

Unifying Value: Industry Opportunities to Streamline Value-based Payment Data Exchange

May 2023

Introduction

Background

The U.S. healthcare system is often lauded for its innovation and commitment to patient safety, but our system is challenged by high costs, outcomes that lag other industrialized countries, and concerns over equity.^{1,2,3,4} These challenges are rooted in the history of our healthcare system, which is built on a Fee-for-Service (FFS) structure that incentivizes the volume of care delivered without a connection to quality or outcomes. Value-based payment (VBP) models change this focus by incentivizing the delivery of high-quality, appropriate care.

Evolution and opportunities

Results of VBP programs to date have been mixed. A recent report from the Center for Medicare and Medicaid Innovation (CMMI) showed that value-based programs produced only modest cost-savings without significant improvements in care quality. These findings led to a broad re-evaluation of the goals and application of VBP models and, through the incorporation of methodologies to collect, analyze, and address social determinants of health (SDOH), they are now recognized as a powerful tool to combat health inequities.⁵ In the future, a successful value-based model may be one that positively impacts expenditures, quality, or health inequity.⁶

Involvement from CAQH CORE

For more than 15 years, the CAQH Committee on Operating Rules for Information Exchange (CORE) has facilitated the industry-led development of operating rules to unify data content and infrastructure requirements that guide the adoption and implementation of technical standards. CAQH CORE participates in the VBP landscape, and in recognition of its evolution, is committed to addressing challenges related to data exchange between stakeholders to ease administrative burdens, encourage participation, and advance program goals.

CAQH CORE Engagement on Value-based Payments

Foundational efforts

In 2018, CAQH CORE identified five operational opportunity areas based on lessons learned on behalf of fee-for-service implementation and automation that, if applied to VBP, could streamline implementation and administration of innovative value-based programs. The five areas identified were interoperability, data uniformity and standardization, risk adjustment, quality measurement, and patient attribution.

Details pertaining to each area are included in the report: [All Together Now: Applying the Lessons of Fee-for-Service to Streamline Adoption of Value-Based Payments](#). Collectively, this effort informed the development of three CAQH CORE Operating Rules designed to simplify patient attribution by giving providers point-of-care information detailing the patient assignment to a value-based contract. These rules are described in greater detail later in this report.

Updates and expansion

In 2022, CAQH CORE sought to update its research and further investigate the role that new or updated operating rules could play in advancing the goals of value-based care. As an initial step, CAQH CORE undertook an environmental scan to clarify barriers to the adoption and automation of value-based payment. This was informed by in-depth industry research, interviews with stakeholders, and a VBP focus group.

Findings show that stakeholders are still contending with a lack of data uniformity and nascent technical interoperability – challenges first identified by CAQH CORE in its 2018 report. Research also identified new issues that must be addressed to advance VBP. Primarily, these considerations fall into one of two categories:

1. Understanding and integrating methodologies to address SDOH and health inequities.
2. Addressing increasing program complexity affecting contracting and data analysis.

Operating rules that promote uniformity and interoperability, and accommodate new methodologies have the potential to advance the goals of value-based care.

Report overview

This report details the findings from the 2022 CAQH CORE VBP environmental scan. The results are broken into three areas: the investigation and validation of the initial five operational opportunity areas, the impact of SDOH on VBP, and the opportunities presented by increased program complexity. The report concludes with potential next steps for CAQH CORE and the industry at large.

Evolution of the Five Operational Opportunity Areas

Industry stakeholders engaged during this work confirmed that the five operational opportunity areas identified by CAQH CORE are just as relevant now as they were in 2018. How each operational area contributes to variability in the VBP space is briefly detailed below.

Data quality and standardization

While data-sharing and analysis is integral to success in VBP, data exchanged between stakeholders is often inconsistent or incompatible, which can hinder efficient patient care. Organizations have increasingly recognized the need for platforms or methods that integrate key data into actionable insights.^{7,8,9} Recently, calls to enhance and standardize data collection of SDOH reflect an increased emphasis on using VBP models to combat inequities.^{10,11,12}

Initiatives such as the Gravity Project, an HL7 FHIR Accelerator, seek to align the data output from SDOH screening tools. The Gravity Project is also contributing to efforts that expand the available set of ICD-10 Z-codes that detail the social risks that may influence care.¹³ Activities at the federal level are also advancing the use of SDOH data, with the Office of the National Coordinator for Health Information Technology (ONC) recently releasing the [Social Determinants of Health Exchange Toolkit](#) to promote the exchange of social information.¹⁴ Medicare and the Office of Management and Budget (OMB) are similarly soliciting public feedback on the types and transfer of SDOH information.^{15,16}

