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CMS Interoperability Recommendations to Reduce Waste and Improve Care Quality

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Summary

Implementing seven interoperability recommendations across Medicare and Medicaid could reduce up to 20 percent of avoidable waste, representing approximately $95 billion per year, without reducing benefits, restricting access, or requiring new payment models.

Introduction

In 2023, the United States spent approximately $4.9 trillion on healthcare, representing 17.6 percent of GDP [1]. Medicare accounted for just over $1.03 trillion and Medicaid contributed an additional $872 billion, bringing combined federal coverage spending to nearly $1.9 trillion out of the total U.S. healthcare dollars spent [2]. Independent analyses, including the 2019 JAMA study by Shrank et al., estimated that about 25 percent of national health spending is attributed to avoidable waste [3]. Earlier work by Berwick and Hackbarth placed this figure closer to one-third of all spending [4]. Applied to Medicare and Medicaid's combined budget, these estimates imply that approximately $475 billion to $633 billion in spending each year may be avoidable, underscoring the urgency of addressing waste in federal healthcare spending.

A significant portion of this avoidable spending is driven by fragmented, incomplete, inaccessible healthcare data across federal programs. The Shrank et al. analysis identified several waste domains that are highly dependent on data quality and interoperability, including failure of care delivery, failure of care coordination, and overtreatment and low-value care [3]. These domains represent a substantial share of avoidable spending and the seven interoperability recommendations in this paper could plausibly address roughly 20 percent of the inefficiencies identified by Shrank et al.

Fragmented or inaccessible data leads to duplicate testing, medication reconciliation errors, and unnecessary hospital utilization, all challenges which are highlighted in the Assistant Secretary for Technology Policy and Office of the National Coordinator for Health Information Technology (ASTP/ONC) Cures Act regulations [5]. Empirical studies consistently demonstrate that missing clinical information contributes to repeat imaging, redundant laboratory tests, and avoidable adverse drug events. Improving interoperability directly addresses these waste drivers [6]. Research on health information exchange (HIE) participation shows an association with lower emergency department utilization, reduced hospital readmissions, and improved chronic disease management, which underscores that better data exchange can mitigate both clinical inefficiency and avoidable utilization [7][8][9].

Value-based care, and other data-intensive care models, illustrate the benefits of improved information flow. Research led by Cohen et al. found that beneficiaries in advanced value-based care arrangements experienced 18 percent lower inpatient admissions, 9 percent lower readmission rates, and 10 percent lower risk of heart attack or stroke compared with clinically similar fee-for-service Medicare populations [10]. Broader analyses of Medicare Accountable Care Organizations (ACO) have shown consistent cost savings while preserving or improving quality measures [11]. Recent Health Care Payment Learning and Action Network (HCPLAN) Alternative Payment Model (APM) measurements show steady national growth in value-based and risk-bearing payment arrangements across Medicare and Medicare Advantage (MA) [12]. These gains carry particular significance for MA, which now accounts for nearly 52 percent of Medicare spending and has a high concentration of clinically complex and dual eligible beneficiaries [13].

CMS leadership has outlined priorities that include strengthening program integrity, expanding risk-bearing models, and improving beneficiary access to information [14]. These goals cannot be met without timely, accurate, and interoperable data, since fragmented information directly contributes to administrative waste, clinical inefficiency, and oversight failures. This urgency is amplified by mounting fiscal pressure on Medicare and Medicaid, including the projected depletion of the Medicare Hospital Insurance Trust fund by 2033 [15].

Providers, payers, and Electronic Health Record (EHR) vendors voluntarily participating in CMS-Aligned Networks represent a major step forward in reducing waste by operationalizing shared interoperability standards [16][17]. Extending these gains beyond early adopters and reducing waste at scale will ultimately require interoperability to be mandated through CMS rulemaking. The following recommendations outline specific steps CMS can take to close interoperability gaps that impair attribution, risk adjustment, encounter visibility, quality measurement, and oversight across CMS-regulated programs.

