Minnesota Journal of Business Law and Entrepreneurship

Volume 2026, No. 3

ISSN: 1540-3270

Private Equity Ownership in Healthcare and Its Effects on Cost, Quality, and Access: A Systematic Review of Evidence and Regulatory Implications

Shivam Agarwal[1], Deepak Katiyar[2]

[1]Assistant Professor, Department of Medical Laboratory Science, College of Allied and Healthcare Sciences, Teerthanker Mahaveer University, Moradabad, UP, India. Email:

2Assistant Professor, Department of Medical Radiology and Imaging Technology, College of Allied and Healthcare Sciences, Teerthanker Mahaveer University, Moradabad, UP, India.

Correspondence: **Deepak Katiyar**

Abstract:

Private equity (PE) investment in United States health care has expanded across hospitals, physician practices, hospice, behavioral health, primary care, and substance-use treatment. This systematic review updates the open-access evidence published after the 2023 BMJ systematic review and examines regulatory implications for cost, quality, and access. PubMed/MEDLINE and PubMed Central were searched through August 29, 2026, with citation chasing and separate review of open government sources for the legal analysis. Seventeen post-2023 empirical studies met the update criteria. The clearest recurring economic signal was higher prices or revenue-oriented utilization in selected physician markets, while hospital studies reported reductions in salary expenditure or capital assets. Quality findings were heterogeneous: hospital studies identified more hospital-acquired adverse events and worse patient experience, and one surgical study reported worse postoperative outcomes, whereas psychiatric-hospital, gastroenterology, and primary-care studies showed neutral or favorable findings on several measured outcomes. Access was also mixed. PE acquisition was associated with reduced Medicaid labor-and-delivery market share in one national study but increased buprenorphine treatment volume in another, with shorter treatment retention. The evidence supports targeted, risk-based oversight rather than categorical assumptions about ownership. Priority measures include ownership transparency, review of serial acquisitions, financial-resilience safeguards, post-closing monitoring of prices and quality, protection of clinical governance, and access-sensitive transaction review. Minnesota's health-care transaction framework illustrates how state review can incorporate affordability, workforce, access, and public-interest considerations alongside competition analysis.

Keywords: Private equity; healthcare consolidation; health law; hospital ownership; physician practices; access to care; quality of care; health-care transactions; antitrust; Minnesota.

1. Introduction

Private equity has become an increasingly visible form of ownership in the United States health-care economy. PE funds typically acquire portfolio companies with capital supplied by institutional and other investors, frequently combine that equity with acquisition debt, seek operational or strategic changes intended to raise enterprise value, and plan an eventual exit through resale, recapitalization, or another liquidity event. In health care, the acquired asset may be a hospital, physician group, management services organization, hospice agency, behavioral-health facility, or other provider. This structure does not predetermine clinical performance, but it creates governance and time-horizon features that are different from traditional nonprofit, public, physician-owned, or long-term corporate ownership. Those differences have prompted a rapidly expanding empirical and legal literature on whether PE changes the cost, quality, and accessibility of care.[2,3]

The policy debate is often framed too broadly. Some accounts treat PE as a single intervention with a uniform effect, even though investment strategies differ across firms, sectors, capital structures, local markets, payment systems, and stages of the ownership cycle. Others focus on a narrow outcome, such as negotiated prices, while overlooking clinical quality or service availability. A legally useful synthesis must therefore separate at least three questions. First, what happens to prices, spending, assets, and staffing resources after or in association with PE ownership? Second, what happens to patient safety, patient experience, clinical outcomes, or process

quality? Third, does PE ownership change practical access to care, including volume, payer mix, continuity, workforce stability, or the availability of services for lower-paying populations?

The 2023 systematic review by Borsa and colleagues provided the first broad cross-setting synthesis of this evidence. It identified 55 empirical studies, 47 of which examined United States providers, and found that PE ownership was most consistently associated with higher costs to patients or payers and with mixed-to-harmful quality findings.[2] The review also emphasized important limitations: substantial heterogeneity, predominance of observational designs, concentration in particular specialties and settings, and insufficient evidence for firm conclusions about several patient outcomes. The publication of that review established a useful baseline, but it also marked the beginning of a period in which the evidence base expanded materially.

Since mid-2023, new studies have examined hospital-acquired adverse events, patient-reported hospital experience, capital assets, hospital staffing expenditure, complex surgical outcomes, primary-care prices, gastroenterology prices and quality, ophthalmology payer mix, hospice patient selection and caregiver experience, psychiatric-hospital staffing and quality, physician turnover after PE exit, Medicaid maternity care, and buprenorphine treatment. Several of these studies use difference-in-differences or event-study designs that are stronger for causal interpretation than simple cross-sectional comparisons, although none eliminates all concerns about selection, measurement, or generalizability.[4-20]

The regulatory environment has also changed. In March 2024, the Federal Trade Commission (FTC), Department of Justice (DOJ), and Department of Health and Human Services (HHS) launched a joint inquiry into consolidation and corporate control in health care, expressly requesting information about transactions involving PE funds and about deals too small to trigger conventional federal premerger reporting.[23] The Centers for Medicare & Medicaid Services (CMS) finalized expanded ownership-disclosure requirements for skilled nursing facilities and nursing facilities, including definitions of private equity companies and real estate investment trusts.[24] The Government Accountability Office (GAO) subsequently reported that PE ownership or investment represented a small but growing share of physician practice ownership nationally and that the empirical evidence on access remained limited.[25] These developments reflect a shift from a debate about whether PE should be noticed at all toward a more difficult question: which features of PE transactions should trigger legal scrutiny and what remedies are proportionate to demonstrated risk.

Minnesota provides a particularly relevant state context for that question. The state's health-care transaction framework requires advance notice for certain qualifying transactions and authorizes public-interest review that considers effects on patients and the health-care workforce, including access, options, and affordability.[26,27] The framework is ownership-neutral rather than PE-specific, but its emphasis on transaction-level information and public-interest consequences maps closely onto the empirical outcomes examined in the PE literature. In 2026, the Minnesota Attorney General applied this framework to major proposed health-system transactions, demonstrating that the statute is an active oversight mechanism rather than a purely theoretical one.[28]

This article therefore has two linked objectives. The first is evidentiary: to update the 2023 systematic review with recent open-access empirical studies and to synthesize post-2023 findings across cost, quality, and access. The second is legal and policy oriented: to translate those findings into a regulatory framework that distinguishes ownership transparency, competition review, financial safeguards, clinical governance, and post-closing accountability. The analysis intentionally avoids the claim that PE ownership is inherently unlawful or inherently harmful. Instead, it asks which recurring empirical signals are sufficiently credible and policy-relevant to justify targeted oversight, and where current evidence remains too uncertain to support categorical rules.

Private equity structure and the health-care context

A PE transaction in health care often involves more than a change in the name of the equity holder. In a leveraged acquisition, debt may be placed at or near the acquired entity, management or monitoring fees may be charged, nonclinical operations may be centralized, and the business may pursue add-on acquisitions to create a larger regional or specialty platform. Physician-practice deals frequently use management services organizations

to separate clinical ownership from nonclinical assets and administrative control. These arrangements can provide capital, information technology, recruiting capacity, contracting expertise, or succession options for clinicians. At the same time, they can redistribute control over budgets, staffing, growth targets, contracting, and the timing of an eventual sale.[3,21]

This dual potential explains why simple ownership labels are insufficient. An acquisition that funds new sites, recruits clinicians, and modernizes infrastructure could improve access or operational capacity. The same transaction, under a different local market or debt structure, could generate pressure to raise prices, reduce labor costs, sell real estate, alter service mix, or prioritize commercially attractive patients. The relevant legal problem is therefore not to infer motive from ownership but to identify observable transaction features and outcomes that create risks to competition, patient welfare, professional judgment, or the continuity of essential services.

