



Jewish
Healthcare
Foundation



Pittsburgh Regional
Health Initiative

Creating a National Home for Patient Safety

Karen Wolk Feinstein, PhD
President and CEO
Jewish Healthcare Foundation
Pittsburgh Regional Health Initiative

May 17, 2024



SAFETY

RELIABILITY

EFFICIENCY



Pittsburgh Regional Health Initiative

To Make Pittsburgh the Global Leader in Patient Safety

Brought Lean principles to health care

Established in 1997

- One of the first regional, multi-stakeholder coalitions on health care
- Originally an initiative of the Allegheny Conference on Community Development



**Karen Wolk
Feinstein, PhD**



Paul O'Neill

Working on Patient Safety for 25 Years

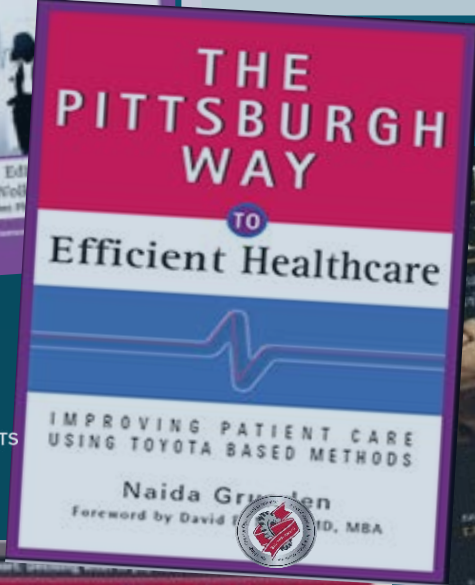


17% Drop in pediatric clinic wait times

35 to 0 Defective charts

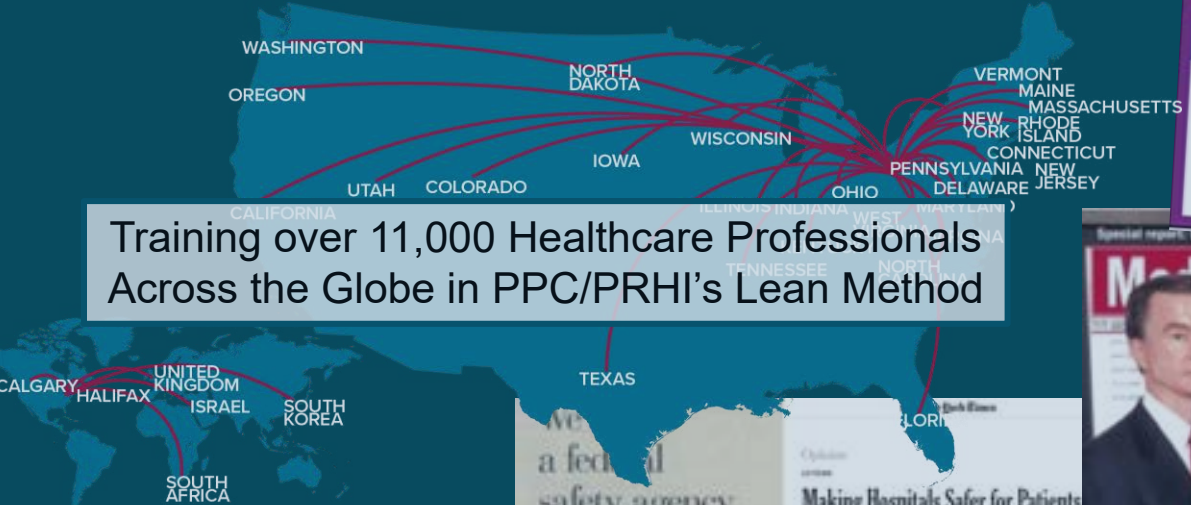


50% Fewer Readmissions w/ COPD focus



180 to Zero! Lost patient hours per month due to ambulance diversions

Training over 11,000 Healthcare Professionals Across the Globe in PPC/PRHI's Lean Method



Case Study No. 3 Pittsburgh Regional Health Initiative: The Quest to Bring Big Ideas to Life



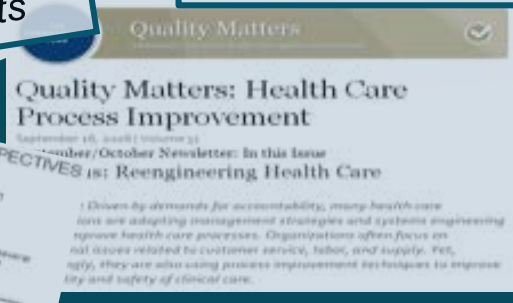
68% Drop in CLABS in 34 regional hospitals

