

# DUTCH HOSPITAL MERGERS: NO EVIDENCE FOR IMPROVEMENT OF HEALTHCARE QUALITY



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## I. INTRODUCTION

The hospital sector has become increasingly concentrated in recent years. This is also true in the Netherlands. Since 2004, the Netherlands Authority for Consumers and Markets (“ACM”) assessed more than 30 hospital mergers. In 2016 there are 71 general hospitals and 8 academic hospitals.

Several developments may have triggered the merger wave. First of all, the introduction of managed competition among hospitals. Mergers may reduce rivalry and increase the bargaining power of the hospitals *vis-à-vis* purchasers, i.e. health insurance companies. Also the market for health insurance became more concentrated and by merging, hospitals improve their relative bargaining position.

Second, scale economies and improved efficiency can be a reason to merge. Hospitals argue that the increased scale will benefit the provision of care and is necessary to meet the volume norms for specific treatments developed by the professional associations of surgeons. Surgeons can specialize even further and perform more (complex) treatments. Hospitals claim that this will improve the quality of care.

However, the further concentration also comes with a cost. Larger entities may experience a lack of flexibility and a slower adoption of innovations as the competitive incentive diminishes. Also, the integration process after the merger may take quite some time and may result in (cultural) clashes between the management and/or surgeons from both merging hospitals. This can have negative effects on the clinical operations and the quality of care delivered. Finally, the merged entity might become “too big to fail” giving it extra bargaining power over insurance companies resulting in higher prices and/or lower quality.

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In this study, we investigate the effects of hospital mergers on the quality of care in the Netherlands. First, we discuss the relevant literature on the concentration-quality relationship. Second, we present the research design followed by the results.<sup>2</sup> Finally, we discuss the implications of the results for the ACM practice of merger control.

## II. LITERATURE OVERVIEW

Most studies on the relationship between hospital mergers and quality are done in the United States. In a review article, Vogt and Town<sup>3</sup> concluded that there are indications that hospital mergers result in lower quality. A majority of the studies indicated a lower quality, although some studies showed a quality improvement. The effects of mergers on hospital prices were clearer: hospital mergers resulted in price increases of at least 5 percent and even bigger if two neighboring hospitals were involved.

In 2012, Gaynor and Town<sup>4</sup> confirmed the results of Vogt and Town; that more competition leads to better quality. This especially holds true in countries where the prices are regulated. In countries with negotiated prices, as in the Netherlands, the results were mixed. If patients react stronger on price than on quality differences, then more competition results in lower prices and also lower quality.

Romano and Balan<sup>5</sup> studied the effect of the merger between Highland Park Hospital and Evanston Northwestern Healthcare. The parties claimed in the FTC procedure that the merger was necessary to improve quality. The authors found the opposite effect: the quality decreased *ex-post*.

Mutter et al<sup>6</sup> studied 42 hospital mergers. For most merging hospitals, no effect on the 25 used indicators was found. The effects were, however, different for the different roles the hospitals had in the merger; the quality of acquiring hospitals improved for three indicators, for acquired hospitals, four indicators significantly worsened. Thus the role of the hospital might influence the relationship.

Hayford<sup>7</sup> studied the effect of hospital mergers on treatment intensity. Merged hospitals performed more intense treatments, in terms of the number of treatments as well as more complex treatments. Also the mortality rate increased. This might be an indication that the merging hospitals treated more complex patients.

In the United Kingdom, many hospitals merged in the period 1997-2006, partly stimulated by the government. Gayner et al.<sup>8</sup> studied the effects of these mergers. They concluded that the quality improved for a few indicators. The number of treatments decreased without an improvement of the productivity, the financial position of the hospitals deteriorated and the waiting time became longer.

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2 The results are based on the study of Significant commissioned by ACM, Significant (2016), *Ziekenhuisfusies en kwaliteit van zorg: Onderzoek naar de effecten van ziekenhuisfusies op de kwaliteit van zorg*, Barneveld: Significant (in English: Hospital mergers and the quality of healthcare: Research into the effects of hospital mergers on the quality of healthcare).

3 Vogt & Town (2006), *How has hospital consolidation affected the price and quality of hospital care?* Research Synthesis Report and Policy Brief #9 The Synthesis Project, Princeton: Robert Wood Johnson Foundation, available at: <http://www.policysynthesis.org>.

4 Gaynor & Town (2012), *The impact of hospital consolidation – Update*, The Synthesis Project, Princeton: Robert Wood Johnson Foundation, available at: <http://www.policysynthesis.org>.