Health care also differs from ordinary consumer markets in ways that make post-acquisition performance especially consequential. Patients often cannot readily shop on price or quality; third-party payment separates the user from much of the price; emergency and specialist markets may be locally concentrated; professional licensure and referral patterns constrain entry; and the consequences of understaffing or interrupted continuity can be clinical rather than merely financial. These features increase the importance of regulatory tools that can observe ownership, measure outcomes over time, and respond when financial restructuring produces externalities borne by patients, workers, insurers, or public programs.

At the same time, law should not assume that nonprofit or non-PE ownership is a reliable quality benchmark. Consolidation by hospitals, insurers, and other corporate entities can also raise prices or alter clinical markets. The GAO's 2025 review of physician consolidation, for example, emphasized that hospital consolidation has been associated with higher spending and prices and that the evidence on quality and access varies by ownership form.[25] PE-specific rules therefore require a defensible rationale. Such a rationale is strongest when it targets features that are unusually salient in PE transactions—serial roll-ups, short investment horizons, acquisition leverage, management-control arrangements, asset transfers, and planned exits—rather than merely imposing burdens based on an investor label.

2. Methods

Review design and reporting: This manuscript was designed as a systematic update of the empirical evidence synthesized by Borsa et al. rather than a de novo replication of their historical search.[2] Reporting was guided by the PRISMA 2020 principles of transparent eligibility criteria, explicit information sources, reproducible search concepts, study-level extraction, and separation of study findings from interpretive conclusions.[1] The review protocol was not prospectively registered and no separate protocol publication preceded this manuscript; this limitation is stated to avoid implying a registration that did not occur.

The evidentiary synthesis was restricted to peer-reviewed empirical research for which an openly accessible full text or public repository version could be verified. The open-access restriction was selected because this manuscript was intended to provide a source set that readers, reviewers, clinicians, and policymakers can inspect without subscription access. Review articles, policy papers, and government materials were used for contextual or regulatory analysis but were not counted as primary empirical studies in the update set.

Information sources and search strategy: PubMed/MEDLINE and PubMed Central were searched for combinations of the concept’s private equity, acquisition or ownership, and health-care settings or providers, including hospital, physician, practice, primary care, hospice, psychiatry, ophthalmology, gastroenterology, surgery, and substance-use treatment. The core search concept was: ("private equity"[Title/Abstract]) AND (health OR healthcare OR hospital OR physician OR practice OR hospice OR clinic OR care), restricted to the update publication window.[2]

For the legal and regulatory analysis, separate searches were conducted in official federal and Minnesota government sources. These included FTC, DOJ, HHS, CMS, GAO, the Minnesota Attorney General, and the Minnesota Revisor of Statutes. Regulatory materials were included when they described an operative disclosure

rule, transaction-review authority, formal federal inquiry, or government evidence synthesis directly relevant to PE or health-care consolidation.[23-28]

Eligibility criteria: A study was eligible for the empirical update if it: (1) was published from July 20, 2023 through August 29, 2026; (2) evaluated a United States health-care provider, facility, or practice with PE ownership, acquisition, divestiture, or a clearly identified PE affiliation as the principal exposure; (3) reported at least one outcome relating to cost, price, spending, assets, staffing resources, quality, patient safety, patient experience, clinical outcomes, utilization, access, payer mix, or workforce continuity; (4) used original empirical data; and (5) had an openly accessible full text or repository version. Studies were excluded if they were editorials, narrative reviews, legal commentaries, case reports without comparative empirical analysis, studies of investors without provider outcomes, or articles that did not isolate PE exposure sufficiently for the stated question.

Study selection, extraction, and outcome classification: Potentially eligible studies were screened at title/abstract level and then against the full-text eligibility criteria. For each included study, the following items were extracted: setting, exposure definition, comparison group, study period, design, sample size, principal cost or resource outcomes, principal quality outcomes, principal access or continuity outcomes, and major design limitations. Results were classified by outcome domain rather than as globally 'positive' or 'negative,' because a single study could show, for example, higher utilization together with shorter treatment retention or lower staffing together with better performance on selected quality measures.

Cost and resource outcomes included negotiated prices, spending, capital assets, salary expenditure, operating margins, and resource intensity. Quality outcomes included hospital-acquired conditions, mortality, complications, patient experience, caregiver experience, restraint use, follow-up, readmission, and procedure-specific adverse events. Access and continuity outcomes included patient volume, payer mix, Medicaid market share, site of care, treatment retention, clinician turnover, and post-exit movement into large practices.

Appraisal and synthesis: The included literature is almost entirely observational. Greater interpretive weight was therefore given to studies using matched controls, difference-in-differences, event-study methods, or other longitudinal designs that assessed pre-acquisition trends. Cross-sectional comparisons were treated as associations rather than acquisition effects. No pooled meta-analysis was performed because the exposure definitions, provider settings, outcomes, units of analysis, follow-up periods, and estimands were too heterogeneous for a clinically or legally meaningful single summary effect. A structured narrative synthesis was used instead. The risk-of-bias discussion is qualitative and design-based. Principal concerns were nonrandom selection into PE acquisition, incomplete measurement of ownership and transaction timing, residual differences between acquired and comparison entities, short follow-up relative to the PE investment cycle, outcome selection, and limited external validity from specialty-specific or payer-specific samples. The review does not convert these concerns into a single numeric quality score because such a score could obscure important differences between causal designs and descriptive studies.

3. Results

3.1 Overview of the updated evidence base

The update identified seventeen empirical studies that satisfied the defined post-2023, United States, open-access criteria and directly addressed at least one of the cost, quality, or access domains.[4-20] The evidence set covered acute-care hospitals, hospice agencies, primary care, gastroenterology, ophthalmology, psychiatric hospitals, complex surgery, physician-practice exits, maternity care for Medicaid beneficiaries, and substance-use treatment. Most studies relied on administrative claims, Medicare cost reports, HCAHPS data, CMS quality measures, or national provider databases. Difference-in-differences and event-study methods were common, but several studies were cross-sectional or limited to selected payers.

The post-2023 studies did not overturn the principal conclusion of the 2023 systematic review that economic outcomes show the most consistent signal.[2] However, they add substantially more information about mechanisms and tradeoffs. New hospital studies connect PE acquisition with capital-asset reductions, salary-

expenditure reductions, adverse events, and patient-reported experience.[4,7,9,11] New physician-practice studies separate negotiated prices from quality and reveal important differences between market expansion and continuity.[12-15] New access-focused studies show that PE can simultaneously increase treatment volume in one sector while narrowing participation by a lower-paying payer group in another.[18,19]

Table 1 summarizes the included empirical studies. The table deliberately reports both concerning and neutral or favorable findings. This is important because regulation based on a systematic review should reflect the direction and certainty of the evidence, not select only outcomes that support a predetermined view.

