Cost and Quality of Care in Physician-Owned Hospitals: A Systematic Review

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ABSTRACT

Conceived in an effort to improve clinical operations, patient experience, and medical quality, physician-owned hospitals (POHs) flourished until 2003, when industry concerns over patient selection, cost of care, and overutilization prompted government oversight and legislation. Subsequent government reports have painted a mixed picture of POHs, with some reports examining healthcare competition recommending a repeal of restrictions on POHs.

This systematic review compares the cost and quality of the care provided in POHs to that at non-POHs in four distinct service markets: cardiac specialty hospitals, orthopaedic specialty surgical hospitals, general surgical hospitals, and general acute care or community hospitals. Focused factory POHs providing cardiac or orthopedic care were found to provide higher-quality care at lower or comparable cost, whereas evidence regarding general acute care POHs is neutral. Limited available evidence prevents definitive conclusions about general surgical POHs. In light of these findings, policymakers should reconsider restrictions on POHs to invigorate competition in the market and deploy other regulatory tools to address concerns associated with physician hospital ownership.

JEL codes: D47, I11, I15, I18, K21, L44, P46

Keywords: Physician-owned hospitals, hospital competition, hospital consolidation, comparative cost of care

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CONFLICT OF INTEREST DISCLOSURES

Mr. Cho reports current service as a fellow at the Centers for Medicare and Medicaid Services (CMS). His views are his own and do not represent those of CMS. Dr. Meshnick has received consulting fees for unrelated work from Resolve to Save Lives. Dr. Ehrenfeld reports serving as a member of the American Medical Association Board of Trustees. Dr. Miller reports serving as a member of the CMS Medicare Evidence Development and Coverage Advisory Committee and receiving consulting fees for unrelated work from the Federal Trade Commission, the Health Resources and Service Administration, the Heritage Foundation, and Oxidien Pharmaceuticals.

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The harms of hospital consolidation are many and well documented,[1] including higher prices,[2] higher insurance premiums, decrements in patient experience, a lack of quality improvement,[3] and associated physician burnout attributable to a lack of operational control.[4] The trend is that hospitals have been consolidating, with labor productivity in hospitals remaining flat or declining over the past 20 years.[5] As many policymakers look toward merger control and antimonopoly law, encouraging both market entry and hospital competition remains a critical health policy priority.

In an effort to improve clinical operations, patient experience, and medical quality, physicians organized new hospital facilities called physician-owned hospitals (POHs). POHs are hospitals in which any ownership of the hospital is held by a physician or an immediate family member, giving the physician a financial stake in the operation of the hospital as well as a claim to any potential profits. The marketplace blossomed and segmented into (1) "focused factory"[6,7] surgical specialty hospitals, which concentrate on a particular medical specialty and any associated procedures, and (2) general acute care hospitals (ACHs). Concerns over self-referral in a fee-for-service setting led to the passage of a series of restrictions in the early 1990s subsequently known as Stark Law.[8] POHs remained exempt from these restrictions through the "whole hospital exception," wherein a physician who held a financial interest or investment in an entire hospital facility was exempt from the self-referral ban.

POHs flourished until 2003, when Congress initiated the first of a series of moratoriums on new facilities because of concerns raised by both the corporate hospital industry[9] and researchers about favorable patient selection, increased utilization, and access to emergency services in POHs.[10] In response, Congress solicited reports from the Medicare Payment Advisory Commission (MedPAC)[11,12] and the Centers for Medicare and Medicaid Services (CMS)[13] that painted a mixed picture of POHs. The debate reached its peak with the passage of the Patient Protection and Affordable Care Act (ACA) in 2010: the

American Hospital Association and Federation of American Hospitals successfully lobbied legislators to include statutory language that restricted the growth of POHs.[14] Specifically, Section 6001 of the ACA modified the "whole hospital exception," prohibiting both new POHs and preexisting POHs from expanding and participating in the Medicare program unless they seek and qualify for an exception (for example, high Medicaid use facility) from the US Secretary of Health and Human Services.[15]

In 2017, with a renewed focus on healthcare competition policy, several government agencies jointly recommended that Congress repeal Section 6001.[16] This recommendation coincided with several legislative attempts[17,18] aimed at rolling back limitations on POHs that unsurprisingly met hospital industry opposition.[19] The conversation has now come full circle, yet the comparative question of the cost and quality of care provided in POHs remains unanswered. This paper fills that gap: We systematically reviewed the available literature to evaluate the cost and quality of care delivered by POHs in comparison to non-POHs. Our results inform the subsequent recommendations we offer to policymakers on how to manage statutory limitations and policy concerns regarding care provided at POHs.

