Targeting Improvements in Patient Safety Through Alternative Payment Models

Request for Input (RFI) Responses

The Physician-Focused Payment Model Technical Advisory Committee (PTAC) requested input from the public about targeting improvements in patient safety through Alternative Payment Models.

Prior to PTAC's June 15-16, 2026 public meeting on this topic, PTAC received three responses from the following stakeholders:

1. Rubrum Advising
2. William Padula, PhD and Peter Pronovost, MD, PhD
3. RTI International

For additional information about PTAC's request, see PTAC's solicitation of public input.

Rubrum Advising

Request for Input

Targeting Improvements in Patient Safety Through Alternative Payment Models

Rubrum Advising appreciates the opportunity to provide input to the Physician-Focused Payment Model Technical Advisory Committee (PTAC) on the Request for Input, Targeting Improvements in Patient Safety Through Alternative Payment Models. Rubrum Advising, co-founded by Lee A. Fleisher, MD, ML (former CMS Chief Medical Officer and Director of the Center for Clinical Standards and Quality), and Matthew A. Fleisher, JD, MPH, advises clients on the adoption, diffusion, and reimbursement of innovative healthcare solutions and products designed to improve patient outcomes and reduce total costs of care within the context of regulation, safety, quality, and clinical standards.

Drawing on our experience with value-based care, alternative payment models (APMs), and patient safety initiatives across diverse care settings, we offer the following comments to support PTAC's efforts to identify opportunities to strengthen patient safety through APM design, implementation, and evaluation.

1) What are opportunities to address patient safety challenges?

Alternative payment models (APMs) can advance patient safety by tying incentive payments to meeting defined quality and safety standards, helping move proven practices into routine care, particularly in high-risk care transitions, medication management, and procedural care. APMs should explicitly link financial accountability for avoidable harm events to investments in team-based care, reliable adherence to evidence-based protocols, and systematic identification of communication and coordination failures across settings.

A critical, often under-recognized opportunity is to treat diagnostic excellence as a core patient-safety goal. Many serious harms arise not from technical errors in procedures but from delayed, missed, or poorly communicated diagnoses, especially in complex patients and those with infections with potentially over or inappropriate antibiotic usage. APMs should explicitly support timely, accurate, and patient-centered diagnosis through team-based assessment, structured follow-up of abnormal test results, and proactive tracking of patients with high-risk diagnostic uncertainty. The development of quality metrics using FIHR based apps should be considered.

2) What are opportunities to engage providers to help reduce adverse events and improve patient safety?

Clinicians engage when goals are clinically meaningful, measures are parsimonious, and feedback is timely. APMs can support this by aligning safety expectations across payers, funding physician and nurse safety leadership roles, and providing near real-time,

actionable data at the team level so that front-line clinicians see how their efforts translate into fewer harms for their own patients.

Successful engagement also requires that safety work is integrated into existing workflows rather than layered on as a separate initiative. Models that explicitly resource multidisciplinary safety huddles, diagnostic case reviews, and morbidity and mortality conferences (and that treat these as core care processes rather than compliance activities) are more likely to sustain clinician ownership of safety goals. Clinicians can also be involved in presenting to the Hospital Board of Trustees around safety issues to engage that level of oversight/leadership.

3) What solutions or insights can patients provide on improving patient safety?

Patients and families often see safety risks that are invisible in claims or chart reviews, especially around communication, coordination, and recovery at home. They can highlight when instructions are confusing, when follow-up plans are unclear, or when their sense that "something is wrong" is not adequately addressed, issues that lie at the heart of diagnostic safety and preventable harm.

APMs can leverage this insight by systematically collecting patient-reported safety concerns and near-misses at key touchpoints and by involving patient and family advisors in the design and review of safety initiatives within accountable entities. Patients and Family Councils should be involved in the patient safety committees of hospitals and present stories of both good catches and misses.

4) How can patient protections (e.g., consumer rights, appeals process, transparency) be used to reduce adverse events and errors and improve patient safety?

Robust patient protections function as core safety infrastructure when they give patients clear pathways to raise concerns and challenge decisions that may compromise safety. APMs should ensure that grievance and appeals data are analyzed as safety signals, that beneficiaries understand their rights in plain language, and that transparent, risk-adjusted reporting on safety performance is used to drive learning rather than blame.

5) What are ways in which Alternative Payment Models (APMs) can effectively promote patient safety (e.g., models that target adherence to checklists and infection prevention protocols, and incentivize meeting certain safety benchmarks)?

APMs can promote safety most effectively when safety is treated as a foundational condition of payment rather than a peripheral add-on. Practical approaches include using safety gates for shared-savings eligibility, tying a modest portion of payment to a small set of high-impact safety measures, and funding the infrastructure needed to deliver safer care,

including AI-enabled tools that identify high-risk patients early and support timely intervention before harm occurs.

In addition to procedure- and infection-related safety, APMs should include diagnostic excellence as an explicit expectation. This can include incentives for timely follow-up of abnormal imaging and lab results, reliable communication of diagnostic plans and uncertainty to patients, and collaboration between primary care and specialists to reduce "diagnostic bounce" between settings. Models might, for example, reward reductions in serious diagnostic-related adverse events or structured implementation of diagnostic-safety checklists for high-risk conditions such as sepsis or acute coronary syndromes.

6) What have been the successes and shortfalls of current programs and strategies to improve patient safety?

Existing programs have demonstrated that targeted incentives, public reporting, and technical assistance can reduce certain hospital-acquired conditions and improve adherence to key safety processes. Focused attention on infection prevention, perioperative care, and standardized protocols has led to measurable improvements in some settings.

At the same time, overly complex measure sets, a heavy reliance on penalties, and limited attention to diagnostic and ambulatory safety have constrained impact and risked disproportionately burdening safety-net providers. The experience with the Merit-based Incentive Payment System (MIPS) illustrates many of these challenges. MIPS has layered a complex and often opaque set of measures and scoring rules onto clinicians, with limited evidence that it has meaningfully improved patient safety or outcomes. Its individual-level focus, heavy reporting burden, and diffuse measure set have tended to distract from team-based safety work and high-priority quality goals, particularly for smaller practices. This and many other strategies have focused more on documentation than on the underlying systems' changes needed to prevent harm, and they have not always been designed with smaller practices and rural providers in mind.

A further shortfall is that most current programs still assess performance at the level of individual clinicians or institutions rather than the care teams and microsystems that actually produce safety. Harms and near-misses are almost always the result of system and team dynamics (e.g., handoffs, communication patterns, and shared situational awareness), yet our measures rarely capture how well teams function in practice. This misalignment makes it harder to reward the collaborative work that drives safer care.

6a) What are the key aspects of these strategies that can be improved with different payment strategies, performance measures, and technologies?

Payment strategies should move from broad, penalty-heavy designs toward risk-adjusted incentives and upfront support for safety infrastructure, especially in under-resourced

settings. This includes dedicated payments for care transitions, antimicrobial stewardship, diagnostic-safety programs, and multidisciplinary safety leadership.

Performance measurement should emphasize a concise set of outcome and process measures that matter to patients and clinicians, including measures of diagnostic safety and equity, augmented by patient-reported information. It should also evolve to recognize team-level performance, for example, measuring the reliability of team-based handoff processes, multidisciplinary sepsis responses, or coordinated follow-up across primary care, specialty, pharmacy, and nursing, rather than focusing solely on individual attribution.

Technology should be used to automate detection and feedback so that teams receive timely, actionable information, while minimizing new documentation burdens. This kind of design supports continuous learning about what actually reduces harm and makes it possible to reward the collaborative work required for high-reliability, team-based care. True interoperability is critical with the use of FIHR to directly assess outcomes.

7) What are opportunities to improve the measurement of patient safety?

Safety measurement can be strengthened by better leveraging electronic health record data, including natural language processing, to identify potential adverse events and near-misses across settings. Early integration of AI and machine-learning models can help detect patterns of risk and early signs of decompensation enabling teams to prevent harm rather than simply catalog it retrospectively. There is a substantial opportunity to expand beyond inpatient metrics to ambulatory, post-acute, and home-based care, where many safety events occur but are rarely measured.

Improving safety measurement also means better detection of diagnostic harm, which is rarely captured in traditional hospital-acquired condition metrics. Measures that track delays in follow-up of abnormal tests, unplanned emergency visits after reassuring encounters, or patient-reported diagnostic concerns can begin to quantify diagnostic safety within APMs.

8) What is the composition or balance of patient safety measures needed?

A balanced safety measurement portfolio in APMs should include:

- A small number of high-priority outcome measures (e.g., serious preventable harm events, sepsis outcomes, preventable readmissions).
- Selected process measures tied to strong evidence and clear practice change only when outcomes cannot be directly measured (e.g., perioperative checklists, antimicrobial stewardship bundles, high-risk medication monitoring).
- Patient-reported safety and experience measures (e.g., clarity of care plans, ability to reach help, perception of coordination, and respect).