Table 1. Post-2023 open-access empirical evidence on private equity ownership and health-care outcomes

Study and setting	Design / sample	Cost or resource findings	Quality findings	Access / continuity and key limitation
Kannan et al., 2023 [4]	Acute-care hospitals; DiD/event study; 51 PE hospitals, 259 matched controls; Medicare 2009-2019	Not primary	Hospital-acquired conditions +25.4% relative; falls +27.3%; central-line infections +37.7%; no differential 30-day mortality	More transfers to acute hospitals and shorter stays; observational residual confounding remains
Braun et al., 2023 [5]	Hospice agencies; DiD; 158 PE-acquired, 250 PTC-acquired, 1,559 other for-profit agencies	Not primary	Quality not principal outcome	PE acquisition associated with increased share of dementia patients; changes in site/case mix; cannot equate case-mix change with inappropriate selection
Kannan & Song, 2024 [6]	Acute-care hospitals; matched comparison; 242 PE targets vs 870 controls	Pre-acquisition finances broadly did not show a general pattern of greater distress among targets	Pre-acquisition clinical characteristics evaluated; no basis to presume rescue-only selection	Selection study; informs acquisition rationale rather than post-acquisition outcome
Schrier et al., 2024 [7]	Acute-care hospitals; matched DiD-style analysis; 156 PE hospitals, 1,560 controls	Capital assets fell 15.0% in PE hospitals vs +9.2% in controls; 24.2% relative difference	No direct clinical outcome	Asset base relevant to future operational capacity; accounting/transaction mechanisms may vary
Soltoff et al., 2024 [8]	Hospice; cross-sectional; 2,676 agencies including 705 PE/PTC-owned	Not primary	Caregiver-reported summary quality lower for PE/PTC-owned hospices than nonprofit and other for-profit	PE and PTC combined, limiting PE-specific causal interpretation
Bhatla et al., 2025 [9]	Acute-care hospitals; event-study DiD; 73 PE	Not primary	Top hospital rating -2.4 pp; definite recommendation -	Patient-experience measure; not a direct mortality/safety

	hospitals, 293 controls		2.1 pp; staff responsiveness -1.3 pp relative to controls	outcome
Williams et al., 2025 [10]	Esophagectomy; retrospective cohort; 9,462 Medicare patients, 517 at PE-acquired centers	Not primary	30-day mortality 8.1% vs 4.9%; adjusted OR 1.82; complications and failure-to-rescue higher	Ownership-status comparison rather than pre/post acquisition; lower volume and staffing may mediate differences
Kannan & Song, 2025 [11]	Acute-care hospitals; DiD; 242 PE hospitals, 870 controls	Salary expenditure decreased; firm-level declines 12.9%-27.3% of baseline; strategies varied	No direct patient outcome in this analysis	Most hospitals also showed lower cumulative charges/service volume; resource measure is not identical to staffing headcount
Singh et al., 2025 [12]	Primary care; national ownership + 2022 negotiated-price cross-section; 198,097 PCPs	PE-affiliated office-visit prices 7.8% higher than independent PCP prices	No quality outcome	Cross-sectional price association; PE share 1.5% in 2022; not causal acquisition estimate
Arnold et al., 2025 [13]	Gastroenterology; DiD/event study; 1.3 million colonoscopies	Colonoscopy price +4.5%; spending/physician +16.0% (with pretrend caution)	No significant change in 6 procedure-quality measures	Colonoscopy and unique-patient volume increased, but utilization pretrends reduce causal certainty
Connolly et al., 2025 [14]	Ophthalmology; payer-mix study, 2012-2022	Not primary	No direct clinical quality outcome	Claim counts increased across commercial, Medicare FFS, and Medicaid; proportional mix shifted toward Medicare FFS; nuanced access effect
Berquist et al., 2025 [15]	Physician practices after PE exit; case-control DiD; 405 physicians in 70 exiting practices, 810 controls	Not primary	No direct patient quality outcome	At 2 years, 16.5 pp less likely to remain; 10.1 pp more likely to join >120-physician practice; continuity/consolidation concern
Shields et al., 2025 [16]	Freestanding psychiatric hospitals; cross-sectional; 87 PE-owned vs 530 non-	Not primary	Lower staffing for some disciplines but better measured restraint, follow-up, and readmission	Important counterexample; cross-sectional design cannot attribute differences to acquisition

	PE		outcomes	
Kannan & Song, 2025 [17]	Hospital secondary sales; 18 PE-to-PE vs 18 PE-to-non-PE for-profit	Operating margin -8.4 pp; expenses +$316/available bed-day relative to comparison	No direct patient outcome	Small sample; highlights need to monitor secondary sale/exit stage
Jiao, 2026 [18]	Hospital maternity care; DiD; >1 million Medicaid L&D hospitalizations; 66 PE vs 290 controls	Payment-gap heterogeneity evaluated	No significant change in low-risk cesarean, procedures, LOS, or severe maternal morbidity	Medicaid L&D market share -12%; larger reduction where Medicaid-commercial payment gap was larger
Holdaway et al., 2026 [19]	Substance-use treatment; DiD; 90 acquired vs 2,374 controls	Cash share +0.73 pp	Treatment retention declined: -6.24 pp at 90 days and -7.91 pp at 180 days	Patient volume +65.66/facility-quarter; prescriptions +163.90; expansion and continuity tradeoff
Dixit et al., 2026 [20]	Primary care; stacked DiD; 24,397 PE-exposed Medicare beneficiaries, 121,939 matched controls	Not primary	ED visits modestly lower; no meaningful change in all-cause or potentially avoidable hospitalization	Patient composition unchanged; short-term acute outcomes largely neutral

Abbreviations: DiD, difference-in-differences; ED, emergency department; FFS, fee-for-service; L&D, labor and delivery; LOS, length of stay; OR, odds ratio; PE, private equity; PTC, publicly traded company. “Not primary” indicates that the study did not principally evaluate the cost/resource domain. Findings are reported as associations or study estimates and should not be interpreted as universal effects of PE ownership.

3.2 Cost, price, and resource outcomes

The most consistent post-2023 economic findings concern prices, financial restructuring, and resource allocation. In primary care, Singh et al. analyzed nearly 200,000 primary-care physicians and found that, in 2022 cross-sectional data, negotiated office-visit prices were 7.8% higher for PE-affiliated physicians than for independent physicians.[12] Because the price analysis was cross-sectional, it cannot establish that acquisition caused the price difference; practices acquired by PE may differ from independent practices in bargaining position, geography, or other unmeasured characteristics. Nevertheless, the result is relevant to competition policy because it shows that PE affiliation can coincide with a measurable price premium for the same categories of office-visit services.

A stronger acquisition design was used in gastroenterology. Arnold et al. reported that PE acquisition was associated with a 4.5% increase in colonoscopy prices relative to independent comparison sites; the estimated increase was 6.7% when the treated group was restricted to PE practices with market share above the 75th percentile.[13] Spending per physician increased 16.0%, and colonoscopy and unique-patient volumes also increased. The authors cautioned that spending and utilization were already rising before acquisition, which makes those latter estimates less clearly attributable to PE. Importantly, the six measured quality outcomes did not change significantly.[13] The combination of higher prices and no discernible quality improvement is more

legally salient than a price increase alone because it weakens an efficiency explanation for the observed price effect, although unmeasured quality dimensions remain possible.

Hospital evidence points to changes in the asset and labor base from which care is delivered. Schrier et al. compared 156 PE-acquired hospitals with 1,560 matched controls and found that total capital assets fell by 15.0% at acquired hospitals while increasing 9.2% at controls over the two years after acquisition, yielding a 24.2% relative difference.[7] The study does not prove that every reduction represented harmful asset stripping; capital restructuring can include accounting and real-estate transactions with different operational effects. Yet persistent depletion of the asset base is directly relevant to transaction review because a hospital's capacity to maintain facilities, technology, and reserves depends on the resources retained within the operating entity.

