





Swords into plowshares

Leveraging clinical data quality excellence and data mining tools for promoting quality of care

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Course agenda and session topics

| Topic | Speakers | Time |
|---|---|-----------------------|
| Introduction and course objectives | All | 1:30 p.m. – 1:35 p.m. |
| Why we need to start treating clinical data like financial data. A case study from Johns Hopkins, the value of data. Leveraging high reliability principles and financial management concept. | Dr. Peter Pronovost | 1:35 p.m. – 2:20 p.m. |
| How do you begin to think about clinical data transactions like financial data transactions and governance: a quick overview of COSO, due diligence and ERM. How to begin to applying these concepts to clinical data quality and reporting integrity | Aloha McBride/ Marc Schulman/ Tamil Chellaiah | 2:20 p.m. – 3:15 p.m. |
| Break | — | 3:15 p.m. – 3:30 p.m. |
| Leveraging data mining/analytics to improve quality of care through the automated generation and distribution of actionable exception reports | David Hoffman | 3:30 p.m. – 4:30 p.m. |

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Setting the stage on data — the never-ending struggle to determine the signal through noise

- ▶ Patient safety indicators are derived from administrative codes in billing and are broadly used in hospital ranking programs and pay-for-quality programs.
- ▶ Patient safety indicators are frequently inaccurate — missing many harms while also reporting false positives.
- ▶ Too often, hospital ratings and rankings reflect how well a hospital codes rather than how a hospital provides care.
- ▶ For instance, Johns Hopkins reduced the number of patient safety indicator (PSI) incidents it reported to CMS by 75%, thereby reducing its penalties.
- ▶ **However — only 10% of the improvement resulted from *changes in clinical care*. The other 90% resulted from *documentation and coding* that was more thorough and accurate.**

Instead of using PSIs, there is an enormous need for valid and reliable measures that can be tested, controlled and audited, similar to financial transactions and measures.

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Medical errors – why they occur and the role of clinical data integrity

MEDICAL ERRORS NATION'S THIRD BIGGEST KILLER IN 2013



Source: Martin Makary, Michael Daniel study at Johns Hopkins University School of Medicine
Jim Sargent, USA TODAY



Why do errors occur?

Commonly, errors are caused by systemic problems, including a lack of integrated process, technologies and governance that drive unwarranted variation.

What is at stake when clinical data contains errors?

- ▶ A patient's life and livelihood
- ▶ Misdiagnosis/delayed diagnosis
- ▶ Medication errors
- ▶ Performance measurement calculation errors
- ▶ Reimbursement errors
- ▶ Trust in your organization's ability to provide safe care

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The problem with bad data

- ▶ Can result in inappropriate clinical decision-making and creates significant patient safety risk
- ▶ Impairs evidence-based medicine and coordination across the care continuum
- ▶ Increases the risk of beneficiaries not having access to covered services
- ▶ Can result in billing, payment and performance inaccuracies
- ▶ Produces inaccurate stakeholder reporting
- ▶ Erodes consumer trust and increases legal risk

Data 'fundamentally broken' at St George's

GAO Highlights

MEDICARE program Oversight Hindered by Data Challenges, Underscoring Need for Continuous Improvements

HOW BAD DATA HURTS QUALITY IMPROVEMENT IN HEALTHCARE

Copy-paste use in EHRs cited for safety concerns

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How does good data become bad information?

- ▶ Methods by which it is captured and stored — manual, incomplete, etc.
- ▶ Data and system architecture lacks interoperability, resulting in blind spots.
- ▶ Cultural roadblocks across the health system prevent collaboration.
- ▶ Integrity of systems is not adequately protected, allowing for vulnerabilities and workarounds.
- ▶ Clinicians and data scientists operate in silos so reporting is not relevant or actionable in the clinical setting.
- ▶ Lack of structure and controls in underlying clinical process to manage quality data inputs.



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What is High Reliability Organizing (HRO) and how can it help us to improve clinical data integrity?



