Session 3: *Improving Patient Safety in Value-Based Care Through the Use of Health Information Technology and Data Analytics*

Presenters:

Subject Matter Experts

- **Rollin J. (Terry) Fairbanks, MD, MS** – Senior Vice President, Chief Quality and Safety Officer, MedStar Health, and Professor of Emergency Medicine, Georgetown University
- **Tejal Gandhi, MD, MPH, CPPS** – Chief Safety and Transformation Officer, Press Ganey Associates LLC
- **Melissa Swanfeldt** – Senior Director, Quality & Regulatory Compliance, MEDITECH
- **Aneesh Chopra, MPP** – Chair, Arcadia Institute

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Senior Vice President, Chief Quality and Safety Officer
MedStar Health
Professor of Emergency Medicine
Georgetown University

MedStar Health

It's how we treat people.

Physician-Focused Payment Model Technical Advisory Committee (PTAC), Session 3

Improving Patient Safety in Value-Based Care Through the Use of Health Information Technology and Data Analytics

Rollin J. (Terry) Fairbanks, MD MS FACEP
SVP, Chief Quality and Safety Officer, MedStar Health
Professor Of Emergency Medicine, Georgetown University

Introduction and Background

About Me

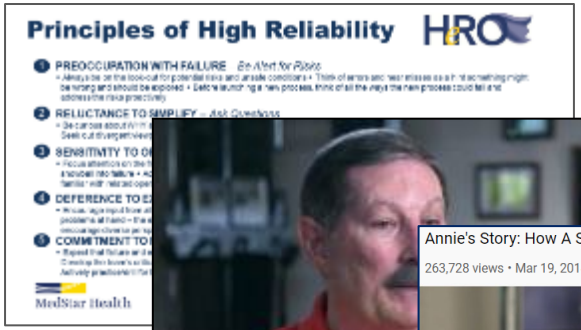
- Safety Scientist – Advanced Degree in Human Factors/Safety Engineering
  - Founded the National Center for Human Factors in Healthcare in 2010
  - Contributed to RCA2 and Candor Toolkits
  - Eisenberg Award 2025
- Emergency Medicine Physician, Professor of Emergency Medicine, Georgetown University
  - 200+ publications/safety in healthcare
- Current Role:
  - Enterprise Leadership for Patient Safety, Clinical Quality, Health Equity, Infection Prevention

About MedStar Health

- Largest Healthcare System in the Washington DC / Baltimore, Maryland Region
  - 10 Hospitals, 400 Outpatient Sites
  - 35,000 Associates, $9.5B Annual Revenue (not for profit)
  - Prioritizes safety, transparency, and learning culture
- Academic Healthcare System: Large research, innovation, and education footprint
  - 2 AMCs (MedStar Georgetown and MedStar Washington Hospital Center)
  - 1100 Residents/Fellows, Close Partnership with Georgetown University

MedStar Health Approach to Safety

- Safety First
- Innovation in Risk Management
  - Open & honest communication
  - Early intervention
- Care for Caregiver
- Just Culture evolution
- Patient & Family Engagement
- Human Factors Integration
  - Safety Science & Systems Approach
  - Discover true risks
  - Effective & sustainable mitigations



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National Center for
Human Factors in Healthcare

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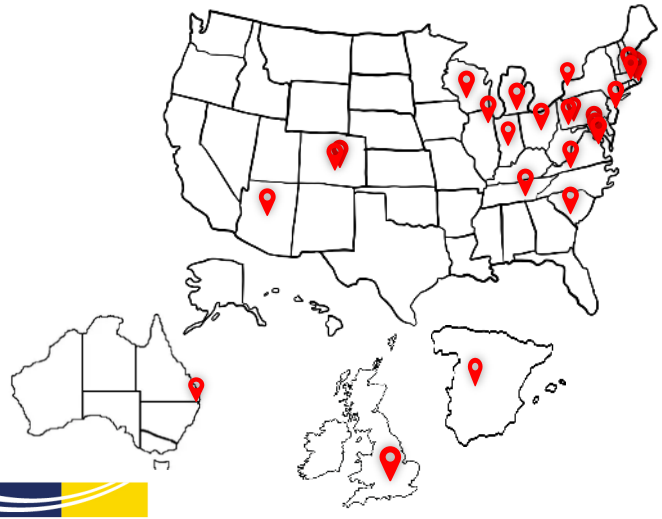
“How can we change the trajectory of safety progress?” *Crowdsourcing Thought Leaders*

30 Safety Expert Interviews + Qualitative Assessment: >70 Comments



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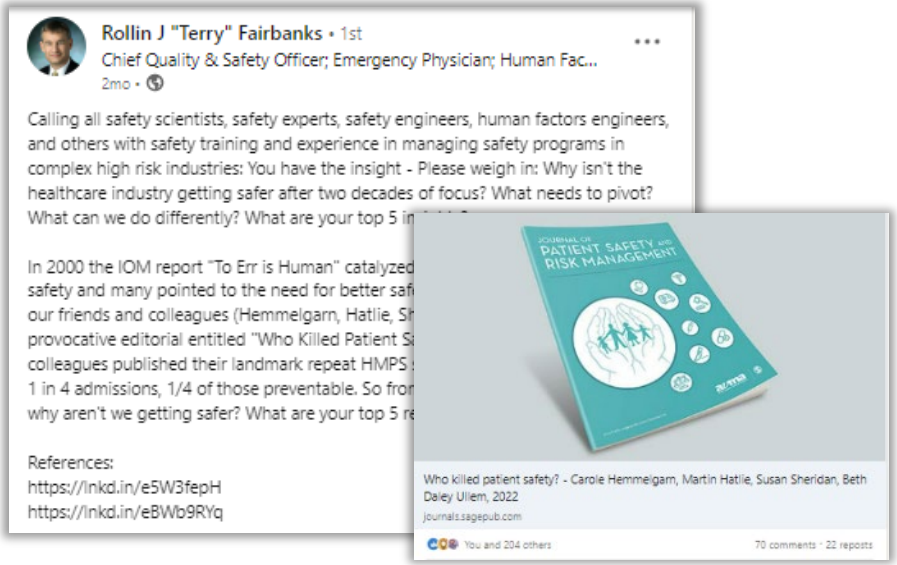

5 Key Takeaways: How Do we Accelerate Improvement in Safety?

1. Avoid the **Conflation of Quality and Safety**
2. Deliberately infuse true **Safety Science**
3. Preempt harm with a **Proactive** focus
4. Prioritize new **Safety Culture** drivers
5. Engage the entire healthcare industry in the **Systems Approach**

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How Do We Define Patient Safety?

Two distinct meanings which require different approaches, skills, training, competencies, and expertise

"How does my care measure up to best practice?"

Quality: (quantitative)

- Degree of excellence measured against an established benchmark.

"Please don't harm me"

Safety:

- Freedom from harm, danger, or risk. (qualitative)

-*To Err is Human, Institute of Medicine, National Academies, 2000*

Institute of Medicine (IOM). Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, D.C: National Academy Press; 2001.

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Quality Competency

CDI

Penalty: Up to 2%	VBP	Reward: Variable
Penalty: 1%	HAC	Reward: None
Penalty: Up to 3%	HRRP	Reward: None

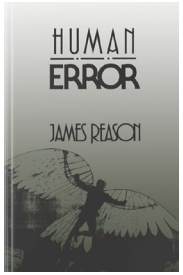
CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

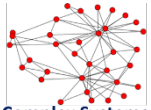
Data Analytics

MedStar Health

Safety Competency

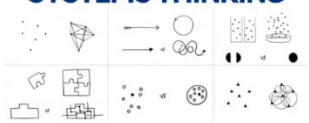
Teamwork Training





Complex Systems Theory

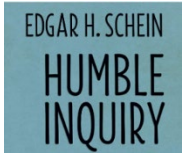
SYSTEMS THINKING



Resilience Engineering

Care for the Caregiver

Open & Honest Communication



Safety Culture

Simulation

CPPS
CERTIFIED PROFESSIONAL IN PATIENT SAFETY

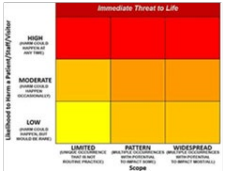
Effective, Durable Risk Mitigation

Human Factors and Ergonomics Society

Event Review

Psychological Safety

Risk Assessment



Just Culture

Cognitive Bias

Human Error Through A Human Factors Lens

Knowledge-Based

Perform the wrong action due to a lack of knowledge. Typically occurs with novices or with experts in a novel situation.

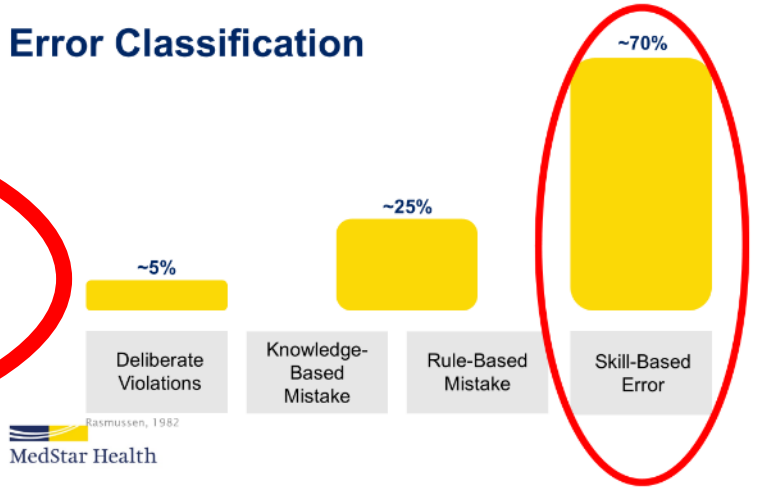
Rule-Based

Perform the wrong action due to a misapplication of rules.