9) How can patient-reported data be used more effectively to ensure that patient safety measures are complete and accurate?

Patient-reported data can fill critical gaps in traditional safety measurements by capturing diagnostic delays, communication failures, and problems in the home environment that are not evident in claims or structured EHR fields. To use these data effectively, APMs should deploy brief, targeted patient-reported safety surveys at key points in the care journey and provide simple mechanisms for patients to report concerns or near-misses in real time.

Patient-reported data are particularly important for diagnostic excellence because patients often recognize when "something is still wrong" despite reassuring tests or encounters. Systematically capturing those concerns can reveal patterns of missed or delayed diagnoses before they manifest as severe harm. Conceptually, patient-reported signals can serve as additional likelihood information in a Bayesian framework, updating our beliefs about where safety problems truly lie, especially when traditional indicators are sparse or noisy.

10) What is the role and impact that electronic Clinical Quality Measures (eCQMs) have in improving patient safety?

When well designed and aligned across programs, eCQMs allow health systems to monitor safety processes and outcomes using data already in the EHR, reducing manual abstraction and enabling more timely feedback. They can support tracking of adherence to infection-prevention bundles, perioperative protocols, and monitoring of high-risk medications, among others. They can also be submitted to CMS and allow benchmarking against national rates.

Their impact depends on strong data validation, close clinician involvement in measure selection, and ensuring that eCQMs reflect the model's true safety priorities rather than adding to a diffuse reporting burden. In the context of APMs, eCQMs should be tightly aligned with diagnostic- and treatment-safety priorities, and they should be designed to facilitate learning, helping teams identify where practice is drifting away from evidence-based care and where unintended safety risks are emerging.

11) What are the types of technologies (e.g., prospective, retrospective) that can be used to effectively reduce provider burden and positively impact patient safety?

Prospective technologies such as embedded clinical decision support, smart infusion systems, and well-tuned medication interaction alerts can help prevent errors at the point of care. Tools that track test results to closure, remind clinicians when critical follow-up is overdue, or prompt documentation of contingency plans directly support diagnostic excellence and reduce the risk of missed or delayed diagnoses. AI-enabled tools can also help identify high-risk patients earlier, including those at risk of sepsis, adverse drug events, deterioration, and diagnostic error, allowing teams to intervene before harm occurs.

Retrospective tools, such as electronic trigger systems, automated chart reviews, and dashboards that aggregate adverse event signals across populations, can identify patterns of harm with far less manual effort, allowing clinicians to focus on analyzing causes and implementing corrective actions.

To reduce provider burden, these technologies must be integrated into workflow in a way that improves signal rather than simply generating more alerts. The most effective tools are those that synthesize complex data into actionable recommendations for care teams, while preserving clinician judgment and making the basis for risk estimates understandable to front-line users

12) What are opportunities to address barriers to integrating AI/technology (e.g., data sharing, data quality, interoperability, security) that aid in improving patient safety?

Key barriers are data fragmentation, variable data quality, interoperability gaps, and concerns about fairness, privacy, and liability. These can be addressed by promoting common data standards and APIs, supporting shared infrastructure, and requiring transparency about AI model performance across subgroups. APMs and payers can provide technical assistance and phased implementation support so that smaller practices and rural providers can adopt safety-enhancing technologies without disproportionate burden.

Governance structures should ensure that AI and predictive tools are evaluated for calibration, bias, and real-world impact on safety, and that clinicians remain central in decisions about how these tools are used. Regulatory and contracting frameworks can encourage vendors to provide clear information about data sources, model logic, and performance in clinically interpretable terms.

13) What are ways to utilize AI to improve patient safety?

AI can enhance patient safety when clinicians understand both what these tools can do and where their limits are. The key is not simply deploying algorithms, but training physicians and teams to interpret AI outputs in context, to recognize when an algorithm is likely to be valid for a given patient, and to identify when the model is operating outside its comfort zone because the patient differs from the population on which the model was trained. AI can also be used to track outcomes in the EHR and provide dashboards and early alerts with respect to patterns in the data.

13a) What are approaches to integrate AI predictive models into the provider workflow to aid in the identification of potential medical errors?

Predictive models are most effective when they are embedded into workflows in ways that are timely, understandable, and actionable, and when clinicians are trained to interpret them critically. Integration should therefore focus on two elements:

- **Clinically meaningful integration.** Risk scores for sepsis, deterioration, or readmission should be presented with clear clinical context, recommended next steps, and information about how the model arrived at its estimate (for example, key contributing factors), so that physicians can decide how much weight to give the prediction in light of the individual patient's situation.
- **Training in model literacy.** Physicians and other clinicians should receive targeted education on how to evaluate key aspects of the models and if they apply to their given population. Training should emphasize that AI is a probabilistic tool, not an oracle, and should teach clinicians to ask: Does this patient look like the patients this model understands well, or is this an outlier case where the model's recommendation should be treated with more caution?

In addition, models should convey their own uncertainty and limitations where feasible (for example, indicating when a prediction is based on sparse data or when performance has been lower in certain demographic or clinical subgroups). This allows clinicians to distinguish between situations where the algorithm is likely to fit that patient and situations where it should be treated as one input among many.

13b) What are ways in which AI/machine learning can be used to develop patient safety metrics?

AI and machine learning can help develop better safety metrics by analyzing structured and unstructured data to identify patterns of adverse events, near-misses, and diagnostic errors that traditional indicators miss. However, just as with clinical predictions, physicians and quality leaders need training to evaluate when these AI-derived metrics are appropriate for their patient populations and care settings.

Training should help clinicians and administrators understand:

- Which data sources underlie a given safety metric and whether those sources are complete and reliable for their patients.
- How the metric performs across different demographic and clinical subgroups, and whether any systematic biases have been identified.
- How to interpret changes in AI-derived safety metrics over time as evidence accumulates, including when an apparent improvement may reflect changes in documentation rather than real reductions in harm.

Bayesian machine-learning methods, which formally combine prior knowledge with local data, can support this kind of continuous learning. They work best when clinicians are

involved in metric design and are equipped to understand what the model "knows," what it does not know, and how confident they should be in using those metrics to guide safety-improvement priorities for their specific patients and teams.

Finally, any APM that encourages the use of AI for safety should pair deployment with structured training and governance so that clinicians are empowered to question model outputs, escalate concerns about model performance, and participate in decisions about when and how algorithms are updated. This is essential to ensuring that AI augments clinical judgment and supports safer care rather than introducing a new, harder-to-see source of error.

14) What are potential payment sources for integrating AI and other new technologies to aid in improving patient safety?

Integrating AI and other technologies to improve safety often requires upfront investment that fee-for-service does not support well but should have a ROI in the long run. Potential payment sources within APMs include per-beneficiary care management or infrastructure payments earmarked for safety technology and training, shared-savings arrangements that allow participants to reinvest a portion of savings into safety infrastructure, and time-limited transformation payments targeted to smaller or rural providers. Outcome-aligned payments such as those proposed in ACCESS are the best approach.

15) How can patient safety and high-quality care be incentivized in APMs (e.g., safety holdbacks or non-payment, no-bill rule for repairs, diagnostic safety bonus)?

Patient safety can be incentivized by tying a portion of shared savings or bonus payments to achieving clear safety thresholds, using thoughtfully designed non-payment policies for certain serious, preventable events, and offering positive recognition or bonus payments for measurable improvements or achieving a specific community threshold in diagnostic and procedural safety. For example, models might include a modest diagnostic-safety bonus tied to improved timely follow-up of abnormal tests or reduced serious diagnostic-related adverse events.

Importantly, incentives should be structured to reflect that safety and quality are produced by teams and leadership, not by individual clinicians in isolation. Drawing on previous experience, efforts to align departmental leadership evaluation and expectations with malpractice risk reduction and patient-safety goals, rather than focusing solely on volume, were associated with greater engagement in safety initiatives and more consistent adherence to evidence-based protocols. APMs can mirror this lesson by rewarding organizational and service-line performance on safety, with shared accountability across physicians, nursing, pharmacy, and administration. These incentives work best when they are predictable, risk-adjusted, and coupled with data, technical assistance, and peer

learning, and when they avoid creating pressure to increase volume or shift risk in ways that undermine safety.

16) How can financial incentives be used while also ensuring unintended consequences (e.g., stinting on care, cherry-picking, early discharge) do not occur?

Safeguards should include monitoring access, outcomes, and case-mix across key subgroups; using balancing measures such as mortality, emergency department visits, and patient-reported access; and adjusting benchmarks for organizations caring for high-risk populations. Particular attention should be paid to patterns that might suggest avoidance of diagnostically challenging patients or premature closure of diagnostic evaluations.

