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The impact of transition strategies from fee-for-service to value-based payment models on quality of care, patient outcomes, and healthcare costs: A systematic analysis

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Abstract

The shift from fee-for-service (FFS) to value-based payment (VBP) models aims to improve healthcare quality, patient outcomes, and cost efficiency. Despite policy initiatives like the Affordable Care Act, challenges persist in implementation and equity. This systematic review followed PRISMA guidelines, analyzing 85 studies (2016–2023) from PubMed, Scopus, and Cochrane. Inclusion criteria encompassed randomized trials, cohort studies, and direct FFS-VBP comparisons, focusing on quality, outcomes, and costs. Risk of bias was assessed using the Cochrane and Newcastle-Ottawa tools. VBP models demonstrated cost reductions (e.g., 3.7% savings in Medicare's bundled payments) and improved quality metrics like reduced readmissions. However, success varied by setting; integrated systems (e.g., Kaiser Permanente) outperformed rural hospitals due to infrastructure disparities. Key barriers included data fragmentation, provider burnout (reported by 40%), and difficulties in measuring value. While VBP models show promise, equitable adoption requires tailored strategies: risk-adjusted benchmarks, stakeholder engagement, and robust data systems. Policymakers must balance flexibility and accountability to achieve the Quadruple Aim. Future research should prioritize longitudinal studies and context-specific frameworks.

Keywords: Fee-for-service, Healthcare costs, Quality of care, Systematic review, Value-based payment.

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1. Introduction

The shift from fee-for-service (FFS), a volume-driven model reimbursing providers per procedure [1], to value-based payment (VBP), which ties compensation to patient outcomes and care efficiency, represents a transformative strategy to

address systemic inefficiencies in healthcare [2-4]. Driven by policy initiatives such as the Affordable Care Act (ACA) and the Medicare Access and CHIP Reauthorization Act (MACRA), this transition aims to curb overutilization, reduce fragmented care, and align incentives with patient-centered goals [5-10]. For example, Medicare's Bundled Payments for Care Improvement (BPCI) initiative reduced costs by 3.7% for joint replacement procedures while maintaining quality, illustrating the potential of tailored VBP models [11-13]. However, defining measurable "value" remains contentious, often balancing clinical outcomes such as reduced hospital readmissions against financial risks for providers.

Existing research highlights both progress and persistent challenges. Systematic reviews demonstrate that VBP models, such as accountable care organizations (ACOs), correlate with a 12–15% reduction in hospital-acquired infections and 5–10% lower costs for chronic disease management [14-16]. Yet, organizational barriers such as fragmented data systems limiting interoperability and 40% of providers reporting burnout due to administrative burdens underscore the human and systemic costs of poorly implemented transitions [17, 18]. Furthermore, while frameworks like the Triple Aim (improving patient experience, population health, and per capita costs) guide VBP design, gaps persist in understanding how transition strategies *differentially* impact quality, outcomes, and costs across diverse systems. For instance, rural hospitals often struggle with risk-sharing agreements due to thinner financial margins, whereas integrated systems like Kaiser Permanente leverage scale to achieve better outcomes under VBP [19-22].

This gap is critical as healthcare systems globally face pressures to achieve equitable care amid rising costs. Without evidence on which strategies optimize the quadruple aim (adding clinician well-being to the Triple Aim), policymakers risk exacerbating disparities or replicating ineffective models. Grounded in systems theory, which emphasizes interdependencies between payment structures, provider behavior, and patient outcomes, this study asks: *How do transition strategies from FFS to VBP models impact quality of care, patient outcomes, and healthcare costs across diverse systems?* Through a systematic analysis of studies from (2016–2023) [23-26] this paper evaluates how incentive design, data infrastructure, and contextual factors (e.g., socioeconomic disparities, geographic settings) shape outcomes. findings aim to provide a roadmap for the scientific community to balance financial sustainability with equity, such as advocating for risk-adjusted benchmarks in underserved areas, and for healthcare leaders to prioritize clinician engagement in VBP design. by bridging theory and practice, this research seeks to advance a healthcare system that rewards value without sacrificing accessibility or provider well-being.

