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Costs & Quality After Independent Hospitals Are Acquired by Health Systems

August 2023

Hospital acquisitions have reshaped the hospital and healthcare market. Many hospital acquisitions have led to the consolidation of hospital care in fewer and larger hospital and healthcare systems. This study describes how prices, costs, and quality change when previously independent hospitals are acquired by systems.

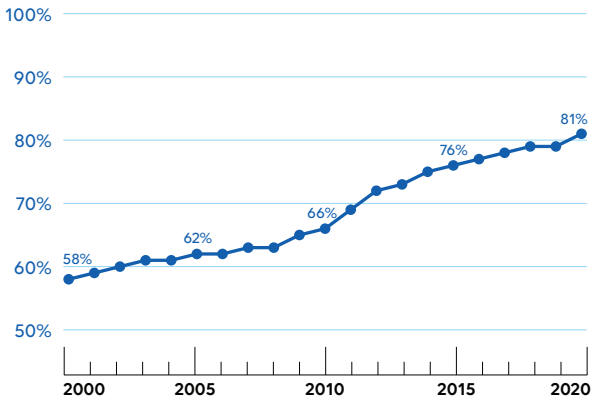
Background

Hospital care is the largest segment in the $4.3 trillion U.S. healthcare sector, with $1.3 trillion in annual spending. Despite a decline in inpatient volume over the last decade, hospital spending as a share of the sector increased from 30 to 31 percent over this time.[1,2]

Hospital systems have rapidly expanded their presence and now dominate the hospital industry—the share of national bed capacity under system control increased from 58 percent in 2000 to 81 percent by 2020 (Figure 1). Hospital systems have similarly increased their share of total employment.[3]

Figure 1

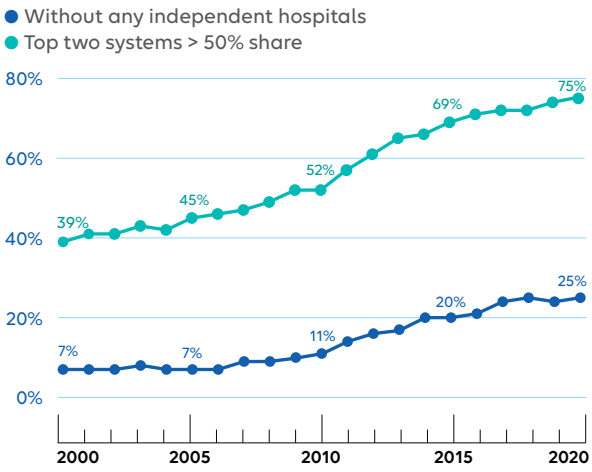
Percent of U.S. Hospital Bed Capacity that Is Part of Systems, 2000-2020



The proportion of hospital markets[4] without a single independent hospital increased from 7 percent to 25 percent over this same period (blue circles, Figure 2). By 2020, 75 percent of markets had over half of their hospital bed capacity controlled by their two largest systems which control over 50 percent the market share, nearly double the rate in 2000 (turquoise circles, Figure 2).[5] These trends accelerated after 2010, coinciding with the acceleration in hospital price growth reported by the Bureau of Labor Statistics.

Figure 2

Percent of Hospital Referral Regions by Market Characteristics



How has this impacted acquired hospitals? Formerly independent hospitals experience a large shock to operational sophistication when they enter a system. Based on this analysis, an independent hospital joins a firm that already owns five hospitals and serves over eight times more patients.[6]

How This Study Differs from Prior Research

Uses actual price data from Elevance Health's affiliated health plans. Most prior studies did not have access to negotiated prices between plans and hospitals, and therefore had to rely on average prices inferred from accounting data reported to the federal government.[7–11] However, recent work has shown that these imputed prices are only weakly correlated with true prices.[12]

Evaluates the cost structure of independent hospitals after acquisition. As a result, the study draws conclusions about efficiency gains of the hospitals. Prior studies have not comprehensively evaluated the impact of efficiency gains for independent hospitals after acquisition.

