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Reorganizing Germany's Hospital Landscape

Better care requires fewer hospitals

- **Overcapacities exacerbate a shortage of skilled workers:** There are too few medical personnel to maintain today's number of hospitals in Germany
- **Many hospitals are poorly equipped:** Almost 2/3 do not have the equipment to perform a coronary angiography, 1/3 lack CT scanners
- **Quality takes priority:** Only hospitals with larger departments and more patients have enough experience to provide reliable care
- **Concentration and specialization:** Good quality care is feasible only with fewer than 600 hospitals throughout Germany
- **Opportunity for cities:** In the Cologne-Leverkusen metropolitan area, 14 instead of 38 acute care hospitals are sufficient; this reduced number would not result in any major difference to the distance patients have to travel
- **Hospitals are only one of many options:** New shuttle services, as well as out-patient and day care solutions need to be established, particularly in rural areas

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In Germany, the per capita rate of hospital inpatient care is higher than almost anywhere else in the world. In 2017, there were almost 19.5 million cases treated in German hospitals; around two million more than ten years prior to this, and almost five million more than in 1991. In Germany, there are 65 percent more beds per capita than the EU average, and patients stay significantly longer in hospital: the number of bed days per capita is around 70 percent higher than the average of comparable EU countries. The number of bed days per capita is 70 percent higher than the average of comparable EU countries.

The problems have been known for a long time: there are too many hospitals in Germany, and they are often too small. In 2017, around one-third (666) of all German hospitals had a maximum of 100 beds. The consequences of this problematic hospital landscape (i.e., the insufficient concentration and specialization) are deficits in the quality of care and in patient safety. In addition, there are overcapacities and economic pres-

ures that result in many patients receiving inpatient care when it is unnecessary.

Until recently, it’s not been a viable option to reorganize the hospital landscape to any significant extent. The public often perceives hospital closures as a loss. Local discussions focus primarily on accessibility, while questions about hospital quality and patient safety take a back seat. Quality has also not played a major role in the hospital planning of the German federal states.

What changes need to be made with inpatient care in Germany so that we can, in the future, receive a level of care as good as or even better than that of today? To address this question, the Bertelsmann Stiftung brought together eight of Germany’s most renowned hospital experts. They discussed what the German hospital landscape should ideally look like in 2030. The focus here was primarily on quality of care, but accessibility and cost-effectiveness were also examined.

In a second study, the Berlin-based IGES Institute looked at the example of the North Rhine-

Care structure today and in 2030

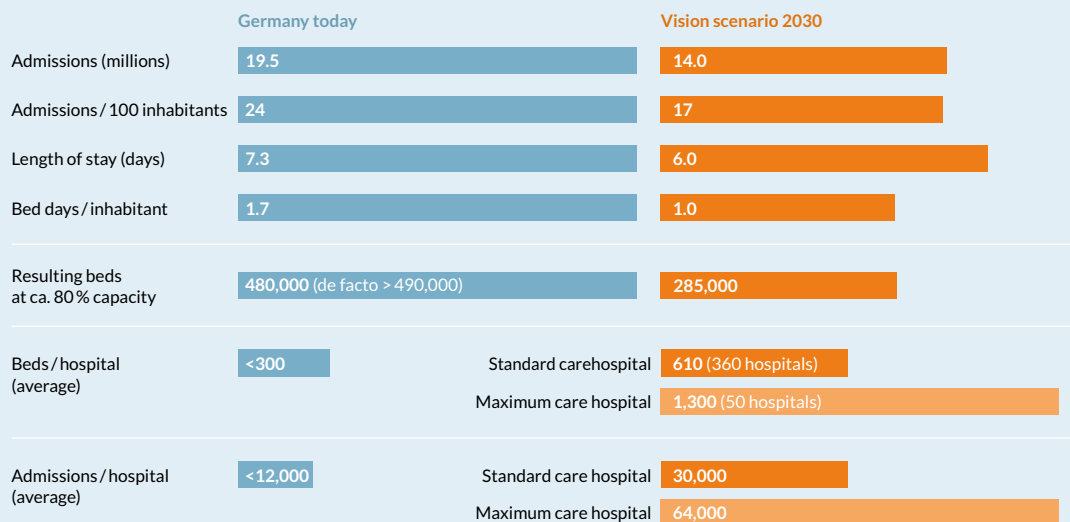


Figure 1 | Source: Zielbild für die zukünftige deutsche Krankenhaus-Landschaft (Vision for the future German hospital landscape)