METHODS

This systematic review was conducted according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Figure 1).[20] All searches were limited to English results from January 1, 1990, through January 12, 2020. The National Library of Medicine, through Ovid MEDLINE, was searched for literature on POHs using the terms *physician* or *specialty* and *own* and *hospital*. In addition, the following public policy and economics databases were searched for the same terms: ABI/INFORM Collection, Academic Search, Business Source Complete, Communication Abstracts, Communication & Mass Media Complete, EconLit, PAIS Index, Policy File Index, Research Library, and Social Sciences Full Text. References of identified articles were searched for additional relevant articles. All article citations were uploaded into RefWorks citation management software and screened using Rayyan QCRI systematic review management software.

Two authors independently screened titles and abstracts to identify eligible articles, with discrepancies resolved by a third author who served as an adjudicator. Articles were included if they addressed the cost or the quality of care provided in POHs and contrasted the care provided in POHs with the care

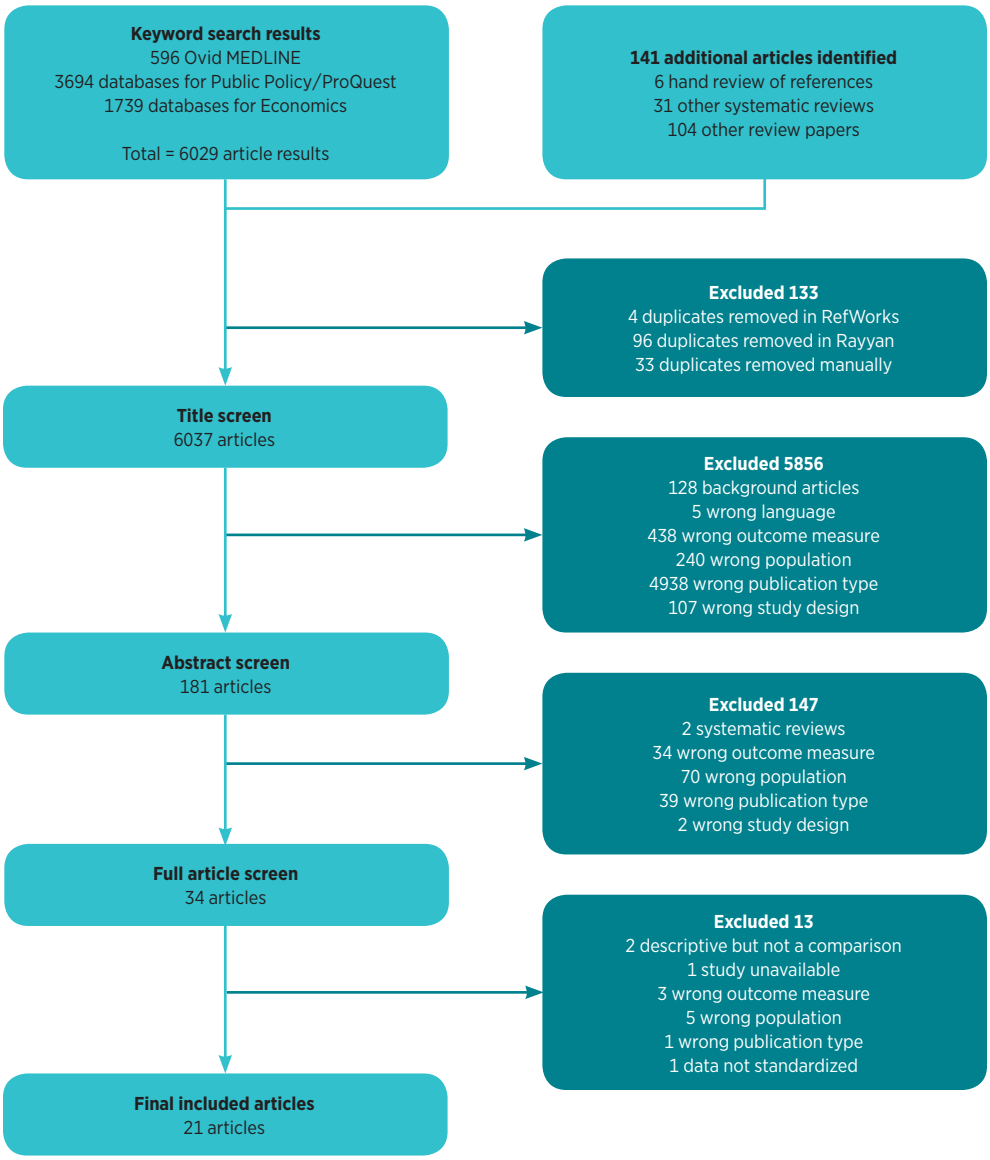
provided in non-POHs. Studies that only presented market effects on competitor hospitals or economic models rather than data analyses were excluded, as were studies that did not directly address and compare the cost or quality of care. Some studies used cost and quality-of-care data to build economic models; in these cases, these data were extracted and included, whereas modeled data were disregarded because extrapolated data rely on assumptions rather than on a characterization of the current state. Full articles were reviewed in parallel to determine their appropriateness, again with an adjudicator. When there was confusion regarding the service or ownership market or measure definitions of any particular article, the study authors were directly contacted for clarification. Data, including cost and quality measures, hospital type, data source, and other characteristics, were extracted and recorded in a spreadsheet in Google Sheets.