50% Reduction in pap smear sampling defects



100% Compliance w/guidelines & aspirin use in a diabetes clinic

86% Reduction in medical errors

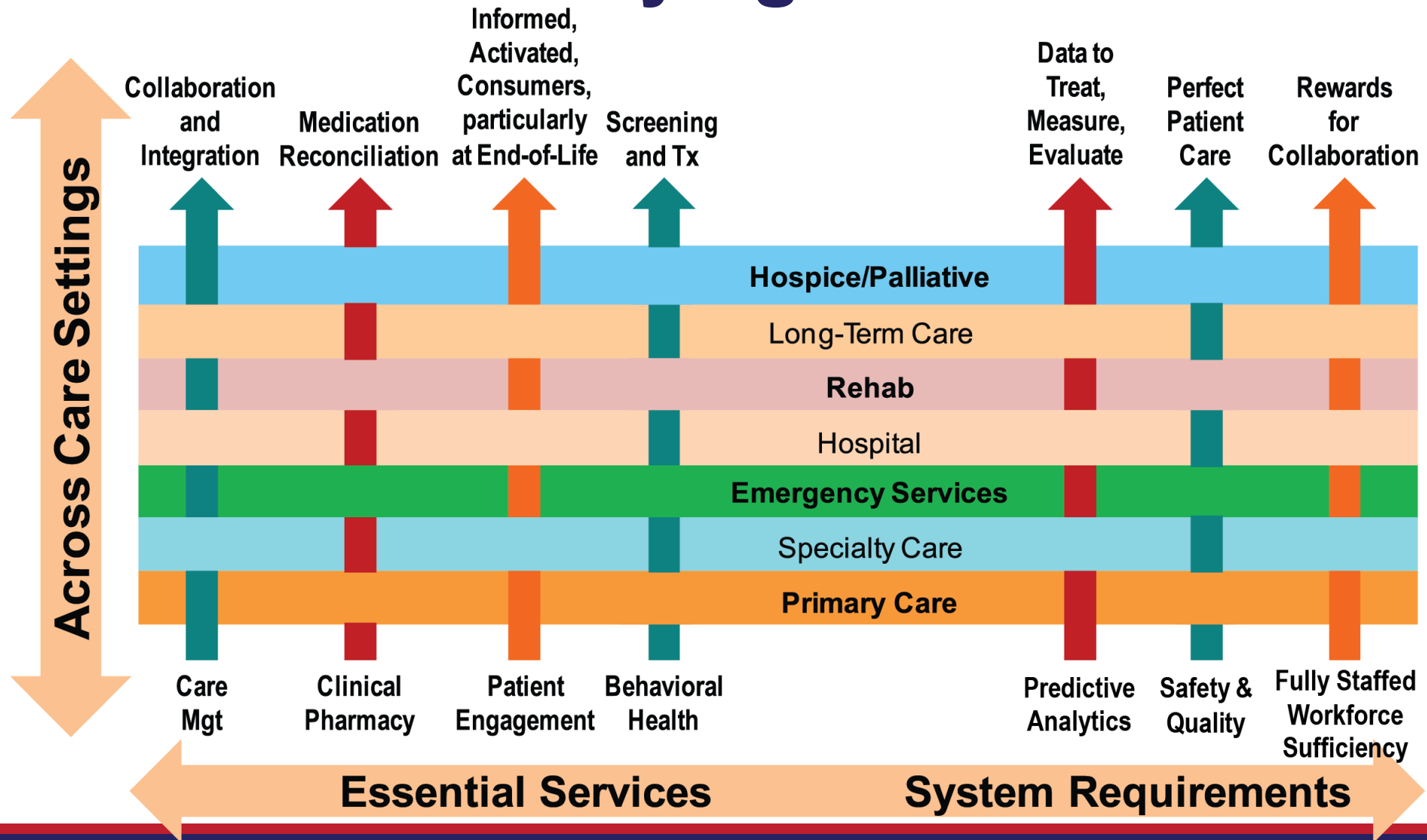




**Improvements
always went...**

back to baseline.

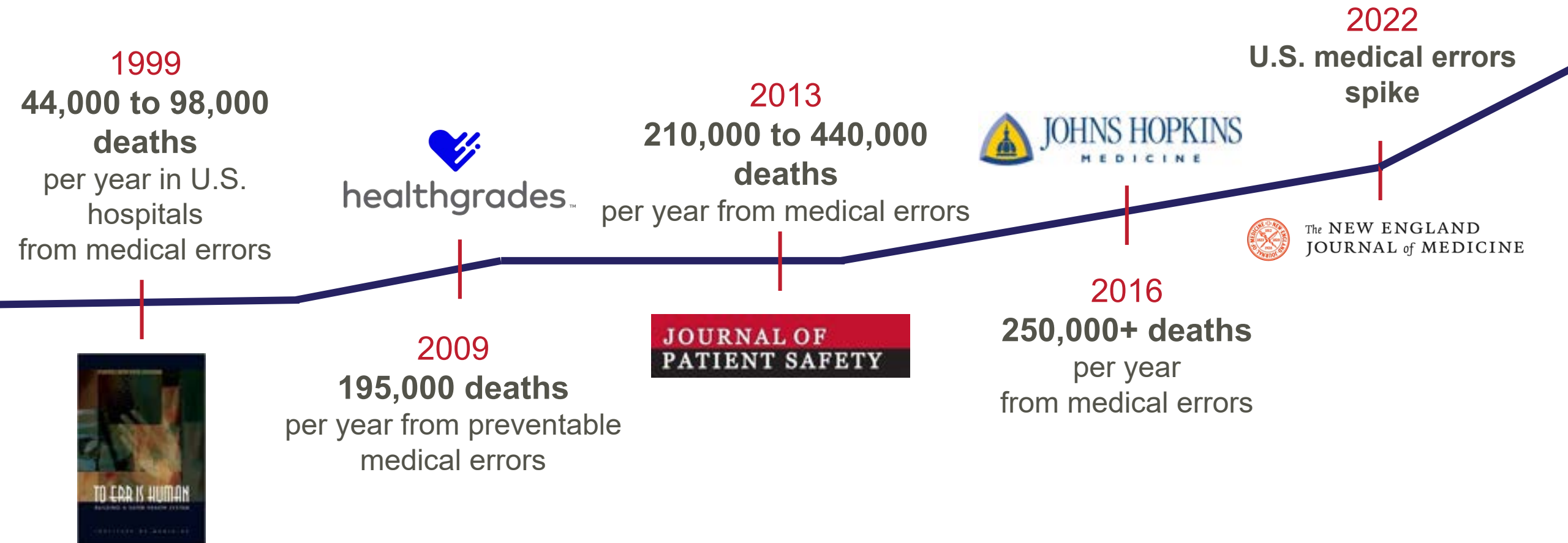
Keeping People Out of Hospitals— Instead of Trying to Fix Them



Patient Safety

The Persistent Problem of Medical Errors

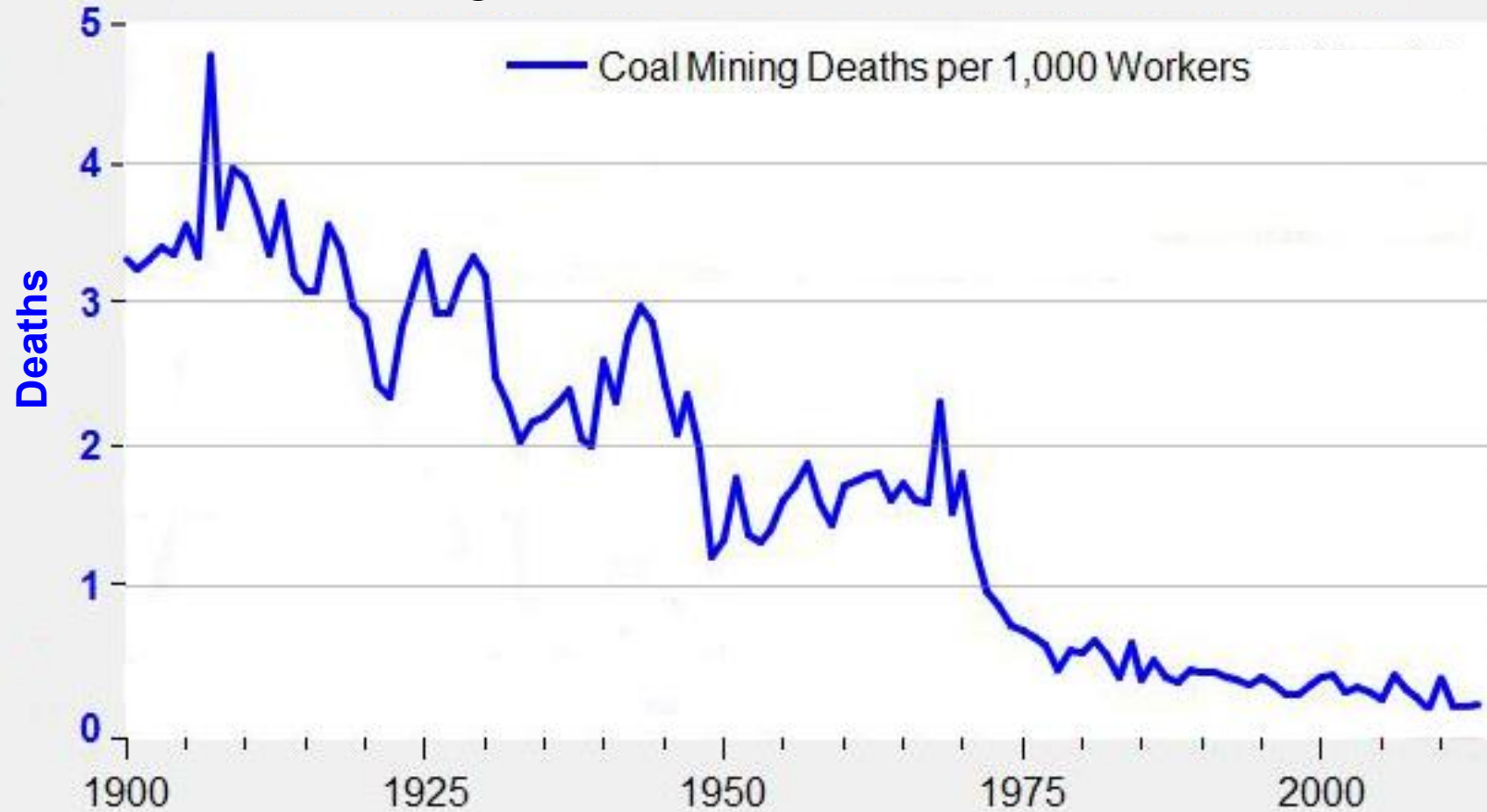
3rd Leading Cause of Death | 1 in 4 Experience Harm