5 Romano & Balan (2011), *A retrospective analysis of the clinical quality effects of the acquisition of Highland Park Hospital by Evanston Northwestern Healthcare*, *International Journal of the Economics and Business*, 18(1), 45-64.

6 Mutter, Romano & Wong (2011), *The effects of US hospital consolidation on hospital quality*, *International Journal of the Economics and Business*, 18(1), 109-126.

7 Hayford, (2012), *The impact of hospital mergers on treatment intensity and health outcomes*, *Health Services Research*, 47(3 pt 1):1008-1029.

8 Gaynor, Laudicella & Propper (2012), *Can governments do better? Merger mania and hospital outcomes in the English NHS*, *Journal of Health Economics*, 31, 528-543.

In the Netherlands, Zuiderent-Jerak et al.<sup>9</sup> studied the effect of volume norms set by associations of surgeons on the quality of care. Often a positive relationship is claimed. The authors found, however, that the volume-quality relationship was often not proven or even not studied. For some treatments, often the more complex ones, there was a positive relationship. The authors also argue that the concentration to realize the volume norms means that the patients had to travel further. This longer travelling time is often left out in the volume norms/quality discussion.

Perry and Cunningham<sup>10</sup> concluded that the existing empirical results do not support the claim that hospital mergers always, or most of the time, result in better quality and that several studies found even a negative effect. Therefore merging hospitals should provide case specific facts and proof that, in their case, the merger will result in improved quality. Also, Zuiderent-Jerak et al.<sup>11</sup> claimed that the parties lobbying for more concentration should better substantiate their quality claims.

Overall, the empirical literature shows a negative relationship between hospital mergers and the quality of care delivered. In the next section, we present the results of our study on the merger-quality relationship in the Netherlands.

### III. RESEARCH DESIGN

In this section, we will describe the research design. First, we will discuss the merger sample followed by the selection of the quality indicators we used in our study. Then, we describe the quantitative “difference-in-differences” approach and the econometric specification.

In 2004, ACM started with the substantive assessment of hospital mergers as market reforms allowed hospitals to compete with one another. More than 30 hospital mergers were assessed since. Most mergers were unconditionally cleared, one cleared subject to remedies, in three cases a voluntary behavioral price remedy was given and one merger was prohibited. In the remedy case, the quality argument played a role in the assessment. The remedy looked at price as well as quality to be sure that the quality effects would be realized without price increases. All 14 hospital mergers in the period 2007-2013 are included in our study. Mergers after 2013 are not included as we only have information after 2014 for waiting times and we need at least some post-merger observations for our analysis.

In this study, we use all publicly available quality outcome indicators that are comparable over time, accessible and have observations for a sufficient number of hospitals. In total 97 quality indicators: 11 measuring quality on the hospital level and 86 for specific treatments. The indicators consist of, among others, disorder-related indicators like pain measurement in recovery rooms and observed delirium risk, (standardized) mortality rates, waiting times and consumer quality indices. Not all indicators are necessarily available for the whole period, but are at least partly available in the period 2007-2016.

We use a difference-in-differences approach (“diff-in-diff”) to test whether the mergers have an effect on the quality of care. In figure 1, a fictional example of a diff-in-diff analysis is displayed. The control group of hospitals shows a certain development in quality, in this case an improvement (solid blue line). Without the merger, we assume that the merging hospitals follow the same development as the control hospitals (dotted orange line). This is our counterfactual. In reality, the merging hospitals improve even more (solid orange line). The difference between the assumed and realized post-merger quality value is the diff-in-diff estimator of the merger-effect and the coefficient of interest.

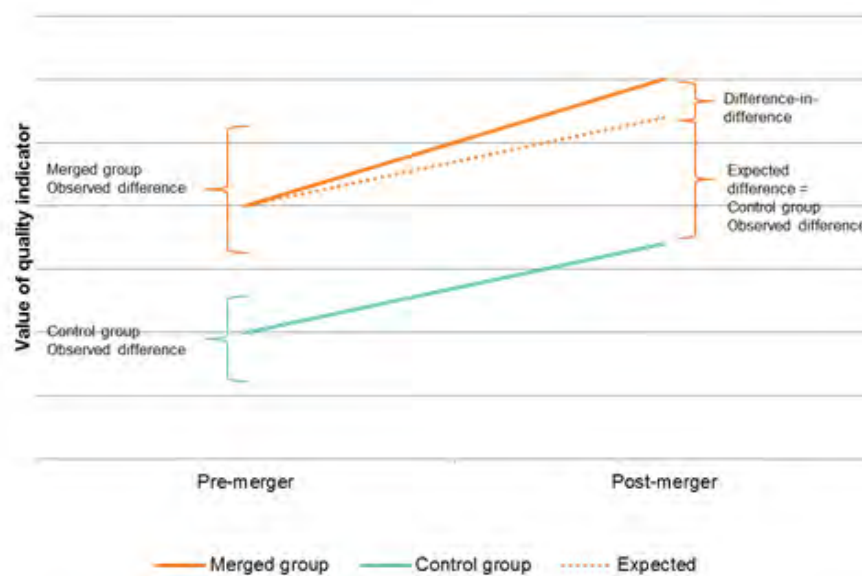
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9 Zuiderent-Jerak, Kool & Rademakers (eds.) (2012), *De relatie tussen volume en kwaliteit van zorg: tijd voor een brede benadering*, Utrecht/Nijmegen/Rotterdam: Consortium Onderzoek Kwaliteit van Zorg (in English: *The relationship between volume and quality of care: time for a broad approach*).

