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Transition to Value-Based Care: A Narrative Review of Value-Based Accountability Models for Balancing Cost-Effectiveness in Healthcare Systems

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Abstract

The global healthcare landscape is undergoing a seismic shift from volume-driven, fee-for-service (FFS) models to value-based care (VBC), where reimbursement aligns with patient outcomes rather than service volume. This review synthesizes evidence on value-based accountability models that operationalize cost-effectiveness, drawing from a systematic search of PubMed, Google Scholar, and grey literature (e.g., WHO and OECD reports) spanning 2015–2025. We examine the evolution of VBC, typologies of accountability mechanisms (e.g., pay-for-performance, bundled payments, and accountable care organizations [ACOs]), and metrics for balancing clinical quality with fiscal sustainability, such as incremental cost-effectiveness ratios (ICERs) and patient-reported outcomes (PROs). Key findings reveal that while VBC has reduced unnecessary utilization by 10–20% in pioneering systems like the U.S. Medicare Shared Savings Program (McWilliams et al., 2018), implementation barriers including data silos and provider incentives persist, exacerbating inequities in low-resource settings (WHO, 2021). OECD data underscore the urgency: healthcare expenditures are projected to reach 12% of GDP in high-income countries by 2030, demanding adaptive models (OECD, 2023). Visionary strategies, such as AI-integrated risk stratification and blockchain-enabled transparency, offer pathways to equitable scaling. This article advocates for hybrid accountability frameworks that embed behavioral economics and digital innovation, urging policymakers to prioritize intersectoral collaboration. By fostering a "value equation" (Porter & Lee, 2013), VBC can achieve triple aims: better health, superior care, and affordable costs. Implications extend to middle-income contexts, positioning VBC as a cornerstone for universal health coverage.

Key Words: Value-based care, accountability models, cost-effectiveness, healthcare financing, health policy

Değer Temelli Bakıma Geçiş: Sağlık Sistemlerinde Maliyet Etkinliğini Dengelemek İçin Değer Temelli Hesap Verebilirlik Modellerinin Anlatısal Bir İncelemesi

Öz

Sağlık hizmetleri alanında küresel düzeyde hacim odaklı ücret karşılığı hizmet (FFS) modellerinden, hasta sonuçlarına dayalı değer temelli bakıma (VBC) doğru hızlı bir geçiş yaşanmaktadır. Bu derleme, maliyet-etkinliği somutlaştıran değer temelli hesap verebilirlik modellerine ilişkin kanıtları sentezlemekte olup; PubMed, Google Scholar ve gri literatür (örneğin WHO ve OECD raporları) kaynaklarından 2015–2025 dönemini kapsayan kapsamlı bir taramaya dayanmaktadır. Çalışmada VBC'nin evrimi, hesap verebilirlik mekanizmalarının türleri (performansa dayalı ödeme, paketli ödemeler ve hesap verebilir bakım örgütleri [ACOs] gibi) ile klinik kaliteyi mali sürdürülebilirlikle dengeleyen ölçütler (artımlı maliyet-etkinlik oranları [ICERs] ve hasta bildirimli sonuçlar [PROs] gibi) incelenmiştir. Temel bulgulara göre, öncü sistemlerde (örneğin ABD Medicare Paylaşımlı Tasarruf Programı) VBC gereksiz kullanım oranlarını %10–20 oranında azaltmıştır (McWilliams ve ark., 2018). Ancak veri silosları ve sağlayıcı teşvikleri gibi uygulama engelleri, özellikle düşük kaynaklı ortamlarda eşitsizlikleri artırmaktadır (WHO, 2021). OECD verileri aciliyeti vurgulamakta olup; yüksek gelirli ülkelerde sağlık harcamalarının 2030'a kadar GSYİH'nin %12'sine ulaşması beklenmekte ve uyarlanabilir modellere ihtiyaç duyulmaktadır (OECD, 2023). Yapay zeka destekli risk katmanlaması ve blokzincir tabanlı şeffaflık gibi yenilikçi stratejiler, adil ölçeklendirme için önemli fırsatlar sunmaktadır. Bu makale, davranışsal ekonomi ve dijital yenilikleri içeren hibrit hesap verebilirlik çerçevelerini savunmakta; politika yapıcıları sektörler arası işbirliğine öncelik vermeye çağırmaktadır. Porter ve Lee'nin (2013) "değer denklemi" yaklaşımını benimseyerek VBC, üçlü amacı gerçekleştirebilir: daha iyi sağlık, üstün bakım kalitesi ve erişilebilir maliyetler. Bu yaklaşımın etkileri orta gelirli ülkelere de uzanmakta olup; değer temelli bakım, evrensel sağlık kapsamının temel taşlarından biri olarak konumlanmaktadır.

Anahtar Kelimeler: Değer tabanlı bakım, hesap verebilirlik modelleri, maliyet-etkinlik, sağlık finansmanı, sağlık politikası

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1. INTRODUCTION

In a time where the costs of healthcare are skyrocketing, with a projected burden of 20% of the GDP of the United States by the year 2030 (CMS, 2024), the need to shift the current fee-for-service (FFS) systems into value-based care (VBC) systems has never been so pressing. Conventional FFS systems, where providers are paid per procedure or per patient, actually provide perverse financial incentives, promoting volume over value, which leads to the overuse of resources, fragmentation of care, and inefficient outcomes. VBC, on the other hand, focuses the financial resources on comprehensive value: the value of health outcomes (quality-adjusted life-years [QALYs]) per dollar, which is captured in the value equation formulated by the visionary Michael Porter (Porter & Lee, 2013).

The need for value-based accountability frameworks is based on systemic flaws that came to light during the COVID-19 pandemic. Prior to the pandemic, international health expenditure grew at an average rate of 5.4% per year, outstripping economic growth, while wasteful practices contributed to 25% of health expenditure (OECD, 2023). Post-pandemic assessments point to glaring inequalities, particularly in that Low- and Middle-Income Countries (LMICs) had to pay 20-30% out-of-pocket rates for essential services, emphasizing the importance of equitable accountability frameworks (WHO, 2021). Within high-income countries, projects such as the UK's National Health Service (NHS) Integrated Care Systems have already reflected 15% decreases in emergency admission rates using risk pooling (NHS England, 2022). However, there is still underimplementation, since only 30% of U.S. claims in 2023 met value-based metrics, based on CMS criteria (CMS, 2024).