Models should pair financial accountability with explicit expectations around equity and patient-centeredness, coupled with corrective actions if evidence of stinting, cherry-picking, or premature discharge emerges. Payment models that pair clear safety and diagnostic-excellence expectations with support are more likely to improve outcomes without exacerbating disparities.

Response to PTAC RFI
Advancing Patient Safety Through Alternative Payment Models

William Padula, PhD
USC Schaeffer Center for Health Policy & Economics, Los Angeles, CA

Peter Pronovost, MD, PhD
University Hospitals, Cleveland, OH

Note: The opinions expressed herein by Dr. Padula represent those of the authors and do not represent the positions of any of their affiliated organizations, including the University of Southern California or USC Schaeffer (Padula)

The United States has made important progress in measuring patient safety, yet preventable harm remains one of the largest and most costly defects in health care delivery. The Zero Defects framework challenges health systems to move beyond accepting avoidable harm as an inevitable consequence of care and instead treat patient safety as a system-wide commitment to continuously identifying, measuring, and eliminating defects in value (1). While this vision has advanced quality improvement efforts across healthcare, the challenge facing policymakers today is not simply how to measure patient safety more accurately, but how to create payment systems that reward prevention before harm occurs.

A growing body of evidence demonstrates that preventable adverse events impose substantial clinical and economic burdens on patients, providers, purchasers, and taxpayers. These burdens often persist long after the original event occurs. As Medicare continues its transition toward value-based payment, Alternative Payment Models (APMs) should increasingly emphasize prevention of harm as a core objective rather than relying primarily on retrospective penalties after adverse events occur.

Pay-for-Performance

Traditional patient safety programs have focused heavily on measurement, reporting, and financial penalties for adverse outcomes. While these approaches have increased accountability, they do not fully address the underlying causes of patient harm.

The defects-in-value framework demonstrates that many of the largest inefficiencies in health care arise from misaligned incentives that reward treatment of disease rather than prevention of disease and harm (2). Current payment systems frequently reimburse downstream complications while underinvesting in the infrastructure required to prevent them.

This distinction is important. When a preventable adverse event occurs, the consequences rarely end with the episode that triggered a payment penalty. Patients may experience chronic morbidity, functional decline, reduced quality of life, additional utilization, and future health expenditures. Taxpayers ultimately bear many of these downstream costs through Medicare and other public programs.

Accordingly, patient safety should be viewed not merely as a quality objective but as a long-term investment strategy. Payment models that support prevention can improve outcomes while reducing future expenditures.

Value of Prevention

Recent evidence illustrates the substantial downstream burden associated with preventable harm. Surgical site infections (SSIs), one of the most common hospital-acquired conditions, are associated with significantly longer hospital stays, increased readmissions, reoperations, higher mortality in some populations, and substantial excess costs extending for at least one year following discharge (3).

Patients experiencing SSIs incurred approximately $40,000 to $68,000 in excess one-year medical expenditures compared with matched patients without infection (3). These costs occurred largely after discharge, demonstrating that the consequences of preventable harm extend well beyond the original hospitalization. Patients also experienced increased out-of-pocket costs and additional utilization throughout the year following infection (3).

These findings reinforce a central policy lesson: preventing harm is often less expensive than paying for its consequences.

Investing in Safety Infrastructure

Evidence suggests that meaningful improvements in patient safety require investment in organizational capabilities rather than isolated interventions. Dedicated prevention infrastructure, including specialized clinical expertise, coordinated care teams, standardized protocols, risk surveillance systems, and continuous performance improvement programs, has been associated with substantial reductions in preventable harm (4). Recent evidence also demonstrates that sustained reductions in adverse events require not only statistical improvement but clinically meaningful improvements that can be measured, monitored, and maintained over time (7).

Alternative Payment Models should therefore support investments in prevention infrastructure through prospective payments, shared savings arrangements, or performance-based incentives. Specifically, these investments should be devoted to building a disciplined quality management and accountability system. Additional incentives should be provided for health systems that get certified both as an individual hospital and health system in ISO9001, the global gold standard for a quality management and accountability system in 150 industries. Yet preciously few health systems have this certification. UH received certification in all 15 hospitals and as a system. While accreditation is a floor measure to ensure safety. It does not create excellence. ISO is a ceiling measure and drives toward excellence.

Addressing Defects in Value

Patient safety programs have historically focused on specific adverse events, such as falls, pressure injuries, infections, medication errors, and readmissions. While these measures remain important, many harms arise from common underlying system failures.

The complexity bias framework suggests that focusing narrowly on individual harms may inadvertently fragment prevention efforts and dilute resources (5). Instead, payment models should encourage integrated prevention strategies that address shared risk factors across multiple forms of harm. Similar opportunities have been identified in surgical care, where coordinated multidisciplinary pathways can simultaneously improve outcomes, reduce complications, and eliminate defects in value across the continuum of care (8).

Promote Centers of Excellence for Patient Safety

The Centers of Excellence framework offers a useful model for disseminating best practices in patient safety and value-based care (6). High-performing organizations consistently demonstrate several common characteristics:

- Frictionless patient access.
- Coordinated navigation.
- Rigorous appropriateness criteria.
- Multidisciplinary team-based care.
- Evidence-based protocols.
- Personalized care pathways.
- Continuous measurement and transparent reporting of outcomes (6).

CMS should consider mechanisms that recognize and support Patient Safety Centers of Excellence capable of demonstrating sustained reductions in preventable harm, transparent reporting of outcomes, and successful implementation of prevention-focused care models.

These organizations can serve as learning laboratories for broader dissemination across Medicare and Medicaid populations.

Recommendations for PTAC

To accelerate progress in patient safety, PTAC should encourage development of physician-focused payment models that:

1. Shift incentives from paying for complications toward paying for prevention.
2. Support prospective investment in patient safety infrastructure.
3. Reward reductions in preventable harm across multiple domains.
4. Encourage automated risk identification and proactive intervention.
5. Promote integrated approaches that address shared drivers of harm.
6. Incorporate long-term patient outcomes and total cost of care rather than focusing exclusively on episode-level costs.
7. Recognize and scale Patient Safety Centers of Excellence.

Conclusion

Patient safety should be understood as both a clinical imperative and an economic investment. Preventable harm creates long-term consequences that extend beyond the initial adverse event and ultimately increase costs for patients, providers, purchasers, and taxpayers.

Across clinical domains ranging from surgery to musculoskeletal care, defects in value often arise when payment systems reward treatment of complications rather than prevention of complications, underscoring the need for payment models that align incentives around long-term outcomes and value creation (9).

Alternative Payment Models offer an opportunity to move beyond retrospective penalties and toward a system that rewards prevention, strengthens safety infrastructure, and systematically eliminates defects in value. By adopting a pay-for-prevention approach, Medicare can improve patient outcomes while advancing the broader goals of affordability, quality, and accountability.

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Request for Information: Patient Safety and Alternative Payment Models

Response to the Physician-Focused Payment Model Technical Advisory Committee Request for Information

Response to Request for Information (RFI)

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Submitted To

Physician-Focused Payment Model Technical Advisory Committee

Email : PTAC@HHS.gov

RTI Points of Contact

Cindy D'Annunzio, Senior Director, Strategic Accounts
cdannunzio@rti.org

Michelle Dougherty, Sr. Manager Health IT Policy
mdougherty@rti.org

RTI International
3040 E. Cornwallis Road
Durham, NC 27713-2852
www.rti.org

Organizational Introduction

RTI International is an independent, nonprofit scientific research institute with more than six decades of experience advising federal health agencies on complex policy, payment, quality, data, and evaluation challenges. RTI's perspective on a patient safety-focused Alternative Payment Model (APM) is grounded in extensive work with CMS and other federal partners designing, implementing, and evaluating value-based care and physician-focused payment models; developing and testing quality measures; building data infrastructure; and supporting surveillance and analytics that translate evidence into actionable program design.

These capabilities position RTI to provide practical, evidence-grounded advice on a patient safety model that aligns incentives with improvement, strengthens measurement and surveillance, reduces provider burden, and advances safer, higher-quality care. The tenets of RTI's patient safety APM insights derive from our applied expertise in APM design and evaluation, measure development and electronic quality reporting, patient safety surveillance, AI-enabled analytics, patient-reported data collection, and the identification of best practices that improve patient safety and quality across diverse care settings.

Question 1: What are opportunities to address patient safety challenges?

Patient safety errors remain a persistent and costly challenge to the U.S. healthcare system. A recent Department of Health and Human Services Office of Inspector General (OIG) report estimated that patient harm rates in hospitals remain high, a finding that underscores both the urgency of reform and the insufficiency of existing approaches. The current landscape is characterized by a patchwork of programs approaching patient safety from different angles, with differing financial incentives, public reporting mandates, and requirements, resulting in excessive administrative burden and at times conflicting incentives that undermine rather than advance safety goals.