Quality metrics were characterized as general facility characteristics, preprocedure attributes, care episode measures, or care delivery outcomes or complications. Evidence was graded according to the Oxford Centre for Evidence-Based Medicine levels of evidence[21] by 2 authors independently, with discrepancies resolved by an adjudicator. The levels of evidence are as follows: (1a) systematic reviews with homogeneity of randomized controlled trials, (1b) individual randomized controlled trials, (2a) systematic reviews with homogeneity of cohort studies, (2b) individual cohort studies, (2c) outcomes research or ecological studies, (3a) systematic reviews with homogeneity of case-control studies, (3b) individual case-control studies, and (4) case series. Quality assessments are presented descriptively to highlight potential biases.

RESULTS

A total of 6029 relevant studies were screened and assessed for eligibility. After applying inclusion and exclusion criteria (see Figure 1), 21 studies were selected for inclusion. Twelve articles exclusively addressed quality, whereas 9 articles addressed both the cost and the quality of care provided in POHs. Evidence was categorized into 4 distinct service markets that are comprehensively representative of all currently operating POHs: cardiac specialty hospitals, orthopedic specialty surgical hospitals, general surgical hospitals, and general acute care or community hospitals. Of note, 2 studies did not differentiate into the aforementioned service markets.[22,23] Table 1 summarizes the cost-of-care evidence in POHs. Table 2 summarizes the evidence for and against POHs. Quality-of-care measures were

FIGURE 1. LITERATURE SEARCH RESULTS



Note: background articles = no data; wrong outcome measure = no cost or quality data; wrong population = did not study physician-owned hospitals (POHs); wrong publication type = not a peer-reviewed article; wrong study design = did not compare POHs and non-POHs.

TABLE 1. SUMMARY OF DATA FOR COST OF CARE AT POHs

Service market	Studies and grading	Findings
Cardiac specialty	2 (2c)[11,12]	The 2 studies that specifically address cardiac POH costs in comparison to other competing hospitals conflict with each other. A MedPAC study from 2005[11] showed that POHs have higher costs per discharge, whereas another MedPAC study from 2006[12] showed that there was no difference in cost per discharge at POHs and competing hospitals.
Orthopedic specialty surgical	3 (2b)[31-33] 2 (2c)[11,12] 2 (3b)[34,35]	Most studies[31-35] showed that ortho POHs were able to achieve significant cost reductions, whereas the 2 MedPAC studies[11,12] showed significant cost premiums for ortho POHs when compared with those of competing hospitals.
General surgical	1 (2c)[11]	Surgical POHs were found to have costs greater than those of competitors.[11]
General acute care	1 (2c)[38]	Costs at general POHs were found to be in line with those at competing hospitals.[38]
Undifferentiated	1 (2b)[22]	POHs had higher average total episode spending with less spending on post-acute care.[22]

2b, individual cohort studies; 2c, outcomes research or ecological studies; 3b, individual case-control studies; MedPAC, Medicare Payment Advisory Commission; ortho, orthopedic; POH, physician-owned hospital.

divided into 4 domains: facility characteristics, preprocedure attributes, care episode characteristics, and care delivery outcomes or complications.