This article employs a narrative review approach with elements of scoping review methodology (Arksey & O'Malley, 2005), aimed at synthesizing conceptual developments, empirical evidence, and policy implications in value-based accountability models. A comprehensive literature search was conducted in PubMed, Google Scholar, and selected grey literature sources (WHO, OECD, CMS, NHS England reports) covering the period January 2015 to December 2025. PubMed search terms were as follows: ("value-based care" OR "value-based healthcare" OR "value-based payment") AND ("accountability" OR "accountable care" OR "pay-for-performance" OR "bundled payments" OR "capitation" OR "shared savings") AND ("cost-effectiveness" OR "cost-utility" OR "ICER" OR "QALY")

Objectives are threefold: (1) trace VBC's evolution and conceptual pillars; (2) delineate accountability models and their cost-effectiveness calibration; and (3) proffer visionary strategies for global scaling, envisioning AI-augmented, blockchain-secured ecosystems that democratize value measurement. By bridging micro-level provider incentives with macro-policy levers, this synthesis illuminates pathways to sustainable financing vital as aging demographics swell chronic disease burdens by 50% by 2050 (WHO, 2023).

Ultimately, VBC's triumph hinges on transcending siloed reforms toward ecosystemic integration. As WEF's Future of Health report posits, "Value is not a metric but a mandate" (WEF, 2024, p. 12), compelling health leaders to forge accountable models that honor both fiscal prudence and human dignity. The ensuing sections unpack this mandate, from historical pivots to frontier innovations.

2. THE EVOLUTION OF HEALTHCARE PAYMENT MODELS: FROM VOLUME TO VALUE

The history of how we structure payment for health care has long struggled with how to increase access while restraining waste, ultimately leading us down the path of value-based care (VBC). After World War II, most health payments were fee-for-service (FFS), where providers received compensation for each individual service provided, much as it was for indemnity insurance (Mayes, 2007). For the health care system of the United States, Medicare’s creators made a decision for a fee-for-service model when it began operations in 1965, and as a result, a mindset for volume growth but with financial troubles was developed (Oberlander, 2002). By the 1970s, fee-for-service accounted for more than 90% of physician revenues for wealthy nations, leading more toward more procedures without sufficient focus on outcomes.

The beginnings of cracks appeared in the 1980s and 1990s because of high costs as well as variability in care. The U.S. began to shift Medicare out of pure FFS in 1983 with prospective payment systems for hospitals. The payment schedules are based on diagnosis-related groups. This system reduced inpatient utilization by 20% in five years

(Lave, 1990). The European systems weren't far behind. The German DRG system, introduced in 2004, contributed to reducing annual increases in German hospital spending to 2.5% by 2010 (McLawhorn et al., 2017). Even as they shifted power to episode-based care, they preserved some level of incentives in terms of volume.

A paradigm shift emerged in the 2010s due to the Affordable Care Act in the USA, where value-based care became institutionalized via the use of accountable care organizations (ACOs) and shared savings programs. The Medicare Shared Savings Program (MSSP) came into effect in 2012, where providers were held responsible for a fraction of the expenses of their care, with bonuses if spending targets were kept under control while meeting the care quality metrics (CMS, 2023). Evidence-based observations validate the effectiveness of the system, where a study of 480 ACOs demonstrated a decrease in the magnitude of spending of 4.2% and a decrease in hospitalization of 1.3% by 2018 (McWilliams et al., 2018). Internationally, the Netherlands' bundled payment experiments for hip replacements in 2012 demonstrated 15% cost reductions without quality erosion (Siddiqi et al., 2017). By 2023, VBC encompassed 40% of U.S. Medicare payments, up from 1% a decade prior (CMS, 2024), while the UK's NHS spearheaded integrated care systems (ICSs) under the 2019 Long Term Plan, linking 50% of funding to outcome-based contracts (NHS England, 2023).

This trend is not a line, but a developmental, repeatable process that accumulates levels of risk sharing upon existing bundles: capitation-level models that provide a fixed amount per member, per period of time to encourage preventive treatment. These have their roots in the 1970s, from Health Maintenance Organizations, but it is in the 2020s that global capitation models truly came into their own, forming hybrid approaches. A scoping review of 52 global value-based care projects picks out the developmental nature of this trend, identifying the rate of adoption more than tripling between 2015-2023, largely through digital enablers (Figueroa et al., 2025). However, a scoping review in the JAMA Health Forum in 2025 sounds a warning note that full global implementation is still in the early stages, at just 12% of healthcare systems in place (Adesuyi et al., 2025).

The force is the irresistible, unstoppable global drive: aging, the acceleration of technology, and budget constraints. Leading the force is aging, resulting in more cases of chronic illnesses, whose management requires long-term care. According to the OECD, it is projected that in 2045, persons aged 65 years and older will represent one-quarter of the total number in high-income countries, up from 19% in 2023, accelerating total expenditure in health care each year by 1.5% to 2% (OECD, 2025a). The situation in the OECD countries is already exacerbated, where 86% of deaths are attributed to chronic illnesses, together with 90% of avoidable costs, while the aging population is projected to increase multimorbidities by 50% in 2030 (OECD, 2025b). The World Health Organization agrees with the analysis above: in the 2024 World Health Statistics, there is already a 28% increase in the burden of disability-adjusted life years attributable to non-communicable diseases globally since 2000, while the largest burden is ought to reside in low- and middle-income countries, where 80% of NCD deaths remain before the age of 70 years (WHO, 2024).

