

## WHITE PAPER

### UNDERWRITING THE EPISODE OF CARE

#### THE CMS-MANDATED TRANSITION TO HOSPITAL-MANAGED ACTUARIAL RISK

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## EXECUTIVE SUMMARY

### Hospitals Are Now Assuming the Dual Mandate Of Care and Its Financial Risk

The Centers for Medicare & Medicaid Services (CMS) has permanently terminated voluntary value-based care programs. Through the finalization of the Comprehensive Care for Joint Replacement Expanded (CJR-X) and Transforming Episode Accountability Model (TEAM) mandates, CMS forces acute care hospitals to operate as localized payers.

This regulatory shift marks the inevitable transition to genuine value-based care, requiring standard acute care facilities to handle a dual mandate: delivering clinical patient care while simultaneously exercising outcomes-based cost control.

Accountable hospitals must now assume immediate, two-sided actuarial risk for cross-continuum patient care. They are financially liable for total episode spending and quality metrics across 90-day (CJR-X) and 30-day (TEAM) post-discharge windows, demanding strict oversight and underwriting of unaffiliated post-acute care (PAC) networks.

### Legacy Software Systems Cannot Accommodate These Mandates

Traditional hospital data infrastructure—including Electronic Medical Records (EMR) and Revenue Cycle Management (RCM) systems—was built to maximize fee-for-service transaction volume. Those platforms are not structured to support this new payer functionality or manage mandatory episode risk. Relying on them can expose hospitals to significant financial and regulatory traps:

**The Retrospective Governance Deficit:** Scraping EMR data post-hoc creates an illusion of data governance. Once an episode is underway, it is too late for hospital leadership to prospectively enforce data quality, ensure the capture of critical risk adjusters, or align independent post-acute care (PAC) facilities with the system's clinical and financial targets.

**The Data Lake Trap:** Centralizing sensitive external PAC records into hospital databases exponentially increases the risk of data breaches and HIPAA liability.

**The Retrospective Risk-Adjustment Trap:** Manual, retrospective extraction of physician notes routinely fails to capture the actuarial risk adjusters (such as complex Hierarchical Condition Categories) required to secure an accurate CMS target price, rendering financial losses for the episode probable.

**The Quality Check-Box Trap:** Manual tracking methods regularly fail to meet the minimum 50% patient survey capture rate required for long-term Patient-Reported Outcome-Based Performance Measures. Failing this threshold disqualifies the hospital from receiving any shared savings, regardless of cost reductions.

**The Illegal Gainsharing Trap:** Attempting to distribute Medicare reconciliation payments to independent physicians via manual accounting spreadsheets exposes the health system to regulatory scrutiny and violations of the federal Anti-Kickback Statute (AKS).

#### **The Integrated Future-Proof Solution: Circles Platform**

The Circles Platform is architected specifically for this regulatory pivot, providing a secure, minimally burdensome infrastructure to automate longitudinal patient tracking and capture verifiable clinical evidence. The platform neutralizes the financial vulnerabilities of CJR-X and TEAM through five fundamental design elements:

**Federated Architecture:** Operates as a decentralized network, tracking patient utilization across external facilities via local queries rather than extracting and centralizing vulnerable protected health information.

**Prospective Data Governance and Deterministic Capture:** Transitions governance from a retrospective IT function into an executable clinical protocol. A cross-functional hospital committee (clinical, operations, and finance) prospectively designs an Observational Protocol, assigning specific clinical parameters to all participating PAC facilities. Automated software guardrails enforce this framework directly at the point of care, eliminating retrospective coding errors.

**Sequential Data Hierarchy:** Constructs an immutable digital ledger of data entry by individual clinical providers throughout the entire episode of care, providing the audit-ready provenance required to execute legal, AKS-compliant gainsharing arrangements.

**Automated Patient Engagement:** Utilizes the integrated Benchmarc™ application to deliver continuous clinical and educational value to patients, driving PRO-PM survey compliance far above the 50% CMS threshold and helping secure the hospital's shared savings.

**Sovereign Economics:** Transforms hospital IT from a cost center into a profit center by establishing clear hospital ownership of the resulting high-fidelity Circle Datasets, enabling independent monetization through intellectual property licensing and other forms of “data dividends” without mandatory vendor extraction.

## THE CJR-X MANDATE: OPERATIONAL AND FINANCIAL IMPLICATIONS

### Regulatory Overview and The End of Voluntary Participation

On July 31, 2026, CMS released the Fiscal Year 2027 Inpatient Prospective Payment System (IPPS) Final Rule (CMS-1849-F). Embedded within this annual payment update is the finalization of the Comprehensive Care for Joint Replacement Expanded (CJR-X) Model. This regulatory mechanism establishes the first nationwide, mandatory episode-based payment structure for lower extremity joint replacements (LEJR), permanently elevating episode-based payment from a localized pilot to a strict condition of hospital participation.

The original CJR Model, which concluded on December 31, 2024, was isolated to 34 selected Metropolitan Statistical Areas (MSAs) and generated an estimated \$113 million in net savings during its final formal evaluation period. CJR-X eliminates these geographic loopholes. Beginning January 1, 2028, the expanded model will become mandatory nationwide, holding acute care hospitals structurally accountable for the cost and quality of care for Medicare beneficiaries undergoing hip, knee, and ankle replacements. By mandating participation for a single procedural category, CMS projects \$725 million in net Medicare savings over the first five performance years, encompassing \$128 million in the first year alone.

