DM. Measuring patient safety in real time: an essential method for effectively improving the safety of care. *Ann Intern Med* 2017; 167: 882-3.

# Pascal Virtual Patient Safety (VPS) Workflow



# VPS Program Overview

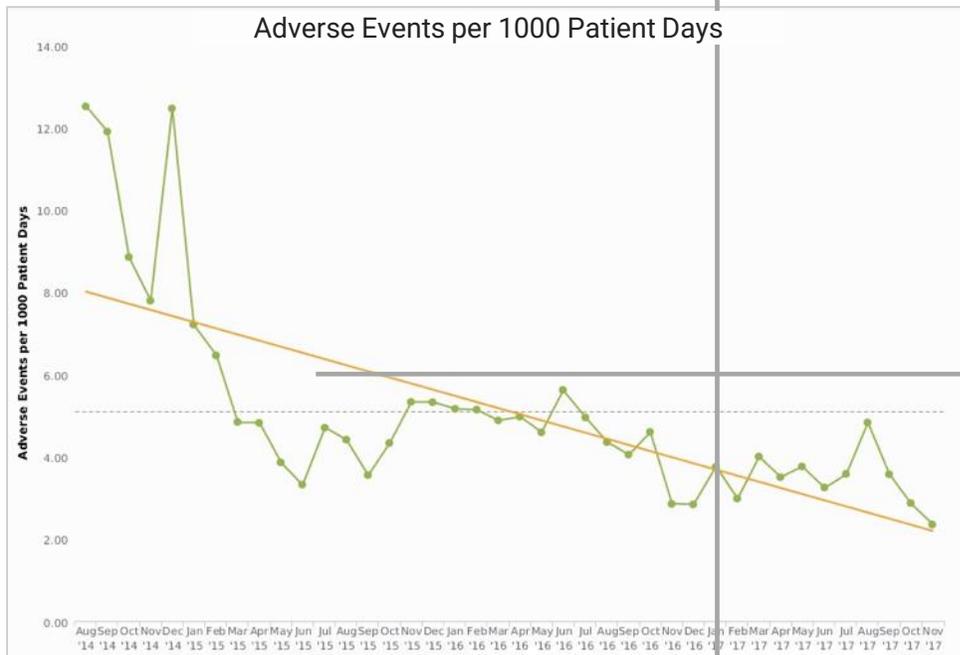


# Clinical operations and real-world examples

- ✓ Concurrent Interventions
  - Hypoglycemia/AKI
- ✓ Pattern identification and improvements
  - Oversedation from opioids
- ✓ Recent system example
  - 4 preventable deaths identified in first 6 weeks of engagement

