INTERNATIONAL REPORT ON Organ Donation and Transplantation Activities 2022

www.transplant-observatory.org
October 2023
Global activity in organ transplantation
Estimations 2022

<table>
<thead>
<tr>
<th>Organ</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>102,090</td>
</tr>
<tr>
<td>Liver</td>
<td>37,436</td>
</tr>
<tr>
<td>Heart</td>
<td>8,988</td>
</tr>
<tr>
<td>Lung</td>
<td>6,784</td>
</tr>
<tr>
<td>Pancreas</td>
<td>2,026</td>
</tr>
<tr>
<td>S. bowel</td>
<td>170</td>
</tr>
</tbody>
</table>

≈ 157,494 solid organ transplants
≈ 9.1% increase vs 2021
≤ 10% of global needs
39% living kidney transplants
24% living liver transplants

41,792 deceased donors (32,248 DBD and 9,544 DCD donors)*

Information of 91 Member States on organ transplantation activities (75% of the global population)
DECEASED DONATION ACTIVITY
Actual donors from deceased persons, 2022*

*data from the Global Observatory on Donation and Transplantation

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Deceased donation pmp in relation to the Human Development Index (HDI) 2022

WHO Regions:

- African Region (AFR)
- Region of the Americas (AMR)
- Eastern Mediterranean Region (EMR)
- European Region (EUR)
- South-East Region (SEAR)
- Western Pacific Region (WPR)

Dots represent responding Member States in each WHO region
Actual deceased organ donors by donor type (pmp) 2022

DBD donors: 32,248 (77%)
DCD donors: 9,544 (23%)

Deceased donation activities reported in 71/91 countries

≈ 9.5% increase vs 2021

*Canada only reported utilized deceased donors

Actual donor: deceased person from whom at least one organ was recovered for the purpose of transplantation.
Actual DCD donors by Maastricht type (pmp) 2022

DCD donors: 9 544

Type II: 106 (1%)
Type III: 8 798 (92%)*
Type IV: 640 (7%)

DCD activities reported in 23/91 countries

Type II: Unexpected cardiac arrest, unsuccessfully resuscitated
Type III: Planned WLST with an expected cardiac arrest.
Type IV: Sudden or planned cardiac arrest after brain death.

*Includes type V DCD donors (donors after MAiD) for Belgium, Canada, Netherlands and Spain
Actual deceased organ donors by donor age (pmp) 2022

N=69 countries provided information on donor age groups

- 2 371 (6%) DD < 18 years
- 28 105 (69%) DD 18-59 years
- 10 151 (25%) DD ≥ 60 years
Actual deceased organ donors by age (%)

2022

N=69 countries provided information on donor age groups

2 371 (6%) DD < 18 years
28 105 (69%) DD 18-59 years
10 151 (25%) DD ≥ 60 years
<table>
<thead>
<tr>
<th>Country</th>
<th>% Male DD</th>
<th>% Female DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuba (N=5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Macedonia (N=5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyprus (N=5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungary (N=122)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia (N=52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liechtenstein (N=1)</td>
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<td></td>
</tr>
<tr>
<td>Lithuania (N=59)</td>
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<tr>
<td>Luxembourg (N=33)</td>
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<tr>
<td>Malawi (N=111)</td>
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<td></td>
</tr>
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<td>Malta (N=211)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico (N=398)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands (N=293)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand (N=63)</td>
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<td></td>
</tr>
<tr>
<td>Norway (N=111)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oman (N=1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peru (N=42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qatar (N=10)</td>
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<td></td>
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<td>Singapore (N=21)</td>
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<tr>
<td>Trinidad and Tobago (N=1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey (N=329)</td>
<td></td>
<td></td>
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<tr>
<td>United Arab Emirates (N=55)</td>
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<td>Ireland (N=86)</td>
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<td>United States (N=14905)</td>
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<td></td>
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<tr>
<td>Uzbekistan (N=10)</td>
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<tr>
<td>Belarus (N=241)</td>
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<td>Kyrgyzstan (N=445)</td>
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</tr>
<tr>
<td>Mexico (N=398)</td>
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<td>Philippines (N=20)</td>
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</tr>
<tr>
<td>Slovakia (N=71)</td>
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<td>Slovenia (N=54)</td>
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</tr>
<tr>
<td>Switzerland (N=164)</td>
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<td></td>
</tr>
<tr>
<td>Taiwan (N=52)</td>
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<td></td>
</tr>
<tr>
<td>Thailand (N=303)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonga (N=1)</td>
<td></td>
<td></td>
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<td>United Kingdom (N=1413)</td>
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<td></td>
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<td>Vietnam (N=941)</td>
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<td></td>
</tr>
<tr>
<td>Vietnam (N=941)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China (N=5628)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25,398 (64%) male donors
14,553 (36%) female donors