Other Industries Have Gotten Safer

Mining Safety

Coal Mining Deaths in the US, 1900 to 2013



Pre-pandemic Reports on Medical Errors

OIG 2022 & Bates et al., 2023

1 in 4

hospitalized patients
experienced harm

Almost half

of harm was
preventable

Clinical Categories of Harm

**Medication
44%**

**Patient
Care 23%**

**Procedure/
Surgery
22%**

**Infection
11%**

Increase in Medical Errors due to Pandemic

We “cannot ask clinicians and staff to work harder, but instead provide them with more tools. The U.S. deserves breakthrough thinking.”



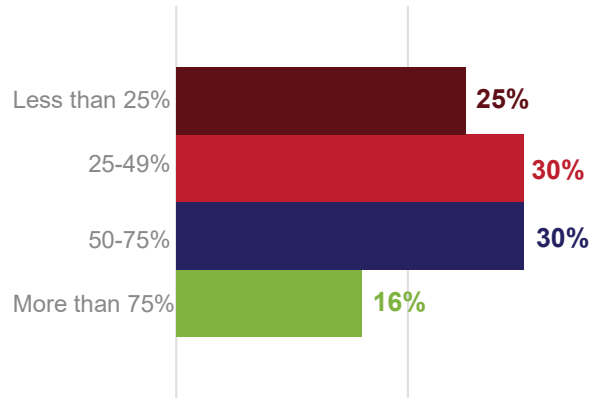
The NEW ENGLAND
JOURNAL of MEDICINE

CMS and the CDC observed **substantial deterioration** on patient safety metrics since the pandemic:

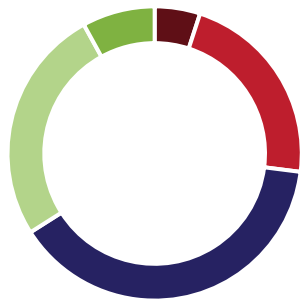
- **Central-line–associated bloodstream infections** in U.S. hospitals **increased by 28%** in the 2nd quarter of 2020
- **Skilled nursing facilities** saw rates of **falls** causing major injury **increase by 17.4%** and rates of **pressure ulcers** **increase by 41.8%**

Compounded by
**healthcare
workforce
shortages and
burnout**

Twin Crises: Workforce Burnout & Patient Safety



55% of nurses in acute care hospitals indicated that **less than half the time their unit does not have the necessary number of staff to provide quality care**



27% of nurses responded that ancillary staff is **seldom or never available to adequately support safety**

- Never
- Seldom
- Sometimes
- Often
- Always

American Nurses Foundation 2022 Workplace Survey

40% of nurses expressed an **intention to leave** their practice within 2 years

24% of physicians expressed the same **intention to leave** within 2 years

Mayo Clinic Dec 2021

38% of nurses reported an **increase in medication errors** or delays

Hospital IQ Nov 2021 Survey



“Many Americans say they simply no longer trust their medical providers”

Los Angeles Times | July 16, 2023

44% of American adults give the U.S. healthcare system a poor or failing grade

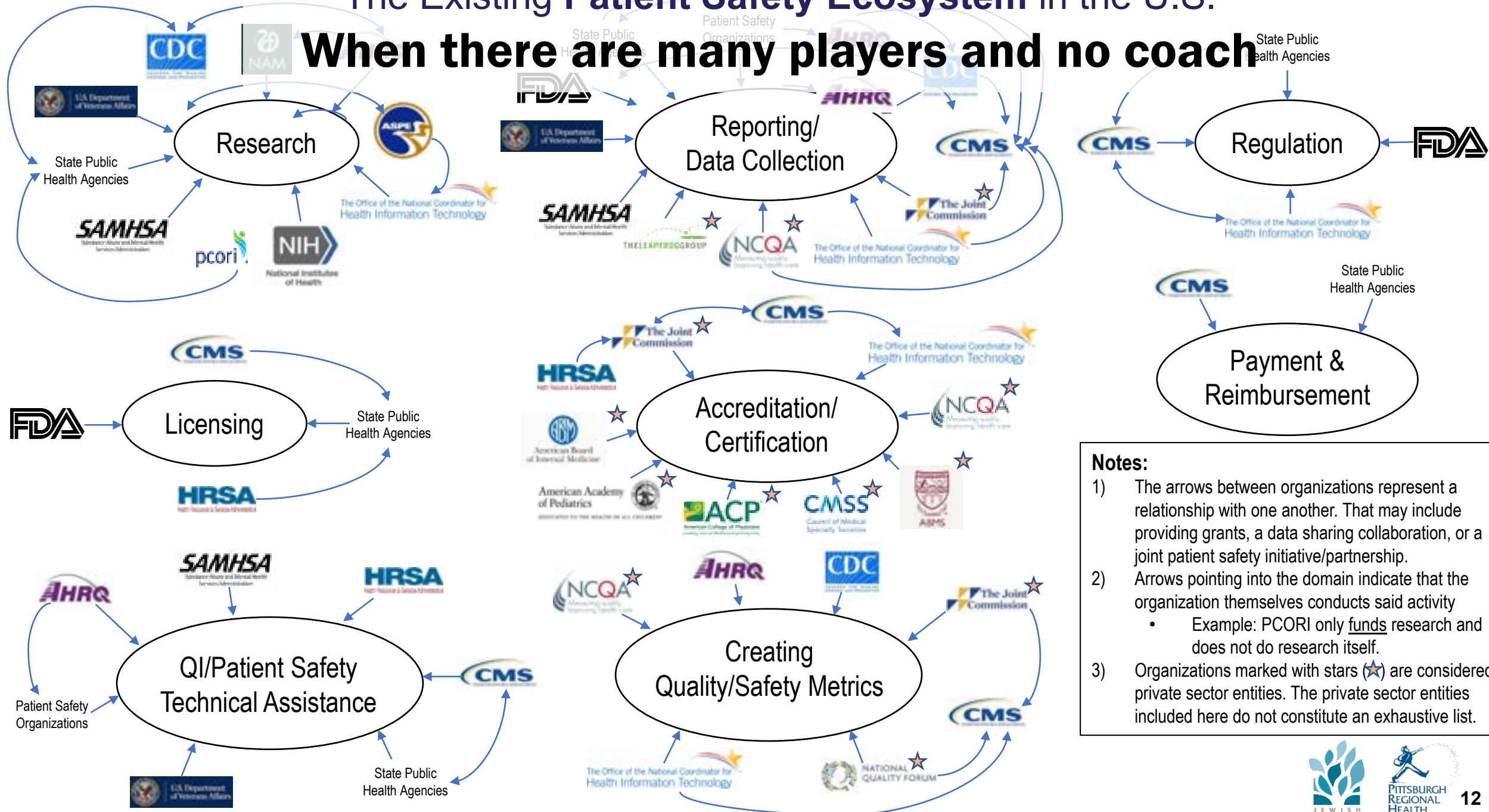
West Health-Gallup 2022 Healthcare in America

60% of American adults have had a recent bad healthcare experience

The Beryl Institute 2023

The Existing Patient Safety Ecosystem in the U.S.

