## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Cycle start</td>
</tr>
<tr>
<td>RET</td>
<td>Oocyte retrieval</td>
</tr>
<tr>
<td>ET</td>
<td>Embryo transfer</td>
</tr>
<tr>
<td>IVF</td>
<td>In vitro fertilization</td>
</tr>
<tr>
<td>FET</td>
<td>Frozen embryo transfer</td>
</tr>
<tr>
<td>PGT-A/PGT-M</td>
<td>Preimplantation Genetic Testing for Aneuploidy/Monogenic (Single Gene) Diseases</td>
</tr>
<tr>
<td>IVM</td>
<td>In vitro maturation</td>
</tr>
<tr>
<td>OHSS</td>
<td>Ovarian hyperstimulation syndrome</td>
</tr>
<tr>
<td>eSET</td>
<td>Elective single embryo transfer</td>
</tr>
<tr>
<td>neSET</td>
<td>Non-elective single embryo transfer</td>
</tr>
<tr>
<td>eDET</td>
<td>Elective double embryo transfer</td>
</tr>
<tr>
<td>neDET</td>
<td>Non-elective double embryo transfer</td>
</tr>
</tbody>
</table>
Disclaimer

• This report is based on data submitted by assisted reproductive technology clinics from across Canada to the CARTR Plus database. Although significant effort has been made to ensure the accuracy of the information presented in this report, neither the authors nor BORN Ontario nor any other parties make any representation or warranties as to the accuracy, reliability or completeness of the information contained herein.

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Suggested citations


Notes

• All data current as of July 2018

• Treatment cycle outcomes for 2017 cycle starts
  – Based on 36 clinics

• Birth outcomes for 2016 cycle starts
  – Based on 35 clinics
Notes

• These slides present descriptive estimates on which no formal statistical tests have been carried out; therefore, differences across treatment cycles, patient characteristics or embryo transfer characteristics may not be statistically significant and should be interpreted cautiously.

• Unless otherwise specified, denominators for birth outcomes are based on the pregnancy level.
INTRODUCTION

*All ART treatment cycles (fresh and frozen)*
CARTR Plus records extracted July 2018

Total treatment records entered into CARTR Plus with a cycle start date between Jan 1, 2013 and Dec 31, 2017: n = 147,419

2013 Treatment cycles: n = 25,349
2014 Treatment cycles: n = 28,166
2015 Treatment cycles: n = 29,538
2016 Treatment cycles: n = 31,274
2017 Treatment cycles: n = 33,092

Birth outcomes
95.0% complete (8,406/8,850) per ongoing clinical pregnancy

* Unacknowledged records were included if they were “submitted” or if they linked to an outcome
Number of Unique Women

All ART treatment cycles

<table>
<thead>
<tr>
<th>Year</th>
<th>Unique Women</th>
<th>Cycle Starts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>17,051</td>
<td>25,349</td>
</tr>
<tr>
<td>2014</td>
<td>18,424</td>
<td>28,166</td>
</tr>
<tr>
<td>2015</td>
<td>18,914</td>
<td>29,538</td>
</tr>
<tr>
<td>2016</td>
<td>20,644</td>
<td>31,274</td>
</tr>
<tr>
<td>2017</td>
<td>21,271</td>
<td>33,092</td>
</tr>
</tbody>
</table>
Volume of treatment cycles by clinic

All ART treatment cycles

Number of treatment cycles

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;200</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>200–499</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>500–999</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>≥1,000</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>8</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>31</td>
<td>33</td>
<td>34</td>
<td>34</td>
<td>36</td>
</tr>
</tbody>
</table>
Number of cycles and clinical pregnancies

All ART treatment cycles

- **Cycle starts**:
  - CARTR, 2011: 23,044
  - CARTR, 2012: 23,200
  - CARTR Plus, 2013: 8,511
  - CARTR Plus, 2014: 7,738

- **Embryo transfer cycles**: 33,092 cycles overall.
  - CARTR, 2011: 23,044
  - CARTR, 2012: 23,200
  - CARTR Plus, 2013: 8,511
  - CARTR Plus, 2014: 7,738

- **Clinical pregnancies***: 8,511 cycles overall.
  - CARTR Plus, 2013: 8,511
  - CARTR Plus, 2014: 7,738

- **Ongoing clinical pregnancies†**:
  - CARTR Plus, 2013: 8,511
  - CARTR Plus, 2014: 7,738

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

†Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
Number of cycles and clinical pregnancies