68 countries provided information according to donor sex

Actual deceased organ donors by donor sex (%)
2022
Actual and utilized deceased organ donors (pmp) 2022

Deceased donation activities reported in 71/91 countries

*Canada only reported utilized deceased donors

Actual donor: deceased person from whom at least one organ was recovered for the purpose of transplantation.

Utilized donor: deceased person from whom at least one organ was transplanted.
Actual deceased organ donors and transplants from deceased donors by type of organ (pmp) 2022

Deceased donation activities reported in 71/91 countries

*Organs recovered from deceased donors may be used for transplantation in other jurisdictions, particularly in the absence of local transplant programs.
Actual DBD donors and transplants from DBD donors (pmp)
2022

DBD donors: 32 248 (77%)
DBD activities reported in 71/91 countries

*Organs recovered from deceased donors may be used for transplantation in other jurisdictions, particularly in the absence of local transplant programs.*
Actual DCD donors and transplants from DCD donors (pmp) 2022

DCD TRANSPLANT activities reported in 24/91 countries

DCD donors: 9,544 (23%)
Transplants from DCD donors per type of organ (pmp) 2022

<table>
<thead>
<tr>
<th>Type of Organ</th>
<th>Kidney</th>
<th>Liver</th>
<th>Lung</th>
<th>Heart</th>
<th>Pancreas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13,759</td>
<td>3,911</td>
<td>722</td>
<td>469</td>
<td>157</td>
<td>19,018</td>
</tr>
</tbody>
</table>

- **Kidney transplants from DCD pmp**
- **Liver transplants from DCD pmp**
- **Heart transplants from DCD pmp**
- **Lung transplants from DCD pmp**
- **Pancreas transplants from DCD pmp**
Refusals to deceased donation (%)
2022

N=47 countries provided information on refusals to deceased donation

*Number of interviews is presented in brackets.
LIVING DONATION ACTIVITY
Organ transplantation from living donors, 2022*

Living organ transplants per million population

0.1-2.49
2.5-4.9
5.0-9.9
10.0-19.9
20.0-49.9
≥50.0
No living donation activity
Data not available
Not applicable

*Data from the Global Observatory on Donation and Transplantation

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Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DIN/DIV
Map Creation Date: 21 September 2023
Living Transplants performed in 90/91 countries

Transplants from living donors per type of organ (pmp) 2022

Total number of LD transplants:
- 39,601 kidney transplants
- 9,061 liver transplants
- 14 lung transplants
Liver transplants activities from living donors (pmp) 2022

9,061 living liver transplants

Living Liver transplants performed in 47/91 countries
Living kidney donors by donor sex (%) 2022

17 045 (50%) male kidney living donors
17 006 (50%) female kidney living donors

N= 78 countries provided information on donor sex
Living liver donors by donor sex (%)

2022

4,720 (58%) male living liver donors
3,389 (42%) female living liver donors

N= 39 countries provided information on donor sex
GLOBAL ORGAN TRANSPLANT ACTIVITY
Global transplantation activities of solid organs, 2022*

Number of organ transplants per million population

- 0.1-4.9
- 5.0-14.9
- 15.0-24.9
- 25.0-49.9
- 50-74.9
- 75.0-99.9
- ≥100.0
- No transplant activity
- Data not available
- Not applicable