When there are many players and no coach



- Notes:**
- 1) The arrows between organizations represent a relationship with one another. That may include providing grants, a data sharing collaboration, or a joint patient safety initiative/partnership.
 - 2) Arrows pointing into the domain indicate that the organization themselves conducts said activity
 - Example: PCORI only funds research and does not do research itself.
 - 3) Organizations marked with stars (★) are considered private sector entities. The private sector entities included here do not constitute an exhaustive list.

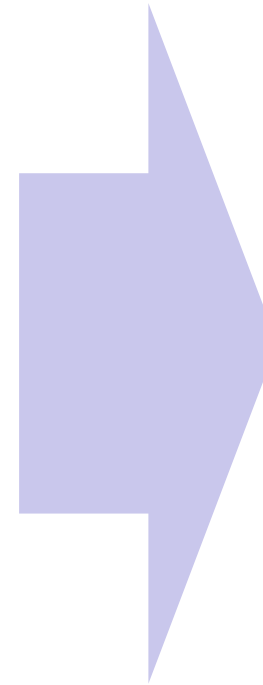
SWERVE



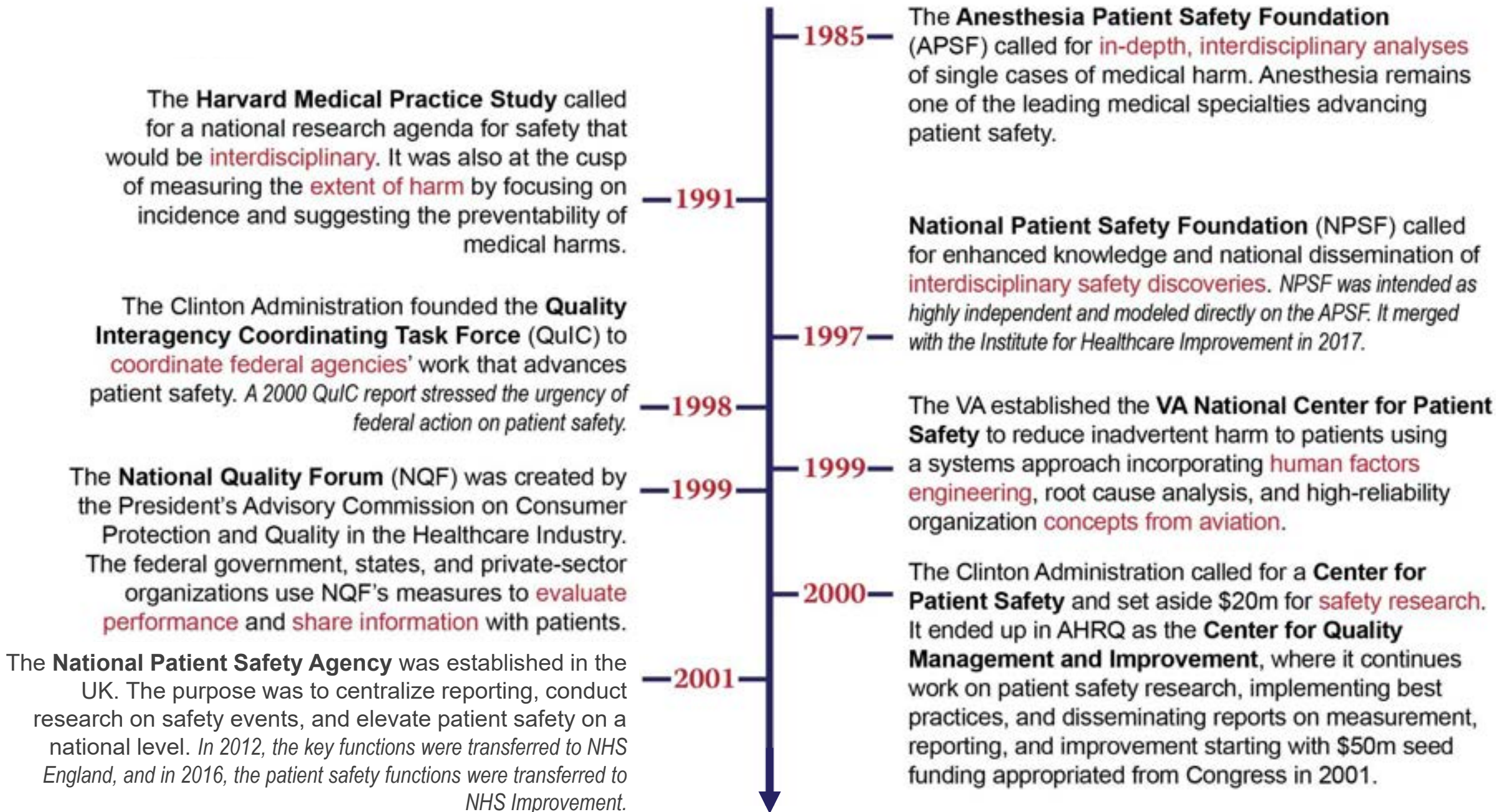
3 Rapid-Fire Sessions

3 Virtual Summits

Diverse National Networks



AN ABBREVIATED HISTORY OF EFFORTS TO CREATE NPSB-LIKE GROUPS



AN ABBREVIATED HISTORY OF EFFORTS TO CREATE NPSB-LIKE GROUPS (cont.)

A proposal circulated to create a **Commercial Aviation Safety Team (CAST)**-like entity in health care that would promote a public-private partnership to address patient safety issues at a national level. Through the CAST model, safety officials and technical experts **investigate and propose solutions** that can be implemented and scaled.

Hardeep Singh, David Classen, and Dean Sittig called for a **national EHR oversight program** to provide **dedicated surveillance** of EHR-related safety hazards and **promote learning** from adverse events. They proposed the creation of a **centralized, nonpartisan board** to ensure the safety of EHRs. This would be modeled after the **NTSB** and funded by Congress.

Aviators and members of the IOM Patient Safety and Health IT Committee called for the establishment of an **NTSB for health care** and action for healthcare suppliers, providers, and purchasers to reinvigorate adoption of aviation best practices.

2005

Patient Safety Organizations began to be maintained and certified by AHRQ to help improve safety within hospitals by **collecting and analyzing data**, maintaining a patient safety network database, and **developing and disseminating recommendations** regarding best practices. They ensure data confidentiality and legal protections provided by the Patient Safety Act of 2005.

2009

2009

The **Pittsburgh Regional Health Initiative** widely advocated for creating a new federal agency to **monitor sources of medical errors, identify patterns**, and help systems **avoid these errors**.

2011

2011

The **IOM Report on Health IT and Patient Safety** recommended development of an **independent federal entity** that could perform the needed **analytic and investigative functions** in a transparent, nonpunitive manner, similar in structure to the **NTSB**. The committee believed an independent federal entity would be the best option to provide a platform to support shared learning at a national level.