Seven Interoperability Recommendations

01 Standardize Attribution through Fast Healthcare Interoperability Resources-Based (FHIR) APIs

02 Ensure Primary Care Physician (PCP) Assignment for All Beneficiaries

03 Establish a Unified Federal Beneficiary Matching Standard

04 Operationalize National Directory of Healthcare Providers and Services (NDH) as the Unified Provider and Network Directory

05 Modernize Credentialing through CMS-Directed Standardized Data Exchange

06 Transition ADT Notifications to a FHIR-Enabled National Standard

07 Adopt a Standard FHIR Framework for Digital Quality Measurement

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Recommendations

Standardize Attribution through FHIR-Based APIs

Financial Impact

Standardizing FHIR-based APIs will create $9 billion per year in annual federal savings. This is achieved by driving approximately 0.7% reductions in avoidable utilization across MA, Medicare Shared Savings Program (MSSP), Dual Eligible Special Needs Plan (D-SNP), and Medicaid Managed Care Organizations (MCOs) risk-bearing arrangements by reducing missed outreach, delayed post-discharge follow-up, and care gap leakage.

Operational Example

A value-based enablement company supporting 60,000 MA members across five plans currently receives five different attribution panel files each month, each with its own format and lag time, leading to delays in outreach, inconsistent care-manager assignment, and confusion when members change PCPs. With a standardized Attribution API, each plan would publish updated attribution and PCP assignment information within seven days of any change, and the enablement company could routinely query each plan's FHIR endpoint to retrieve attribution method, PCP-of-record, program identifiers, and effective dates in a uniform structure. As members switch PCPs or plans adjust attribution logic, these updates would flow through the API in a timely and consistent way, stabilizing panel management and improving care coordination.

Care Delivery Implications

Real-World Provider Example

A well-established primary care practice in Southern Nevada partnered with a MA plan to transition from a traditional fee-for-service model to accountable care. Despite strong alignment with CMS's 2021 strategic direction to expand accountable care arrangements, the practice encountered persistent attribution errors. Members were frequently misassigned, either attributed to this practice while actively receiving care elsewhere or assigned to other practices despite receiving primary care services within this organization. These inconsistencies undermined the practice's ability to manage population health, reduced provider engagement, and ultimately pushed clinicians back toward fee-for-service patterns, counter to CMS's national policy goals. A standardized FHIR-based attribution API would have ensured timely,

accurate member-to-provider alignment, supporting continuity of care, and advancing the intended shift toward accountable care arrangements.

Real-World Patient Example

A 74-year-old MA beneficiary, Mr. R.F., further illustrates the consequences of attribution errors. While undergoing evaluation for a pulmonary mass, he was referred to a thoracic surgeon for excision. Although the surgeon correctly submitted a prior authorization request, the request was denied because the patient was erroneously attributed to a different PCP and corresponding specialty network. The patient was required to seek an additional evaluation through the incorrectly assigned PCP and specialty network before proceeding with surgery, creating delays in treatment for a potentially serious condition. A nationally standardized attribution framework would have prevented this misalignment and enabled uninterrupted patient-centered care.

Suggested Rulemaking and Guidance

To promote uniformity in member-to-provider assignments, CMS should mandate that all federally regulated health plans engaged in value-based care arrangements publish a standardized FHIR Attribution API. This API must align with the Health Level Seven (HL7) Da Vinci Member Attribution (ATR) Implementation Guide and utilize common profiles for FHIR Group, Patient, Practitioner, and associated resources [18]. Plans should be required to update attribution data within a defined timeframe, such as seven calendar days, to ensure that attribution information remains accurate and operationally usable without imposing unrealistic same-day requirements.