Interoperability

Interoperability, empowered by existing and emerging technologies, is essential to support VBP operations but remains an obstacle to widespread adoption. Given the varied stakeholders and techniques involved, multiple technical standards are needed. For example, complex reporting requirements are fulfilled using the X12 837 Claim Submission transaction that facilitates the exchange of supplementary diagnostic or procedure information through quality data codes, like CPT II, or ICD-10. Additionally, performance monitoring of quality and financial benchmarks can be achieved using API-driven modalities supported by HL7 FHIR standards; approaches are currently being refined in the HL7 Da Vinci Project Value-based Performance Reporting Use Case.¹⁷

Interoperability remains of great interest to healthcare stakeholders because it can eliminate wasteful, manual workflows that drive up costs and perpetuate operational deficits.^{18,19} Industry stakeholders also acknowledge that interoperability supports modern technical infrastructures that promote innovation and facilitate the inclusion of methodologies to exchange SDOH data and drive the involvement of community resources in care team discussions.^{20,21}

Patient risk stratification

Risk stratification or adjustment is the practice of cataloguing patient characteristics to ensure resources are appropriately devoted to their care and well-being. At the time of the original CAQH CORE report, risk adjustment was already a challenge for VBP participants, mainly due to differing models used between programs and payers and a lack of transparency about how “risk” was calculated. Today, these concerns remain, but the debate has expanded into how social risks can be quantified. Industry experts are considering a variety of strategies, such as the collection of key demographic variables and the incorporation of imputed risk scores, but additional testing and validation will be required before any solution is implemented widely.^{22,23,24}

Underpinning these concerns are federal-level discussions about the need for risk adjustment reform. This stems from a perception that risk adjustment models may be “gamed” by Medicare Advantage plans through coding practices that result in higher-than-expected patient acuity. Some contend these practices threaten the long-term solvency of Medicare. This could trigger significant risk adjustment reforms, which could have downstream consequences for VBP models.^{25,26}

Patient attribution

In VBP contracts, patients are assigned to providers using a variety of methods. Methodologies often include identifying the provider with whom a patient has a plurality of claims, visits, or spend during a defined period. Differences in approaches used by health plans make it difficult for providers to easily or reliably identify attributed lives. Further, the information health plans provide to clarify attribution often arrives in varying formats and at differing intervals, perpetuating time-consuming manual work.

CAQH CORE Participating Organizations addressed these challenges with the publication of three CAQH CORE Operating Rules that outline consistent data content and technical requirements for health plans to provide rosters of all patients attributed to a VBP contract ([CAQH CORE Attributed Patient Roster X12 005010X318 834 Data Content and Infrastructure Rules](#)) and to indicate patient attribution to a VBP contract during eligibility checks ([CAQH CORE Eligibility and Benefits \(270/271\) Single Patient Attribution Data Rule](#)).

Despite progress in this area, upwards of 40% of providers still indicate that they are unsure which patients are attributed to them.²⁷ Industry stakeholders, particularly provider groups, have expressed a desire for the CAQH CORE Patient Attribution Operating Rules to be federally mandated as a method to require point-of-care indications about whether a patient is attributed. CAQH CORE recently submitted the Single Patient Attribution Rule to the National Committee for Vital Health and Statistics (NCVHS) for consideration for federal mandate by the Department of Health and Human Services (HHS).

Quality measurement

Measuring care quality and outcomes is needed to assess the value of care delivery; however, providers participating in VBP contracts are burdened by a high volume of varying quality reporting requirements. Efforts are on-going to support simplification, with CMS undertaking efforts to refine quality measure sets across programs, reducing the number of measures and aligning reporting with meaningful indicators, such as key clinical markers and patient milestones.²⁸ Additionally, CAQH CORE heard challenges in its research around inconsistent expectations across health plans for how and when to submit quality measurement information.