Kannan and Song examined salary expenditure and service utilization across 242 PE-acquired hospitals and 870 matched controls. On average, acquired hospitals reduced salary expenditures while control hospitals increased them; firm-specific salary reductions ranged from 12.9% to 27.3% of pre-acquisition levels and appeared across multiple clinical departments.[11] Most acquired hospitals also showed declines in cumulative charges despite higher chargemaster rates, a pattern the authors interpreted as consistent with reduced service volume. The study is useful because it demonstrates heterogeneity across PE firms rather than a single uniform strategy. Some hospitals increased cumulative charges without comparable salary cuts, underscoring why transaction-level and owner-level data matter for enforcement.

The ownership life cycle may also matter after the initial acquisition. Kannan and Song later examined a small sample of hospitals sold by one PE owner to another and reported that operating margins declined by 8.4 percentage points relative to PE hospitals sold to non-PE for-profit owners, driven by higher expenses per available bed-day.[17] This study included only 18 hospitals in each secondary-sale group, so it should not be generalized to all PE-to-PE transfers. Its legal relevance lies in a different point: an exit or secondary sale is itself a potentially material event, and oversight systems focused only on the first acquisition may miss later financial or operational changes.

Evidence about acquisition targets also complicates the frequently stated claim that PE primarily rescues distressed hospitals. In a 2024 study comparing 242 acquired hospitals with 870 matched nonacquired hospitals, Kannan and Song found no general pattern showing that PE targets were substantially more financially or clinically distressed before acquisition.[6] This finding does not mean that rescue transactions never occur. It means regulators should evaluate claimed rescue rationales with transaction-specific financial evidence rather than presume that PE capital is entering only failing facilities.

3.3 Quality, safety, and patient experience

The strongest new patient-safety evidence comes from acute-care hospitals. Kannan et al. compared more than 662,000 Medicare hospitalizations at 51 PE-acquired hospitals with more than 4.1 million hospitalizations at 259 matched controls. After acquisition, hospital-acquired conditions increased by 25.4% relative to controls, driven in part by increases in falls and central-line-associated bloodstream infections.[4] Surgical-site infections doubled within PE hospitals while surgical volume declined, although the between-group estimate for surgical-site infection was imprecise. The study did not find a differential increase in 30-day mortality. These findings should therefore be described as a deterioration in measured inpatient safety indicators rather than as proof that PE acquisition generally increases mortality.

Patient experience provides a complementary quality dimension. Bhatla et al. studied 73 PE-acquired hospitals and 293 matched controls and found relative declines of 2.4 percentage points in the share of patients rating the hospital 9 or 10 out of 10 and 2.1 percentage points in the share who would definitely recommend the hospital.[9] The gaps widened over time, and staff responsiveness also worsened. HCAHPS measures are not substitutes for clinical outcomes, but they capture communication, responsiveness, and perceived care processes that may be affected by staffing or operational changes. In a regulatory framework, repeated deterioration across both safety and patient-experience measures is more concerning than a single isolated quality metric.

Complex surgery offers a different but important signal. Williams et al. compared Medicare esophagectomy outcomes at PE-acquired and nonacquired health centers. Patients treated at PE-acquired centers had higher 30-day mortality (8.1% versus 4.9%), higher overall complications, higher serious complications, and higher failure-to-rescue after adjustment.[10] The study also found lower procedure volume and lower nurse-to-patient ratios at PE-acquired centers. Unlike a before-and-after acquisition design, this analysis primarily compared outcomes by ownership status and therefore remains susceptible to unmeasured differences between centers. It nevertheless shows why high-acuity services may warrant outcome-specific monitoring when ownership or service configuration changes.

Hospice evidence also raises quality concerns, although ownership categories require careful interpretation. Soltoff et al. analyzed caregiver-reported experience across 2,676 hospices and found that PE or publicly traded company-owned hospices had lower adjusted summary quality scores than nonprofit hospices and than other for-profit hospices.[8] Because PE and publicly traded company ownership were combined in the principal exposure category, the study cannot isolate the entire observed difference to PE alone. Braun et al., in a separate acquisition study, found changes in patient diagnosis and site-of-care patterns after PE or publicly traded company acquisitions, including an increase in the share of dementia patients at PE-acquired hospices.[5] Together these studies suggest that ownership can influence both patient selection and experience, but they do not establish a single PE-specific causal pathway across all hospice agencies.

The evidence is not uniformly adverse. Shields et al. examined all 617 Medicare-participating freestanding psychiatric hospitals in 2021 and found that PE-owned hospitals had lower staffing ratios for some disciplines but performed better on several measured quality indicators, including restraint use, follow-up after discharge, and all-cause readmission.[16] The cross-sectional design prevents attribution of those differences to acquisition, and unmeasured case mix or reporting practices may contribute. Still, the study is an important counterexample to any claim that PE ownership is necessarily associated with worse measured quality in every setting.

Primary care likewise produced largely neutral short-term clinical findings in the 2026 study by Dixit et al. Among traditional Medicare beneficiaries linked to PE-acquired primary-care physicians, emergency-department visits decreased modestly, while potentially preventable hospitalizations and all-cause hospitalizations showed no meaningful change relative to matched controls.[20] Patient composition also remained stable. The result indicates that higher prices or utilization in PE-affiliated primary care should not automatically be translated into an inference of worse short-term acute-care outcomes. Different outcome domains can move independently.

Gastroenterology provides another neutral quality finding: despite higher colonoscopy prices after PE acquisition, Arnold et al. did not detect significant changes across six procedure-quality measures.[13] This pattern is especially useful for policy because it separates the competition question from the clinical-safety question. A transaction can raise prices without measurable quality deterioration, which may justify competition or affordability scrutiny even when a patient-safety remedy is not supported by the evidence.

3.4 Access, payer mix, utilization, and continuity

Access is the least reducible of the three domains because it can improve by one measure while worsening by another. Increased patient volume can signify expanded capacity, but it can also accompany shorter visits, altered payer mix, or weaker continuity. Conversely, reduced utilization can reflect inappropriate service contraction or improved efficiency. The post-2023 literature therefore supports a multidimensional definition of access that includes who is served, how many patients are treated, which payers are accepted, whether essential services remain available, and whether patients can maintain continuity with clinicians.

The most direct equity-related access finding comes from Medicaid maternity care. Jiao evaluated more than one million labor-and-delivery hospitalizations involving 66 PE-acquired hospitals and 290 matched controls. PE acquisition was associated with a 12% decrease in Medicaid labor-and-delivery market share, with a larger reduction in states where the Medicaid-to-commercial payment gap was greater.[18] The study did not find

significant changes in low-risk cesarean delivery, procedures, length of stay, or severe maternal morbidity. The legally relevant issue is therefore not demonstrated deterioration in measured maternity quality; it is the possibility that ownership incentives interact with payment differentials in ways that reduce a provider's relative participation in care for Medicaid beneficiaries.

Substance-use treatment shows the opposite volume effect but a continuity tradeoff. Holdaway et al. examined 90 acquired and 2,374 nonacquired facilities and found that PE acquisition was associated with approximately 66 additional patients receiving buprenorphine per facility-quarter and approximately 164 additional prescriptions per facility-quarter.[19] Those increases suggest expanded treatment volume. Yet the share of treatment episodes reaching 90 days fell by 6.24 percentage points and the share reaching 180 days fell by 7.91 percentage points. Cash-paid prescriptions also increased modestly. A rule that classified increased volume as an unqualified access improvement would miss the retention decline; a rule that focused only on retention would miss the expanded reach. Both should be monitored.