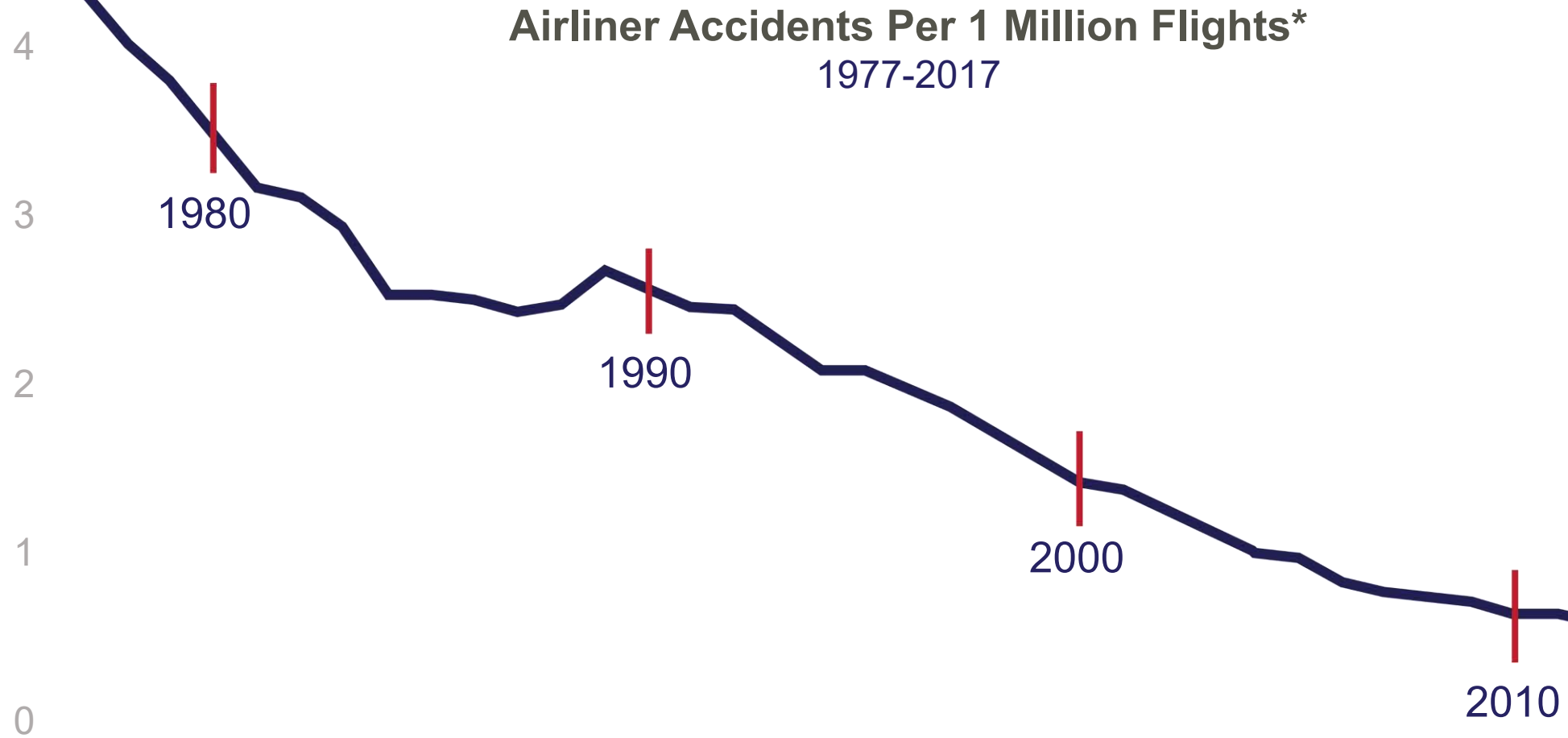
2012

2015

National healthcare safety experts proposed the creation of a **Federal Health Information Technology Safety Center** as an independent federal entity to **investigate serious incidents** and even devise a roadmap for health IT safety.

State of Aviation Safety

Consistent Reduction of Errors



*Aviation Safety Network

Bringing Aviation's Key Models to Health Care

NTSB

National Transportation Safety Board

Independent federal agency

- ✓ Investigates accidents to determine probable causes
- ✓ Issues recommendations to agencies and the industry

CAST + ASIAs

Commercial Aviation
Safety Team

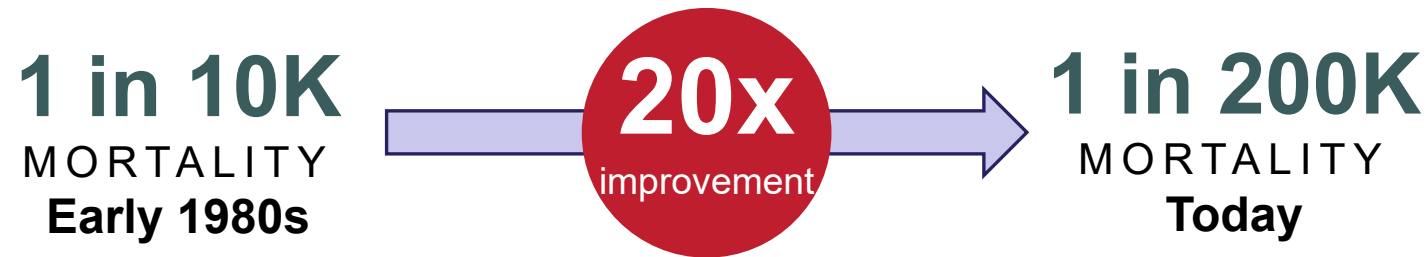
Aviation Safety Information
Analysis and Sharing

Voluntary Industry-Government Collaborative

- ✓ Identifies risks and priorities based on shared data (ASIAs)
- ✓ Gains consensus on safety enhancements to implement



The model to follow:



- APSF facilitates accessible, time-sensitive patient safety material frequently translated into a significant safety improvements
 - Field of Simulation

The Human Factors Perspective

**Building a safer *work environment*
to prevent *harm/injury***



**It's the vehicle
not the driver**

**Coal Carts were stabilized
countrywide after one overturned
on an uneven surface**



A large, modern hospital command center with multiple rows of computer workstations and a wall of large monitors displaying various data, maps, and video feeds. Staff members are seated at the workstations, working. The room is well-lit with overhead lights.

Hospital Command Centers

Enable peak operational efficiency

Provides real-time information and situational awareness by incorporating **sensors, monitors,** and establishing a **pipeline of information** that is **collected and centralized** for improved decision-making.

The logo for TeleTracking, featuring a green swoosh above the word "TeleTracking" in a bold, sans-serif font.