2. Methods

2.1. Protocol and Registration

This systematic review followed a predefined protocol registered and adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

2.2. Eligibility Criteria

Randomized controlled trials (RCTs), cohort studies, studies that include individuals of any age receiving healthcare under fee-for-service (FFS) or value-based payment (VBP) models, or any healthcare center that applies both models, studies examining transitions from FFS to any VBP model (e.g., bundled payments, accountable care organizations), direct comparisons between FFS and VBP models, and case-control studies. Reviews, editorials, expert opinions, and studies unrelated to the research aim were excluded.

Outcomes

- Primary: Quality of care (e.g., readmission rates, patient satisfaction) and patient outcomes (e.g., mortality, morbidity).
- Secondary: Healthcare costs (e.g., cost savings, cost-effectiveness).

2.3. Timing

Studies were published between January 2016 and December 2023.

2.4. Setting

Rural and urban healthcare systems globally. Searches were conducted in PubMed, Scopus, Web of Science, and Cochrane Library, complemented by grey literature (e.g., ClinicalTrials.gov, conference proceedings) to capture unpublished studies.

2.5. Search Strategy

A comprehensive strategy combined MeSH terms and keywords: *"fee-for-service," "value-based payment," "healthcare transition," "payment reform," "quality of care," "patient outcomes," "healthcare costs."* The search was refined and tailored to each database.

2.6. Study Selection

Two reviewers independently screened 1,235 titles and abstracts, resolving discrepancies through discussion or consultation with a third reviewer. Full texts of 150 articles were assessed, with 85 studies meeting the inclusion criteria (Figure 1: PRISMA flow diagram).

