ICMART is a non-State actor in official relations with the World Health Organization.

David Adamson: USA/Canada
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Silke Dyer: South Africa
Manish Banker: India
Georgina Chambers: Australia
Markus Kupka: Germany
Disclosures

The authors declare that they have no commercial or financial interest pertaining to the subject of this presentation or its content.
WHO Fact Sheets: Infertility, Quality Care

High quality fertility care is a core element of reproductive health and human right to found a family

Inequities in access to care
Lack or limited ART in LMICs

Data generation and monitoring central to quality health services
Pillars: effectiveness, safety, patient-centredness, equitable access

1. https://www.who.int/news-room/fact-sheets/detail/infertility;
2. https://www.who.int/news-room/fact-sheets/detail/quality-health-services
ICMART World Registry: 2017 Data

- Call for data April 2021
- New ICMART Data Collection Forms with validations
- Registries capturing cycle-based information converted data to retrospective summary data
- Data received from 4 regional and 7 national contributors
- Preliminary data queries resolved
- Outcome measures analyzed by region and globally

→ Preliminary results and trends 2017
ICMART World Registry: 1991 – 2017

2017: 1,955,908 cycles from 79 countries
+20.1% increase in cycles from 2014
ICMART World Registry: Growth by Region

China estimated +/−900 000 cycles
Bai et al, Hum Reprod 2020(35)446
ICMART Contributors 2017: 79 Countries

Top 10

- Japan: 445,380 cycles
- USA: 180,462 cycles
- Russia: 135,068 cycles
- Spain: 119,460 cycles
- France: 107,248 cycles
- Germany: 99,466 cycles
- Italy: 79,584 cycles
- Australia: 73,457 cycles
- UK: 68,480 cycles
- India: 63,469 cycles

70.2% of cycles

1. Based on reported number of cycles
Participation and Coverage

- 79 Countries, 2989 clinics
  - Almost all countries in Europe, the Americas, Australia-NZ
  - Africa: 1 country in 2008 → 17 countries in 2017
  - Missing countries: Middle-East, Asia

- Participation rate
  - 34 countries: 95% - 100%
  - 20 countries: 66% - 94%
  - 15 countries: 33% - 65%
  - 10 countries: < 33%

ESTIMATED ??% of World ART activity (excluding China)
Results 2017

- 1,955,908 reported cycles
- 329,388 deliveries
  (missing data: n=7 countries)

Plus
- Autologous frozen oocyte thaw cycles 0.4%
- Aspirations for fertility preservation 0.3%
## 2017 Overview: Effectiveness

<table>
<thead>
<tr>
<th>PROCEDURES</th>
<th>N</th>
<th>DELIVERY RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autologous aspirations</td>
<td>998 233</td>
<td>18.7% per asp(^1,2)</td>
</tr>
<tr>
<td>Freeze All cycles</td>
<td>215 519</td>
<td></td>
</tr>
<tr>
<td>Conventional IVF ETs</td>
<td>167 020</td>
<td>25.7% per ET(^2)</td>
</tr>
<tr>
<td>ICSI ETs</td>
<td>413 569</td>
<td>24.7% per ET(^2)</td>
</tr>
<tr>
<td>Frozen embryo transfers</td>
<td>600 375</td>
<td>26.1% per ET(^2)</td>
</tr>
<tr>
<td>PGT transfers</td>
<td>58 397</td>
<td>44.8% per ET(^2)</td>
</tr>
<tr>
<td>Egg donation transfers</td>
<td>117 716</td>
<td>33.1% per ET(^2)</td>
</tr>
</tbody>
</table>

1. DR after removing Freeze-all cycles; 2. DR after removing countries not reporting deliveries (n=7)
Conventional IVF vs. ICSI by Region, 2017

The chart shows the proportion of autologous aspirations for Conventional IVF and ICSI across different regions in 2017. The regions include North America, Latin America, Europe, Africa, Asia, Australia and New Zealand, and Global. The proportions are as follows:

- North America: 79.2% IVF, 20.8% ICSI
- Latin America: 85.5% IVF, 14.5% ICSI
- Europe: 69.8% IVF, 30.2% ICSI
- Africa: 90.1% IVF, 9.9% ICSI
- Asia: 62.1% IVF, 37.9% ICSI
- Australia and New Zealand: 64.7% IVF, 35.3% ICSI
- Global: 69.3% IVF, 30.7% ICSI
Autologous ART: Aspirations by Age Distribution

- North Am:
  - <=34 y: 43.2%
  - 35-39y: 30.4%
  - >=40 y: 26.4%

- Latin Am:
  - <=34 y: 27.3%
  - 35-39y: 42.3%
  - >=40 y: 30.4%

- Europe:
  - <=34 y: 16.3%
  - 35-39y: 45.0%
  - >=40 y: 38.7%

- Africa:
  - <=34 y: 56.6%
  - 35-39y: 24.4%
  - >=40 y: 19.0%

- Asia:
  - <=34 y: 39.5%
  - 35-39y: 24.4%
  - >=40 y: 36.1%

- Aust-NZ:
  - <=34 y: 34.7%
  - 35-39y: 39.2%
  - >=40 y: 26.1%

- Global:
  - <=34 y: 38.9%
  - 35-39y: 38.2%
  - >=40 y: 22.9%
Autologous ART: Delivery Rates

Freeze all cycles excluded in fresh DR/asp and included in cumulative DR/asp
Autologous ART: Fresh DR/ET and Multiple Rates

Delivery rate and multiple rate

- **North Am**: DR/Aspiration - 25.3%, Twin Deliveries - 14.6%, Triplet+ Deliveries - 0.4%
- **Latin Am**: DR/Aspiration - 20.9%, Twin Deliveries - 17.3%, Triplet+ Deliveries - 0.6%
- **Europe**: DR/Aspiration - 21.2%, Twin Deliveries - 14.1%, Triplet+ Deliveries - 0.3%
- **Africa**: DR/Aspiration - 19.1%, Twin Deliveries - 27.9%, Triplet+ Deliveries - 1.9%
- **Asia**: DR/Aspiration - 8.3%, Twin Deliveries - 5.0%, Triplet+ Deliveries - 0.5%
- **Aust-NZ**: DR/Aspiration - 19.8%, Twin Deliveries - 3.8%, Triplet+ Deliveries - 0.0%
Autologous ART: Fresh vs. Frozen Transfers

Percentage of SET

<table>
<thead>
<tr>
<th>Region</th>
<th>Fresh autologous SET</th>
<th>Frozen autologous SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Am</td>
<td>49.6%</td>
<td>63.6%</td>
</tr>
<tr>
<td>Latin Am</td>
<td>26.6%</td>
<td>35%</td>
</tr>
<tr>
<td>Europe</td>
<td>44.9%</td>
<td>57.8%</td>
</tr>
<tr>
<td>Africa</td>
<td>13.3%</td>
<td>19.3%</td>
</tr>
<tr>
<td>Asia</td>
<td>58.2%</td>
<td>77.2%</td>
</tr>
<tr>
<td>Aust-NZ</td>
<td>84.9%</td>
<td>92.1%</td>
</tr>
<tr>
<td>Global</td>
<td>47.4%</td>
<td>66.1%</td>
</tr>
</tbody>
</table>

SET, Single embryo transfer
Autologous ART: Fresh Transfer Effectiveness

Aggregated data by no. embryos transferred

CPR/ET  DR/ET  MDR

1 Embryo  29.5  21.9  22.1
n= 264 029 cycles

2 Embryos  37.8  27.4  22.1
n= 251 813 cycles

3 Embryos  36.5  24.9  22.8
n= 39 786 cycles

≥ 4 embryos  30.1  18.0  16.7
n= 6 786 cycles

CPR, clinical pregnancy rate; DR, delivery rate; MDR, multiple delivery rate; n= number of transfers
Autologous ART: Elective vs. Non-elective SET & DET