Participation is mandatory for nearly all acute care hospitals reimbursed under the IPPS and Outpatient Prospective Payment System (OPPS). This dual-payment system eligibility ensures that target pricing remains consistent whether the procedure is performed in an inpatient setting or a Hospital Outpatient Department (HOPD).

CMS has finalized highly specific exemptions to prevent overlapping financial jeopardy. For example, hospitals actively mandated to participate in the Transforming Episode Accountability Model (TEAM), Maryland hospitals operating under the state's all-payer rate-setting authority, Critical Access Hospitals (CAHs), and Rural Emergency Hospitals (REHs) are structurally excluded from the immediate CJR-X mandate.

### **The Actuarial Burden of 90-Day Cross-Continuum Accountability**

The mandate forces acute care hospitals to assume immediate, two-sided financial risk starting in Performance Year 1. The financial liability is not restricted to the hospital walls; facilities must operate as localized health plans, managing and underwriting patient utilization across external, unaffiliated post-acute care networks.

The risk encompasses a 90-day clinical trajectory. The episode initiates upon admission for the LEJR procedure and concludes 90 days following discharge. Crucially, the mandate amalgamates traditionally siloed institutional costs (Medicare Part A) and professional outpatient care (Medicare Part B) into a unified financial target. This includes the cost of the surgical procedure, the hospital stay, independent surgeon fees, external post-discharge physical therapy, and any subsequent readmissions or follow-up visits.

While all providers continue to bill under the existing fee-for-service (FFS) Medicare system, actual total spending for the 90-day episode is aggregated and compared against the participant hospital's pre-assigned target price during an annual financial reconciliation. The finalized policy implements a uniform 2% discount factor applied to preliminary target prices, baking guaranteed savings into the model for Medicare before the hospital sees a return. If a hospital's total episode spending falls below the target while simultaneously meeting stringent quality metrics, it receives a reconciliation payment; if spending exceeds the target, the facility owes direct financial repayments to Medicare.

To protect against catastrophic outlier cases, CMS finalized specific stop-loss and stop-gain thresholds. For standard IPPS hospitals, these limits are capped at 20%. However, CMS applies a specialized 5% stop-loss threshold for geographically rural hospitals, Sole Community Hospitals, Medicare-dependent hospitals, and safety-net facilities managing a high proportion of dually eligible Medicare and Medicaid patients.

### **Algorithmic Target Pricing: The 29 Risk Adjusters**

Legacy bundled payment models historically utilized simple linear regression and regional historical averaging, often penalizing hospitals for treating medically complex populations. The CJR-X Final Rule fundamentally overhauls this methodology. Moving away from the 3 adjusters utilized in the original CJR model, CJR-X deploys a robust actuarial framework reliant on 29 distinct risk adjusters—mirroring the exact methodology utilized in the TEAM mandate. Target pricing is adjusted across two distinct tiers:

**Participant-Level Adjusters:** CMS calculates baseline algorithmic adjustments based on the hospital's bed count and its provision of care to a high percentage of dually eligible beneficiaries (safety-net designation).

**Episode-Level Adjusters:** To accurately capture the precise clinical acuity of the individual patient, CMS assesses 27 distinct patient-level variables. These include the beneficiary's age, procedure type, dual eligibility status, disability as the original reason for Medicare enrollment, and historical post-acute care utilization within the prior 180 days. Furthermore, the model factors in the total count of chronic conditions and adjusts for the presence of 21 highly specific Hierarchical Condition Categories (HCCs).

This algorithmic precision dictates that predicting the target price requires sophisticated actuarial modeling and point-of-care clinical capture. Failure to document these specific 21 HCCs in, for example, unstructured physician notes prior to the procedure will artificially lower the hospital's risk-adjusted target price, making a financial loss for the episode likely.

### Weaponized Quality Gates and PRO-PM Requirements

Under the CJR-X framework, cost reduction is financially meaningless if separated from clinical fidelity. CMS has deployed a strict "quality first" principle, structurally weaponizing quality reporting by establishing an absolute financial gatekeeper: the Composite Quality Score (CQS).

The model fully integrates the THA/TKA Patient-Reported Outcome-Based Performance Measure (PRO-PM) as a mandatory, high-stakes component of the CQS. PRO-PM compliance requires hospitals to execute longitudinal surveillance, mandating the collection of both pre-operative and post-operative functional surveys for elective hip and knee replacements. The regulatory timelines for this functional surveillance are inflexible:

**Preoperative Data Collection:** Hospitals must successfully administer and collect baseline surveys (e.g., PROMIS-10 Global, VR-12) measuring pain scales and general health between 0 and 90 days prior to the surgical intervention.

**Postoperative Data Collection:** Hospitals are forced to track patients for nearly a year post-discharge to administer follow-up functional surveys (HOOS Jr. for hip procedures, KOOS Jr. for knee procedures) strictly within a 300 to 425-day window following the surgery.

CMS evaluates the Risk-Standardized Improvement Rate (RSIR) to measure the percentage of patients achieving substantial clinical benefit.

