



Data, analysis, perspectives | No. 3, 2016

# Hospital Structure

Specialization increases the quality of healthcare without jeopardizing close-to-home treatment

- In Germany, surgical procedures are too commonly conducted in hospitals with low levels of specialization
- Quality is better in hospitals that perform many treatments of the same kind
- The concentration of plannable procedures in specialized hospitals results in only a marginal increase in travel time for patients
- The advantages of specialization must not be counteracted by economically motivated increases in case volumes
- Minimum case volumes lead to an enhanced quality of treatment in important areas of healthcare and should therefore be implemented consistently
- Quality criteria have to be systematically implemented in hospital planning

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**W**hen people need to undergo medical treatment, they are primarily interested in good quality of healthcare. This is especially true for serious procedures, which often have complications with severe and long-term impacts. The question of how one introduces high quality is of key importance for the hospital sector, as many plannable procedures are conducted in hospitals with direct impacts on the morbidity and mortality of patients. A Healthcare Fact Check by the Bertelsmann Stiftung has investigated the importance greater hospital specialization could have in this context.

High quality of healthcare is not least dependent on the facilities of the hospitals and the experience of their staff. The level of experience increases when a treatment is frequently conducted – that is, in hospitals with high case volumes. In order to achieve this, hospitals need to increase specialization on specific procedures, which can then no longer be provided in every hospital.

This realization has yet to trickle down to the German hospital landscape: in Germany, commonly “everyone does everything.” The public, too, wants treatment close to home – not just in emergencies, but also with plannable inpatient procedures – and they want this to be of high quality and professional. Close-to-home treatment is an important goal even for healthcare policy. However, this goal often collides with profitability, as many hospitals, especially small and local ones, are fighting for survival.

The issue of quality is once again the focus of hospital planning with the Hospital Structure Act (Krankenhausstrukturgesetz – KHSKG), which came into effect at the beginning of 2016. The German federal and state governments want to use the KHSKG to further develop the qualitative standards in hospital care and ensure sustainable financing of hospital operating costs – without negatively impacting the goals of being close-to-home and being profitable.

For this Healthcare Fact Check, the Bertelsmann Stiftung has had the Berlin-based IGES research institute analyze the consequences of concentrating specific services in specialized hospitals. This analysis has focused on the questions of:

- › whether the quality of healthcare really increases when departments in hospitals specialize in specific procedures;
- › whether patient travel times increase when plannable operations are conducted only in hospitals that reach specific case volumes; and
- › how increased specialization of inpatient treatment influences cost efficiency.

### Too many surgical procedures in general hospitals

Analysis of international academic literature shows a clear connection between case volume and quality of healthcare. When the case volume at a hospital or for a particular surgeon increases, the quality generally does too: For example, following a breast cancer operation, three times as many patients die in hospitals with a low case volume compared to hospitals where such an operation is routine. This connection is also evident with the implantation of artificial knee joints. The risk of complications or that the patient dies during the procedure is greater in small hospitals with small departments, and with surgeons with little experience.

In comparison with other OECD countries, Germany has not only the most hospital beds per 1,000 residents in Europe; the number of hospitals is also above average (see Figure 1). With 40.4 hospitals per one million residents, Germany has significantly more than the OECD country average (29.9) and more than twice as many as the U.S. (18.9). In Germany, operations often take place in small and general hospitals. In these places, the case volume per procedure is so low that complications occur more frequently.

## Hospital landscape and specialization in Europe

With the support of the Bertelsmann Stiftung, the WHO's European Observatory on Health Systems and Policies has analyzed how the hospital landscape in European countries is managed. Many countries hand over management to regional or local authorities. A clear pattern is not recognizable. However, a common trend can be seen of improving quality and patient satisfaction through specialization. For example, Denmark has concentrated specialized and planable procedures in a few hospitals. In the Netherlands, there are now independent treatment centers that are specialized in particular procedures.

The results of the analysis have been published in a policy brief that can be downloaded from the Observatory's website.