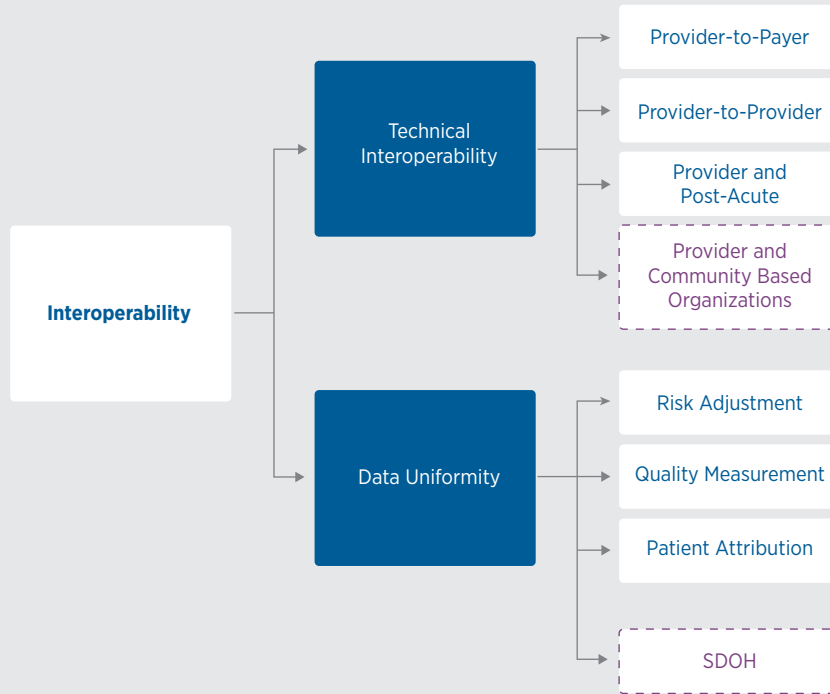
Developments in quality measurement are also extending to topics such as the incorporation of social risk and the use of new technologies. Groups like the National Committee for Quality Assurance (NCQA) are advocating for the inclusion of social risk into quality measurement to better reflect non-clinical attributes that affect patient care.²⁹ Further they recommend the use of FHIR-based APIs for quality reporting, believing their ability to easily integrate multiple, disparate data sources is essential to strengthen digital quality measurement and the new Electronic Clinical Data System reporting standard.³⁰ CAQH CORE supports new data elements and technologies to advance quality measurement. Business rules can align the industry around minimum requirements and set common expectations for data exchange.

An interdependent framework

Revisiting the five operational opportunity areas showed their continued relevance to the adoption and streamlined administration of value-based payment programs. Each area has evolved to accommodate shifting VBP priorities, including the capture and analysis of SDOH data used to combat health inequity, as well as the emerging impact of new technologies - like HL7 FHIR-based APIs.

Additionally, reinvestigation of the five operational opportunity areas aids in a greater appreciation that each domain is interconnected and interventions targeting one area have downstream impacts on others. **Figure 1** demonstrates this concept and CAQH CORE and its Participating Organizations will consider this framework throughout rulemaking efforts.

FIGURE 1: INTER-DEPENDENT FRAMEWORK FOR VALUE-BASED PAYMENT INTEROPERABILITY



Emerging Issues in VBP

The five operational opportunities in the 2018 CAQH CORE report remain relevant to the implementation and success of VBP models. As VBP matures, however, emergent issues are informing a re-evaluation of the barriers that challenge adoption. During this comprehensive review, two themes were continually raised: challenges and opportunities incorporating SDOH into VBP model design and the difficulties presented by the growing complexity of VBP models. Each is covered in greater detail below.

SDOH in value-based care

Healthcare inequities were magnified by the pandemic. To address them, industry has increased efforts to collect and analyze social data. However, because no common approach to using SDOH has emerged, progress has been limited.

Driving SDOH data collection and uniformity

Key industry stakeholders, including Medicare³¹ and the HCP-LAN Health Equity Advisory Team (HEAT),³² recognize the need to update and align SDOH data sources and screening tools. Doing so creates a basis for the development and scaled implementation of interventions that address health inequities. Organizations like the Gravity Project are unifying coding output from SDOH screening tools and contributing to a more robust list of ICD-10 Z-code diagnoses used to document patient-level social risks.³³ ONC also recently released the SDOH data exchange toolkit with best practices and technical infrastructures that support transfer of social information.³⁴

Additional activity at the federal level is stimulating a standard approach to the capture and exchange of SDOH data. Recent requests for information issued by CMS³⁵ and OMB,³⁶ are seeking public input about best practice SDOH data exchange methods and the suitability of updating race and ethnicity statistical standards. These RFIs could result in swift impacts and greater industry alignment around data collection and exchange standards if public input justifies regulatory action. CMS closed their RFI on March 13 and the OMB solicitation ended on April 11, 2023. CAQH CORE is monitoring responses to both requests to help inform the need for operating rules.

Benefit of incorporating social risk data into model design

Undertaking activities related to the collection and utilization of SDOH data has direct benefits to VBP models. For example, unifying collection contributes to the quantification of social challenges, which in turn can be used to strengthen the risk adjustment models that affect financial and performance benchmarks.^{37,38,39} Additionally, integration of social circumstances supports meaningful care coordination between providers and community-based organizations (CBOs) by affording the opportunity to detect and document unmet social needs. Efforts such as the ONC 360X initiative seek to advance these care relationships by facilitating closed-loop referrals between providers and CBOs; however, more work and investments are necessary before this is carried out at a large scale.^{40,41}

Opportunities within SDOH

Incorporating SDOH into VBP programs presents an important, yet challenging opportunity. Through industry engagement and interviews, CAQH CORE documented support for impactful interventions that leverage existing transactions and infrastructures that would minimize implementation burden while accommodating progress toward a more equitable health system.