Skill-Based

Occur in familiar tasks that generally require little conscious thought and are highly practiced.

Reason, 1990; Rasmussen & Jensen, 1974; Rasmussen, 1983



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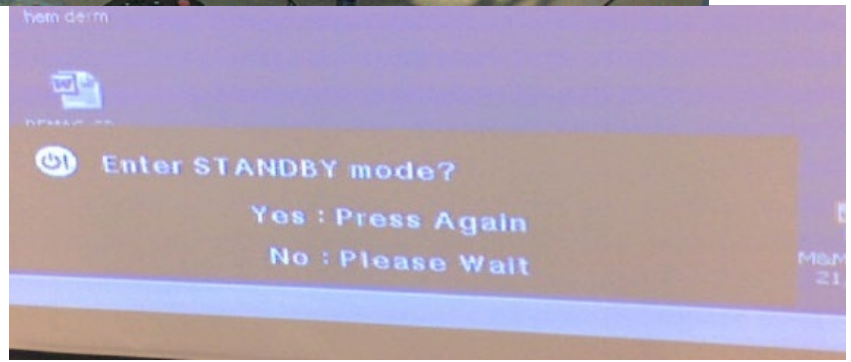

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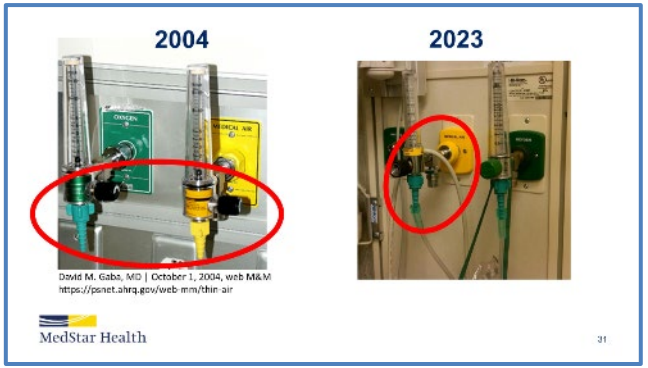
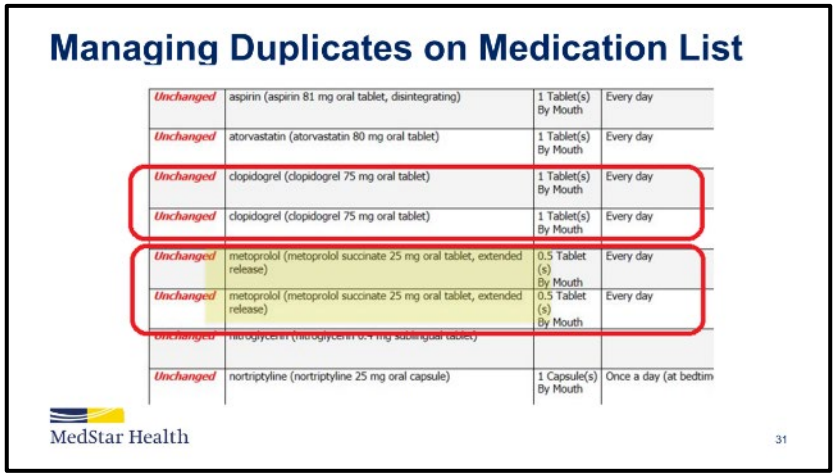
Fairbanks RJ, Caplan SH, Bishop PA, Marks AM, Shah MN. Usability Study of Two Common Defibrillators Reveals Hazards. Annals of Emergency Medicine Oct 2007; 50(4): 424-432.

Fairbanks RJ and Wears RL. Hazards With Medical Devices: the Role of Design. Annals of Emergency Medicine Nov 2008; 52(5): 519-521.


VISA
EXIT
PUSH

“Systems Approach” to Safety





- System
- People
- Process

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Bottom Line

- We must use hazard, risk, and error data
- We must be sophisticated in how we respond
- Encourage and expand collection of data
  - Personally reported, trended, or mined data
- Increased reporting is a positive leading measure
  - We must be careful not to create a disincentive
- Data must be the facilitator of change, not the disincentive to change
- This will take partnership from all

MedStar Health

Thank you.

Rollin J. (Terry) Fairbanks, MD MS
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Professor of Emergency Medicine, Georgetown University
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Terry.Fairbanks

It's how we treat people.

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Session 3: *Improving Patient Safety in Value-Based Care Through the Use of Health Information Technology and Data Analytics*

Tejal Gandhi, MD, MPH, CPPS

Chief Safety and Transformation Officer
Press Ganey Associates LLC

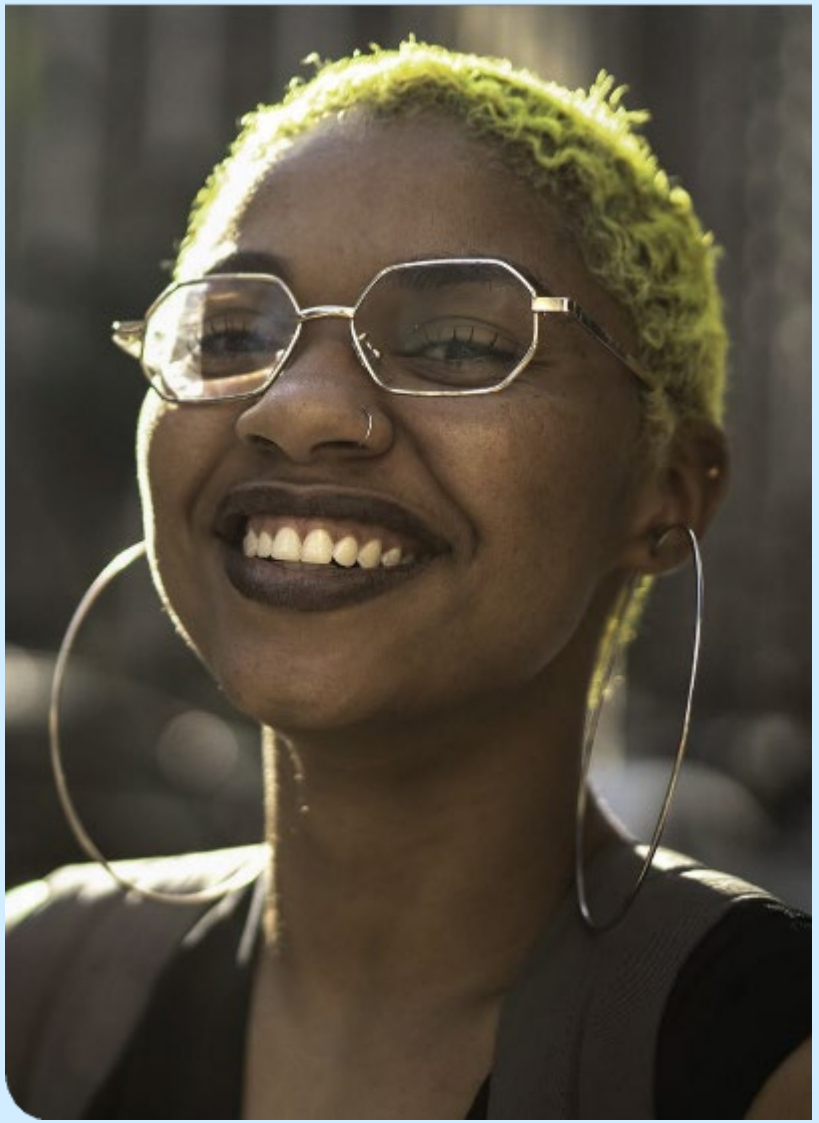
PressGaney

Using Artificial Intelligence to Improve Safety: Risks and Opportunities

PREPARED BY

Tejal Gandhi, MD, MPH, CPPS

Chief Safety and Transformation Officer



Speaker

Tejal Gandhi, MD, MPH, CPPS, is the Chief Safety and Transformation Officer at Press Ganey. In this role, she is responsible for advancing the Zero Harm movement, improving patient and workforce safety, and developing innovative health care transformation strategies. Dr. Gandhi is leading Press Ganey's Patient Safety Organization, the largest in the country.

Before joining Press Ganey, Dr. Gandhi served as Chief Clinical and Safety Officer at the Institute for Healthcare Improvement (IHI), was President and CEO of the National Patient Safety Foundation (NPSF) and Chief Quality Officer at Partners Healthcare (now Mass General Brigham).

Dr. Gandhi has been named as one of the "100 Most Influential People in Healthcare," "Top 25 Women in Healthcare," and "50 Most Influential Clinical Executives" by Modern Healthcare magazine and one of the "Top Patient Safety Experts to Know "and "Top Women in Health IT to Know" by Becker's Hospital Review.

She received her MD and MPH degrees from Harvard Medical School and the Harvard T.H. Chan School of Public Health and trained at Duke University Medical Center.

Questions to ask:

- Is the technology designed to be safe?
- Is the technology being used safely?
- Is the technology implemented safely?
- Can the technology improve patient safety?