# Pascal drives clinical and financial value, and more

## Reducing Harm is Foundational ...



## ... and Drives ROI & Value Enterprise-wide

### Financial ROI

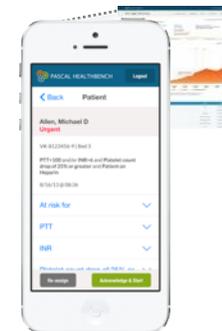
**3X – 5X**  
per year

### Regulatory Compliance

Prepare for New EHR-based  
Hospital Harm Measures



### Patient Experience



### Legal Protection



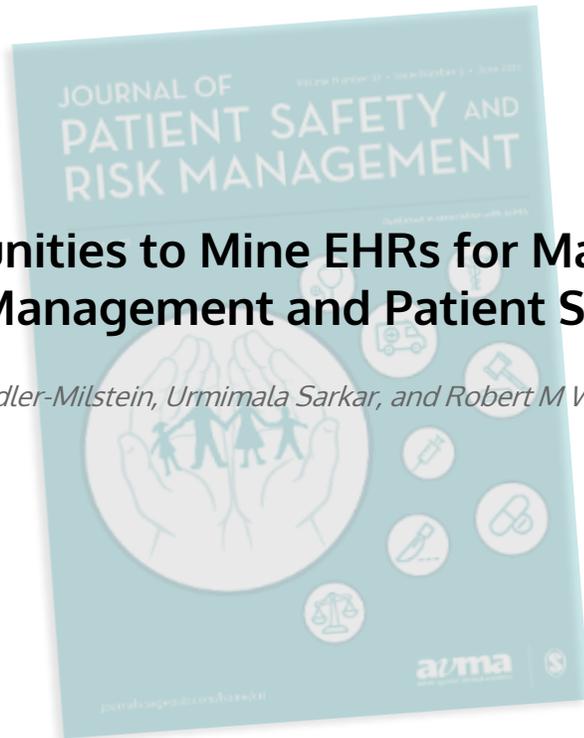
U.S. PSO  
certification  
reduces  
legal liability