Policy Rationale

Accurate attribution is consistently identified as a necessity for establishing accountability for both cost and quality in value-based care models, such as ACOs and APMs. Attribution instability is a widely acknowledged challenge in this area [19]. Today, MA plans, Medicaid Managed Care Organizations (MCOs), and ACOs use varied attribution methodologies for updating schedules and various file formats. National analyses have found that inconsistent and opaque attribution rules make it difficult for providers to understand which patients they are responsible for, which complicates care coordination and performance measurement [20]. Providers in risk-bearing arrangements often reconcile many attribution panel files each month with varying lag times and structures, creating uncertainty about who is accountable for each member, a challenge well documented in attribution and measurement-risk research [19][20]. These inconsistencies also slow care gap closure, post-discharge follow-up, and outreach activities that depend on accurate attribution. Although CMS defines assignment logic

for federal ACO models, these specifications govern how beneficiaries are attributed, not how attribution lists are exchanged across organizations [21]. The existing HL7 Da Vinci Member Attribution Implementation Guide offers a standardized FHIR pattern for representing attribution, but its adoption is voluntary, and no federal program requires plans to expose attribution information through a uniform, API-based mechanism. Making this pattern mandatory would fill a significant operational gap and establish a consistent, real-time source of truth for payers, providers, and delegated entities.

Ensure PCP Assignment for All Beneficiaries

Financial Impact

Assigning a PCP to all beneficiaries will create $18 billion per year in annual federal savings. This would be achieved by driving approximately 1.0% reductions in avoidable admissions and emergency department utilization across MA, D-SNP, and Medicaid MCO risk-bearing populations by improving preventive outreach, strengthening chronic disease management, and ensuring timely post-discharge follow-up.

Operational Example

An MA plan offering both HMO and PPO products participates in several risk-bearing arrangements with provider groups, yet many PPO members do not select a PCP, leading to inconsistent care management. Under the revised CMS requirement, the plan must ensure that every member in a risk-bearing product has a PCP of record, and it publishes this information through a FHIR endpoint that updates within seven days of any change. A PPO member with diabetes who has not selected a PCP is automatically assigned to a local primary care practice based on geographic proximity and network availability. This assignment enables the practice to initiate outreach, schedule annual screenings, and coordinate follow-up care after future hospitalizations. Over time, this proactive approach improves quality performance and decreases avoidable utilization.

Suggested Rulemaking and Guidance

CMS should require all MA, Dual Eligible Special Needs Plan (D-SNP), and Medicaid managed care products operating under risk-bearing payment arrangements to maintain and publish a designated PCP for every enrolled member, whether established through member selection, claims-based attribution, or plan assignment for members who have not established care with a PCP. Plans should expose this PCP assignment information through a standardized FHIR-based endpoint that conveys essential identifiers and assignment metadata in a consistent format, with updates posted within a defined timeframe (for example, within seven calendar days of any change).

Policy Rationale

Clear PCP assignment is essential for effective care delivery in risk-bearing arrangements. Evidence shows that consistent primary care relationships enhance continuity of care, improve prevention and management of chronic diseases, and lead to a reduction in avoidable hospitalizations and emergency department visits [22][23]. When members do not have a designated PCP of record, responsibility for preventive services, medication reconciliation, and post-discharge follow-up become fragmented, producing inconsistent outreach and reactive care coordination [24]. When beneficiaries are not explicitly required to select a PCP, they may never be officially assigned one. This indefinite lack of assignment undermines accountability within risk-bearing models. This gap is most visible in MA Preferred Provider Organizations (PPOs) and some Medicaid managed care products, where many members lack a recorded PCP and plans rely on incomplete or outdated panel files for care management. National analyses, including Medicare Payment Advisory Commission (MedPAC) evaluations, have linked weak primary care continuity to lower quality performance and higher costs in Medicare populations [24]. Instead of restricting member choice in open-access products, a uniform requirement for PCP assignment ensures every beneficiary is linked to a primary care entity responsible for their longitudinal care. This accountability structure is already established in MA HMO models and can be easily extended to other risk-bearing designs [25].

