

Tonsillectomy in Germany: Marked regional variations in the most common inpatient operation performed on children and adolescents

In some districts, eight times as many children and adolescents are operated on as in others

Every year, 48 out of every 10,000 children and adolescents¹ in Germany have their tonsils removed. This makes this surgical procedure the most frequently performed inpatient operation carried out on children and adolescents under a general anesthetic and the most common surgical intervention performed by ENT departments in Germany.

- The surgical removal of the tonsils is a “young person’s operation”: 54 % of all operations are performed on patients aged up to 19 years; in 2010, this number totaled 69,000.
- In 2010 this operation accounted for more than half of the procedures carried out in 175 out of 673 ENT departments and more than two thirds of all procedures in 71 ENT departments.
- On an international scale, the frequency of such operations in Germany is about average.
- In addition to the usual risks associated with surgical interventions, complications such as post-operative bleeding can occur, which in very rare cases may even be life-threatening.
- An alternative procedure in the presence of enlarged tonsils (adenotonsillar hyperplasia) is partial tonsillectomy, which can be undergone either as an inpatient or as an outpatient and is generally regarded as posing less risk. In 2010, about 12 % of the surgical interventions considered in the study were partial tonsillectomies.

Slight fall in the frequency of operations overall but in certain age groups the number is actually on the increase.

- The number of tonsillectomies has fallen over the last few years; half of this decline is due to a drop in the number of children.
- In the age groups 1 to 4 years and 15 to 19 years, however, the frequency of operations has increased slightly per 10,000 children and adolescents in the respective age groups.

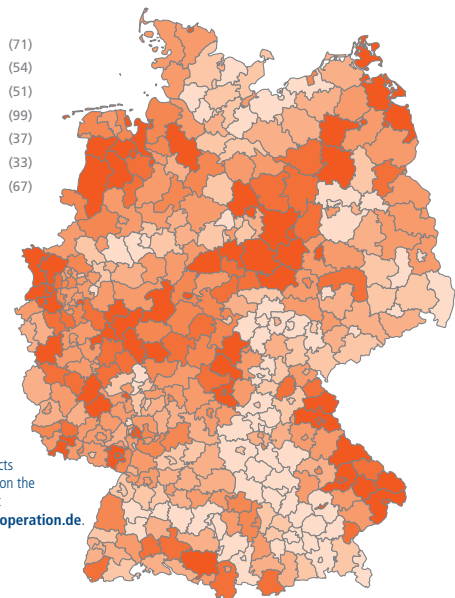
The Healthcare Fact Check shows: The incidence of surgical interventions varies considerably from region to region.

- The frequency of surgery varies among the German federal states by a factor of up to three: for example, in the period 2007 to 2010, operations were performed on 76 out of every 10,000 children and adolescents in Bremen but in Berlin, the number of interventions was only 27.²
- At the level of rural and urban districts, the variation is even greater. In some districts the number of children who had their tonsils removed was up to eight times as high as in other districts.
- In 71 of the 412 districts, the frequency of surgery was 30 % or more above the national average of 48 per 10,000 children and adolescents.
- The data presented here refers to where the patients live, not to where the operation was carried out.

Annual rate of tonsillectomy per 10,000 children and adolescents in Germany according to district of residence for the period 2007-2010

Children and adolescents up to the age of 19 years old, district of residence, directly standardized according to the population in 2010, partial and complete removal of the tonsils, with and without adenoidectomy, in hospital

Germany:	48.0
≥ 0 to < 33.4	(71)
≥ 33.4 to < 38.1	(54)
≥ 38.1 to < 42.9	(51)
≥ 42.9 to < 52.4	(99)
≥ 52.4 to < 57.2	(37)
≥ 57.2 to < 62.0	(33)
≥ 62.0	(67)



The values for individual districts can be viewed and compared on the interactive map of Germany at www.faktencheck-mandeloperation.de.

Source: Healthcare Fact Check 2013; data: German Federal Statistical Office; calculation and graphic: IGES.