# “Perhaps the answer is hiding in plain sight”

USE FINE-GRAINED REAL-TIME EHR DATA IN CHART AUDITS TO FIND RISK

## “Opportunities to Mine EHRs for Malpractice Risk Management and Patient Safety”

*Julia Adler-Milstein, Urmimala Sarkar, and Robert M Wachter*

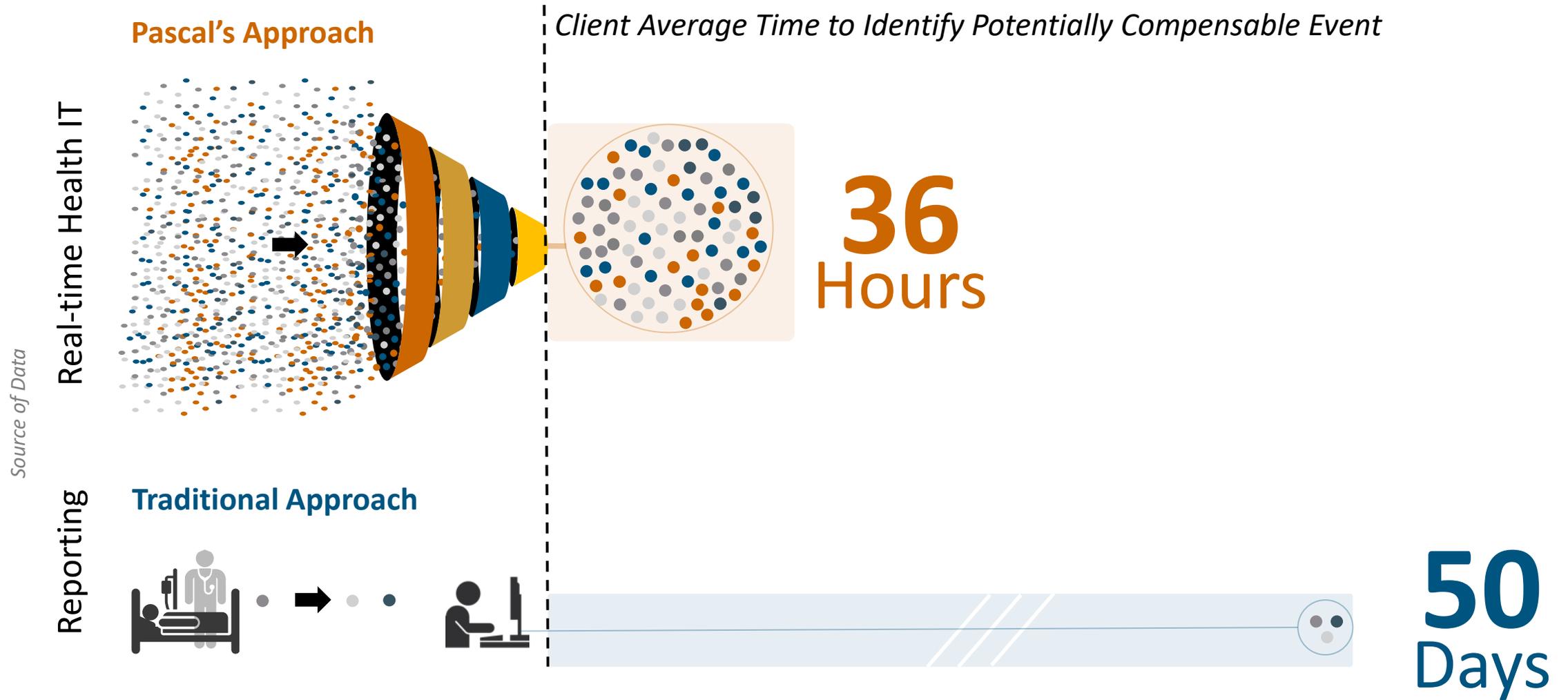


### Article proposes:

<b>Data:</b>	Clinical (EHR), not just claims
<b>Latency:</b>	Real-time (excluding adjudication)
<b>Method:</b>	“Gold standard” chart review
<b>Operations:</b>	Scalable
<b>Granularity:</b>	Precise – fine-grained, not coarse
<b>Timing:</b>	Prospective

*Exactly the right approach, but far more is needed to scale in clinical operations*

# Virtual Patient Safety applied to risk: Identifying potential lawsuits while the patient is still in the hospital!



# One more thing: Emerging evidence that current harm identification is inequitable

## African Americans

**60-65%**

Less likely to have safety events reported  
in a voluntary event reporting system

Race Differences in Reported Harmful Patient Safety Events in Healthcare System High Reliability Organizations

Angela D. Thomas, DrPH,\* Chinmay Pandit, MHI,\* and Seth A. Krevat, MD†

[Journal of Patient Safety: December 2020 - Volume 16 - Issue 4 - p e235-e239](#)

### BRIEF REPORT

**Patient Characteristics Associated With Voluntary Safety Event Reporting in the Acute Care Setting**

Danielle P. Thurtell, MD, Sara B. Daffron, MD, Elizabeth E. Halvorson, MD, MS

[Hospital Pediatrics: February 2019; 9 \(2\): 134-138.](#)