However, the immediate operational threat is the absolute capture threshold: CMS requires a strict minimum response rate of 50% for these long-term submissions. Because patients are entirely off-site during the 300- to 425-day postoperative window, traditional administrative tracking methods are highly likely to fail. If a hospital does not meet this 50% capture requirement, its CQS drops to a "Below Acceptable" rating. A failure to satisfy this threshold disqualifies the CQS entirely, resulting in the forfeiture of all shared savings and reconciliation payments, regardless of how successfully the facility managed external PAC utilization or drove down the 90-day episode costs.

## **REPLICATING THE CJR-X APPROACH THROUGH THE TEAM MANDATE**

### **The Scope of the Transforming Episode Accountability Model (TEAM)**

The financial mechanisms defining the CJR-X mandate operate alongside CMS's broader strategic initiative to structurally transfer actuarial risk from the Medicare Trust Fund to acute care providers. The Transforming Episode Accountability Model (TEAM), finalized in the Fiscal Year 2025 Inpatient Prospective Payment System (IPPS) Final Rule and launched in January 2026, serves as the immediate precursor and parallel financial engine to this strategy.

Operating through December 31, 2030, TEAM imposes a mandatory 30-day episode-based payment framework on more than 700 acute care hospitals across 188 specifically selected Core-Based Statistical Areas (CBSAs). Unlike earlier voluntary programs such as the Bundled Payments for Care Improvement Advanced (BPCI-A) model, TEAM eliminates the ability of hospitals to cherry-pick profitable clinical pathways. Hospitals mandated to participate in TEAM are explicitly exempt from the initial rollout of CJR-X to prevent overlapping financial frameworks.

The mandate covers five distinct, high-volume surgical categories:

- Lower Extremity Joint Replacement (LEJR)
- Surgical Hip and Femur Fracture Treatment (SHFFT)

- Spinal Fusion
- Coronary Artery Bypass Graft (CABG)
- Major Bowel Procedure

Hospitals under TEAM must absorb the total cost of care from the point of inpatient or outpatient admission through a 30-day post-discharge window, forcing the facility to act as a localized health plan responsible for external skilled nursing facility (SNF) utilization, physical therapy, and emergency readmissions.

The model establishes a phased approach to risk assumption. For Performance Year 1 (2026), TEAM participants operate in Track 1, which features upside-only financial risk subject to a 10% stop-gain limit and up to a 10% Composite Quality Score (CQS) adjustment. Beginning in Performance Year 2, participants must transition to two-sided financial risk (Track 2 or Track 3).

These subsequent tracks implement stringent 5% stop-gain and stop-loss limits, alongside CQS adjustments up to 15% for negative reconciliation amounts, dictating that poor quality scores directly amplify a hospital's financial penalty.

### Financial Vulnerabilities in High-Acuity Procedures

Under a 30-day mandatory bundle, actuarial exposure is not evenly distributed across the five surgical categories. Elective procedures carry manageable variance, whereas high-acuity surgeries present significant downside risk. Actuarial modeling based on 2023 Medicare claims data, published by the American College of Surgeons (ACS), reveals catastrophic per-case financial penalties for hospitals failing to control high-acuity episodes.

According to the ACS claims modeling, up to two-thirds of hospitals face net revenue losses under the TEAM framework, with the severity of those losses heavily concentrated in Spinal Fusion and Major Bowel Procedures. The granular financial drivers of these losses are mathematically severe:

**Spinal Fusion:** Out of 30,689 total modeled cases, 12,372 episodes missed the CMS target price. For these failed cases, hospitals averaged \$14,188 in financial losses per case.

**Major Bowel Procedures:** Out of 19,723 modeled cases, 6,441 episodes missed the target. The average financial penalty for these failed cases reached \$13,726 per case.

**Surgical Hip and Femur Fracture Treatment (SHFFT):** Out of 25,427 total cases, 12,146 missed the target, resulting in average losses of \$10,046 per case.

**Lower Extremity Joint Replacement (LEJR):** Conversely, standard LEJR episodes demonstrated the lowest comparative risk. Of the 43,529 cases missing the target, the average loss was \$6,133 per case.

These figures define the margin exposure for hospital executives. A standard health system exceeding the target price on just 50 spinal fusions and 50 major bowel procedures in a given performance year faces nearly \$1.4 million in direct Medicare repayments, potentially erasing the surgical service line's profitability.

### Clinical Heterogeneity and the Post-Acute Driver

The disproportionate financial exposure associated with spinal fusion and major bowel procedures is directly driven by clinical heterogeneity. Unlike an elective knee replacement—which typically follows a standardized, predictable rehabilitation pathway—spinal fusions and major bowel surgeries are characterized by unpredictable recovery trajectories.

Patients undergoing these procedures frequently present with cascading comorbidities and an elevated baseline frailty index. For major bowel procedures, for example, the risk of gastrointestinal complications, sepsis, and surgical site infections requires intensive post-operative surveillance. For spinal fusions, severe mobility limitations and pain management requirements frequently preclude a direct discharge to the home setting.

Consequently, actuarial exposure in these specific categories is heavily driven by an over-reliance on intensive post-acute care facilities, specifically SNFs and inpatient rehabilitation. When a medically complex patient requires an extended stay in an unaffiliated facility—or is readmitted to the emergency department for a surgical complication within the 30-day window—the cumulative Part A and Part B spending can easily exceed the algorithmically assigned CMS target price.