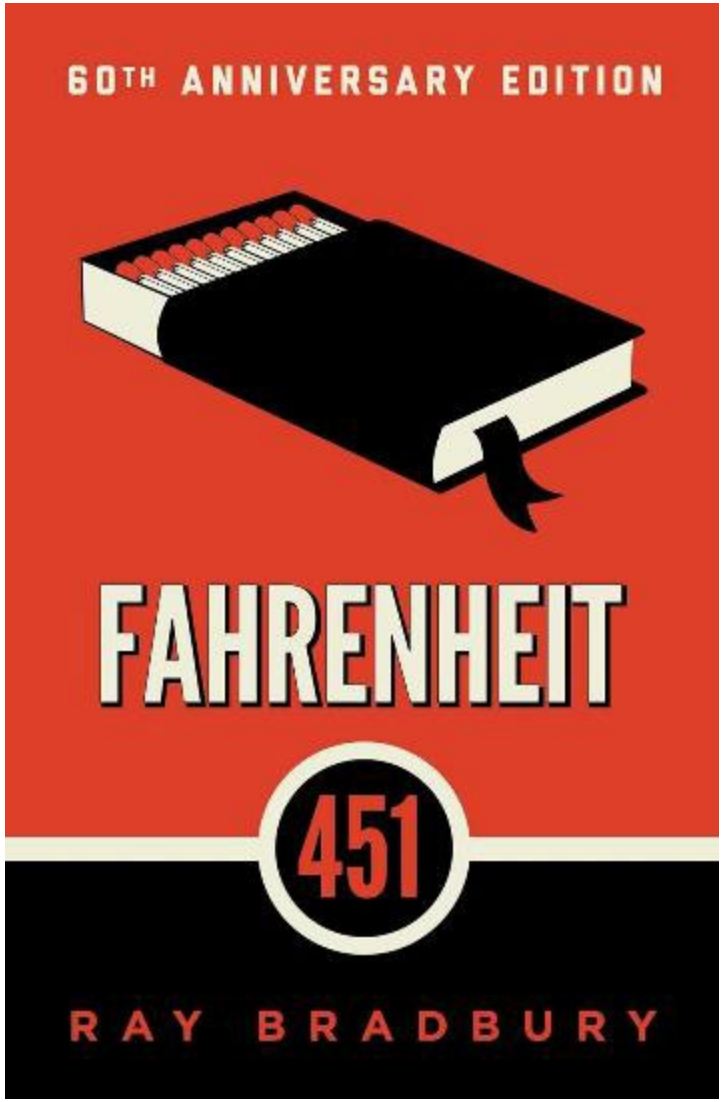
Safety Opportunities for AI

Decrease administrative burden and cognitive load

1. **Diagnosis**
   - Follow-up of test results and referrals/complaints without follow-up
   - Imaging/pathology
   - Synthesizing information in the workflow
2. **Medication Decision Support/Med Reconciliation**
   - Smarter decision support using more robust algorithms
   - Identifying discrepancies
3. **Predicting harm/proactive (patients and workforce)**
   - Early deterioration/early detection/risk prediction (finding high risk situations through a range of data sources)
4. **Measuring harm (patients and workforce)**
   - Triggers
   - Safety event reporting/PSOs
     - Easing burden of reporting by leveraging text to minimize data entry
     - Analyzing to find important trends and helping prioritize
5. **Patient engagement**
   - Identifying safety themes in patient comments
   - Communication tools/Chatbots

The Big Data Problem

There is so much information now in the medical record- every patient has become a big data problem. When you try to do a quick review of a patient's chart, it is like skimming Fahrenheit 451- 45,000 words- which is the median number of words in a record now. And 1 in 5 patients has a record as long as Moby Dick.



JAMIA Open, Volume 7, Issue 2, July 2024, ooae039

AI & Its Role in Patient Safety: Decreasing Cognitive Burden

JAMIA Open, 2023, **6(3)**, ooad079
https://doi.org/10.1093/jamiaopen/ooad079
Perspective

Perspective

How can artificial intelligence decrease cognitive and work burden for front line practitioners?

Tejal K. Gandhi, MD, MPH[1,*], David Classen, MD, MS[2], Christine A. Sinsky, MD[3], David C. Rhew, MD[4], Nikki Vande Garde, BSN[5], Andrew Roberts, PhD[6], Frank Federico, RPh[7]

- Data gathering
- Data synthesis
- Documentation
- Taking appropriate action
- Structure asynchronous activities, outcomes and activities

Table 1. Clinical and cognitive processes potentially impacted by AI.

Function	Description	Example
Data gathering.	AI-based tools such as natural language processing (NLP), large language models, and image recognition can help clinicians comb through large volumes of information sources and discrete or unstructured data to help locate, identify, and surface the most relevant pieces of information, as well as missing information, to reduce cognitive and work burden on clinicians.	*Data gathering*: Using NLP, clinicians can more efficiently search genomic and clinical trial databases, medical literature, and other sources of information to rapidly identify recommended treatments specific to cancer patients. *Data gathering and synthesis*: Solutions identify and compile both structured and unstructured EHR data and present that information to the provider to identify potential missing diagnoses, diagnoses that lack specificity, and documented diagnoses that lack clinical evidence. Presenting this information directly to providers within their workflow eliminates the need to address manual queries hours, days, or weeks later; thus, reducing the cognitive burden on the provider.
Data synthesis. rapidly collect, organize, manage, and making sense of the datasets from clinical assessments, physiologic observations, and documentation.	AI may be used to help support a new clinical workflow (eg, command center; rapid response team) or to improve an existing one (eg, prioritize existing care management outreach based on risk)	*Data gathering and synthesis*: The future of healthcare includes the use of wearable devices and remote monitoring which will present clinicians with an overwhelming amount of information to sift through to make a clinical decision. AI can help filter through data, identifying critical data points or information that may indicate a change in a patient's condition or sudden deterioration. AI can also suggest treatments based on scientific evidence, as well as offer customization based on the patient's condition, ability to adhere to treatment, and personal desires.
Documentation.	AI may be used to create or enter a summary of or provide specific details regarding a patient encounter into an EHR or other system of record using technology. AI can help simplify the billing documentation process, and generative AI can help reduce documentation burden.	*Documentation*: Ambient clinical intelligence (ACI) allows patients and clinicians to engage in conversation without the clinician needing to focus his/her time on a keyboard or screen. When used in ACI, AI helps identify the speaker, uses NLP to convert the voice conversation into text, maps the medical terms and phrases to standardized nomenclatures, and organizes the conversation into a properly formatted clinical note, that can then be reviewed by the clinician for accuracy and relevance. Once finalized, the note is integrated into the EHR. Voice can also be leveraged to navigate and act within the EHR.
Taking appropriate action.	AI can provide decision support, prediction tools, targeted outreach, and guidance in response to signals or deploy an "intelligent" command center to help manage populations	*Data gathering, synthesis and taking action*: In 2018, Ochsner Health System (New Orleans, LA) leveraged a pilot program to redesign care models at several campuses to include virtual nursing.[14,15] With trained clinicians working from remote command centers or virtual bunkers, there is opportunity to leverage AI to remove interruptions for nurses and physicians at the patient's bedside, and to centralize AI and ML model monitoring and management while allowing associated interventions to continue to be carried out at the bedside. *Taking action*: Clinical decision support, particularly related to medication prescribing, has been plagued with issues related to over-alerting, contributing to cognitive burden. In a recent study, researchers at one academic medical center found that ML techniques could enable intelligent filtering of medication alerts and reduce alert volume by 54%.[16]
Structure asynchronous activities, outcomes and activities.	The care team's clinical and operational activities, including patient rounds and communication, are unstructured and asynchronous. AI can help manage coordination and synthesis of the information for updates and the next best course of action.	*Data gathering, synthesis and taking action*: A computer assisted management program for antibiotics and other anti-infective agents showed improved patient and antibiotic outcomes.[17]

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AI & its role in patient safety: Specific Safety Issues

npj | Digital Medicine

www.nature.com/npjdigitalmed

REVIEW ARTICLE OPEN

Check for updates

The potential of artificial intelligence to improve patient safety: a scoping review

David W. Bates[1,2,3✉], David Levine[1,2], Ania Syrowatka[1,2], Masha Kuznetsova[4], Kelly Jean Thomas Craig[5], Angela Rui[1], Gretchen Purcell Jackson[5,6] and Kyu Rhee[5]

Majority of use cases are prediction models- ADEs, sepsis, falls, pressure injuries, surgical complications, decompensation; key to tie into workflow and action

Table 3. Evaluation of the potential of artificial intelligence to improve patient safety in the eight harm domains.