HRO is the pursuit of flawless performance under complex, dynamic and oftentimes, potentially catastrophic conditions.*

Core characteristics

1. Sensitivity to operations
2. Deference to expertise
3. Reluctance to simplify
4. Preoccupation with failure
5. Commitment to resilience

*Source: Karl E. Weick and Kathleen M. Sutcliffe, *Managing the Unanticipated: Resilient Performance in an Age of Uncertainty*

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How have HROs organized for success? The advent of the *Operating Management System*

Unifying framework for structured assurance of safety, quality and reliability and an integrated approach for continuous organizational learning, innovation and improvement



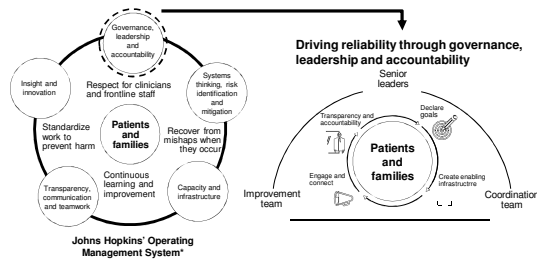
For critical data, this means the utmost control, monitoring and testing to certify that all data sets are complete, accurate, interoperable, accessible, relevant and auditable.

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What are the core components of an HRO operating model — a lesson from Johns Hopkins Medicine



Governance supports a committee structure at every level of the organization — similar to a board finance and audit committee — the clinical quality committee has fiduciary duties to confirm clinical quality and safety — inclusive of clinical data integrity

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Johns Hopkins Medicine – governance, leadership and accountability

- ▶ Board of Trustees (Board) confirms oversight for quality and safety
- ▶ Applies the same rigor as applied to finance
- ▶ High reliability is a specific strategic objective
- ▶ Strategic objectives flow consistently throughout the health system
- ▶ Quality, safety and service are key components of strategic objectives
- ▶ Each clinical area is accountable for performance in four standard domains (patient safety, experience, value and external reporting)
- ▶ Leaders create shared accountability that cascades from Board to bedside

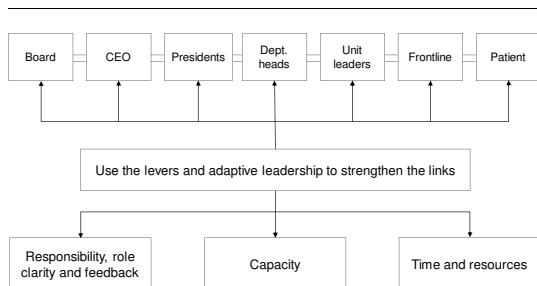


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Shared leadership accountability



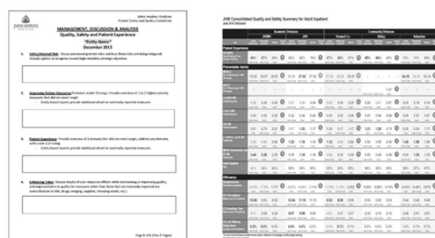
Source: Weaver, J. Healthcare Management. In press

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Rigorous reporting and monitoring of core quality and safety measures



Source: Johns Hopkins Medicine, Armstrong Institute for Patient Safety and Quality
Proprietary

The Board confirms that a framework for reporting quality and safety of care mirrors the rigor and comprehensiveness of a consolidated financial statement.

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Driving accountability through proactive monthly and quarterly reporting and oversight

- | | |
|----------|---|
| 1 | Performance below target for one month or one performance period (ex: one quarter) <ul style="list-style-type: none"> Local champions to form performance improvement team Review data and investigate defects Identify barriers and implement targeted interventions |
| 2 | Performance below target for two months or two performance periods <ul style="list-style-type: none"> PI team presents to local Hospital Quality Council and President/CEO President meets with appropriate clinical director and PI team President presents plan with timelines to JHM QSS executive committee |
| 3 | Performance below target for three months <ul style="list-style-type: none"> Department Director/MD champion present to local hospital Quality and Safety Board (trustee chair and President sign QI plan) President presents to JHM Quality Safety Board Committee AI conducts peer-to-peer review |

By monitoring clinical quality and safety, any small change in clinical pathway performance is noted, investigated and remediated thoughtfully and quickly — individuals are rewarded for anticipating, identifying and remediated clinical risks.

