



# The impact of hospital consolidation — Update

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## SUMMARY OF KEY FINDINGS

- > **Hospital consolidation generally results in higher prices.** This is true across geographic markets and different data sources. When hospitals merge in already concentrated markets, the price increase can be dramatic, often exceeding 20 percent.
- > **Hospital competition improves quality of care.** This is true under both administered price systems, such as Medicare and the English National Health Service, and market determined pricing such as the private health insurance market. The evidence is more mixed from studies of market determined systems, however.
- > **Physician-hospital consolidation has not led to either improved quality or reduced costs.** Studies find that consolidation was primarily for the purpose of enhanced bargaining power with payers, and hence did not lead to true integration. Consolidation without integration does not lead to enhanced performance.

## Introduction

In 2006, the Synthesis Project published a research synthesis on the impact of hospital mergers on prices, costs and quality of care (38). Since that time, the literature has expanded a great deal. We review those subsequent findings in this Synthesis Update. In particular, we focus on the impact of hospital mergers on prices and quality, and introduce a review of the evidence on physician-hospital consolidation (absent from the 2006 synthesis). The Patient Protection and Affordable Care Act (ACA) promotes Accountable Care Organizations (ACOs) and the bundling of payments across providers for an episode of care (“bundled payments”). Both of these features of the ACA encourage consolidation between hospitals and physician practices, which in fact has recently accelerated.

## What is the relationship between hospital consolidation and prices?

**Increases in hospital market concentration lead to increases in the price of hospital care.**<sup>1</sup> This finding is consistent with the conclusion of the 2006 synthesis. Since the 2006 report, several econometric studies have revisited the relationship between price and hospital concentration, using data from a variety of sources, thereby expanding the geographic scope of the evidence base. The prior evidence came almost exclusively from California. The more recent evidence comes from more states (Florida, Massachusetts) and from the entire United States (see Table 1). Ultimately, increases in health care costs (which are generally paid directly by insurers or self-insured employers) are passed on to health care consumers in the form of higher premiums, lower benefits and lower wages (see, e.g., Baicker and Chandra (4)).

Table 1: Summary of hospital concentration studies since 2006

Author/Year	Location of data	Time frame of analysis	Results
Akosa Antwi et al. (2009)	CA	1999–2005	Prices increased twofold over period and growth is highest in monopoly markets; however, changes in market concentration are not associated with differential price growth.
Dranove et al. (2008)	CA & FL	1990–2003	The association between hospital concentration and price increased during the 1990s and leveled off during the 2000s.
Melnick and Keeler (2007)	CA	1999–2003	Hospital concentration is positively associated with price growth; hospitals in large systems experienced higher price growth.
Moriya et al. (2010)	US	2001–2003	Insurer concentration is negatively associated with hospital prices; hospital price/concentration relationship is insignificant.
Wu (2008)	MA	1990–2002	Hospitals for which a rival hospital closed experienced a price increase relative to controls.

<sup>1</sup> Hospital concentration measures the extent to which a market is dominated by a few (or one) hospitals. All else equal, the higher the market concentration, the less vigorous is the resulting price competition. Consolidation within a market (e.g., via mergers) reduces independent market participants and by doing so increases market concentration.

# Price increases exceeded 20% when mergers occurred in concentrated markets.

## ANTITRUST ENFORCEMENT

In recent years, the Federal Trade Commission (FTC) has become more aggressive in challenging cases and has had dramatically more success than during the 1980s and 1990s. At the time of the 2006 synthesis, after a decade and a half long series of unsuccessful attempts to block hospital mergers, the Federal Trade Commission (FTC) had just successfully litigated its first hospital merger case. In this case, the FTC challenged a consummated merger and the court found that the merger between Evanston-Northwestern Hospital and Highland Park Hospital (both located in Evanston, Ill.) led to an increase in prices. The decision in this case is important because it established that proximate not-for-profit hospitals in urban areas can increase market power by merging. Importantly, the case also established that, post-acquisition, hospitals are willing to use their increased market power to raise prices.

The findings in the Evanston-Northwestern case gave the FTC a firm footing for litigation of hospital merger cases. Since 2006, the FTC has successfully brought suit to stop several hospital mergers. Of particular note is the ProMedica case, in which a federal judge granted the FTC an injunction in its antitrust challenge of ProMedica's acquisition of a hospital.<sup>2</sup> It is the first prospective merger court victory for the enforcement agencies in decades.<sup>3</sup>

<sup>2</sup> United States of America Federal Trade Commission Office of Administrative Law Judges, Docket No. 9346, In the Matter of ProMedica Health System, Inc., December 12, 2011 (<http://www.ftc.gov/os/adjpro/d9346/120105promedicadecision.pdf>).

<sup>3</sup> Prospective merger analysis seeks to assess the competitive harm from a transaction principally based on information available prior to the consummation of the transaction.