Establish a Unified Federal Beneficiary Matching Standard

Financial Impact

Establishing a unified federal beneficiary matching standard will create $7 billion per year in annual federal savings. This is achieved by reducing approximately 0.4% of excess administrative costs driven by duplicate services, administrative reconciliation, and identity-related claim rework across Medicare, Medicaid, and dual-eligible populations.

Operational Example

A dual-eligible beneficiary enrolled in both a MA plan and a state Medicaid managed care plan is currently represented with different identifiers, requiring value-based care organizations to maintain complex EMPI logic to reconcile records. Under a federal beneficiary matching profile, the beneficiary's digital identity credential would bind to a unified set of identifiers. When a Qualified Health Information Network (QHIN) performs a FHIR-based patient matching operation, records can be reliably linked across systems, reducing mismatches, improving care coordination, and lowering the likelihood of improper payments stemming from duplicate or conflicting enrollment records.

Suggested Rulemaking and Guidance

CMS should use forthcoming interoperability rulemaking to establish a single federal beneficiary matching profile for Medicare, Medicaid, and dual-eligible data exchange. This would require CMS-regulated plans to include standardized program identifiers and U.S. Core Data for Interoperability (USCDI) demographics in FHIR Patient resources, support a FHIR-based patient matching operation using a consistent national profile, and bind NIST-aligned IAL2 and AAL2 digital identity credentials to each beneficiary record.

Policy Rationale

Accurate beneficiary matching is essential for coordinated care, program integrity, and safe data exchange. Currently, though, authentication improvements under the CMS Interoperability Framework do not by themselves ensure reliable record linkage across EHRs and payers. Federal digital identity standards such as NIST SP 800-63 define IAL2 and AAL2 requirements for verifying people online, while emerging FHIR implementation guides focus on interoper-

able digital identity and cross-network patient matching workflows [26][27]. These gaps are especially consequential for dual eligible beneficiaries whose information must move consistently across Medicare and Medicaid infrastructures. For Medicare, the Medicare Beneficiary Identifier (MBI) is the federally mandated identifier for all claims and eligibility transactions and is used within CMS FHIR APIs, although current interoperability regulations do not require payers to include the MBI in every FHIR Patient resource exchanged across networks [28]. For Medicaid, states use multiple identifiers, and CMS Transformed Medicaid Statistical Information System (T-MSIS) guidance requires reporting Medicaid Card IDs and a state-assigned MSIS ID for longitudinal linkage [29]. Without a consistent matching profile that binds these identifiers with core demographics, organizations must rely on complex and error-prone Enterprise Master Person Index (EMPI) logic. Evidence shows that duplicate or mismatched records lead to repeated tests, treatment delays, denied claims, and significant financial waste [30][31]. Establishing a standardized federal matching profile and requiring CMS-aligned networks and Trusted Exchange Framework and Common Agreement (TEFCA) participants to support FHIR-based matching would reduce EMPI overhead and strengthen safety, accuracy, and oversight across Medicare, Medicaid, and value-based care programs.

Operationalize NDH as the Unified Provider and Network Directory

Financial Impact

Operationalizing NDH as the unified provider and network directory will create $14 billion per year in annual federal savings. This is achieved by reducing approximately 0.7% of excess system-wide expenditures driven by provider directory inaccuracies, claim rework, roster reconciliation, and network-related administrative overhead across MA and Medicaid MCO markets.

Operational Example

Currently, a value-based enablement organization supporting multiple MA plans and Medicaid MCOs must first reconcile conflicting provider rosters—containing inconsistent NPIs, outdated practice locations, and missing TIN affiliations—before reliable attribution or performance analytics can be generated.

By requiring the use of the finalized NDH, this process would be streamlined. Each health plan would submit updates directly to the NDH using standardized FHIR APIs. Consequently, the organization could query the NDH once to retrieve an accurate, unified listing of contracted providers, including their NPIs, TINs, practice sites, and digital endpoints.