RTI sees the greatest opportunities for progress in three interconnected areas.

Move from Retrospective to Near-Real-Time Proactive Surveillance: The most foundational opportunity is the transition from retrospective compliance reporting to near-real-time, proactive risk surveillance. Current patient safety reporting is predominantly retrospective, relying on claims-based data that arrives weeks or months after harm has occurred. This limits the ability of providers and oversight bodies to intervene before adverse event patterns become entrenched.

Models built on FHIR-compliant data pipelines, electronic health record (EHR) integration, and automated surveillance would close this gap, enabling intervention before harm compounds. The maturation of FHIR Application Programming Interface (API) standards and the widespread adoption of certified EHR systems make this transition technically feasible today, though it requires deliberate investment in data infrastructure at the national level.

Streamline Fragmented and Duplicative Reporting: The second opportunity is the streamlining of the fragmented and duplicative reporting landscape. Healthcare organizations currently navigate overlapping mandates from state agencies, federal programs, and accreditation bodies, including the Joint Commission and its National Patient Safety Goals, the National Patient Safety Board, Consumers Advancing Patient Safety, ECRI, and the Department of Veterans Affairs, producing inconsistent data capture and significant administrative burden.

Standardizing reporting through AHRQ Common Formats, aligned with existing EHR infrastructure, would reduce this burden while improving the consistency and comparability of safety data across settings. Achieving sustainable reform requires meaningful engagement from these existing patient safety organizations whose endorsement and active participation are critical to real-world adoption and long-term program sustainability. It is worth noting that perspectives on AHRQ's specific frameworks vary among key federal stakeholders, and RTI recommends that any reporting standardization approach be developed in close consultation with CMS and relevant program offices to ensure alignment with current federal priorities.

Redesign Financial Incentives: The third opportunity is the redesign of financial incentives to support, rather than impede, transparent reporting and genuine safety improvement. Current pay-for-performance models penalize poor performance without offering providers with meaningful pathways for recovery or improvement. Evidence further suggests that existing value-based purchasing programs have disproportionately affected safety net and rural providers, widening rather than narrowing safety disparities across provider types. Shifting improvement-focused payment architectures, where demonstrated progress is rewarded, would make patient safety a financially rational priority for all provider types, including those serving the most vulnerable populations.

It is also important to recognize that participation in an APM itself can serve as a meaningful incentive, by providing participants with access to real-time data, a platform for improving their understanding of safety performance, and access to relevant training and support resources. These benefits represent tangible value for providers independent of direct financial transfers.

Question 2: What are opportunities to engage providers to help reduce adverse events and improve patient safety?

Sustained provider engagement in patient safety improvement requires moving beyond compliance mandates toward genuine partnership structures. RTI's experience supporting voluntary federal programs demonstrates that engagement is highest and most durable when providers perceive the program as a supportive, learning-oriented relationship rather than a surveillance or enforcement mechanism.

Build Trust Through Data Use Protections: A critical prerequisite for engagement is the assurance that data submitted for patient safety monitoring will be used for improvement, not enforcement. This assurance must be operationalized through legally binding data use agreements and governance structures, not merely stated as program intent. Where Patient Safety Organizations (PSOs) can be appropriately integrated, their statutory confidentiality protections under the Patient Safety and Quality Improvement Act (PSQIA) offer a mechanism for enabling candid, protected reporting.

Provide Accessible, Appropriately Structured Technical Support: Providers need capacity-matched support to participate meaningfully in patient safety improvement initiatives. Effective APM design should ensure that technical assistance (TA) resources are available to all

participants. The structure and delivery of such support should be designed to meet providers where they are, and provider organizations may benefit most from flexibility to engage consulting or advisory support of their own choosing, rather than a mandated, top-down TA structure. This approach preserves provider autonomy while ensuring access to expert resources when safety performance issues arise.

Leverage Near-Real-Time Feedback Loops: Provider engagement is meaningfully strengthened when participants receive timely, actionable performance data not only retrospective annual reports. Near-real-time dashboard feedback showing safety trends, benchmark comparisons, and improvement trajectories gives clinical and administrative leaders the information they need to act before adverse patterns compound. This prospective surveillance capability represents a qualitative advance over current program designs and should be built into any new APM structure from the outset.

Foster Peer Learning and National Collaboration: Peer learning is a powerful engagement mechanism. Quarterly national collaboratives, topical communities of practice focused on high-priority safety domains, such as falls, hospital-acquired infections, pressure injuries, and medication errors, and annual patient safety summits create structured opportunities for providers to share knowledge and learn from comparable organizations.

National Partnerships: National partnerships modeled after initiatives such as Partnership for Patients, can be particularly effective at convening diverse stakeholders around shared safety goals and accelerating the dissemination of best practices. Highlighting successful safety net, rural, and disproportionate share hospitals as exemplars, providers who have achieved meaningful safety improvements under constrained resources, creates both a credibility signal and a practical learning resource for comparable organizations. The Quality Assurance and Performance Improvement (QAPI) framework further supports this by enabling systematic data collection, root cause analysis, and leadership accountability within individual organizations.

Question 3: What solutions or insights can patients provide on improving patient safety?

Patients and their families represent an underutilized but uniquely important source of patient safety intelligence. Patients observe care processes, transitions, and communication failures in ways that are often invisible to clinical data systems and administrative claims. Structured mechanisms for capturing patient-reported safety concerns, including validated patient experience instruments and standardized adverse event reporting tools accessible through multiple modalities, would allow patient-generated signals to be systematically integrated into national safety surveillance.

Standardized patient safety event reporting instruments aligned with AHRQ Common Formats and designed for patient completion could be deployed through analogous mechanisms, enabling patients to report near-misses, communication failures, and adverse experiences in a structured, analyzable format.

Patient-reported data are particularly valuable as a cross-validation source. Triangulating patient-reported safety signals against clinical event data and provider self-reports can surface discrepancies that may indicate underreporting or systematic gaps in clinical data capture. Collection strategies must be accessible across multiple modalities, including patient portals, telephone, paper, and in-person assistance, to reach populations with varying levels of health literacy and digital access, including non-English speakers, patients with disabilities, and those

in rural communities with limited digital connectivity, all of whom face elevated patient safety risks.

Additionally, aggregated, de-identified patient-reported data should be integrated into provider-facing dashboards giving clinical and administrative leaders visibility into patient-perceived safety concerns alongside clinical event rates. This dual view strengthens the completeness and credibility of the overall safety picture available to providers.

Finally, patients and patient advocates should be represented on model governance structures, ensuring that the patient perspective actively shapes measure selection, reporting design, and program evolution over time. Patient representation on governance bodies is a structural safeguard, not a symbolic gesture, and should be formalized within any new APM framework.

Question 4: How can patient protections (e.g., consumer rights, appeals process, transparency) be used to reduce adverse events and errors and improve patient safety?

Patient protections and consumer rights are structural enablers of patient safety improvement, not peripheral considerations. When patients have meaningful access to information about provider safety performance, the ability to appeal care decisions, and assurance that their safety concerns will be heard and acted upon, important dynamics are set in motion that reduce both the likelihood and the impact of adverse events.

Transparency in Safety Performance Data: Provider-level dashboards displaying performance on measured safety events, risk-adjusted trends, and benchmark comparisons create public accountability that incentivizes improvement independent of financial penalties. Publicly accessible, appropriately risk-adjusted performance information empowers patients to make informed care decisions and generates reputational incentives that financial penalties alone cannot fully replicate.

Thoughtful design is required to ensure transparency does not inadvertently disadvantage safety net providers through presentation of unadjusted performance data that fails to account for patient complexity. Risk adjustment is not optional. It is a prerequisite for transparency that is both fair and actionable.

Appeals Processes for Payment and Coverage Decisions: Providers must have clear, structured, and accessible avenues to contest erroneous safety event attribution or disputed data. Equally, patients must have formal processes through which to raise safety concerns and receive timely, substantive responses. Governance structures within any new APM framework should incorporate formal appeals and review processes as a core design element, not an afterthought.

Data Use Agreements That Protect Patient and Provider Information: Data use agreements must explicitly limit the use of patient safety information to quality improvement purposes prohibiting its use in enforcement actions, litigation, or public identification of individual patients or providers. These protections provide the foundational trust necessary for candid reporting cultures to develop and sustain over time. Where PSOs are integrated into the program structure, their statutory PSQIA protections should be leveraged to reinforce these assurances with legally binding confidentiality frameworks.

Governance with Meaningful Patient Representation: Model governance structures should include formal patient and patient advocate representation ensuring that consumer perspectives actively shape program design decisions, including measure selection, reporting requirements, and program evaluation criteria. Patient voices are most powerful when embedded in governance from program inception, rather than introduced as a post-hoc consultation process.