Prices paid to hospitals by private health insurers within hospital markets vary dramatically (22). The evidence points to differences in hospital bargaining leverage as a principal driver of the difference between relatively expensive and inexpensive hospital systems within the same hospital market.

**Some evidence suggests that growth in prices is related to market concentration.** An important policy question is whether, in addition to leading to a one-time price increase, hospital mergers increase the rate of growth of hospital prices. A few studies have addressed this issue (see Table 1), with the most recent studies giving somewhat conflicting answers to this question. Melnick and Keeler find a positive correlation between price growth and market concentration (28). On the other hand, Akosa Antwi et al. find that monopoly markets experienced the highest rates of growth, but there was little relationship between changes in concentration and the growth of prices (2).

**Hospital mergers in concentrated markets generally lead to significant price increases.** Several studies have taken a retrospective look at the impact of recent hospital mergers on prices paid to hospitals by health insurers. This research focuses on a “case study” merger and examines the change in inpatient prices after the merger compared with a set of “control” hospitals (see Table 2). The magnitude of price increases when hospitals merge in concentrated markets is typically quite large, most exceeding 20 percent. Analyses that use data spanning large geographic regions that encompass many hospital mergers also find that, for the most part, hospital mergers in concentrated markets result in significant price increases.

Table 2: Summary of hospital merger event studies since 2006

Author/ Year	Location of mergers	Time frame of analysis	Results
Dafny (2009)	US	1999–2005	Merging hospitals had 40% higher prices than non-merging hospitals.
Haas-Wilson and Garmon (2011)	Evanston, IL Mergers of Evanston-NW & Highland Park and St. Therese & Victory Memorial	1990–2003	Post-merger, Evanston-NW hospital had 20% higher prices than control group; no price effect at St. Therese-Victory.
Tenn (2011)	SF Bay Area, CA Sutter/Summit merger	1999–2003	Summit prices increased 28.4% to 44.2% compared with control group.
Thompson (2011)	Wilmington, NC New Hanover-Cape Fear merger	2001–2003	3 of 4 insurers experienced a large price increase; 1 insurer experienced a decrease in prices.
Town et al. (2006)	US	1990–2002	Aggregate hospital merger activity increased the uninsured rate by .3 percentage points.

# Hospital competition improves quality.

## What is the relationship between hospital consolidation and quality?

**At least for some procedures, hospital concentration reduces quality.** Since the 2006 synthesis report, many new econometric studies have examined the impact of hospital competition on quality of care, using data from a variety of sources, including studies from outside the United States. The new econometric studies can be divided into two types: those that examine markets with administered prices and those that examine markets with market determined prices.

**Hospital competition improves quality under an administered pricing system.** Studies of the impact of competition on hospital quality under an administered price regime are based on the U.S. Medicare program and the English National Health Service (NHS), which made a transition to administered prices in a 2006 reform. The evidence presented in the 2006 synthesis was entirely from the Medicare program. The findings from those studies were mixed, but the strongest evidence was that tougher competition led to enhanced quality of care. Those results are reinforced by newer studies from the NHS, which uniformly show a positive impact of competition on the quality of care. The 2006 reform in the NHS was intended to create competition among hospitals for patients, by allowing patients to choose their hospital, while setting regulated prices in a manner very similar to the Medicare DRG-based system.<sup>4</sup> The studies all show a substantial impact of the introduction of hospital competition in the NHS on reducing mortality rates (see Table 3). While it is not possible to draw direct conclusions about the United States based on evidence from the United Kingdom, these studies add to the growing evidence base that competition leads to enhanced quality under administered prices.

Table 3: Summary of hospital quality-competition studies with administered prices since 2006 (continued on next page)

Author/ Year	Location of data	Time frame of analysis	Does competition increase quality?	Results
Cooper et al. (2011)	England	2002–08	Yes	Acute myocardial infarction (AMI) mortality fell significantly faster after the reforms in less concentrated markets. This led to 300 fewer AMI deaths per year.
Gaynor et al. (2010)	England	2003–04, 2007–08	Yes	All-cause and AMI mortality fell significantly faster after the reforms in less concentrated markets. There were no effects on length of stay, expenditures or productivity. This led to 4,791 life years saved from deaths from all-causes averted, and 1,527 AMI life years saved. Benefits outweigh costs.
Bloom et al. (2010)	England	2006	Yes	Hospitals in less concentrated markets have better management, and better management leads to reduced mortality. Adding an additional hospital close by improves management quality and thereby reduces heart attack mortality by 10.7%.

<sup>4</sup> The NHS reforms introduced: patient choice among hospitals, regulated prices, and performance incentives for hospital managers. Previously a local public entity selectively contracted with hospitals (often sole source) to provide care for their patients. Contract negotiations focused on price, not quality. Patients had little choice and hospital managers had little incentive to compete for patients on quality. See Cooper et al. (13), Gaynor et al. (20) for more details.

