

This presentation deck was modified from the call before posting publicly to protect proprietary information.

Pilot of an automated adverse event monitoring system in Massachusetts

INFORMATION SESSION #2: ANALYTICS AND IMPROVEMENT SUPPORT

Agenda

- Pilot goals
- The problem
- The field: Why now?
- The solution: Automated event detection and timely, actionable data
- Pilot program implementation
- Confidential data sharing and evaluation

Pilot goals

To demonstrate whether and how this approach:

- Produces daily validated data on a wide range of safety events that hospitals can use to inform and power their existing improvement systems and activities.
- Helps hospitals achieve significant and sustained improvements of patient outcomes by reducing preventable harm events.
- Eases the burden of manual reporting on frontline staff, while promoting a culture of safety and workforce well-being.
- Serves as a source of meaningful information on statewide patient safety events, risks, and trends.
- Reduces costs associated with preventable harm events at the individual hospital level and statewide.

Pascal Metrics' role in the pilot





What results a pilot hospital can expect from participating

To have achieved by pilot end:

- ✓ Identified ~10x serious harm
- ✓ Have begun to improve AE Outcomes
- ✓ Identified PCEs in volume, and much sooner
- ✓ Used AE Outcomes & insight in peer review
- ✓ Demonstrated ROI opportunity of >3x/year

To be positioned to achieve at pilot end:

- Scalably identify more harm efficiently, effectively
- Reduce harm by >25% compared to baseline
- Transform QI into more timely capability, identifying & reducing other events, patterns
- Reduce payouts and associated legal/other costs
- Convert patient safety to integrated program with risk and source of "CFO-grade" value
- Apply VPS more fully to revenue cycle, positioned to avoid new CMS penalties

The problem





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:



Death Risk



Readmission Risk



Payor Penalties





Length of Stay



Delivery Cost



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. Pascal Metrics U.S. Community Collaborative member data.

Without AE outcomes*, operations impaired enterprise-wide



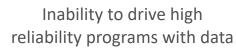




Reliance on ext to action vs. "m

Reliance on external body calls to action vs. "my" patient harm data









Over-emphasis of compliance data – less operationally useful



Lack of visibility on common cause contributors





Inability to go "upstream" in managing liability payout risk

Poor identification of adverse eventassociated quality variation





Necessary to manage effectively in a value-based world

^{*}AE Outcomes = Clinically Validated Adverse Event Outcomes using real-time Health IT Data

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. Thurtle, 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

RIEF REPORT

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

David C. Stockwell, MD, MBA, ** Christopher P. Landrigan, MD, MPH,** Sana L. Toomey, MD, MPH, MPhil, MSc,** Matthew Y. Westfall, BA,* Shanshan Liu, MS, MPH,* Sareth Parry, PhD,** Ani S. Coopersmith, BA,** Mark A. Schuster, MD, PhD,** for the GAPPS Study Group

Hospital Pediatrics; January 2019; 9 (1): 1-5.