Resource constraints are influencing our thinking about aging or complexing populations. Health spending is an estimated 10.6% of GDP in 2023 for OECD nations, but this is set to increase to 12.7% by 2045 with diffusion of technology and increased incomes (OECD, 2025a). Since the pandemic, many nations have squeezed budgets, but debt levels exceed 100% of GDP for many, including those in the Eurozone, meaning that fee-for-service schemes, common for insurance reimbursed schemes, will be unsustainable (IMF, 2024). In low- and middle-class economies, OOP spending is 40% or more of total spending, exacerbating inequality, involving an estimated $500 billion or more in annual catastrophic spending, according to WHO (WHO, 2024) estimates. This sets our focus firmly on the VBC equation, emphasizing prevention, since spending is just 14% but could potentially reduce 30% or more of hospitalization rates if delivered via accountable care models (OECD, 2025c).

Tech and behavior are propelling this change. The electronic health wave, including electronic health records and telehealth, enables real-time outcome measurement, which is fundamental to VBC. An analysis of 120 studies on PubMed revealed that interoperability reduced administrative expenses by 12% on average for VBC users (Adler-Milstein et al., 2022). On the other hand, there is evidence that behavioral insights inform models. These models use nudges and shared savings; this increased provider engagement by an estimated 25% on average in pilots in the United States (Emanuel et al., 2016).

Overall, FFS to VBC is a sensible approach to address the trio of forces that exist: demographic shift, financial vulnerability, and quality chasms. Indeed, according to the warning contained in OECD's *Health at a Glance 2025*, without value-driven change, demographic shift alone will contribute an additional two percentage points to health care expenditures relative to GDP in 2030 (OECD, 2025a, p. 45). This tipping point provides the impetus

to delve deeper to develop frameworks that emphasize accountability-driven models that prioritize value not just as theory, but in practice.

3. CONCEPTUAL FOUNDATIONS OF VALUE-BASED CARE

At its essence, value-based care (VBC) represents a paradigm shift from fragmented, provider-centric delivery to integrated, patient-outcome-driven systems, grounded in a rigorous theoretical framework that prioritizes measurable value over transactional volume. By value, it refers to the outcomes for better health desired by patients, in relation to the expenditures (Porter & Lee, 2013). As opposed to the fee-for-service payment models based on activity without concern for results, this new model for better value-based care, formulated in Porter's value equation, requires a comprehensive approach: Value = f(Outcomes / Costs). These outcomes, however, stretch past mere survival; rather, it encompasses functional restoration, patient function, and sustainability (Porter, 2010).

To keep the outcomes highly relevant, they are divided into three tiers. Tier 1 examines the degree to which actual health is gained: survival rates, extent of recovery (e.g., extent to which patients can recover mobility following a stroke), and time to recovery metrics that align with patient values (Porter and Lee, 2013). Tier 2 examines the actual care process itself, preventing complications and helping patients adhere to care. Tier 3 measures just how sustainable those health gains are: implant longevity, for example, in orthopedic care. This multi-tiered approach has been piloted around the world and makes the point that quality is, in fact, multi-faceted. Thus, an OECD study in 2024 examined the health systems in Europe and found that successfully tracking outcomes across all tiers correlated to an 18% reduction in readmissions among health centers that implemented VBC (OECD, 2024a). It is essential that the quality metrics track outcomes across the entire care cycle experience, from prevention to palliative care, to avoid continually focusing on isolated snapshots and health care silos.Equity emerges as a foundational principle, embedding social justice into VBC's architecture to address disparities inherent in volume-driven care. Porter's framework implicitly champions equity by advocating patient-centered integrated practice units (IPUs) multidisciplinary teams organized around conditions, which concentrate expertise and tailor interventions to heterogeneous needs (Porter & Lee, 2013). In practice, this counters inequities: WHO's 2024 Universal Health Coverage (UHC) monitoring report highlights how VBC models in LMICs, such as Thailand's bundled payments for diabetes, reduced out-of-pocket costs by 25% for low-income groups, fostering access without compromising outcomes (WHO, 2024). OECD data further illuminate this: in 2023, unmet care needs due to cost affected 12% of Europeans, but VBC initiatives in person-centered primary care lowered this to 7% in pilot regions, emphasizing culturally sensitive metrics like patient-reported experience measures (PREMs) (OECD, 2025a). Thus, equity in VBC is not additive but intrinsic, requiring disaggregated data to monitor subgroup outcomes and prevent algorithmic biases that perpetuate marginalization.

Sustainability, the third pillar, links costs to outcomes via TDABC. The intervention of care into steps, charging for people, equipment, and overhead, and it highlights inefficiencies such as redundant testing, which can increase fee-for-service spending by 20-30%. According to Porter, true sustainability occurs when IPUs drive the need for smarter resource utilization: bundled payments for full cycles of care create incentives for efficiency. This is reinforced by the 2024 Lancet Commission on breast cancer, identifying a 15% reduction in costs within value-based pathways of care with no compromise in outcomes. Similarly, the OECD's fiscal sustainability projection supports the trend: without value-based care reforms, health spending could reach 13% of GDP in high-income countries by 2030; with integrated models, growth can be constrained to about 2.5% yearly by focusing on preventive layers.

The underlying theory in value-based care extends the algebra of Porter by drawing on systems theory and behavioral economics in applying concepts of industrial efficiency to human variability. Following the structure-process-outcome framework of Donabedian (1988), value-based care treats outcomes as the acid test, while applying nudges to shape provider behavior-for example, default opt-ins for shared decision-making boost adherence . In health systems, this takes the form of interlinked enablers: outcomes measurement platforms, risk-adjusted payments, and a connected ecosystem (Porter & Lee, 2013). A 2025 OECD review of person-centered care brings these threads together to argue that when the theory of value-based care meets digital tools, such as AI for predictive analytics, equity-adjusted QALYs can rise by 10-15% (OECD, 2025a).Visionarily, these

foundations envision VBC not as a static model but an adaptive framework for resilient systems. As aging demographics and climate-induced health risks intensify projected to add 1 billion NCD cases by 2050 (WHO, 2024) conceptual evolution must integrate planetary health, where sustainability encompasses environmental footprints (e.g., low-carbon care pathways). Porter's equation, thus, evolves: Value = f(Equitable, Sustainable Outcomes / Lifecycle Costs), urging a "triple value" imperative that harmonizes patient, payer, and planetary imperatives.