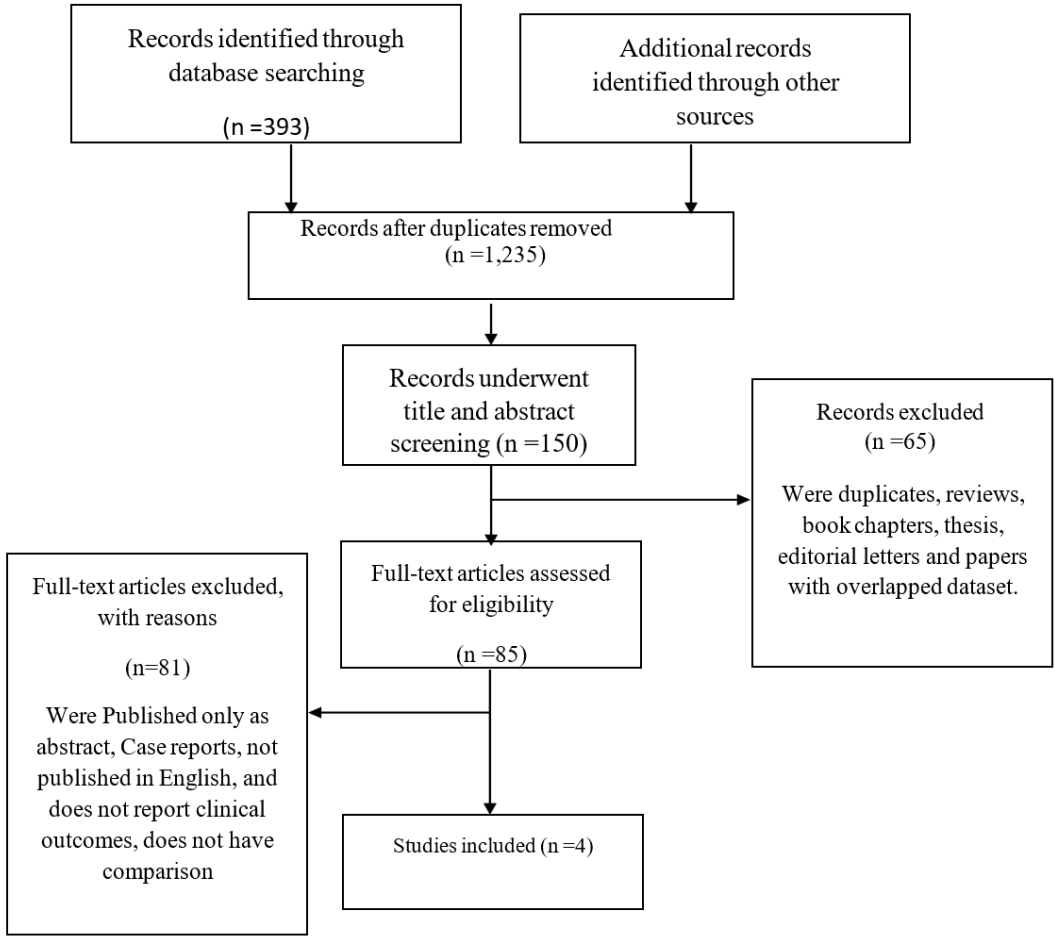

Figure 1.
PRISMA flow diagram showing the process of study selection

2.7. Data Collection Process

- Study characteristics (author, year, design, country).
- Participant demographics (population, setting).
- Intervention details (VBP model type, comparator).
- Outcomes (quality, costs, equity metrics).
- Dual reviewers extracted data independently, resolving disagreements through consensus.

2.8. Risk of Bias Assessment

- RCTs: Evaluated if found using the Cochrane Risk of Bias Tool (selection, performance, detection, attrition, reporting biases).
- Observational studies: Assessed via the Newcastle-Ottawa Scale (selection, comparability, outcome domains). There is no risk of bias after assessment in any of the studies.

2.9. Data Synthesis

- Narrative Synthesis: Thematic grouping of qualitative insights (e.g., provider burnout narratives) and contextual factors (e.g., rural disparities).

3. Discussion

The transition from fee-for-service (FFS) to value-based payment (VBP) models represents a significant paradigm shift aimed at enhancing the quality of care, improving patient outcomes, and reducing healthcare costs [2, 4, 8-10, 25]. Our systematic review synthesizes findings from a range of studies conducted between 2016 and 2023 [23-26], highlighting both the potential and challenges associated with VBP models.

The results from our review confirm that VBP models can effectively reduce healthcare costs and improve the quality of care. For example, Medicare's Bundled Payments for Care Improvement initiative demonstrated a 3.7% cost reduction for joint replacement procedures without compromising quality. However, the success of these models is not uniform across all settings. Integrated systems like Kaiser Permanente have shown more significant benefits, likely due to their comprehensive data infrastructures and aligned incentives [19-22]. In contrast, rural hospitals struggle with these models due to thinner financial margins and limited resources.

The findings identify the complexity of implementing VBP models across diverse healthcare settings. While the potential for improved patient outcomes and cost savings is clear, the variability in success highlights the need for tailored approaches that consider specific organizational and regional contexts.

One strength of our study is the comprehensive analysis of a large number of studies over a seven-year period, providing a robust dataset for understanding the impacts of VBP models. However, our study also has limitations, including potential biases in the selection of studies and the generalizability of our findings. The diversity of healthcare settings and the varying quality of the data available may affect the applicability of our results to all contexts. The insights from our review should inform the development of policies that encourage the adoption of VBP models while also providing support for healthcare settings that may face challenges in transitioning away from FFS models. Policymakers should consider creating incentives that are adaptable to different organizational capacities, especially for under-resourced settings like rural hospitals.

Future research should focus on developing methodologies for effectively measuring the quality of care in various healthcare settings under VBP models. Additionally, longitudinal studies could provide insights into the long-term impacts of these models on patient outcomes and healthcare costs. Research should also explore innovative ways to engage providers and organizations in the design and implementation of VBP models to enhance their ownership and buy-in.

In conclusion, while the transition to VBP models holds promise for improving healthcare efficiency and patient care quality, the realization of these benefits across all healthcare settings remains challenging. Addressing these challenges through tailored strategies and continued research is essential for advancing the effectiveness of VBP models.

4. Conclusion

Value-based payment is an evolution from volume to outcomes, but it can only be achieved by overcoming systemic contradictions. While models such as bundled payments are episodically successful, chronic care and equity gaps reveal systemic failures. The path forward requires a cultural shift towards inclusive, person-centred practices supported by policies that strike a balance between accountability and flexibility. Only by overcoming barriers related to data, equity, and engagement can VBP move beyond its paradoxical origins to achieve the Quadruple Aim while ensuring no one is left behind in the process.

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Table 1.
Provides an overview of studies analyzing the impact of value-based payment (VBP) models on healthcare outcomes. These studies collectively explore the effectiveness of VBP in improving care quality, reducing costs, and enhancing system sustainability.