First, strategies to promote the usage of ICD-10 Z-codes, which are specifically designed to capture non-clinical factors affecting patient care and are inclusive of social risk, can generate a more complete picture of the impact that SDOH have nationally. However, use of Z-codes is limited for a variety of reasons, including a lack of resources, training gaps, and missing diagnoses.⁴² Though these are complex barriers to overcome, establishing a best practice pathway for the recording of supplementary ICD-10 Z-codes within the X12 837 Health Care Claim Submission transaction was identified in stakeholder interviews as a potential route to encourage engagement and usage.

Second, interviews and research highlighted the importance for health plans to standardly collect socio-demographic information during member enrollment, including self-reported race and ethnicity data. This information can be used to enhance interventions or provide insights into the patient populations aligned to VBP

programs. Unfortunately, health plans do not adhere to a single data collection standard, limiting interoperability between plans, as well as broader, population-level insights that could be used to develop common frameworks that combat health inequity. Unifying the industry around best practice data sets for the collection of race and ethnicity or other socio-demographic information in the X12 834 Benefit Enrollment Transaction can help standardize data collection for socio-demographic data collection.

CAQH CORE is committed to supporting the growth and sustainability of interventions that address harmful health disparities and will consider potential solutions to further these identified opportunities.

Relative Complexity of VBP Programs

Participation in VBP models has grown steadily over the past decade and - despite most models falling short of producing meaningful savings - providers and health plans foresee that adoption of VBP models will continue to increase.⁴³ This establishes a context where more stakeholders will be forced to grapple with the growing complexities of implementing and managing a VBP program.

The difficulties and costs of managing and participating in VBP programs have long been recognized. For example, providers participating in the MIPS program report financial and time costs that outstrip the potential incentive bonus.^{44,45} Similar barriers are reported for Medicaid VBP programs that often do not sufficiently fund necessary infrastructure development.⁴⁶ Start-up costs and infrastructure requirements can similarly discourage participation.⁴⁷ Several areas emerged during research and stakeholder interviews related to this program complexity.

Data and IT Infrastructure

A strong IT infrastructure is important across all aspects of healthcare, particularly for VBP programs.⁴⁸ Unfortunately, uniform exchange of data between stakeholders is still lagging. Additionally, tools to centralize and standardize the transfer of information, such as EHRs, have not yet been leveraged to their full potential to function as a central hub for data sharing and exchange.⁴⁹ Interviews with industry stakeholders also highlighted the untapped potential of community health information exchanges, which have not been widely implemented outside of small pilot programs.

Once the collection and standard exchange of information is solved, a second issue arises: the desire to use the data that is available for analysis and action.⁵⁰ Doing so often requires significant infrastructure investments, whether through in-house development or via vendor-based solutions.^{51,52} As previously highlighted, many VBP programs do not provide the necessary start-up funds to cover the full cost of such investments. From experience, industry stakeholders highlight that prohibitive costs can lead participants to over-extend their finances or enter revenue-sharing relationships with vendors who, in return for their service, benefit by getting a piece of any savings produced through participation.

Those obstacles aside, once a participant has made the commitment to developing or obtaining an analytic platform, they are faced with myriad choices. There are hundreds of analytic solutions, both free-standing and as a bolt-on product to EHRs or practice-management systems. The sheer number of options raises concerns around differing methodologies and divergent technical infrastructures - points that may harm the long-term interoperable exchange of information necessary to successfully coordinate VBP programs.

Contractual complexities

Contracting also introduces considerable complexity to VBP models, arising from differences in how common terms and methodologies are defined. For example, the establishment of high quality networks of providers can augment success in VBP models; however, the methodologies used to evaluate high-value providers can differ between health plans, diminishing the potential cost-saving or quality benefits.⁵³ These differences contribute to a push-and-pull between providers and health plans who are seeking alignment around contractual language that promotes mutual accountability for performance monitoring and financial risk.^{54,55} These complexities compound when extended to innovative approaches to VBP, such as the incorporation and incentivization of SDOH data.^{56,57}

Opportunities within program complexity

Program complexity has increased the burden of participation in value-based programs. Though VBP is sometimes complex out of necessity – coordinating a population of patients across the spectrum of care is not easy – stakeholders are quick to point out that certain controls could ease the initiation and administration of contracts. One such method is to develop a common set of terms and definitions that can be used across programs and participants, so the language used during negotiation and other initiation activities is consistent.

Further, technical infrastructures are imperative to streamlining healthcare, but as more responsibility is placed on VBP participants, strategies must support the efficient development and integration of solutions meant to provide analytic insights and unite care teams onto a single platform. Industry stakeholders agree that a minimum set of technical infrastructure requirements that support the quick and secure exchange of information between trading partners is necessary to coordinate care between providers and services that fall outside of traditional care pathways.