Ophthalmology payer-mix evidence is similarly nuanced. Connolly et al. found increases in the number of established commercials, Medicare fee-for-service, and Medicaid claims per ophthalmologist after PE acquisition, while the proportional payer mix shifted toward Medicare fee-for-service and away from commercial insurance.[14] This finding does not support a simple claim that PE acquisition necessarily causes selection away from public payers. It instead suggests that payer-mix effects can depend on specialty, baseline demographics, and local demand. Regulatory disclosure should therefore capture payer-specific volumes rather than rely on generalized assumptions.

Continuity can also be affected at the ownership exit stage. Berquist et al. studied physicians in 70 practices sold by PE owners and found that two years after exit, physicians were 16.5 percentage points less likely to remain in the original practice than matched controls and 10.1 percentage points more likely to join a practice with more than 120 physicians.[15] Retirement did not explain the difference. The study does not establish that every departure disrupted patient care, but it links the PE exit cycle to clinician mobility and further consolidation. For patients with longitudinal specialist relationships, turnover is a meaningful access and continuity concern even if the total number of clinicians in a market is unchanged.

Hospice acquisition studies add evidence that access can change through patient selection rather than facility closure. Braun et al. observed an increase in the share of dementia patients after PE hospice acquisition and changes in sites of care.[5] Such shifts may reflect efforts to expand service to populations with unmet needs, selection of patients with longer expected hospice stays, or both. The study's findings should therefore be interpreted as changes in case mix and service setting, not as proof of inappropriate selection in every acquired agency.

Taken together, these studies explain why legal review should define access prospectively. At the transaction stage, regulators can require the parties to identify essential services, payer participation, geographic service areas, and workforce plans. After closing, the same measures can be tracked against a baseline. This approach is superior to an abstract promise to 'maintain access,' because it converts access into observable indicators such as Medicaid share, appointment capacity, site closures, treatment retention, clinician turnover, and service-line availability.

3.5 Heterogeneity across settings and ownership strategies

The updated literature reinforces a central methodological point: PE is not a homogeneous treatment. Outcomes differ by setting, owner strategy, payer environment, market concentration, and the stage of the investment cycle. Hospital salary cuts varied substantially across PE firms.[11] Psychiatric hospitals showed lower staffing ratios but better measured performance on several quality metrics.[16] Gastroenterology prices increased without measurable deterioration in procedure quality.[13] Primary-care acute outcomes were largely unchanged in the short term.[20] Buprenorphine volume increased while retention decreased.[19] These patterns are incompatible with a simple binary classification of PE as either beneficial or harmful.

Heterogeneity also affects the legal choice of remedy. A price increase associated with local market power is primarily a competition and affordability problem. A decline in capital assets or financially risky real-estate transaction may call for solvency or asset-protection safeguards. A rise in hospital-acquired conditions is a quality and patient-safety problem. A fall in Medicaid market share is an access and equity problem. The same transaction could raise more than one of these concerns, but evidence for one does not automatically establish another. Regulation should therefore be modular and linked to the risk actually observed or reasonably predicted.

4. Discussion

This systematic update produces three principal findings. First, the post-2023 evidence continues to show the clearest recurring signal in economic outcomes. Higher negotiated prices appear in primary care and gastroenterology, and hospital studies document substantial changes in capital assets and labor expenditure.[7,11-13] These findings are broadly consistent with the earlier systematic review, which identified costs to patients or payers as the domain most consistently associated with adverse effects.[2] The newer studies refine that conclusion by showing that the pathway may involve both market-facing strategies, such as higher negotiated prices, and internal resource strategies, such as salary or asset reductions.

Second, the quality evidence has become stronger but remains heterogeneous. Difference-in-differences hospital studies associate PE acquisition with more hospital-acquired conditions and worse patient experience.[4,9] Procedure-specific evidence raises concerns about complex surgery at PE-acquired centers.[10] Hospice caregiver experience also appears worse under PE or publicly traded ownership.[8] Yet psychiatric hospitals, gastroenterology, and primary care show neutral or favorable findings on several quality outcomes.[13,16,20] The appropriate conclusion is not that quality always worsens; it is that there is now enough setting-specific evidence to justify systematic quality surveillance after acquisition, especially where staffing or capital changes are substantial.

Third, access is characterized by tradeoffs rather than a single direction. Medicaid maternity market share declined after PE hospital acquisition, whereas buprenorphine treatment volume increased after PE acquisition of substance-use treatment facilities.[18,19] The latter expansion was accompanied by shorter treatment retention, illustrating why access should include continuity and adequacy, not just the number of visits or prescriptions. Physician movement after PE exit adds a further time dimension: the period of greatest continuity disruption may occur during resale rather than immediately after the first acquisition.[15]

These findings support a regulatory approach based on observability and accountability. Ownership status is useful as a screening variable, but it should not substitute for analysis of market structure, transaction financing, governance, quality, and access. A well-designed regime would make those features visible before closing, preserve a baseline, and enable post-closing comparison. The aim is to distinguish transactions that primarily provide capital or administrative support from those that create market power, transfer excessive financial risk to providers, reduce care resources, or shift access away from vulnerable populations.

The findings also caution against using short-term financial performance as a sufficient measure of success. A PE-acquired entity can improve margin while reducing staffing, change site mix, or increase negotiated prices. Conversely, lower operating margin after a secondary sale does not by itself prove patient harm.[17] Health-care regulation should therefore measure performance across multiple dimensions. The relevant question is whether financial gains are produced in a manner consistent with continued delivery of safe, affordable, and accessible care.

Causal interpretation remains a major challenge. PE firms do not acquire providers randomly. They may select markets with favorable demographics, providers with growth opportunities, entities with specific payer mixes, or organizations that are more capable of supporting acquisition debt.[6] Difference-in-differences methods address time-invariant differences and can test pre-trends, but they cannot eliminate all time-varying confounding. Cross-sectional studies are even more limited. A legally responsible synthesis should therefore

treat the literature as evidence of recurring risk patterns and measurable associations, not as proof that ownership label alone causes every observed outcome.

The open-access restriction of this update has an additional implication. It improves transparency because every empirical study in the primary synthesis can be inspected without a paywall, but it may exclude relevant subscription-only studies. The earlier Borsa review, which searched PubMed, Web of Science, Embase, Scopus, and SSRN, remains important for the broader historical evidence base.[2] The present manuscript should be read as a transparent post-2023 update and legal synthesis rather than a replacement for that wider historical search.

5. Regulatory Implications

5.1 Ownership transparency and transaction mapping

The first regulatory requirement is basic visibility. PE ownership can be difficult to trace through funds, holding companies, management services organizations, real-estate affiliates, and successive portfolio transactions. Without reliable ownership data, regulators cannot measure concentration, connect quality outcomes to control, or determine whether an apparently small transaction is one step in a larger roll-up. CMS has moved in this direction for nursing facilities by requiring expanded ownership and managerial disclosures and by defining private equity companies and real estate investment trusts for reporting purposes.[24] The logic should extend to other provider sectors where ownership opacity impedes oversight.

Disclosure should identify the ultimate controlling entities, material management agreements, ownership of clinical and nonclinical assets, debt placed on the provider, related-party leases, major fees, and contemplated changes to services or sites. For physician practices, the regulator should also identify the MSO and any contractual rights that effectively determine budgets, hiring, payer contracting, or sale decisions even when licensed clinicians retain nominal ownership of the professional entity. Transparency is not itself a prohibition. It is the information infrastructure needed for competition, quality, and access oversight.