Patient safety domain	Likelihood of impact
Healthcare-associated infections	AI may have a moderate impact on the reduction of HAIs given that current evidence-based practices are already effective when applied well.
Adverse drug events	AI can play a major role in ADE prevention. As more patients at risk of ADEs are accurately identified before a medication is administered or prescribed, a greater proportion of these events will become preventable. However, a key challenge lies in the lack of integrated high-quality datasets in which ADEs have been accurately captured. A variety of automated approaches have been effective at identifying patients likely to have experienced an ADE, but typically clinician adjudication is still required. ML could also help identify patients who may benefit from additional testing for specific single nucleotide polymorphisms to guide optimal drug therapy. These methods may also help to identify signals from the remainder of the genome beyond single nucleotide polymorphisms which may have prognostic impact.
Venous thromboembolism	We believe that AI will have a moderate effect on the reduction of VTE, as current evidence-based preventive strategies are already effective. AI solutions could provide further insights by identifying patients who could benefit from diagnostic testing for inherited thrombotic disorders to inform management of their condition.
Surgical complications	AI can be expected to have a moderate impact on the prediction and prevention of surgical complications both in the operating room and during recovery. Most complications felt to be preventable today are related to delayed diagnoses or intervention, technical issues, and infections. Given the overlap with other harm domains, focusing on advances in these other areas will likely also improve surgical safety.
Pressure ulcers	Pressure ulcers represent an attractive target with moderate to high potential for AI to prevent harm. Novel data sources such as motion and fluid sensors are now available, and large numbers of traditional clinical variables can be combined with the sensing data to predict who is at risk to guide evidence-based prevention.
Falls	AI is anticipated to have a moderate impact on fall prevention, given that this area has already received substantial attention and current risk mitigation strategies are effective. As with pressure ulcers, clinical data combined with sensing data can be used to predict when falls may occur, and which ones are likely to be associated with the most harm.
Decompensation	Leveraging novel data sources and AI has high potential to improve the prediction of decompensation to guide preventive strategies as well as early intervention to mitigate the impacts including premature death, given that current approaches are not effective. Given the serious nature of these events, preventing decompensation is a particularly attractive target. ML can deeply analyze data, beyond the standard values of heart rate or heart rate variability and will be critical to improving detection of decompensation and subsequent intervention.
Diagnostic errors	Diagnostic error is the most complex of the eight harm domains with vast opportunities for improvement using novel data sources and AI. ML could help to reduce the frequency of diagnostic errors by leveraging pattern recognition, bias minimization, and infinite capacity, areas where diagnosticians often falter. Although this area has garnered a lot of attention, many outstanding challenges remain, and current solutions only address a small fraction of what is possible. Most crucial to constructing valuable ML algorithms that help to reduce diagnostic error is the availability of large databases that accurately report errors.

ADE adverse drug event, *AI* artificial intelligence, *HAI* healthcare-associated infection, *ML* machine learning, *VTE* venous thromboembolism.

NEJM Catalyst | Innovations in Care Delivery

COMMENTARY

Ambient Artificial Intelligence Scribes to Alleviate the Burden of Clinical Documentation

Aaron A. Tierney, PhD, Gregg Gayre, MD, Brian Hoberman, MD, MBA, Britt Mattern, MBA, Manuel Ballesca, MD, Patricia Kipnis, PhD, Vincent Liu, MD, MS, Kristine Lee, MD

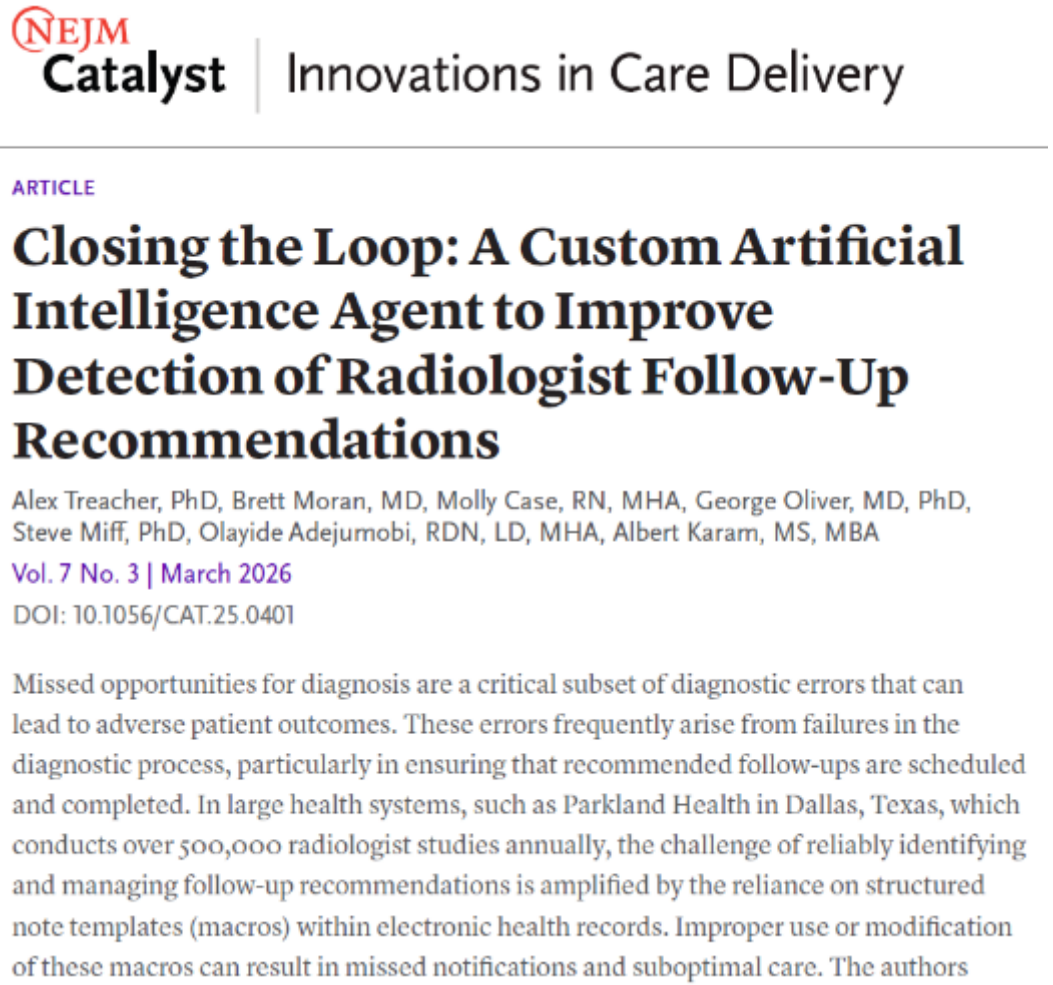
Vol. 5 No. 3 | March 2024

DOI: 10.1056/CAT.23.0404

Clinical documentation in the electronic health record (EHR) has become increasingly burdensome for physicians and is a major driver of clinician burnout and dissatisfaction. Time dedicated to clerical activities and data entry during patient encounters also negatively affects the patient–physician relationship by hampering effective and empathetic communication and care. Ambient artificial intelligence (AI) scribes, which

Significantly larger decrease in time spent in the EHR outside 7 a.m. to 7 p.m. among users starting to use the ambient AI scribe than among those who did not use the tool

PressGaney



NEJM Catalyst | Innovations in Care Delivery

ARTICLE

Closing the Loop: A Custom Artificial Intelligence Agent to Improve Detection of Radiologist Follow-Up Recommendations

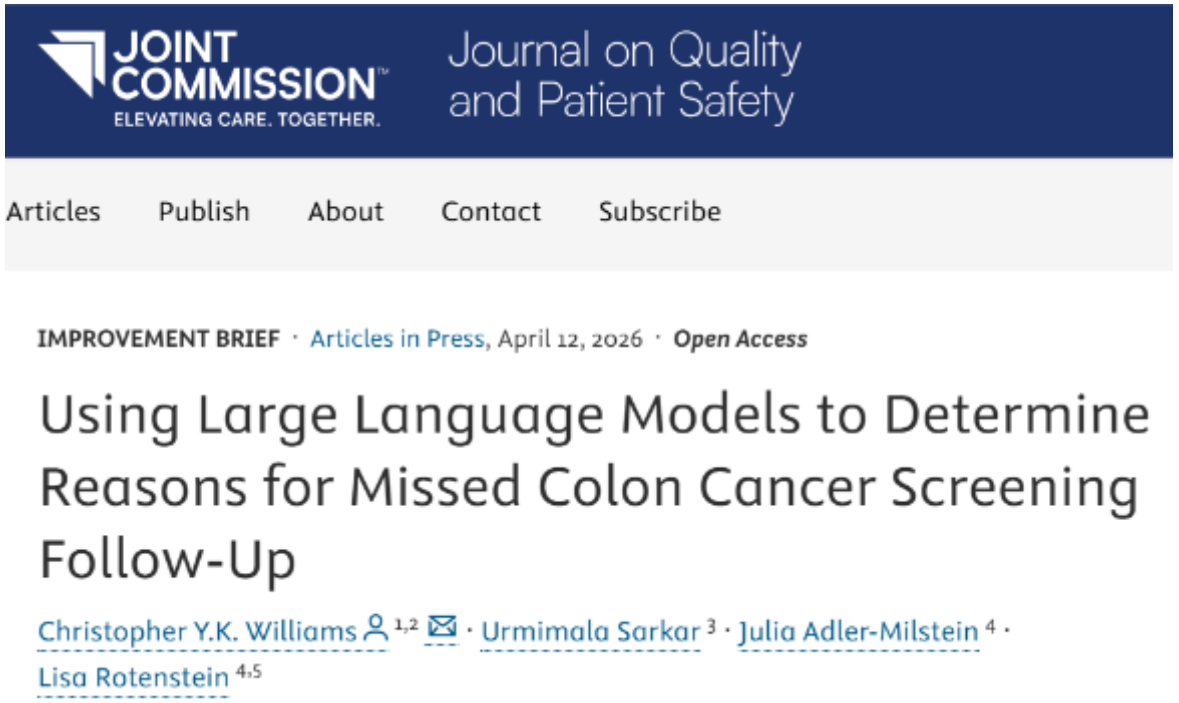
Alex Treacher, PhD, Brett Moran, MD, Molly Case, RN, MHA, George Oliver, MD, PhD, Steve Miff, PhD, Olayide Adejumobi, RDN, LD, MHA, Albert Karam, MS, MBA

Vol. 7 No. 3 | March 2026
DOI: 10.1056/CAT.25.0401

Missed opportunities for diagnosis are a critical subset of diagnostic errors that can lead to adverse patient outcomes. These errors frequently arise from failures in the diagnostic process, particularly in ensuring that recommended follow-ups are scheduled and completed. In large health systems, such as Parkland Health in Dallas, Texas, which conducts over 500,000 radiologist studies annually, the challenge of reliably identifying and managing follow-up recommendations is amplified by the reliance on structured note templates (macros) within electronic health records. Improper use or modification of these macros can result in missed notifications and suboptimal care. The authors

This approach enabled the digital health team to more reliably identify patients in need of follow-up and improved the integration of actionable findings into patient outreach workflows. Implementation of an AI agent as an additional safety net significantly improved the identification of missed diagnostic opportunities in radiologist notes and accurately extracted key details that aid in patient outreach and scheduling.