Westphalian Care Region 5 (Versorgungsregion 5) – consisting of Cologne, Leverkusen, and three surrounding, structurally weaker districts – and investigated whether a quality-based reorganization is feasible in accordance with the objectives and criteria of the experts, and what this would mean for the region. The results of both studies are presented in this Spotlight Healthcare.

There are too few medical personnel to maintain today’s number of clinics.

A total of 5.5 specialists are required to fill the post of a specialist around the clock (i.e., 24 hours/7 days a week). However, there is a shortage of highly trained physicians and nursing staff. The situation in Germany is further exacerbated by the fact that medical personnel are divided across too many hospitals. This results in it taking a long time for patients in hospitals to actually see a specialist. If there are no specialists available, an easily accessible hospital is only ostensibly an advantage: in reality, it presents a serious disadvantage in terms of quality.

Millions of hospital admissions are superfluous

The large number of competing hospitals and false incentives in the remuneration system result in more and more patients receiving inpatient care despite the lack of personnel. This leads to the paradoxical situation in which there are more hospital personnel per capita in Germany than in other countries, but fewer per patient. In comparison with 15 EU countries, significantly more patients in Germany come from emergency admissions, and also more than in the past; today, almost half of all patients are admitted to hospital this way. This was not always the case: in 2005, 60 percent of all inpatients were still admitted by an office-based physician.

In the opinion of the leading German hospital experts, much of this overcapacity is avoidable: around five million patients could receive care or operations of the same standard when treated in an outpatient setting. This alone corresponds to around 500 medium-sized hospitals, or a third of the capacity of all German general hospitals. As such, this capacity is not actually needed. The number of ambulatory care-sensitive conditions (ACSCs) that could be treated on an outpatient basis is almost as high. If this potential is taken advantage of, rather than increasing, the number

The expert team

The following experts took part in the discussion on the required structural changes to the German hospital landscape:

- Dr. Martin Albrecht, IGES Institute, Berlin
- Prof. Dr. Boris Augurzky, RWI – Leibnitz Institute for Economic Research, Essen
- Prof. Dr. Andreas Beivers, Hochschule Fresenius für Wirtschaft und Medien, Munich
- Prof. Dr. Reinhard Busse, TU Berlin
- Prof. Dr. Max Geraedts, Philipps-Universität Marburg
- Dr. Matthias Gruhl, Hamburg Ministry of Health and Consumer Protection (ended his participation in the team of experts on 2 November 2018 with his appointment as State Councilor)
- Dr. Stefan Loos, IGES Institute, Berlin
- Dr. Uwe Preusker, international healthcare expert, Helsinki
- Prof. Dr. Bernt-Peter Robra, Otto von Guericke University Magdeburg
- Prof. Dr. Jonas Schreyögg, Hamburg Center for Health Economics (HCHE)
- Karsten Zich, IGES Institute, Berlin

of hospital admissions could be reduced to around 14 million per year by 2030. Accordingly, less hospital capacity would be required.

“ We know that the quality of many operations increases with experience and resources. As such, there is no way around a bundling of cases and specialization. ”

Dr. Ilona Köster-Steinebach,
German Coalition for Patient Safety (Aktionsbündnis
Patientensicherheit e.V., APS)

Small hospitals often have poorer quality of care

Some 57 percent of all German hospitals are small hospitals with less than 200 beds, and many are under-equipped in terms of medical technology. For example, in 2017, every third hospital lacked a computed tomography (CT) scanner, and 61 percent of all hospitals lacked the equipment to perform a coronary angiography. In many cases, hospitals lack both the equipment and the experience to treat typical emergencies like heart attacks and strokes. The fact that many patients are treated in hospitals that have neither the personnel nor the technical equipment can be seen

in the high number of transfers: in 2017, around 770,000 patients were transferred to other hospitals. In addition, many of the underequipped hospitals are located in metropolitan areas where patients could also easily reach better-equipped hospitals.

