ICMART
PRELIMINARY WORLD REPORT 2019

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Disclosures

The authors declare that they have no commercial or financial interest pertaining to the subject of this presentation or its content.
Global perspectives and developments

- Real-world data (RWD) are increasingly valued as part of real-world evidence and patient-centred outcome research
- RWD facilitate assessment of reproductive strategies across regions and how these impact the balance between effectiveness, safety and equity
- New ICMART initiative: Global Expert Discussion Forum
  - Virtual meetings twice per year
  - Address specific challenges and topics
  - All ICMART Contributors and invited experts
ICMART World Registry: 1991 – 2019

3,411,005 cycles from 81 countries (+ 6.7%)
ICMART Contributors 2019

81 countries, 3230 clinics

**Leading countries**
- China: 1,121,510
- Japan: 455,499
- USA: 182,187
- Russia: 157,132
- Spain: 129,238
- France: 117,572
- Germany: 107,136
- Italy: 84,890
- Australia: 79,565
- UK: 68,341

≈ 90 - 95% of World ART activity

73.4% of cycles
Results 2019

- 3,411,005 reported cycles
- 660,003 deliveries (missing data: n=11 countries)
- 751,659 babies

Plus
- Autologous frozen oocyte thaw cycles 0.4%
- Aspirations for fertility preservation 0.3%

Distribution of ART procedures:
- Initiated fresh IVF&ICSI: 51.5%
- Autologous thaw cycles: 36.0%
- Fresh & frozen OD ET: 7.9%
- Initiated PGT: 3.9%
# 2019 Overview: Effectiveness

<table>
<thead>
<tr>
<th>PROCEDURES</th>
<th>N</th>
<th>DELIVERY RATES(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autologous IVF &amp; ICSI aspirations</td>
<td>1,737,181</td>
<td>22.3% per asp</td>
</tr>
<tr>
<td>Freeze All cycles</td>
<td>657,515</td>
<td></td>
</tr>
<tr>
<td>Autologous fresh transfers</td>
<td>825,176</td>
<td>30.2% per ET</td>
</tr>
<tr>
<td>Frozen embryo transfers</td>
<td>1,262,727</td>
<td>32.6% per ET</td>
</tr>
<tr>
<td>PGT transfers</td>
<td>109,912</td>
<td>48.4% per ET</td>
</tr>
<tr>
<td>Egg donation transfers (fresh and frozen)</td>
<td>281,678</td>
<td>34.5% per ET</td>
</tr>
</tbody>
</table>

1. Excluding countries not reporting deliveries (n=11) and freeze all cycles from DR/asp
Autologous ART 2019: Delivery Rates

Freeze all cycles excluded in fresh DR/asp and included in cumulative DR/asp
Autologous ART 2019: Fresh DR/asp & Multiple Rates

Delivery rate and multiple rate

<table>
<thead>
<tr>
<th>Region</th>
<th>DR/Aspiration</th>
<th>Twin Deliveries (%)</th>
<th>Triplet+ Deliveries (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Am</td>
<td>22.0</td>
<td>10.5</td>
<td>0.2</td>
</tr>
<tr>
<td>Latin Am</td>
<td>24.5</td>
<td>15.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Europe</td>
<td>20.2</td>
<td>11.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Africa</td>
<td>17.5</td>
<td>20.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Asia*</td>
<td>25.0</td>
<td>22.7*</td>
<td>2.7**</td>
</tr>
<tr>
<td>Aust-NZ</td>
<td>19.9</td>
<td>3.2</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Global MDR 17.6%

* China ≥Twins
** Japan MDR
Autologous ART 2019: DR/FET and Multiple Rates

Delivery rate and multiple rate

North Am: 39.4% DR/FET, 9.0% Twin Deliveries (%), 0.2% Triplet+ Deliveries (%)
Latin Am: 29.5% DR/FET, 13.9% Twin Deliveries (%), 0.3% Triplet+ Deliveries (%)
Europe: 25.5% DR/FET, 8.9% Twin Deliveries (%), 0.1% Triplet+ Deliveries (%)
Africa: 18.7% DR/FET, 18.7% Twin Deliveries (%), 0.2% Triplet+ Deliveries (%)
Asia*: 15.0% DR/FET, 2.7% Triplet+ Deliveries (%)
Aust-NZ: 27.8% DR/FET, 2.8% Twin Deliveries (%), 0.0% Triplet+ Deliveries (%)

Global MDR 13.1%

* China ≥Twins
** Japan MDR
Oocyte Donation 2019: DR/ET and Multiple Rates

Fresh & frozen transfers

<table>
<thead>
<tr>
<th>Region</th>
<th>Delivery Rate</th>
<th>Multiple Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Am</td>
<td>46.6</td>
<td>7.6, 0.2</td>
</tr>
<tr>
<td>Latin Am</td>
<td>33.3</td>
<td>18.1, 0.8</td>
</tr>
<tr>
<td>Europe</td>
<td>32.3</td>
<td>9.7, 0.1</td>
</tr>
<tr>
<td>Africa</td>
<td>22.8</td>
<td>26.9, 4.5</td>
</tr>
<tr>
<td>Aust-NZ</td>
<td>30.5</td>
<td>2.8, 0.0</td>
</tr>
</tbody>
</table>

(no OD data reported from Asia)