*Data from the Global Observatory on Donation and Transplantation

Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DNA/EDI
Map Creation Date: 04 September 2023

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Transplant activity by type of organ (pmp) 2022

157 494 organ transplants performed in 90/91 countries
Patients transplanted* (pmp)
2022

150 337 patients transplanted in 90/91 countries

*A recipient of more than one organ is counted as one recipient, therefore the number of patients transplanted is smaller than the number of organs transplanted (see previous slide)
Transplants from deceased persons vs transplants from living persons (pmp). 2022
Patients transplanted by sex (%)
2022

90,910 (65%) male recipients
49,323 (35%) female recipients

N = 76 countries provided information on sex of recipients
Kidney transplants per million population (pmp). 2022

✓ 102 090 kidney transplants
✓ 10% increase vs 2021
✓ 39% from living donors

90/91 countries reported kidney transplant activities (living or deceased) in 2022
Kidney transplants by WHO regions 2022

Absolute number (pmp); % kidney tx from deceased donors

- **AMR**: 39,196 (39.8 pmp) 75.5%
- **EUR**: 25,329 (36.7 pmp) 68%
- **EMR**: 6,364 (13.7 pmp) 25%
- **AFR**: 286 (0.7 pmp) 0%
- **SEAR**: 12,696 (7.7 pmp) 16%
- **WPR**: 18,219 (10.2 pmp) 66%

Rates (pmp) are calculated by applying the population of the responding countries.
Kidney transplants by WHO regions 2022

<table>
<thead>
<tr>
<th>Region</th>
<th>Kidney tx from LD</th>
<th>Kidney tx from DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AMR</td>
<td>39 (0.7)</td>
<td>196 (39.8)</td>
</tr>
<tr>
<td>EMR</td>
<td>6364 (13.7)</td>
<td>25329 (36.7)</td>
</tr>
<tr>
<td>EUR</td>
<td>12696 (7.7)</td>
<td>18219 (10.2)</td>
</tr>
<tr>
<td>SEAR</td>
<td>3 (3)</td>
<td>6 (6)</td>
</tr>
<tr>
<td>WPR</td>
<td>8 (8)</td>
<td>66 (66)</td>
</tr>
</tbody>
</table>

**KIDNEY TX, absolute number (pmp)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Kidney tx from LD</th>
<th>Kidney tx from DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>286 (0.7)</td>
<td>286 (0.7)</td>
</tr>
<tr>
<td>AMR</td>
<td>39 (0.7)</td>
<td>39 (0.7)</td>
</tr>
<tr>
<td>EMR</td>
<td>6364 (13.7)</td>
<td>6364 (13.7)</td>
</tr>
<tr>
<td>EUR</td>
<td>25329 (36.7)</td>
<td>25329 (36.7)</td>
</tr>
<tr>
<td>SEAR</td>
<td>12696 (7.7)</td>
<td>12696 (7.7)</td>
</tr>
<tr>
<td>WPR</td>
<td>18219 (10.2)</td>
<td>18219 (10.2)</td>
</tr>
</tbody>
</table>

**% from deceased donors**

<table>
<thead>
<tr>
<th>Region</th>
<th>AFR</th>
<th>AMR</th>
<th>EMR</th>
<th>EUR</th>
<th>SEAR</th>
<th>WPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>0</td>
<td>76</td>
<td>25</td>
<td>68</td>
<td>16</td>
<td>66</td>
</tr>
</tbody>
</table>

**Countries with kidney tx activity/ countries reporting to the GODT (total countries in the region)**

<table>
<thead>
<tr>
<th>Region</th>
<th>AFR</th>
<th>AMR</th>
<th>EMR</th>
<th>EUR</th>
<th>SEAR</th>
<th>WPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>3/3 (46)</td>
<td>22/22 (35)</td>
<td>12/12 (22)</td>
<td>42/43 (53)</td>
<td>3/3 (11)</td>
<td>8/8 (27)</td>
</tr>
</tbody>
</table>

