This article presents an overview of European Union (EU) statistics related to surgical operations and procedures. It provides information for a selection of the most common surgical operations and procedures.

This article is one of a set of statistical articles concerning healthcare activities in the EU which forms part of an online publication on health statistics.

Number of surgical operations and procedures

The two most common surgical operations and procedures performed in EU hospitals were colonoscopies and cataract surgery

Tables 1 and 2 indicate how frequently a selection of the most common surgical operations and procedures were conducted in 2015 or 2017; in both tables the data are presented relative to the size of the population (per 100 000 inhabitants). For several of these operations and procedures, such as appendectomies, information is given on the frequency with which these are carried out laparoscopically, in other words, using minimally
invasive surgery (this technique involves performing an operation through only a small incision in the body and is also known as keyhole surgery), as well as a total figure.

Table 1: Surgical operations and procedures performed in hospitals — top 10 procedures group 1, 2015 or 2017 (per 100 000 inhabitants)

| Source: Eurostat (hlth_co_proc2) |

Cataract surgery (ICD-9-CM codes 13.1-13.8), the extraction of the lens from an eye, was conducted 4.7 million times in 2017 across the EU Member States (Denmark, 2016 data; Spain and Portugal, 2015 data; the Netherlands, 2014 data; Greece, no data available), making this one of the two most common of the surgical operations and procedures presented in this article. In 13 of the Member States, cataract surgery was performed 1 000 times or more per 100 000 inhabitants in 2017 (or another recent year — see Figure 1 for details of coverage), peaking at 1 400 times per 100 000 inhabitants in Portugal (2015 data). By contrast, cataract surgery was performed fewer than 400 times per 100 000 inhabitants in Romania, Cyprus and Ireland.
The second most common type of surgical operation and procedure was a colonoscopy with or without a biopsy (ICD-9-CM codes 45.22–45.25, 45.42 and 45.43), a procedure to examine the inside of the colon (large intestine or large bowel) with a camera. Relatively high frequencies for this procedure were recorded in 2015 in Sweden, Luxembourg, the Netherlands (2012 data), the United Kingdom, Ireland, Malta and Belgium (2014 data), all over 1 000 per 100 000 inhabitants, with even higher frequencies — between 2 000 and 3 000 per 100 000 inhabitants — in Croatia, France (2014 data) and Denmark (2016 data). In the remaining EU Member States for which data are available, the frequency of colonoscopies ranged from 208 to 813 per 100 000 inhabitants, with Portugal (2014 data), Cyprus, Slovenia, Finland and Hungary below this range.
Other common procedures include diagnostic bronchoscopies (an examination of the throat, larynx, trachea and lower airways) with or without a biopsy (ICD-9-CM codes 33.21-33.24 and 33.27) and transluminal coronary angioplasties (the opening up of blocked coronary arteries; ICD-9-CM codes 36.01, 36.02 and 36.05). The frequency of diagnostic bronchoscopies in 2015 peaked at 607 per 100 000 inhabitants in Latvia (in-patients only) and 588 per 100 000 inhabitants in Croatia, while it was also above 400 per 100 000 inhabitants in Germany. Among the remaining EU Member States for which data are available the frequency was in the range of 80-307 per 100 000 inhabitants, with Malta, Finland and Cyprus below this range. In 2017, transluminal coronary angioplasties were most common in Germany and Croatia where they were performed on average 413 and 388 times per 100 000 inhabitants respectively. They were conducted between 145 and 297 times per 100 000 inhabitants in most of the remaining Member States for which data are available, with Ireland, the United Kingdom, Spain (2015 data), Portugal (2015 data) and Romania below this range.