## PHYSICIAN-HOSPITAL CONSOLIDATION

It is important to distinguish between consolidation and integration. Consolidation is simply bringing together two (or more) previously independent entities. Integration implies more—in particular, elimination of unnecessary duplication, creating systems to bring the previously separate entities together, and comprehensive management of the organization as a whole.

**Limited data show that consolidation between physicians and hospitals is increasing.** Increasing numbers of physicians are working as hospital employees and increasing numbers of physician practices are owned by hospitals. The number of physicians working as employees grew from around 31 percent in 1996–97 to 36 percent in 2004–05 (26). Another survey found that the percentage of primary care physicians employed by hospitals rose from under 20 percent in 2000 to over 30 percent in 2008 and the percentage of specialists employed by hospitals rose from just over 5 percent to 15 percent (25). The percentage of physician practices owned by hospitals rose from around 20 percent in 2002 to over 50 percent by 2008 (25). On the other hand, the percentage of hospitals with other kinds of physician-hospital relationships, such as physician hospital organizations (PHOs) and independent practice associations (IPAs), has fallen steadily from 2000 through 2010 (3).

# Physician-hospital consolidation studied so far did not involve true integration.

## PHYSICIAN-HOSPITAL CONSOLIDATION, CONT.

Consolidation between physicians and hospitals is of great interest both because of the potential consolidation has for creating integration, and the impetus created by the ACA's push towards creating Accountable Care Organizations (ACOs) and emphasis on bundled payments. In theory, there are substantial gains to be made from consolidation. However, there are also concerns that consolidation may have adverse impacts on competition. Consolidation can simply be an attempt by providers to enhance bargaining power vis à vis insurers.

**The research evidence on physician-hospital consolidation does not find evidence supporting either clinical gains or cost reductions** (9, 27). The most likely reason is that most consolidation did not lead to true integration. Evidence on this topic comes from examination of physician-hospital organizations in the 1990s. Current consolidation is too recent to allow for studies of its effects. While the successes of certain prominent integrated organizations, such as Geisinger Health System, InterMountain Healthcare, or the Mayo Clinic, are frequently mentioned as support for gains from consolidation, these are ad hoc examples, selected for their positive results. They do not constitute research evidence.

Table 3: Summary of hospital quality-competition studies with administered prices since 2006 (continued from previous page)

Author/ Year	Location of data	Time frame of analysis	Does competition increase quality?	Results
Beckert et al. (2012)	England	2008–09	Yes	Hip replacement patients are significantly more likely to choose higher-quality hospitals. A 5% increase in a hospital's mortality rate decreases demand by 6.9%. Hospital mergers substantially reduce the responsiveness of demand to mortality.
Gaynor et al. (2011)	England	2003–04, 2007–08	Yes	Coronary artery bypass graft surgery (CABG) patients' responsiveness to hospital mortality rates is substantially higher after the reforms. A 1% increase in a hospital's mortality rate reduces its market share by over 4% after the reforms. The change in elasticity due to the reform led to a significant reduction in mortality.

**Competition improves quality where prices are market determined, although the evidence is mixed (Table 4).** There have also been substantial additions to this literature since the 2006 synthesis. The findings from these studies are more mixed than the findings of recent studies of markets with administered prices. This stands to reason: if hospitals can compete on both price and quality, then when they face tougher competition they will choose to compete by whichever means is most effective. If buyers are considerably more responsive to price than quality (for example, if price is easier to measure), then enhanced competition can lead to lower prices, but also less attention to quality. On the other hand, if quality is particularly salient, then tougher competition can enhance quality.

All of the U.S. studies except for one find that competition improves quality, while the English studies uniformly find negative effects.<sup>5</sup> The difference appears to most likely be due to differences in the possibility of patient choice between the United States and England (in the 1990s).

In the United States, prices are negotiated by price-sensitive insurers. These insurers have strong incentives to obtain lower prices, since their customers, typically employers, are responsive to price differences. Insurers, however, do not engage in sole-source contracting. They contract with sets, or “networks,” of hospitals. Patients are thus free to exercise choice of hospital within a network (which is often quite broad). Hospitals have an incentive to compete on quality in order to attract patients within a network. As a consequence, there are both price and quality incentives in play.

In contrast, in England in the 1990s, negotiation was done by a single local public entity (Primary Care Trust, or PCT) for all individuals in a geographic area, and contracts were sole source. Purchasers could use savings obtained via lower prices to purchase more care (particularly elective care). Hospitals' operating incomes came from contracts with purchasers. Information on quality was not publicly available. This led to negotiations focused on price, not quality. As a consequence, patients had little or no choice of hospital, and there was far less incentive for hospitals to compete on quality to attract patients.