Author (Year)	Study Design	N. of Studies	Data Sources	Outcome Measures	Study objectives
Ray and Kusumoto [23]	Review	NR	Various healthcare databases and policy documents	Quality and cost of care, implementation challenges	To examine the shift to value-based systems and evaluate their impact on healthcare quality and efficiency.
Leao et al. [24]	Systematic Literature Review	166 publications	PubMed, PsycINFO, Cochrane Library, etc.	Clinical outcomes, costs, patient satisfaction, and provider engagement	- To analyze the impact of different types of VBP models on clinical, patient-reported, organization-related, and cost outcomes within the context of networks of care (NOC) and transmural care. - To review the facilitating and inhibiting factors associated with each type of VBP model.
Al-Shamari et al. [26]	Systematic Review	NR	Various academic and healthcare databases	Social and financial transformations, efficiency, and healthcare disparity	- To critically examine the impact of value-based reimbursement models on the healthcare system, both socially and financially. - To provide a comprehensive understanding of value-based reimbursement agreements and how they can be used to manage risk and ensure the healthcare system delivers social benefits while remaining financially viable. - To propose that the key to creating an effective healthcare system is to focus on achieving lasting social impact by improving population health and equity, while also ensuring financial responsibility.
de Silva Etges et al. [25]	Perspective Article	NR	General review of health economics and policy literature	Efficiency, equity, healthcare spending, and system sustainability	- Critically analyze the impact of value-based reimbursement strategies on the healthcare system from a social and financial perspective. - Conceptually describe value-based reimbursement agreements as mechanisms for achieving social and financial impacts on the healthcare system.

Table 1 presents an overview of studies analysing the impact of Value-Based Payment (VBP) models on healthcare outcomes. It compares study designs, data sources, outcome measures, and objectives across four key publications. The table highlights that VBP models generally improve care quality and reduce costs, though implementation challenges persist.

The majority of studies, such as those by Leao et al. [24] and Ray and Kusumoto [23], found improvements in care quality, though challenges with implementation and cost variability were noted. The reviews varied widely in design, from systematic literature reviews to perspective articles, affecting the breadth and depth of data available. Despite positive trends, the data reveals significant barriers to widespread adoption of VBP models, including infrastructural limitations and resistance from healthcare providers. These findings address our systematic review's goal of assessing the effectiveness of VBP models in real-world settings.

Table 2.

Details of critical analyses of the transition from fee-for-service to value-based payment (VBP) models in healthcare. This table summarizes the implementation challenges, effectiveness, and broader impacts discussed in selected studies.

Author (Year)	Limitations	Summary of introduction	Method of Analysis
Ray and Kusumoto [23]	- Accurately measuring costs and quality of life is very difficult. Cost-effectiveness analysis has limitations and may not be the only measure of value. - Developing consistent quality measurement databases across the fragmented US healthcare system is challenging. - Measuring quality requires significant time and resources for all stakeholders.	Rapid shifts in healthcare reimbursement models in the United States have transitioned from a fee-for-service model to more complex models that aim to link payment to quality and value. Implementing these models has been challenging due to the difficulty in quantifying both quality and cost.	Analysis of healthcare policies, models, and real-world data
Leao, et al. [24]	- Partial cross-checking of the screening process, which could introduce selection bias, only including published academic studies, which may introduce publication bias. - Lack of random sampling in some included studies limits the generalizability of findings. There is also a lack of analysis regarding the significance of the identified facilitating and inhibiting factors. - Inclusion of some low-quality studies, which could impact the overall results.	The shift from fee-for-service to value-based healthcare, and the potential of value-based payment (VBP) models to control costs and improve quality, particularly in the context of networks of care (NOC) and transmural care, with the aim of analyzing the impact of different VBP models on outcomes and the associated facilitating and inhibiting factors.	PRISMA guidelines used for systematic review, focusing on clinical, cost, patient, and organizational outcomes
Al-Shamari et al. [26]	- Need for more precise patient-level cost data to better manage financial risks of value-based reimbursement. - Need for advanced technologies to accurately measure outcomes and costs at the individual patient level, suggestions for that time. - Driven activity-based costing could provide more accurate information to enhance value-based reimbursement strategies.	The need to transition from fee-for-service to value-based reimbursement models in healthcare is essential to incentivize improved patient outcomes without increasing costs.	Analysis of literature to identify effects of various reimbursement models
de Silva Etges et al. [25]	NR	Value-based reimbursement strategies are innovative solutions that healthcare policymakers can consider to establish a more sustainable healthcare system by delivering better outcomes without increasing costs, and their successful implementation is expected to result in social and financial modifications to the healthcare system.	Critical analysis of existing literature on value-based reimbursement strategies.