### The Necessity of Expanding Care Coordination

To mitigate 30-day readmissions and extended PAC lengths-of-stay, acute care facilities must project their internal care protocols outward into the community. Because Medicare beneficiaries legally retain their statutory "freedom of choice," hospitals cannot unilaterally

mandate that patients utilize closed-network, affiliated post-acute facilities or home health agencies.

The hospital remains financially liable for care delivered by entities it does not own, creating a dangerous incentive gap. Independent orthopedic surgeons, unaffiliated SNFs, and independent physical therapy clinics operate under traditional fee-for-service models, which inherently incentivize maximizing billable services (e.g., extending a patient's SNF stay by an additional week). Hospitals must systematically align these independent groups with the facility's value-based objectives to effectively manage the post-discharge trajectory.

### **The Statutory Architecture of "Collaborator" Sharing Arrangements**

To bridge the incentive gap between risk-bearing hospitals and external providers, CMS regulations (codified at 42 CFR Part 512 Subpart E) explicitly permit TEAM participants to enter into formal sharing arrangements. These statutory frameworks allow hospitals to distribute financial incentives—or share downward repayment risks—with non-affiliated providers who actively coordinate care, redesign clinical pathways, and successfully lower the total cost of the episode.

Under TEAM regulations, hospitals may form sharing arrangements with specific entities legally classified as TEAM Collaborators. Eligible collaborators include:

- Independent Physician Group Practices (PGPs)
- Accountable Care Organizations (ACOs)
- Skilled Nursing Facilities (SNFs)
- Home Health Agencies (HHAs)
- Inpatient Rehabilitation Facilities (IRFs)
- Physicians and Non-Physician Practitioners (NPPs)

Through these written agreements, a hospital can issue Gainsharing Payments (derived from positive CMS reconciliation payments or internal hospital savings) to a collaborator. Conversely, it may receive Alignment Payments from a collaborator to share the burden of a negative Medicare repayment.

Constructing these sharing arrangements requires adherence to federal compliance guardrails to prevent violations of the Anti-Kickback Statute (AKS) and the Physician Self-

Referral Law (Stark Law). The regulations mandate the following:

**Prohibition on Volume and Value Metrics:** The terms of any gainsharing or alignment payment must be calculated using a methodology that does not directly or indirectly account for the volume or value of past, current, or anticipated referrals, or any business otherwise generated between the hospital and the TEAM Collaborator.

**Quality First Gatekeeping:** Gainsharing distributions must be solely based on verifiable quality of care improvements and the actual provision of TEAM activities, such as dedicated care coordination and clinical pathway redesign.

**Repayment Caps:** To prevent predatory financial structures, CMS enforces strict caps on downward risk sharing. For example, if a TEAM participant forms a sharing arrangement with an ACO acting as a TEAM Collaborator, the alignment payment exacted from the ACO is strictly capped at 50 percent of the hospital's total repayment amount to CMS.

**Formal Documentation and Board Oversight:** Every sharing arrangement must be formalized in writing, signed by both parties, and fully executed before any care is furnished to a TEAM beneficiary under the arrangement. Furthermore, the hospital's corporate compliance program must maintain explicit, auditable oversight of all active sharing arrangements.

Executing millions of dollars in gainsharing payments to independent physicians via manual accounting exposes the health system to catastrophic regulatory scrutiny. To satisfy CMS, hospitals require an immutable technological ledger proving that every distributed dollar corresponds strictly to a verifiable clinical action rather than an illegal inducement for surgical volume.

## EXPANDING ACROSS THERAPEUTIC CATEGORIES

### The Autopsy of Legacy Value-Based Care Models

For hospital leadership to successfully navigate the CJR-X and TEAM mandates, it is necessary to examine the empirical rationale driving CMS policy. These mandates are the

direct, corrective response to the structural and financial failures of the previous decade of value-based care.

The Bundled Payments for Care Improvement Advanced (BPCI-A) model, introduced by the Center for Medicare and Medicaid Innovation (CMMI) in 2018, is widely recognized as a financial failure for the Medicare Trust Fund. BPCI-A was severely undermined by a fatal architectural flaw: voluntary participation.

Because the model allowed acute care providers and physician group practices (PGPs) to opt-in at their discretion, health systems engaged in systemic adverse selection—colloquially known as "cherry-picking." Hospitals selectively participated only in clinical episodes where their baseline margins were highly profitable, care pathways were standardized, and historical benchmark costs allowed for rapid reduction through basic administrative interventions.

Participants maximized shared savings payouts by opting into highly predictable episodes while actively avoiding complex, heterogeneous clinical presentations. While participating hospitals successfully reduced episode spending—primarily by denying patients access to expensive SNFs—CMS paid out massive financial reconciliation bonuses to these systems. The structural misalignment dictated that the incentive payouts entirely offset the realized episode savings. According to CMMI evaluation data, this voluntary cherry-picking resulted in a net loss of \$171 million to the Medicare Trust Fund during early performance periods.

Furthermore, when CMS later altered target pricing methodologies to enforce downside risk, many participating hospitals simply withdrew from the voluntary program entirely. This left Medicare to absorb the systemic losses without achieving any permanent, structural redesign of care delivery.

### **The Contrast: Empirical Savings Under the Original CJR Model**

To contrast the systemic failure of voluntary opt-in models, CMS evaluated the performance of the original CJR model, which operated from 2016 through December 31, 2024. Unlike BPCI-A, the original CJR model was mandatory for selected participants, though it was strictly constrained by geographic limitations.