In general, the frequency of appendectomies (removal of an (infected) appendix; ICD-9-CM codes 47.0 and 47.1) varied less between the EU Member States than did other procedures presented in Tables 1 and 2. Nevertheless, the frequency of laparoscopic appendectomies in 2017 was notably higher in Germany, Belgium, Ireland and Denmark (2016 data) than in the other EU Member States, while it was lowest in Romania, Poland, Cyprus and Bulgaria. The share of appendectomies that were performed laparoscopically varied greatly, from at most 15 % of the total number of these procedures in Bulgaria and Romania to more than four fifths in France, Germany and Belgium, peaking in Denmark (2016 data) at 90 %. By contrast, with the exception of Bulgaria (45 %), the vast majority of cholecystectomies (removal of the gall bladder; ICD-9-CM codes 51.22 and 51.23; see Table 2) were performed laparoscopically, their share in 2017 ranging from 81 % in Romania to 94 % in Lithuania.
Table 2: Surgical operations and procedures performed in hospitals — top 10 procedures group 2, 2017 (per 100 000 inhabitants) Source: Eurostat (hlth_co_proc2)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Belgium</th>
<th>Bulgaria</th>
<th>Czechia</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Finland</th>
<th>Ireland</th>
<th>Greece</th>
<th>Spain</th>
<th>France</th>
<th>Croatia</th>
<th>Italy</th>
<th>Cyprus</th>
<th>Latvia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal hernia repair</td>
<td>220.9</td>
<td>219.0</td>
<td>200.5</td>
<td>195.5</td>
<td>185.1</td>
<td>185.0</td>
<td>180.5</td>
<td>173.8</td>
<td>174.9</td>
<td>195.1</td>
<td>240.4</td>
<td>185.9</td>
<td>112.4</td>
<td>286.5</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>112.1</td>
<td>113.0</td>
<td>79.7</td>
<td>95.0</td>
<td>129.1</td>
<td>18.3</td>
<td>19.3</td>
<td>5.5</td>
<td>67.1</td>
<td>85.7</td>
<td>7.7</td>
<td>4.7</td>
<td>9.2</td>
<td>94.9</td>
</tr>
<tr>
<td>Laparoscopic repair of inguinal hernia</td>
<td>120.5</td>
<td>113.0</td>
<td>150.1</td>
<td>87.0</td>
<td>128.3</td>
<td>151.5</td>
<td>126.4</td>
<td>78.0</td>
<td>98.4</td>
<td>92.0</td>
<td>95.6</td>
<td>93.8</td>
<td>4.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>220.8</td>
<td>213.2</td>
<td>253.2</td>
<td>247.9</td>
<td>286.5</td>
<td>309.4</td>
<td>261.3</td>
<td>48.2</td>
<td>204.7</td>
<td>229.5</td>
<td>210.4</td>
<td>255.0</td>
<td>588.0</td>
<td>238.7</td>
</tr>
</tbody>
</table>

Other common procedures performed within the EU included repairs of inguinal hernias (covering the hernia defect with mesh from within the abdomen in order to patch it; ICD-9-CM codes 53.0 and 53.1) and hysterectomies (the removal of all or part of the uterus; ICD-9-CM codes 68.3-68.7 and 68.9). Repairs of inguinal hernia were typically undertaken between 150 and 250 times per 100 000 inhabitants in 2017, with Austria reporting a higher frequency and the United Kingdom, Romania, Cyprus and Ireland lower frequencies. In Belgium and Germany, a majority (51% and 62%) of these repairs were undertaken laparoscopically, while this share was below 50% in the remaining EU Member States for which data are available; the share was below 10% in seven of the EU Member States and below 5% in Spain (2015 data), Italy and Portugal (2015 data). Hysterectomies were most frequently performed in 2017 in Czechia (150 per 100 000 inhabitants), while they were least common in Denmark (10 per 100 000 inhabitants; 2016 data). More than half of all hysterectomies in Finland, Czechia, Poland, Estonia and Belgium were performed laparoscopically. Elsewhere shares of at most 40% were recorded, with the lowest shares in Cyprus (where 8% of hysterectomies were performed laparoscopically) and Romania (4%).

At least 1.4 million caesarean sections performed in the EU

Another common procedure was a caesarean section (ICD-9-CM codes 74.0-74.2, 74.4 and 74.99), in other words, the delivery of one or more babies through an incision in a mother’s abdomen and uterus. In 2017, this procedure was performed at least 1.4 million times in the EU (Czechia, Denmark and Ireland, 2016 data; the Netherlands, 2014 data; Portugal, data only cover in-patients; Greece, no data available). A total of 237 000 caesarean sections were performed in Germany, while 207 000 were performed in the United Kingdom, and 150 000 to 158 000 in Poland, Italy and France; note also the high number of caesarean sections performed in Turkey (686 000) in 2017. In most of the EU Member States, between 200 and 390 caesarean sections were performed.
per 100 000 inhabitants in 2017 (see Figure 3), with this procedure more frequent in Cyprus, Romania, Ireland (2016 data) and Poland, and less frequent in Lithuania, Sweden, the Netherlands (2014 data) and Finland.

![Figure 3: Caesarean section, 2017 (per 100 000 inhabitants)](source: Eurostat (hlth_co_proc2))

Hip replacements (ICD-9-CM codes 81.51-81.53) were performed 309 times per 100 000 inhabitants in Germany in 2017 and between 270 and 285 times per 100 000 inhabitants in Austria, Belgium and Finland; these were the highest frequencies among the EU Member States for which data are available (see Table 2).