AI for Quality Improvement



CONCLUSION:

- In this proof-of-concept study of 846 patients who did not have a follow-up colonoscopy within 90 days of an abnormal FIT/FOBT, we found that an LLM can both identify whether reasons for a lack of follow-up colonoscopy are documented in patients' clinical notes and accurately classify those reasons into clinically meaningful categories. These results suggest the potential ability of LLMs to facilitate chart review and inform quality improvement efforts at scale. Future studies should investigate the application of LLMs to further characterize gaps in care and the reasons behind those gaps.

Never shall a patient concern go unheard

Ensure every opportunity for patients and families to share – and to feel comfortable sharing – their questions and concerns

During Encounter – Prevent/Resolve

Prompted Inquiry

- Conclusion of office visit
- Nurse leader rounding
- Intentional rounding
- Every care provider touch point

Patient Initiated

- At start of encounter, “Let us know if…”
- Patient direct entry

Post Encounter – Resolve/Remediate

Prompted Inquiry

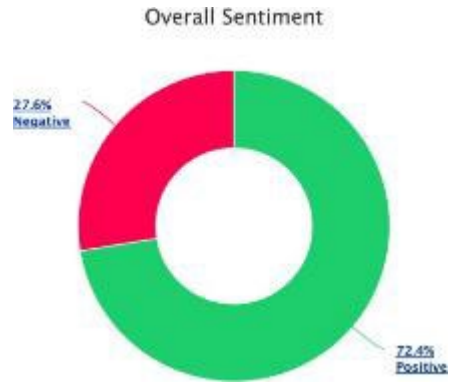
- Post-visit/discharge call
- Patient experience survey
- Focus groups

Patient Initiated

- Patient portal entry
- Consumer websites

Learning From What Patients Say About Safety

- Experience surveys show the patient's perspective, including the safety of care delivered.
- AI-enabled insights show what is safe and what is unsafe care in patients' words.



In a database of **1 million** AI-enabled insights into inpatient care experiences, patients comment on **safety** in **7,000 insights**.

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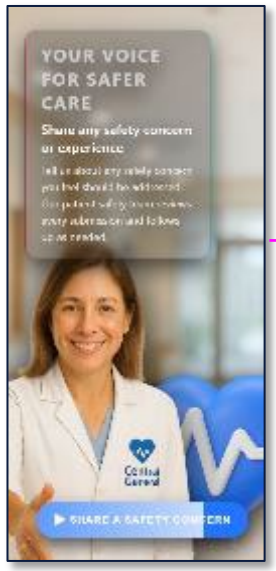
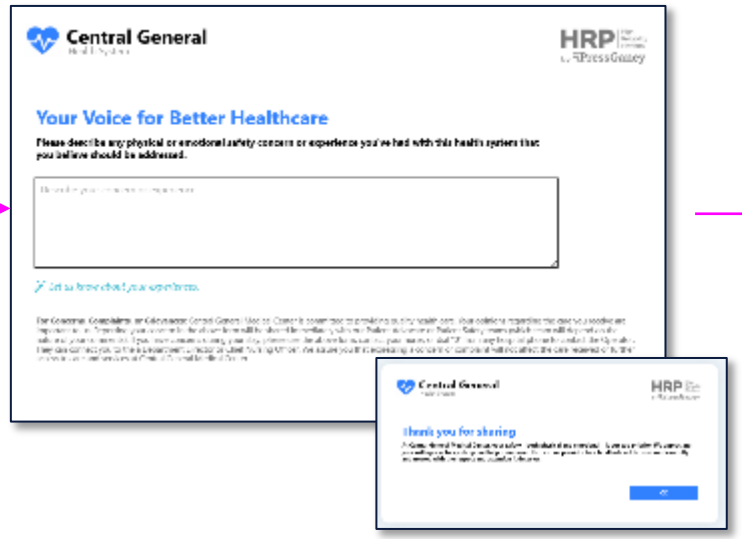
AI: Direct Patient Feedback for Safety

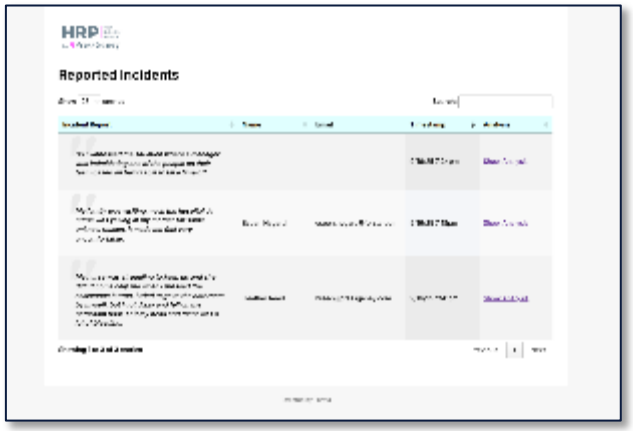
Patient feedback triggers cases in Press Ganey High Reliability Platform informed by AI



Mobile view



Patient view



Safety leader view

Safety leader view

What to worry about

Problem	Example
Design	• Black box • Bias in data/bad data • Perpetuating inaccurate information in the EHR (falsehood mimicry) • Hallucinations/complete the narrative errors • Sycophancy bias • Variability (LLMs are probabilistic) • Other unintended consequences
Implementation/Use of Findings	• Patients using AI generated medical advice and experiencing harm • Bias in how used • Generalizability • Drift in how used • Decay in algorithm accuracy • Inequitable access/widening gaps • Depersonalized care/patient concerns
Cognition Distraction De-skilling/automation bias/induced belief revision Re-skilling	• Too much attention to computer monitors and smart-phones, and not • enough to patients and colleagues • AI does not say patient is deteriorating- do we ignore clinical intuition? • What new teaching and competencies do clinicians need?

PressGaney

CASE STUDY

Cognitive Biases and Artificial Intelligence

Authors: Jonathan Wang, M.M.A.Sc. , and Donald A. Redelmeier, M.D., F.R.C.P.C., M.S.H.S.R., F.A.C.P. Author Info & Affiliations

Published November 27, 2024 | NEJM AI 2024;1(12) | DOI: 10.1056/AIcs2400639
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Abstract

Generative artificial intelligence (AI) models are increasingly utilized for medical applications. We tested whether such models are prone to human-like cognitive biases when offering medical recommendations. We explored the performance of OpenAI generative pretrained transformer (GPT)-4 and Google Gemini-1.0-Pro with clinical cases that involved 10 cognitive biases and system prompts that created synthetic clinician respondents. Medical

"We suggest that generative AI models display human-like cognitive biases and that the magnitude of bias can be larger than observed in practicing clinicians."

PressGaney

npj | digital medicine

Article

Published in partnership with Seoul National University Bundang Hospital

https://doi.org/10.1038/s41746-025-01586-2

Opportunities and risks of artificial intelligence in patient portal messaging in primary care

Joshua M. Biro[1] ✉, Jessica L. Handley[1], J. Malcolm McCurry[2], Adam Visconti[3], Jeffrey Weinfeld[3], J. Gregory Trafton[2] & Raj M. Ratwani[1,4]

The rapid increase in patient portal messaging has heightened the workload for primary care physicians (PCPs), contributing to burnout. The use of generative artificial intelligence (AI) to draft responses to patient messages has shown promise in reducing cognitive burden, yet there is still much unknown about the safety and perceptions of using AI drafts. This cross-sectional simulation study assessed whether PCPs could identify and correct errors in AI-generated draft responses to patient portal messages. Twenty practicing PCPs reviewed 18 patient portal messages, four of which contained errors categorized as objective inaccuracies or potentially harmful omissions. Each error was insufficiently addressed by 13–15 participants, and 35–45% of erroneous drafts were submitted entirely unedited. While 80% of participants agreed AI drafts reduced cognitive workload and 75% found them safe, uncorrected errors highlight patient safety risks, underscoring the need for improved design, training, and error-detection mechanisms for AI tools.

NEJM AI

PERSPECTIVE

The Burden of Reviewing LLM-Generated Content

Authors: Joshua W. Ohde, Ph.D. , Lauren M. Rost, Ph.D., M.S. , and Joshua D. Overgaard, M.D.
Author Info & Affiliations

Published January 13, 2025 | NEJM AI 2025;2(2) | DOI: 10.1056/AIp2400979 | VOL. 2 NO. 2

Abstract

Large language models (LLMs) in health care aim to reduce the cognitive and administrative burden for health care professionals. Yet

Further study on the use of LLMs to generate clinical documentation or clinical communication should consider the cognitive impact of proofreading and the increased accountability of physicians.

Ohde, Joshua & Rost, Lauren & Overgaard, Joshua. (2025). The Burden of Reviewing LLM-Generated Content. NEJM AI. 2. 10.1056/AIp2400979.