By forcing accountability on hospitals rather than allowing opt-ins, the CJR model removed the provider's route of escape for medically complex or unprofitable cases. As a result, the model produced statistically significant net positive financial outcomes for Medicare.

During its final formal evaluation period (Performance Years 6 and 7, spanning 2021 to 2023), the CJR model generated an estimated \$113 million in net savings to Medicare.

The granular mechanisms driving these savings were distinct and measurable. The \$113 million in savings was driven almost entirely by aggressive decreases in institutional post-acute care spending. Hospitals structurally optimized discharge destinations, securely routing patients to home health agencies or outpatient physical therapy rather than utilizing high-cost, inpatient SNFs.

Crucially, CMMI evaluation reports confirm that these savings were achieved while maintaining or improving strict quality standards for claims-based outcomes, including complication rates, mortality, and unplanned emergency department readmissions.

Despite this localized success, the original CJR model was hindered by geographic loopholes. The mandate was strictly limited to hospitals operating within 67 (later reduced to 34) randomly selected Metropolitan Statistical Areas. If an acute care facility was located outside those specific MSAs, it was entirely exempt. This loophole allowed the majority of U.S. health systems to bypass downside risk and continue operating under the fragmented, highly profitable fee-for-service status quo.

### **The Inevitability of Mandatory, Nationwide Accountability**

CMS and CMMI absorbed the actuarial data from these two contrasting models and established a definitive architectural pivot. The finalized TEAM and CJR-X mandates are explicitly engineered to guarantee systemic cost reductions by structurally eliminating the provider's ability to selectively participate or geographically avoid downside risk.

CMS has permanently shifted from voluntary pilot programs to blunt-force, mandatory financial accountability. The era of "opt-in" value-based care is definitively terminated. TEAM forces mandatory, two-sided episode risk onto hospitals across 188 geographic regions for five high-acuity surgical categories. Simultaneously, CJR-X eliminates historical geographic loopholes by initiating a permanent, mandatory, nationwide rollout for lower extremity joint replacements.

Under these new frameworks, quality reporting expectations have transitioned from passive, "check-the-box" secondary metrics into absolute financial gatekeepers. As observed in CJR-X, failing to meet strict 50% capture rates for Patient-Reported Outcome-Based Performance Measures completely invalidates a hospital's Composite Quality Score. This

instantly disqualifies the facility from shared savings, allowing CMS to retain 100% of the generated cost reductions while shifting all downside repayment risk directly onto the hospital's balance sheet.

### **Orthopedics as the Strategic Wedge for Nationwide Expansion**

CMS deliberately selected orthopedics—specifically lower extremity joint replacements—as the foundational wedge for permanent mandatory bundled payments. This selection was not arbitrary; it was driven by a distinct confluence of massive procedural volume, extreme facility-level cost variance, and high clinical predictability.

Hip and knee replacements consistently rank among the highest-volume surgical procedures performed on Medicare beneficiaries. CMS baseline data previously revealed extreme cost variance; a standard joint replacement could cost Medicare significantly more at one facility compared to a facility in the same state. This massive delta provided actuarial proof that excessive spending was driven by fragmented billing and institutional inefficiency rather than the baseline physiological cost of delivering the procedure.

Crucially, unlike emergent cardiac events (which are unpredictable) or oncology treatments (which require multi-year interventions with high-cost biologics), a joint replacement is an elective, scheduled procedure. This elective predictability allows hospitals to proactively medically optimize the patient, dictate the post-acute discharge destination, and actively manage a standardized recovery protocol.

By successfully demonstrating \$113 million in net savings under the mandatory LEJR structure, CMS has validated its architectural thesis. Orthopedics serves as the proof-of-concept. By codifying CJR-X as a permanent, nationwide condition of Medicare participation, CMS has established the definitive blueprint it will utilize to force two-sided episode risk across all major therapeutic categories, fundamentally dictating future reimbursement structures for both Medicare and commercial payers.

## **THE STRUCTURAL DEFICIT OF TRADITIONAL SOFTWARE SOLUTIONS**

### **The Expense and Fragmentation of Disjointed Tech Stacks**

The vendor landscape for managing mandatory episode-based risk—specifically under the CJR-X and TEAM models—is highly fragmented and unprepared. Because these mandates

force health systems to simultaneously synthesize clinical workflows, financial accounting, and external care coordination, the potentially relevant software market can be divided into specialized point solutions, none of which can easily work effectively with each other.

**PROM Capture and Patient Engagement:** Vendors focusing on automating the collection of Patient-Reported Outcome Measures to fulfill CMS PRO-PM requirements. These typically drive an annual enterprise cost of \$60,000 to \$120,000.

**Bundle Analytics and Target Pricing:** Platforms that ingest historical claims data to predict algorithm-assigned target prices and identify cost outliers. Estimated annual cost: \$100,000 to \$180,000.

**Physician Gainsharing Accounting:** Solutions specializing in time-driven activity-based costing (TDABC) to execute legal gainsharing arrangements. Estimated annual cost \$50,000 to \$90,000.

**Post-Acute Network Tracking:** Transition-of-care software used to monitor patient readmission risks across external skilled nursing facilities (SNFs). Estimated annual cost \$40,000 to \$80,000 annually.