<http://tinyurl.com/jj2bjra>

### Number of hospitals per 1 million population, 2010 (or most current available year)

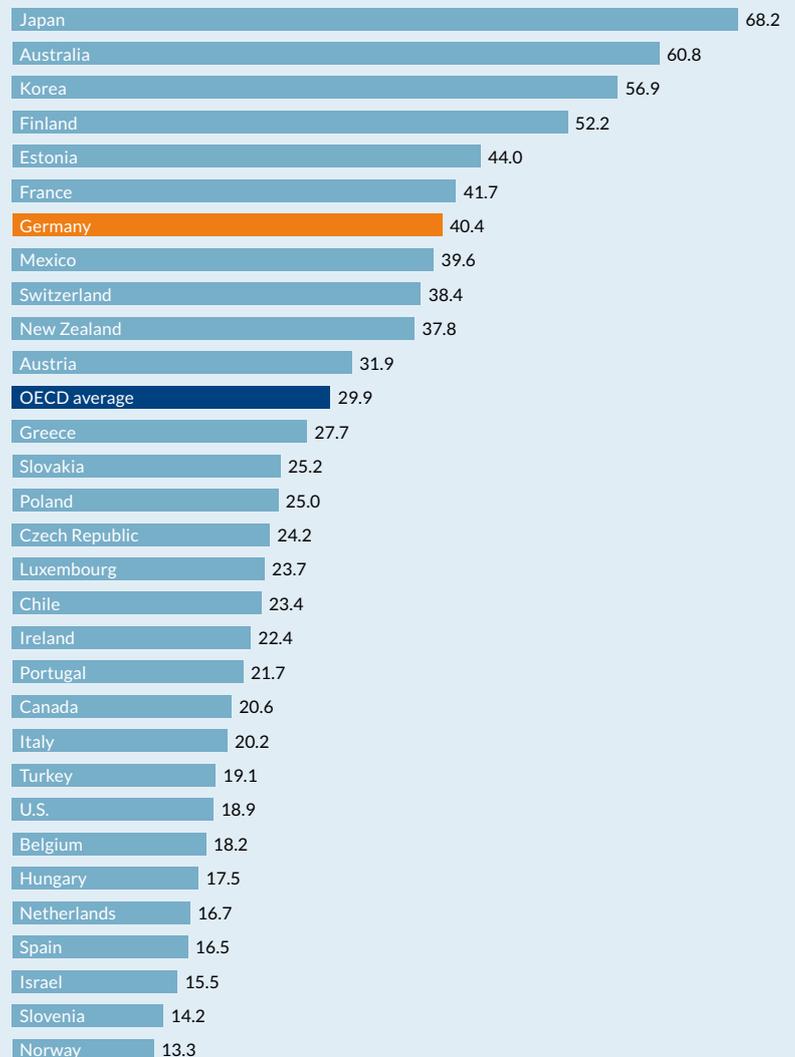


Figure 1 | Source: OECD Health Data, 2012

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Analysis of inpatient treatment in Germany clearly substantiates the difference in quality between large and small hospitals, for example, with respect to total hip replacements (THRs) and prostate removals. Almost every hospital with a surgical or orthopedic department offers THRs. This is why, despite a high total case volume (almost 229,000 THRs were conducted in Germany in 2014), many individual hospitals have a comparatively low case volume: in 176 hospitals, less than 30 new hips were implanted; in 311, less than 50. Only about half of all hospitals had more than 150 THRs. Of the 414 German hospitals that conduct prostate removals, 43 do this less than

five times a year. Only ten of the 414 had more than 300 cases a year.

### Higher quality is achievable – the case volume is crucial

Quality is higher in hospitals with high case volumes than in hospitals with low case volumes. This is more than just conventional wisdom – it was also confirmed by the Healthcare Fact Check, which examined five procedures – THRs, prostate removals, heart bypasses as well as classic heart valve operations and the minimally invasive transcatheter aortic valve implantations (TAVIs).



For more information, please refer to the IGES study »Faktencheck Krankenhausstruktur - Spezialisierung und Zentrenbildung« (only available in German).

Download the study at [faktencheck-krankenhausstruktur.de](https://faktencheck-krankenhausstruktur.de) (in German)

Analysis of the literature shows that when hospitals specialize in these procedures, it increases the quality of the treatment.