Physician-Owned Cardiac Specialty Hospitals

Two studies of moderate quality (2c)[11,12] addressed the cost of care in cardiac specialty POHs. A 2005 study of specialty POHs conducted by MedPAC,[11] which analyzed Medicare spending data from 2002, found that cardiac specialty POHs had higher case-weighted inpatient average costs per discharge relative to other hospital types (108% of national average vs 102% of competitor hospitals), but this difference was not statistically significant. A subsequent study by MedPAC, which was released in 2006,[12] analyzed Medicare spending data from 2004 and found that cardiac specialty POHs achieved parity with non-POHs and that there was no difference in case-weighted inpatient average costs per discharge between POHs and the national average.

Quality data were more robust. One moderate-quality study (2b)[24] examined general facility characteristics and found that POHs were more likely to undertake percutaneous coronary intervention (PCI) for unclear indications (5.1% vs 4.7%, for-profit hospitals; 4.5%, major teaching hospitals; 4.2%, not-for-profit hospitals; $P < .001$).

In contrast, 4 moderate-quality studies (2b, 2c),[11,12,25,26] which investigated care episode characteristics for PCI and cardiac hospitalizations, found both a

TABLE 2. SUMMARY OF POH STUDIES BY SERVICE MARKET

Cost/quality by service market	Source	Evidence grading	Data favors POH?
Cardiac specialty:			
Cost	MedPAC, 2006[12]	2c	Equivocal
	MedPAC, 2005[11]	2c	Equivocal
Quality	Greenwald et al., 2006[27]	2b	Yes
	Carey et al., 2008[25]	2b	Yes[a]
	O'Neill and Hartz, 2012[26]	2b	Equivocal
	Cram et al., 2012[28]	2b	Yes
	Cram et al., 2012[24]	2b	No
	MedPAC, 2006[12]	2c	Yes
	CMS, 2005[13]	2b	Yes
	MedPAC, 2005[11]	2c	Yes
	Cram et al., 2010[30]	3b	Yes[b]
	Nallamothu et al., 2007[29]	2b	Equivocal
Orthopedic specialty surgical:			
Cost	Courtney et al., 2017[31]	2b	Yes
	Malik et al., 2019[32]	2b	Yes
	Malik et al., 2019[33]	2b	Yes
	Chen et al., 2017[34]	3b	Yes
	Rondon et al., 2019[35]	3b	Yes
	MedPAC, 2006[12]	2c	No
	MedPAC, 2005[11]	2c	Equivocal
Quality	Greenwald et al., 2006[27]	2b	Yes
	Carey et al., 2008[25]	2b	Yes[a]
	Courtney et al., 2017[31]	2b	Yes
	Malik et al., 2019[32]	2b	Yes
	Malik et al., 2019[33]	2b	Yes
	Schroeder et al., 2017[36]	3b	Equivocal
	Chen et al., 2017[34]	3b	Equivocal
	Schroeder et al., 2018[37]	2b	Equivocal
	Rondon et al., 2019[35]	3b	Yes
	MedPAC, 2006[12]	2c	Yes
	CMS, 2005[13]	2b	Yes
	MedPAC, 2005[11]	2c	Yes
General surgical:			
Cost	MedPAC, 2005[11]	2c	Equivocal
Quality	CMS, 2005[13]	2b	Yes
	MedPAC, 2005[11]	2c	Yes
General acute care:			
Cost	Blumenthal et al., 2015[38]	2c	Equivocal
Quality	Blumenthal et al., 2015[38]	2c	Equivocal
	Rosenkrantz and Doshi, 2015[40]	3b	No
Undifferentiated:			
Cost	Lundgren et al., 2016[22]	2b	No
Quality	Lundgren et al., 2016[22]	2b	Yes
	Ramirez et al., 2016[23]	2c	Yes

2b, individual cohort studies; 2c, outcomes research or ecological studies; 3b, individual case-control studies; CMS, Centers for Medicare and Medicaid Services; MedPAC, Medicare Payment Advisory Commission; POH, physician-owned hospital.

[a] Only for length-of-stay data.

[b] For acute myocardial infarction, but not for coronary artery bypass grafting.

lower average length of stay (LOS) and a lower ratio of actual to expected LOS than competitor hospitals.