PressGaney

Going Forward: Detect Risk, Act On It, and Close the Loop

- Incentivize adoption of tools that augment safety across a broader range of safety process and outcome gaps
  - AI tools for test result management, med reconciliation, adverse event detection, patient-reported safety concerns
  - Prior experience with this: P4P for barcode adoption, decision support, smart pumps
- Metrics to ensure safety improvement across process and outcome measures
  - E.g, % of clinically important tasks that are completed, predictive alerts that result in meaningful action
  - E.g, time to action
- AI/LLMs for proactive risk identification and mitigation
  - Measures of risk prediction with appropriate response
- Metrics to evaluate clinician experience with technology
  - Measures of cognitive burden
  - Override rates/over-alerting
  - Inbox load/documentation time
- Balancing measures to monitor for unintended consequences

Session 3: *Improving Patient Safety in Value-Based Care Through the Use of Health Information Technology and Data Analytics*

Melissa Swanfeldt

Senior Director, Quality & Regulatory Compliance
MEDITECH

MEDITECH

Improving the System Around the Care Team:

Technology Opportunities for Patient Safety

PTAC: June 15, 2026

Melissa Swanfeldt
Senior Director, Quality and Regulatory Compliance

EHR Technologies Supporting Patient Safety

Decision Support (CDS)

Real-time alerts for drug interactions, allergies, and evidence-based clinical guidance.

CPOE Systems

Eliminating handwriting errors via Computerized Provider Order Entry for meds and labs.

Telehealth Technologies

Expanding access to care while monitoring patient safety remotely through virtual visits.

Interoperability

Seamless data exchange to prevent information gaps during transitions of care.

Surveillance/Predictive Analytics

Early identification of high-risk patients for sepsis, falls, or readmission.

Patient Portals

Engaging patients in safety by allowing them to verify records and track history.

System-Level Contributors to Patient Safety Events

- Disrupted workflows
- Alert Fatigue
- Cognitive overload
- Fragmented patient history
- Communication gaps
- Process variability
- Labor shortages
- Delayed recognition of risk
- Lack of patient engagement

Improving the System *Around the Care Team*

- Identify Risk Early
- Standardize Care Quality
- Reduce Burden
- Support Decision-making
- Improve Communication and Engagement
- Personalize care

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Data in Abundance

30%

of the world's data is generated by the healthcare industry...

97% goes unused

80%

of the healthcare data is unstructured

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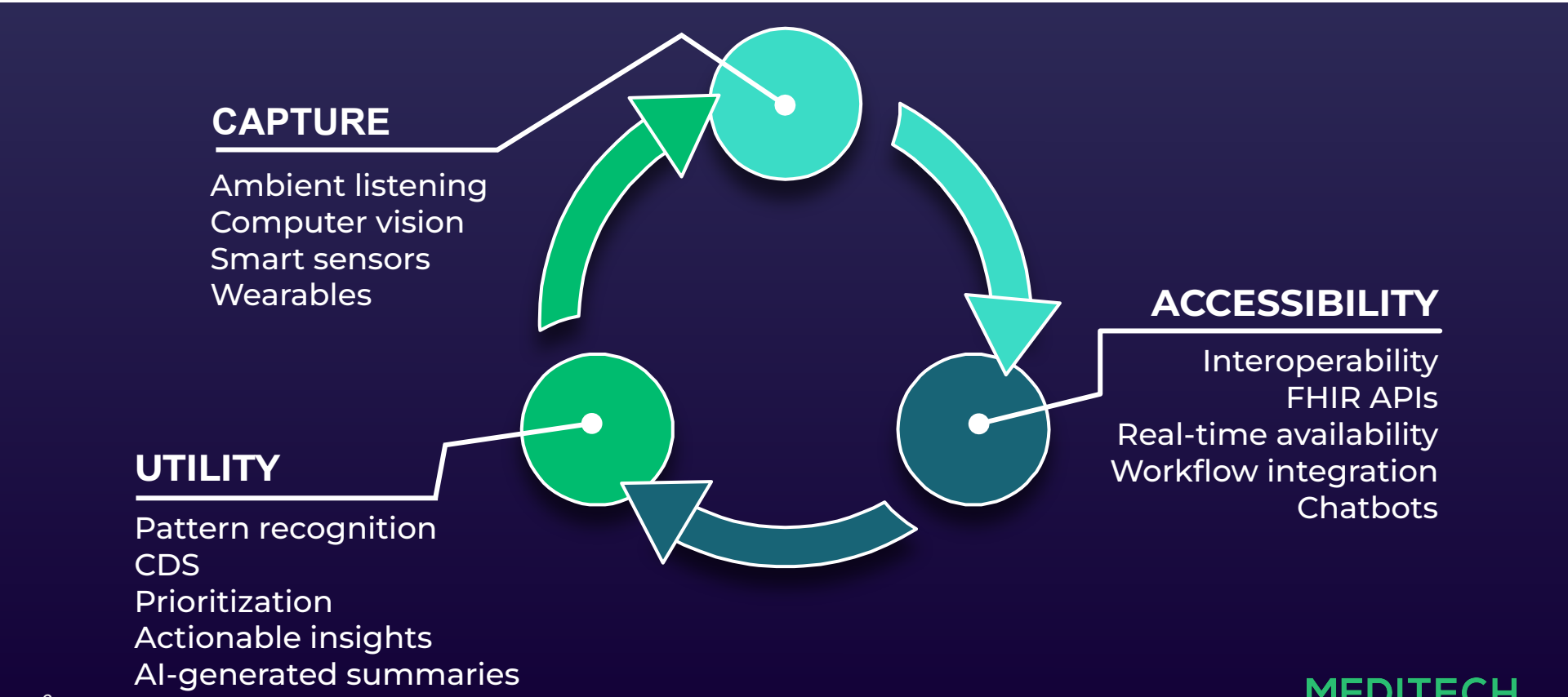
Improving the *Data Life Cycle*



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CDS and EHR-supported Protocol Standardization:
Impact on Clinical Outcomes

Reduce CAUTI Rates

North Country Healthcare, NH

- Improve tracking of indwelling urinary catheters, central and PICC lines
- Zero instances of CAUTI for over 8 months after initiative
- 100% compliance in CAUTI documentation
- Reduce report generation time from 50 hours to <4

Decrease Unnecessary Cultures

Southern Ohio Medical Center, OH

- CDS ensures specific criteria met
- 29% decrease in acute setting orders

Enhance Patient Engagement

Nathan Littauer, NY

- Smart messaging & translation
- 25% decrease in no-shows
- 70% increase in pre-registration portal views

Expedite DKA Resolution

Appalachian Regional Healthcare

- Nurse-driven protocol, evidence-based
- Reduces resolution time by 25%
- Simultaneously treats electrolyte imbalance, reducing hypokalemia events

Reduce C Diff Rates

Southern Ohio Medical Center, OH

- System automation of screening process to differentiate between active infection and colonization
- 30% relative reduction in hospital-acquired CDI

Care Journey Points Where Data Could Be Better Leveraged

Pre-visit, Admission/Intake

- Longitudinal history
- Problems, meds
- Recent utilization
- SDOH factors
- Advance directives

Monitoring

- Prior nursing assessments
- VS, lab trends
- PGHD

Care Transfers

- Pending tests, tasks
- Medication changes
- Active issues Safety
- risks Anticipated
- needs

Outreach, Follow-Up, Education

- Recent utilization Risk
- scores
- Patient-reported concerns/barriers

- AI-generated summaries
- Intelligent searches
- Chatbots
- Virtual nursing

- Predictive scores
- AI-enabled CDS
- Wearables, sensors
- Ambient listening
- Surveillance alerts

- AI-generated handoff summaries
- Predictive scores

- Telehealth
- RPM
- AI-generated messages
- Language translation

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AI's *Potential*

- Reduce cognitive burden
- Support direct care
- Save time
- Facilitate quality reviews

87% **GenAI-Assisted Hospital Course Summary**
of users reported a **reduction in cognitive load** for discharge documentation.

20-30%
Reduction on documentation time and administrative tasks using Ambient Listening Tools

AI Search & Summarization for Infection Control

Saving ~40 hrs/mo

Reviews that took hours or days are now **completed in 15 minutes.**

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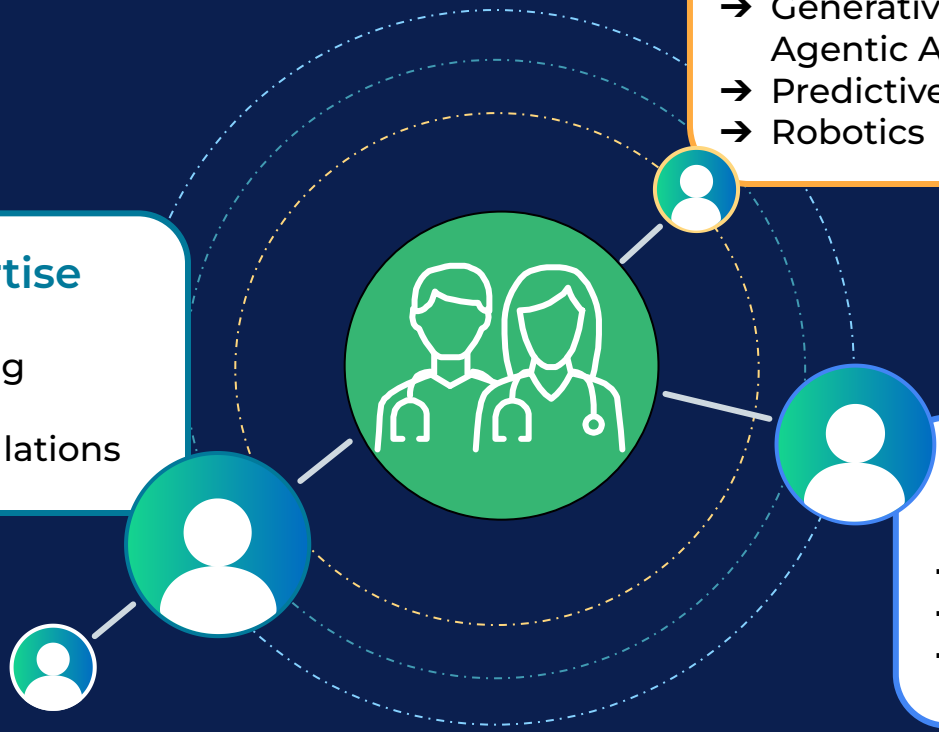
Technology as a *Clinician Force Multiplier*