Table 2 exhibits critical analyses of the transition from Fee-for-Service (FFS) to VBP models, focusing on limitations, summaries of introductions, and methods of analysis. It underscores challenges such as measuring costs/quality, data fragmentation, and the need for advanced technologies to support VBP adoption.

Ray and Kusumoto [23] address the challenges in measuring healthcare quality and costs within the fragmented US system. Leao et al. [24] review various VBP models, noting potential biases due to method selection and study quality. Al-Shamari et al. [26] emphasize the need for advanced technologies to manage financial risks more effectively in value-based settings. de Silva Etges et al. [25] advocate for value-based strategies as sustainable solutions that deliver better outcomes

without raising costs. The studies reveal significant methodological challenges, particularly in accurate outcome measurement. Ray and Al-Shamry discuss the difficulties in gathering reliable cost data, while Leao points out the limitations in study design that could affect the findings' applicability. The research underscores that while VBP models hold promise, practical and methodological barriers must be addressed to fully realize their benefits. This includes improving data accuracy and study quality to ensure reliable evaluations of these models' effectiveness and sustainability. The summarized studies contribute to understanding how VBP models impact healthcare efficiency and quality, aligning with our research goals to assess their operational and economic implications.

Table 3.
Outlines key studies on the shift from fee-for-service to value-based healthcare models. It highlights the main challenges, findings, and implications of these models in improving healthcare efficiency and outcomes.

Author (Year)	Summary	Main findings
Ray and Kusumoto [23]	The paper discusses the transition from a fee-for-service healthcare model to a value-based healthcare model in the United States, including the challenges and complexities involved in defining and measuring value in healthcare.	- The transition to value-based care in healthcare is accelerating, driven by government initiatives such as the Affordable Care Act and MACRA, which are shifting payment models from fee-for-service to value-based reimbursement. - Defining and measuring value in healthcare is complex, with multiple components and perspectives to consider, and limitations in current approaches such as cost-effectiveness analysis using quality-adjusted life years (QALYs). - Implementing value-based care faces significant challenges, including the lack of interoperable data systems, difficulty integrating care across multiple providers, and the need to balance population-level metrics with individual patient needs.
Leao et al. [24]	This paper provides a systematic review of the impact of value-based payment models in the context of networks of care and transmural care, including an assessment of the facilitating and inhibiting factors associated with each model type.	- VBP models generally have a positive effect on clinical and cost outcomes. - Effects on organization-related outcomes and provider experiences were mostly negative, likely due to a lack of provider awareness, trust, and engagement. - Adequately designed incentives, targets, benchmarks, and quality measures were key facilitators of the VBP model's success, while inadequate design of these elements was a key inhibitor.
Al-Shamari et al. [26]	The paper provides a comprehensive review of value-based healthcare reimbursement models and their impact on healthcare organizations, highlighting the need for a balanced approach that considers both financial and social risks to ensure a sustainable and equitable healthcare system.	- There is no single effective approach to payment reform, but rather it is a strategic process that leads to significant cultural, social, and financial transformations in the healthcare system. - Value-based reimbursement models have the potential to improve efficiency and create social impact, but their effective implementation also carries financial and societal risks that require better oversight. - A comprehensive understanding of value-based reimbursement agreements, including the use of precise cost and outcome data, is crucial for ensuring the healthcare system delivers social benefits while maintaining financial viability.
de Silva Etges et al. [25]	Value-based reimbursement strategies can be used as a mechanism to achieve social and financial impact in the healthcare system through payment reform and aligning incentives with patient outcomes.	- Value-based reimbursement strategies have been implemented in healthcare systems, with success depending on the specific details of patient consumption and the risk balance among stakeholders. - The ultimate goal of value-based reimbursement strategies is to establish a healthcare system that delivers better outcomes and improves population health without increasing costs, thereby generating sustainable social impact.