New standard care: Significantly less than 600 hospitals, but of better quality

According to leading German hospital experts, high-quality care is only possible with significantly less than 600 hospitals. The number of beds would have to be reduced, and care concentrated in much larger hospitals and departments. To this end, the experts call for moving away from the three- or four-tier hospital structure (inpatient primary care, standard care, main and maximum care hospitals, as well as specialized hospitals). The current structure should be replaced with a two-tier system featuring “new standard care” hospitals in medium-sized urban centers and “maximum care” hospitals in larger and major urban centers.

Binding criteria have been established for this new hospital landscape: the quality of a hospital (technical equipment, personnel, and minimum case volumes), accessibility and cost-effectiveness. Each hospital should have central departments staffed around the clock with specialists and have enough cases for the purposes of quality assurance and cost-effectiveness. All other departments should only exist in university

hospitals and maximum care hospitals (see Figure 2).

According to the experts, if these quality and cost-effectiveness criteria are strictly applied to remaining admissions (i.e., taking into account the 14 million fewer cases described above), only 410 hospitals would be required instead of the circa 1,650 hospitals in Germany today. Of the 410, 360 would be standard care hospitals and 50 maximum care hospitals. However, it won’t be politically feasible to apply this criteria in a strict sense and would require building many expensive new hospitals. A realistic number of hospitals would thus be somewhat higher – also to avoid long travel times in very remote rural areas. The greatest potential for capacity reduction lies in metropolitan areas without real access problems for the public.

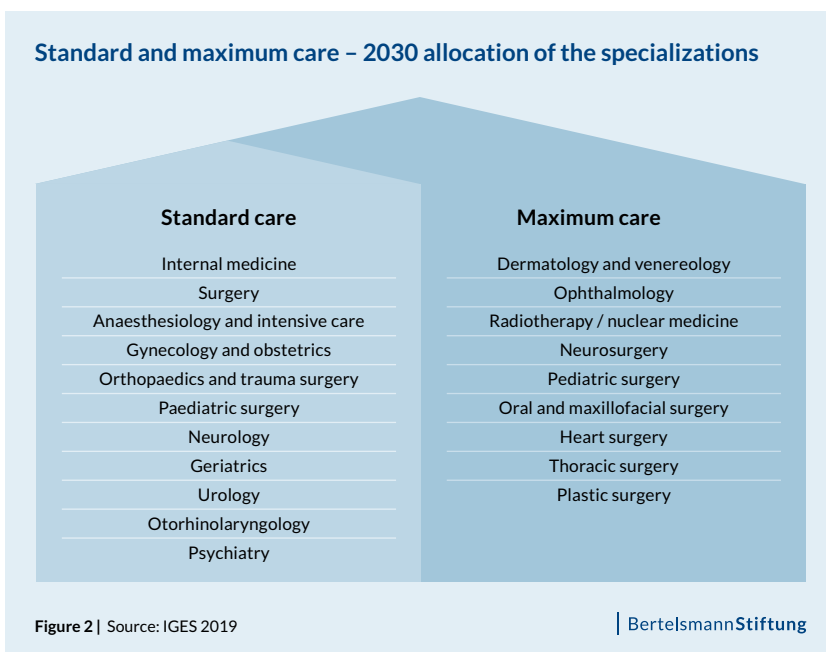
Quality takes priority: Only large hospitals have enough experience to provide reliable care

The hospitals in the new standard care category should have the technical equipment and personnel for comprehensive emergency treatment of patients with heart attacks or strokes. The departments and the hospitals as a whole have to be large enough to work well in terms of both quality and cost-effectiveness. This means that departments should have at least 25 beds, and hospitals an absolute minimum of 200 beds, with significantly larger hospitals preferable.