Comprehensively evaluates quality implications. Quality has been understudied in studies of consolidation. The prior evidence on the effects of acquisitions on hospital quality is limited and mixed.[13–15]

Methods

- This retrospective claims study used hospital admissions data from Elevance Health affiliated commercial health plans in 20 states between January 1, 2012, to December 31, 2018.
- The analysis compared independent hospitals that merged with a hospital system and hospitals that remained independent.
- Additional data sources include New York all payor claims data and Medicare fee-for-service claims data, which were used to verify quality of care outcomes. Patient quality performance measures were measured with the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey.
- Independent hospitals, mergers, and acquiring hospital characteristics were identified in the American Hospital Association (AHA) survey and from Levin Associates. Independent hospital acquisitions were hand verified using internet research.
- A difference in difference approach was utilized that compared independent hospitals acquired by hospital systems before and after the acquisition with independent hospitals that remained independent.
- Patients were followed for at least 90 days to calculate hospital readmission rates.

Regression

This analysis used regression models to control for a large set of potential confounding variables. As is standard for difference in difference models, we included hospital and time fixed effects. Additionally, we included patient admission characteristics (female, age, DRG of hospital stay), patient health and hospital use history (Elixhauser co-morbidity score in the previous year count of hospital stays), health plan type (individual exchange, individual non-exchange, fully insured), plan attributes such as the product type (HMO, PPO, CDHP, POS, EPO, other), relationship to subscriber (self, spouse, child, parent). Hospital controls include number of hospital beds, teaching status, whether the hospital is in a rural area, and Medicare and Medicaid shares of patients.

We use the following variables from the American Community Survey to adjust for regional differences: the percentage of employed working age adults (16+ years of age), adults with some college education or higher (25+), individuals below the poverty line, elderly individuals (65+), and white individuals. We also include market level information on whether the state expanded Medicaid, and lagged Herfindahl-Hirschman Index based on the Hospital Referral Regions.

Results

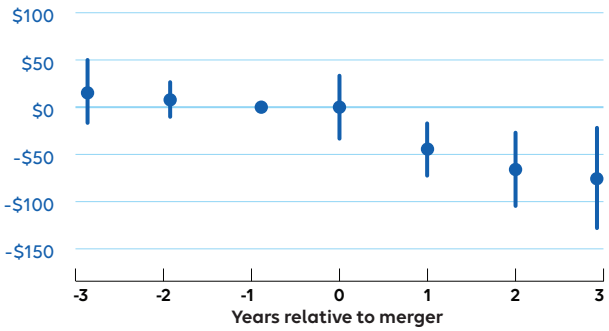
Hospitals experienced large cost efficiencies after system acquisition.

- Operating expenses declined by 6 percent, above market trend, at the acquired hospital following system ownership, without any offsetting increase in costs at the acquirer system (Figure 3).
- Reductions in personnel spending accounted for about 60 percent of the total decline in operating costs.
- Overall, employment decreased by 3 percent, which was driven by a reduction in the number of employees in support functions (including in the areas of employee benefits, general and administrative, maintenance, supply, pharmacy, and medical records).
- There were similar reductions in employment regardless of whether the acquired hospital was in the same market as the acquiring system or not.

Figure 3

Change in Acquired Hospitals' Operating Expenses Pre- and Post-Merger*

(Expenses per bed in thousands of dollars)



***Note.** Change in acquired hospitals' operating expenses is relative to the expenses pre- and post-merger of hospitals that remained independent. Vertical lines represent 95% confidence intervals.

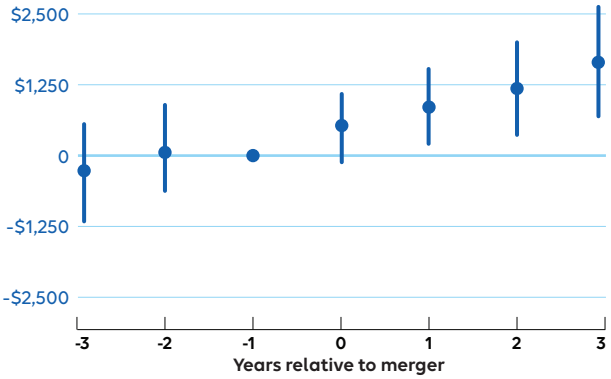
Payers and consumers faced higher prices after independent hospitals were acquired by hospital systems.