10 Perry & Cunningham (2013), *Effective defenses of hospital mergers in concentrated markets*, *Antitrust*, 27(2), 42-47.

11 Id.

Figure 1. Representation of the difference-in-difference method



The composition of the control group is important in the diff-in-diff approach. In this study, we use as our control group all general hospitals that did not merge in the research period. We excluded academic hospitals, specialized hospitals and independent treatment centers. Furthermore, at least ten hospitals should be in the control group in order to reliably estimate the autonomous development.

Besides the merger dummy to estimate the merger effect, we included several control variables in our regression, like the status of the hospital (top clinical vs general hospital), the population density, the number of competitors within a 20 kilometer radius and the size of the hospital. In addition, we also included a ceiling and floor effect. Hospitals with relatively poor quality scores can be expected to work on quality improvement regardless of whether they merged or not, while hospitals with very high scores for certain indicators will not be able to improve the scores very much. As we estimate a large number of coefficients, we controlled for the multiple-comparisons problem by using the Bonferroni correction.

## IV. RESULTS

In table 1, we present the significant results for the hospital level indicators (in total 11 indicators). All five significant effects show a decline in quality. After a merger, there was 12.5 percent less frequent measurement of malnutrition in adults. In merged hospitals, there is an almost 10 percent lower frequency of pain measurement in the nursing ward than one can expect based on the control group. This effect remains significant after the Bonferroni correction. Waiting times for outpatient clinics increase by 0.2 weeks compared to the control group. The waiting times for diagnostics increase by almost 0.5 weeks. The interpretation of the differences in waiting times needs to be done with caution. All other things being equal, a shorter waiting time would appear to be beneficial, a longer waiting time a deterioration. However, it cannot be ruled out that an increase in clinical quality (if recognized as such by patients or referring medical staff) could lead to more patients and hence longer waiting times. As quality is not that transparent for patients yet and patients mainly select a hospital based on proximity, we argue that longer waiting times are an indication for deteriorated quality. Finally, the mortality rate increases in absolute terms by 0.1 percent compared to the control hospitals.

Table 1. Significant results hospital level quality indicators

<i>Indicator</i>	<i>Effect on quality<sup>a</sup></i>
Screening of malnutrition in adults	Lower
Pain measurement in nursing ward	Lower <sup>b</sup>
Waiting times, diagnostics	Longer
Waiting times, outpatient clinic	Longer
Mortality rate (unweighted)	Increase

<sup>a</sup> significant at 5 percent level

<sup>b</sup> significant after Bonferroni correction

For the treatment specific indicators (n=86), we only found 12 significant effects, all waiting times. For eight outpatient clinical treatments, the waiting times increase, for three outpatient clinical treatments the waiting times decrease. For the treatment specific diagnostics waiting times, we found one significant increase. The effects range from 1.2 weeks shorter to 2.5 weeks longer waiting times. Only two of the 12 significant effects remain significant after the Bonferroni correction (an increase in waiting times).

In the results above, we assume that hospitals have the incentive to improve their quality to at least the industry average (the floor effect). If we waive this assumption, for some treatments the waiting times become shorter compared to the control group of hospitals. Although they have not reached the level of the control group, they become closer to the industry average. So the merger might be used to catch up (although this is never claimed by the merging parties in a procedure).

In interviews for this study, hospital representatives pointed out the risks for quality reduction. For example, attention to quality could wane and waiting times could rise because of the uncertainty and distraction from the primary process during the merger process. On the other hand, the interviewees also pointed out that mergers result in higher volumes for specific treatments. This may lead to further specialization, which, in turn, may lead to increased healthcare quality. However, this has not yet been found in the examined indicators.