The hospitals in the new standard care category would handle significantly more admissions than most hospitals today, even with far fewer inpatients overall. At the same time, as all current hospital personnel will work in far fewer hospitals, the high level of staffing required for these large hospitals will not only guarantee the provision of emergency care, the concentration will also allow for the delivery of high-quality medical care (in part a result of meeting minimum case volumes), as well as more effective economic management.

A practical case-in-point: Reorganizing the hospital landscape in the Cologne-Leverkusen metropolitan areas is feasible

The Berlin-based IGES Institute has simulated in a computation model how the application of the expert criteria would affect the number of hospitals in a specific region. According to the model, the number of hospitals in the North



Rhine–Westphalian Care Region 5 (consisting of Cologne, Leverkusen, and three surrounding, structurally weaker districts) can be reduced from the 38 existing acute care hospitals to 14, and without significantly increasing travel time for patients and their relatives. Reorganizing the hospital landscape in accordance with the concepts and criteria of the experts would also significantly improve care in the Cologne–Leverkusen metropolitan area, as all 14 hospitals would have the appropriate technical equipment and personnel to comprehensively deal with emergencies, including a suspected heart attack.

Now, the exact location of these hospitals needs to be determined so as to provide the public with the optimal care. If the locations of the hospitals are primarily determined according to accessibility,

The state of care in the Cologne–Leverkusen metropolitan area today

Of the 38 hospitals in the Cologne–Leverkusen metropolitan area, some 36 treated patients with acute heart attack in 2016. However, only six hospitals treated more than 309 cases, which is the critical lower limit for sufficient experience cited in the literature. Some 21 of the 36 hospitals had no procedures documented for primary percutaneous coronary intervention (PPCI), which is considered the preferred treatment. All of these hospitals had less than 100 patients with acute heart attack. Of the remaining 15 hospitals with documented PPCI procedures, only 14 had a cardiac catheter laboratory. It can be assumed that the remaining hospitals do not possess the central diagnostic and therapeutic facilities for treating emergency patients with acute heart attack.

In cases of stroke, only seven hospitals had more than 250 patients and thus met the minimum case volume requirements for certification as a stroke unit.

In 2016, only six of the general hospitals in the Cologne–Leverkusen metropolitan area had sufficient personnel to staff all of their departments continuously with specialists. A total of only 143 of the 204 departments in the 38 general hospitals in the North Rhine–Westphalian Care Region 5 had enough specialists for round-the-clock operation.

Size of the 38 acute care hospitals in Care Region 5 (2016)

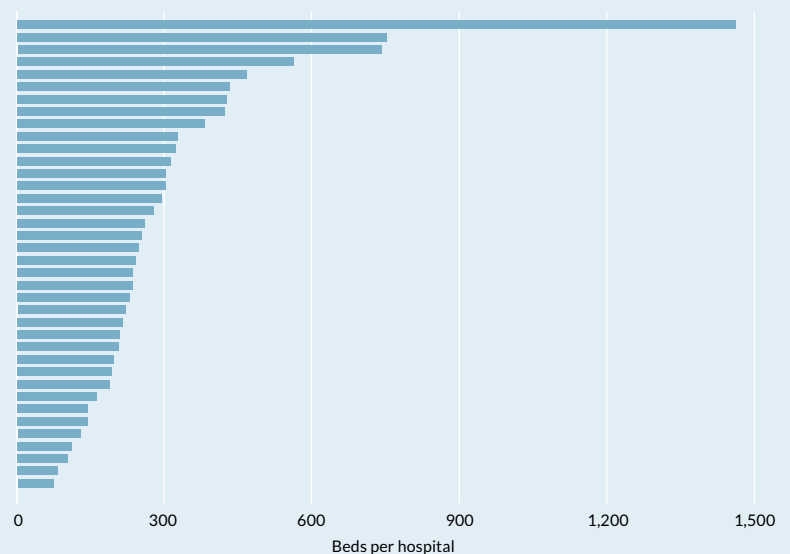


Figure 3 | Source: Structured quality reports (Strukturierte Qualitätsberichte) 2016, calculation by IGES