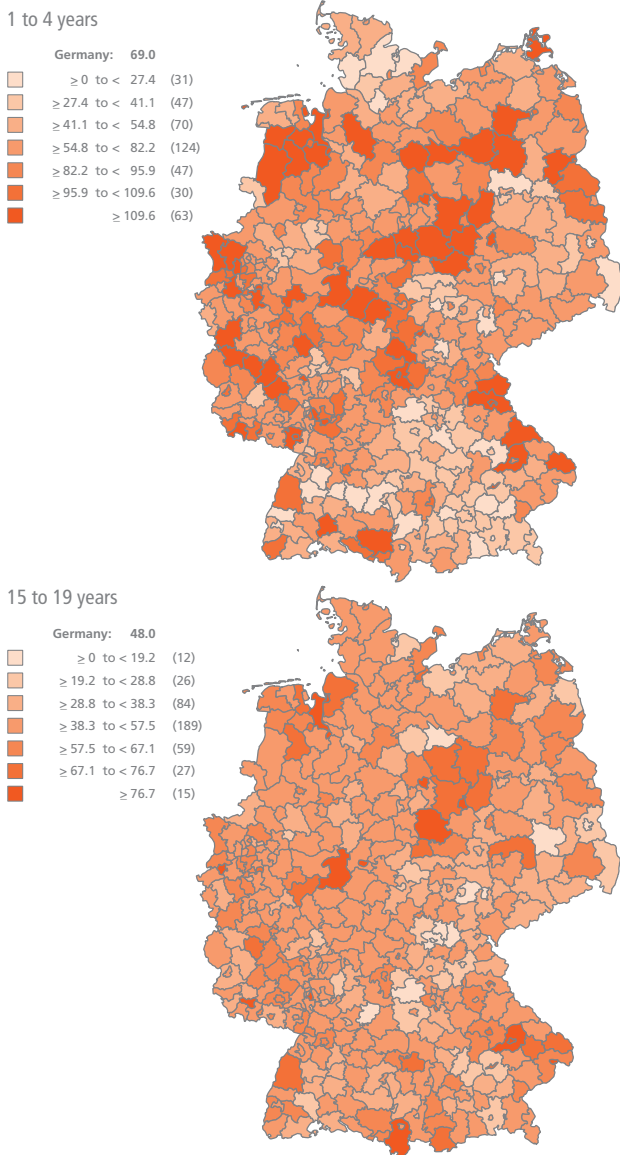
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¹ Annual average for the period 2007-2010, children and adolescents up to 19 years of age
² Directly standardized values

- The regional variation in the rate of surgery is greatest in the case of children up to the age of 4. The degree of variation decreases with the age of the children being treated.

Rate of surgery for tonsillectomy and tonsillotomy operations per 10,000 children and adolescents in Germany according to age groups, 2010

District of residence, non-standardized, partial and complete removal of tonsils (tonsillectomy and tonsillotomy), with and without removal of the adenoids (adenoidectomy)



Source: Healthcare Fact Check 2013; data: German Federal Statistical Office; calculation and graphics: IGES. | BertelsmannStiftung

Context

Key determinants of regional variations in the frequency of surgery: the lack of a verified basis for decision-making means that indications are evaluated locally.

Surgical interventions as a result of “chronic inflammation” vary by as much as a factor of 12: Some 57 % of interventions are performed following a diagnosis of “chronic tonsillitis”. The variation between the districts with the highest and the lowest rates of surgery is more than twelve times.

In the case of surgery on the basis of “enlargement”, the variation is as high as 58 times: About 32 % of operations were performed following a diagnosis of “hyperplasia of the tonsils, with or without hyperplasia of the adenoids”. The variation among districts is over 58 times.

These tremendous variations can not be due simply to a difference in the frequency of specific clinical cases. The findings of the Healthcare Fact Check clearly indicate that the referring physicians and hospital doctors as well as parents and adolescent patients in different regions assess the respective medical conditions differently and consequently reach different decisions with regard to the most appropriate treatment.

Lack of a verified basis for decision-making: Whereas in other countries, the existing evidence on indications and benefits are compiled in a structured manner, doctors and patients in Germany have almost no verified basis for making decisions about when surgery is to be preferred to other forms of treatment, even though surgery entails the risk of life-threatening secondary hemorrhage. In addition, even the familiar “Paradise Criteria” are interpreted and applied differently.

Further determinants:

- **Increase in and uneven distribution of partial tonsillectomies (tonsillotomies)**

When “hyperplasia of the tonsils” is diagnosed, it is becoming more common to perform a partial, rather than a complete tonsillectomy. However, there is a significant variation in the incidence of this procedure.



It is conceivable that tonsillotomies are not only being performed as a substitute for what would previously have been inpatient tonsillectomies, but that they are actually adding to the number of inpatient interventions. Furthermore, the incidence of outpatient tonsillotomies is on the increase, resulting in a shift of provision toward the outpatient sector. This means that the varying rates of inpatient and outpatient tonsillotomies can have an effect on the overall frequency of surgery.

■ **Inpatient care structures**

The frequency of surgery performed on patients who live in districts without their own ENT hospital facilities is far below the national average. On the other hand, the number of patients operated on who live in districts with one or more major ENT departments is above the national average. Furthermore, there is a correlation between the proportion of regional healthcare provided by office-based physicians with special admission rights to ENT inpatient wards and the frequency of surgery: The incidence of surgery is greater among patients living in districts in which a greater percentage of healthcare is provided by office-based physicians with special admission rights.

