Contents

Results

1. TOTAL / GLOBAL TRANSPLANT ACTIVITY ...........................................................4
2. PATIENTS TRANSPLANTED ..............................................................................10
3. ACTUAL DECEASED DONOR ACTIVITY .........................................................12
4. KIDNEY ACTIVITY ..........................................................................................17
5. LIVER ACTIVITY .............................................................................................22
6. HEART ACTIVITY ............................................................................................27
7. LUNG ACTIVITY .............................................................................................31
8. PANCREAS ACTIVITY ......................................................................................35
9. SMALL BOWEL ACTIVITY ..............................................................................39
10. TRANSPLANTS BY GENDER ..........................................................................43

Methods and definitions .....................................................................................47
Acronyms ..............................................................................................................49
Disclaimer ..............................................................................................................50
Acknowledgements ..............................................................................................51
Global transplantation activities of solid organs, 2017*

Number of organs transplanted per million population:
- 0.4–2.4
- 2.5–9.9
- 10.0–24.9
- 25.0–49.9
- 50.0–74.9
- 75.0–99.9
- ≥100.0

No activity transplants
Data not available
Not applicable

* data from the Global Observatory on Donation and Transplantation

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: Global Observatory on Donation & Transplantation. Map Production: Information, Evidence and Research (IER) World Health Organization

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# Global Activity in organ transplantation

**Estimations 2017**

<table>
<thead>
<tr>
<th>Organ</th>
<th>Transplants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>90,306</td>
</tr>
<tr>
<td>Liver</td>
<td>32,348</td>
</tr>
<tr>
<td>Heart</td>
<td>7,881</td>
</tr>
<tr>
<td>Lung</td>
<td>6,084</td>
</tr>
<tr>
<td>Pancreas</td>
<td>2,243</td>
</tr>
<tr>
<td>S. bowel</td>
<td>162</td>
</tr>
</tbody>
</table>

**Total Organ Transplants**: 139,024
82 Member States, which represent 75 % of the global population, reported to the Global Observatory on Donation and Transplantation (GODT) for 2017.

Only one reporting country did not have any transplant activity at all.

Organ Transplant activities performed in 2017, although impressive, barely cover 10% of the global needs.

Member States with any transplant activities showed a large variability in rates pmp.

Kidneys and Livers are the more frequent therapeutic options (65% and 23% respectively), while small bowel transplants are very infrequent.
Transplant activity per type of organ (pmp). 2017
139,024 TRANSPLANTS PERFORMED IN 2017

380 TRANSPLANTS / DAY

16 TRANSPLANTS / HOUR
Patients transplanted
135,686 patients were reported to be transplanted in 2017.
Actual Deceased Donor Activity
Absolute numbers of **DCD and DBD**. Percentage of DCD. Global data.

2011-2017

- **Actual DBD**
- **Actual DCD**
- **% DCD**

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual DBD</th>
<th>Actual DCD</th>
<th>% DCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>23010</td>
<td>2263</td>
<td>8.9</td>
</tr>
<tr>
<td>2012</td>
<td>23377</td>
<td>2410</td>
<td>9.3</td>
</tr>
<tr>
<td>2013</td>
<td>23550</td>
<td>2486</td>
<td>9.5</td>
</tr>
<tr>
<td>2014</td>
<td>24245</td>
<td>2561</td>
<td>9.5</td>
</tr>
<tr>
<td>2015</td>
<td>25586</td>
<td>5188</td>
<td>16.9</td>
</tr>
<tr>
<td>2016</td>
<td>27962</td>
<td>6892</td>
<td>19.8</td>
</tr>
<tr>
<td>2017</td>
<td>29462</td>
<td>7985</td>
<td>21.3</td>
</tr>
</tbody>
</table>

78.7% donors after brain death

DBD: 70 countries
DCD: 25 countries
12 countries out of 82 did not have any DD in 2017.
Actual donors after circulatory death (DCD): Absolute number and Rate (pmp). 2017

7,985 DCD
(21.3 % of the total number of Actual deceased organ donors).

N = 25 countries
Kidney activity
Evolution of **Kidney** Transplant activities worldwide (absolute numbers and rates pmp).

**Note** – Rates are estimated by using the global population as the denominator.
Absolute numbers of Kidney transplants from DD and from LD.