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Hospitals 2016/2030 in Care Region 5 according to the distance-based structure model

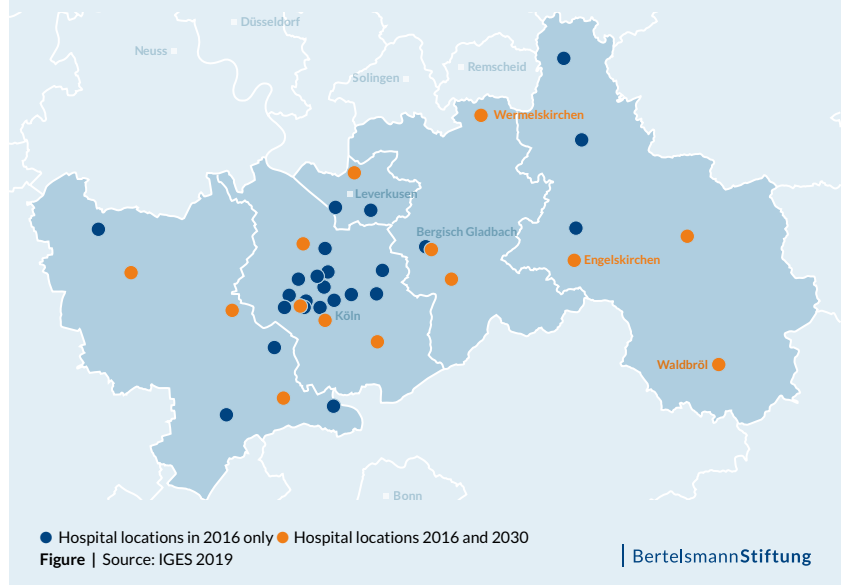
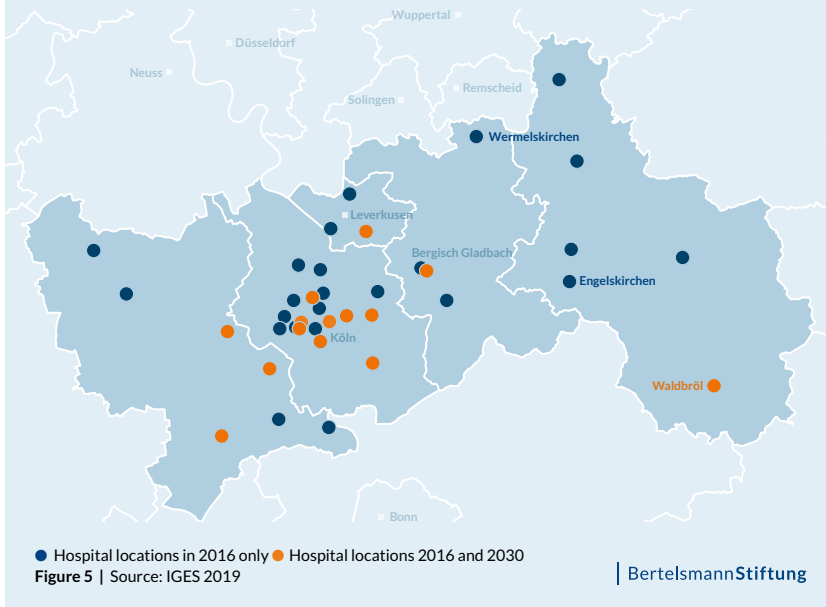