NATIONAL PATIENT SAFETY BOARD



Modeled on CAST, NTSB, and APSF as a non-punitive, collaborative, multi-disciplinary R&D team at HHS to:

- ✓ Identify and anticipate significant harm
- ✓ Understand the causes and pre-cursors to harm
- ✓ Create solutions

The NPSB's solutions would prevent harm before it occurs and reduce the burden on health systems and frontline teams

Complements HHS' Existing Patient Safety Structures

The NPSB Would Not:

- Collect additional patient safety data (AHRQ, CMS, CDC)
- Publicly report data (CMS)
- Conduct incident investigations (CMS)
- Fund patient safety research (AHRQ)
- Regulate (CMS)

The NPSB Would:

- Aggregate and analyze existing patient safety data collected across HHS agencies to gain national insights
- Study the pre-cursors and causes via a centralized R&D team at HHS
- Gain consensus on **solutions** to adopt across the public-private team

NPSB Model Has Evolved with Guidance from Advocacy Coalition

- ✓ Placed the NPSB's Board and its research and development team within HHS (*not as an independent agency*) to gain bipartisan support
- ✓ Strengthened the power of the 5-member Board to prevent political interference with the NPSB's solutions
- ✓ Required at least 2 of the 5 Board members to have lived experience

NPSB Coalition



PCAST Recommends Creation of **National Patient Safety Team** to President

September 7, 2023



PCAST Recommendations to Pres. Biden

- 1 Establish and Maintain Federal Leadership for Improvement of Patient Safety as a National Priority
 - 1.A Appoint a Patient Safety Coordinator Reporting to the President on Efforts to Transform Patient Safety Among All Relevant Government Agencies
 - 1.B **Establish a Multidisciplinary National Patient Safety Team and Ensure Inclusion of Persons from Populations Most Affected**
- 2 Ensure That Patients Receive Evidence-Based Practices for Preventing Harm and Addressing Risks
- 3 Partner with Patients and Reduce Disparities in Medical Errors and Adverse Outcomes
- 4 Accelerate Research and Deployment of Practices, Technologies, and Exemplar Systems of Safe Care

Similarities and Differences: NPST and NPSB

	NPST	NPSB
Investigation Body	Yes	No
Modeled after CAST	Yes	Yes
Public-Private, Multi-Disciplinary Team	Yes	Yes
Board Members	No	Yes
Non-punitive protections	Yes	Yes
Public Reporting	Yes	No
Requires HHS agencies & the VA to respond to solutions	No	Yes
Includes cyber security and data protections	No	Yes

U.S. Congresswoman (D CA)
Nanette Barragán

U.S. Congressman (R TX)
Michael Burgess

**Reintroduced
on March 8, 2024**

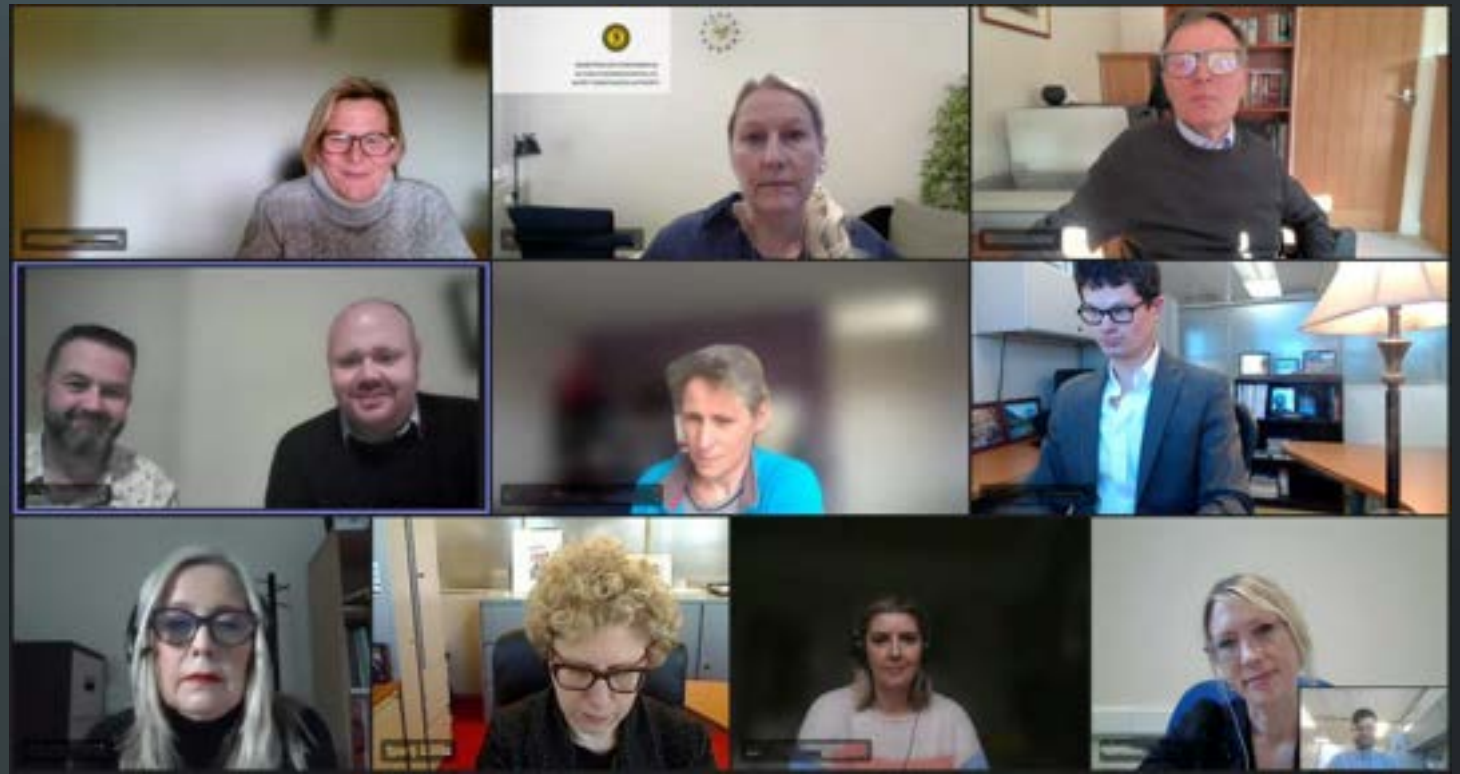


**Support the Bipartisan
National Patient Safety Board Act**

Founding Member

International Patient Safety Organisations Network

Australia, Canada, Finland, Ireland, Japan, Netherlands, New Zealand, Norway, Saudi Arabia, Singapore, Sweden, Switzerland, United Kingdom, and United States



Presented NPSB work to 700+ international attendees at *Healthcare Safety Investigations Conference* on September 27



A **podcast series** untangling the paths to safer health care



Episodes discussing:

- ★ AI & big data
- ★ Anesthesia's approach
- ★ Equity
- ★ Human factors engineering
- ★ Insights from futurists
- ★ International models
- ★ Payment reform
- ★ Physician behavior change
- ★ Simulation
- ★ Systemic solutions
- ★ Workforce crisis
& more

Listen & subscribe today on your favorite podcast app



Join us.

Our growing Coalition needs your voice and help to advance policies to establish the NPSB



**PATIENT SAFETY
TECHNOLOGY** 
CHALLENGE

patientsafetytech.com

PATIENT SAFETY TECHNOLOGY

CHALLENGE

An **INVITATION** TO INSPIRE THE NEXT GENERATION TO SOLVE THE PROBLEM OF MEDICAL ERROR, WHICH HARMS MILLIONS OF U.S. PATIENTS AND COSTS BILLIONS OF DOLLARS EVERY YEAR.

HOST A PATIENT SAFETY AWARD
AT A MAJOR COMPETITION/EVENT.