Finally, 5 moderate-quality (2b) studies[13,26-29] and 1 low-quality study (3b)[30] examined care delivery outcomes and complications in cardiac specialty POHs. POHs were found to have lower inpatient mortality rates,[13,27] inpatient plus 30-day mortality rates,[27] and readmission rates[27] in the settings of major heart intervention, percutaneous transluminal coronary angioplasty, and other cardiac interventions. PCI at cardiac specialty POHs exhibited lower in-hospital mortality rates[26,28] and lower hospital risk-standardized mortality rates,[26,28] whereas, in the settings of congestive heart failure (CHF) and acute myocardial infarction (MI), cardiac specialty POHs had significantly lower 30-day mortality rates.[29] Significant cardiothoracic and vascular surgery such as abdominal aortic aneurysms repair showed lower mortality rates,[13] which were also exhibited in other high-risk procedures such as coronary artery bypass grafting[13] and carotid endarterectomy[13] as well as in life-threatening medical conditions such as CHF[13] and acute MI.[13,29,30] Higher-risk complications and adverse outcomes such as bleeding,[28] post-op sepsis, post-op hemorrhage, post-op pulmonary embolus, and death in low-mortality Medicare Severity Diagnosis-Related Groups (MS-DRGs)[13] were found to occur less frequently at POHs.

Physician-Owned Orthopedic Specialty Surgical Hospitals

Seven studies of low to moderate quality addressed the cost of orthopedic care provided at both general POHs and at orthopedic specialty POHs. Three studies of moderate quality (2b)[31-33] demonstrated decreased costs for orthopedic procedures provided at POHs. One study, which examined total hip arthroplasty (THA) and total knee arthroplasty (TKA), demonstrated decreased Medicare payments and total payments ($13,442 vs $15,272; $P < .002$),[31] with the latter including disproportionate share and other payments. A second study of elective posterior lumbar fusion (PLF) found both decreased charges and actual costs, noting that both inpatient costs ($18,668 vs $22,633; $P < .001$) and 90-day charges ($21,572 vs $26,151; $P < .001$) were lower at POHs.[32] A third study, which examined anterior cervical discectomy and fusion (ACDF), demonstrated a decrease in risk-adjusted inpatient costs ($1517 savings) and 90-day episode costs ($1927 savings).[33]

Two other low-quality studies (3b)[34,35] that were conducted within a health system composed of both general ACHs and POHs retrospectively matched patients at general ACHs to those at POHs. The first study demonstrated lower total episode-of-care costs for THA and TKA for both public

payers (THA: $16,032.16 vs $23,707.49; TKA: $17,290.16 vs $24,973.03) and private payers (THA: $27,120.31 vs $43,024.75; TKA: $28,965.66 vs $45,468.36).[34] A subsequent study of the same design at the same institution corroborated those findings.[35]

In contrast, earlier low-quality MedPAC studies (2c) found higher costs for care delivered in orthopedic specialty surgical POHs. An initial 2005 study,[11] which analyzed data from 2002, found that the average cost for all discharges in orthopedic specialty hospitals was higher compared with peer, competitor, and community hospitals. Noting that this difference was not statistically significant, the authors found large cost variances across hospitals, positing that many of the hospitals focused on outpatient procedures and had small numbers of inpatient discharges. A follow-on 2006 study,[12] which reviewed claims data from 2004, replicated this finding, noting that the difference was statistically significant. Neither MedPAC analysis presented data that were parsed by MS-DRG, and both studies relied on a single year of claims data.

Many studies addressed quality data for orthopedic specialty surgical POHs. In studying general facility characteristics, 1 moderate-quality study (2b)[31] found that in the settings of TKA and THA, POHs were superior in patient satisfaction surveys from Medicare beneficiaries by a statistically significant margin across a multitude of categories, including doctor–nurse communication, staff responsiveness, and overall hospital ratings.

Three studies, 2 of low quality (3b)[34,36] and 1 of moderate quality (2b),[37] examined preprocedural characteristics of care. When compared with competitors in the setting of ACDF, POHs were less likely than independent community hospitals and university-owned tertiary care hospitals to seek consent from patients for surgical intervention on their initial consultation.[36,37] Furthermore, compared to independent community hospitals, POHs were more likely to try other interventions (eg, nonsteroidal anti-inflammatory drugs, 93.0% vs 83.9%; physical therapy, 72.2% vs 67.1%) before offering surgical intervention.[37] The data on the timing of procedures at orthopedic POHs versus non-POHs was fairly neutral. Some statistically significant results favored POHs such as time from preoperative appointment to surgery for ACDF (2.9 weeks vs 4.1 weeks at university-owned tertiary care hospitals).[36] In contrast, other statistically significant results favored non-POHs such as in the case of time from initial appointment to surgery (359.7 days vs 108.2 days in ACHs)[34] and initial appointment to surgical consent (288.1 days vs 40.8 days in ACHs)[34] in the setting of TKA.