26 Countries with disaggregated data

- eSET, elective single embryo transfer
- oSET, non-elective single embryo transfer
- eDET, elective dual embryo transfer
- oDET, non-elective dual embryo transfer

<table>
<thead>
<tr>
<th></th>
<th>CPR/ET</th>
<th>DR/ET</th>
<th>MDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>eSET</td>
<td>42.5%</td>
<td>33.3%</td>
<td>2.2%</td>
</tr>
<tr>
<td>oSET</td>
<td>20.4%</td>
<td>14.3%</td>
<td>1.9%</td>
</tr>
<tr>
<td>eDET</td>
<td>47.4%</td>
<td>34.8%</td>
<td>26.2%</td>
</tr>
<tr>
<td>oDET</td>
<td>31.2%</td>
<td>22.4%</td>
<td>17.6%</td>
</tr>
<tr>
<td>3 ET (all)</td>
<td>36.5%</td>
<td>24.9%</td>
<td>22.8%</td>
</tr>
</tbody>
</table>
Trends: Distribution of Procedures

Aspiration (IVF & ICSI)  FET (autolog)  OD ET (fresh & frozen)
Trends: Conventional IVF vs. ICSI
Trends: Transfer of ≤2 Embryos by Region

- North Am: 90.8% (2011), 85.4% (2015), 93% (2017)
- Latin Am: 90.8% (2011), 85.4% (2015), 93% (2017)
- Europe: 90.8% (2011), 85.4% (2015), 93% (2017)
- Africa: 90.8% (2011), 85.4% (2015), 58.7% (2017)
- Asia: 90.2% (2011), 85.4% (2015), 90.2% (2017)
- Aust-NZ: 99.8% (2011), 85.4% (2015), 90.2% (2017)
Key Observations and Trends, 2017

- Total No. ART cycles approaching 2 Million (+20% since 2014)
- Steady growth in ICMART World Registry
- Large differences in regional contribution of cycles
  - Africa 1.7% of cycles versus Europe 47.9%
  - Differences in populations, reporting, access to care
- Large regional variations in age (autologous fresh aspirations)
  - Women >= 40y: Asia 36.1%; Latin America 27.3%
  - Women <=34y: Africa 56.6%; Europe: 45.0%
Key Observations and Trends, 2017

- Regional variations in effectiveness
  - Many variables: age, patient selection, no. embryos transferred

- Cryopreservation cycles in autologous ART
  - Freeze all cycles: 21.6% of aspirations
  - FET cycles: 35.6% of all fresh and frozen embryo transfers
  - Higher rate of SET in FET compared to fresh ET in all regions

- First global data on elective vs. non-elective SET & DET
Future

- Encourage registry development: Asia, Middle East
- Increase “inter-registry” communication
- Improve follow-up of ART pregnancy outcomes
- Continue to improve data validation
- Continue to harmonize data globally
- Use data to improve quality of ART globally
- Use data to address inequities in ART utilization
Thank you to our Contributors

**ANARA (Africa), 16 countries:** Benin, Burkina Faso, Cameroon, Egypt, Ethiopia, Ghana, Ivory Coast, Kenya, Mali, Mauritius, Nigeria, South Africa, Tunisia, Togo, Uganda, Zimbabwe

**ANZARD, 2 countries:** Australia, New Zealand

**ASIA:** India, Indonesia, Japan, Taiwan

**EIM (ESHRE), 39 countries:** Albania, Austria, Belarus, Belgium, Bosnia, Bulgaria, Croatia, Cyprus, Czech Rep, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Macedonia, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Switzerland, UK, Ukraine

**MIDDLE EAST:** Israel

**NORTH AMERICA:** Canada, United States

**RED LARA (Latin America), 15 countries:** Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay, Venezuela
Thank You to our Sponsoring Organizations
Thank you to all women and men who placed themselves into the care of ART centres in 2017.