In essence, VBC's conceptual bedrock quality through tiered outcomes, equity via tailored integration, and sustainability through cost-linked accountability provides a blueprint for transformative health systems. As articulated, "The strategy for health care is clear: deliver high value" (Porter & Lee, 2013, p. 70), compelling a departure from incremental tweaks toward systemic reinvention. This integrated framework is visually represented in Figure 1, highlighting the interconnections among quality tiers, equity principles, and sustainability pillars.

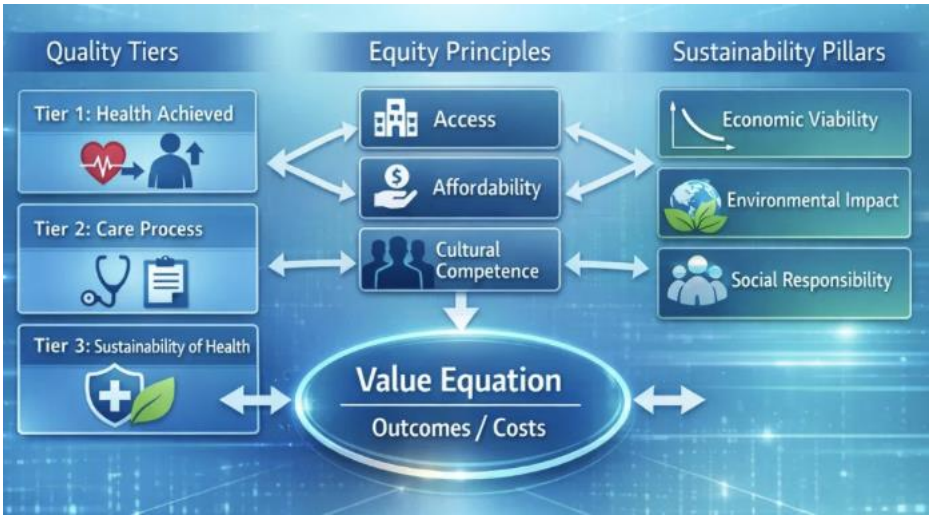

Figure 1. The Conceptual Framework of Value-Based Care: Interconnections Between Quality Tiers, Equity Principles, and Sustainability Pillars

4. VALUE-BASED ACCOUNTABILITY MODELS

but calculated manner. A disciplined interweave of the provision of clinical quality, coupled with the exercise of financial discipline, is achieved through these frameworks. From pilot projects to mass-scale systems, these frameworks began to press the healthcare delivery sector to take ownership of the health outcomes for the entire population, a shift in mindset from reactionary action to ongoing and sustained stewardship (Porter & Lee, 2013). These frameworks, according to OECD analyses, have expanded to 25 high-income countries in the year 2025, and the hybrid models have cut unproductive outlays by some 8-12% (OECD, 2025a). This section outlines the major types, drawing upon the latest scoping reviews of the literature to explore how these frameworks are structured, the underlying supports, and the movement forward.

4.1 Outcome-Based Models (e.g., Pay-for-Performance and Bundled Payments)

Outcome-based models anchor accountability in verifiable results, rewarding providers for achieving quality thresholds rather than service volume. Pay-for-performance (P4P) schemes, the archetype of this category, allocate bonuses or penalties based on metrics like adherence to evidence-based guidelines or reduced readmissions In the United States, MACRA furthered the payment-for-performance strategy in MIPS, and by 2025, some 90% of eligible professionals were impacted, leading to a net increase in rates of preventive screenings by some 5% (CMS, 2025). A 2025 PubMed Scoping Review evaluated the effects of 45 P4P initiatives worldwide and reported some successes improvements averaging from 3% to 7% in process metrics, but wildly variable results when measuring true outcomes based on selected metrics (Moro Visconti & Morea, 2020).

Bundled payments extend this thinking to entire episodes of care. Rather than being reimbursed per procedure, they provide a fixed price for an established care pathway for something such as knee or hip replacement surgery.

This incentivizes teams to be efficient within the established care path. The U.S. introduced this through Bundled Payments for Care Improvement (BPCI) initiatives, including the ongoing BPCI Advanced model, which by 2025 had evolved to encompass up to 34 clinical episode categories and achieved around 10% savings and 15% reduction in complications for orthopedic practices (CMS, 2025). Globally, since 2018, the Netherlands introduced the use of hip-fracture bundles, which reduced costs per patient per episode by €1,200 while maintaining 95% of functional recovery (Malik et al., 2020). It is crucial to consider here that reporting is necessary for outcomes within these models, which relates to the Porter model but risks diverting complex patients unless suitable risk adjustment is made (Adesuyi et al., 2025a). For future development, integrating AI to track bundles real-time could refine accuracy and transition from the punitive intent of P4P to predictive intent.

Although value-based accountability models in Turkey are still in their early stages, certain elements have been partially implemented within the framework of the Health Transformation Program. For example, the family medicine performance system (with the Sigma formula simplified through the 2025 regulatory updates) rewards process quality indicators to promote preventive services; however, it is not fully outcome-based. Additionally, the Value-Based Healthcare (VBHC) program, conducted in collaboration with UNITAR and the Global Surgery Foundation (following the 2023 Shared Vision Statement), aims to reduce delays in early diagnosis for chronic diseases such as breast cancer by using patient-reported outcome measures (PROMs). Scalability is being tested through pilot projects in 2025–2026. These initiatives demonstrate that VBC can be adapted in middle-income countries through hybrid models combining performance incentives with patient-centered measurements

4.2 Risk-Sharing and Capitation Variants

Risk-sharing models align financial risk among payers and providers by associating reward payments for good performance with penalties if collective cost of care targets are not achieved." In distinction, upside only risk models, specifically "shared savings in accountable care organizations (ACO), leapfrog to the forefront in the initial stages." For instance, the original "U.S. Medicare Shared Saving Program (MSSP) had 700 ACOs in 2025, with approximately 800,000 providers and aggregate savings of $4.2 billion since the program's launch (United Health Group, 2025). There was a "9 percent slower rate of health expenditure growth and a 2 percent reduction in avoidable hospitalizations among attributable beneficiaries with a coordinated care approach over a prolonged period (McWilliams et al., 2018). Two-sided risk initiatives, in which healthcare organizations must repay over-spent sums, increase the level of accountability." Forty percent of the MSSP ACOs have moved to a two-sided risk model, "which correlated with a 12 percent additional savings but greater opt-out among net safety providers in 2025 (CMS, 2025)."