All ART treatment cycles

<table>
<thead>
<tr>
<th>Cycle starts</th>
<th>Embryo transfer cycles</th>
<th>Clinical pregnancies*</th>
<th>Ongoing clinical pregnancies†</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,782</td>
<td>21,054</td>
<td>8,583</td>
<td>8,511</td>
</tr>
<tr>
<td>25,349</td>
<td>19,785</td>
<td>7,714</td>
<td>7,756</td>
</tr>
<tr>
<td>23,997</td>
<td>20,886</td>
<td>7,278</td>
<td>7,940</td>
</tr>
<tr>
<td>31,274</td>
<td>22,637</td>
<td>8,250</td>
<td>7,930</td>
</tr>
<tr>
<td>33,092</td>
<td>23,044</td>
<td>8,779</td>
<td>7,738</td>
</tr>
</tbody>
</table>

* Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
Number of multiple pregnancies

*All ART treatment cycles*

<table>
<thead>
<tr>
<th>Year</th>
<th>Multiple pregnancies†</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARTR, 2011</td>
<td>6,368</td>
</tr>
<tr>
<td>CARTR, 2012</td>
<td>6,982</td>
</tr>
<tr>
<td>CARTR Plus, 2013</td>
<td>7,716</td>
</tr>
<tr>
<td>CARTR Plus, 2014</td>
<td>8,245</td>
</tr>
<tr>
<td>CARTR Plus, 2015</td>
<td>7,756</td>
</tr>
<tr>
<td>CARTR Plus, 2016</td>
<td>7,940</td>
</tr>
<tr>
<td>CARTR Plus, 2017</td>
<td>7,738</td>
</tr>
</tbody>
</table>

*Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound*
Percentage of multiple pregnancies

*All ART treatment cycles*

<table>
<thead>
<tr>
<th>Year</th>
<th>Twin</th>
<th>Triplet+</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARTR, 2011</td>
<td>1,278</td>
<td>72</td>
</tr>
<tr>
<td>CARTR, 2012</td>
<td>1,152</td>
<td>65</td>
</tr>
<tr>
<td>CARTR Plus, 2013</td>
<td>1,122</td>
<td>45</td>
</tr>
<tr>
<td>CARTR Plus, 2014</td>
<td>1,004</td>
<td>34</td>
</tr>
<tr>
<td>CARTR Plus, 2015</td>
<td>909</td>
<td>44</td>
</tr>
<tr>
<td>CARTR Plus, 2016</td>
<td>733</td>
<td>27</td>
</tr>
<tr>
<td>CARTR Plus, 2017</td>
<td>595</td>
<td>12</td>
</tr>
</tbody>
</table>

*Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound*
Percentage of multiple pregnancies in Ontario

All ART treatment cycles

<table>
<thead>
<tr>
<th>Year</th>
<th>Twin</th>
<th>Triplet+</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARTR Plus, 2013</td>
<td>585</td>
<td>25</td>
</tr>
<tr>
<td>CARTR Plus, 2014</td>
<td>448</td>
<td>13</td>
</tr>
<tr>
<td>CARTR Plus, 2015</td>
<td>396</td>
<td>22</td>
</tr>
<tr>
<td>CARTR Plus, 2016</td>
<td>307</td>
<td>16</td>
</tr>
<tr>
<td>CARTR Plus, 2017</td>
<td>246</td>
<td>4</td>
</tr>
</tbody>
</table>

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound
Specialized services
*All ART treatment cycles (fresh and frozen), 2017*

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational carrier</td>
<td>895</td>
</tr>
<tr>
<td>PGT-A/PGT-M</td>
<td>5,422</td>
</tr>
<tr>
<td>Oocyte or embryo banking due to cancer treatment</td>
<td>264</td>
</tr>
<tr>
<td>Oocyte or embryo banking due to non-cancer/non-medical reasons</td>
<td>381</td>
</tr>
<tr>
<td>Any use of donor oocytes or embryos</td>
<td>3,297</td>
</tr>
<tr>
<td>Frozen oocyte IVF</td>
<td>674</td>
</tr>
</tbody>
</table>
# Oocyte or embryo freezing for non-medical reasons

*2013, 2014, 2015, 2016, 2017*

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>132</td>
</tr>
<tr>
<td>2014</td>
<td>174</td>
</tr>
<tr>
<td>2015</td>
<td>280</td>
</tr>
<tr>
<td>2016</td>
<td>332</td>
</tr>
<tr>
<td>2017</td>
<td>381</td>
</tr>
<tr>
<td>Overall</td>
<td>1,299</td>
</tr>
</tbody>
</table>
## PGT-A and PGT-M


<table>
<thead>
<tr>
<th>Year</th>
<th>Number of cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>463</td>
</tr>
<tr>
<td>2014</td>
<td>864</td>
</tr>
<tr>
<td>2015</td>
<td>2,499</td>
</tr>
<tr>
<td>2016</td>
<td>4,444</td>
</tr>
<tr>
<td>2017</td>
<td>5,422</td>
</tr>
<tr>
<td>Overall</td>
<td>19,692</td>
</tr>
</tbody>
</table>
TREATMENT CYCLES FOR 2017