**Increasing and decreasing surgical operations and procedures**

Large increases reported for appendectomies performed using keyhole surgery

A selection of surgical operations and procedures which have become more frequent during recent years is presented in Table 3; four of these concern laparoscopic techniques. The most rapid increases were observed for cochlear implantations (implanting an electronic medical device that replaces the function of the damaged inner ear) and laparoscopic appendectomies (keyhole surgery to remove an (infected) appendix).
Laparoscopic appendectomy was the most common operation among the five procedures shown in Table 3. Among the 23 EU Member States for which data are available for 2012 and 2017, all but one reported an increase in this procedure; the exception was Germany. Four Member States — Finland, Poland, Lithuania and Estonia (2013-2017) — reported the frequency of this procedure more than doubling, while there were even faster expansions in Slovenia (3.5 times as high in 2017 as in 2012), Cyprus (5.2 times; 2013-2017, note that there is a break in series) and Malta (6.3 times).

Between 2012 and 2017, the frequency of laparoscopic repair of inguinal hernia increased in 19 of the 22 EU Member States for which data are available, the exceptions being Sweden, Finland and the United Kingdom. Four Member States — Hungary, Lithuania, Portugal (2012-2015) and Romania — reported the frequency of laparoscopic hysterectomies increased in 20 of the 22 EU Member States for which data are available between 2012 and 2017, the exceptions being Sweden, Finland and the United Kingdom.
this procedure more than doubling during the period under consideration, while in Cyprus it more than tripled between 2013 and 2017 (note that there is a break in series), and in Malta and Slovenia it was 4.6 and 4.7 times as common in 2017 as in 2012.

Although the absolute number of cochlear implantations remained relatively low, there was a widespread increase in this procedure. Among the 20 EU Member States for which data are available for 2010 and 2015, only Lithuania, the Netherlands, Malta and Croatia (the latter three only have data available for the period 2012-2015) reported decreases in the frequency of this procedure, while the frequency of operations involving cochlear implants more than doubled in Ireland, Finland and Hungary and more than quadrupled in Slovenia. There was an even larger increase in Portugal (almost seven times as many operations in 2016 as in 2010).

The frequency of laparoscopic colectomy (part of ICD-9-CM codes 45.7-45.8), in other words, keyhole surgery to remove part of the large intestine, increased between 2010 and 2015 in 14 of the 16 EU Member States for which data: in Romania this procedure was not conducted in either of the two periods, while the frequency fell strongly in Croatia (2012-2015). By contrast, the frequency of this operation more than tripled in Sweden between 2010 and 2015, while in Malta it was seven times as high in 2015 as in 2012.

Tonsillectomies and hysterectomies, both relatively common procedures, were performed with a decreasing frequency

A selection of surgical operations and procedures which have become less common is presented in Table 4, two of which concern bypass surgery. Based on data for the 19 EU Member States for which data are available, just over half (10) recorded fewer femoropopliteal bypasses (an operation that removes diseased blood vessels either above or below the knee) performed in 2015 than in 2010, including Germany, Italy, France (2010-2014) and the United Kingdom; the largest of the Member States to report an increase in the frequency of this procedure was Spain. For bypass anastomosis for heart revascularisation (a bypass operation that concerns one or more coronary arteries), 18 of the 24 Member States for which data are available reported a decline in the frequency between 2012 and 2017, again including four of the five largest Member States (Spain once again being the exception with an increase). While the frequency of carrying out bypass anastomosis for heart revascularisation increased by 23 % in Slovakia and by 18 % in Croatia between 2012 and 2017, it was far more commonplace for declines to be recorded — the largest of these were in Finland (34 %), Malta (43 %) and Luxembourg (54 %).
The removal of tonsils, a tonsillectomy, is also a relatively common procedure. Among 24 EU Member States, the frequency of tonsillectomies fell in 18 between 2012 and 2017. Relatively small increases (of 8% or less) were reported in Sweden, Poland, Cyprus (2013-2017) and Slovenia, while there were faster expansions in Lithuania (up 18%) and Croatia (up 26%). The sharpest declines in tonsillectomies were recorded in Germany and Luxembourg, where the frequency dropped by 38% and 45% respectively.

A total of 25 EU Member States have data available for the frequency of hysterectomies in 2012 and 2017 (partial or no data available for Bulgaria, Greece and the Netherlands; see Table 4 for coverage). Only four Member States reported an increase in the frequency of this procedure, with a 4% gain in Romania being the highest rate of change; the other three Member States to record an increase in the frequency of hysterectomies were Poland, Estonia and Slovenia. In the remaining 21 Member States — including all five of the largest Member States — the frequency of hysterectomies decreased, most notably in Denmark (2012-2016).

Open prostatectomy is a traditional surgical procedure to remove a man’s prostate gland. Among 24 EU Member States for which data are available, 15 reported decreases in the frequency of this procedure, including four of the five largest Member States (the United Kingdom was the exception). There were six Member States where the frequency of carrying out an open prostatectomy fell by in excess of 20%, with the highest fall...
registered in Finland. The remaining nine Member States recorded increases, five of them by more than 20%; note that in Malta, the frequency increased from none in 2012 to 3.9 per 100 000 inhabitants in 2017.