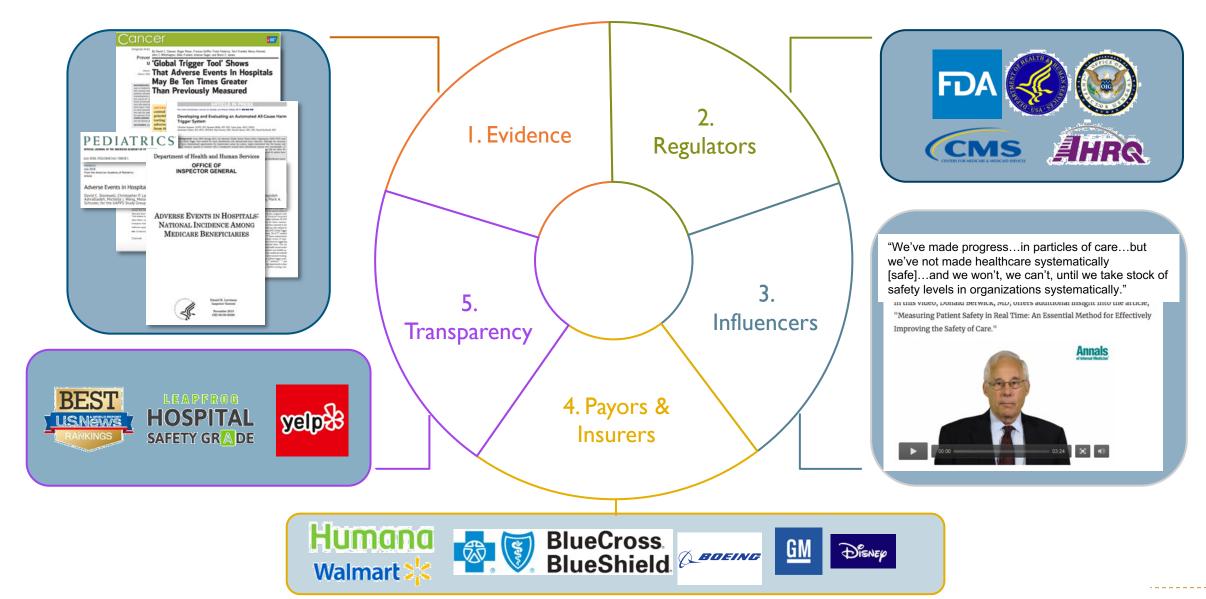
The field

WHY NOW?