All ART treatment cycles (fresh and frozen)
Number of treatment cycles

2016

- Fresh IVF – own oocytes*: 15,344
- Fresh IVF – donor oocytes: 754
- Natural/modified natural IVF*: 343
- FET – own oocytes*: 12,071
- FET – donor oocytes: 1,584
- ET cycles: 8,084
- Frozen oocyte IVF – own oocytes*: 1,578
- Frozen oocyte IVF – donor oocytes: 126
- Cycle starts / Embryo thaw cycles: 8,084
- ET cycles: 1,584

* Own oocytes exclusively
Number of treatment cycles

2017

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Cycle starts / Embryo thaw cycles</th>
<th>ET cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh IVF – own oocytes*</td>
<td>15,391</td>
<td>7,000</td>
</tr>
<tr>
<td>Fresh IVF – donor oocytes</td>
<td>823</td>
<td>262</td>
</tr>
<tr>
<td>Natural/modified natural IVF*</td>
<td>142</td>
<td>42</td>
</tr>
<tr>
<td>FET – own oocytes*</td>
<td>13,417</td>
<td>13,261</td>
</tr>
<tr>
<td>FET – donor oocytes</td>
<td>1,912</td>
<td>1,906</td>
</tr>
<tr>
<td>Frozen oocyte IVF – own oocytes*</td>
<td>136</td>
<td>78</td>
</tr>
<tr>
<td>Frozen oocyte IVF – donor oocytes</td>
<td>538</td>
<td>492</td>
</tr>
</tbody>
</table>

* Own oocytes exclusively
Type of treatment cycle, per cycle start

All ART treatment cycles (fresh and frozen), 2017

- IVF: 49.0%
- FET: 46.3%
- Frozen oocyte IVF: 2.0%
- Oocyte banking: 2.2%
- IVM: 0.0%
## Type of treatment cycle, per cycle start

*All ART treatment cycles (fresh and frozen), 2017*

<table>
<thead>
<tr>
<th>Treatment Cycle</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh IVF – own oocytes*</td>
<td>46.5</td>
</tr>
<tr>
<td>Fresh IVF – donor oocytes</td>
<td>2.5</td>
</tr>
<tr>
<td>Natural/modified natural IVF*</td>
<td>0.4</td>
</tr>
<tr>
<td>FET – own oocytes*</td>
<td>40.5</td>
</tr>
<tr>
<td>FET – donor oocytes</td>
<td>5.8</td>
</tr>
<tr>
<td>Frozen oocyte IVF – own oocytes*</td>
<td>0.4</td>
</tr>
<tr>
<td>Frozen oocyte IVF – donor oocytes</td>
<td>1.6</td>
</tr>
<tr>
<td>Oocyte banking</td>
<td>2.2</td>
</tr>
<tr>
<td>IVM</td>
<td>0.04</td>
</tr>
</tbody>
</table>

*Own oocytes exclusively*
<table>
<thead>
<tr>
<th>Type of treatment cycle</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVF – own oocytes*</td>
<td>15,391</td>
<td>46.51</td>
</tr>
<tr>
<td>IVF – donor oocytes</td>
<td>823</td>
<td>2.49</td>
</tr>
<tr>
<td>Natural/modified natural IVF*</td>
<td>142</td>
<td>0.43</td>
</tr>
<tr>
<td>FET – own oocytes*</td>
<td>13,417</td>
<td>40.54</td>
</tr>
<tr>
<td>FET – donor oocytes</td>
<td>1,912</td>
<td>5.78</td>
</tr>
<tr>
<td>Frozen oocyte IVF – own oocytes*</td>
<td>136</td>
<td>0.41</td>
</tr>
<tr>
<td>Frozen oocyte IVF – donor oocytes</td>
<td>538</td>
<td>1.63</td>
</tr>
<tr>
<td>Oocyte banking</td>
<td>721</td>
<td>2.18</td>
</tr>
<tr>
<td>IVM</td>
<td>12</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>TOTAL TREATMENT CYCLES</strong></td>
<td>33,092</td>
<td></td>
</tr>
</tbody>
</table>

* Own oocytes exclusively
Reasons for treatment

All ART treatment cycles (fresh and frozen), 2017

Male factor
Unexplained infertility
Advanced female age
Diminished ovarian reserve
PGT-A
PCOS
Tubal factor
Endometriosis
Other ovulatory disorder
Other female factor
No male partner
Other uterine factor
Other reasons†
PGT-M
Oocyte/embryo banking for cancer treatment
Oocyte/embryo banking for non-cancer/non-medical reasons

Percent per cycle start (%)

* Categories are not mutually exclusive
† Other reasons include: gonadotoxic therapy, no female partner and peritoneal factor or severe adhesions
Clinical pregnancy by type of treatment cycle