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So – why are we concerned with clinical data quality and controls?

Health care organizations require complete, accurate, relevant and reliable patient safety, quality and performance data in order to make sound clinical decisions, support reimbursement documentation and meet their internal and external reporting requirements.

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Questions to ponder...

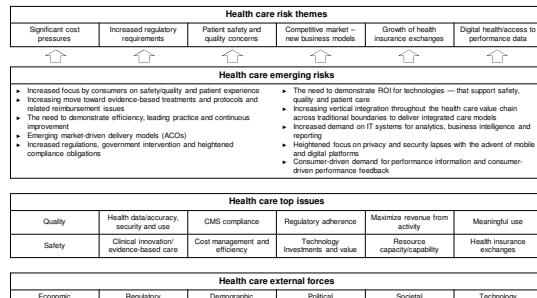
- ▶ Do you have a "Board to the Bedside" governance structure for clinical quality and patient safety measures and risks?
- ▶ Are you managing and overseeing your clinical data with the same level of rigor as your financial data?
- ▶ Do you have risk and internal control(s) owners over your clinical processes, systems and data?
- ▶ How confident are you that the clinical data residing in your systems is complete, accurate, interoperable, accessible, relevant and auditable?
- ▶ Do you understand how each clinical data element traverses through all of your systems into clinical diagnosis decisions, revenue cycle and performance reporting?
- ▶ Are you regularly testing and independently auditing clinical data, diagnosis and coding to identify control gaps, compliance gaps and training gaps?

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Health systems must proactively *identify, understand and manage* clinical risks ... robust effective internal controls, monitoring and governance activities are crucial



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To enable high reliability of clinical data, health systems must treat clinical data with the same rigor as financial data

Enterprise Risk Management (ERM)
ERM is a discipline that addresses the full spectrum of an organization's risks, including challenges and opportunities, and integrates them into an enterprise-wide, strategically aligned portfolio view. ERM contributes to improved decision-making and performance management and supports the achievement of an organization's mission, goals and objectives.

Internal Controls Management (ICM)
ICM is a process for promoting achievement of an organization's objectives in operational effectiveness and efficiency; reliable clinical performance reporting; and complying with laws, regulations and policies.

How do we quantify enterprise risks and design internal controls that matter?
The impact of a risk is quantified in terms of existing performance measures and is evaluated by gauging the potential volatility the risk has on strategic goals and related business outcomes. Internal controls are designed, monitored and tested against those key clinical processes that drive critical performance and compliance measures.

Why are ERM and ICM critical to HROs?
HROs must anticipate risk and mitigate harm in order to achieve mission success. In order to anticipate risk, health systems must have early warning and continuous monitoring systems in place to proactively address potential harms. ERM and ICM provide this capability and prescribe disciplined activities to root out data quality issues and test the reliability of performance and compliance reporting measures.

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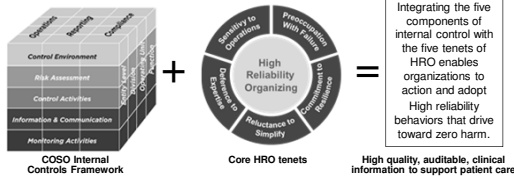


The basics – incorporating HRO into risk management and internal controls using the COSO internal controls framework to drive clinical quality and reporting integrity

- Leveraging the principles of enterprise risk management, internal controls and HROs can identify potential harms while improving clinical data quality and reporting
- Start by asking the simple question ...

How might we manage the integrity of clinical data as if it were financial data in order to reduce errors in diagnoses and potential patient harm?