Multiple drivers accelerating adoption nationwide

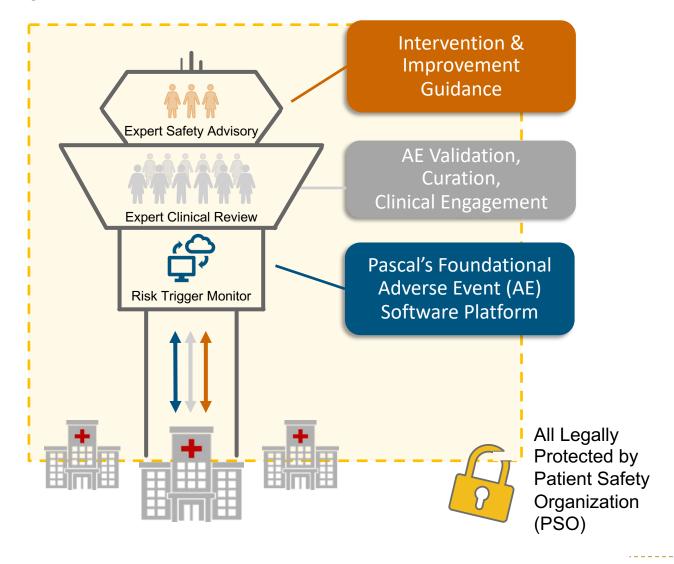


Pascal software and services

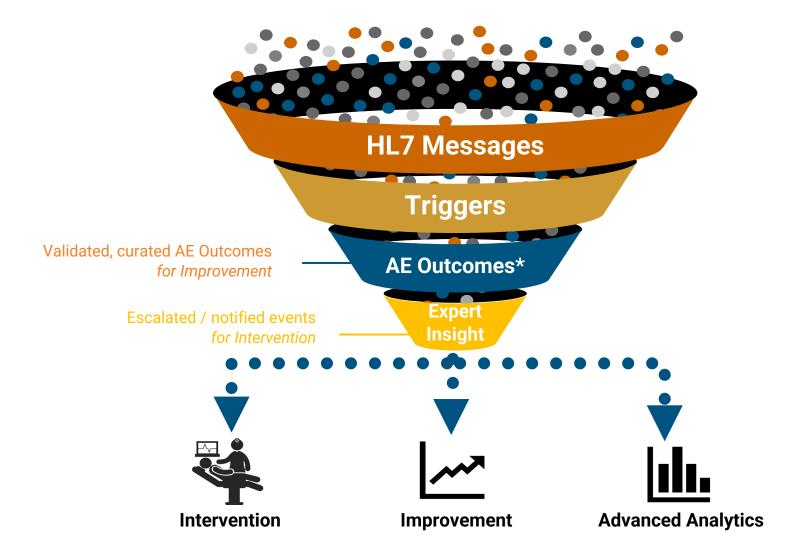


24/7 Virtual Patient Safety (VPS) solution

 Measure and manage all harm, all the time for all patients



Pascal VPS transforms data into outcomes and expert insight



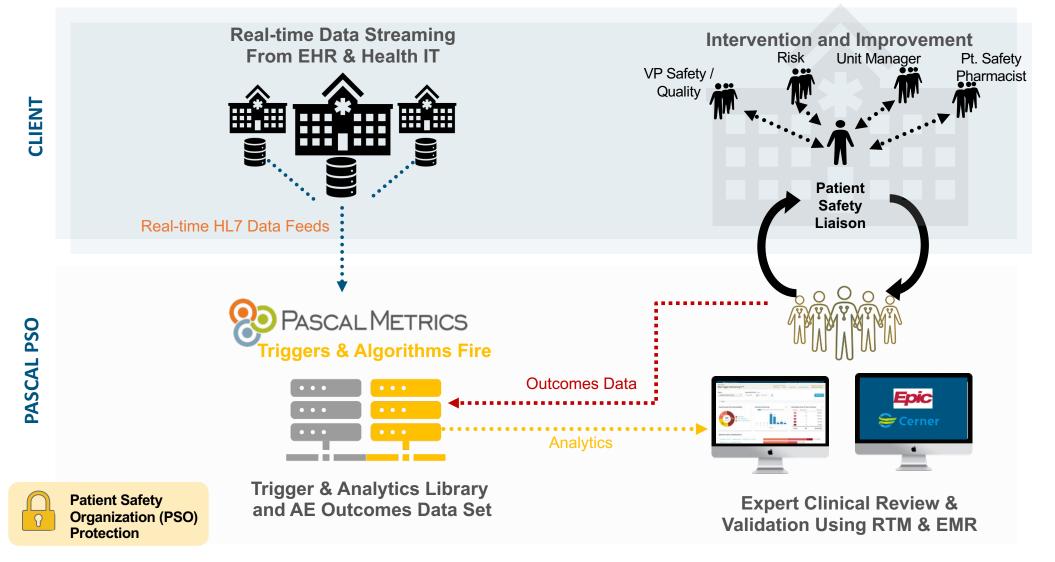
Clinically relevant adverse event analytics



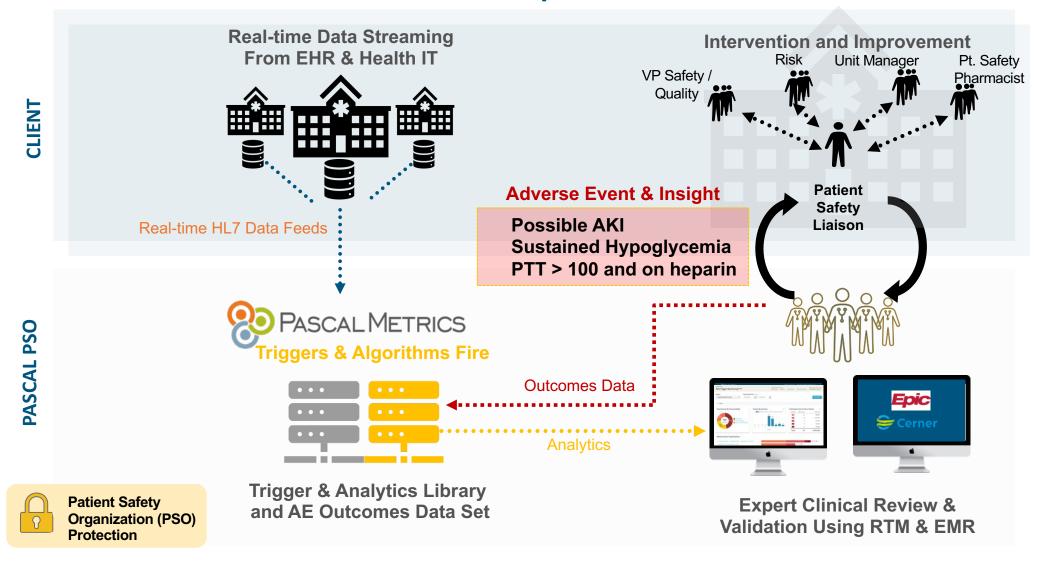
AE outcomes and expert insight "lens" providing visibility of and "teeing up" for intervention and improvement:

- ✓ Events
- ✓ Trends
- ✓ Patterns
- ✓ Common causes/factors
- ✓ Vulnerabilities and variation

Pascal Virtual Patient Safety (VPS) workflow



VPS workflow: Patient example



The AE universe – Pascal VPS identifies more AE types, higher volume, faster and with 7-day <24-hour actionability