Percentage of LD. Global data. 2011-2017

- **2011**: 43,727 DD, 32,391 LD, 42.6% LD
- **2012**: 44,878 DD, 32,922 LD, 42.3% LD
- **2013**: 44,738 DD, 32,872 LD, 41.6% LD
- **2014**: 46,715 DD, 33,233 LD, 41.6% LD
- **2015**: 48,902 DD, 35,230 LD, 41.8% LD
- **2016**: 53,695 DD, 36,125 LD, 40.2% LD
- **2017**: 57,316 DD, 32,990 LD, 36.5% LD

Total numbers: 2011-2017

- **Total DD**: 437,277
- **Total LD**: 329,118
- **Total**: 761,395

- **2011-2017**: 90,306
Kidney transplants from deceased and living donors (pmp). 2017

81 countries reported kidney transplants (deceased and/or living). Only 13 countries (Armenia, Ethiopia, Georgia, Honduras, Jordan, Iceland, Kenya, Mongolia, Nigeria, N.Macedonia, Pakistan, Sudan and Syria) reported to have only living kidney transplants.
Liver activity
Evolution of the Liver Transplant activities (total numbers and rates pmp).

2011-2017

Note – Rates are estimated by using the global population as the denominator.

19% from living donors in 2017
Liver transplants from deceased, living donors and domino (pmp). 2017

65 countries reported liver transplants (deceased and/or living). 13 countries reporting domino transplants: Belgium, Brasil, France, Germany, Italy, Japan, Portugal, Romania, Spain, Sweden, Switzerland, UK and USA.
Absolute numbers of Liver transplants from DD, from LD and Domino.

Percentage of LD. Global data. 2011-2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Domino</th>
<th>DD</th>
<th>LD</th>
<th>% LD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>86</td>
<td>19510</td>
<td>4211</td>
<td>17.7</td>
</tr>
<tr>
<td>2012</td>
<td>50</td>
<td>19562</td>
<td>4376</td>
<td>18.2</td>
</tr>
<tr>
<td>2013</td>
<td>51</td>
<td>20038</td>
<td>4562</td>
<td>18.2</td>
</tr>
<tr>
<td>2014</td>
<td>47</td>
<td>20845</td>
<td>5168</td>
<td>19.8</td>
</tr>
<tr>
<td>2015</td>
<td>59</td>
<td>21808</td>
<td>5824</td>
<td>21.0</td>
</tr>
<tr>
<td>2016</td>
<td>56</td>
<td>24292</td>
<td>6012</td>
<td>19.8</td>
</tr>
<tr>
<td>2017</td>
<td>53</td>
<td>26142</td>
<td>6153</td>
<td>19.0</td>
</tr>
</tbody>
</table>

Total: 23,727 to 32,348
Heart activity
Evolution of the **Heart** Transplant activities (total numbers and rates pmp).

2011-2017

**Note** – Rates are estimated by using the global population as the denominator.
53 countries reported heart transplant activities in 2017. Slovenia, followed by USA, presented the highest rate pmp with more than 10 heart transplants per million inhabitants (11.4 and 10.09 respectively).
Lung activity
Lung transplantation activities, 2017*

Number of lung transplants per million population

- <0.1
- 0.1–0.4
- 0.5–2.9
- 3.0–5.9
- 6.0–8.9
- ≥9.0
- Not applicable
- No transplant activity
- Data not available

* data from the Global Observatory on Donation and Transplantation

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Evolution of the Lung Transplant activities (total numbers and rates pmp). 2011-2017

Note – Rates are estimated by using the global population as the denominator.
44 countries reported Lung transplants.

99.8% of the transplants were from deceased donors while only eleven procedures were reported from living donors: Japan (n=10) and Brazil (n=1).

According to the rates, a total of 12 countries showed rates > 5.0 pmp, and 32 lower than 5.0 pmp.

Austria had the highest activity (13.3 pmp) followed by Belgium (10.6 pmp).
Pancreas activity
Pancreas transplantation activities, 2017*

Number of pancreas transplants per million population:
- 0.01–0.49
- 0.50–1.49
- 1.50–2.49
- 2.50–3.49
- ≥3.50

No transplant activity, Data not available, Not applicable

* data from the Global Observatory on Donation and Transplantation

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A continuous slight decrease is observed in the last years of compilation of data.

**Note** – Rates are estimated by using the global population as the denominator.
39 countries reported pancreas transplants.

The three countries with the highest rates are Norway (4.5 pmp) followed by Finland (3.8 pmp) and Czech Republic (3.7 pmp).
Small bowel activity
Evolution of *small bowel* Transplant activities (total numbers and rates pmp). 2011-2017

**Note** – Rates are estimated by using the global population as the denominator.
Only 15 countries reported to perform small bowel transplants. A total of 162 were reported for 2017, although it seems to be quite underestimated.