Figure | Source: IGES 2019

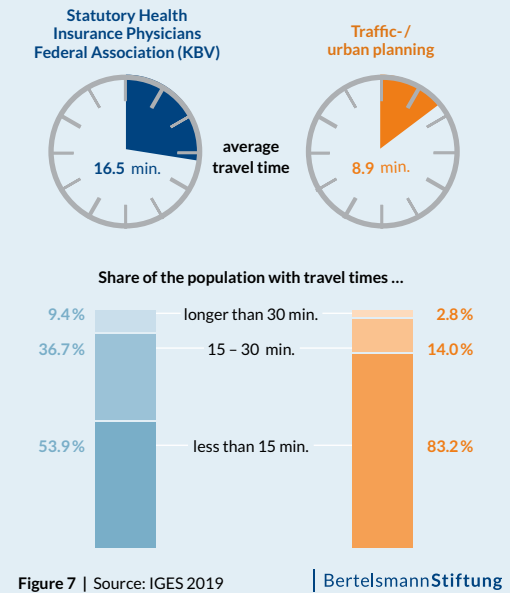
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the average travel time to a hospital of the new standard care category would take 17 minutes; today, it would take a maximum of 30 minutes for 97 percent of the public. The average travel time to a maximum care hospital would be 24 minutes; a maximum of 60 minutes would be required, as is the current case. However, for this to happen, two of the four maximum care hospitals in the rural part of the metropolitan area would have to be new.

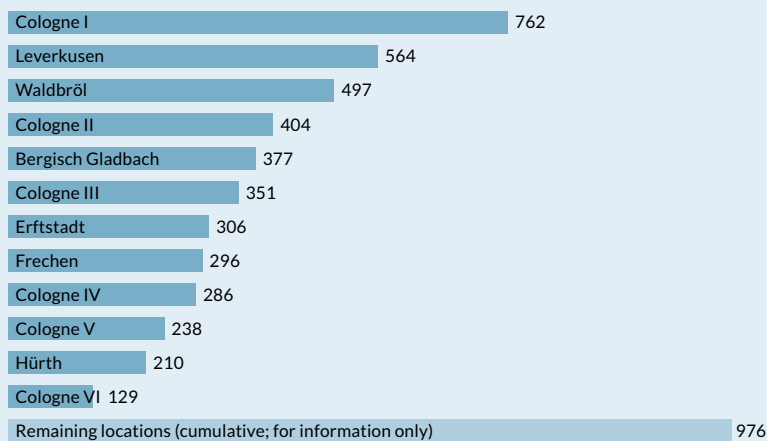
**Quality-based structure model:
Hospital locations that can adequately provide for the emergency
treatment of heart attack patients**



**Quality-based structure model:
Accessibility of standard care hospitals**



**Quality-based structure model:
Number of cases of acute heart attack (ICD-10 I21)**



Quality of care takes precedence over accessibility

It is not ideal to maintain hospitals in sparsely populated regions only for reasons of accessibility: In their catchment areas, there are still too few patients to gather and maintain the experience necessary for really good quality. This applies not only to maximum care hospitals,

but also to the typically smaller hospitals of the new standard care category. In 2030, the hospitals in the sparsely populated east of Care Region 5 (Engelskirchen, Wermelskirchen and Waldbröl) would have too few potential patients to provide high-quality and cost-effective emergency treatment for heart attacks or strokes. The situation is similar with respect to the preferred minimum case volumes, which often cannot be reached in departments in rural areas.

Alternatively, if the 14 hospitals necessary for the provision of care are selected so that all emergency patients with suspected heart attack can be treated, 9.4 percent of the public would have to travel longer than 30 minutes to the next standard care hospital. However, this relatively high number of patients with longer travel times is based on the computation model of the German National Association of Statutory Health Insurance Physicians (Kassenärztliche Bundesvereinigung, KBV), which uses very low average travel speeds. If the model applied in transport and land use planning is used, only 2.8 percent of patients have travel times in excess of 30 minutes. In any case, patients in the remaining hospitals would be well cared for, and would have to be transferred less frequently.