This standardized approach ensures that when a provider changes groups, updates a location, or joins a new network, corrected information flows automatically to downstream users as plans update the NDH. The benefits include improved network accuracy, reduced administrative burden, strengthened attribution models, and enhanced fraud detection through real-time visibility into provider affiliations and billing relationships.

Care Delivery Implications

Real-World Patient Example

Mrs. C.S., a 67-year-old MA beneficiary, was referred by her PCP to a mental health specialist. Upon contacting the specialist's office, she was informed the clinician was no longer accepting patients, despite being listed as in-network and accepting new patients in the plan's directory. After escalating the issue to her MA plan, she was ultimately connected to an available specialist. While this case reached resolution, many beneficiaries do not persist through multiple failed attempts and subsequently forego necessary specialty care. The outdated directory entry created unnecessary frustration for the patient and introduced additional operational

burden for the health plan. A unified, FHIR-enabled national provider and network directory would reduce these failures by ensuring accurate, real-time provider availability information across all CMS-regulated products.

Suggested Rulemaking and Guidance

CMS should advance the NDH from its current conceptual and pilot stage into a fully operational, production-grade FHIR-based national directory and designate it as the authoritative source for provider, facility, and network data across CMS-regulated programs. CMS should require CMS-regulated plans to submit timely updates to NDH using FHIR APIs and to rely on NDH as the source of truth for public provider directories, roster exchange, and network adequacy reporting.

Policy Rationale

Provider directories remain one of the most inconsistent and error-prone datasets in federal health programs. External reviews show pervasive inaccuracy, with one federal evaluation finding that nearly half of MA provider locations contained at least one error, such as incorrect addresses, wrong network status, or providers not accepting new patients [32]. Several problems result from the current system: plans maintain distinct provider rosters, providers must redundantly update the same information across multiple systems, and value-based care organizations struggle to reconcile differing National Provider Identifier (NPI), Taxpayer Identification Number (TIN), and location mappings among various payers. This lack of interoperability leads to serious consequences, including misrouted clinical messages, errors in patient attribution, inaccurate network status information, and violations of network adequacy requirements for MA and Medicaid programs [33]. The limitations of the National Plan and Provider Enumeration System (NPPES) prevent it from resolving these issues, as it only handles NPI enumeration. It lacks the critical data necessary for network accuracy, such as TIN-level organizational structures, granular practice site details, contracting status for MA and Medicaid managed care plans, validated digital endpoints, and timely roster updates required by network adequacy rules [34]. Studies estimate that fragmented directories cost the health system billions of dollars annually through redundant administrative work, claim denials, outdated affiliations, and inaccurate network files [33][35]. NDH is designed to address these gaps by supplying validated digital endpoints, hierarchical provider organization relationships, and verified network participation. Finalizing NDH and designating it as the canonical directory would replace today's duplicative infrastructure, improve accuracy, and strengthen downstream analytics across MA, Medicaid, and Marketplace programs [36].

Modernize Credentialing through CMS-Directed Standardized Data Exchange

Financial Impact

Modernizing credentialing through CMS-directed standardized data exchange will create $5 billion per year in annual federal savings. This is achieved by reducing approximately 0.3% of excess system-wide expenditures attributable to duplicative credentialing workflows, onboarding delays, directory rework, and administrative verification costs across MA and Medicaid MCO networks.

Operational Example

A primary care organization currently faces an administrative hurdle when onboarding new clinicians. For example, hiring three new clinicians who need credentialing with five MA plans and one MCO requires redundant application packets, repeated documentation uploads, and separate status tracking for each payer. This process often delays patient access, as onboarding times can span two to six months.

Implementing standardized credentialing data exchange, however, offers a solution. Each clinician would complete a single credentialing profile using a CMS-defined FHIR profile with a recognized credentialing provider. All six payers could then retrieve the same validated data through FHIR APIs, only performing necessary plan-specific checks. This standardization would significantly reduce the time needed for full network participation, lower the administrative burden on the organization, allow patients to be served sooner, and provide CMS with more consistent credentialing information for enhanced program integrity and network adequacy oversight.