By still other metrics, studies produced conflicting results such as for time from onset of symptoms to preoperative visit and from onset of symptoms to

surgery in the setting of ACDF: One study showed no difference between POHs and competitors,[37] whereas another study showed POHs had statistically significant longer times than competitors.[36] However, most studies placed POHs on par with non-POHs: times from onset of symptoms to initial consultation for ACDF,[36,37] initial consultation to surgery for ACDF,[37] onset of symptoms to initial consultation for TKA,[34] surgical consent to date of surgery for TKA,[34] initial consultation to surgery for THA,[34] initial appointment to surgical consent for THA,[34] and surgical consent to date of surgery for THA.[34]

Five studies, 3 of moderate quality (2b)[25] (2c)[11,12] and 2 of low quality (3b),[34,35] examined the characteristics of care episodes. Orthopedic specialty POHs were found to have lower average LOS than did full-service hospitals (2.26 days vs 4.22 days, respectively)[25] as well as a lower ratio of actual to expected LOS than did competitor community hospitals (0.78 vs 1.03, respectively[11] and 0.79 vs 1.00, respectively[12]). Specifically, in the settings of TKA and THA, POHs were found to have statistically significant lower average LOS than those of competitors.[34,35]

Seven studies, 5 of moderate quality (2b)[13,27,31-33] and 2 of low quality (3b),[34,35] examined care delivery outcomes and complications in orthopedic specialty POHs. These studies found POHs to have statistically significant lower inpatient mortality,[13] inpatient plus 30-day mortality,[13,27] and readmission rates[13,27] than competitors across major and minor orthopedic interventions regardless of severity. In the setting of THA, POHs were found to provide care that required less post-acute care, with rates for discharge disposition to home almost double those of ACHs (61.9% vs 37.3%, respectively),[34] whereas ACHs seemed to have a greater need for post-acute care and much higher rates of discharge disposition to home with home nursing or therapy than did POHs (57.6% vs 38.1%, respectively).[34] In the setting of TKA, POHs were found to have similar rates of discharge disposition to home[34] and to home with home nursing or therapy[34] as ACHs, which would suggest no increased requirement for post-acute care. In settings of TKA and THA, POHs were found to have statistically significant lower risk-adjusted complication scores than did non-POHs (2.83 vs 3.04, respectively),[31] while largely achieving parity with non-POHs with similar risk-adjusted readmission scores (4.48 vs 4.62 for non-POHs).[31] In the settings of TKA and THA, POHs were also found to have statistically significant lower readmission rates than did non-POHs for Medicare and Medicaid services (4.11% vs 6.83%, respectively)[35] while maintaining no difference in readmission rates when compared with non-POHs for private payers (0.74% for ACHs vs 0.78% for non-POHs).[35]

For complications, statistically significant odds ratios between POHs and non-POHs favored POHs for cardiac complications (0.80), septic complications

(0.87), deep vein thrombosis (0.71), renal complications (0.74), and readmissions (0.83) in the setting of ACDF.[33] Similarly, in the setting of PLF, adjusted, statistically significant odds ratios between POHs and non-POHs favored POHs for urinary complications (0.87), renal complications (0.52), and thromboembolic complications (0.66),[32] whereas POHs were also found to have statistically significant lower unadjusted 90-day rates of cardiac complications (7.4% for POHs vs 8.7% for non-POHs),[32] thromboembolic complications (1.3% vs 2.3%),[32] septic complications (0.7% vs 2.9%),[32] urinary tract infection (8.3% vs 10.1%),[32] renal complications (1.7% vs 3.6%),[32] all-cause emergency department visits (12.6% vs 13.6%),[32] and readmissions (7.7% vs 8.7%).[32]

Physician-Owned General Surgical Hospitals

A single moderate-quality (2c) study[11] demonstrated that general surgical POHs had higher case-weighted inpatient average costs per discharge relative to other hospital types (133% of national average vs 99% competitor hospitals), but this difference was not statistically significant.