**Kidney tx centres (millions inhabitants/centre)**

<table>
<thead>
<tr>
<th>Region</th>
<th>AFR</th>
<th>AMR</th>
<th>EMR</th>
<th>EUR</th>
<th>SEAR</th>
<th>WPR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17 (23.2)</td>
<td>867 (1.1)</td>
<td>128 (3.6)</td>
<td>398 (1.7)</td>
<td>624 (2.6)</td>
<td>430 (4.2)</td>
</tr>
</tbody>
</table>
Liver transplantation activities, 2022*

Number of liver transplants per million population
- 0.01-1.49
- 1.5-4.9
- 5.0-9.9
- 10.0-14.9
- 15.0-19.9
- 20.0-24.9
- ≥25
- No transplant activity
- Data not available
- Not applicable

*Data from the Global Observatory on Donation and Transplantation

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Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DNA/DDI
Map Creation Date: 21 September 2023

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Liver Transplants
per million population (pmp). 2022

- 37,436 liver transplants
- 8% increase vs 2021
- 24% from living donors
- 45 domino liver transplants

68/91 countries reported liver transplant activities (living or deceased) in 2022
Liver transplants by WHO Regions 2022

<table>
<thead>
<tr>
<th>Region</th>
<th>LIVER TX, absolute number (pmp)</th>
<th>% from deceased donors</th>
<th>Countries with liver tx activity/countries reporting to the GODT (total countries in the region)</th>
<th>Liver tx centres (millions inhabitants/centre)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>0 (0.0)</td>
<td>0</td>
<td>0/3 (46)</td>
<td>0</td>
</tr>
<tr>
<td>AMR</td>
<td>13 387 (13.6)</td>
<td>88</td>
<td>15/22 (35)</td>
<td>404 (2.4)</td>
</tr>
<tr>
<td>EMR</td>
<td>1 817 (3.9)</td>
<td>59</td>
<td>7/12 (22)</td>
<td>35 (13.2)</td>
</tr>
<tr>
<td>EUR</td>
<td>9 840 (14.3)</td>
<td>82</td>
<td>36/43 (53)</td>
<td>229 (3.0)</td>
</tr>
<tr>
<td>SEAR</td>
<td>4 067 (2.5)</td>
<td>19</td>
<td>2/3 (11)</td>
<td>247 (6.7)</td>
</tr>
<tr>
<td>WPR</td>
<td>8 325 (4.7)</td>
<td>71</td>
<td>8/8 (27)</td>
<td>231 (7.7)</td>
</tr>
</tbody>
</table>

*Rates (pmp) are calculated by applying the population of the responding countries.

** Million inhabitants per transplant centre are calculated by applying the population of the responding countries.
Heart transplantation activities, 2022*

Number of heart transplants per million population:
- 0.1-0.49
- 0.5-1.49
- 1.5-3.49
- 3.5-5.49
- 5.5-6.9
- ≥7.0
- No transplant activity
- Data not available
- Not applicable

*Data from the Global Observatory on Donation and Transplantation

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Heart transplants per million population (pmp) 2022

- 8,988 heart transplants
- 7% increase vs 2021

56/91 countries reported heart transplant activities in 2022
# Heart transplants by WHO Regions 2022

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Heart transplants (pmp)*</th>
<th>Paediatric Heart transplants (pmp) (&lt;18 years)</th>
<th>Countries with any heart tx activity/countries reporting to GODT (countries in the region)</th>
<th>Heart transplant centres (million inhabitants/centre)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0/3 (46)</td>
<td>0</td>
</tr>
<tr>
<td>AMR</td>
<td>4 996 (5.1)</td>
<td>598 (0.6)</td>
<td>13/22 (35)</td>
<td>338 (2.9)</td>
</tr>
<tr>
<td>EMR</td>
<td>184 (0.4)</td>
<td>45 (0.1)</td>
<td>4/12 (22)</td>
<td>21 (22.1)</td>
</tr>
<tr>
<td>EUR</td>
<td>2 444 (3.5)</td>
<td>244 (0.4)</td>
<td>31/43 (53)</td>
<td>155 (4.4)</td>
</tr>
<tr>
<td>SEAR</td>
<td>274 (0.2)</td>
<td>29 (0.0)</td>
<td>2/3 (11)</td>
<td>168 (9.8)</td>
</tr>
<tr>
<td>WPR</td>
<td>1 090 (0.6)</td>
<td>98 (0.1)</td>
<td>6/8 (27)</td>
<td>154 (11.6)</td>
</tr>
</tbody>
</table>