<sup>5</sup> The English studies are of a prior reform in the 1990s which emphasized price competition (see Propper et al. (31) for more details).

# Physician-hospital consolidation is often motivated by enhanced bargaining power.

A major next step for research in this area is sorting out the factors that determine whether competition will lead to increased or decreased quality. Whether competition leads to increased or decreased quality depends on its relative impacts on how responsive hospital choice is to price versus quality. Future research can focus on trying to recover estimates of these key elements, as well as understanding institutional and policy factors that affect the competitive environment.

Table 4: Summary of hospital quality-competition studies with market determined prices since 2006

Author/ Year	Location of data	Time frame of analysis	Does competition increase quality?	Results
Sohn and Rathouz (2003)	California	1995	Yes	Competition reduced angioplasty mortality.
Encinosa and Bernard (2005)	Florida	1996–2000	No	Low hospital operating margin (possibly due to competition) led to more patient safety events.
Propper et al. (2004)	England	1995–98	No	Hospitals facing more competitors had higher mortality rates in a deregulated environment.
Capps (2005)	New York	1995–2000	Yes	Hospital mergers had no impact on many quality indicators, but did lead to increases in mortality for AMI and heart failure patients.
Propper et al. (2008)	England	1991–99	No	Mortality increased at hospitals with a larger number of competitors following deregulation.
Howard (2005)	US	2000–02	Yes	Demand for kidney transplants is responsive to graft failure. As demand becomes more responsive, hospitals have to compete harder to attract or retain patients.
Abraham et al. (2007)	US	1990	Yes	Quantity increases with the number of hospitals. This will happen only if quality increases or price falls. This therefore implies that an increase in the number of hospitals increases competition.
Cutler et al. (2010)	Pennsylvania	1994–95, 2000, 2002–03	Yes	Removing barriers to entry in the form of certificate of need laws led to entry and increased market shares for low mortality rate CABG surgeons.
Escarce et al. (2006)	California, New York, Wisconsin	1994–99	Yes	Mortality for patients with a variety of conditions is lower in less concentrated markets in California and New York. There are no effects in Wisconsin.
Rogowski et al. (2007)	California	1994–99	Yes	Mortality for patients with a variety of conditions is lower where hospitals have more competitors.
Romano and Balan (2011)	Chicago Primary Metropolitan Statistical Area (PMSA)	1998–99, 2001–03	Yes	A hospital merger in the Chicago suburbs had no effect on some quality indicators, and harmed some others.

## PHYSICIAN-HOSPITAL CONSOLIDATION, CONT.

### Consolidation is often motivated by a desire to enhance bargaining power by reducing competition.

Burns et al. (10) find that hospital-physician alliances increase with the number of HMOs in the market. They infer that providers may be consolidating in order to achieve or enhance market power. More recently, Berenson et al. (6) conducted 300 interviews with health care market participants, and reported that increased bargaining power through joint negotiations is one of several reasons for hospital-physician alliances.

Ciliberto and Dranove (12) and Cuellar and Gertler (14) are econometric studies that examine the impact of physician-hospital consolidation. Both papers look at the effects of physician-hospital consolidation on hospital prices. The two studies find opposite results—Cuellar and Gertler find evidence consistent with anticompetitive effects of physician-hospital consolidation, while Ciliberto and Dranove find no such evidence.

It appears that consolidation is often motivated by a desire to enhance bargaining power by reducing competition, but the limited evidence on whether this leads to higher hospital prices is mixed.

# Conclusions and Policy Implications

Additions to the evidence base since the 2006 research synthesis reinforce the findings that hospital competition leads to lower prices. The expanded evidence on competition and quality shows that competition leads to higher quality when there are administered prices. The evidence is less straightforward when prices are market determined, although the majority of studies show that competition improves quality. Our review of the research on physician-hospital consolidation does not suggest that such consolidation (absent true integration) will lead to cost reductions or clinical improvement, and may lead to enhanced market power for providers.

Policy developments since the 2006 synthesis give policy-makers both some cause for optimism and some cause for concern.

- > The FTC's recent successes in blocking horizontal hospital mergers should prevent further consolidation, thereby constraining price increases and likely improving the quality of care.
- > Nonetheless, many hospital markets remain highly concentrated and noncompetitive. And, the prospect that the ACA could encourage greater physician-hospital consolidation gives some cause for concern.
- > While the current evidence base is not very supportive of initiatives to encourage physician-hospital integration, given the current interest in this kind of consolidation and the promotion of ACOs and bundled payments, more evidence is clearly needed on the impacts of consolidation on costs, quality and prices.

**THE SYNTHESIS PROJECT** (Synthesis) is an initiative of the Robert Wood Johnson Foundation to produce relevant, concise, and thought-provoking briefs and reports on today's important health policy issues.

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