Reclaim Capacity

- Ambient Listening
- Generative and Agentic AI
- Predictive Scheduling
- Robotics

Extend Expertise

- Virtual Nursing
- Telehealth
- Training Simulations



Augment Intuition

- AI-enabled CDS
- Risk Prediction
- Wearables & Sensors

Establishing Guardrails for *Responsible AI* in Healthcare

TRUST & TRANSPARENCY

- Disclosure when AI is used in clinical care
- Established processes for obtaining patient consent
- Explainability standards
- Standardized, plain language model cards
- Privacy compliance for PHI/PII protection

BIAS & EQUITY

- Formal bias testing across diverse populations
- Prioritize high-quality, representative training data
- Democratized access to AI

RISK MANAGEMENT

- Vulnerability testing and security safeguards
- Life cycle-based risk assessment
- Continuous monitoring of deployed solutions

HUMAN AUTONOMY

- AI cannot replace human clinical judgment
- Preserve right to override AI decisions
- Human-in-the-loop (HITL)

REGULATORY ALIGNMENT

- Unified model aligned with strictest state laws
- Risk-based approach
- Clear liability and indemnity frameworks

Funding & Regulatory Considerations for *Safety & Innovation*

CHRONIC CARE MANAGEMENT

Continued Investment into Tech Driven Solutions for Chronic Care Management

AI & EHR INFRASTRUCTURE

Investment in AI and EHR upgrades that support safety initiatives

GOVERNANCE INCENTIVES

Financial incentives for organizations meeting high safety governance standards

REGULATORY COLLABORATION

Cross-agency collaboration to balance regulatory requirements with technology adoption (e.g., FDA/CMS coordination on Sepsis CDS and Quality Measures))

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Thank You!

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Session 3: *Improving Patient Safety in Value-Based Care Through the Use of Health Information Technology and Data Analytics*

Aneesh Chopra, MPP

Chair, Arcadia Institute

PTAC Patient Safety Session:

Improving Patient Safety in Value-Based Care Through the Use of HIT and Data Analytics

Aneesh Chopra
@aneeshchopra

Widening the Aperture: A Safer Journey?

To Err Is Human · *IOM, 1999*

44,000 – 98,000
preventable deaths per year in U.S. hospitals

- **Focused the lens on the hospital:** IOM defined preventable harm as a systemic failure, not individual error — placing acute care at the center of the safety agenda.
- **ACOs answered part of the call:** ACOs absorbed care coordination, readmission reduction, and post-acute follow-up — extending the safety perimeter beyond the hospital wall.
- **But the aperture remained narrow:** FFS incentives kept safety accountability inside the facility. Ambulatory failures, diagnostic gaps, and cross-site medication errors remained largely invisible.

PCAST Report on Patient Safety · *2023*

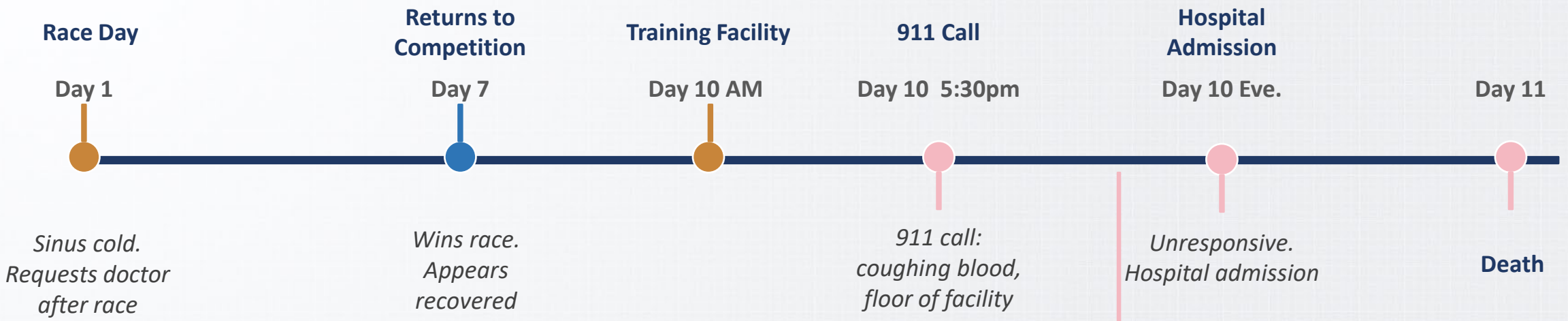
~250,000
deaths annually from medical error — now the 3rd leading cause of death

- **25 years later, the problem is larger:** PCAST found patient safety has not materially improved since IOM — harm now extends into ambulatory, post-acute, and home settings.
- **Data infrastructure remains the missing link:** Fragmented records, broken care transitions, and the absence of longitudinal patient identity mean errors repeat because no one sees the full picture.
- **PCAST called for national leadership:** The report urged the Administration to treat patient safety as a federal priority — emphasizing accountability and system incentives for preventing harm.

How might safety measurement shift from episodic, facility-based measurement towards longitudinal patient care?

CareJourney

A Sepsis Patient's (Measurement) Journey



SEP-1	✗ **Invisible to SEP-1**	Hospital only — bundle compliance during final admission
Community—Onset Sepsis eCQM	✗ **Pre-admission trajectory invisible**	Hospital admission + 30-day mortality via Medicare claims linkage
Safety Learning Network	Full trajectory: ambulatory symptoms → EMS contact → admission → outcome · Patient as the authorized aggregator	

What Current Measures Miss

SEP-1 and the proposed community-onset eCQM both start their clock at hospital admission. **The 11-day ambulatory deterioration trajectory — the race-day radio call, the progressive cough, the 911 call — is invisible to every current measure.** A learning network with permission to aggregate and use patient data is the best architecture that can see it.

† *Illustrative — based on a recent, publicly reported case. Presented to illustrate a systemic gap in patient safety measurement*

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A Unified Data Model (Decade in the Making)

Networks, Providers, EHRs, Payers (July 4, 2026)

Technical and Operational Expectations for Aligned Networks FHIR API

- Networks must provide or facilitate access to data using FHIR APIs for:
  - Patients (without additional login burdens)
  - Providers attesting to a treatment relationship AND active on the NDH
  - Payers for paid claims within 60 days of a request, or for closing HEDIS gaps
- Networks must enable patient access to audit logs, share consent preferences
- Networks must support USCDI v3 (Terminology mapping, documents)
- Networks must support modern identity standards (IAL2, MDL, passkey)
- Networks should leverage FHIR Bulk Data standards

Record Location & Directory Participation

- Support Record Location Services accessible by all parties
- Share NPI-level participants and relevant endpoints for the CMS Directory

Reporting & Certification

- Provide metrics to CMS
- HITRUST certification required

1 **Consumer Right of Access**

2 **Verified Provider Access**

3 **Limited Payer Access**

The "Heart" of the Cures Act: "The way I interpret the law, the only way to have 'no special effort' is by achieving substitutability through an open, standard API."
– Dr. Ken Mandl (Politico, 7/17)

Source: https://www.cms.gov/files/document/discretion-x12-278-enforcement-guidance-letter-remediated-2024-02-28.pdf; https://www.politico.com/story/2017/07/24/open-apis-a-nerdy-phrase-with-big-meaning-for-health-care-240897; https://qpp.cms.gov/developers

CareJourney

Data Sharing Reduces Measure Burden

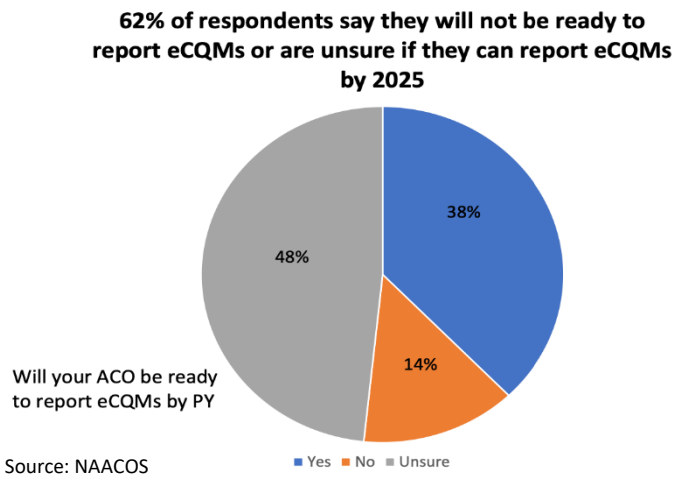
Generation 1

eCQMs

Where logic lives: Embedded inside each EHR system

The failure mode: Works on data tagged correctly in that system — silent miss if patient was seen elsewhere or underlying data not properly tagged

Safety signal: Hospital-centric; transitions, ambulatory gaps, and cross-site drug interactions are invisible



Source: NAACOS

Generation 2

Digital Quality Measures

Where logic lives: In a portable CQL specification that travels to the ACO's data pool

What changes: Measure fires on pooled clinical + claims data — complete patient, not a fragment

ACO role: The data assembly layer — certified logic on their own longitudinal record

Safety signal: Care transitions become visible; cross-site medication conflicts can be detected

Generation 3 · Emerging

COIN

How it works: A reasoning agent on the provider side negotiates with a payer-side agent — they agree a measure is met

Why it's different: No rigid pre-specified logic. Agents adapt, resolve data gaps, and self-heal — like a coordinator who never loses paperwork

Safety implication: Quality logic moves to the patient's longitudinal record; enables real time clinical decision support


NEJM AI

CASE STUDY

Large Language Models for More Efficient Reporting of Hospital Quality Measures

Authors: Aaron Boussina, Ph.D., Rishivardhan Krishnamoorthy, M.S., Kimberly Quintero, R.N., M.S., Shreyansh Joshi, Gabriel Wardi, M.D., Hayden Pour, M.S., Nicholas Hilbert, R.N., M.S.N., +6, and Shamim Nemati, Ph.D. Author Info & Affiliations

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Source: https://ai.nejm.org/doi/abs/10.1056/AIcs2400420

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Making Use Meaningful

Health Systems and Providers

Connect to Networks & "Kill the Clipboard"

COMPANY PLEDGE: We pledge to participate in a CMS Aligned Network and work collaboratively to enable the CMS Interoperability Framework goals together. We believe in a future where seamless care coordination and data-sharing for the patients' needs are the norm, not the exception and commit to ensuring our patients' health data is accessible wherever and whenever it's needed for the benefit of the patient.