5.2 Serial acquisitions and competition review

Traditional merger review can miss serial acquisitions when each individual practice purchase falls below federal reporting thresholds. The 2024 FTC-DOJ-HHS inquiry expressly sought information on nonreportable health-care transactions, reflecting concern that a sequence of smaller deals can produce meaningful local consolidation.[23] PE roll-ups are particularly relevant because the investment strategy may depend on assembling a platform with greater bargaining leverage or operational scale. The legal unit of analysis should therefore be the cumulative ownership footprint, not only the last individual acquisition.

Competition review should examine specialty-specific and local market concentration, contracting leverage, referral dependencies, and the relationship between price changes and measurable quality. The gastroenterology evidence is instructive: post-acquisition colonoscopy prices rose, and the estimated increase was larger among PE practices with high market share.[13] That pattern does not establish an antitrust violation, but it identifies a testable mechanism by which consolidation may translate into higher prices. A state or federal reviewer can use such evidence to justify closer scrutiny of add-on acquisitions that materially increase local share even if each transaction is modest in dollar value.

5.3 Financial safeguards: leverage, assets, and related-party transactions

The hospital asset and salary findings support review of the financial architecture of a transaction, not only the purchase price. A regulator evaluating an essential provider should understand how much debt will be borne by the operating entity, whether land or buildings will be sold to an affiliate or third party, whether the provider will assume new lease obligations, and whether dividends or fees can be paid while liquidity or capital investment falls. The 24.2% relative reduction in hospital capital assets reported by Schrier et al. shows why asset retention can be a patient-care issue rather than merely a corporate-finance issue.[7]

Possible safeguards include minimum notice for significant asset transfers, restrictions on distributions when liquidity or debt-service metrics fall below defined thresholds, board certification of the effect of related-party

transactions on continued operations, and enhanced reporting where an essential service provider sells real estate and becomes a tenant. Such rules should be calibrated to risk. A low-leverage outpatient transaction that expands capacity should not face the same financial conditions as an acute-care hospital transaction that materially encumbers the operating entity.

5.4 Post-closing quality and staffing accountability

Premerger review cannot reliably predict every clinical consequence. The hospital safety and patient-experience studies demonstrate the value of post-closing surveillance.[4,9] Regulators should preserve a pre-acquisition baseline for staffing expenditure, nurse staffing where available, hospital-acquired conditions, patient experience, service volume, and selected outcomes relevant to the provider's major service lines. Reporting should continue for a period that matches the likely investment horizon rather than ending after the first post-closing year.

Outcome triggers should lead to investigation, not automatic liability. A rise in infections or falls may reflect changes in case mix, coding, or unrelated shocks. But a sustained deterioration that coincides with staffing reductions, capital withdrawal, or service reconfiguration warrants scrutiny. The psychiatric-hospital findings reinforce the need for multiple metrics because lower staffing did not coincide with worse performance on all reported quality measures.[16] A regulator should therefore avoid single-metric rules and evaluate patterns across safety, experience, continuity, and staffing.

5.5 Clinical governance and professional autonomy

PE-backed management arrangements can create separation between formal clinical ownership and practical operational control. The regulatory objective should be to preserve professional judgment where decisions are clinical while permitting legitimate nonclinical management. Relevant safeguards include clinician authority over clinical protocols, credentialing, referral decisions, patient-discharge decisions, and medical-necessity determinations; protection against compensation structures that directly reward inappropriate utilization; and disclosure of management rights that could indirectly influence those decisions. The American College of Physicians' 2026 position paper similarly calls for stronger oversight, transparency, accountability, and protection of clinical autonomy in the context of PE and corporatization.[22]

These safeguards should not be drafted so broadly that they prevent administrative support, value-based contracting, or evidence-based standardization. The distinction is functional: investors and managers may set business strategy, but clinical decisions should remain subject to professional standards, patient interests, and applicable licensure law.

5.6 Access-sensitive oversight and public-program participation

Access commitments should be specific to the provider and local market. The maternity evidence suggests that Medicaid participation can change after acquisition, particularly where reimbursement differentials are larger.[18] Transaction review can therefore require baseline and post-closing reporting of Medicaid, Medicare, and commercial volumes; closure or relocation of essential services; appointment capacity; geographic coverage; and workforce changes. Where a transaction involves the only or dominant provider of a service in a region, enforceable notice and continuity requirements may be appropriate before a service line is closed.

Access rules must also recognize beneficial expansion. The buprenorphine study documented substantial growth in treated patients after PE acquisition.[19] A regulator should not deter such expansion merely because ownership is PE-backed. Instead, it should assess whether increased capacity is accompanied by adequate treatment retention, continuity, and quality. This approach aligns legal oversight with patient welfare rather than with a categorical preference for one ownership form.

5.7 Exit, resale, and the full ownership life cycle

Many regulatory systems treat closing as the endpoint of review, but PE ownership is intentionally transitional. The evidence on physician turnover after PE exit and hospital financial performance after secondary sale shows

why resale should be included in the regulatory lifecycle.[15,17] Notice requirements should apply to material transfers of control after the initial acquisition, and post-closing commitments should bind successors where necessary to protect patients or public funds.

A practical framework would require a closing report, annual ownership certification, notice of material refinancing or asset sale, and advance notice of a subsequent sale when statutory thresholds are met. This creates continuity of information even as the fund, portfolio company, or management structure changes.

6. Minnesota-Specific Legal and Policy Implications

Minnesota's health-care transaction law offers a useful model for translating empirical evidence into state-level review. The Attorney General's current guidance states that certain health-care entities must notify the Attorney General and the Minnesota Department of Health before covered transactions. For the principal large-transaction provision, notice applies when at least one involved health-care entity has average annual revenue of at least $80 million or when the resulting entity is projected to meet that threshold, and notice generally must be submitted at least 60 days before completion.[26,27] The Attorney General may extend the notice period under the statute, and the disclosure package includes information concerning the entities, leadership, services, revenues, and service areas.[26,27]

The Minnesota framework is significant for PE oversight even though it is not limited to PE. The Attorney General describes review of a transaction's effects on patients and the health-care workforce, including health-care options, access, and affordability.[26] Those criteria align closely with the empirical domains in this review. Higher negotiated prices are relevant to affordability; changes in Medicaid market share or service volume are relevant to access; turnover and salary reductions are relevant to workforce stability; and patient safety and experience are relevant to the public-interest assessment.[4,9,11-15,18]

The statute also recognizes that a transaction may consist of a series of actions within a defined period, an important concept for consolidation strategies that occur through staged acquisitions.[26] That structure can help prevent an overly formal analysis in which each step is viewed in isolation. At the same time, the revenue threshold means that smaller physician-practice roll-ups may not always fall within the principal large-entity notice provision. Minnesota policymakers should therefore periodically assess whether available notice thresholds and definitions capture the types of serial specialty consolidation that empirical research associates with price effects.

Recent practice demonstrates that Minnesota's review authority is active. In 2026, the Attorney General reviewed major proposed health-system transactions under Minn. Stat. § 145D.01 and emphasized public input, access, affordability, and workforce effects.[28] These transactions were not offered as examples of PE acquisitions; their relevance is institutional. They show that Minnesota already possesses a review architecture capable of receiving transaction data and evaluating public-interest consequences. PE-specific risk factors could be incorporated into that architecture through guidance, reporting forms, or future statutory refinement without creating an entirely separate regulatory system.

For a Minnesota-oriented legal framework, four additions deserve consideration. First, ownership disclosures should identify PE funds, MSOs, related-party real-estate entities, and material debt or management arrangements. Second, serial add-on acquisitions should be aggregated where they collectively alter local specialty concentration. Third, post-closing reporting should track prices, workforce, essential-service availability, and payer mix for a defined period. Fourth, where an acquired entity provides an essential or difficult-to-replace service, substantial asset transfers or closures should trigger advance notice and an access-impact assessment. These measures are evidence-linked and more defensible than a blanket prohibition based solely on the identity of the investor.