With THRs, studies show a connection between the case volume and the quality of the results. The larger the hospital and the higher the case volume, the lower the rate of complications and mortality. According to a study published in 2012, the probability of someone dying due to a THR in a German hospital that conducts less than 70 such operations per year is 0.7 percent higher than in those that conduct more than 176. Although this seems small, it means that if all 19,420 patients in small hospitals were operated on in large hospitals, 140 fewer patients per year would die as a result of a THR.

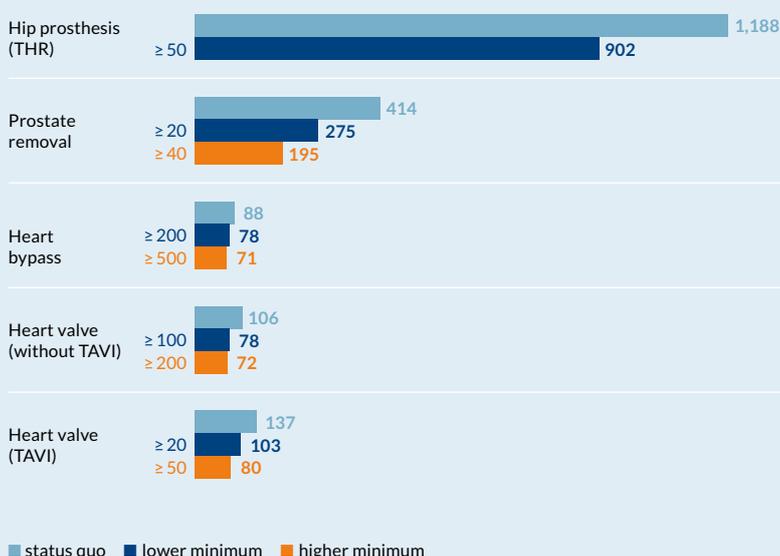
With prostate removals, higher case volumes per surgeon result in shorter stays in hospital, a higher quality of life and fewer complications. In addition, institutions with higher case volumes achieve a higher patient survival rate.

Studies have determined that hospitals that conduct more than 200 heart bypasses a year have a significant reduction in mortality.

### Minimum case volumes can improve treatment

The widely established connection between large case volumes and higher quality of healthcare suggests that binding targets for the number

#### Simulation 1: What is the impact of the minimums on the number of hospitals entitled to perform the procedure?



Source: IGES, based on data from the structured quarterly reports (Strukturierten Qualitätsberichte - SQB)

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“Not everything can be performed in the same way everywhere with the same quality. This is why it is appropriate to arrive at a sensible division of labor between local and readily accessible basic and standard care, and specialization. This will also lead to a restructuring in the hospital landscape.”

German Federal Minister for Health, Hermann Gröhe, in his address to the Bundestag on the Hospital Structure Act, 5 November 2015.

of procedures conducted should be introduced. There are no required minimums for the five indications selected in this fact check, although the international literature would support this. The Federal Joint Committee (Gemeinsamer Bundesausschuss - G-BA) has set annual minimums for certain inpatient procedures (e.g., for total knee replacements (50), kidney transplants (25), liver transplants (20) and complex procedures on the esophagus (10)). If a hospital does not reach these targets, they are, in principle, not permitted to charge the insurance funds for the corresponding services.

What happens if minimums are set for further indications? How will the hospital landscape change? What are the consequences for close-to-home healthcare? How will the number of hospitals permitted to conduct a specific operation fall? These questions have been addressed with a simulation developed especially for this fact check. The annual minimums applied here – 50 for THRs, 20 or 40 for prostate removals, 200 or 500 for heart bypasses, 100 or 200 for heart valve operations without TAVI and 20 or 50 for those with TAVI – have been derived from the available literature as plausible figures for the respective indication.

When strictly complying with the above-mentioned minimums, the number of hospitals entitled to perform the corresponding procedures falls, in part, appreciably: for THRs by almost a quarter; for prostate removals (depending on the minimum applied) a third to almost a half of hospitals may no longer perform these procedures. The number of hospitals performing these proce-

dures also significantly falls with the other three indications (see Simulation 1).