As health care compliance and risk professionals — you understand the level of rigor and scrutiny applied to ticking and tying every invoice in order to maintain financial transparency and solvency — might we well do the same when someone's life is at risk?



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COSO and HRO aligned – COSO provides a structured framework to assess the internal controls environment to identify potential risk which clearly is aligned to HRO

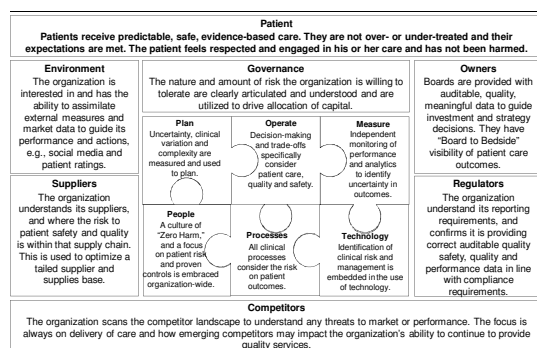
| Components of internal control | Principles of internal control | Alignment to high reliability tenets |
|----------------------------------|---|---|
| 1. Control environment | <ol style="list-style-type: none"> Demonstrates commitment to integrity and ethical values Board of Directors demonstrates independence from management and exercises oversight responsibility Management, with board oversight, establishes structure, authority and responsibility The organization demonstrates commitment to competence The organization establishes and enforces accountability | <ul style="list-style-type: none"> Commitment to resilience Preoccupation with failure Deference to expertise Reluctance to simplify Sensitivity to operations |
| 2. Risk assessment | <ol style="list-style-type: none"> Specifies objectives with sufficient clarity to enable identification of risks Identifies and assesses risk Considers the potential for fraud in assessing risk Identifies/assesses significant change that could impact system of internal control | <ul style="list-style-type: none"> Preoccupation with failure Sensitivity to operations Reluctance to simplify |
| 3. Control activities | <ol style="list-style-type: none"> Selects and develops control activities Selects and develops general controls over technology Deploys through policies and procedures | <ul style="list-style-type: none"> Preoccupation with failure Sensitivity to operations Deference to expertise |
| 4. Information and communication | <ol style="list-style-type: none"> Obtains or generates relevant, quality information Communicates internally Communicates externally | <ul style="list-style-type: none"> Preoccupation with failure Commitment to resilience Reluctance to simplify |
| 5. Monitoring | <ol style="list-style-type: none"> Selects, develops and performs ongoing and separate evaluations Evaluates and communicates deficiencies | <ul style="list-style-type: none"> Preoccupation with failure Deference to expertise Commitment to resilience |

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What does an ERM- and ICM-enabled health care organization look like?



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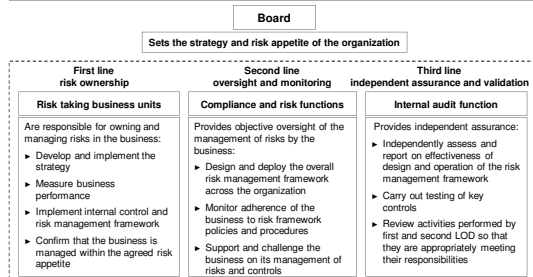
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The Three Lines of Defense Model for clinical data

The Three LOD model — a standard approach in financial management — can be applied to clinical, safety and quality data. Such an approach sets the structure for clinical data to be treated with just as much rigor as financial data.

The Three Lines of Defense model confirms there is segregation between direct accountability for risk decisions, independent oversight and independent assurance on the effectiveness of risk management, control and governance processes.