7. Evidence-Linked Policy Framework

Table 2 translates the evidence into a risk-based policy matrix. The proposed measures are intentionally proportional. Ownership disclosure is broadly applicable because it is low burden relative to its informational

value. More intrusive conditions—such as financial covenants, service-line commitments, or enhanced quality monitoring—should be reserved for transactions where leverage, market concentration, essential-service dependence, or credible evidence of post-closing risk justifies them.

A central design principle is that regulation should follow the mechanism. If the concern is market power, the remedy should focus on serial acquisition, contracting leverage, and concentration. If the concern is financial fragility, the regulator should examine leverage, distributions, real-estate transfers, and liquidity. If the concern is quality, the response should monitor staffing, adverse events, patient experience, and service-specific outcomes. If the concern is access, the transaction record should include payer mix, location, service lines, and continuity. This mechanism-based design reduces the risk of both under-regulation and overbroad ownership discrimination.

A second design principle is symmetry in evidentiary standards. Regulators should neither accept claimed efficiencies at face value nor assume harm from ownership identity alone. Parties seeking credit for efficiency should identify measurable, transaction-specific benefits and a realistic mechanism by which those benefits will reach patients or payers. Regulators alleging risk should identify the relevant market, financial structure, or clinical pathway and use observable outcomes. The updated evidence base provides plausible indicators for both inquiries.

A third principle is longitudinal accountability. Many PE investments are held for several years and may involve refinancing, add-on acquisitions, recapitalization, and eventual resale. A one-time pre-closing filing cannot capture the entire period in which incentives and operations change. Annual reporting need not be unlimited; a defined three-to-five-year period, with extension for high-risk transactions or unresolved commitments, would often align better with the ownership cycle and with the follow-up periods used in empirical research.

Table 2. Risk-based regulatory framework linking observed evidence to potential oversight tools

Regulatory domain	Risk addressed	Evidence linkage	Proportionate policy options
Ownership transparency	Complex PE/MSO/affiliate structures can obscure control and related-party transactions	Beneficial across all domains because outcomes cannot be linked to owners without reliable identifiers	Disclose ultimate control, MSO agreements, related-party leases, debt, fees, and ownership changes; maintain public registry where lawful
Serial-acquisition review	Small add-on deals can cumulatively increase local specialty concentration	Higher prices in PE-affiliated primary care and post-acquisition gastroenterology; larger GI price estimate in high-share practices [12,13]	Aggregate related acquisitions over a defined period; analyze specialty/local market share and contracting leverage even when individual deals are small
Financial resilience	Leverage, asset sales, and distributions may weaken provider balance sheets	Hospital capital assets fell relative to controls; salary expenditure reductions common but heterogeneous [7,11]	Require financing/asset-transfer disclosure; enhanced review for essential providers; consider liquidity/distribution safeguards in high-risk deals
Quality	Operational changes may	Hospital-acquired	Preserve pre-close

monitoring	affect staffing, safety, and patient experience after closing	conditions and patient experience worsened in DiD studies; evidence mixed across other settings [4,9,13,16,20]	baseline; monitor staffing, safety, patient experience, and service-specific outcomes for a defined post-close period
Access and equity	Profit incentives may alter service mix or payer participation	Medicaid maternity share declined; buprenorphine volume expanded but retention fell; ophthalmology payer mix nuanced [14,18,19]	Track payer mix, essential service lines, geographic sites, capacity, retention, and closures; tailor commitments to local dependence
Clinical governance	Nonclinical control can indirectly influence clinical decisions and professional autonomy	Evidence is mechanistic rather than a single measurable endpoint; ACP calls for stronger oversight and clinical-autonomy safeguards [22]	Define reserved clinical powers, disclose incentive arrangements, protect medical-necessity and referral judgment
Exit and successor accountability	PE investment is transitional; resale may disrupt continuity or finances	Physician turnover increased after PE practice exit; secondary hospital sales showed different financial trajectories [15,17]	Require notice of material resale/refinancing; make appropriate commitments successor-binding; continue data reporting across ownership transitions

8. Limitations

This review has several limitations. First, it is a post-2023 systematic update anchored to the broader Borsa review rather than a full replication of the historical search. Its empirical update was intentionally restricted to openly accessible articles identified through PubMed/MEDLINE, PubMed Central, and citation chasing. Relevant subscription-only studies or papers indexed only in other databases may therefore be absent. The open-access restriction improves verifiability but can introduce availability bias.

Second, the evidence base is dominated by observational studies in the United States. Even difference-in-differences designs depend on assumptions about comparable pre-trends and absence of differential unmeasured shocks. PE acquisition is not random, and ownership data can be incomplete. Cross-sectional studies, including the psychiatric-hospital and some payer-mix analyses, are useful for description but should not be interpreted as causal acquisition effects.[14,16]

Third, the provider settings and outcomes are heterogeneous. A negotiated-price estimate in gastroenterology cannot be pooled meaningfully with a hospital-acquired infection rate, hospice caregiver score, maternity payer-mix outcome, or buprenorphine retention measure. For this reason, the review used structured narrative synthesis rather than meta-analysis. The absence of a pooled effect is a methodological choice, not an indication that individual findings are unimportant.

Fourth, several outcomes are proxies. Salary expenditure is not identical to bedside staffing; capital assets do not directly measure maintenance quality; claims-based payer mix does not fully measure appointment access; and patient experience is only one dimension of quality. Regulatory use of these measures should therefore combine multiple indicators and, where possible, corroborate administrative data with local operational information.

Fifth, legal frameworks evolve rapidly. The federal and Minnesota provisions discussed here are described as of August 29, 2026. Future legislation, rulemaking, litigation, or changes in enforcement policy may alter thresholds, reporting obligations, or the scope of review. Any submission or policy application after that date should update the legal authorities.

Finally, the review cannot determine whether the observed associations are attributable to PE ownership as such, to particular firms, to leveraged capital structures, to local consolidation, to management practices, or to provider characteristics that attract investment. This uncertainty is precisely why the recommended regulatory approach is feature-based and outcome-based rather than a presumption that all PE transactions should receive the same legal treatment.

9. Conclusion

The evidence published since the 2023 systematic review strengthens the case for careful oversight of private equity in health care while also demonstrating why categorical conclusions are unwarranted. Economic effects remain the clearest recurring concern: higher negotiated prices appear in selected physician markets, and hospital studies show substantial changes in capital assets and salary expenditure.[7,11-13] Quality evidence is more concerning than it was several years ago, particularly for hospital adverse events and patient experience, but it remains setting-specific and includes neutral or favorable findings.[4,9,13,16,20] Access evidence reveals both risk and expansion, including lower Medicaid maternity market share, increased buprenorphine treatment volume, reduced treatment retention, and clinician turnover around PE exit.[15,18,19]

These findings support targeted legal oversight built around transparency, cumulative transaction review, financial resilience, clinical governance, access-sensitive monitoring, and accountability across the ownership life cycle. Minnesota's existing health-care transaction framework provides a practical foundation because it already links transaction review to affordability, access, workforce effects, and the public interest.[26-28] The next step is not to presume that every PE acquisition should be blocked or permitted. It is to ensure that regulators can see the transaction, understand its financial and market structure, measure what changes after closing, and intervene when evidence shows that investor returns are being generated at an unacceptable cost to patients, workers, competition, or the continuity of essential care.