**Specialization only marginally increases travel times**

Critics of a heavier concentration of individual inpatient procedures in hospitals or centers specialized in these maintain that patients would have to accept longer travel times. However, this is not the case for many kinds of procedures. For the indications examined in the fact check, a simulation calculated no considerable increases in travel times for patients if hospitals more strongly specialize in order to achieve the required minimum case volumes.

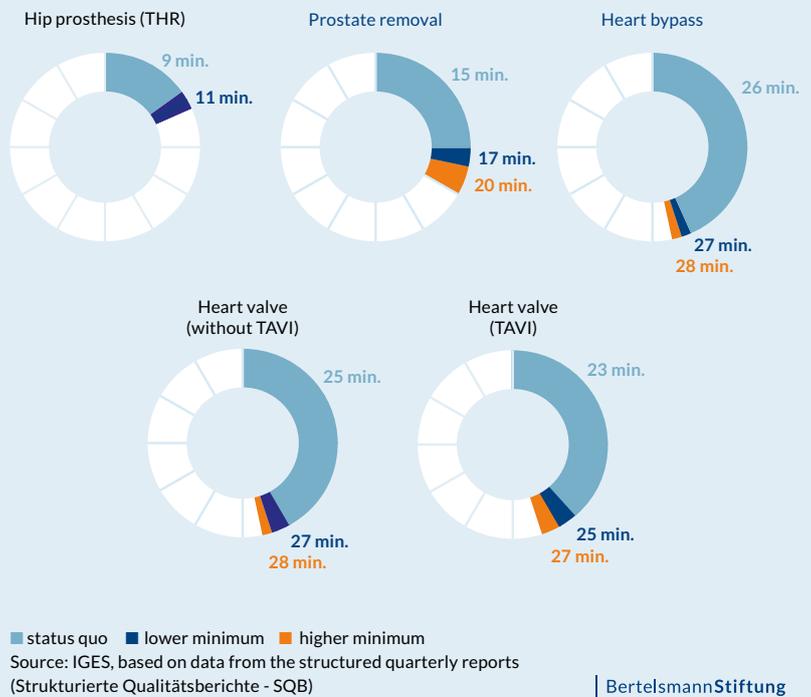
The introduction of minimums for the five indications considered does lead to a reduction of hospitals entitled to perform these procedures. However, the average travel times to the nearest hospital increase by only two to five minutes, even using the higher minimum. A hospital for THRs could be reached in an average of eleven minutes instead of the previous nine minutes; for prostate removals this would be an average of 20 minutes, and for a heart bypass or heart valve operation 28 minutes (see Simulation 2).

The share of the population needing more than 60 minutes travel time increases with the new minimums for all five indications. However, for THRs and prostate removals, less than one percent of the population are affected, and for the three other procedures considered, shares of between 2.8 and six percent are affected, depending on the minimum applied (see Simulation 3).

“Other countries, such as the Netherlands, implement much stricter requirements than Germany with respect to centralizing complex treatments in order to increase the quality of healthcare. And this has been successful, as can be clearly seen in the complication and mortality rates for certain indications.”

Prof. Dr. Thomas Mansky,  
Head of the Department for Structural  
Advancement and Quality Management in  
Health Care, Technical University of Berlin

**Simulation 2: What impact do minimums have on average travel times to the nearest hospital?**



**Simulation 3: What percentage of the public need more than 60 minutes to reach the nearest suitable hospital if minimums are prescribed?**

	status quo	lower minimum	higher minimum
Hip prosthesis	0.02%	≥ 50 0.06%	-
Prostate removal	0.06%	≥ 20 0.2%	≥ 40 0.7%
Heart bypass	3.4%	≥ 200 4.1%	≥ 500 6.0%
Heart valve (without TAVI)	3.2%	≥ 100 4.1%	≥ 200 6.0%
Heart valve (TAVI)	1.7%	≥ 20 2.8%	≥ 50 5.7%

The derived figures represent the average, population-weighted travel time in minutes to the nearest hospital for all municipalities.  
Source: IGES, based on data from the structured quarterly reports (Strukturierte Qualitätsberichte - SQB) | BertelsmannStiftung

286  
hospitals conducted  
less than 50 THRs per year;  
176 of these even less than 30.