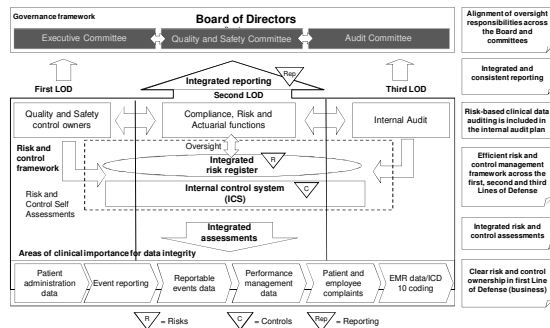


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HRO's aim to have clinical data and integrity auditing as standard activities using a similar LOD assessment and reporting model



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Step 3 – Identify areas of significant clinical quality and safety risk — sample risk areas and categorize across a threat matrix

- ③ Review the risk assessment to review and validate supporting and relevant data. Assess the key risk indicators and variance to compile a qualitative and quantitative assessment of the key risk areas.

Clinical

- Variations in service delivery related to demographic
- Incident database incomplete, inaccurate — potential for underreporting of events
- EMR incomplete, incorrect: misdiagnosis or incorrect treatment
- Errors in receipt of medications
- Delayed identification of service quality errors — i.e., undetected shifts in mortality/morbidity

IT

- Systems disparate: linkages are unstable
- Data entry predominately manual and by low-skilled teams
- Lack of clarity concerning the underlying analytics
- Insufficient cybersecurity measures — potential for safety and security breaches
- Underdeveloped business continuity planning for system shutdown

Compliance

- Risk of non-compliance with mandatory reporting resulting from poor data control
- Delayed action in addressing undiscovered issues

Safety and Quality

- Errors to patient laboratory data — slow/inaccurate reporting
- Primary care referral database out of date affecting patient handover and communication
- Incident reporting lag — three month turnaround; May result in repeat issues
- Medical record process manual — increased opportunity for errors

Governance

- Performance reporting is static: consolidate three month — limited predictive value
- Unclear reporting and accountability structures in key areas

Workforce

- Rostering occurs separately from planned activity
- Significant churn in the administrative department resulting in operational disruption

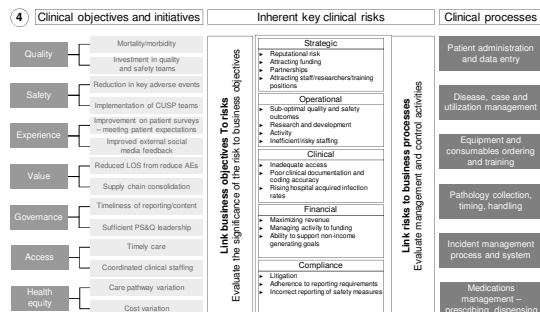
EY/Johns Hopkins Medicine Proprietary

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Step 4 – Link risk to clinical objectives and processes



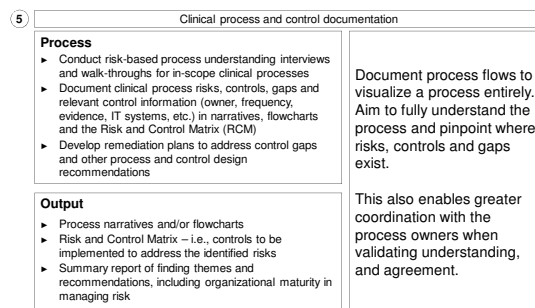
Source: EY/Johns Hopkins Medicine Proprietary

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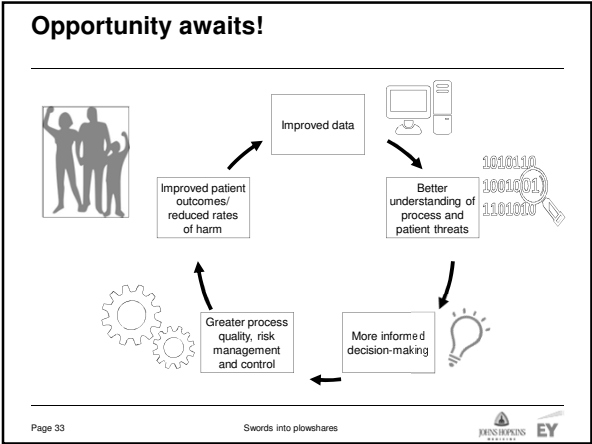
Step 5 – Assessment of internal controls design



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**Leveraging data mining and analytics to drive
 quality, compliance and risk reduction**

What you will learn

- ▶ The solution is hiding in the record.
- ▶ Metadata is your friend.