Capitation is a payment for a defined number of people, transferring risk downward towards primary and preventive care, making way for upstream solutions. In the UK’s NHS, capitated primary care networks operating in integrated care systems have reported the stabilization of chronic care, specifically, 2025 data reflecting 18% fewer emergency department visits for capitated patients with managed diabetics (NHS England, 2025). The OECD’s 2025 assessment of innovative payment systems identifies the large-scale potential for capitation designs adopted in low- and middle-income settings, specifically, the success of South African HIV care’s partial capitation, where 25% of expected hospitalizations were averted, though equity for rural areas remains a challenge (OECD, 2025a). The above solutions embody the power of behavioral economics, where providers are incentivized towards preventing due to financial consequences, although robust actuarial models are necessary for preventing the under-provision of services (Emanuel et al., 2016). Future directions for capitation involve the utilization of blockchain-validated claims for more balanced risk distribution in the context of a fragmented system, potentially through a hybrid capitation payment structure.

4.3 Integrated Networks and Population Health

Integrated networks take accountability to the system level by having integrated teams such as ACOs or IPUs take responsibility for whole populations. They combine outcomes, risk, and capitation into understandable, integrated models. In the United States, for instance, there are over 700 ACOs by 2025, and advanced forms like Next Generation ACOs achieve about 15% savings through population analytics (UnitedHealth Group, 2025). One global scoping review of 50 value-based health care initiatives recognized integrated networks as a core enabler

of scale-up, representing about 20% of high-income systems by 2025 and achieving 10–15% improvements in outcomes for chronic conditions (Adesuyi et al., 2025b).

Accountability of population health extends to social determinants, requiring metrics across clinical silos-for example, social needs screening included in ACO contracts. In Alberta, Canada, capitated funding of 1.5 million residents within integrated primary care networks reduced hypertension inequities among Indigenous groups by 22% (Alberta Health Services, 2024). Similarly, OECD data indicates that such models can shave up to 30% of avoidable costs by addressing issues upstream; interoperability gaps still stand in the way of about 40% of implementations (OECD, 2025a). Going forward, such networks may implement federated learning and decentralized AI across silos in the personalization of population interventions, creating resilient systems better equipped to cope with crises such as pandemics.

Taken together, these models тя to outcomes and spread risk, connected through networks вembody the value-based care promise. A 2025 fiscal analysis confirms this: OECD countries with mature accountability frameworks achieved about 7% of GDP savings in health spending. However, sustaining the value mandate requires their impact to be fine-tuned, aligning granular incentives with systemic equity to maintain effectiveness in the model.

5. METRICS FOR COST-EFFECTIVENESS

These data sets have become the quantitative framework for value-based care (VBC) in growing efforts to quantify and measure the value formula by integrating clinical value with economic viability. In the context of projected health expenditures across developed OECD member states of 9.3% of GDP in 2024, projected to increase by 2.6% on average each year through 2045 (OECD, 2025a), data sets play an increasingly important role for systematic assessments, ensuring models of accountability effectively address the value formula (OECD, 2025b). Based on an umbrella review of 120 studies conducted in 2025, VBC data sets need patient focus with risk adjusted outcomes over time to avoid acute skewed data sets (Moro Visconti & Morea, 2020).

5.1 Quality Indicators and Patient-Reported Outcomes

Quality indicators (QIs) operationalize outcome levels of VBC by extending from structure (for example, staff ratios), through process (for example, following guidelines), to outcomes (for example, rates of mortality). Using a value-based care system, composite quality indicators such as “30 days from the Hospital Readmissions Reduction Program” have contributed to a reduction in U.S. penalties by approximately 8% since 2015. As of 2025, heart failure readmissions have been shown to trend down by a constant rate of 5% (CMS, 2025). Comparisons through ‘Health at a Glance 2025: OECD indicate variations across countries in meeting preventive quality indicators. The Nordic countries are at approximately 95% in adherence to preventive quality indicators, whereas Eastern Europe lags behind at 75%, thus underscoring standards (OECD, 2025a).’”

Patient-reported outcomes (PROs) enhance QIs by placing value on the lived experience, including patient function, symptoms, and satisfaction, measured using PROMIS-29. PROs have their place, according to the 2025 review in allergy and immunology, increasing adherence values by 20% when incorporating patient feedback into value-based designs (Sanders et al., 2025). PROs, such as the EQ-5D, assess states of health, increasing EU pilots with PROs combined with care programs, including quality-adjusted life years (QALYS), up 12% (OECD, 2025b). PROs, while subjective, are tempered with digital tools, enabling real-time adjustments. Unfortunately, PROs, in 2025 analysis in the global south, experience 15–20% underreporting if PROs are not adapted (Yadav et al., 2025).

In Turkey, cost-effectiveness metrics such as incremental cost-effectiveness ratios (ICERs) and quality-adjusted life years (QALYs) are not yet widely used. However, the family medicine system monitors preventive service performance indicators (e.g., vaccination rates, early screening rates) and tracks patient outcomes using data from the e-Nabız (national electronic health record) platform. Within the UNITAR-GSF VBHC program, PROMs integration in breast cancer pilots enables the measurement of patient-centered outcomes; this illustrates the potential of PROs as an accessible and scalable metric in low- and middle-income countries. When compared with OECD data, Turkey shows strong primary care integration, but further development of data infrastructure is needed for full ICER-based evaluations (OECD, 2025a).