Integration of common definitions and infrastructure requirements into VBP rule development efforts could ensure considerations specific to the administration of VBP programs are fully and appropriately reflected in industry business requirements.

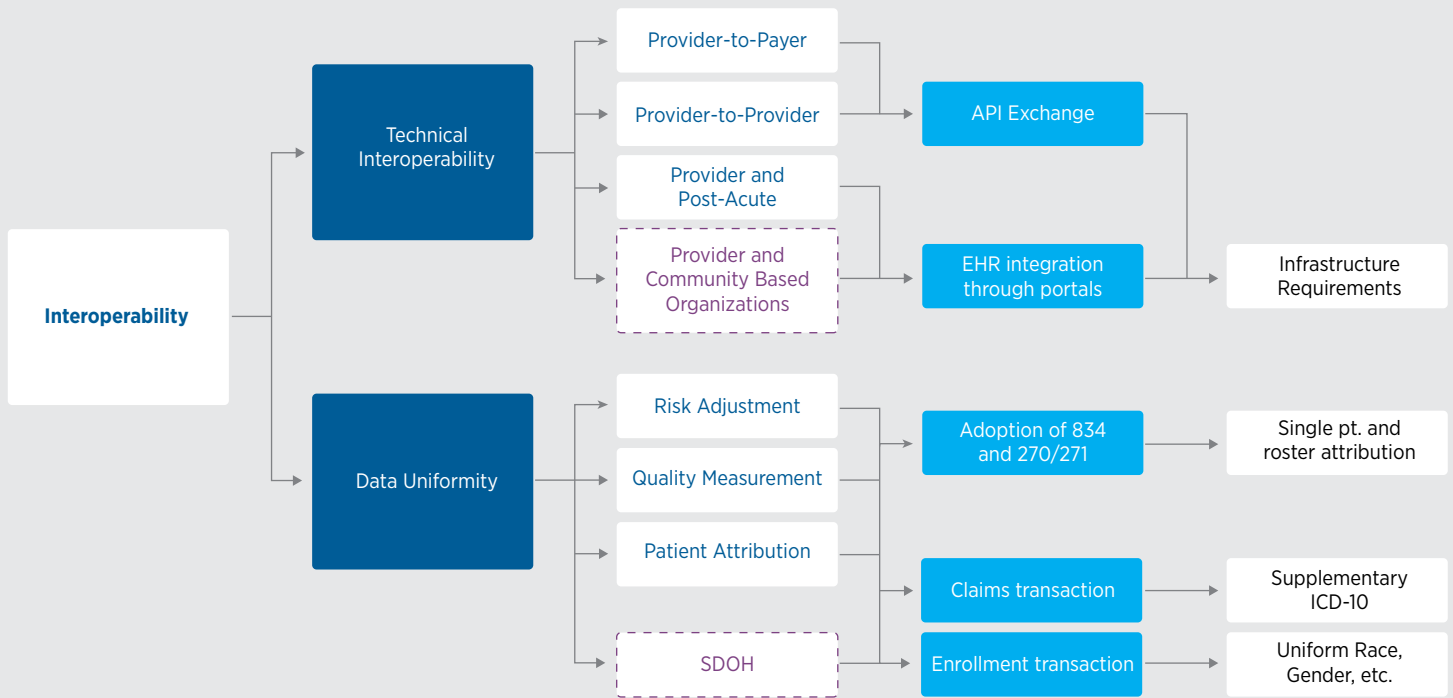
Call to Action

No longer just a demonstration, VBP programs are present across a wide array of health plans and attract provider participants from across specialties who care for diverse patient populations; however, challenges remain. Nascent interoperability is an issue across the healthcare industry, but one that becomes compounded in value-based care due to the extensive coordination required between multiple stakeholders. Moreover, the concept of value-based care is changing. The industry has pivoted and sees VBP models as a way to combat inequities that exist in the U.S. healthcare system.

CAQH CORE is at the center of healthcare interoperability, publishing operating rules that provide a uniform way for industry stakeholders to automate data exchange. There is significant variability within the administration of VBP that can be addressed through thoughtful consensus-based, industry led interventions. The areas of opportunity presented in this report provide a foundation for greater uniformity within the VBP space that can be achieved by updating existing or creating new operating rules. CAQH CORE and its Participating Organizations have launched a Value-based Payment Subgroup to address these topics. To join this initiative and lend your organizational perspective and voice to the process, please contact CORE@caqh.org.

Figure 2 demonstrates how the various opportunities discussed in this report can support an inter-dependent framework of VBP interoperability.

FIGURE 2: EXPANDED INTEROPERABILITY FRAMEWORK



About CAQH CORE

CAQH CORE was formed to drive the creation and adoption of healthcare operating rules that support standards, accelerate interoperability, and align administrative and clinical activities among providers, health plans, and consumers. CAQH CORE Participating Organizations represent more than 75 percent of insured Americans, including health plans, providers, vendors, government entities, and standards development organizations. CAQH CORE Operating Rules addressing eight healthcare business transactions have been issued to date. For more information, visit www.caqh.org/CORE.