Based on the quantitative results, the most important conclusion of our study is that there seems to be no indication of a strong effect of hospital mergers on healthcare quality. Among the majority of the 97 examined indicators we used, no significant change takes place after the merger compared with the control group of non-merged hospitals. For a limited number of indicators, a deterioration as well as an improvement can be observed (such as shorter or longer waiting times), although there is a tendency towards lower quality. Therefore, the claim by merging hospitals that a merger is good for quality of care is not supported by our research findings.

The research has several limitations. The observed period is relatively short. For a limited number of mergers, we could test the merger-quality relationship for a 3-5 year period. Merging hospitals often claim that it will take some time before quality effects emerge, i.e. longer than the 3-5 years we studied. As this may be true for the clinical quality indicators, we think that waiting times can be influenced relatively quickly. This assumption is in line with our results, although the significant effects often indicate lower quality, i.e. longer waiting times.

Also, the number of studied mergers is limited. It is therefore not possible to study the effect of characteristics of different hospital mergers like Mutter et al.<sup>12</sup> did. Possible interesting distinctions could be the level of integration, the motive to merge, whether the provision of care is reorganized and concentrated over the different locations and whether it is a takeover versus a merger among equals.

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12 Id.



## V. IMPLICATIONS FOR MERGER ASSESSMENT

In merger assessment, a common theory of harm is that the merger may result in higher prices or lower quality as a result of lower competition. When it comes to hospital mergers, the key question increasingly asked is what value the merger adds to the quality of healthcare. Though hospitals themselves often argue that a merger is needed in order to improve healthcare quality, such improvement is not the initial focus in the legal framework that governs merger assessments by ACM. Instead, the primary question for a competition authority is whether or not competition and sufficient choice remain in the market after the merger. After all, sufficient competition creates an incentive to compete on quality and price. Only if no sufficient competition remains after the merger, with thus potentially higher prices, potential quality benefits may be taken into consideration as part of an efficiency defense. The improvement in quality must then offset the drawbacks of higher prices and possibly reduced accessibility. In practice so far, ACM has very seldom had to make such an assessment. Yet, we expect this to change in the future, one reason being that Dutch health insurers increasingly point to the risks of market power and higher prices associated with mergers. If ACM proves this point valid, one may expect hospitals, in response to this, to put forward, more often and more explicitly, that healthcare quality will improve as a result of the merger.

The findings of the study described above raise several issues in this respect. First of all, they indicate that, in healthcare mergers, there is no fundamental difference between the risk of price increases and the risk of quality losses. Such difference is sometimes claimed by hospital representatives pointing to “special characteristics” of the medical profession, including the Hippocratic Oath, the presumption that in healthcare there is no relation between competition and the quality of care and that any quality improvement most directly benefits patients’ lives. Also, the findings reinforce that there is no *a priori* reason to treat quality improvement claims in the healthcare sector differently than “other” claims typically associated with efficiency defenses. As there is no evidence for quality improvements resulting from hospital mergers, ACM will continue to take a critical look at the quality benefits that merging hospitals claim in advance, on a case-by-case basis. ACM will assess materially whether these benefits will actually emerge, whether they are substantial and whether the merger is necessary for producing these benefits. In assessing these benefits, views from other authorities like the Health Care Inspectorate (“IGZ”) can be valuable.

If quality improvements are to be the deciding factor in the assessment of a merger, the expected quality benefits for patients will have to be substantiated concretely, specifically and factually by the merging parties. Furthermore, hospitals need to provide evidence of their efforts to produce these quality benefits as quickly as possible and to demonstrate the feasibility of the schedule. In the study, interviewed hospital representatives indicated that it will most likely take up to at least three years after the integration before the benefits have been fully produced and have become visible. This long time frame poses a challenge in merger control, as competition authorities particularly value benefits that hospitals are able to produce in the short run. With regard to benefits that will only emerge in the longer run, it will be more difficult to establish the certainty and the causal connection with the merger.

Whereas three years is already quite “long run” in merger assessment, in some instances, hospital representatives explicitly link projected quality improvements to necessary real estate (re)developments and/or step-by-step redistribution of medical disciplines over hospital locations, extending over five or even ten years. In the (so far hypothetical) situation that the foreseeable healthcare quality benefits to patients as such are substantial, undisputed and factual, leaving the long time frame as the “only” uncertainty, the imminent question for the competition authority is how to avoid blocking healthy innovation.