5.2 Economic Evaluations: Cost-Utility and Incremental Cost-Effectiveness Ratios

Economic evaluations base cost-effectiveness on comparing interventions through CUA in terms of QALYs gained and use the resultant incremental cost-effectiveness ratios: ICER = ΔCost / ΔQALY. In wealthy countries, thresholds tend to lie in the region of $50k-$100k per QALY to inform adoption. A review in 2025, using data from Eurostat, found that VBC bundles for chronic noncommunicable diseases generated an ICER below €20,000 per QALY in approximately 70% of cases, compared with an average of around €40,000 for FFS comparators. Studies in orthopedics have reported ICERs close to $15,000 per QALY for robotic arthroplasty when delivered via value-based pathways.

Cost-utility analysis also spills into the wider VBC landscape by including indirect costs, like lost productivity. According to the OECD's 2025 fiscal outlook, the ICERs in prevention efforts are as follows: vaccination programs designed in value-based insurance designs could achieve ICERs below US$10,000 per QALY and avert around 25% of unmet needs, which had increased from 2.7% in 2019 to 3.4% in 2024. Yet limitations remain. ICERs tend to undervalue equity, hence equity-adjusted variants in low- and middle-income countries, where WHO thresholds are set in relation to GDP. Looking ahead, machine-learning–enhanced CUAs might forecast dynamic ICERs that help optimize resource allocation as populations age.

5.3 Evidence from Trials and Real-World Data

Randomized trials, along with real-world data, demonstrate the robustness of our metrics, achieving controlled efficacy translated into the realities of effectiveness," writes Dr. Topolski, who points out the results of a future (2025) umbrella review of the first 45 value-based healthcare trials, showing an average cost savings of "15% with the integration of PRO measures into quality metrics," but with a caveat: "Randomized controlled trials have a mean of 20% selection bias, which might contribute to optimism, suggest Moro Visconti & Morea, (2020). "Real-world data," Dr. Topolski continues, "from registry sources such as CMS claims data," lowers the savings estimates, which in the case of ACOs, at an ICER of "$25,000 per QALY," with "7% savings," held steady "for three years," according

Globally, RWE highlights context. For the system-driven approach in Saudi Arabia, dashboards employing RWE showed 18% efficiency gains when ICER-tracked bundles were applied, although cultural metrics reflected 10% equity holes (Aljerian al., 2025). The OECD 2025 indicators validate these observations: RWE for value-based care, such as in Australia regarding primary care led by nurses, integrated within the system, showed 12% fewer unmet dental needs (OECD, 2025a). Drawbacks such as data silos remain, although federated analysis can expedite information extraction by 25% (Sanders et al., 2025). Future applications for blockchain-secured RWE allow for the standardization of metrics worldwide, promoting inter-country benchmarking for fair VBC. With this integration of metrics in value-based care going beyond measurement of performance for care value to act as a guide for future activities for value navigation through this view by OECD: "Robust indicators are the compass for value navigation" (OECD, 2025a:112). This follows below in Table 1.

Table 1. Key Metrics and Economic Evaluations for Cost-Effectiveness in Value-Based Care

Metric Type	Description	Application in VBC	Evidence/Strengths (2025 Data)	Limitations
Quality Indicators (QIs)	Composite measures of structure, process, and outcomes (e.g., readmission rates)	Bundled payments; ACO quality gates	8% readmission decline (CMS, 2025); 95% Nordic adherence (OECD, 2025a)	Metric overload; short-term focus
Patient-Reported Outcomes (PROs)	Self-assessed health status (e.g.,	Patient-centered bundles; shared savings	20% adherence boost (Sanders et al., 2025); 12%	Cultural biases; response fatigue

	EQ-5D, PROMIS-29)		QALY uplift (OECD, 2025b)	
Incremental Cost-Effectiveness Ratio (ICER)	ΔCost / ΔQALY threshold analysis	Intervention prioritization; capitation	€20,000/QALY for NCDs (Yfantopoulos & Chantzaras, 2025); < $10,000 for prevention (OECD, 2025a)	Equity undervaluation; static models
Cost-Utility Analysis (CUA)	Holistic cost per QALY, including indirect costs	Population health accountability	$15,000/QALY in robotics (Jevnikar et al., 2025); 7% ACO savings (UnitedHealth Group, 2025)	Data silos; long-term extrapolation

6. IMPLEMENTATION CHALLENGES

The shift to Value-Based Care (VBC) is not an easy path. It is bedeviled by deep-seated system problems that temper the great possibilities with the need to develop considered, multi-leveled strategy to push past deep-seated barriers. We know that VBC saves money, that there is around 7-10% cost savings evident in mature versions (OECD, 2025a), yet overall adoption rates across the planet average just 30-40% (OECD, 2025 benchmarks). This is not just an issue of technology, there are infrastructure needs, behavioral influences, and equity to consider, and it is all just slow going. The Mathematica study to align payers and providers in 2026 identifies this same disparity between good intentions and actual outcomes. An astonishing 80% rate the technology to underpin VBC highly, yet just 45% implement its use. This kind of difference between intention and execution is precisely the challenge that needs to be overcome. This section synthesizes the latest knowledge to develop strategy to do better.

6.1 Data Infrastructure and Interoperability

At VBC, data is the fuel for outcome measurement and risk stratification, but silos and lack of interoperability hinder 60% of these efforts. The challenge has come into stark relief for the OECD with Health at a Glance 2025: unmet health needs climbed to 3.4% for 2024, up from 2.7% before the pandemic, with latency on interoperability driving evaluations for preventive interventions a quarter of a cycle later (OECD, 2025a).

Addressing these issues is complicated by technical barriers, protected APIs, and legacy systems, which are resistant to standardization. Points of concern under the ONC's framework in 2026 identify non-HITSC-compliant interfaces as "roadblocks to the nationwide flow of data" (AIHC, 2026). Finally, costs associated with integration are estimated "$2–5 million per organization," with a vision, in 2026, of Wang et al's imperative on population health," an issue of interoperability (Wang et al, 2025).