Endnotes

- 1 Brangham W and Kane J (2020). Is U.S. health care the best or 'least effective' system in the modern world? PBS News House, August 31, 2020. Retrieved from: <https://www.pbs.org/newshour/show/is-u-s-health-care-the-best-or-least-effective-system-in-the-modern-world/> on May 12, 2023.
- 2 Schneider EC, Shah A, Doty MM, Tikkanen R, Fields K and Williams II RD (2021). Mirror, Mirror 2021: Reflecting Poorly: Health Care in the U.S. Compared to Other High-Income Countries. The Commonwealth Fund. Retrieved from: <https://www.pbs.org/newshour/show/is-u-s-health-care-the-best-or-least-effective-system-in-the-modern-world/> on May 12, 2023.
- 3 Wagner E, Ortaliza J & Cox C (2022). How does health spending in the U.S. compare to other countries? Peterson-KFF Health System Tracker. Retrieved from: <https://www.healthsystemtracker.org/chart-collection/health-spending-u-s-compare-countries-2/#Average%20annual%20growth%20rate%20in%20health%20consumption%20expenditures%20per%20capita%201980s%20through%202020,%20U.S.%20dollars,%20PPP%20adjusted%20C%20AO> on May 12, 2023.
- 4 Kurani N and Wagner E (2021). How does the quality of the U.S. health system compare to other countries. Peterson-KFF Health System Tracker. Retrieved from: <https://www.healthsystemtracker.org/chart-collection/quality-u-s-healthcare-system-compare-countries/> on May 12, 2023.
- 5 Werner RM, Emanuel E, Pham HH & Navathe AS (2021). The Future of Value-Based Payment: A Road Map to 2030. Retrieved from: <https://ldi.upenn.edu/our-work/research-updates/the-future-of-value-based-payment-a-road-map-to-2030/> on May 12, 2023.
- 6 Centers for Medicare and Medicaid Services (2021). "Innovation Center Strategy Refresh." Retrieved from: <https://innovation.cms.gov/strategic-direction-whitepaper/> on May 12, 2023.
- 7 Gajra A, Simons D, Jeune-Smith Y, Valley AW & Feinberg BA (2021). Barriers to Participation and Success in Value-Based Care models. DOI: 10.1200/JCO.2020.39.28_suppl.70 *Journal of Clinical Oncology* 39, no. 28_suppl (October 01, 2021) 70-70. Retrieved from: https://ascopubs.org/doi/abs/10.1200/JCO.2020.39.28_suppl.70/ on May 12, 2023.
- 8 Gavidia M. (2020). Employing Value-Based Care: An Industry View of Obstacles, Applicable Strategies for Efficient Implementation. AJMC. Retrieved from: <https://www.ajmc.com/view/employing-valuebased-care-an-industry-view-of-obstacles-applicable-strategies-for-efficient-implementation/> on May 12, 2023.
- 9 Prabhutendolkar S and Shah D (2020). Data is the Foundation for the Shift to Value-Based Care. Managed Healthcare Executive. Retrieved from: <https://www.managedhealthcareexecutive.com/view/data-foundation-shift-value-based-care/> on May 12, 2023.
- 10 Raths D (2021). NQF Leadership Consortium Identifies Top Priorities for 2022. Healthcare Innovation. Retrieved from: <https://www.hcinnovationgroup.com/policy-value-based-care/value-based-care-quality-measurement/news/21251219/nqf-leadership-consortium-identifies-top-priorities-for-2022/> on May 12, 2023.
- 11 Assistant Secretary for Planning and Evaluation (ASPE) (2021). Supporting Value-Based Care Transformation through Interoperability and Care Coordination. Office of the Secretary Patient-Centered Outcomes Research Trust Fund. Retrieved from: <https://aspe.hhs.gov/sites/default/files/2021-07/value-based-care.pdf> on May 12, 2023.
- 12 Alsdurf B (2022). Examining the value-based care approach: How improved data models and analysis can remedy inequities. Retrieved from: <https://medcitynews.com/2022/01/examining-the-value-based-care-approach-how-improved-data-models-and-analysis-can-remedy-inequities/> on May 12, 2023.
- 13 The Gravity Project (n.d.). Retrieved from: <https://thegravityproject.net/> on April 28, 2023.
- 14 The Office of the National Coordinator (ONC) (2023). Social Determinants of Health Information Exchange Toolkit: Foundational Elements for Communities. Retrieved from: https://www.healthit.gov/sites/default/files/2023-02/Social%20Determinants%20of%20Health%20Information%20Exchange%20Toolkit%202023_508.pdf on March 10, 2023.
- 15 Centers for Medicare and Medicaid Services (2022). 87 FR 76238. Retrieved from: <https://www.federalregister.gov/documents/2022/12/13/2022-26479/medicare-and-medicaid-programs-patient-protection-and-affordable-care-act-advancing-interoperability/> on March 10, 2023.
- 16 Office of Management and Budget (2023). 88 FR 5375. Retrieved from: <https://www.federalregister.gov/documents/2023/01/27/2023-01635/initial-proposals-for-updating-ombs-race-and-ethnicity-statistical-standards/> on March 10, 2023.
- 17 HL7 Da Vinci Value Based Performance Reporting (VBPR) (2023). Retrieved from: <https://confluence.hl7.org/pages/viewpage.action?pageId=94643888> on April 28, 2023.