■ **Economic aspects**

Health insurers expend a total of approx. 150 million euros on full tonsillectomies each year. If an alignment of the frequency of operations at regional level were to produce a reduction in the number of operations by, for example, 5 %, this would result in an annual saving of about 7.4 million euros. Compared with the overall expenditure on hospital care, this amount is almost negligible.

The economic impact of tonsillectomies on the majority of ENT departments, on the other hand, is considerable. This intervention can generally be planned in advance and is performed on one in five of all inpatients in ENT wards. A reduction in hospitalization figures could, when taken together with the anticipated ongoing decline in the number of children, have a noticeable effect on the take-up of services in ENT departments.

■ **No impact on outpatient care structures**

No statistically relevant correlations have been established between the density of SHI (Statutory Health Insurance) outpatient care (number of physicians per 10,000 children and adolescents) among ENT specialists, pediatricians and general practitioners on the one hand and the frequency of tonsillectomies performed on children and adolescents on the other.

Promote robust diagnostics and evidence-based evaluation of surgery indications through information, decision aids and regional dialog on quality issues

Measures to promote needs-based rates of surgery and evidence-based diagnosis:

- **Develop guidelines:** In Germany, there are currently no guidelines for formulating evidence-based recommendations to cover the different treatment options possible for the various tonsillectomy indications in children. However, these are much needed in order to attain the goal of uniform treatment practices and procedures.
- **Publicize the Paradise Criteria:** Until medical guidelines are available, information about the Paradise Criteria should be spread among pediatricians, general practitioners and ENT specialists.
- **Improve and standardize documentation:** An appropriate decision for or against a tonsillectomy on the basis of

chronic inflammation can only be made in the light of comprehensive documentation of the previous course of the disease. This course can cover a long period of time and may involve a number of physicians. One avenue to explore is whether a specially developed tonsillitis pass could help to meet this documentary challenge.

- **Inform and involve patients:** Parents and adolescents in the higher age groups should be informed of the risks and benefits of surgery and the possible alternative courses of treatment. The development of a decision aid could provide parents and patients with evidence-based medical information, explain to them the scope for decision-making and help them to identify their own preferences.
- **Examine incentive structures:** The present Fact Check provides a useful point of departure for studying the im-



part of regional inpatient healthcare structures (proportion of care provided by office-based physicians with special admission rights, size of ENT department(s), existence of ENT departments and rates of surgery). Further studies should be carried out in order to obtain a more targeted alignment of quality assurance measures.

- **Discuss regional anomalies:** In districts consistently record a rate of surgery performed on children and adolescents considerably above or below the national average, the diagnostic practices should be examined in detail. The Healthcare Fact Check can form the basis for a quality-oriented dialog among healthcare providers at regional level. It is important to discuss and analyze whether a high rate of surgery in a given region is attributable to overuse, underuse or misuse or whether they reflect the actual need for treatment.
- **Rationally promote the option of tonsillotomy:** In the case of children aged between two and six years who have been diagnosed with hyperplasia and who are covered by the German statutory health insurance scheme, more advantage should be taken of the option to perform a lower-risk (outpatient) partial removal of the tonsils (tonsillotomy) instead of a full removal (tonsillectomy). In this context, particular attention must be paid to the training of healthcare providers and the organization of post-operative care. It will also be important to be on the alert for any increase in the number of surgical interventions overall, because there are no known reasons for an increase in the total number of tonsil operations for this particular indication and patient group. Health insurers must therefore carefully monitor the total number of tonsillotomies in both the inpatient and outpatient sectors.

THE HEALTHCARE FACT CHECK PROJECT (FAKTENCHECK GESUNDHEIT)

Mapping regional variations in healthcare

In its “Healthcare Fact Check” the Bertelsmann Stiftung seeks to map regional variations in healthcare in Germany. The overall goal is to identify solutions to structural deficits while providing patients with clear and accurate information. Previous endeavors to investigate variations in healthcare in the UK, the United States, the Netherlands and Spain provided both inspiration and a model for this project.

First report illustrates bandwidth and magnitude of variation

the first publication in the current series appeared in September 2011 and provides an insight into 16 different cases of regional variations in healthcare. Covering a range of topics from caesarian section to end-of-life care, this report illuminates the bandwidth and magnitude of regional variations in the German healthcare system. It is available in English at www.faktencheck-gesundheit.de/english-summary/

Single topic reports provide the public with relevant information

In the years to come, regular single-topic reports will focus on key healthcare issues, addressing the range of variations, underlying causes and possible solutions. This paper on “Tonsillectomy in Germany”, published in 2013, summarizes the findings of one of these reports. For each issue, a website provides patients with useful tips, check lists and practical information to help them make the best individual decision in consultation with their physician.

Further information can be found at faktencheck-mandelopoperation.de and faktencheck-gesundheit.de