Question 5: What are ways in which Alternative Payment Models (APMs) can effectively promote patient safety?

APMs represent the most consequential policy lever currently available for reshaping provider behavior around patient safety at national scale. The fundamental design question is not whether APMs should incorporate patient safety, they clearly must, but how they should be structured to make safety improvement financially rational for the full range of providers, including those serving the most complex and under-resourced patient populations.

RTI recommends grounding APM design for patient safety in the following high-level principles, which reflect both applied research experience and the perspectives of federal stakeholders engaged on this topic:

Principle 1: Reward Meaningful Improvement and Attainment: Avoid Onerous Penalties: APMs should promote patient safety by measuring and rewarding meaningful safety outcomes and continuous improvement, not by imposing penalties that punish poor baseline performance without creating genuine pathways to progress. The organizing principle should center on attainment and improvement: rewarding both sustained high performance and verified progress over time. Critically, models should include meaningful incentives for hospitals serving Medicaid beneficiaries, low-income populations, and under-resourced communities, for whom safety improvement is both most needed and most difficult to achieve.

Earn-back mechanisms, where providers who fail to meet safety thresholds can recoup a portion of withheld funds by demonstrating verified, meaningful improvement specifically directed toward addressing the underlying safety issue, represent a constructive model for aligning financial incentives with improvement behavior. Such mechanisms already exist in modified form in programs like the Hospital Value-Based Purchasing (HVBP) program; a patient safety APM could meaningfully expand this concept by extending the time horizon, broadening the measure set, and more explicitly rewarding improvement trajectories. These design elements should be developed in close consultation with CMS and relevant stakeholders to ensure alignment with current federal priorities and program architecture.

Principle 2: Set Attainable, Incrementally Improving Benchmarks: Performance benchmarks should be grounded in providers' own prior performance and increase incrementally over time to incentivize continuous improvement rather than imposing fixed absolute thresholds that may be structurally unattainable for providers with high-complexity patient populations or limited infrastructure.

Benchmarks must be established within genuinely comparable peer groups, with robust risk adjustment and risk stratification that accounts for patient complexity, social risk factors, and facility type. Providers serving populations with high rates of dual eligibility and social risk factors may persistently underperform on safety measures even after standard risk adjustment, underscoring the need for thoughtful, multi-dimensional stratification approaches that do not systematically disadvantage providers for factors outside their clinical control.

Principle 3: Reward Electronic Quality Measurement and Health Information Exchange: APMs should create meaningful financial incentives for providers to adopt FHIR-compliant health information exchange and eCQM-based quality reporting.

Reducing long-term provider burden through interoperability investment improves the timeliness and reliability of safety data across the program. Rewarding participation in interoperable reporting infrastructure makes the economics of technology investment favorable for providers who might otherwise lack the financial rationale to upgrade their systems and builds the data foundation upon which more sophisticated safety surveillance can be constructed over time.

Principle 4: Align Across Existing Programs: Address Gaps Without Creating Duplication: A significant structural weakness of the current patient safety landscape is the fragmentation of pay-for-performance and value-based payment programs, which creates overlapping and at times conflicting reporting requirements for providers.

New patient safety APMs should be designed explicitly to align with, consolidate, and address gaps in existing programs, not to add another layer of administrative burden. This design principle also raises an important policy question: depending on goals and context, there may be substantial value in adding patient safety components to existing APMs rather than (or in addition to) creating a wholly standalone patient safety model. The appropriate structural approach should be informed by the specific safety outcomes targeted, the provider populations engaged, and the existing program landscape.

Principle 5: Promote Multi-Payer Alignment: Safety incentives operating exclusively within Medicare fee-for-service generate limited behavioral leverage over providers whose revenue is substantially derived from Medicaid, commercial, and other payer sources. Where feasible, APM design should facilitate alignment of patient safety measurement and incentive requirements across payers, reducing reporting burden, improving incentive coherence, and extending the reach of improvement efforts to the full patient population under a provider's care.

Principle 6: Publicly Report Results to Drive Transparency and Patient Decision-Making: Public reporting of safety outcomes, using appropriately risk-adjusted, provider-level data, serves dual and mutually reinforcing goals: provider accountability and patient empowerment. Transparency creates reputational incentives that reinforce financial incentives and gives patients and caregivers the information they need to make informed care decisions. Public reporting should create alignment with existing programs and work to eliminate, not compound, conflicting requirements and incentives.

Principle 7: Promote a National Learning Culture Through Peer-to-Peer Sharing: APMs should embed structural mechanisms for peer-to-peer learning, including national patient safety collaboratives, topical communities of practice focused on high-priority safety domains, and regular forums for sharing evidence-based best practices. National partnerships modeled on initiatives such as Partnership for Patients can be especially effective at convening diverse stakeholders and accelerating the dissemination of proven safety improvement approaches. Safety net, rural, and disproportionate share hospitals that have demonstrated sustained high performance on patient safety measures despite serving high-complexity populations represent powerful exemplars whose methods and institutional investments should be actively identified, documented, and disseminated.

Additionally, participation in a patient safety APM itself represents a meaningful non-financial incentive. Providing participants with access to timely performance data, a structured platform for understanding safety issues in near-real time, and connections to training and support resources generate genuine value for providers independent of direct financial transfers. It can be a powerful driver of sustained engagement in improvement activities.

Question 6: What have been the successes and shortfalls of current programs and strategies to improve patient safety? What are the key aspects of these strategies that can be improved with different payment strategies, performance measures, and technologies?

Documented Successes: Current patient safety programs have established an important foundation and produced meaningful progress, while also highlighting opportunities for continued refinement and stronger alignment with emerging safety priorities. Several achievements provide a genuine foundation upon which new APM designs can build:

- ***Shared taxonomy and benchmarking infrastructure:*** The AHRQ Patient Safety Indicators (PSI) framework and Common Formats have established a standardized vocabulary for safety events that makes national benchmarking possible. This shared definitional infrastructure is a prerequisite for any comparative measurement system.
- ***Demonstrated event-specific reductions:*** Hospital-acquired condition (HAC) reduction programs have produced measurable reductions in targeted events, including catheter-associated urinary tract infections (CAUTI) and central line-associated bloodstream infections (CLABSI), in settings where clinical protocols are mature and reporting infrastructure is robust. These results demonstrate that structured financial accountability can drive meaningful safety improvements when measurement infrastructure is well-developed.
- ***Definitional harmonization across oversight systems:*** The NQF Serious Reportable Events framework, updated in 2025 and aligned with the Joint Commission Sentinel Events structure, represents meaningful progress in harmonizing safety event definitions across accreditation and federal oversight systems, reducing the definitional inconsistency that has historically complicated cross-setting and cross-program benchmarking.

Persistent Structural Shortfalls: Building on these achievements, several structural challenges remain that provide important opportunities for continued refinement and stronger alignment with emerging safety priorities in future APM designs:

- ***Retrospective measurement introduces critical latency:*** The dominant reliance on claims-based data introduces significant lag between the occurrence of harm and the availability of actionable information. For example, HAC Reduction Program data typically becomes available many months after the performance period, making real-time course correction structurally impossible under current program design, and limiting the utility of the data for proactive safety management.
- ***Penalty-only models create disincentives for transparency:*** Existing frameworks punish providers for past performance without creating meaningful pathways for recovery or investing in the proactive safety culture development that prevents future harm. The HAC Reduction Program, for example, imposes a 1% payment reduction on the lowest-performing quartile of hospitals with no provision for improvement-based

penalty relief, a structure that may disincentivize candid reporting among providers near the performance threshold.

- ***Existing programs disproportionately affect under-resourced providers:*** Value-based purchasing programs have been shown to widen rather than narrow safety performance disparities across provider types, particularly for hospitals serving the most complex and under-resourced patient populations, including those with high proportions of patients with social risk factors that elevate baseline event rates independent of clinical care quality.
- ***Fragmented and duplicative reporting erodes reporting cultures:*** Organizations submitting safety data to multiple overlapping federal, state, and accreditation systems face significant administrative burden and inconsistent data requirements, conditions that undermine the coherent, learning-oriented safety cultures that make programs effective over time.

Key Improvement Opportunities: RTI recommends the following priority improvements:

- ***Payment strategy:*** Shift from punishment to progress as the organizing principles centering improvement-focused, earn-back mechanisms that reward verified progress over time rather than solely penalizing poor historical performance.
- ***Performance measurement:*** Broaden beyond eCQMs alone to integrate a diverse set of patient safety data sources including NHSN surveillance data, CMS administrative claims, patient-reported outcomes and safety events, and facility-reported incident data to capture a comprehensive and timely picture of safety performance across settings and conditions.
- ***Technology:*** Invest in FHIR-compliant data infrastructure, real-time analytics capabilities, rules engines, predictive risk models, and provider-facing dashboards making the surveillance, detection, and response cycle timely and clinically actionable.