Care Delivery Implications

Real-World Provider Example

A medical group in North Las Vegas opened a new clinic in an underserved community with limited access to primary care. Although a nurse practitioner was ready to begin providing care immediately, the group encountered substantial delays in completing credentialing with multiple MA plans. These delays postponed the provider's ability to see patients, prolonging unmet care needs in a community already experiencing access barriers. A standardized, FHIR-based credentialing data exchange would have enabled rapid verification and avoided redun-

dant documentation cycles by accelerating the provider's onboarding and directly improving timely access to care for the population.

Suggested Rulemaking and Guidance

CMS should mandate the use of standardized FHIR-based credentialing data exchange between CMS-regulated plans and CMS-recognized credentialing data providers, and explicitly authorize plans to rely on these entities as primary sources of credentialing information. CMS should define a national FHIR credentialing profile and establish standards for data quality, verification, auditability, and update frequency. CMS should require CMS-regulated plans to incorporate this standardized credentialing exchange into their workflows and contractual requirements.

Policy Rationale

Provider credentialing remains one of the most time-consuming and duplicative administrative processes in health care, with industry surveys showing that credentialing and re-credentialing drive long onboarding delays and significant administrative cost for both providers and health plans [37]. These delays, coupled with proprietary portals, PDF uploads, phone-based verification, and manual primary source checks, force clinicians to submit the same information repeatedly and lead to inconsistent records across plans due to the absence of standardized identifiers, structured data formats, and interoperable verification pathways. Moving to fully electronic and standardized credentialing processes offers substantial cost savings for the healthcare industry. Council for Affordable Quality Healthcare (CAQH) has identified that inconsistent or outdated credentialing and affiliation data are significant factors contributing to provider directory inaccuracies, which, in turn, compromise essential functions such as network adequacy monitoring, claims routing, quality measurement, and program integrity oversight [38][39]. Without explicit CMS authorization to rely on standardized credentialing data sources, plans will continue to require duplicative primary source verification, limiting the impact of interoperability improvements.

Transition ADT Notifications to a FHIR-Enabled National Standard

Financial Impact

Transitioning ADT notifications to a FHIR-enabled national standard will create $24 billion per year in annual federal savings. This is achieved by driving approximately 2% reductions in preventable readmissions and avoidable emergency department utilization across MA, MSSP, D-SNP, and Medicaid MCO populations by improving care-timing, strengthening post-discharge follow-up, and enabling near real-time encounter visibility.

Operational Example

A regional hospital's practice of sending HL7 v2 ADT messages solely to a local HIE results in inconsistent notifications for downstream MA plans and care management entities. The significant fragmentation in data flow is evident in the systemic delay and incompleteness of acute event data. This forces multi-state Value-Based Care (VBC) organizations to rely on time-consuming, manual chart reviews and reactive patient outreach, rather than proactive care.

Under a standardized FHIR-based encounter notification profile, the hospital would publish encounter events using a CMS-defined FHIR Encounter resource and Subscription channel, with routing through TEFCA or a CMS-aligned network to ensure all authorized recipients receive consistent, near real-time alerts. This enables the VBC organization to initiate same-day outreach, plan post-discharge follow-up, and verify high-cost encounters without depending on fragmented regional HIE pathways.

Care Delivery Implications

Real-World Patient Example

Mrs. J.L., a 77-year-old patient with pancreatic cancer, had long-standing continuity of care with her PCP. Following an acute decline, she was admitted to a local hospital for biliary obstruction and remained hospitalized for three weeks. Despite the PCP's established workflow for post-discharge outreach, the practice never received admission or discharge notifications due to failures of the current ADT feeds. As a result, no transitional care management visit was scheduled, and the patient was readmitted five days later due to complications from medications that would likely have been addressed during a timely PCP follow-up. A standardized national FHIR-based ADT notification framework would have ensured consistent,

automated delivery of ADT information, improving care transitions, and reducing avoidable readmissions.