Implementation, upgrades, APIs, and specialized personnel will add additional costs.

Beyond baseline capital expenditures, this fragmented approach severely degrades operational efficiency. Industry analyses on "point solution fatigue" indicate that half of healthcare organizations are actively managing between four and nine disconnected vendor solutions. This forces the health system to maintain disparate vendor relationships, execute redundant EMR integrations, and manage isolated data silos (each with growing cyber risk).

To meet CJR-X and TEAM requirements with existing tools, physicians and administrative staff will be forced to toggle among disjointed tools, significantly increasing administrative drag and worsening the already severe average of nearly 6 hours spent in EHR interfaces for every 8 hours of scheduled patient care.

### **The "Data Lake" and Post-Acute Integration Trap**

Because the hospital holds immediate financial risk for a 30-day (TEAM) or 90-day (CJR-X)

post-discharge window, it must aggressively track patient utilization across unaffiliated post-acute care facilities, including home health agencies. Standard IT strategy dictates building a massive, centralized data lake to ingest these external EHR files.

However, this centralized extraction strategy is structurally flawed. It triggers large software integration costs, requires continuous API maintenance, and exponentially increases the hospital's HIPAA liability risk. Aggregating sensitive external patient files—ranging from unstructured clinical notes to unstructured post-acute recovery telemetry—into a single vulnerable database creates a potentially catastrophic single point of failure. The healthcare sector consistently bears the highest cost burden of data breaches across all industries, with recent estimates placing the average total cost at nearly \$11 million per breach.)

A HIPAA-compliant data lake requires continuous investments in physical, network, host, and application-level security, including strict network segmentation, size-3 replication across clustered servers, and continuous access monitoring. Relying on centralized data extraction effectively forces the hospital to underwrite the cybersecurity liabilities of its external, unaffiliated post-acute partners.

### **Retrospective Traps Likely Leading To Financial Penalties**

Under older voluntary models, health systems attempted to solve episode management by hiring large administrative teams and relying on manual spreadsheets. Under the blunt-force financial accountability of CJR-X and TEAM, these manual administrative traps all but ensure financial penalties.

#### **The Retrospective Risk-Adjustment Trap**

Legacy workflows frequently rely on back-office billing coders manually scraping unstructured physician notes weeks or months after the surgery to justify patient complexity. Under CJR-X, CMS utilizes 29 highly specific actuarial risk adjusters, including complex Hierarchical Condition Categories and historical utilization flags.

If clinical evidence of these specific comorbidities is not captured accurately at the point of care, the patient appears artificially healthier to CMS. This results in the hospital being assigned a lowered target price, likely leading to a financial loss for the episode.

#### **The Manual Quality Check-Box Trap**

Hospitals traditionally treat quality reporting as an afterthought, utilizing disparate call

centers to track down patients for long-term functional surveys. However, genuine clinical data encompasses significantly more than subjective patient feelings; it requires deterministic, longitudinal capture.

Manual administrative proxy approaches generally result in response rates below the strict 50% capture threshold finalized by CMS. Falling below this threshold disqualifies the hospital's Composite Quality Score (CQS), resulting in the forfeiture of all financial upside regardless of how effectively the facility reduced 90-day episode costs.

### **The Illegal Gainsharing Trap and OIG Scrutiny**

To fundamentally alter the post-acute trajectory and succeed under TEAM or CJR-X, hospitals must share savings with independent orthopedic surgeons to incentivize structural cost reductions. However, attempting to calculate and distribute these Medicare reconciliation payments utilizing manual accounting spreadsheets exposes the health system to severe regulatory scrutiny.

The Federal Anti-Kickback Statute makes it a criminal offense to knowingly and willfully offer, pay, solicit, or receive any remuneration to induce or reward the referral of services reimbursable by a Federal health care program. The AKS is a strict, intent-based criminal statute. The Office of Inspector General (OIG) has consistently warned that any financial arrangement involving remuneration between a hospital and a referring physician will violate the AKS if even *one purpose* of the payment is to induce or reward referrals.

When a hospital attempts to manage independent physician gainsharing via manual spreadsheets, it creates severe administrative bloat and invites structural AKS violations. CMS regulations explicitly permit "sharing arrangements" with independent collaborators, but these arrangements must meet rigorous safe harbor requirements. Payments must be based strictly on verifiable quality of care improvements and internal cost savings, without any methodology that directly or indirectly accounts for the volume or value of past, current, or anticipated referrals.

Without an immutable, technologically verified ledger proving that every distributed dollar aligns strictly with measurable clinical improvements (rather than surgical volume), regulators may easily classify these manual distributions as illegal inducements. If a hospital cannot automatically produce audit-ready provenance metadata proving the legitimate clinical basis for a physician payout, it fundamentally risks triggering OIG investigations and

subsequent Civil Monetary Penalties.

### **The Serious Implications of Poor Data Governance**

Beyond cybersecurity liabilities, centralizing retrospective records creates a fatal structural deficit: the illusion of data governance. Utilizing EMR data scrapes and data lake approaches to meet CJR-X and TEAM mandates fails because the extraction occurs post-hoc. It is too late to implement the type of proactive data governance policies necessary to influence data quality, establish risk-sharing alignment with post-acute care (PAC) facilities, or ensure the capture of key Hierarchical Condition Categories (HCCs) and Risk-Standardized Improvement Rates (RSIRs) during the specific episode of care. If for example a critical risk adjuster is omitted during the clinical encounter, no downstream data-cleaning script or governance committee can retrospectively manufacture that missing evidence.