Quality data of general surgical POHs were equally difficult to come by but still generally in favor of POHs. One study of moderate quality (2c)[11] examined the characteristics of care episodes. It found that POHs had a lower, more favorable ratio of actual to expected LOS than competitor hospitals (0.69 vs 0.96, respectively).[11]

One study of moderate quality (2c)[13] examined care delivery outcomes and complications in general surgical POHs. POHs were found to have statistically significant lower inpatient mortality rates than competing community hospitals in the settings of moderate-severity major surgery and severe major surgery,[13] in addition to statistically significantly lower inpatient plus 30-day mortality rates.[13]

Physician-Owned General Acute Care Hospitals

Costs at general acute care POHs were examined in a single moderate-quality study (2c),[38] which used Medicare claims data to compare facilities within the same Dartmouth Atlas hospital referral region.[39] In comparison to patients at general ACHs, patients at POHs were younger (72.6 vs 78.4 years) and more likely to be male (44.1% vs 42.6%), but they were also more likely to be African American (7.1% vs 5.5%) or use Medicaid (18.4% vs 15.4%).[38] Patients at POHs were also found to have higher mean predicted mortality (9.9% vs 7.5%)[38] when compared with those at non-POHs, which may suggest that POHs are not shying away from

more acutely ill patients as might be expected. In this context, risk-adjusted costs at general acute care POHs were found to trend lower than those at non-POHs ($9,635 vs $10,024)[38] although no statistical test was performed.

Quality data were similarly equivocal. Two studies of moderate (2c)[38] and low (3b)[40] quality examined general facility characteristics of general acute care POHs. POHs were found to have generally higher rates of imaging utilization than non-POHs of abdominal, chest, and simultaneous brain and sinus computed tomography scans.[40] POHs were found to be on par with non-POHs in terms of lumbar spine MRI use for low back pain,[40] patient experience scores,[38] and quality process measures for MI, CHF, and pneumonia.[38]

For care episode characteristics, 1 moderate-quality study (2c)[38] found that general acute care POHs and non-POHs had comparable mean LOS (4.9 days vs 5.2 days, respectively).[38]

Finally, 1 moderate quality study (2c),[38] which examined care delivery outcomes and complications in general acute care POHs, found that POHs had overall risk-adjusted hospital mortality and readmission rates that were comparable with those of non-POHs, as well as in the settings of acute MI and CHF.[38]

Undifferentiated Physician-Owned Hospitals

A moderate-quality study (2b),[22] which combined data on orthopedic specialty surgical hospitals with data on general surgical hospitals, found that POHs earned significantly higher mean summary patient satisfaction scores (POHs 4.86 vs 2.88 for-profit hospitals vs 3.10 ACHs; $P = .002$). However, for increased patient satisfaction, POHs were also found to have higher average total episode spending (POHs $22,799 vs $18,284 for-profit hospitals vs $18,856 ACHs). In addition, only a small amount of the total spending was used for post-acute care (POHs $1,435 vs $3,867 for-profit hospitals vs $3,378 ACHs). Despite this difference in average total episode spending, per beneficiary Medicare spending and per beneficiary performance rates, as well as complication and readmission rates, related to hip and knee surgeries were similar across all hospital types.

Another study of moderate quality (2c)[23] pooled data across all POH service markets to analyze trends in the hospital value-based purchasing program. This study found POHs to be better than other competitors in patient-reported patient satisfaction scores (124.7 vs 43.3 Kaiser Permanente [KP] vs 36.5 University Health System Consortium [UHS] vs 44.9 US News & World Report Honor Roll Hospitals [USNHR] vs 41.8 Pioneer Accountable Care Organization Affiliated Hospitals [PACO])[23] and better than most other competitors in hospital

efficiency (40.3 vs 87.9 KP vs 9.8 UHS vs 7.9 USNHR vs 20.9 PACO), with the exception of Kaiser Permanente, which significantly outpaced all other competitors in the efficiency domain because of its unique operating model.[23] POHs were also found to have higher average hospital category scores in the processes of care domain (91.2 vs 74.3 KP vs 53.2 UHS vs 63.0 USNHR vs 60.0 PACO)[23] along with higher total performance scores (64.11 vs 40.92 non-POHs)[23] than competitors. In the outcomes domain, however, POHs were found to have scores similar to those of competitor hospitals (POHs 55.0 vs 60.3 KP vs 44.7 UHS vs 58.4 USNHR vs 46.5 PACO).[23]

DISCUSSION

Our review examined several POH service markets, including both the "focused factory" (cardiac, orthopedic, and general surgical) specialty hospitals and general ACHs. We found quality benefits with a focused factory model of care, with the most robust evidence supporting orthopedic specialty surgical and cardiac specialty POHs. Patients who had a wide range of serious conditions experienced lower in-hospital and 30-day mortality rates, whereas patients who had orthopedic conditions experienced appropriately increased use of preoperative conservative therapies before undergoing invasive procedures and had lower LOS and risk-adjusted complication rates. Similarly, general surgical POHs were shown to have a higher quality of care than competitors. However, the evidence regarding the quality of care provided at general acute care POHs was found to be limited and more neutral. Our review did not identify a service market where the quality data disfavored POHs.