The rates vary from 0.02 to 0.34 pmp. USA is the country with the highest rate (0.34 pmp) followed by UK (0.27 pmp).
Transplants by Gender
Patients transplanted by gender (%). 2017

- 33,540 female recipients (36.7%)
- 57,734 male recipients (63.2%)

N= 60 countries

In brackets, absolute number of recipients provided by gender
Deceased Donors by gender (%). 2017

12,164 female actual donors (40.2%)
18,113 male actual donors (59.8%)
N= 64 countries

In brackets, absolute number of Total DD provided by gender.
In brackets, absolute number of LD provided by gender

11,211 female actual donors (52.5%)
10,126 male actual donors (47.4%)

N= 52 countries
Methods and definitions

An ad hoc standard questionnaire for the activities related to organ donation and transplantation practices is annually distributed to the identified health authorities and focal points contributing to the global database.

The definitions applied for the completion of the standardized questionnaire are derived from the WHO Global Glossary on Donation and Transplantation, which is accessible at http://www.transplant-observatory.org/download/global-glossary/ or through the WHO website (http://www.who.int/transplantation/activities/en/). Definitions and explanations about how to complete the questionnaire can be found at the Global Observatory on Donation and Transplantation website (http://www.transplant-observatory.org/).

In summary,

- Actual donor (=donor): a deceased person from whom at least one organ has been recovered for the purpose of organ removal.
- DBD donor: a deceased donor whose death has been determined by neurological criteria.
- DCD donor: a deceased donor whose death has been determined by circulatory criteria.
Transplants are counted as those performed only within the country.

Counts for the multiorgan or double organ transplants are counted as follows:

One double kidney transplant is considered as one transplant.
One heart-lung transplant is counted as one lung transplant and one heart transplant.
One double lung transplant is considered as one transplant.
One kidney-pancreas transplant is counted as one kidney transplant and one pancreas transplant.

Counts for the number of recipients transplanted: For more than one organ transplanted into the same recipient, count as one recipient.

Specific indicators have been added to the questionnaire along the years, in order to provide further information about the donation and transplantation activities performed around the globe.

As a novelty, information about the gender data is presented for first time in the annual report. Some selected data provided by gender are shown, only for those countries that reported this type of information and when the figures were > 0.

The data provided correspond to the period from January 1st to December 31st 2017.

The progression bars represent rates that have been estimated by using the global population as the denominator. This approach provides a better estimation of the accessibility of the global population to transplant thera-
pies.

To calculate rates per million inhabitants, the State of World Population reports, from the United Nations Population Fund (UNFPA), has been used as the source to estimate the population size.

Data were analysed using descriptive statistics. Statistical analysis was performed with SPSS software (version 25.0) and the Excel tool was used for the creation of bar charts.

The official maps are annually produced by the Information Evidence and Research (IER) Department at WHO, derived from a datasheet of the Global Database.

It should be noticed that the previous GODT Reports used the most recent available national figures to avoid missing data. However, only the responding countries for 2017 have been included in this report. Therefore comparative analysis with previous years should be treated with caution.

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DBD</strong></td>
<td>Actual donors after brain death</td>
</tr>
<tr>
<td><strong>DCD</strong></td>
<td>Actual donors after circulatory death (DCD)</td>
</tr>
<tr>
<td><strong>DD</strong></td>
<td>Actual deceased organ donors</td>
</tr>
<tr>
<td><strong>LD</strong></td>
<td>Living organ donors</td>
</tr>
<tr>
<td><strong>GODT</strong></td>
<td>Global Observatory on Donation and Transplantation</td>
</tr>
<tr>
<td><strong>ONT</strong></td>
<td>Organización Nacional de Trasplantes, Spain</td>
</tr>
<tr>
<td><strong>pmp</strong></td>
<td>per million inhabitants</td>
</tr>
<tr>
<td><strong>Tx</strong></td>
<td>Transplants</td>
</tr>
<tr>
<td><strong>WHO</strong></td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
Disclaimer

The data and information presented here are published in order to promote transparency in transplantation activities.

Whenever possible this information has been confirmed by official national sources. However, in some instances, there are still provisional estimates. It is therefore anticipated that some data presented may be modified without prior notice.

As the facts displayed here are not definitive, they cannot be reproduced or quoted unless shown with the appropriate warning and the date.

For any references to this report, the following should be quoted: Organ Donation and Transplantation Activities 2017 Report. Global Observatory on Donation and Transplantation (GODT).

For citations of the 2017 GODT data please quote the following: Those 2017 data are based on the Global Observatory on Donation and Transplantation (GODT) data, produced by the WHO-ONT collaboration.

For any references in Charts and bar chart please quote: * Data of the WHO-ONT Global Observatory on Donation and Transplantation.
Acknowledgements

The GODT team is grateful to the identified focal points in Member States for their valuable contribution to the database, the Council of Europe for its contribution through the Newsletter Transplant and the Information Evidence and Research (IER) Department at WHO for the production of the global maps.