VPS-Identified AEs

Oversedation
Return to surgery
Unexpected transfer to ICU
HIT-related harm
Medication-related coag
Hypoglycemia
Acute renal injury
Over-sedation
Medication-related bleeding
Electrolyte imbalance
Med-related allergic reaction

Medication-related toxicity Respiratory complication related to medication Medication-related constipation Neurological complication related to medication Intravenous (IV) volume overload Neonatal resuscitation or injury Delivery complication Obstetrical hemorrhage Neonatal birth injury Postpartum hemorrhage Hypertension in preg incl preeclampsia 3rd or 4th degree lacerations Preterm delivery of an infant Maternal infection/sepsis Newborn Metabolic acidosis Maternal hypotension requiring

treatment

Retained placenta or tissue Eclampsia Placental Abruption Hyperbilirubinemia Preeclampsia with severe features Readmission Fall with/without injury Pressure Injuries Patient deterioration Sepsis related event Cardiac Arrest Respiratory complications Venous Thrombolytic Events (VTE) Hypotension IV infiltrate Cardiac Complications Anesthetic induction issue Anesthetic airway mgmt. issue Removal, injury or repair of organ

Equipment failure/malfunction Skin tear, abrasion, or other breakdown Aspiration pneumonia Mental status change Equipment-related event Gastrointestinal hemorrhage Constipation / Obstipation Complications related to peripheral venous or arterial puncture Catheter associated urinary tract infection Respiratory infection (non-ventilator associated) Misread of radiology study latrogenic pneumothorax Transfusion-related event Catheter-related urinary retention Post-operative / Post-procedure urinary Intubation-related event

Healthcare-Associated Clostridium Difficile Infection Central line associated BSI Intravenous (IV) volume overload Ventilator-associated pneumonia Premature extubation causing respiratory failure Clostridium difficile medication associated infection Altered Nutrition Abnormal bleeding following surgery or procedure Removal retained foreign body Cardiac complications related to surgery or procedure Post-operative / Post-procedure pain Death Post-operative wound infection Post-operative wound dehiscence Respiratory complications related to surgery or procedure

ILLUSTRATIVE

Post-op fever
Epidural/Spinal-related event
Stroke / other neurological
complication
Unplanned Return to Surgery
Neurological complication related to
surgery or procedure
/ Surgical Site Infection
Post-operative Anastomotic
complication
Post-operative / Post-procedure ileus /
SBO
n Death

Falls
Neonatal events
Cardiac arrest

Environmental event
Non-patient

Sample
Client Key
Initiative
Targets

Maternal Hypertension 7-day Readmissions Reduction Pressure Ulcers

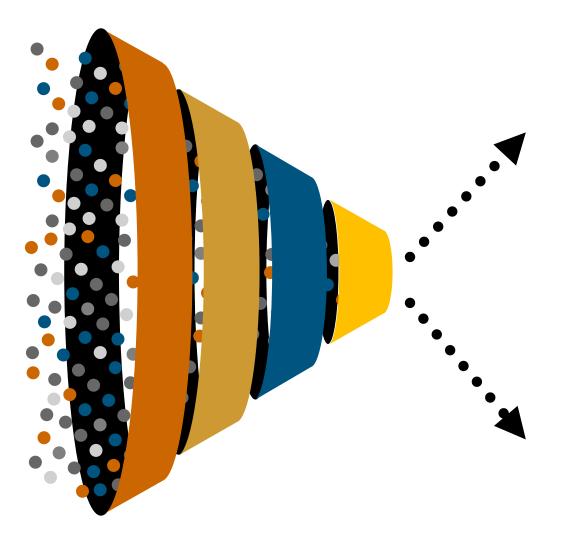
Surgical Site Infections
O-E sepsis mortality
Surgical Complications
CAUTI-CLABSI-C Diff Composite
Blood therapeutics
Percutaneous Coronary Interventions

Client initiatives typically identify only a fraction of AEs Pascal VPS systematically and consistently validating

Voluntary Event Reports

^{1.} Pascal currently delivers limited aspects of this.