2  
minutes longer – the average travel  
time to the nearest hospital when  
a minimum of 50 THRs were to be  
prescribed.

1,188  
of 1,191 hospitals with a surgeon in  
2014 conducted THRs

“The bundling of capacities and cooperation between hospitals enables greater specialization and more treatments to be conducted. This approach should be taken consistently in the interests of patients.”

Prof. Dr. Jonas Schreyögg,  
Director of the Hamburg Center for Health  
Economics, Universität Hamburg

### Centers for particularly complex treatments

The specialization of the hospital landscape relates not only to a focusing of treatments provided in individual hospitals. There is also the opportunity to offer treatment in a region in highly specialized centers for particularly complex procedures (as required with diseases such as tumors). These centers integrate a comprehensive spectrum of treatment expertise. It is particularly important with respect to cancers that a specialized hospital be sought out, which might not be the closest. As part of its hospital search function, the Weisse Liste provides information on more than 1,200 cancer treatment centers certified by the German Cancer Society. In addition, the portal indicates the case volume for each procedure and the treatment-relevant facilities of each department.

[weisse-liste.de](http://weisse-liste.de) (in German)

Nonetheless, long travel times already exist today, especially in remote regions. This situation won't significantly change, even with an increase in specialization – it has to be addressed with adequate healthcare approaches.

In this context, it is interesting to note that, according to a 2015 survey by the company insurance funds, although a quarter of those surveyed wanted to have a plannable operation in a hospital in the immediate vicinity, more than half considered travel times of up to an hour acceptable. In addition, when the quality of medical and nursing services is assured in an even more distant hospital, 46 percent of those surveyed would accept additional travel times of over an hour.

### Specialization, but not at all costs

It's often the small hospitals that encounter financial difficulties. They can profit from the bundling of cases in a specialized hospital landscape and improve their cost effectiveness. At the same time, increased quality in specialized departments can contribute to reducing the expenses for insurance funds that arise from complications. It is generally commercially advantageous for small hospitals to forgo certain treatments in some areas and specialize in other indications.

The total number of treatments conducted should not increase due to the specialization of hospitals or departments. In the public interest, it is sensible to restrict a potential increase of treatments conducted and limit a strengthening of the bargaining power of specialized institutions, for example with respect to price negotiations with health insurance funds. The specialization of the hospital landscape should also not be driven forward at all costs. Above all, the specialization process should not be thwarted by economically motivated increases in cases (i.e., treatments that are not medically necessary).

### Implementing quality criteria in hospital planning

The German hospital landscape has long followed the model of a supply network as closely meshed as possible: Almost 96 percent of the population can reach the nearest hospital for primary care in less than 20 minutes. State hospital planning has largely maintained and perpetuated these structures up to now. The KHSG, which came into effect at the beginning of the year, offers states the opportunity to realign their respective hospital planning.

Among other KHSG provisions, quality should be introduced as an additional criterion in hospital planning. Unfortunately, states are not obliged to apply the quality criteria developed by the Institute for Quality Assessment and Transparency in Health Care (Institut für Qualitätssicherung und Transparenz im Gesundheitswesen – IQTIG). The Act, passed by the Bundestag and Bundesrat, also allows for surcharges and deductions with respect to the remuneration of inpatient services. A specialization of hospitals and consequent concentration of treatments in more capable departments would meet the objective of the Act – ensuring and increasing the quality of healthcare – without jeopardizing close-to-home treatment, as this fact check shows.



### Case study: Hamm – specialization instead of competition

The St. Marien-Hospital and the Evangelische Krankenhaus (EVK) have taken new approaches and formed a healthcare network. The hospitals, with 584 and 464 respective beds, service Hamm – a town of 180,000, located at the eastern edge of the Ruhr (Westphalia). The hospitals, which previously had six of the same departments, decided to bundle these into three departments for each respective hospital. The St. Marien-Hospital has specialized in cardiology, vascular diseases, as well as orthopedic and trauma surgery, while the EVK has specialized in oncology, surgery and gastroenterology.