The evidence for differences in cost of care was generally more mixed. Cardiac hospitals showed higher to equivalent costs, whereas initial evidence from MedPAC, which examined orthopedic surgical specialty POHs, demonstrated cost premiums, with numerous subsequent studies demonstrating lower costs of care for common procedures. Evidence for general surgical and general acute care POHs was again limited, with general surgical POHs found to have higher costs in a single study and general acute care POHs found to be similar in cost.

Aggregate current evidence reveals that POHs employing a focused factory model provide cardiac or orthopedic care at a comparable or lower cost and with a higher quality than non-POHs. Limited available evidence prevents definitive conclusions about general surgical POHs. Data on the differences in the cost and quality of care provided at general acute care POHs is sparse but neutral, suggesting a lack of specific patient harms from this business model.

Taken together, these data confirm that POHs should not be disregarded as an effective mechanism for improving both the cost and quality of specialty care and specialty surgical care, expanding community hospital supply capacity, and increasing competition in hospital markets, thereby providing more choices for patients in how and where they receive care.

Most of the data from the included studies were adjusted by the original study authors for a variety of factors, such as case mix, disease severity, and volume of procedures, but these methods varied from study to study. Of note, 11 articles[11-13,24-30,33] included in our study used data that predate the 2007 MS-DRG payment update for complicating conditions and case mix index. However, with the exception of 1 included article,[33] no data were compared across this transition point, so if comparisons between POHs and non-POH competitors were made using adjusted data, these data were consistently adjusted using the same criteria (ie, either all using the pre-2007 or the post-2007 MS-DRG classification). Although some policy experts have expressed historical concerns of favorable patient selection ("cherry picking") in POHs, our systematic review found no consistent evidence to support this assertion. Recognizing that our work will spur further research, we note that policymakers can address patient selection concerns through deployment of the tools of payment policy (ie, improving risk-adjustment methodologies).

In the absence of evidence that POHs provide services of lower quality or higher cost, Medicare's ban on new POH participation and expansion of preexisting POHs lacks justification. Moreover, payment policy might mitigate concerns regarding patient selection and overpayment of specialty hospitals, although additional refinement of the MS-DRG system to adjust for patient severity[41] could further ameliorate well-founded concerns about POHs as well.

Repealing the ban on new POH participation in Medicare has multiple potential market effects. First, it would permit the development of new joint ventures and clinical operating models, thereby allowing clinicians, nonprofit hospitals, and other types of health systems to work together to build a better delivery system for the one-third of domestic healthcare spending directed to hospital care. Second, repealing the ban would also promote flexibility and competition among hospital ownership models, with previous CMS research supporting 4 to 9 times greater total community benefit from physician-owned models than for nonprofit competitors largely due to tax status.[13] Finally, a functional ban on physician hospital ownership is unique among rules that govern professions: nonlawyers cannot own and operate law firms.[42,43] Allowing greater physician autonomy and participation in the organization of care delivery would

present the potential for gains made from empowering those with both specialized knowledge and proximity to patient care.

CONCLUSION

Our systematic review found that specialty POHs generally provide higher-quality care at a lower or comparable cost than do non-POHs. Although the available evidence on general or community hospital POHs is generally more equivocal, it suggests that POHs are not higher cost or lower quality than non-POHs.

At present, Americans face challenges in accessing affordable hospital care, with increasing hospital consolidation making matters worse in terms of quality, price, and choice. POHs present a lever for policymakers to increase choice and competition while simultaneously promoting innovation in care delivery through the creation of focused factories. Current POH policy was constructed contrary to the available evidence. Consequently, policymakers should reconsider whether the blunt ban found in Section 6001 of the ACA is justified and whether any well-founded concerns about POHs can be addressed through more narrowly targeted payment policy tools.

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