CO-SPONSOR THE CHALLENGE
TO SPARK MORE SOLUTIONS.

patientsafetytech.com

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Center for Lean Engagement & Research in Healthcare

Auton
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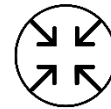
THE LEAPFROGGROUP

MedStar Health
National Center for
Human Factors in Healthcare

PITTSBURGH
REGIONAL
HEALTH
INITIATIVE

HEALTHY
SIMULATION

Pittsburgh Center for
Artificial Intelligence
Innovation in Medical Imaging
University of
Pittsburgh



SONSIEL
SOCIETY OF NURSE SCIENTISTS INNOVATORS ENTREPRENEURS & LEADERS



Patient Safety
MOVEMENT



P.A.R.T.

Institute for
Healthcare
Improvement

innovation works



NATIONAL
QUALITY FORUM
Driving measurable health
improvements together

FIVE PROBLEM CATEGORIES

**Medication
44%**

- Delirium or other change
- Significant hypoglycemia
- Acute kidney injury

**Patient
Care 23%**

- Pressure injury
- Venous thromboembolism
- Fall or trauma with injury

**Procedure /
Surgery
22%**

- Intestinal perforation
- Excessive bleeding
- Pneumothorax

**Infection
11%**

- Respiratory infection
- Surgical site infection
- CLABSI

**Diagnostic
Error**

- Missed
- Delayed
- Wrong

INNOVATION HUBS

with funded patient safety tech prizes

United States

SEATTLE

UPSTATE NY

BOSTON

SALT LAKE CITY

CHICAGO

PGH

NYC + PHILLY

LONDON

BAY AREA

WEST LAFAYETTE COLUMBUS

DC + BALTIMORE

LAS VEGAS

ST. LOUIS

CINCINNATI LEXINGTON

SO CAL

PHOENIX

NASHVILLE

RESEARCH TRIANGLE

DALLAS

CONWAY

ATLANTA

SO CAL

PHOENIX

AUSTIN

BIRMINGHAM

TUSKALOOSA



Universities & Events that have hosted a sponsored prize



Cornell University



Massachusetts Institute of Technology



UNIVERSITY OF CENTRAL ARKANSAS



VANDERBILT UNIVERSITY



TEXAS A&M UNIVERSITY



Stanford University

THE UNIVERSITY OF ALABAMA



HEALTH UNIVERSITY OF UTAH



University of Kentucky

Carnegie Mellon University



University of Pittsburgh School of Medicine



East Carolina University



New Jersey Institute of Technology



Duke University



UT DALLAS



University of Cincinnati



Georgetown University



Penn University of Pennsylvania



UNIVERSITY of WASHINGTON



THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL



EMORY UNIVERSITY



University of San Diego



Arizona State University



UNIVERSITY of VIRGINIA

Ucla



USC University of Southern California



Rensselaer



UNIVERSITY of ROCHESTER

Consumer Technology Association FOUNDATION



Washington University in St. Louis



THE OHIO STATE UNIVERSITY



UCI University of California, Irvine

Society of Critical Care Medicine The Intensive Care Professionals

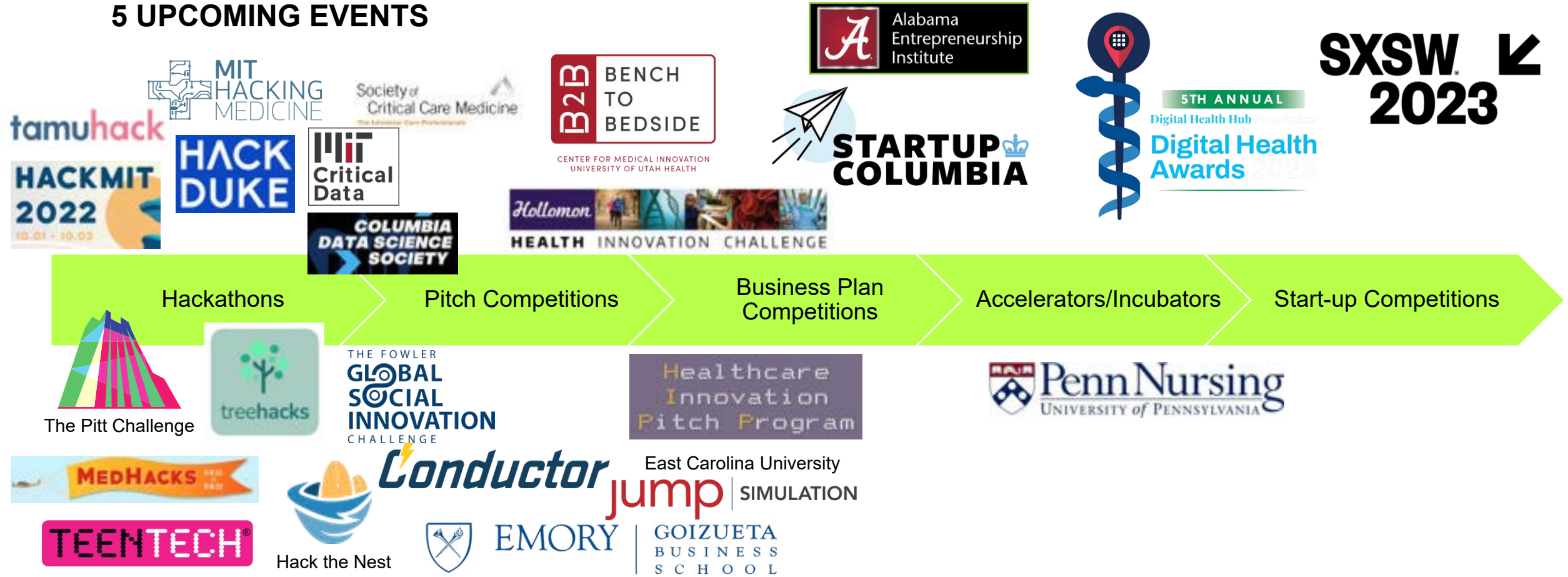
PATIENT SAFETY TECHNOLOGY CHALLENGE

DIVERSITY IN PARTICIPATING EVENTS

42 COMPLETED EVENTS

63 WINNING TEAMS (550+ PS TEAMS AND OVER 1,900 STUDENTS)

5 UPCOMING EVENTS



PATIENT SAFETY TECHNOLOGY CHALLENGE

participants featured in



PATIENT SAFETY'S

NEXT GENERATION



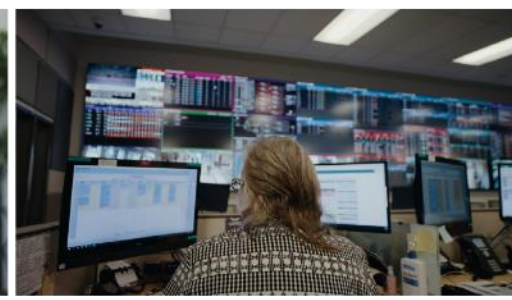
Reetam Ganguli



Dr. James Clarkson



A STORY BY TALL TALE PRODUCTIONS A PARTNER WITH THE JEWISH HEALTHCARE FOUNDATION
 "THE PITCH: PATIENT SAFETY'S NEXT GENERATION" BY MIKE EISENBERG
 STARRING KAULEY BRACKETT WITH KAREN FEINSTEIN JOSHUA MAITZ DOWNE AND TEDDY GLASS
 DIRECTED BY SARAH KRIVIN PRODUCED BY CHIP NAGH WRITTEN BY MIKE EISENBERG




**CLEVELAND
INTERNATIONAL
FILM FESTIVAL**

 OFFICIAL SELECTION





Pittsburgh is a Center of Safety Research, Discovery & Innovation



SAFETY INNOVATION SUMMIT THUR FEB 29

Brought together Safety Leaders in:

Transportation | Energy | Construction
Manufacturing | Academia | Health Care



Pittsburgh
Technology
Council



Pittsburgh Regional
Health Initiative



Jewish
Healthcare
Foundation

A commitment by top leadership
to **foster a culture of safety**;
with safety as an integral part of
the organization's mission



“If safety is only my responsibility or my team's responsibility, I've failed miserably as a chief safety officer. It is actually a responsibility of every employee within Aurora.”