Global MDR 10.8%
Autologous ART 2019: SET in Fresh vs Frozen Cycles

- **Fresh SET**
- **FET SET**

**Percentage of SET in ET cycles**

- **North Am**: 58.0, 74.0
- **Latin Am**: 36.1, 46.1
- **Europe**: 55.8, 68.5
- **Africa**: 14.9, 19.1
- **Asia***: 82.5, 85.1
- **Aust-NZ**: 88.5, 93.6
- **Global**: 57.1, 74.1

*SET, Single embryo transfer; * Japan only*
Autologous ART 2019: Aspirations by Age

Distribution of aspirations by category of age

- North Am
- Latin Am
- Europe
- Africa
- Asia*
- Aust-NZ
- Global

* Japan only
Autologous ART 2019: Fresh Transfer Effectiveness

Aggregated data by no. embryos transferred

CPR, clinical pregnancy rate; DR, delivery rate; MDR, multiple delivery rate; n= number of transfers
Autologous ART 2019: Elective vs Non-elective SET & DET

36 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
Trends: Multiple Rates and Prematurity, 2019

Fresh autologous ART, 2019

- **Singletons**
  - 22-27 weeks: 9.7%
  - 28-32 weeks: 41.7%
  - 33-36 weeks: 12.4%
  - ≥37 weeks: 40.0%
  - Total: 86.1%

- **Twins**
  - 22-27 weeks: 13.9%
  - 28-32 weeks: 42.2%
  - 33-36 weeks: 41.7%
  - ≥37 weeks: 8.0%
  - Total: 86.0%

- **Triplets**
  - 22-27 weeks: 1.2%
  - 28-32 weeks: 2.9%
  - 33-36 weeks: 41.9%
  - ≥37 weeks: 8.0%
  - Total: 44.9%

Multiple rates by type of procedure

- **Autologous fresh**
- **Autologous FET**
- **OD fresh & FET**

Proportion of multiple deliveries (2000-2019)
Trends: Conventional IVF vs. ICSI

* First inclusion of China data
6-year trends: Autologous Cryopreservation

Fresh ET versus FET

Distribution of fresh and frozen ETs

<table>
<thead>
<tr>
<th>Year</th>
<th>Frozen ET</th>
<th>FET</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>61.1</td>
<td>38.9</td>
</tr>
<tr>
<td>2015</td>
<td>53.9</td>
<td>46.1</td>
</tr>
<tr>
<td>2016</td>
<td>49.2</td>
<td>50.8</td>
</tr>
<tr>
<td>2017</td>
<td>49.3</td>
<td>50.7</td>
</tr>
<tr>
<td>2018</td>
<td>43.2</td>
<td>56.8</td>
</tr>
<tr>
<td>2019</td>
<td>39.5</td>
<td>60.5</td>
</tr>
</tbody>
</table>

Freeze all cycles

Freeze all cycles per aspiration (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Freeze all cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>19.2</td>
</tr>
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<td>2015</td>
<td>21.3</td>
</tr>
<tr>
<td>2016</td>
<td>24.8</td>
</tr>
<tr>
<td>2017</td>
<td>28.9</td>
</tr>
<tr>
<td>2018</td>
<td>37.4</td>
</tr>
<tr>
<td>2019</td>
<td>37.8</td>
</tr>
</tbody>
</table>

No. Countries reporting Freeze All

<table>
<thead>
<tr>
<th>Year</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>45</td>
</tr>
<tr>
<td>2015</td>
<td>52</td>
</tr>
<tr>
<td>2016</td>
<td>62</td>
</tr>
<tr>
<td>2017</td>
<td>60</td>
</tr>
<tr>
<td>2018</td>
<td>67</td>
</tr>
<tr>
<td>2019</td>
<td>65</td>
</tr>
</tbody>
</table>
PGT 2019: Distribution by age and DR per ET

Distribution of transfers by age

<table>
<thead>
<tr>
<th></th>
<th>≤ 34 y</th>
<th>35-39 y</th>
<th>≥ 40 y</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Am</td>
<td>22.7%</td>
<td>45.6%</td>
<td>31.8%</td>
</tr>
<tr>
<td>Latin Am</td>
<td>20.7%</td>
<td>39.3%</td>
<td>40.1%</td>
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<td>Aust-NZ</td>
<td>30.7%</td>
<td>45.5%</td>
<td>23.8%</td>
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<tr>
<td>Africa</td>
<td>37.1%</td>
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<td>28.5%</td>
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<table>
<thead>
<tr>
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<th>DR/ET</th>
</tr>
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<tbody>
<tr>
<td>≤ 34</td>
<td>50.1%</td>
</tr>
<tr>
<td>34-39</td>
<td>48.9%</td>
</tr>
<tr>
<td>≥ 40</td>
<td>46.3%</td>
</tr>
<tr>
<td>Total*</td>
<td>48.4%</td>
</tr>
</tbody>
</table>

(n = 95 347 transfers)

* Including Europe and Asia
Thank you to our Contributors

**ANARA (Africa), 18 countries:** Benin, Burkina Faso, Cameroon, Egypt, Ethiopia, Ghana, Ivory Coast, Kenya, Libya, Mali, Mauritius, Nigeria, South Africa, Sudan, Tunisia, Togo, Uganda, Zimbabwe

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

**ASIA:** China, India, Japan,

**EIM (ESHRE), 40 countries:** Albania, Armenia, Austria, Belarus, Belgium, Bosnia, Bulgaria, Czech Rep, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Slovakia, Spain, Sweden, Switzerland, Ukraine, United Kingdom

**MIDDLE EAST:** Israel

**NORTH AMERICA:** Canada, United States

**REDLARA (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 those who placed themselves into the care of ART centres in 2019