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But first, for some context

- ▶ First rule of corporate compliance:
 - ▶ Don't bill for care you didn't provide.
 - ▶ That's stealing.

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Some more context

- ▶ Second rule of corporate compliance:
 - ▶ Don't bill for care you provided that wasn't necessary.
 - ▶ That's stealing.

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And

- ▶ Third rule of corporate compliance:
 - ▶ Don't bill for care you provided that was necessary but was of poor quality.
 - ▶ That's _____?

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“Quality care” did not mean the patient got “all better.”

Doctors couldn't and were not expected to guarantee outcomes.

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With *Value-based purchasing*,
all that has changed.

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Acronyms that have ruled our lives

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HCAHPS

Hospital **C**onsumer **A**ssessment of **H**ealthcare
Providers and **S**ystems

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CAHPS

**Consumer Assessment of Healthcare
Providers and Systems**

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DSRIP(P)

**Delivery System Reform Incentive
Payment Program**

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And now

VBP

(a very special acronym)

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VBP**Value Based Purchasing**

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MACRA**Medicare Access and CHIP (Child Health Insurance Program) Reauthorization Act of 2015**

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What is MACRA?

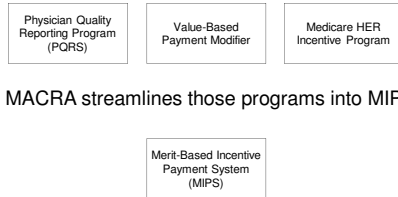
- ▶ The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) is a bipartisan legislation signed into law on April 16, 2015:
- ▶ What does Title I of MACRA do?
 - ▶ Repeals the Sustainable Growth Rate (SGR) Formula
 - ▶ Changes the way that Medicare rewards clinicians for value of volume
 - ▶ Streamlines multiple quality programs under the new Merit-Based Incentive Payments System (MIPS)
 - ▶ Provides bonus payments for participation in eligible alternative payment models (APMs)

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MIPS changes how Medicare links performance to payment

There are currently multiple individual quality and value programs for Medicare physicians and practitioners:



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Medicare Access and CHIP Reauthorization Act (MACRA)

- MACRA in Brief**
- Legislation passed in April 2015 that repealed the Sustainable Growth Rate (SGR)
 - CMS released proposed rule on MACRA implementation in July 2015, which is available for public comment until July 1, 2016
 - Effectively changes the way CMS pays clinicians for Medicare Part B services
 - Locks provider reimbursement rates at near zero growth
 - 2016 – 2019: 0% increase
 - 2020 – 2021: 0% increase
 - 2022 and on: 0.25% increase
 - Regulates development of two new Medicare Part B payment tracks: Merit-Based Incentive Payment System (MIPS) and Advanced Alternative Payment Models (APM)

Two New Medicare Part B Payment Tracks Created Under MACRA

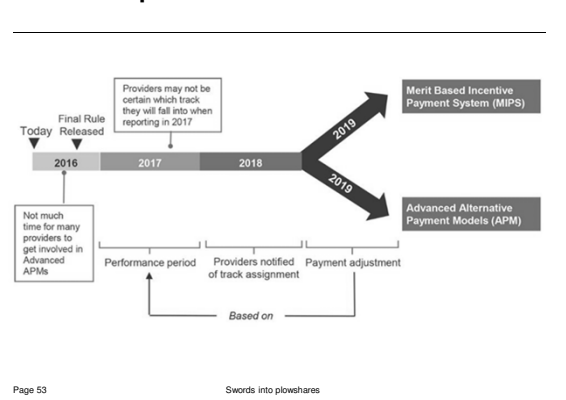
- Merit-Based Incentive Payment System (MIPS)**
- Overview:** Rules creating quality programs (Physician Quality Reporting System, Value-Based Payment Modifier, and meaningful use rules) and budget-neutral program where providers are tracked on quality, volume, cost, clinical practice improvement, and EHR use, and assigned payment adjustment accordingly.
- Who Qualifies?**
- Meets all eligibility criteria to qualify for the APM track
 - 90% of eligible clinicians are required to participate in the MIPS track