*Rates (pmp) are calculated by applying the population of the responding countries

** Million inhabitants per transplant centre are calculated by applying the population of the responding countries
Lung transplantation activities, 2022*

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Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DVI/DDI
Map Creation Date: 04 September 2023

Number of lung transplants per million population

- 0.01-0.49
- 0.5-2.9
- 3.0-5.9
- 6.0-8.9
- ≥9.0
- No transplant activity
- Data not available
- Not applicable

*data from the Global Observatory on Donation and Transplantation
Lung transplants per million population (pmp) 2022

- 6784 lung transplants
- 5% increase vs 2021
- 14 living lung transplants (0.2%)

48/91 countries reported lung transplant activities in 2022
### Lung transplants by WHO regions 2022

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Lung transplants (pmp)*</th>
<th>Paediatric Lung transplants (pmp) (&lt;18 years)</th>
<th>Countries with any lung tx activity/countries reporting to GODT (countries in the region)</th>
<th>Lung transplant centres (million inhabitants/centre)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0/3 (46)</td>
<td>0</td>
</tr>
<tr>
<td>AMR</td>
<td>3313 (3.4)</td>
<td>32 (0.0)</td>
<td>10/22 (35)</td>
<td>129 (7.6)</td>
</tr>
<tr>
<td>EMR</td>
<td>55 (0.1)</td>
<td>4 (0.0)</td>
<td>4/12 (22)</td>
<td>8 (58.0)</td>
</tr>
<tr>
<td>EUR</td>
<td>2073 (3.0)</td>
<td>36 (0.1)</td>
<td>28/43 (53)</td>
<td>92 (7.5)</td>
</tr>
<tr>
<td>SEAR</td>
<td>144 (0.1)</td>
<td>4 (0.0)</td>
<td>1/3 (11)</td>
<td>95 (17.3)</td>
</tr>
<tr>
<td>WPR</td>
<td>1199 (0.7)</td>
<td>26 (0.0)</td>
<td>5/8 (27)</td>
<td>123 (14.5)</td>
</tr>
</tbody>
</table>

*Rates (pmp) are calculated by applying the population of the responding countries

** Million inhabitants per transplant centre are calculated by applying the population of the responding countries
Pancreas transplantation activities, 2022*

Number of pancreas transplants per million population
- 0.01-0.49
- 0.5-1.49
- 1.5-2.49
- 2.5-3.49
- ≥3.5
- No transplant activity
- Data not available
- Not applicable

*data from the Global Observatory on Donation and Transplantation

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Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DIII/DBI
Map Creation Date: 04 September 2023

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Pancreas transplants per million population (pmp) 2022

- 2,026 pancreas transplants
- 40/91 countries reported pancreas transplant activities in 2022
- 0% of increase vs 2021

Transplants by WHO regions 2022

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Pancreas Transplants (pmp)*</th>
<th>countries with any pancreas tx activity/ countries reporting to GODT (countries in the region)</th>
<th>Pancreas tx centres (million inhabitants / centre)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>0 (0.0)</td>
<td>0/3 (46)</td>
<td>0</td>
</tr>
<tr>
<td>AMR</td>
<td>1,171 (1.2)</td>
<td>7/22 (35)</td>
<td>218 (4.5)</td>
</tr>
<tr>
<td>EMR</td>
<td>56 (0.1)</td>
<td>3/12 (22)</td>
<td>10 (46.4)</td>
</tr>
<tr>
<td>EUR</td>
<td>611 (0.9)</td>
<td>23/43 (53)</td>
<td>122 (5.7)</td>
</tr>
<tr>
<td>SEAR</td>
<td>30 (0.0)</td>
<td>2/3 (11)</td>
<td>60 (27.4)</td>
</tr>
<tr>
<td>WPR</td>
<td>158 (0.1)</td>
<td>5/8 (27)</td>
<td>129 (13.8)</td>
</tr>
</tbody>
</table>