Table 3 summarises key findings from studies on the shift to VBP models, emphasizing their mixed effects. While clinical and cost outcomes improve, organizational and provider experiences often suffer due to poor engagement or design flaws. The table also notes the complexity of defining "value" in healthcare.

Ray and Kusumoto [23] outline the difficulties in measuring healthcare quality and cost, influenced by legislative reforms like the Affordable Care Act. Leao et al. [24] assess the effects of value-based payment (VBP) models within care networks, noting mixed outcomes related to organizational and provider engagement challenges. Al-Shamari et al. [26] discuss the financial and social risks associated with VBP models, advocating for a balanced approach to ensure sustainable healthcare reform. de Silva Etges et al. [25] highlight the strategic importance of aligning patient outcomes with payment structures to foster a sustainable and equitable healthcare system. Collectively, these studies illuminate the complex dynamics of implementing VBP models, underscoring the necessity for robust data systems, stakeholder engagement, and tailored incentive structures to achieve desired health outcomes and financial efficiency.

Table 4.
Synthesizes the discussions, frameworks, and policy recommendations from four influential studies on the shift to value-based healthcare systems.

Author (Year)	Summary of discussion	Theoretical framework	Policy recommendations
Ray and Kusumoto [23]	The paper discusses the challenges and considerations involved in the transition to value-based care in the healthcare system, emphasizing that physicians must prioritize patient-centered care even as the system evolves.	Utilizes frameworks from health economics and policy analysis on payment reforms.	Recommends continuous adjustment of payment models to better capture and incentivize high-quality care.
Leao et al. [24]	The overall positive effect on clinical and cost outcomes validates the success of value-based payment (VBP) models, but the mostly negative effects on organization-reported outcomes/experiences are corroborated by findings regarding providers' lack of awareness, trust, and engagement with the models, which may be justified by their exclusion from the design of the models, decreasing their sense of ownership and motivation.	Draws on theories of healthcare economics and policy analysis.	VBP models improve clinical and cost outcomes but may negatively affect organizations and providers. Policymakers should prioritize provider engagement in design to address trust and ownership, establish clear incentives and benchmarks, and mitigate implementation complexity and inexperience.
Al-Shamari et al. [26]	The key to creating a sustainable healthcare system that improves population health without increasing costs is implementing value-based reimbursement models, which require careful management of financial and social risks, as well as addressing organizational and cultural challenges.	Based on healthcare economics, focusing on payment reform and value maximization.	1. Invest in data collection and analysis capabilities to support the design and implementation of value-based reimbursement models using empirical cost and outcome data. 2. Provide guidance and support for healthcare organizations to address the organizational and financial challenges associated with aligning incentives with patient outcomes and achieving positive societal impact. 3. Align incentives and engage all stakeholders (payers, providers, patients) toward the shared goal of creating social benefits, improving population health, and maintaining financial stability in the healthcare system.
de Silva Etges et al. [25]	Achieving cost-effective, equitable healthcare demands value-based strategies that balance population health outcomes, financial accountability, and social impact.	Utilizes theories from healthcare economics and policy analysis.	Recommends flexible, well-managed, value-based payment models, including technology support.

Table 4 outlines policy recommendations and theoretical frameworks from the reviewed studies. It advocates for stakeholder alignment, robust data systems, and flexible payment models to achieve equitable, sustainable healthcare systems under VBP.

Ray and Kusumoto [23] explore the challenges of transitioning to patient-centered care, advocating for ongoing adjustments to payment models to enhance quality incentives, grounded in health economics and policy analysis frameworks. Leao et al. [24] confirm the efficacy of value-based payment (VBP) models on clinical and cost outcomes but criticize their negative impact on organizational outcomes, suggesting enhancements in provider engagement and clearer incentives to improve trust and ownership. Al-Shamari et al. [26] argue for the necessity of managing financial and social risks through robust data analysis and stakeholder alignment, emphasizing the importance of creating a sustainable healthcare system that balances economic efficiency with social benefits. de Silva Etges et al. [25] call for flexible, well-supported VBP models that ensure equitable healthcare, suggesting a balanced approach to integrating technology and aligning stakeholder incentives. Collectively, these studies provide a comprehensive view of the operational challenges and strategic considerations essential for advancing value-based healthcare reforms.