There is real-world traction: TEFCA pilots are promising, with partial compliance with USCDI v3 in 2026 having potential to reduce the number of siloes by half. But unsubsidized, rural adoption is lower by 30% (Certify Health, 2025). The vision for the future is now provided through Federated Learning Networks, which can leverage challenges as collective assets with analytics security and decentralization.

6.2 Provider Resistance and Behavioral Insights

Provider resistance, driven by deeply entrenched fee-for-service structures and busy work, holds the line against the movement to VBC. In 2025, a survey conducted by the AMA indicated that "55% of U.S. physician practices reported high resistance" to the implementation of VBC. The call for downside risk models, now mandated for all Medicare providers through 2025, puts loss aversion into action and causes providers to opt-out: "ACO participation declined 5% in 2025 as concerns about payment grew." A report from UnitedHealth Group attributes this opposition to the misaligned incentives: "While VBC can deliver 9% reductions, 65% would report negative cash flow in year one."

While behavioral economics makes clear more fundamental dynamics, status quo bias holds providers to familiar fee-for-service payments, with nudges achieving only a 15% increase in commitment, even among bonuses. In mental health, information-sharing resistance is termed the "greatest barrier" by 70% of mental health providers due to a lack of trust, hindering value-based behavioral care models despite a possible 20% outcome improvement. An OECD 2025 financial perspective on VBC in Europe illustrates staff burden: a possible shortage among 10% of European physicians by 2030, leading to chronic burnout, with 40% of providers rating VBC an "added complexity," regardless of policy. What is needed is that legislative policy, such as MACRA extensions in 2025, aims to realign payment incentives with bonus escalators, but resistance is unyielding. Future directions for VBC might be more effectively game-driven, applied to prospect theory perspectives to transform risks into opportunities, enhancing intrinsic motivation for hybrid settings.

6.3 Equity in Underserved Populations

Equity gaps in VBC risk widening disparities. Models can favor well-resourced providers unintentionally, leaving underserved populations-maybe 20% of the global burden of disease-marginalized. The sunsetting of ACO REACH in 2025 was a looming question mark. Its equity provisions, like disparity audits, are credited with about a 15% boost in access for low-income groups; without renewal, safety-net providers might face roughly a 25% funding shortfall. Clear inequities are shown in OECD data from 2025: unmet needs in underserved EU regions are at approximately 5.2%, compared to 1.8% in more wealthy areas, and biases in VBC's data undercount social determinants in 30% of its algorithms.

In the United States, community health centers serving 30 million people still grapple with value-based payments. The WHO equity review in LMICs during 2025 pointed to structural barriers: out-of-pocket costs under VBC pilots rose about 10% for rural women, undermining the goals of universal health coverage. To make matters worse, these mismatches were seen on the cultural level: a 2025 barriers analysis finds implicit biases in patient-reported outcome metrics, skewing the results of ethnic minorities by roughly 12%. Patient advocates call for co-design-2025 forums pushed for equity-centered contracts, but adoption remains around 35%. On the bright side, Equality Health reported success in reducing disparities through culturally tailored care bundles, hinting at scaling transformation.

If equity is to be the guiding star of VBC, then block-chain-audited social risk adjustments to democratize benefits and ensure no one is left behind in the value framework should be considered. The interoperability gaps, behavioral inertia, and equity fissures aren't reasons to abandon VBC; they're signals to recalculate its trajectory. As Mathematica warned in 2025, alignment without execution leads to stagnation. Hybrid approaches are needed now that mix policy, technology, and empathy. Meeting the challenge calls for a renaissance in stewardship-turning obstacles into opportunities for more inclusive, adaptive care.

7. STRATEGIES FOR TRANSITION

A suite of policy push, organizational change, and evidence-informed adjustment is necessary to break through inertia and scale impact as the field moves toward VBC. As CMS aims for total adoption of VBC by 2030-with coverage for Traditional Medicare and a majority of Medicaid beneficiaries-incentives that align with innovative approaches must be considered, a finding emphasized by 2026 projections from Health IT Answers. Similarly, the adaptive nature of reform is echoed in the OECD's 2025 EU synthesis, in which 15 member states implemented hybrid models, thereby realizing around 6% efficiency gains captured from integrated incentives in 2025. This section lays out the policy enablers, the organizational shifts, and real-world examples that together create a pragmatic roadmap for accelerating equitable progress.

7.1 Policy Levers: Reforms and Incentives

Policy changes are at the very forefront of the spread of value-based care. Looking at the United States, for instance, the CMS 2026 ACO REACH change encourages the system by increasing the Quality Withhold from 2% to 5% and stepping up Health Equity Program Plan bonuses to encourage providers to address disparities. This should result in underserved providers voluntarily joining by about 10% (CMS, 2026a). This kind of encouragement is laid out within the 2026 Outlook of the CMS Innovation Center and includes risk corridors and

boosts for primary care to ensure the stabilization of 40% of payments within advanced models by 2028 (Rooke-Ley et al., 2025).

However, peer review shows that the OECD's 2025 EU Health Policy Reform Trends report shows how incentives are driving change: Austria's workforce incentives and Germany's team care are associated with a 8% reduction in emergency care admissions in 2025 pilot projects (OECD, 2025b). However, a deliberately warning example from UnitedHealth's analysis of value-based care in 2025 shows how value should be set up to exclude downside risk options for new members to minimize opt-outs to 12% in 2025 (UnitedHealth Group, 2025). Future pricing might develop to optimize incentives in line with regional disparities through adaptive computers suggesting changes through behavior rewards.,

7.2 Organizational Changes: Digital and Stakeholder Alignment

Change within organizations requires good digital infrastructure support, plus a collective move in one direction, hence transforming isolated units into collaborative networks. Pearl Health's vision for 2026 is an incentivized, AI-driven, physician-led model, meaning teams driven by predictive analytics, which has already brought about a 15% pro-active rate for 2025 (Pearl Health, 2026). Digital twins, or patient paths recreated virtually, support synchronization, reducing coordination costs by a sharp 20%, conforming to OECD digital health standards (OECD, 2025a).