600

hospitals are sufficient for Germany

2/3

of the acute care hospitals in the Cologne-Leverkusen metropolitan area are not equipped for the emergency treatment of heart attacks

30%

of hospital departments in Care Region 5 cannot guarantee the 24/7 presence of specialists

Too few specialists for the current number of hospitals

The calculations delivered by the IGES Institute model show that, even after a reorganization of the hospital landscape, the number of specialists in the Cologne-Leverkusen metropolitan area would still be too low to fill all the departments in the planned 14 hospitals around the clock. For example, the 33 otorhinolaryngologists currently working in the hospitals in the region are just barely enough to ensure 24/7 specialist care at six locations. Although the financial resources could, theoretically, be increased, the same cannot be done with respect to the scarce personnel. In the model region, concentration does not solve the problem of the shortage of specialists entirely, but it does mitigate it. At the moment, only four locations have the appropriate number of otorhinolaryngologists.

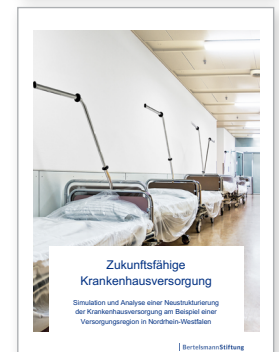
The outpatient care sector also needs reform

The roughly five million operations that will no longer take place in an inpatient setting cannot be catered for by the existing outpatient provider structures alone. Comprehensive structural changes are necessary here as well, including outpatient operation centers at the future hospitals in the new standard care category. Small

hospitals that will no longer be needed as acute care hospitals could be converted into multidisciplinary intermediate treatment and care centers.

A further concentration of hospital locations cannot be avoided, as medical and nursing staff will remain scarce and small hospitals will not be able to acquire the necessary experience and optimize processes. Specialization is not only an economic necessity, but also – and above all – imperative for patient safety. As seen, accessibility is not a problem in major cities. In rural regions, on the other hand, there is a real conflict between accessibility and quality of care. Given this, poorly equipped hospitals in rural regions should not be left to provide care. Instead, alternative emergency service structures need to be established, and concepts for shuttle services for both patients and their relatives should be developed.

The reorganization of the hospital landscape represents a structural change similar to that of the phasing-out of coal, but much more complex, as it is a selective reorganization based on the quality of care and patient safety rather than a complete phase-out. The reorganization should be viewed as a macrosocial transformation process for entire regions, which, like the phasing-out of coal, should also receive financial support from tax revenues.



Our vision for the future of the German hospital landscape as well as the analyses for the Cologne-Leverkusen metropolitan area can be downloaded free of charge at www.bertelsmann-stiftung.de/krankenhaus-landschaft.

Recommended actions

Federal and state governments must support municipalities with reorganization

Closing hospitals is difficult. The public usually perceive closures as a loss. Nevertheless, given the shortage of skilled workers, concentrating inpatient care in large hospitals is necessary in order to improve quality and ensure care. Also, work on reorganizing the hospital landscape needs to start soon – otherwise considerable funds will be pointlessly invested, for example, in the digitalization of hospitals that are no longer needed. The following measures in particular are required:

Improve quality

- › The German Federal Joint Committee (Gemeinsame Bundesausschuss, G-BA) should establish minimum case volumes for further interventions and significantly increase existing ones when there is scientific justification for this.
- › The German federal states have to introduce binding measures to ensure that hospitals have the equipment for treatment in accordance with the guidelines. Quality must no longer be considered just “another criterion” in hospital planning.

Ensure accessibility

- › The G-BA guidelines for hospital accessibility have to be based on realistic models and result in plausible travel times.
- › If the closest hospital cannot be reached in 30 or 60 minutes, the primary focus should be on optimizing emergency services and shuttle services for relatives.
- › Developing outpatient and telemedical solutions in rural areas is preferable to maintaining small hospitals with poor quality of care.

Adjust planning and financing

- › Hospital planning should no longer be based on beds, but rather on case volumes and actual needs.
- › Structural funds need to be increased to enable the reorganization of the hospital landscape so as to reduce the number of hospitals to less than 600.

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.

Further information at www.bertelsmann-stiftung.de/krankenhaus-landschaft

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