- Independent hospital acquisitions by hospital systems increased average inpatient prices for commercially insured patients by 5 percent above market trend, holding procedure intensity constant (Figure 4).

Figure 4

Change in Acquired Hospitals' Inpatient Prices Pre- and Post-Merger*

(Inpatient prices in dollars)

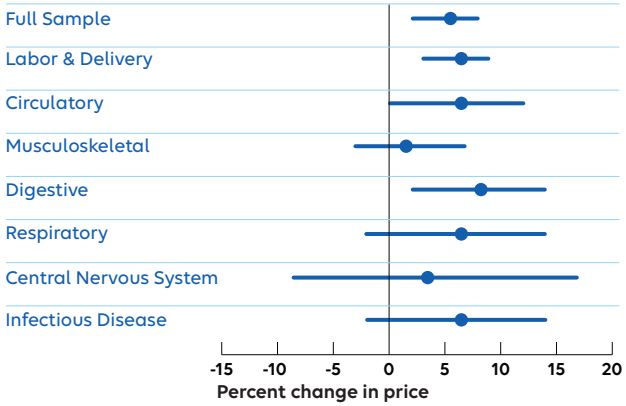


***Note.** Change in acquired hospitals' inpatient prices is relative to the prices pre- and post-merger of hospitals that remained independent. Vertical lines represent 95% confidence intervals.

- Across the top seven Major Diagnostic Categories by volume, prices increased 5–8 percent, with digestive, infectious diseases, labor & delivery, respiratory, and the circulatory system experiencing the largest price increases (Figure 5).
- The size of the acquiring system size did not seem to matter with respect to price increases at the acquired hospital, suggesting that price increases were uniform at acquired independent hospitals.

Figure 5

Change in Acquired Hospitals' Inpatient Prices Pre- and Post-Merger, by Diagnosis*



***Note.** Change in acquired hospitals' inpatient prices is relative to the prices pre- and post-merger of hospitals that remained independent. Diagnosis groups are defined using the Major Diagnostic Category identified from the inpatient claims. Horizontal lines represent 95% confidence intervals.

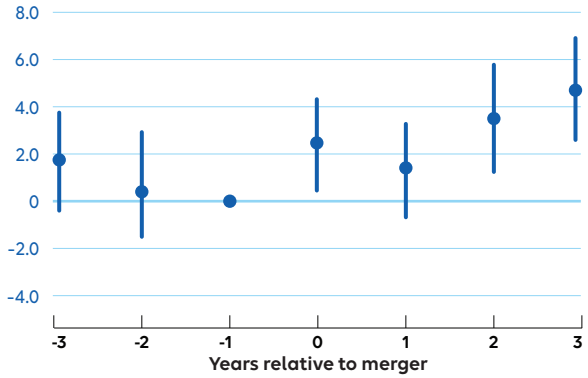
Hospital quality declined following acquisition, leading to worse outcomes for patients.

- For Elevance Health's affiliated members receiving cardiac care, readmission rates increased by 10-12 percent and remained elevated for three years after the acquisition (Figure 6).
- Readmission rates for Medicare patients admitted with acute, non-deferrable conditions conservatively increased by 2-3 percent (Figure 7).
- Acquired hospitals that experienced greater staff reductions experienced greater readmission rate increases, suggesting the reduction in personnel may be a contributing factor.
- Quality measures of in-hospital mortality, 90-day mortality in Medicare, and patient satisfaction scores did not change.