Declarations and Review Transparency

- **Ethics approval:** Not applicable.
- **Data availability:** All evidence discussed in this review is available in the cited open-access publications or public government sources. No original patient-level dataset was created for this manuscript.
- **Funding:** Not Applicable
- **Conflict of Interest :** Not applicable

References:

[1] Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. doi:10.1136/bmj.n71.

[2] Borsa A, Bejarano G, Ellen M, Bruch JD. Evaluating trends in private equity ownership and impacts on health outcomes, costs, and quality: systematic review. BMJ. 2023;382:e075244. doi:10.1136/bmj-2023-075244.

[3] Cai C, Song Z. A policy framework for the growing influence of private equity in health care delivery. JAMA. 2023;329(18):1545-1546. doi:10.1001/jama.2023.2801.

[4] Kannan S, Bruch JD, Song Z. Changes in hospital adverse events and patient outcomes associated with private equity acquisition. JAMA. 2023;330(24):2365-2375. doi:10.1001/jama.2023.23147.

[5] Braun RT, Unruh MA, Stevenson DG, Prigerson HG, Fernandez R, Yao LZ, et al. Changes in diagnoses and site of care for patients receiving hospice care from agencies acquired by private equity firms and

publicly traded companies. JAMA Netw Open. 2023;6(9):e2334582. doi:10.1001/jamanetworkopen.2023.34582.

[6] Kannan S, Song Z. Financial and clinical characteristics of hospitals targeted by private equity firms. JAMA Intern Med. 2024;184(9):1127-1129. doi:10.1001/jamainternmed.2024.3319.

[7] Schrier E, Schwartz HEM, Himmelstein DU, Gaffney A, McCormick D, Dickman SL, et al. Hospital assets before and after private equity acquisition. JAMA. 2024;332(8):669-671. doi:10.1001/jama.2024.13555.

[8] Soltoff AE, Unruh MA, Stevenson DG, Kavalieratos D, Braun RT. Caregiver-reported quality in hospices owned by private equity firms and publicly traded companies. JAMA. 2024;332(23):2029-2031. doi:10.1001/jama.2024.20546.

[9] Bhatla A, Bartlett VL, Liu M, Zheng Z, Wadhera RK. Changes in patient care experience after private equity acquisition of US hospitals. JAMA. 2025;333(6):490-497. doi:10.1001/jama.2024.23450.

[10] Williams JE, Schaefer SL, Jacobs RC, Ibrahim AM, Odell DD. Esophagectomy trends and postoperative outcomes at private equity-acquired health centers. JAMA Surg. 2025;160(3):296-302. doi:10.1001/jamasurg.2024.5920.

[11] Kannan S, Song Z. Variation in hospital salary expenditures and utilization changes after private equity acquisition, 2005-19. Health Aff (Millwood). 2025;44(2):206-214. doi:10.1377/hlthaff.2024.00687.

[12] Singh Y, Radhakrishnan N, Adler L, Whaley C. Growth of private equity and hospital consolidation in primary care and price implications. JAMA Health Forum. 2025;6(1):e244935. doi:10.1001/jamahealthforum.2024.4935.

[13] Arnold DR, Fulton BD, Abdelhadi OA, Teotia A, Scheffler RM. Private equity acquisition of gastroenterology practices and colonoscopy price and quality. JAMA Health Forum. 2025;6(6):e251476. doi:10.1001/jamahealthforum.2025.1476.

[14] Connolly JE, Guido M, Girard A, Braun RT, Emanuel EJ. Changes in payer mix associated with private equity acquisition of ophthalmology practices. JAMA Netw Open. 2025;8(5):e2512629. doi:10.1001/jamanetworkopen.2025.12629.

[15] Berquist V, Klarnet L, Dafny L. Sale of private equity-owned physician practices and physician turnover. JAMA Health Forum. 2025;6(2):e245376. doi:10.1001/jamahealthforum.2024.5376.

[16] Shields MC, Yang Y, Busch SH. Private equity among US psychiatric hospitals. JAMA Psychiatry. 2025;82(7):701-708. doi:10.1001/jamapsychiatry.2025.0689.

[17] Kannan S, Song Z. Financial health after private equity hospitals are sold. JAMA Health Forum. 2025;6(8):e253217. doi:10.1001/jamahealthforum.2025.3217.

[18] Jiao YA. The impact of private equity hospital acquisitions on maternal health for Medicaid patients. Health Serv Res. 2026;61(1):e70048. doi:10.1111/1475-6773.70048.

[19] Holdaway T, Busch SH, Reimer J, Beetham T, Fiellin DA, King M. Private equity acquisition and buprenorphine prescribing. JAMA Netw Open. 2026;9(3):e260250. doi:10.1001/jamanetworkopen.2026.0250.

[20] Dixit MN, Philips AP, Trivedi AN, Whaley C, Singh Y. Private equity acquisition in primary care and avoidable hospitalizations. JAMA Health Forum. 2026;7(5):e261045. doi:10.1001/jamahealthforum.2026.1045.

[21] Unruh L, Rice T. Private equity expansion and impacts in United States healthcare. Health Policy. 2025;155:105266. doi:10.1016/j.healthpol.2025.105266.

[22] Johnson D, Manaker S, Algase LF, Watkins C Jr; Medical Practice and Quality Committee of the American College of Physicians. Regulatory framework for private equity and corporatization in health care: a position paper from the American College of Physicians. Ann Intern Med. 2026;179(7):1027-1029. doi:10.7326/ANNALS-25-03148.

[23] Federal Trade Commission; U.S. Department of Justice; U.S. Department of Health and Human Services. Federal agencies launch cross-government inquiry on impact of corporate ownership trend in health care [Internet]. Washington (DC): Federal Trade Commission; 2024 Mar 5 [cited 2026 Aug 29]. Available

from: https://www.ftc.gov/news-events/news/press-releases/2024/03/federal-trade-commission-department-justice-department-health-human-services-launch-cross-government

[24] Centers for Medicare & Medicaid Services. Disclosures of ownership and additional disclosable parties information for skilled nursing facilities and nursing facilities; definitions of private equity companies and real estate investment trusts for Medicare providers and suppliers [Internet]. Baltimore (MD): CMS; 2023 Nov 15 [cited 2026 Aug 29]. Available from: https://www.cms.gov/newsroom/fact-sheets/disclosures-ownership-additional-disclosable-parties-information-skilled-nursing-facilities-nursing

[25] U.S. Government Accountability Office. Health care consolidation: published estimates of the extent and effects of physician consolidation. GAO-25-107450 [Internet]. Washington (DC): GAO; 2025 Sep 22 [cited 2026 Aug 29]. Available from: https://www.gao.gov/products/gao-25-107450

[26] Office of the Minnesota Attorney General. Requirements for certain health care entity transactions [Internet]. St. Paul (MN): Office of the Minnesota Attorney General; [cited 2026 Aug 29]. Available from: https://www.ag.state.mn.us/Health-Care/Transactions/

[27] Minnesota Legislature. Minnesota Statutes, chapter 145D: health care transactions [Internet]. St. Paul (MN): Office of the Revisor of Statutes; 2025 [cited 2026 Aug 29]. Available from: https://www.revisor.mn.gov/statutes/cite/145D/pdf

[28] Office of the Minnesota Attorney General. Proposed hospital system transactions [Internet]. St. Paul (MN): Office of the Minnesota Attorney General; 2026 [cited 2026 Aug 29]. Available from: https://www.ag.state.mn.us/Health-Care/Transactions/ProposedMergers.asp