- 18 Hetler J (2021). Empowering Value-Based Care Through Interoperability. Medical Product Outsourcing. Retrieved from: https://www.mpo-mag.com/contents/view_online-exclusives/2021-05-13/empowering-value-based-care-through-interoperability/ on May 12, 2023.
- 19 Lipps M (2021). The Interoperability Effect: Driving Value-Based Care and Financial Health. Managed Healthcare Executive. Retrieved from: <https://www.managedhealthcareexecutive.com/view/the-interoperability-effect-driving-value-based-care-and-financial-health/> on May 12, 2023.
- 20 Cohen JK (2021). Interoperability, social determinants challenges linger. Modern Healthcare. Retrieved from: <https://www.modernhealthcare.com/patients/interoperability-social-determinants-challenges-linger/> on May 12, 2023.
- 21 Health Care Payment Learning & Action Network: Health Equity Advisory Team (2021). Advancing Health Equity Through APMs: Guidance on Social Risk Adjustment. Retrieved from: <http://hcp-lan.org/workproducts/APM-Guidance/Advancing-Health-Equity-Through-APMs-Social-Risk-Adjustment.pdf> on March 10, 2023.
- 22 Goldman M (2022). ACOs unsure about health equity adjustment to REACH model. Modern Healthcare. Retrieved from: https://www.modernhealthcare.com/policy/acos-unsure-about-health-equity-adjustment-reach-model?utm_source=modern-healthcare-am-thursday&utm_medium=email&utm_campaign=20220518&utm_content=article1-headline/ on May 12, 2023.
- 23 Jaffery JB and Safran DG (2021). Addressing Social Risk Factors in Value-Based Payment: Adjusting Payment Not Performance to Optimize Outcomes and Fairness. HealthAffairs. Retrieved from: <https://www.healthaffairs.org/doi/10.1377/forefront.20210414.379479/full/> on May 12, 2023.
- 24 Sheingold S, Zuckerman R, DeLew N and Sommers BD (2021). Health Equity and Value-Based Payment Systems: Moving Beyond Social Risk Adjustment. HealthAffairs. Retrieved from: <https://www.healthaffairs.org/doi/10.1377/forefront.20210726.546811/> on May 12, 2023.
- 25 Hostetter M and Klein S (2022). Taking Stock of Medicare Advantage: Risk Adjustment. The Commonwealth Fund. Retrieved from: <https://www.commonwealthfund.org/blog/2022/taking-stock-medicare-advantage-risk-adjustment/> on May 12, 2023.
- 26 Gilfillan R and Berwick DM (2021). Medicare Advantage, Direct Contracting, And The Medicare 'Money Machine' Part 1: The Risk-Score Game. HealthAffairs. Retrieved from: <https://www.healthaffairs.org/doi/10.1377/forefront.20210927.6239/full/> on May 12, 2023.
- 27 CAQH Explorations (2021). Communicating Attribution: Accessibility of Information to Support Value-Based Payment Initiatives. Council for Affordable Quality Healthcare. Retrieved from: <https://www.caqh.org/sites/default/files/provider-attribution-issue-brief.pdf> on May 12, 2023.
- 28 Jacobs DB, Schreiber M, Seshamani M, Tsai D, Fowler E and Fleisher LA (2023). Aligning Quality Measures across CMS – The Universal Foundation. Retrieved from: <https://www.neim.org/doi/full/10.1056/NEJMp2215539/> on February 14, 2023.
- 29 The National Committee for Quality Assurance (2021). Health Equity and Social Determinants of Health in HEDIS: Data for Measurement. Retrieved from: https://www.ncqa.org/wp-content/uploads/2021/06/20210622_NCQA_Health_Equity_Social_Determinants_of_Health_in_HEDIS.pdf on March 10, 2023.
- 30 National Committee for Quality Assurance (2023). ECDS Frequently Asked Questions. Retrieved from: <https://www.ncqa.org/hedis/the-future-of-hedis/ecds-frequently-asked-questions/> on March 10, 2023.
- 31 Centers for Medicare and Medicaid Services (2022). CMS Framework for Health Equity 2022-2032. Retrieved from: <https://www.cms.gov/files/document/cms-framework-health-equity-2022.pdf/> on March 10, 2023.
- 32 HCP-LAN HEAT (2021).
- 33 Health Level 7 (2022). Gravity Project. Retrieved from: <https://confluence.hl7.org/display/GRAV/The+Gravity+Project/> on May 12, 2023.
- 34 ONC (2023).
- 35 1-CMS (2022).
- 36 OMB (2023).
- 37 Jaffery JB and Safran DG (2021).
- 38 Sheingold S, Zuckerman R, DeLew N and Sommers BD (2021).
- 39 HCP-LAN HEAT (2021).