Figure 6

Change in Acquired Hospitals' 90-day Readmission Rates for Cardiac Care Pre- and Post-Merger*

(Readmission rate change in percentage points)

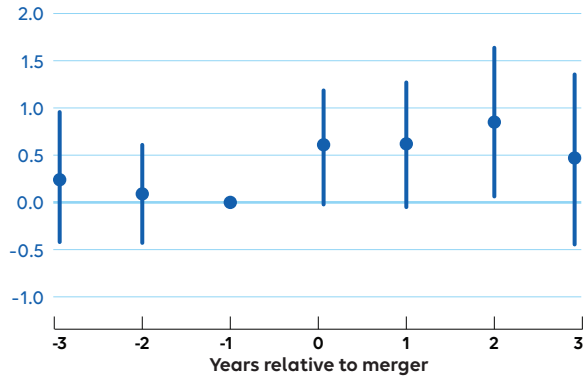


***Note.** Change in acquired hospitals' 90-day readmission rates for cardiac care are relative to the rates pre- and post-merger of hospitals that remained independent. Cardiac care is defined based on procedure codes for the cardiovascular system. Vertical lines represent 95% confidence intervals.

Figure 7

Change in Acquired Hospitals' Medicare Readmission Rates for Acute Conditions Pre- and Post-Merger*

(Readmission rate change in percentage points)



***Note.** Change in acquired hospitals' readmission rates is relative to the rates pre- and post-merger of hospitals that remained independent. Hospital readmission rate for Medicare fee for service patients includes non-deferrable conditions through the emergency department. These are conditions generally thought to require immediate care, including septicemia and malignant neoplasm. See Doyle et al. (2015) for further discussion.[16] Vertical lines represent 95% confidence intervals.

Access to care was generally reduced for patients at acquired hospitals.

- The study observed the closure of maternity wards, which were concentrated in rural hospitals.
- Given aforementioned price increases and staff reductions, one could expect a decrease in hospital patient volume, however the study did not detect a change.
- Access to medical technology did not change after acquisition.

Policy Considerations

Future acquisitions of independent hospitals. This study provides credible evidence to suggest that proposed mergers would raise prices for consumers and employers without increasing quality of care.

Affordability. Acquired independent hospitals experience a substantial increase in efficiency and profitability. In the event of such acquisitions, this study highlights an opportunity for regulators to seek assurances of lower prices given these declines in operating costs.

Quality standards. During the approval process of hospital acquisitions, state regulators might consider requiring quality standards, such as readmission rates and patient experience measures.

Partnerships. Employers and public and private payers may wish to explore innovative partnerships and value-based care models that help independent hospitals to remain independent.

Conclusion

This brief highlights that independent hospital mergers have negative consequences for insurers, employers, and consumers. Specifically, payers and patients are exposed to higher prices without a commensurate increase in quality of hospital care.

Further, access to care does not improve, with acquired systems no more likely to expand access to medical technology or services. Instead, patients are likely to experience a reduction in access to maternity wards and reduction in staff. As hospital mergers continue to occur at a high rate, it is important that stakeholders understand their implications.

The Elevance Health Public Policy Institute gratefully acknowledges the research and analysis of Elena Andreyeva, Atul Gupta, Catherine Ishitani, and Malgorzata Sylwestrzak that resulted in the paper[17] that is the basis for this brief.

Endnotes

[1] Centers for Medicare and Medicaid Services. (2020). National Health Expenditure Data. Retrieved June 6, 2023, from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData.

[2] Based on authors' calculations using MedPAC's annual data books, "Health Care Spending and the Medicare Program," from 2013, 2019, and 2021.

[3] Based on authors' calculations using American Hospital Association survey data.

[4] Hospital markets refer to Hospital Referral Regions as defined by: Data.dartmouthatlas.org. (n.d.). Supplemental Data. Dartmouth Atlas Project. Retrieved June 6, 2023, from https://data.dartmouthatlas.org/supplemental/#boundaries.

[5] Authors' calculations using American Hospital Association survey data.

[6] Andreyeva, E., et al. (2022, December 13). The Corporatization of Hospital Care. The Social Science Research Network. Retrieved June 6, 2023, from http://dx.doi.org/10.2139/ssrn.4134007.

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[15] Beaulieu, N. D., et al. (2020, January 2). Changes in Quality of Care After Hospital Mergers and Acquisitions. *New England Journal of Medicine 382*(1), 51–59. Retrieved June 6, 2023, from https://www.nejm.org/doi/full/10.1056/NEJMsa1901383.

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