Question 7: What are opportunities to improve the measurement of patient safety?

The most significant opportunity to improve patient safety measurement lies in the transition from retrospective, claims-based indicators to prospective, electronically captured measures that enable near-real-time surveillance.

This transition is technically feasible today, given the widespread adoption of certified EHR systems and the maturation of FHIR API standards but requires deliberate, sustained investment in data infrastructure and measure specification at the national level. CMS's 2024 National Quality Strategy stated goal of zero preventable harm, and the leadership of CMS quality officials who have championed patient safety measurement reform, provide important strategic alignment for this transition and should inform the framing of any new measurement initiatives.

RTI identifies the following specific measurement improvement opportunities meriting PTAC's priority attention:

Prioritize Prevention Through Proactive Identification of At-Risk Populations: The highest-value application of improved measurement infrastructure is not counting adverse events after they occur but preventing them before they happen. Deploying rules engines that apply clinical logic directly against EHR data enables detection of patient-specific risk signals, fall risk indicators, infection precursors, medication interaction alerts, days, or weeks before adverse

events occur. Identifying patients at elevated risk and supporting providers in implementing evidence-based preventive interventions at the point of care is the most direct path from improved measurement to improved safety outcomes.

Broaden Data Sources Beyond eCQMs: An effective measurement framework must integrate multiple complementary data streams, including NHSN surveillance data, CMS administrative claims, patient-reported safety events, facility-reported incident data, and clinical EHR data, with each source filling gaps left by the others. Over-reliance on any single data source creates structural blind spots in the safety picture available to providers and oversight bodies alike.

Embed Risk Adjustment from the Outset: Risk adjustment for patient complexity and social determinants of health must be built into all performance measures from program inception not retrofitted as an afterthought. Without appropriate risk adjustment, measures systematically disadvantage providers caring for high-complexity populations, creating perverse incentives to avoid exactly those patients who most need high-quality, safety-conscious care.

Adopt a Phased Measure Expansion Strategy*:* Beginning with a well-validated, feasible initial measure set and expanding systematically over time would avoid overwhelming providers in early implementation years while building the measurement infrastructure needed for comprehensive national surveillance. The initial measure set should be selected based on clinical significance, electronic capture ability, and the availability of evidence-based prevention protocols and the specific composition of that set should be developed through a structured, multi-stakeholder consensus process rather than reflecting any single organization's design choices.

Question 8: What is the composition or balance of patient safety measures needed?

A well-balanced patient safety measure set must span multiple dimensions simultaneously: event type and severity, care setting, data source, and population characteristics. No single measure or measure type can provide a complete picture of patient safety performance, and over-reliance on any single dimension creates blind spots that undermine both measurement validity and provider accountability.

The key dimensions of a well-balanced measure set are presented below:

- ***Event Type and Severity:*** Both low-frequency/high-severity events (NQF Serious Reportable Events, events that should never occur in any healthcare setting) and higher-frequency preventable conditions (hospital-acquired infections, pressure injuries, falls with major injury) where protocol adherence can drive meaningful volume reductions
- ***Measure Type:*** Structure measures (presence of safety systems), process measures (adherence to evidence-based protocols), and outcome measures (actual adverse events) capturing the full causal chain from safety investment to patient harm prevention
- ***Data Source:*** Claims data (broad coverage and longitudinal continuity) + electronic clinical data via FHIR APIs (timeliness and clinical specificity) + patient-reported data (near-misses and care experiences not captured elsewhere) + NHSN and other surveillance data
- ***Care Setting:*** Initial focus on acute care hospitals, with phased expansion to ambulatory surgery centers, nursing homes, long-term post-acute care facilities, inpatient

rehabilitation, dialysis centers, and federally qualified health centers reflecting that preventable harm occurs across the full care continuum

- ***Population Characteristics:*** Measures must be risk-adjusted and disaggregated to identify persistent safety disparities particularly for patient populations with high rates of social risk factors that may drive underperformance independent of clinical care quality

The specific measure composition of any new patient safety APM should be determined through a structured, multi-stakeholder consensus process engaging clinical experts, providers, patient representatives, federal partners, and existing patient safety organizations rather than reflecting the proprietary design choices of any single organization.

Safety does not end at the hospital door. A measure set that excludes post-acute and community-based settings will inevitably fail to capture a substantial proportion of preventable harm and will create perverse incentives to shift adverse events to settings outside the measurement window. Throughout all dimensions, measures must be defined in clinically meaningful, valid, and achievable terms so that improvement goals represent genuine progress rather than statistical artifacts or artifacts of favorable case mix.

Question 9: How can patient-reported data be used more effectively to ensure that patient safety measures are complete and accurate?

Patient-reported data are currently among the least systematically integrated sources in national patient safety measurement, yet they represent a uniquely valuable perspective capturing care experiences, communication failures, and near-miss events that clinical documentation and administrative claims routinely miss.

Realizing the full potential of patient-reported data requires both methodological investment and deliberate structural integration into the national measurement framework.

Develop and Validate Standardized Patient Safety Reporting Instruments: The most important methodological investment is the development and validation of standardized patient safety event reporting instruments designed for patient completion. These instruments should be aligned with AHRQ Common Formats to enable consistent data captured across settings and populations. They should be accessible through multiple modalities, patient portals, telephone, paper, and in-person assistance, to ensure reach across populations with varying levels of health literacy and digital access.

Integrate Patient-Reported Data into the Measurement Framework as a Cross-Validation Source: Patient-reported data should be integrated alongside clinical event data and claims in the national safety measurement framework, with standardized processes for triangulation and discrepancy analysis. When patient-reported safety events cannot be corroborated by clinical data, that discrepancy is itself analytically meaningful. It may indicate underreporting by providers, documentation failures, or systematic gaps in clinical data capture that warrant investigation. Aggregated, de-identified patient-reported data should also be incorporated into provider-facing performance dashboards giving clinical and administrative leaders visibility into patient-perceived safety concerns alongside clinical event rates creating a more complete and actionable picture of safety performance.

Ensure Accessible, Representative, and Complete Data Collection: Collection strategies must be deliberately designed to reach populations with varying levels of health literacy,

language proficiency, and digital access, including non-English speakers, patients with disabilities, patients in rural areas with limited connectivity, and individuals navigating complex social circumstances, all of whom face elevated patient safety risks and whose experiences are most likely to be absent from existing surveillance systems. Representation of these populations in patient-reported safety data is both a measurement quality issue and a patient safety priority: incomplete data systematically obscures the safety experiences of the patients most at risk.

Question 10: What is the role and impact that electronic Clinical Quality Measures (eCQMs) have in improving patient safety?

eCQMs represent a foundational, though not by themselves sufficient, technology for the next generation of patient safety improvement. By automating the extraction and analysis of clinical data directly from certified EHR systems, eCQMs eliminate the latency, manual abstraction burden, and definitional inconsistency that have historically limited the utility of administrative claims-based measures.

Mechanisms Through Which eCQMs Improve Patient Safety: eCQMs improve patient safety through three principal mechanisms:

- ***Near-real-time proactive surveillance:*** eCQMs enable continuous application of clinical logic against incoming EHR data triggering alerts when patterns suggesting elevated adverse event risk are detected. This prospective capability represents a qualitatively different level of patient safety management than retrospective claims analysis, enabling intervention before harm occurs rather than after it has been recorded.
- ***Standardized data capture enabling fair benchmarking.*** eCQMs enable standardization of safety data across provider types and systems through the use of common terminologies, including SNOMED CT, LOINC, and RxNorm, embedded in certified EHRs. This standardization is a prerequisite for the fair, comparable benchmarking that meaningful payment accountability requires; when data are captured consistently, performance comparisons reflect genuine differences in safety outcomes rather than artifacts of data collection variability.
- ***Reduced provider reporting burden***. eCQMs significantly reduce provider burden relative to manual abstraction particularly when implemented through event-driven FHIR API calls that extract only newly created or updated records, avoiding unnecessary system load while keeping safety indicators continuously current.

Critical Limitation: EHR Adoption Gaps in Behavioral Health and Long-Term Post-Acute Care Settings: A fundamental limitation of eCQM-based surveillance must be explicitly acknowledged; eCQMs are only as effective as the certified EHR adoption and data quality in the settings where they are deployed. Many behavioral health (BH) providers and long-term and post-acute care (LTPAC) settings, including nursing homes, home health agencies, inpatient psychiatric facilities, and substance use disorder treatment programs, do not use certified EHR systems, or use systems with significantly limited interoperability relative to acute care hospitals. RTI-led ASPE studies on interoperability in behavioral health and LTPAC settings document these gaps and the structural barriers to their resolution, underscoring the need for a measurement strategy that does not assume uniform certified EHR capability across all provider types and care settings.