- 40 The Office of the National Coordinator (n.d.). 360X Implementation Guide. Retrieved from: <https://oncprojecttracking.healthit.gov/wiki/display/TechLab360X/360X+Implementation+Guide/> on March 10, 2023.
- 41 ONC (2023).
- 42 Centers for Medicare and Medicaid Services Office of Minority Health (2021). Utilization of Z Codes for Social Determinants of Health among Medicare Fee-for-Service Beneficiaries, 2019. Retrieved from: <https://www.cms.gov/files/document/z-codes-data-highlight.pdf/> on April 17, 2023.
- 43 Health Care Payment Learning & Action Network (2022).
- 44 Khullar D, Bond AM, Qian Y, O'Donnell E, Gans DN, Casalino LP. Physician Practice Leaders' Perceptions of Medicare's Merit-Based Incentive Payment System (MIPS). *J Gen Intern Med.* 2021 Dec;36(12):3752-3758. doi: 10.1007/s11606-021-06758-w. Epub 2021 Apr 9. PMID: 33835310; PMCID: PMC8034038.
- 45 Khullar D, Bond AM, O'Donnell EM, Qian Y, Gans DN, Casalino LP. Time and Financial Costs for Physician Practices to Participate in the Medicare Merit-based Incentive Payment System: A Qualitative Study. *JAMA Health Forum.* 2021;2(5):e210527. doi:10.1001/jamahealthforum.2021.0527.
- 46 Baller J, Herringa J, Lipson D, Samra M (2020). Forging the Building Blocks for Success Under Medicaid Value-Based Payment. Retrieved from: <https://www.mathematica.org/blogs/forging-the-building-blocks-for-success-under-medicicaid-value-based-payment> on May 12, 2023.
- 47 Waddill K (2019). Administrative Complexity Ups Spending Despite Value-Based Care. *Health Payer Intelligence.* Retrieved from: <https://healthpayerintelligence.com/news/administrative-complexity-ups-spending-despite-value-based-care/> on May 12, 2023.
- 48 Mjaset C, Ikram U, Nagra NS and Feeley TW (2020). Value-Based Health Care in Four Different Health Care Systems. *NEJM Catalyst.* Retrieved from: <https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0530/> on May 12, 2023.
- 49 Emerson, J (2022). How to improve pay-provider data collaboration in value-based care systems. *Becker's Payer Issues.* Retrieved from: <https://www.beckerspayer.com/payer/how-to-improve-payer-provider-data-collaboration-in-value-based-care-systems.html/> on May 12, 2023.
- 50 Gavidia M (2020).
- 51 Rural Health Value. Preparing for a Value-Based Payment Contract. Retrieved from: <https://ruralhealthvalue.public-health.uiowa.edu/TnR/vbc/VBCContractPrep.pdf> on May 12, 2023.
- 52 RevCycle Intelligence (2021).
- 53 RevCycle Intelligence (2021). Value-Based Contracting 101: Preparing, Negotiating, and Succeeding. Retrieved from: <https://revcycleintelligence.com/features/value-based-contracting-101-preparing-negotiating-and-succeeding/> on May 12, 2023.
- 54 Nierengarten MB (2019). Adoption of Value-Based Reimbursement Among Private Insurers. *HMP Global Learning Network.* Retrieved from: <https://www.hmpgloballearningnetwork.com/site/frmc/articles/adoption-value-based-reimbursement-among-private-insurers/> on May 12, 2023.
- 55 Wadill K (2021). Value-Based Care Challenges, Opportunities for Payers in 2021. *Health Payer Intelligence.* Retrieved from: <https://healthpayerintelligence.com/news/value-based-care-challenges-opportunities-for-payers-in-2021/> on May 12, 2023.
- 56 Strazewski L (2022). How value-based care is making payor contracts even more complex. *American Medical Association.* Retrieved from: <https://www.ama-assn.org/practice-management/private-practices/how-value-based-care-making-payor-contracts-even-more-complex/> on May 12, 2023.
- 57 RevCycle Intelligence (2021).