Used to support analytics and action enterprise-wide





Patient safety



Risk management



Data science



Quality improvement



Peer review



Finance

Virtual Patient Safety applied to risk

IMPROVING PATIENT'S RISK EXPERIENCE WHILE STILL IN THE HOSPITAL



Reporting

Traditional Approach







50 Days

Pilot program implementation

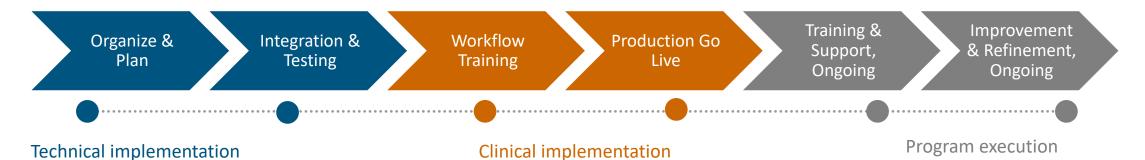


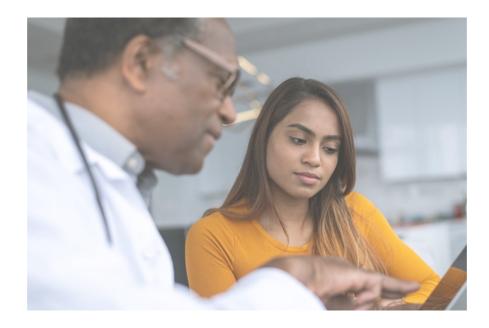
Pilot implementation overview

	Month I	Month 4	Month 7	Month 10	Month 13	Month 18
I. GovernanceConduct governance meetings	•	*	*	•	•	•
2. Legal / ProcurementContract demonstration stageContract enterprise stage [TBD]	*					•
 3. Informatics & IT Establish VPN Implement test feeds Validate interface configurations Activate production feeds 			•			
 4. Patient Safety & Quality Educate & train on RTM Clinically integrate ECR Deliver ECR 7-days/week Activate ESA Deliver ESA Workshops Deliver VPS clinical support 			•	* *	•	•
 5. Risk Management Educate risk team on opp. Add ECR risk-related rules Deliver PCE notifications 			•	•		
 6. Finance Present ROI model Review initial client data Present Demo Stg. ROI findings RTM = Risk Trigger Monitor PCE = Potential Comp 	Front ECD = Francis Clinica	Doubou ESA - Evport Sofati Advisory		•	•	•