### **THE INTEGRATED FUTURE-PROOF SOLUTION: CIRCLES PLATFORM**

Legacy EMR, RCM, and similar systems are engineered to maximize fee-for-service transaction volume, rendering them structurally incapable of managing cross-continuum actuarial risk. Their clinical fragmentation and reliance on retrospective data extraction directly expose health systems to financial penalties under mandatory value-based frameworks.

The Circles Platform is architected specifically for this regulatory pivot. It deploys a secure, minimally burdensome infrastructure to capture verifiable clinical evidence and automate longitudinal patient tracking. This prospective, deterministic approach provides the operational and financial oversight required to control 30- and 90-day episode spending, secure mandatory Composite Quality Scores (CQS), and execute legally compliant physician sharing arrangements.

The fundamental design elements resolving the financial vulnerabilities of CJR-X and TEAM are detailed below.

### **Federated Architecture vs. The Data Lake Trap**

To track cross-continuum patient utilization, traditional healthcare IT relies on centralized databases that extract and copy external electronic health records. This centralized

extraction strategy is financially indefensible. Aggregating sensitive protected health information from unaffiliated post-acute partners into a single repository exponentially increases exposure to data breaches, which currently average nearly \$11 million in aggregate costs. This approach effectively forces the hospital to underwrite the cybersecurity vulnerabilities of its entire external network.

The Circles Platform eliminates this liability by operating as a fully integrated, closed, decentralized network. Rather than ingesting legacy records—a process that corrupts data provenance, degrades clinical utility, and demands continuous software integrations—each hospital, post-acute facility, and patient operates a dedicated instance of the platform. Built on native FHIR architecture, it maintains the capacity for external data exchange when necessary, but preserves total data integrity by operating within these dedicated instances.

This architecture is governed by the principle of local custodianship. The treating external facility remains the physical and legal gatekeeper of its patient records, satisfying privacy regulations at the source and preventing the transfer of systemic liability to the participant hospital. When a hospital must evaluate episode spending, verify a clinical quality metric, or audit an independent physician sharing arrangement, it utilizes federated query orchestration.

Instead of requesting the underlying medical file, the platform transmits a specific analytical question to the external facility's local server. The server computes the answer internally and returns only the final, anonymized result. This enables the hospital to seamlessly coordinate care and verify TEAM or CJR-X compliance without exposing protected health information.

### **The Observational Protocol and Deterministic Capture**

The Circles Platform neutralizes the retrospective risk-adjustment trap by replacing delayed data extraction with a prospective data governance framework anchored by the Observational Protocol (OP). The inherent architecture of the platform begins with the design of the OP by a dedicated CJR-X or TEAM governance committee at the accountable hospital. While the exact composition of such a committee is determined by the hospital—and participating PAC facilities may choose to establish their own parallel committees—it optimally integrates clinical, operations, and finance leadership to align systemic priorities.

Rather than imposing a rigid vendor template, the Circles Platform allows this cross-

functional governance committee to formulate the best specific Question/Answer pairs for each distinct type of care episode. The platform then assigns all relevant Attributes to each Question/Answer pair, and formally assigns all PAC facilities that have agreed to participate as Circle Members.

This structural foundation enables the hospital's governance committee to prospectively influence data quality and meaningfully maximize the financial and quality goals for the hospital itself, as well as post-acute care facilities and their patients. By empowering physicians to capture essential regulatory metrics—including necessary HCCs and RSIRs—directly at the point of care, the platform replaces subjective administrative guesses with high-fidelity, deterministic facts.

To guarantee consistent execution, the platform deploys automated software guardrails via schema-on-capture validation. This validation can operate instantaneously: if a required data point is omitted or entered in an impossible format, the system flags the error and prevents the submission of an incomplete record. By stopping data omissions at the source, the hospital ensures all necessary risk adjusters are accurately documented to support the patient's true clinical acuity, securing the appropriate actuarial target price from CMS.

### **The Sequential Data Hierarchy: From Attribute to Circle Dataset**

To safely manage mandatory episode risk and execute legal gainsharing agreements, hospital executives require certainty regarding care provision, specific clinical actions, and verified outcomes. The Circles Platform replaces fragmented data lakes comprising heterogeneous and often unverifiable single data points with ground truth data pre-structured through a sequential architecture. This enables the automatic generation of a fully auditable digital paper trail for any care episode:

**The Attribute:** Every Question/Answer pair within the Observational Protocol is encoded through FHIR with a variety of pertinent Attributes. These automatically include relevant medical codes (e.g., OMOP, LOINC, CPT, USCDI, etc.). They can include any number of RSIR and/or HCC references as well. Finally, each Question/Answer pair is essentially its own Attribute.

**The Circle:** Each individual or entity sharing a given Observational Protocol in the context of an episode of care, within or external to the hospital, is assigned its own Attribute. Together, they constitute a Circle, allowing quality and gainsharing

auditing on a granular level to be both efficient and verifiable.