AND

We pledge to "kill the clipboard" by enabling our systems to accept inbound patient data via QR codes or Smart Health Cards/Links using FHIR bundles and, where possible, return visit records to the patient in the same format. We commit to making it easy for patients and providers to exchange information securely and efficiently without requiring the patient to recall and repeatedly write out their medical history. We are committed to eliminating the clipboard, one encounter at a time.

Early Adopters

- Amazon
- AtlantiCare
- Bon Secours Mercy Health
- Cleveland Clinic
- CVS Health
- Froedtert ThedaCare Health Inc.
- Intermountain Health
- Providence
- Sanford Health
- Tennessee Oncology
- UnitedHealth Group

The Policy Scaling Flywheel

All authority exists in current law

Stage 1 **Early Adopters Prove Value**
HTE orgs solve problems through testing emerging standards, demonstrate payers, providers & patients can share data

↓

Stage 2 **ONC / CMS Standardize**
Certification can scale upon "evidence of industry adoption"; CMS can expand CoP; HHS can enforce "information blocking"

↓

Stage 3 **Capabilities Scale Nationally**
Next cohort of early adopters test next standards capability — flywheel turns again

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Tech-Focused Models Push Capabilities

What CMMI built

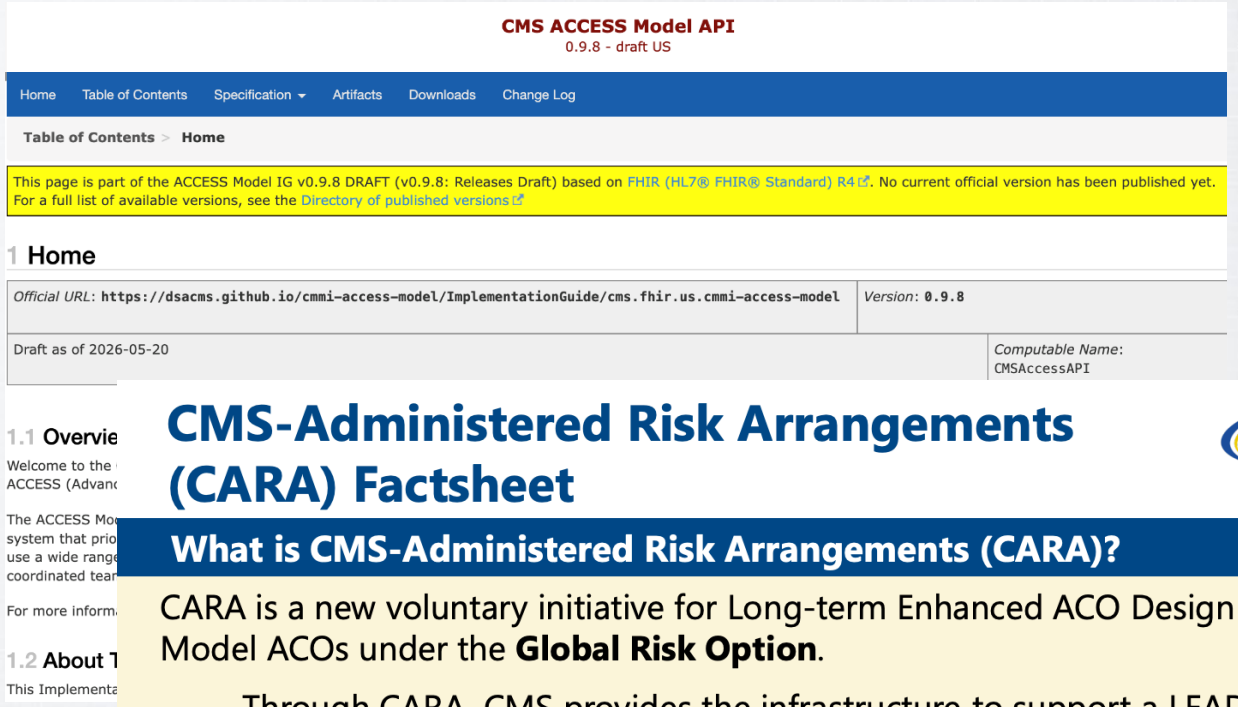
ACCESS · WISeR · CARA

CMMI payment architecture · 2026–2036

WISeR: Tech companies as direct CMMI participants, earning shared savings. First time CMMI has funded a technology-enabled infrastructure layer rather than a provider organization.

ACCESS: Outcome-aligned payments for technology-enabled care. FHIR APIs required. Complements ACOs with a temporary benchmark reprieve on costs.

CARA: CMS-operated digital engine alongside ACO payment arrangements — programmable at the network level, not the individual ACO level.



CMS-Administered Risk Arrangements (CARA) Factsheet

What is CMS-Administered Risk Arrangements (CARA)?

CARA is a new voluntary initiative for Long-term Enhanced ACO Design (LEAD) Model ACOs under the **Global Risk Option**.

Through CARA, CMS provides the infrastructure to support a LEAD ACO to **negotiate with a specialist** (also known as a Preferred Provider, under LEAD) to establish an **episode-based risk arrangement (EBRA)**.

The EBRA permits the specialist to take on **financial risk** for aligned beneficiaries that initiate an episode of care.

HVHC 2.0: “Star Alliance(s)” for Safety

Calling All Innovators – Health Care Innovation Challenge Open for Great Ideas

Aneesh Chopra

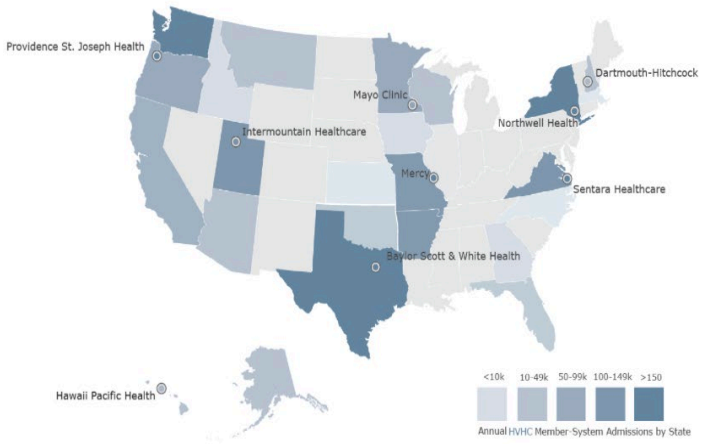
December 07, 2011

Recently, the Department of Health and Human Services, through the Affordable Care Act, launched the Health Care Innovation Challenge, which will award $1 billion in grants to applicants who will implement the most compelling new ideas to deliver better health and improved care at lower costs to people enrolled in Medicare, Medicaid and the Children's Health Insurance Program (CHIP)—particularly those with the greatest health care needs.

Partnering for Excellence

The HVHC Program Management Office (PMO), housed at The Dartmouth Institute for Health Policy & Clinical Practice (TDI), is the neutral third-party convener of the Collaborative. With TDI, HVHC translates research into operations and subsequently advocacy for evidence-based health policy across the United States.

High Value Healthcare Collaborative



”Star Alliance” Collaborative

All authority exists in current law

① **CONTRIBUTE** ACOs pool clinical + claims data

↓

② **POOL & LEARN** AI generates safety protocols + dQMs

↓

6–8 National Collaboratives

③ **DEPLOY** Protocols to point of care via FHIR/COIN

④ **SAVINGS** Harm reduced → CMS savings flow back

Foundation: CMS Health Tech Ecosystem

- **Any Medicare accountable care relationship:** MSSP, ACO REACH, LEAD, TEAM — any org with attributed beneficiaries and FHIR APIs is a potential member node
- **BCDA + real-time clinical data:** HTE continues to push towards real-time FHIR feeds — richer clinical data, faster learning loop
- **dQMs + COIN:** Portable measure logic to the org's data pool; reasoning agents negotiate measure satisfaction across the provider-payer boundary
- **HTE pledge layer:** Safety-focused APMs can launch with early adopters contributing data + protocol deployment; accountability for results

Source: https://obamawhitehouse.archives.gov/blog/2011/12/07/calling-all-innovators-health-care-innovation-challenge-open-great-ideas; http://highvaluehealthcare.org/

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