Taken together, eCQMs can have a significant positive impact on patient safety when they are used as part of a broader, multi-source measurement strategy rather than as the sole

mechanism for accountability. In settings with certified EHR capacity, eCQMs can support faster detection of safety risks, more consistent benchmarking, and lower reporting burden. In BH, LTPAC, and other settings where certified EHR adoption and interoperability remain uneven, APMs should pair eCQM expectations with complementary data pathways, including patient-reported data, facility-reported events, NHSN data, administrative claims, phased reporting requirements, and targeted technical assistance. This approach preserves the value of eCQMs while ensuring that patient safety measurement remains inclusive, feasible, and actionable across the full continuum of care.

Question 11: What are the types of technologies (e.g., prospective, retrospective) that can be used to effectively reduce provider burden and positively impact patient safety?

Effective patient safety technology must simultaneously accomplish two distinct goals: generating timely, actionable intelligence about safety risks, and doing so in ways that minimize, rather than compound, the administrative burden on already resource-constrained providers. Both prospective and retrospective technologies have important roles to play, and they are most powerful when deployed as complementary, integrated components of a coherent surveillance architecture rather than as standalone point solutions.

Prospective Technologies: Detecting Risk Before Harm Occurs: Prospective technologies focus on identifying risk signals before adverse events materialize, the highest-value application of safety surveillance technology. Key prospective approaches include:

- ***FHIR-compliant data pipelines.*** Event-driven FHIR API calls that extract structured clinical data directly from certified EHRs, pulling only newly created or updated records, enable continuous monitoring without requiring providers to manually enter or export data. This approach avoids unnecessary system load on clinical infrastructure while keeping safety indicators continuously and automatically current.
- ***Clinical rules engines.*** Rules engines that apply the underlying clinical logic for patient safety indicators to incoming data streams can identify trigger patterns, combinations of clinical findings that historically preceded adverse events, and generate near-real-time alerts for provider review. When integrated into existing clinical workflows rather than deployed as separate systems, these tools add analytical value without adding a separate interface burden for clinicians.
- ***Predictive risk models.*** Machine learning and AI-enabled predictive models can integrate structured clinical data, claims history, medication records, and patient demographic information to generate individualized, continuously updated risk scores, enabling clinical teams to target preventive interventions toward the specific patients most likely to experience harm. The critical design requirement is that these models be integrated directly into clinical workflow tools rather than deployed as separate applications requiring separate provider interaction.

Retrospective Technologies: Analyzing Patterns and Informing Improvement: Retrospective technologies provide the analytical depth needed to identify systemic vulnerabilities, measure improvement over time, and inform quality improvement strategies at the organizational and population level:

- ***Batch Extract-Transform-Load (ETL) pipelines*:** ETL pipelines that integrate claims data with clinical, pharmacy, and social determinant data enable comprehensive,

longitudinal analysis of safety trends across patient populations, provider types, and time periods. This retrospective view complements prospective surveillance by revealing patterns that are only visible across large populations and extended timeframes.

- ***Natural language processing (NLP):*** NLP applied to free-text incident reports, nursing notes, and provider documentation can extract structured safety signals from narrative sources that rules engines alone cannot process significantly expanding the analytical value of existing reporting systems without requiring providers to change their documentation practices.
- ***Provider-facing performance dashboards:*** Near-real-time dashboards that display safety event rates, trends, benchmark comparisons, and improvement trajectories give clinical and administrative leaders the information they need to make timely operational decisions. When dashboards are designed for usability, presenting actionable information in accessible formats rather than raw data exports, they serve as both accountability tools and quality improvement platforms.

Cross-Setting Technology Considerations: It is important to acknowledge that technology solutions designed primarily for acute care settings may not transfer directly to other care settings. BH providers, LTPAC facilities, and community-based organizations frequently operate without certified EHR systems or with systems of limited interoperability creating gaps in prospective surveillance coverage precisely in the settings where vulnerable patient populations are often concentrated. Technology strategies must account for this heterogeneity and include pathways for extending surveillance capabilities to settings beyond the acute care hospital.

Question 12: What are opportunities to address barriers to integrating AI/technology (e.g., data sharing, data quality, interoperability, security) that aid in improving patient safety?

The integration of AI and advanced technology into patient safety surveillance faces several well-documented and interconnected barriers. Addressing these barriers requires both technical standards and policy mechanisms operating in parallel.

Data Sharing Barriers: Many of the most valuable data sources for patient safety surveillance, including clinical EHR data, pharmacy records, social determinant information, and patient-reported safety events, are siloed across organizations, systems, and jurisdictions. Legally binding data sharing agreements, standardized data use frameworks, and clear regulatory guidance on permissible uses of safety data are prerequisites for building the integrated data infrastructure that effective AI-enabled surveillance requires. PSOs operating under the statutory protections of the PSQIA provide one existing mechanism for enabling protected data sharing for safety improvement purposes, a model that should be evaluated for potential integration into new APM frameworks.

Data Quality and Standardization Barriers: AI and machine learning models are only as reliable as the underlying data on which they are trained and applied. Inconsistent coding practices, incomplete clinical documentation, variable data element definitions across EHR platforms, and the underrepresentation of certain patient populations in training datasets all introduce bias and reduce model reliability. Investments in data standardization, including broader adoption of common terminologies such as SNOMED CT, LOINC, and RxNorm, and in data quality governance frameworks are foundational requirements for trustworthy AI-enabled safety surveillance.

Interoperability Barriers: The lack of universal, standardized interoperability across EHR platforms, payer systems, and public health reporting infrastructure remains a fundamental barrier to integrated safety surveillance. While the maturation of HL7 FHIR standards has created a viable technical pathway for interoperability at scale, broad adoption requires both regulatory requirements and financial incentives, including the APM-based incentives for FHIR adoption described in RTI's response to Question 5. As noted in ASPE's work on interoperability in BH and LTPAC settings, these barriers are particularly acute for provider types operating outside the acute care hospital sector.

Cybersecurity and Privacy Barriers: The integration of clinical, claims, and patient-reported data into centralized or federated safety analytics platforms creates cybersecurity risks that must be addressed through robust technical security standards, access controls, and audit mechanisms. Privacy protections, ensuring that individual patient data are used exclusively for safety improvement and not for enforcement, litigation, or commercial purposes, are essential prerequisites for the trust that makes candid safety reporting possible. These protections must be established in data governance frameworks, not merely stated as program intent.

Financial Barriers to Technology Adoption: Many providers, particularly rural, critical access, and safety net facilities, lack the financial resources to invest in the EHR upgrades, interoperability infrastructure, staff training, and analytics capabilities required to participate fully in technology-enabled safety surveillance. APM design should include provisions for supporting provider technology investment, whether through participation-based incentives, grant programs, or other mechanisms that make the infrastructure of safety participation accessible across the full spectrum of provider types and sizes.

Question 13: What are ways to utilize AI to improve patient safety? For example, what are approaches to integrate AI predictive models into the provider workflow to aid in the identification of potential medical errors? What are ways in which AI/machine learning can be used to develop patient safety metrics?

Artificial intelligence offers several distinct and complementary pathways to improving patient safety, from real-time clinical risk identification to population-level pattern analysis and measure development. The most impactful applications share a common design principle: they must be integrated into existing clinical and operational workflows in ways that support, rather than disrupt or add burden to, care delivery

AI Predictive Models Integrated into Provider Workflow: The most clinically immediate AI application is the integration of predictive risk models directly into provider workflow tools. electronic clinical decision support systems that generate individualized, continuously updated risk assessments at the point of care. These tools can alert clinical teams to patients at elevated risk of adverse events, falls, hospital-acquired infections, medication errors, diagnostic failures, early enough to enable preventive intervention before harm occurs.

The key to effective workflow integration is designing AI tools that present actionable, specific recommendations in context, not generic risk scores that require additional clinical interpretation time. Alerts should be calibrated to minimize alarm fatigue, be actionable within the existing clinical workflow, and be accompanied by specific recommended interventions so that clinicians can act immediately on AI-generated risk signals without disrupting care delivery.

AI and Machine Learning for Patient Safety Metric Development: Beyond real-time clinical support, AI and machine learning offer powerful tools for developing and continuously refining patient safety metrics:

- ***Automated identification of safety signals:*** Machine learning models applied to large, integrated datasets, combining clinical EHR data, claims, pharmacy records, and patient-reported information can identify previously unrecognized patterns of harm that do not appear in existing measure sets. This capability is particularly valuable for identifying safety failures in domains, such as diagnostic errors and care transitions, which are currently underrepresented in administrative measure sets.
- ***Natural language processing for incident report analysis:*** NLP applied to free-text safety incident reports, nursing narratives, and provider documentation can extract structured, analyzable safety signals from narrative sources at scale dramatically expanding the effective scope of safety surveillance beyond the structured fields captured in administrative data.
- ***Continuous measure refinement:*** Machine learning approaches can be applied to evaluate and refine existing safety measures over time identifying measures that have lost discriminatory validity, detecting coding drift or gaming behaviors, and informing measure updates in response to changes in clinical practice, treatment protocols, and care delivery patterns.