## Latino Children

**~ 2X**

More safety events detected  
by automated trigger tool

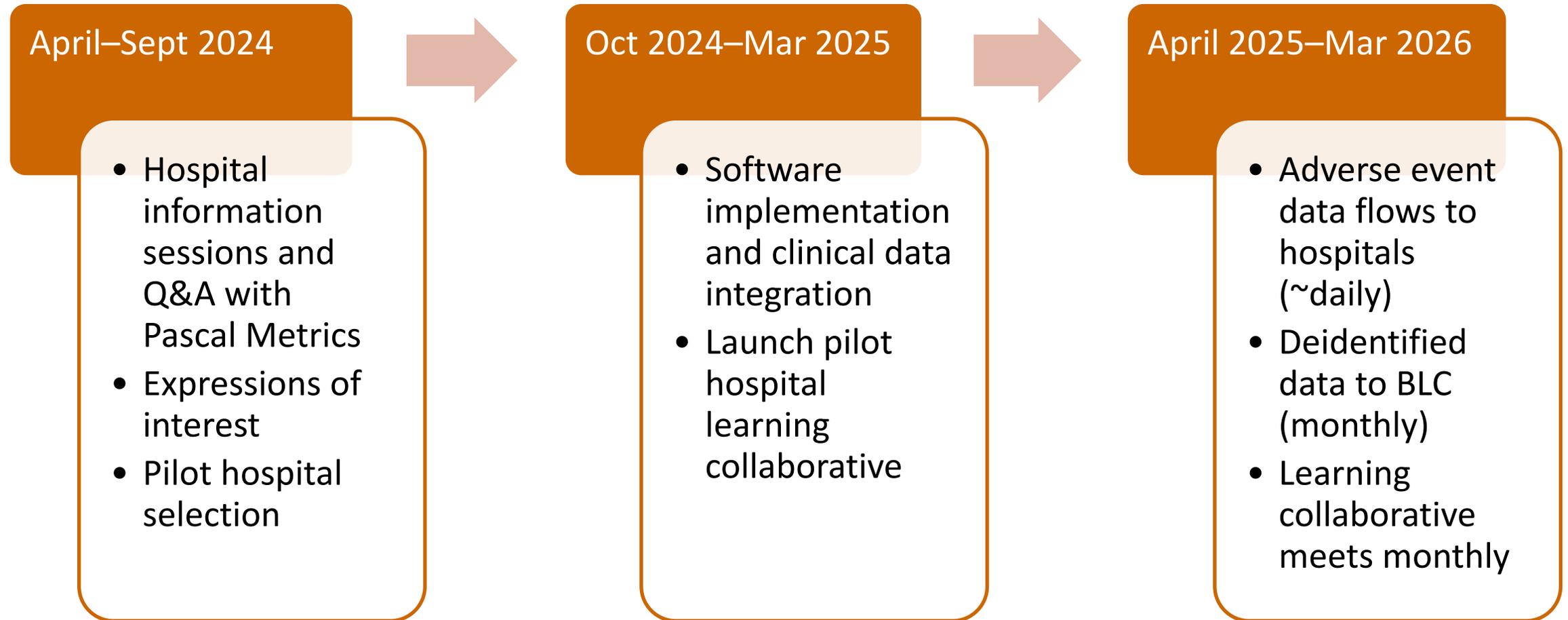
### BRIEF REPORT

**Racial, Ethnic, and Socioeconomic Disparities in Patient Safety Events for Hospitalized Children**

David C. Stockwell, MD, MBA\*\* Christopher P. Landrigan, MD, MPH††† Sara L. Toomey, MD, MPH, MPhil, MS,†† Matthew Y. Westfall, BA,† Shanshan Liu, MS, MPH† Gareth Parry, PhD,†† Ari S. Coopersmith, BA,†† Mark A. Schuster, MD, PhD,††† for the GAPPs Study Group

[Hospital Pediatrics: January 2019; 9 \(1\): 1-5.](#)

# Pilot timeline



# Learning collaborative

- Confidential monthly meetings to collaboratively discuss experiences, challenges, and successes
- Expectation of regular participation by a senior hospital representative and quality/safety leader

# Evaluation of the pilot

- Independent evaluation by 3rd party
- The evaluation will look at:
  - The implementation process in a diverse set of hospitals
  - Changes in safety events over time and differences between those areas and organizations that improve and those that do not
  - The potential cost implications of changes in safety events
  - How system use and changes in safety event rates are associated with organizational factors, e.g., culture of safety, operational burden, and workforce well-being

# Data sharing and confidentiality

- Pascal Metrics' federal PSO protections
- Betsy Lehman Center's enabling statute
- Data use agreements

# Upcoming information sessions

Information session	Topics	Date
Analytics and improvement support	<ul style="list-style-type: none"><li>• Adverse event analytics</li><li>• Applying data to safety improvement and risk reduction</li><li>• Data sharing and confidentiality</li></ul>	May 3, 1-2 p.m. <a href="#"><u>REGISTER FOR MAY 3, 2024</u></a>
Real-world experiences	<ul style="list-style-type: none"><li>• Q&amp;A with leaders of early adopter hospitals</li></ul>	May 10, 1-2 p.m. <a href="#"><u>REGISTER FOR MAY 10, 2024</u></a>
Readiness and next steps	<ul style="list-style-type: none"><li>• Hospital readiness criteria</li><li>• Hospital selection process and timeline</li></ul>	May 23, 11 a.m. – 12 p.m. <a href="#"><u>REGISTER FOR MAY 23, 2024</u></a>

# Thank you!

## Contact us

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