1. CMS will release a final rule on MIPS implementation in 2016. CMS will also release a final rule on APM implementation in 2016. CMS will also release a final rule on the MIPS track in 2016. CMS will also release a final rule on the APM track in 2016. CMS will also release a final rule on the MIPS track in 2016. CMS will also release a final rule on the APM track in 2016.

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MACRA implementation timeline



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Merit-Based Incentive Payment System (MIPS)

Proposed Reporting Requirements Under Four Performance Categories

- Quality**
 - Adopted from PQRS
 - Requires clinicians to report six quality measures to CMS
 - Over 200 measures to choose from, 80% tailored to specialists
- Resource Use**
 - Adopted from VBPRI
 - No reporting requirement
 - Assesses clinician cost performance based on Medicare claims data
- Clinical Practice Improvement Activities**
 - New performance category for clinicians
 - Measures performance by assessing clinical practice improvement activities such as activities focused on care coordination, beneficiary engagement, and patient safety
- Advancing Care Information**
 - Adopted from the Medicare EHR Incentive Program (Meaningful Use)
 - Measures clinicians' certified EHR use
 - Applies to all clinicians¹ and no longer requires all-or-nothing measure reporting

Financial Implications

Maximum Provider Penalties and Bonuses

Annual Update for MIPS Track

0.25% Annual update to physician fee schedule from 2026 onwards

1) Eligible clinicians include physicians, physician assistants, nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists, and groups that include such members.

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AMA STEPSforward

PRACTICE SUPPORT RESOURCE LIBRARY CONTACT US SHARE

HOME | MODULES | LIVE EVENTS | HOW IT WORKS

CATEGORIES

- All (43)
- Patient Care (13)
- Workflow and Process (12)
- Leading Change (8)
- Professional Well-being (4)
- Technology and Finance (6)

Listening with empathy ONE AVAILABLE

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Quality Reporting and the importance of Qualified Clinical Data Registries (QCDRs) in maximizing your success ONE AVAILABLE

Ensure your practice's quality reporting success [Get started >](#)

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AMA | Payment Model Evolution

What is MACRA?

The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) repealed the sustainable growth rate formula replacing a broken, frustrating and needlessly unpredictable system. This transition stabilizes Medicare payments and has the potential to reward physicians for what they do best — providing quality, high-value care. From education materials to customized practice insights, we'll help you get a clear view of your payment model options and your practice's financial wellness throughout the payment and care delivery reform process.

[Learn About MACRA](#)

[Take MACRA Assessment](#)

[How Will MACRA Affect Me](#)

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Now back to
metadata

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Two keys to survival

1. Data mining
2. Exception reports

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Metadata as sword

Detection...

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Metadata as sword

Detection...
Followed by extrapolation...

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Metadata as sword

Detection...
Followed by extrapolation...
And then,

Repayment!

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Metadata as tool

Surveillance,
Followed by intervention,
Followed by corrective action.

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A simple example

Unread lab results,

Or PAP smears.

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A not-so-simple example

DVT prophylaxis

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What does the future hold?

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Electronic medical records (EMR)

Friend or Foe?

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Electronic medical records (EMR)

- ▶ Friend or Foe?
- ▶ It doesn't matter.

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EMR as a term paper

- ▶ Citation, not Plagiarism.

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EMR as a term paper

- "Copy and Paste"
- Is a dangerous tool we actually don't need

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A wonderful challenge

Changing a flat tire on a bus ...

... while the bus is moving.

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Thank you!

- (Please complete your evaluation)

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