**The Case:** This is essentially the episode of care for a given patient. Each Case inherits all Observational Protocol and Circle Attributes. As each patient progresses through an episode of care, the data defined by all Attributes is automatically organized into a unified, longitudinal record representing the complete medical journey. For many reasons, including the monetizable value of the resulting Circle Datasets, a hospital may choose to extend the Case data well beyond twelve months.

**The Circle Dataset:** This is the dataset defined by all Cases containing one or more Attributes. Unlike traditional databases containing isolated data points, each Circle Dataset retains unbroken digital provenance. An auditor can trace any single data entry event to its time-stamped creation and identify the Circle Member or patient author.

This verifiable provenance systematically solves the compliance trap associated with the federal Anti-Kickback Statute (AKS). Because each Circle Dataset acts as an immutable, technologically verified accounting ledger, the hospital can prove the legitimate clinical basis for every distributed dollar, eliminating the severe regulatory scrutiny invited by manual spreadsheet accounting.

Furthermore, this Attribute-level tracking provides hospital leadership with financial control to establish distinct allocation rules. For example, the hospital will have the verifiable foundation for distributing one dividend to satisfy CJR-X gainsharing mandates, and a separate allocation for Circle Dataset licensing revenues.

### Automated Patient Engagement and PRO-PM Compliance

Traditional hospital systems are structurally ill-equipped to meet CMS's mandatory 50% capture threshold for long-term Patient-Reported Outcome-Based Performance Measures. Hospitals currently attempt to collect outcomes data, if at all, a full year post-operation after months of no patient engagement at all. In the CJR-X and TEAM environments, this is likely to lead to survey compliance failures and the subsequent forfeiture of shared savings.

The Circles Platform neutralizes this risk through Benchmarc™, an integrated, patient-centric application designed to drive long-term compliance by providing continuous, tangible value to the user. Benchmarc™ executes this strategy through four core

mechanisms:

**Unified Cross-Continuum Experience:** Instead of forcing patients to navigate duplicative or fragmented outcomes platforms for every provider involved in a 30- or 90-day episode, Benchmarc™ unifies outcomes capture across all participating Circle Members into a single application. This eliminates survey fatigue and generates the coherent dataset required for CMS compliance.

**Flexible Assessment Scheduling:** Moving beyond rigid vendor templates, the Observational Protocol allows hospitals to deploy custom outcomes assessments on any desired timeline, ensuring consistent clinical touchpoints leading up to the mandatory one-year, as well as any intervening, PRO-PM captures.

**Preoperative Education:** Engagement initiates before the surgery, delivering materials that set clear expectations for the patient to actively participate in their recovery and help their surgeon track key clinical milestones.

**Instant Visual Value Loop:** To combat survey fatigue, Benchmarc™ provides immediate, actionable feedback. Upon completing an assessment, the patient receives a personalized report tracking their recovery trajectory against their preoperative baseline, with optional visualizations comparing their progress against broader cohorts.

By delivering ongoing engagement and continuous insights, Benchmarc™ drives survey compliance far above the 50% threshold, helping to protect the hospital's Composite Quality Score and its generated shared savings.

### **Sovereign Economics and Dataset Monetization**

Legacy hospital IT systems operate as severe cost centers that routinely allow third-party vendors to monetize clinical data without offering gainsharing to the facility absorbing the regulatory risk. Attempting to adapt these platforms for CJR-X and TEAM compliance introduces unforecastable expenses with a high probability of structural failure.

The Circles Platform reverses this extractive dynamic, transitioning hospital infrastructure from a sunk cost into a profit center. By establishing a framework of sovereign economics, the platform ensures the hospital retains unambiguous ownership and control over the resulting proprietary Real-World Evidence (the Circle Datasets). This provides hospital

leadership with the authority to determine whether, with whom, and on what commercial terms to license or otherwise monetize those Circle Datasets.

To securely execute this commercial strategy, the Circles Platform utilizes the Attribute ledger established during the episode of care. Because every clinical node is pre-assigned, before data capture begins, its own Attribute, the hospital possesses a fully verifiable accounting mechanism to simultaneously manage any number of revenue operations involving Circle Datasets in which those clinical nodes participated. For example:

**CMS Mandate Management:** The hospital can transparently allocate Medicare reconciliation funds or enforce downside risk penalties with independent providers, cleanly satisfying CJR-X and TEAM compliance guardrails.

**Intellectual Property Monetization:** The hospital can utilize the same granular ledger to distribute data dividends, license fees, or intellectual property royalties generated from external researchers or life science companies licensing the Circle Datasets.

The Circles Platform imposes no mandatory payment structures. It simply provides the deterministic accounting infrastructure necessary for executives to execute their proprietary commercial strategy, share risk, and offset the financial burdens of mandatory value-based care.

## THE STRATEGIC IMPERATIVE

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CMS has permanently terminated the era of voluntary value-based care. With the active rollout of TEAM and the nationwide expansion of CJR-X mandate beginning January 1, 2028, acute care facilities are now legally bound to manage total episode risk. The timeline for strategic adaptation is inflexible, and the window for passive compliance has closed.

This regulatory environment forces a binary choice regarding enterprise infrastructure, highlighting the profound structural divergence between centralized data registries and closed-loop clinical networks. Hospital executives must either adopt decentralized, federated data architectures to securely control cross-continuum actuarial risk and capture their resulting data dividends, or all but ensure severe financial penalties through continued reliance on fragmented, retrospective platforms.



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