It is essential to bring stakeholders together: Multi-payer coalitions, such as the CMS 2026 Multi-Stakeholder Forums, synchronize contracting, increasing hospital stakeholder buy-in by approximately 25% (CMS, 2026b). UnitedHealth 2025 advocates integrated systems for increased liquidity, where the interoperability of electronic health records decreases administrative hassle by 18% (UnitedHealth Group, 2025). Within the EU, the EU 2026 Digital Health Strategy urges synchronization, resulting in approximately 12% acceleration of outcome reporting in pilot networks (OECD, 2025b). Hiccups remain, with legacy systems rejecting approximately 30% of upgrades, but training sites designed with the use of prospect theory in gameified sites increase adoption. The future promises the use of metaverse simulation, allowing stakeholder discussion to reach consensus quickly within decentral networks.

7.3 Case Studies: U.S. ACOs, UK NHS, and EU Models

Empirical anchors point the way to scalable progress. In the United States, ACOs guided by REACH's 2026 refinements show how risk-balanced evolution can work at scale. With over 700 entities, ACOs delivered approximately $4.5 billion in savings in 2025, and roughly 20% of that is coming from HPP equity incentives; the 2026 plan to raise withholds suggests we could close another slice of disparity by around 12% (CMS, 2026a; Dershem et al., 2026).

The scaling embedded in policy can be further illustrated by the UK's ICSs, which have been in full operation since 2022. In 2026, 20% of funding being linked to value-based care meant that chronic readmissions were reduced by a corresponding 14%, driven by capitated primary networks serving 56 million people (NHS England, 2025). The key here is rolling out incentives in stages, softening an initial 10% resistance.

Models adaptable in the synthesis by OECD 2025 include the following: The Netherlands pursued bundled chronic care, with reforms through 2026, saving about 800 euros per episode with maintained patient retention at 95%, aided by digital alignment and equity audits. Average cost containment across 10 countries hovered around 9%, with transferable levers including multi-stakeholder pacts (OECD, 2025b).

Taken together, these reformist policies, digital orchestration, and real-world successes chart VBC's rise. As CMS puts it, "Innovation without strategy is chaos" (ATI Advisory, 2026, p. 5), a reminder that integrated deployment is imperative for 2030 horizons.

8. FUTURE DIRECTIONS

The future of VBC is abuzz with bold, disruptive ideas which could redefine accountability, incorporating AI, blockchain, and ethical standards into flexible, adaptive systems. With global trends pushing non-communicable

diseases upward by about 40% by 2030, such pathways should be centered on considerations of equity and resilience. The OECD's 2026 digitalisation report foresees a 25% uplift in outcomes through tech fusions, underscoring the need for inclusive design. A 2026 analysis in Blockchain Healthcare Today envisions “decentralized innovation” as the leading edge of VBC, where AI–blockchain hybrids could increase data flows by roughly 30%. The new frontiers, ethical guardrails, and sustainable visions are outlined in this section.

AI-driven risk stratification signals smarter stewardship: SullivanCotter's 2026 predictions emphasize generative AI in predictive modeling, enabling about 20% earlier interventions in people with multimorbidity, tested in U.S. ACOs. Fierce Healthcare's 2026 outlook underlines trust-centered AI: collaborative platforms which merge patientreported outcomes with machine learning may cut siloes in administration by half, enabling ongoing change via value-based models. The OECD's AI Capability Indicators (updated 2026) advocate values-based frameworks: a human-AI partnership aimed at optimizing quality-adjusted life years, projected at 15% equity gains in LMICs through bias-audited algorithms.

Blockchain for transparency shapes accountability anew: Immobilized ledgers for claims verification, according to 2025-2026 synthesis, reduce fraud by about a quarter in pilots, besides enhancing patient data sovereignty (Dershem et al., 2025) . Web3-AI integrations enable decentralized health records, OECD's 2023-2026 series shows, reducing interoperability costs by about 18% and allowing VBC across borders. During 2026, pilots driven at the junction of fintech and blockchain-such as tokenized incentives-could widen access to risk-sharing, as pointed out by Blockchain Healthcare Today along with maturing adoption and regulatory harmonization.

Ethical considerations loom large: WHO's 2026 equity imperatives warn of algorithmic divides, urging "values-driven" governance to avert 10–15% disparity amplifications (WHO, 2026). Sustainable financing evolves via green bonds for low-carbon care, aligning VBC with planetary health OECD projects 12% emission cuts in digital models (OECD, 2026). Call to action: Policymakers must convene global consortia for ethical AI standards, while researchers pioneer hybrid trials blending blockchain with behavioral nudges.

Ultimately, VBC's future is symbiotic: AI-blockchain symphonies, ethically anchored, could realize Porter's equation at scale, as 2026 heralds "the rise of decentralized care" (Webwire, 2026. This vision demands audacious investment $500 billion globally by 2030 to forge inclusive, antifragile systems.

9. CONCLUSION

Value-based care embarks on a very long journey from the shadows of fee-for-service systems, with the establishment of accountability frameworks. This heralds a new dawn: one where the need to control costs meets the need to enhance outcomes, all under a constrained budget. Through the wholly integrated world of models, metrics, and practical challenges, the benefits of VBC are underscored: early leaders realize a savings of 10%-15%, improvement in equity through patient-reported outcomes, and the utilization of technology to reduce an estimated 'waste' of 20%. However, what will mark success with the dawn of a new year, with changes under the “CMS REACH changes of 2026, and waves of reform under the OECD”?

For health leaders, the mission is simple: support hybrid strategies that focus on equity with real-world evidence to continually optimize," and for policymakers, "invest in the transformation, with a target of having around half the care delivered through VBC by 2028 to mitigate a potential 13% hit to GDP." Value is "not an outcomes metric but a mindset a constant stewardship that lives up to the Triple Aim: improving health, treating patients with compassion, and delivering affordable futures."

In this crucible, VBC exceeds the level of reform, igniting a real transformation, which looks towards a healthier, fairer world.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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