*Rates (pmp) are calculated by applying the population of the responding countries.
**Million inhabitants per transplant centre are calculated by applying the population of the responding countries.
Small bowel transplantation activities, 2022*

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Number of small bowel transplants per million population

- ≤0.09
- 0.1-0.19
- 0.2-0.29
- ≥0.3
- No transplant activity
- Data not available
- Not applicable

*Data from the Global Observatory on Donation and Transplantation

Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DHA/IDD
Map Creation Date: 04 September 2023
Small bowel transplants per million population (pmp) 2022

- 170 transplants of small bowel
- 21/91 countries reported small bowel transplant activities in 2022
- -1.2% decrease vs 2021

Transplants by WHO region 2022

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Small bowel transplants (pmp)*</th>
<th>Countries with any S.B tx activity/ countries reporting to GODT (countries in the region)</th>
<th>S.B tx centres (million inhabitants/centre)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>0 (0.0)</td>
<td>0/3 (46)</td>
<td>0</td>
</tr>
<tr>
<td>AMR</td>
<td>90 (0.1)</td>
<td>3/22 (35)</td>
<td>43 (22.9)</td>
</tr>
<tr>
<td>EMR</td>
<td>14 (0.0)</td>
<td>2/12 (22)</td>
<td>2 (231.8)</td>
</tr>
<tr>
<td>EUR</td>
<td>40 (0.1)</td>
<td>11/43 (53)</td>
<td>47 (14.7)</td>
</tr>
<tr>
<td>SEAR</td>
<td>3 (0.0)</td>
<td>1/3 (11)</td>
<td>29 (56.7)</td>
</tr>
<tr>
<td>WPR</td>
<td>23 (0.0)</td>
<td>4/8 (27)</td>
<td>78 (22.9)</td>
</tr>
</tbody>
</table>

*Rates (pmp) are calculated by applying the population of the responding countries

** Million inhabitants per transplant centre are calculated by applying the population of the responding countries
EVOLUTION OF ACTIVITIES BY WHO REGION
Donation and transplantation activities from 2020 to 2022 and percentage of variation 2022 vs 2021

<table>
<thead>
<tr>
<th></th>
<th>Africa</th>
<th>America</th>
<th>Eastern Mediterranean</th>
<th>Europe</th>
<th>South East Asia</th>
<th>Western Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deceased donors</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>OBD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>14 090 (14.3)</td>
<td>14 572 (14.8)</td>
</tr>
<tr>
<td>DCD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(0.0)</td>
<td>3 420 (3.5)</td>
<td>4 442 (4.5)</td>
</tr>
<tr>
<td>Kidney Tx</td>
<td>413 (0.9)</td>
<td>359 (0.9)</td>
<td>286 (0.7)</td>
<td>20.3</td>
<td>32 957 (33.5)</td>
<td>36 232 (36.9)</td>
</tr>
<tr>
<td>DDKT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>25 841 (26.3)</td>
<td>27 317 (27.8)</td>
</tr>
<tr>
<td>LDKT</td>
<td>413 (0.9)</td>
<td>359 (0.9)</td>
<td>286 (0.7)</td>
<td>20.3</td>
<td>7 116 (7.2)</td>
<td>8 915 (9.1)</td>
</tr>
<tr>
<td>Liver Tx</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>12 335 (12.5)</td>
<td>12 790 (13.0)</td>
</tr>
<tr>
<td>DDLT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>11 467 (11.7)</td>
<td>11 926 (12.1)</td>
</tr>
<tr>
<td>LDLT</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>862 (0.9)</td>
<td>859 (0.9)</td>
</tr>
<tr>
<td>Heart Tx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>4 419 (4.5)</td>
<td>4 599 (4.7)</td>
</tr>
<tr>
<td>Lung Tx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>3 048 (3.1)</td>
<td>3 096 (3.2)</td>
</tr>
<tr>
<td>Pancreas Tx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>1 226 (1.2)</td>
<td>1 234 (1.3)</td>
</tr>
<tr>
<td>Small bowel Tx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(-)</td>
<td>99 (0.1)</td>
<td>108 (0.1)</td>
</tr>
<tr>
<td>Total organ Tx</td>
<td>415 (0.9)</td>
<td>359 (0.9)</td>
<td>286 (0.7)</td>
<td>-20.3</td>
<td>54 084 (55.0)</td>
<td>58 059 (59.1)</td>
</tr>
</tbody>
</table>