In-patient procedures: cataract surgery

Widespread fall in the use of in-patient procedures for cataract surgery

As already noted, one of the most common procedures conducted in the EU is cataract surgery. Several decades ago, this procedure required admission as an in-patient. Figure 4 shows that this is no longer the case in many of the EU Member States. In 2017, less than 10.0 % of procedures for cataract surgery were carried out as in-patient procedures in 16 of the Member States; the lowest share — less than 1.0 % — was recorded in Estonia. In a further six Member States less than half of the procedures for cataract surgery were performed on in-patients and as such at the other end of the scale there were only four Member States where more than half of the procedures for cataract surgery continued to be performed on in-patients: Lithuania, Poland, Bulgaria and Romania (which had the highest share, 66.3 %).

Figure 4: Share of in-patient procedures for cataract surgery, 2012 and 2017(%)Source: Eurostat (hlth_co_proc2)

Between 2012 and 2017, the share of procedures for cataract surgery carried out on in-patients fell in nearly every EU Member State for which data are available, the exception being Estonia where there was a small
increase (up 0.3 percentage points; note that the overall share of in-patient surgery remained below 1.0 %); there was also a slight increase in Norway (where the overall share of in-patient surgery also remained relatively low, at 4.4 %).

Source data for tables and graphs

- Surgical operations and procedures: tables and figures

Data sources

Key concepts

Surgical procedures are all types of medical interventions involving an incision with instruments mostly performed in an operating theatre which normally involves anaesthesia and/or respiratory assistance. Surgical procedures can be performed either as in-patient cases, day cases or out-patient cases. Note that the statistics cover surgical procedures performed on in-patients and day care patients, except for cataract surgery and tonsillectomy for which the coverage is widened to include out-patients as well.

Only the main procedure performed on a patient during a hospital stay, day case or out-patient treatment should normally be reported.

An in-patient is a patient who is formally admitted (or 'hospitalised') to an institution for treatment and/or care and stays for a minimum of one night or more than 24 hours in the hospital or other institution providing in-patient care. An in-patient or day care patient is discharged from hospital when formally released after a procedure or course of treatment (episode of care). A discharge may occur because of the finalisation of treatment, signing out against medical advice, transfer to another healthcare institution, or because of death.

Healthcare resources and activities

Statistics on healthcare resources and healthcare activities (such as information on surgical operations and procedures) are documented in this background article which provides information on the scope of the data, its legal basis, the methodology employed, as well as related concepts and definitions.

For surgical operations and procedures the International Classification of Diseases — clinical modification (ICD-9-CM) is used.

For country specific notes on this data collection, please refer to this background information document. In particular, note that in general: data for Latvia, Slovakia and Iceland only concern in-patients; data for Ireland, Cyprus, Portugal, some parts of the United Kingdom, Liechtenstein and North Macedonia only concern public hospitals, while the coverage of private hospitals is incomplete for Spain.

Symbols

Note on tables:

- a colon ':' is used to show where data are not available;
- a dash '-' is used to show where data are not applicable/relevant.

Context

For any particular type of surgical operation or procedure, the extent to which this is performed is influenced by a number of factors, including the size of the population and the incidence of the underlying disease or injury among the population. Other factors include differences in medical practices between countries and the availability of financial and human resources.
The European core health indicators (ECHI) shortlist includes an indicator on 'selected surgeries' for eleven categories of surgical operations and procedures performed in hospitals in the chapter on health services.

Other articles

Online publications

- Health in the European Union — facts and figures
- Disability statistics

Health status — selected diseases and related health problems

- Cancer
- Cardiovascular diseases
- Respiratory diseases

Healthcare activities

- Consultations
- Hospital discharges and length of stay
- Medicine use
- Preventive services
- Unmet needs for health care

Methodology

- Healthcare non-expenditure

General health statistics articles

- Health statistics introduced
- Health statistics at regional level
- The EU in the world — health

Database

- Health (hlth)

Health care activities (hlth_act)

- Operations, procedures and treatment (hlth_oper)
  Surgical operations and procedures performed in hospitals by ICD-9-CM (hlth_co_proc2)

Dedicated section

- Health

Methodology

- Healthcare resources (ESMS metadata file — hlth_res_esms)
External links

- European Commission — Directorate-General for Health and Food Safety — European core health indicators (ECHI)
- European Commission — Directorate-General for Health and Food Safety — Health systems performance assessment
- European Commission — Directorate-General for Health and Food Safety — Public health
- OECD — Health policies and data
- WHO Global Health Observatory (GHO)
- World Health Organisation (WHO) — Health systems

View this article online at https://ec.europa.eu/eurostat/statistics-explained/index.php/Surgical_operations_and_procedures_statistics