-Nat Beuse, Aurora



“One of the best things we've done as a company is empower all of our employees to recognize and speak up, and they don't suffer any consequences for stopping anything that they're doing because they find a problem.”

-Todd Moore, CONSOL Energy⁴⁵

A commitment by top leadership to **foster a culture of safety**; with safety as an integral part of the organization's mission



“Show me an unsafe site and I'll show you an unproductive site and by definition if you're having a lot of incidents a lot of accidents a lot of mishaps, you're not producing anything useful.”

-Raghu Arunachalam, WorkVis.io



“I walked into a supplier facility, and before I walked in the door there was a mirror. In the mirror it said, “safety leader,” and you saw yourself. Past the mirror every safety statistic was posted on the wall. They celebrated the data they had. There were stickers for everyone's hard hats regarding any time they found a near miss or kept another employee safe... that's how you improve safety, it's sharing the data, understanding each other's role in keeping people safe and looking out for each other.”

-Evan Sevel, Wabtec 46

Safety information systems that provide the **data for improvement**—data that are precise, complete, timely, and comprehensive



“When you have enough data to fully put that risk assessment forward in a manner that you understand, the risks associated with what you're doing, and you can share that data and provide the transparency, then you can create that level of trust that's necessary to move to the next step of innovation, whether it's health care or any other space.”

-Evan Sevel, Wabtec

Ongoing research and experimentation that is interdisciplinary

“The worker’s input is absolutely vital to the products that we make. Otherwise, they would sit on the shelf, and they wouldn’t really solve your problem.”

-Zane Frund, MSA Safety



“Don't be afraid to talk to the manufacturers... I reach out to manufacturers, and they respond over the top. One company sent reps from Germany to sit with our folks and listen and what came out of that was better tools. The technology changed because they were listening to us, and it's still going on today. Don't be shy, get with the manufacturers, let them know what your problems are, and they'll work to fix them.”

-Kevin Kelley, Steamfitters




Ongoing research and experimentation that is interdisciplinary



“Oftentimes faculty researchers want to do something novel, they want to invent something new, they want to take perhaps an existing product and do a novel experiment on it. It's actually not that cool sometimes to do an evaluation and that is the hardest work. It's the grunt work. It means you must do your field work. It's iterative and it must be collaborative, and it takes a special kind of researcher to take that on.”
-Karen Lightman, Metro21 and Safety21



Technology making work/workers safer in other industries:

- Sensors
 - Monitors
 - Exoskeletons
 - Reminders
 - Decision support
 - Robots/drones
 - Biomarker detection
 - Virtual reality/augmented reality
- 

Applications from available technologies as they are discovered



“What I realized is this problem is not about technology. The technology is the easy part. There's a lot of technology available, but it's these other things about how you work with the users... the first thing we do is talk to the user. We tell them what the problem is rather than escalating it to some supervisor. We talk to the workers in the field, because they're best equipped and the quickest equipped to save themselves, save their brother who is working next door.”

-Raghu Arunachalam, WorkVis.io



“We incorporate input while we're innovating at the bleeding edge so we can make sure that we are building instruments and devices that workers care about, that they want to wear, they want to feel proud of wearing. That shapes the way we build technology.”

-Himanshu Khurana, Industrial Scientific

Regulation that creates a rapid adoption of best practices and adherence to standards



*“The good news is **we actually like standards** because it assures the highest level of protection and actually the health standards help benefit you. Your product standards don't reduce the rigor, they ever increasingly increase the rigor of those.”*

-Zane Frund, MSA Safety



“You can't underestimate the power of standards and how helpful they are to get a line of thinking on safety.

Over the last five years, the industry has gone from everybody doing their own thing to everybody coming together to say, 'let's work on some standards.' This is happening without any sort of federal regulation. This is companies recognizing the difficult task ahead and beginning to share information on safety best practice and then eventually turn those into standards. That's one of the big revelations for the industry.”

-Nat Beuse, Aurora



Training, engagement and education at the frontline

“We teach fundamental skills. We do everything from first aid CPR to concrete work to rod tying to scaffold building to mason tending to the environmental end of the pipeline. We give them the basic knowledge that they need to go out there in the field and work safely every day. Not only for the contractors which is important but also for the member to be able to go home every night with all 10 fingers and 10 toes the same way they came to that job site.”

-Mark Ferrari, Pennsylvania Laborers' Education & Training Center



“If the workers don't believe and trust in the system, they'll never use it.”
-Raghu Arunachalam, WorkVis.io



“The cost of health care has gotten to a point that there is an existential threat to hospitals. Most hospitals in the US are operating in the red. I work in Germany and 10 hospitals a month close because of their inability to be able to manage the costs. Efficiency, productivity solves a lot of economic ills, but it flows through to the patient caregivers.”

-Chris Johnson, TeleTracking

Commercialization—the private development of best practice solutions into marketable products

“Health care is an incredibly difficult environment for technology advancement and movement. It was 75 years from the time the stethoscope was invented before it hung around doctor's necks on a regular basis... I think that there is a trust problem around AI in particular. I look at anything we do, whether it's around safety, quality or pure operations. If the algorithm is wrong, it could kill somebody. But we have plenty of stories where the use of our system beat what is considered industry gold standard by 10 minutes and that saved a life.”

-Chris Johnson, TeleTracking



Training, engagement and education at the frontline

“85% of nurses surveyed will tell you that they will leave the profession in the next year to two years. Now that is not because they’re afraid of diseases. That is not because they’re afraid of patients. It is because they do not feel that they can safely do their calling due to the inefficiencies in the healthcare system.”

-Chris Johnson, TeleTracking

The Military Is Funding the Frontiers of Safety Tech in Health Care

“DARPA is looking for revolutionary technology as high-risk high-reward investments and is willing to tolerate a risk of a failure in order to get there...”

We're interested in modeling and simulation that will help us predict the effect of interventions so we can more quickly get to treatments and other solutions that will work when they get into humans and then in reality for training and for real-time decision support.”

-Jean-Paul Chretien, DARPA



The Military Is Funding the Frontiers of Safety Tech in Health Care

When, and will, these breakthroughs reach civilians?

Examples of DARPA Funded Innovations:

- Biosynthetic whole blood analog
- Advanced data, scalable and predictive approaches to medical triage
- Autonomous robots/drones to identify and triage injuries on the battlefield/mass casualty situations
- Trauma Care in a Rucksack: portable, autonomous diagnosis and life sustaining tool
- Devices to restore functions for people with severe spinal cord injuries



Thank you!

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npsb.org

patientsafetytech.com



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