Although at odds with the widely accepted notions of a successful efficiency defense, in theory one could envision innovations in merger control that are in tune with the Dutch healthcare system based on “managed competition.” In essence, this would entail a regime of clearing the above mergers on the basis of a sunset clause, i.e. with regulatory measures that may be removed or at least lightened conditional on realization of the projected quality improvements within the scheduled period. However, the downside of such an approach is obvious: there needs to be a credible “Plan B.” The consequences in case the ultimate condition is not fulfilled, particularly demerging or permanent regulation, do not appear to be attractive and come at considerable costs. Moreover, at a bare minimum, a strict quality based sunset clause would require a compact set of

unambiguous and well-established healthcare quality indicators which have been structurally monitored through the ordinary course of business prior to the development of the merger plans. In general practice, none of these (minimum) conditions appears to be fulfilled.

Indeed, a second central issue that emerged from the study is the clear need in the Netherlands to further develop comprehensible and accessible quality indicators and making these available to patients. As to the latter, in the study we found that internally available quality information based on which of the merger's effect could have been analyzed, was not always accessible. For example, not all hospitals made quality indicators (hospital level CQI) available for the purpose of the study and the researchers were not given direct access to Intensive Care data. If a competition authority like ACM is not able to collect this quality information (without exercising formal powers), this clearly is an impossible task for patients. Yet, healthcare quality can only play a role in merger assessments if it can play a role in consumer preferences: patients choosing a hospital for their treatments and basing their decisions on, among others, the quality offered.

Furthermore, in the course of the study we were confronted with various discussions between healthcare professionals on what "good" quality indicators are, and how quality in healthcare should be defined in the first place. Clearly, if the field of practice is divided on these (admittedly thorny) questions, ACM is not in a position to conclude that claimed quality improvements are sufficiently "concrete" and "certain" in relation to merger control. Again, this carries the risk of blocking welfare enhancing mergers (type II errors). This is one of the reasons that ACM fully supports the ambitions and efforts of more specialized Dutch governmental bodies like the National Health Care Institute ("ZiN"), the Dutch Healthcare Authority ("NZa") and the IGZ with regard to the development of well-grounded evidence based quality indicators.

The third issue highlighted by the study challenges that mergers are "absolutely necessary" to achieve the claimed quality benefits. Hospitals often consider mergers as the way to improve quality, whereas less drastic forms of cooperation may also realize these objectives. Focused collaborations, for example on high-complexity low-volume care, could also be an option and are less likely to result in anticompetitive concerns than a full merger. If these collaborations prove to be problematic in due course, they can more easily be reversed than a full merger. In concrete cases, ACM regularly provides clarity, as recently done in an informal opinion about a collaboration on complex oncology in the province of Utrecht. In this case there was sufficient consensus in the field that the benefits of closer collaboration to quality of healthcare offset any potential competition concerns. The latter included the risk of reduced accessibility to care for patients in the form of longer travelling times, a risk we regularly see downplayed or even ignored by parties in self assessments of their merger or collaboration plans.

However, given the pervasive need for well-established and evidence-based quality indicators, even for focused collaborations, ACM will not always be in a position to make a fact based judgement of claimed quality gains. For collaborations, unlike for mergers, ACM has no obligation to provide clarity upfront. And, indeed, parties intending to collaborate are under no obligation to inform or ask ACM in the first place. Uncertainty about healthcare quality effects thus raises a potential dilemma for *ex-post* cartel enforcement as well. In fact, there may be a difference between, on the one hand, a situation with a divided professional field with dissenting opinions on quality effects and, on the other hand, a situation with consensus about the promise and potential of a collaboration regarding quality gains, but with limited factual evidence so far. In both cases, the collaboration, with potential competitive restrictions as a result, needs to be necessary to achieve the envisioned quality improvement. Furthermore, proper documentation of plans and progress on quality is relevant. Yet, one might argue that a competition authority has grounds to look more leniently at the second situation, weighing that the collaboration provides a relevant experiment for fact based progress and innovation in healthcare.

Finally, we recall that quality is only one of the competition parameters. Apart from the accessibility of healthcare, a merger (as well as a collaboration for that matter) may also influence price and volumes. For this reason, ACM is currently conducting a study into the price and volume effects of Dutch hospital mergers. Combining the results of both studies, ACM will be able to arrive at a more complete picture of the effects of hospital mergers, as well as of potential implications for its merger control practice.

## VI. CONCLUSION

In conclusion, our study found no evidence for improvement of quality of healthcare after hospital mergers. This is not in line with the claim by merging parties that a merger is necessary in order to improve healthcare quality. To prevent the risk of business chilling and less quality improvements, hospitals as well as competition authorities are challenged to be creative and explore new paths. The availability of well-established quality indicators is a basic condition for this.