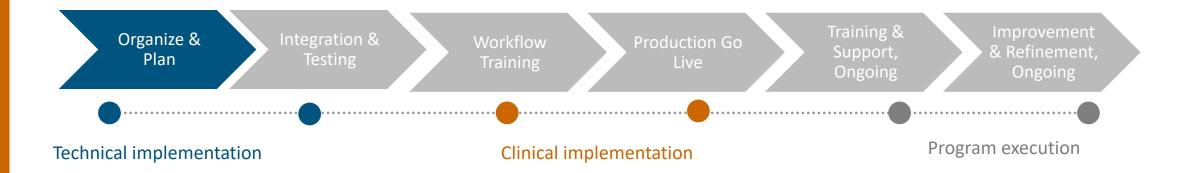
Pilot implementation overview

STREAMS 3 AND 4

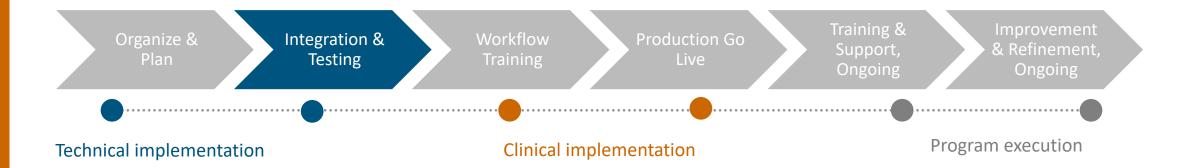




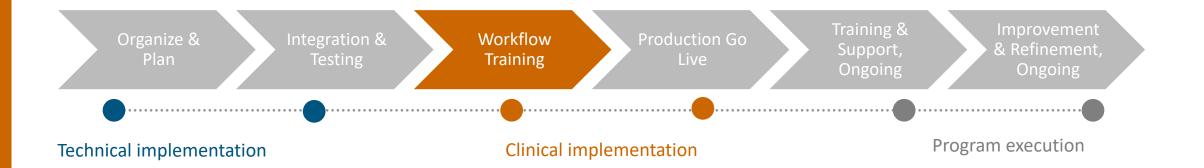
Phase 1: Organize and plan



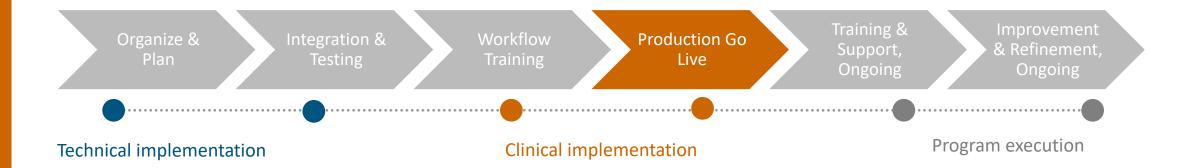
Phase 2: Integration and testing



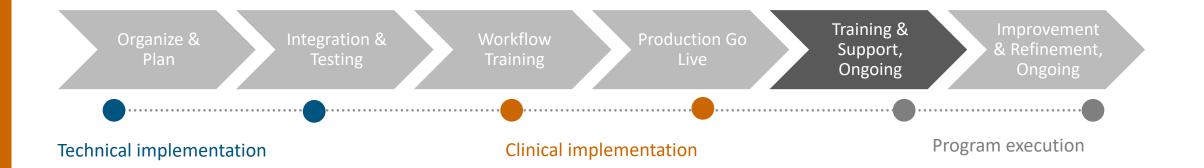
Phase 3: Workflow training



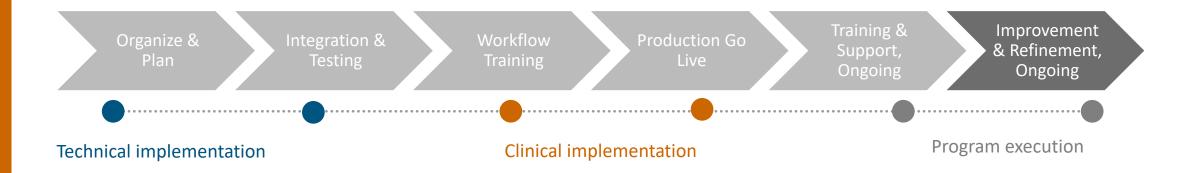
Phase 4: Production go-live



Phase 5: Training and support



Phase 6: Improvement and refinement



Closing considerations

- 1. Know what you don't know
- 2. Use new tech-enabled method to build measurable value on culture work
- 3. Generate reliable, timely, actionable data for HRO, risk & med-mal, rev cycle, and functions & initiatives
- 4. Enable consistent, comprehensive data-driven decision-making across enterprise related to adverse events
- 5. Facilitate effective governance & management in prioritizing of goals and resources with existing resources

Data sharing and evaluation



Data sharing and confidentiality

- Pascal Metrics' federal PSO protections
- Betsy Lehman Center's enabling statute
- Embedded in data use agreements
 - MOU between hospital and Betsy Lehman Center
 - BAA between hospital and Pascal Metrics
 - Contract between Betsy Lehman Center and Pascal Metrics

Evaluation and publication

- Independent evaluation
 - Ease of implementation
 - Changes in safety events over time
 - Impact on safety culture, operational burden, workforce well-being
 - Cost
 - ROI to individual hospitals
 - Impact on state health care spending
- Publication of findings
 - Deidentified data

Thank you!

Contact us

Email: Charles.Carter@BetsyLehmanCenterMA.gov

Website: BetsyLehmanCenterMA.gov/Pilot

Appendices





Health system/hospital team resourcing

Resource	Typical role
Clinical sponsor	Clinical leader responsible for quality/patient safety for each hospital
Executive sponsor	Executive leader responsible for quality/patient safety-related performance/cost

Hospital team resourcing

Resource	Typical Role
Patient Safety Liaison	 Patient Safety Officer/Risk manager Quality manager Manager who oversees root cause analysis Person who integrates voluntary reporting, peer review events as well as mandatory reporting

Hospital team resourcing

Resource	Typical role
Clinical leads	 Executive leadership (CMO, CNEO) Quality analysts Peer review Clinical pharmacy specialist Unit manager/director(s) Charge nurse or nurse shift managers Clinical nurse specialist Clinical lab scientist Care coordination Clinical educators Interventional radiologist Subject matter experts (such as wound care specialist, perinatal specialist, infection preventionist, coagulation team)

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