The driver for the restructure was the 2015 hospital plan of the state of North Rhine-Westphalia, which provided for the reorganization of regional services and reduction of overcapacities. Both Hamm hospitals thus decided to cooperate: “We’re bundling our expertise but we remain financially independent,” emphasized the Heads of Administration. Some 130 staff, including many doctors, changed from one hospital to the other that had focused on their medical specialty.

The specialization was intended primarily in the interests of the patients, but also to improve the hospitals’ capacities. “The consolidation has now created a large and effective team. We can now offer all of the diagnostic methods of our specialty,” stated Prof. Dr. Alexandra von Herbay, Head of Gastroenterology, who changed from St. Marien-Hospital to the EVK. She views her expanded department as having better equipment and functioning now practically at the level of a university hospital. Prof. Klaus Pethig, Head of Cardiology added “We are now able to provide outstanding quality at any time. Our special treatment and operative expertise mean a huge improvement for patients.”

## Recommended action

## Promote specialization – make quality more transparent

There is no single means of promoting the specialization of the hospital landscape. However, answers might be found within the health system itself (e.g., through cooperation between hospitals). Legislators and authorities could also support and promote specialization, primarily through measures that make it easier for patients to choose high quality treatment in a specialized hospital. However, legislative measures formulated to improve quality should also be implemented and expanded with respect to the minimum case volumes.

### Make quality reports comprehensible

- › In order to promote competition between hospitals and increase quality transparency, improvements must be made to the structured quality reports delivered by hospitals. As prescribed in the KHSg, they need to be clearer and more comprehensible for patients and doctors in private practice, and provide more patient-relevant information.

### Cut the certificate red tape

- › Quality transparency must also apply to the certificates and quality certifications used by centers for complex procedures in advertising. This requires the IQTIG to promptly develop evaluation criteria. Centers should also be identified in states' hospital plans.

### Introduce binding quality criteria in hospital planning

- › Aligning hospital planning with quality criteria, as prescribed by the KHSg, must be implemented consistently. The quality criteria developed by the IQTIG for hospital planning should be introduced by states in a binding manner.

### Monitor and facilitate the determination of minimum case volumes

- › The determination of minimum case volume standards should be facilitated. The G-BA should make use of the expanded possibilities presented by the KHSg. The minimums should be more stringently monitored, regularly evaluated, and adjusted with advances in medicine.

### Establish regional cooperation for complex procedures

- › Where possible, complex elective procedures should only take place in specialized departments. Smaller hospitals in particular should review possibilities for regional cooperation.



SPOTLIGHT HEALTHCARE is an initiative of the “Improving Healthcare – Informing Patients” program at the Bertelsmann Stiftung. Published several times a year, SPOTLIGHT HEALTHCARE addresses topical issues in healthcare. The Bertelsmann Stiftung is committed to promoting a healthcare system relevant to public needs. Through its projects, the Stiftung aims to ensure the provision of needs-based and sustainable high-quality healthcare in which patients are empowered by access to readily understandable information.

As part of the program, the project “Healthcare Fact Check” takes a closer look at a specific healthcare topic several times a year. Healthcare Fact Check aims to help limited resources to be used more appropriately and ensure that healthcare services are more closely aligned to the actual needs of patients.

#### Further information at

[bertelsmann-stiftung.de/healthcare-fact-check](http://bertelsmann-stiftung.de/healthcare-fact-check)

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Photos: Halldark /Fstop/  
 Strandperle, EVK Hamm,  
 Fotostudio Clemens,  
 krinke-fotografie  
 Design: Dietlind Ehlers  
 Editors: Claudia Haschke,  
 Burkhard Rexin  
 Printed by: Druckhaus Rihn

Responsible for content:  
 Uwe Schwenk  
 Program Director  
 »Improving Healthcare –  
 Informing Patients«

ISSN (Print): 2364-6101  
 ISSN (Online): 2364-611X  
 Publication date:  
 November 2016

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