Suggested Rulemaking and Guidance

Current Conditions of Participation (CoPs) permit hospitals to use FHIR APIs for encounter notifications, but the lack of a standardized, single required profile has led to significant inconsistencies in the content, routing, and timeliness of these alerts. CMS should adopt a uniform FHIR-based encounter notification profile, aligned with the US Core Encounter and the FHIR Subscriptions framework, as the national standard for electronic admission, discharge, and transfer (ADT) notifications. CMS should require all CMS-regulated providers to publish encounter notifications using this standardized FHIR-based profile, replacing fragmented HL7 v2 ADT feeds with a consistent national approach.

Policy Rationale

Although current CoPs allow hospitals to use any electronic method that meets the standard of 45 CFR 170.205(d)(2), this flexibility has produced significant nationwide variation in the completeness, timeliness, and routing of encounter notifications [40]. Today, plans and care organizations often must stitch together ADT feeds from multiple regional HIEs to approximate full coverage, and even then the networks may be incomplete or unable to deliver consistent, timely alerts. Federal and state evaluations have found the following issues: uneven ADT data quality, inconsistent metadata, and delayed notifications. These deficiencies impede critical functions such as transitional care workflows, same-day outreach, readmission prevention efforts, and program integrity [41][42]. A standardized FHIR-based encounter notification profile would reduce this fragmentation through a uniform structure and delivery mechanism. Plus, FHIR subscription-based methods present a more scalable substitute for fragmented HL7 v2 data feeds [43]. Aligning this profile with TEFCA pathways would create a consistent national channel for real-time, verified encounter events across MA, Medicaid, and ACO models, which would strengthen care coordination and operational oversight.

Adopt a Standard FHIR Framework for Digital Quality Measurement

Financial Impact

Adopting a standard FHIR framework for digital quality measurement will create $18 billion per year in annual federal savings. This is achieved by reducing manual chart abstraction, supplemental data chase, and reporting rework, while driving approximately 0.5% reductions in avoidable utilization across MA, Medicaid MCO, and MSSP populations through improved gap closure visibility and standardized digital quality exchange.

Operational Example

A primary care organization involved in MA, Medicaid, and Medicare Shared Savings Program (MSSP) ACO risk models currently collects quality data via diverse, fragmented channels (eCQMs, chart reviews, flat-files, proprietary portals) with inconsistent formats and cycles. By implementing a unified FHIR Bulk Data Export across all plans, the organization can access a single, standardized dataset of clinical and encounter information for its population. This approach would replace fragmented workflows and reduce the need for manual abstraction, ultimately improving the completeness and timeliness of digital quality measurement.

Care Delivery Implications

Real-World Provider Example

A well-established accountable care practice in Henderson, Nevada frequently experiences discrepancies in digital quality data supplied by multiple MA plans and delegated entities. The practice receives varying reports on which beneficiaries have met or remain due for NCQA-aligned quality measures. These inconsistencies require the clinical team to reconcile multiple conflicting data sources, diverting time and resources away from direct patient care. Over time, these administrative challenges have contributed to significant provider frustration. The clinicians of this practice report feeling increasingly exasperated as they attempt to navigate conflicting quality reports that do not align with the care they deliver or the information documented in their EHR. This friction adds to the already substantial burden primary care providers face in accountable care arrangements and exacerbates existing burnout trends within the primary care workforce. Without standardized and reliable digital quality measurement, these frustrations undermine provider engagement, the very ingredient CMS relies on to drive improvements in quality and accountable care adoption.

Suggested Rulemaking and Guidance

CMS should establish a unified FHIR-based data pathway for federal quality programs, accessible to both plans and providers, using a standardized FHIR Bulk Data Export profile for digital Quality Measures (dQMs). CMS should require CMS-regulated health plans to support this export, which must include the clinical and encounter data elements necessary for dQMs, as well as a consistent attribution reference to support population-level reporting.