Note: Rates (pmp) are calculated by applying the population of the responding countries.

* Type of donor not reported in 606 Liver Tx, but included in the total Liver Tx
## Global donation and transplantation activities from 2020 to 2022

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>% Variation 2022 vs 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deceased donors</strong></td>
<td>36 102 (5.8)</td>
<td>38 156 (6.4)</td>
<td>41 792 (7.0)</td>
<td>9.5</td>
</tr>
<tr>
<td><strong>DBD donors</strong></td>
<td>27 936 (4.5)</td>
<td>29 611 (4.9)</td>
<td>32 248 (5.4)</td>
<td>8.9</td>
</tr>
<tr>
<td><strong>DCD donors</strong></td>
<td>8 166 (1.3)</td>
<td>8 545 (1.4)</td>
<td>9 544 (1.6)</td>
<td>11.7</td>
</tr>
<tr>
<td><strong>Kidney Tx</strong></td>
<td>81 003 (13.0)</td>
<td>92 532 (15.4)</td>
<td>102 090 (17.1)</td>
<td>10.3</td>
</tr>
<tr>
<td><strong>DD Kidney Tx</strong></td>
<td>55 262 (8.9)</td>
<td>57 365 (9.6)</td>
<td>62 489 (10.5)</td>
<td>8.9</td>
</tr>
<tr>
<td><strong>LD Kidney Tx</strong></td>
<td>25 741 (4.1)</td>
<td>35 167 (5.9)</td>
<td>39 601 (6.6)</td>
<td>12.6</td>
</tr>
<tr>
<td><strong>Liver Tx</strong></td>
<td>32 615 (5.2)</td>
<td>34 694 (5.8)</td>
<td>37 436 (6.3)</td>
<td>7.9</td>
</tr>
<tr>
<td><strong>DD Liver Tx</strong></td>
<td>25 286 (4.1)</td>
<td>26 739 (4.5)</td>
<td>28 343 (4.8)</td>
<td>6.0</td>
</tr>
<tr>
<td><strong>LD Liver Tx</strong></td>
<td>6 691 (1.1)</td>
<td>7 930 (1.3)</td>
<td>9 061 (1.5)</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Heart Tx</strong></td>
<td>8 103 (1.3)</td>
<td>8 409 (1.4)</td>
<td>8 988 (1.5)</td>
<td>6.9</td>
</tr>
<tr>
<td><strong>Lung Tx</strong></td>
<td>5 942 (1.0)</td>
<td>6 470 (1.1)</td>
<td>6 784 (1.1)</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>Pancreas Tx</strong></td>
<td>1 970 (0.3)</td>
<td>2 025 (0.3)</td>
<td>2 026 (0.3)</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Small bowel Tx</strong></td>
<td>158 (0.03)</td>
<td>172 (0.03)</td>
<td>170 (0.0)</td>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Total organ Tx</strong></td>
<td>129 791 (20.8)</td>
<td>144 302 (24.1)</td>
<td>157 494 (26.4)</td>
<td>9.1</td>
</tr>
</tbody>
</table>

*Rates (pmp) are calculated by applying the population of the responding countries*
WAITING LISTS
Patients on the Kidney WL versus Kidney transplants (pmp) 2022