Critical safeguards must accompany all AI applications in patient safety. Model transparency, the ability to explain why a risk score was generated, is essential for clinical adoption and for identifying when models are producing unreliable outputs. Ongoing validation against current, representative data is necessary because the clinical environments in which models are deployed change over time, and models trained on historical data can drift. Systematic bias assessment is non-negotiable, particularly to ensure that predictive models do not systematically disadvantage patient populations with complex social determinants of health or providers serving those populations.

Question 14: What are potential payment sources for integrating AI and other new technologies to aid in improving patient safety?

Sustainable integration of AI and advanced technology into patient safety surveillance requires a diverse portfolio of payment mechanisms, no single funding source is likely to be sufficient at the scale required for national impact. RTI identifies the following principal payment pathways:

APM Participation Incentives: As described in RTI's response to Question 5, participation in a patient safety APM itself can generate meaningful non-financial value for providers, including access to timely performance data, a structured platform for understanding safety issues in near-real time, and connections to training and analytical resources. This participation-based value represents a meaningful incentive for technology investment independent of direct financial transfers. Additionally, APM structures that reward FHIR adoption and electronic quality measurement, as RTI recommends, create direct financial incentives for the interoperability infrastructure investments that underpin AI-enabled surveillance.

CMMI Innovation Authority: The CMS Innovation Center's (CMMI) existing statutory authority to test innovative payment models provides a pathway for piloting technology-enabled APM designs including those that incorporate AI-based safety surveillance tools, without requiring new Congressional authorization. Model tests can be designed to evaluate both the safety

impact and the financial sustainability of technology integration, generating the evidence base needed to inform broader program adoption.

Federal Grant and Cooperative Agreement Programs: Federal grant programs, including those administered through AHRQ, the Health Resources and Services Administration (HRSA), and the Office of the National Coordinator for Health Information Technology (ONC), provide existing mechanisms for funding provider technology adoption and data infrastructure development. Coordinating these programs with APM incentive structures would create complementary funding pathways, grants supporting infrastructure investment, APM incentives rewarding the performance improvements that infrastructure enables.

Value-Based Technology Investment: Providers who participate in safety-focused APMs have a direct financial rationale for investing in the technology infrastructure required to participate effectively and competitively, particularly when APM performance incentives are designed to reward electronic quality measurement, FHIR adoption, and near-real-time surveillance capabilities. The business case for technology investment becomes substantially clearer when APM participation demonstrably improves financial performance. This alignment between technology investment and financial return is a key design principle for making AI-enabled safety surveillance economically sustainable for providers across the size and resource spectrum.

Question 15: How can patient safety and high-quality care be incentivized in Alternative Payment Models (APMs) (e.g., safety holdbacks or non-payment, no-bill rule for repairs, diagnostic safety bonus)?

Patient safety incentives in APMs are most effective when structured around clear, high-level principles that combine financial accountability with genuine and accessible pathways for improvement. RTI recommends that PTAC consider the following design principles for APM-based patient safety incentives:

Design Incentives Around Improvement, Not Solely Punishment: Financial accountability structures, including payment withholding mechanisms tied to minimum safety performance thresholds, should be designed to create improvement incentives, not simply to penalize poor performance. Withholding provisions should be accompanied by clear, accessible pathways through which providers can earn back withheld funds by demonstrating verified, meaningful improvement directed specifically at addressing the identified patient safety issue. This improvement-oriented design makes the financial consequences of safety performance directly constructive, channeling accountability into the specific operational and clinical changes that reduce harm.

Ensure Thresholds Are Clinically Meaningful and Transparent: Any payment accountability thresholds must be clinically meaningful, achievable, and publicly transparent, so that providers understand exactly what performance is required and can verify that their performance data are accurately measured and fairly evaluated. Thresholds that are achievable only by providers with the most favorable patient populations effectively function as arbitrary penalties on providers serving complex populations, undermining the equity goals that patient safety programs should advance.

Reward Electronic Quality Reporting and Participation Infrastructure: Incentive structures should reward providers who invest in the measurement infrastructure, including FHIR-compliant reporting, eCQM adoption, and interoperable health information exchange, which enables the timely, reliable safety data on which all other incentive mechanisms depend. Making the measurement infrastructure itself a rewarded behavior creates a self-reinforcing cycle of data quality improvement and safety accountability.

Include Both Standalone and Integrated APM Pathways: The appropriate incentive structure for patient safety improvement may differ depending on whether patient safety is addressed through a standalone APM or integrated as a priority component within existing APMs such as ACO programs or other care models. Both pathways have merit and may be appropriate for different provider contexts. Incentive design should account for this structural flexibility rather than assuming a single universal model architecture.

Question 16: How can financial incentives be used while also ensuring unintended consequences (e.g., stinting on care, cherry-picking, early discharge) do not occur?

Financial incentives in healthcare payment systems are powerful tools that can drive intended behaviors but also produce unintended consequences when not carefully designed and monitored. The risks of patient selection bias, stinting on care, and premature discharge must be addressed through a combination of measure design, monitoring, and governance safeguards built into any APM framework from the outset.

RTI recommends grounding unintended consequence prevention in the following high-level principles:

Use All-Patient Denominator Definitions: The most effective structural safeguard against patient selection bias is ensuring that safety measures use denominator definitions broad enough that providers cannot improve measured performance by selectively avoiding complex patients. When measure denominators are defined to include all patients, regardless of complexity, payer mix, or social risk, the financial rationale for cherry-picking is removed by design.

Monitor for Case Mix Shifts: Ongoing monitoring for measurable shifts in provider patient population characteristics, including complexity, payer mix, and social risk factor prevalence, across performance periods provides an early-warning system for patient selection behavior. If a provider's patient population becomes measurably less complex following the introduction of safety incentives, that pattern warrants structured investigation.

Require Robust, Multi-Dimensional Risk Adjustment: Robust risk adjustment for patient complexity and social determinants of health ensures that providers serving high-complexity or high-social-risk populations are evaluated relative to what would be expected given their patients' characteristics, not against raw performance benchmarks that disadvantage them structurally. Proper risk adjustment removes the financial rationale for avoiding complex patients and ensures that safety incentives reward genuine clinical performance improvement rather than favorable case mix composition.

Extend Attribution Windows Beyond the Inpatient Stay: To guard against premature discharge as a gaming strategy, safety measure attribution windows and post-discharge event

monitoring should extend meaningfully beyond the inpatient stay, capturing 30-day readmissions, post-discharge infections, and other adverse outcomes that may result from premature discharge decisions. Aligning attribution windows with the full episode of care, rather than the inpatient admission alone, ensures that providers cannot shift adverse events outside the measurement window by accelerating discharge.

Maintain Comprehensive Monitoring and Audit Infrastructure: Cross-referencing self-reported safety events with clinical data and administrative claims signals, conducting independent data validation audits, and maintaining clear escalation and review pathways for persistent data anomalies together constitute a robust system for detecting gaming behaviors that evade any single structural safeguard. The goal is not to assume bad faith among providers, the vast majority of whom are acting in good faith, but to design a monitoring system rigorous enough that gaming behaviors are unprofitable and reliably detectable, preserving the integrity of the incentive structure for all participants.

Align Incentives to Eliminate Conflicting Requirements: Financial incentives for patient safety should be designed to create alignment with, not operate in conflict with, existing payment and quality programs. Providers who face conflicting incentive signals across programs may make decisions that optimize for one program's metrics at the expense of another's safety requirements. Deliberate coordination across federal, state, and accreditation-body programs is essential for ensuring that safety incentives operate coherently across the full landscape of provider accountability requirements.

Conclusion

RTI International appreciates the opportunity to provide substantive, evidence-grounded input to PTAC on the critical challenge of improving patient safety through Alternative Payment Models and related policy mechanisms. The evidence is clear: preventable harm remains a persistent, large-scale challenge requiring systemic structural change, not incremental adjustments to programs that have already demonstrated their limits. A learning-oriented, improvement-focused approach to patient safety, anchored in near-real-time surveillance infrastructure, equitable and balanced payment incentives, multi-source measurement, meaningful patient engagement, and active peer learning, represents the most promising path toward the goal of zero preventable harm. RTI stands ready to provide additional detail on any of the perspectives offered in this response and welcomes continued dialogue with PTAC and HHS on these important priorities.