Policy Rationale

CMS and the National Committee for Quality Assurance (NCQA) are moving quality measurement toward digital, FHIR-based reporting. NCQA is transitioning Healthcare Effectiveness Data and Information Set (HEDIS) to digital measures that rely on standardized FHIR data exchange for calculation [44]. CMS is implementing a multi-year strategy to transition Electronic Clinical Quality Measures (eCQMs) and hybrid electronic measures to FHIR-based dQMs. This shift is necessary because the current methods, which rely on a combination of manual abstractions, chart reviews, and varied, inconsistent file formats, are no longer viable for ensuring the accuracy and integrity of the program [45]. Current quality reporting for MA, Medicaid, and ACO programs relies on disparate inputs like Consolidated Clinical Document Architecture (CCDA) documents, flat files, health plan extracts, and HIE-specific schemas. This fragmentation leads to inconsistencies and increased administrative burden. Digital quality pilots demonstrate that collecting data using FHIR can minimize manual abstraction and enhance the completeness of measures requiring data from multiple sources [46]. By establishing a single, FHIR-based path for dQMs, CMS can reduce redundant integrations, improve measure validity, and strengthen oversight. This approach ensures that dQMs are calculated using standardized, reliable clinical data instead of manual or error-prone abstractions [47].

Conclusion

Medicare and Medicaid already finance care through increasingly sophisticated value-based and risk-bearing arrangements, yet the data infrastructure supporting these programs remains fragmented, inconsistent, and operationally fragile. The interoperability gaps described in this paper directly contribute to avoidable administrative and clinical waste embedded in current federal spending. Based on established national estimates of healthcare waste, the seven recommendations outlined here could reasonably eliminate roughly 20 percent of inefficiencies, representing approximately $95 billion per year in avoidable federal health spending, without reducing benefits, restricting access, or introducing new payment models. These recommendations rely on standardizing the data pathways that already underpin attribution, primary care accountability, credentialing, encounter visibility, and quality measurement across CMS-regulated programs.

As CMS and ASTP/ONC continue the Health Data, Technology, and Interoperability (HTI) rulemakings, these recommendations should be incorporated into the next proposed HTI rule, moving them from voluntary adoption to national standard practice. By using targeted rulemaking to establish a limited set of interoperable, FHIR-based standards and authoritative sources of truth, CMS can materially reduce waste, strengthen program integrity, and improve care coordination at a national scale.

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Abbreviations

ACO: Accountable Care Organization

ADT: Admission, Discharge, and Transfer

APM: Alternative Payment Model

ASTP/ONC: Assistant Secretary for Technology Policy and Office of the National Coordinator for Health Information Technology

ATR: Member Attribution (Da Vinci FHIR Implementation Guide)

CAQH: Council for Affordable Quality Healthcare

CCDA: Consolidated Clinical Document Architecture

CMS: Centers for Medicare & Medicaid Services

CoPs: Conditions of Participation

dQMs: Digital Quality Measures

D-SNP: Dual Eligible Special Needs Plan

EHR: Electronic Health Record

EMPI: Enterprise Master Person Index

FHIR: Fast Healthcare Interoperability Resources

HEDIS: Healthcare Effectiveness Data and Information Set

HIE: Health Information Exchange

HTI: Health Data, Technology, and Interoperability

MA: Medicare Advantage

MBI: Medicare Beneficiary Identifier

MCO: Managed Care Organization

MedPAC: Medicare Payment Advisory Commission

MSSP: Medicare Shared Savings Program

NCQA: National Committee for Quality Assurance

NDH: National Directory of Healthcare Providers and Services

NPI: National Provider Identifier

NPPES: National Plan and Provider Enumeration System

PCP: Primary Care Physician

PPO: Preferred Provider Organization

QHIN: Qualified Health Information Network

TEFCA: Trusted Exchange Framework and Common Agreement

TIN: Taxpayer Identification Number

T-MSIS: Transformed Medicaid Statistical Information System

USCDI: United States Core Data for Interoperability

VBC: Value-Based Care