N= 90 countries
Patients on the Liver WL versus Liver transplants (pmp) 2022

N = 73 countries
Patients on the Heart WL versus Heart transplants (pmp) 2022

N= 60 countries
Patients on the Lung WL versus Lung transplants (pmp) 2022

N= 53 countries
Global distribution of countries with legal frameworks for organ donation and/or transplantation*

Countries with any legal requirement covering the organ donation and/or transplantation (donation of live and/or deceased persons)

Data not available or countries with no legal requirements in place

Not applicable

*data from the Global Observatory on Donation and Transplantation

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Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DNA/DDI
Map Creation Date: 29 June 2022
Global distribution of countries per type of consent for deceased organ donation*
Distribution of countries with national oversight on donation and/or transplantation*

*Data from the Global Observatory on Donation and Transplantation

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Data Source: Global Observatory on Donation and Transplantation
Map Production: WHO GIS Centre for Health, DNA/DDI
Map Creation Date: 29 June 2022
TRANSPLANTS PERFORMED ABROAD AND NON-RESIDENTS TRANSPLANTS
At least 600 patients from 31 countries travelled for transplantation abroad in 2022

Cases reported by the country of origin

46/91 countries were able to provide this information

Note: Not all countries were able to provide detailed information. Therefore figures may be underestimated.
More than 2,600 non-resident patients from 22 countries were reported to be transplanted from a living (n=2086) or a deceased (n=577) donor in 2022.

*Cases reported by the country of destination*

54/91 countries were able to provide this information.
WHO-ONT Collaboration

The GODT is a collaborative effort of WHO and the ONT of Spain. It is running since 2007 and came up in response to the request of the World Health Assembly, in Resolutions WHA57.18 and WHA63.22, to collect global data on the practices, safety, quality, efficacy, epidemiology and ethical issues of allogeneic transplantation. This database collects data on global donation and transplantation practices, and it is recognized as a tool for ensuring transparency, equity and monitoring national transplant systems.

Methods and definitions

An *ad hoc* standardized questionnaire for activities related to organ donation and transplantation is annually distributed to the identified health authorities and national 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/](http://www.transplant-observatory.org/download/global-glossary/) or through the WHO website ([http://www.who.int/transplantation/activities/en/](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/](http://www.transplant-observatory.org/)).
Actual donor (=donor): a deceased person from whom at least one organ has been recovered for the purpose of organ transplantation.

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.

Domino Transplant: a procedure in which an organ is removed from one transplant candidate and immediately transplanted into a second patient, with the first patient receiving a new organ from a deceased donor.


Transplants are counted as those performed only within the country. Counts for 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: a recipient of more than one organ is counted 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.

The data provided correspond to the period from January 1st to December 31st 2022. Only countries reporting data for 2022 have been included in this report.

Comparisons 2020 vs 2021 vs 2022 have been made with the most up to date data collected in the database (last accessed: October 2023).

To calculate rates per million population, the State of World Population reports, from the United Nations Population Fund (UNFPA), has been used as the source to estimate the population size. Figures for Human Development Index (HDI) are obtained from the United Nations Development Programme (UNDP), Human Development Report 2021/2022.

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.
Acronyms

- **DBD**: Actual donors after the neurologic determination of death
- **DCD**: Actual donors after the circulatory determination of death
- **DD**: Actual deceased organ donors
- **LD**: Living organ donors
- **GODT**: Global Observatory on Donation and Transplantation
- **KT**: Kidney transplants
- **LT**: Liver transplants

- **ONT**: Organización Nacional de Trasplantes, Spain
- **pmp**: per million population
- **Tx**: Transplants
- **WHO**: World Health Organization
- **HDI**: Human Development Index
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 2022 Report. Global Observatory on Donation and Transplantation (GODT).

For citations of the 2022 GODT data please quote the following: Those 2022 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 thankful to the identified focal points in Member States for their valuable participation in this international data sharing exercise, the Council of Europe for its support through the Newsletter Transplant, and the Spanish Government for its contribution to maintain the GODT.