2017

Clinical pregnancies

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>Clinical Pregnancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh IVF – own oocytes*</td>
<td>2,320</td>
</tr>
<tr>
<td>Fresh IVF – donor oocytes</td>
<td>136</td>
</tr>
<tr>
<td>Natural/modified natural IVF*</td>
<td>11</td>
</tr>
<tr>
<td>FET – own oocytes*</td>
<td>5,009</td>
</tr>
<tr>
<td>FET – donor oocytes</td>
<td>782</td>
</tr>
<tr>
<td>Frozen oocyte IVF – own oocytes*</td>
<td>28</td>
</tr>
<tr>
<td>Frozen oocyte IVF – donor oocytes</td>
<td>225</td>
</tr>
</tbody>
</table>

* Own oocytes exclusively
† Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
Singleton ongoing clinical pregnancy by type of treatment cycle

2017

* Own oocytes exclusively
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound
Patient age

All ART treatment cycles (fresh and frozen), 2017

<table>
<thead>
<tr>
<th>Patient age (years)</th>
<th>Percent per cycle start (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>39.1</td>
</tr>
<tr>
<td>35–37</td>
<td>23.5</td>
</tr>
<tr>
<td>38–40</td>
<td>20.1</td>
</tr>
<tr>
<td>41–42</td>
<td>9.9</td>
</tr>
<tr>
<td>≥43</td>
<td>7.3</td>
</tr>
</tbody>
</table>
TREATMENT CYCLES FOR 2017

ART cycles using IVF – own oocytes
Stage of treatment and treatment outcomes

*ART cycles using IVF – own oocytes, 2017*

- Cycle starts (CS): 15,391
- Oocyte retrieval cycles (RET): 14,542
- Embryo transfer cycles (ET): 7,000
- Clinical pregnancies*: 2,320
- Ongoing clinical pregnancies†: 2,112
- Singleton pregnancies‡: 1,902

- 849 cancelled: 5.5% per CS
- 7542 no ET: 48.1% per RET
- Clinical pregnancies*: 15.1% per CS 16.0% per RET 33.1% per ET
- Ongoing clinical pregnancies†: 13.7% per CS 14.5% per RET 30.2% per ET
- Singleton pregnancies‡: 12.4% per CS 13.1% per RET 27.2% per ET

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
‡ Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound
Stage of treatment and treatment outcomes

ART cycles using IVF – own oocytes, 2017

- Cycle starts (CS): 15,391
- Oocyte retrieval cycles (RET): 14,542
- Embryo transfer cycles (ET): 7,000
- Clinical pregnancies*: 2,320
- Ongoing clinical pregnancies†: 2,112
- Singleton pregnancies‡: 1,902

* Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
‡ Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound
Percentage of cancelled cycles

ART cycles using IVF – own oocytes, 2017

<table>
<thead>
<tr>
<th>Patient age (years)</th>
<th>Percent per cycle start (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>3.9</td>
</tr>
<tr>
<td>35–37</td>
<td>5.1</td>
</tr>
<tr>
<td>38–40</td>
<td>6.3</td>
</tr>
<tr>
<td>41–42</td>
<td>9.4</td>
</tr>
<tr>
<td>≥43</td>
<td>8.5</td>
</tr>
<tr>
<td>OVERALL</td>
<td>5.5</td>
</tr>
</tbody>
</table>
Reasons for cycle cancellation

ART cycles using IVF – own oocytes, 2017

- **Low ovarian response**: 78.1%
- **Other reasons†**: 13.6%
- **Premature ovulation**: 4.7%
- **Patient error**: 3.2%
- **Premature luteinization**: 2.1%
- **Patient personal reason**: 1.1%

*Categories are not mutually exclusive
† Other reasons include: patient illness, donor illness, donor personal reason, donor error, no access to ovaries, other (unspecified)
Percentage of cycles with no embryo transfer

*ART cycles using IVF – own oocytes, 2017*

![Bar chart showing the percentage of cycles with no embryo transfer by patient age.](image-url)
Reasons for no embryo transfer

*ART cycles using IVF – own oocytes, 2016*

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percent per oocyte retrieval cycle with no embryo transfer (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeze all, other reason than OHSS risk or PGT</td>
<td>25.6</td>
</tr>
<tr>
<td>Freeze all, PGT-A</td>
<td>22.4</td>
</tr>
<tr>
<td>Freeze all, OHSS risk</td>
<td>17.0</td>
</tr>
<tr>
<td>No utilizable embryos</td>
<td>11.2</td>
</tr>
<tr>
<td>Freeze all, PGT-M</td>
<td>9.2</td>
</tr>
<tr>
<td>No normal fertilization</td>
<td>5.6</td>
</tr>
<tr>
<td>Freeze all, other reason than OHSS risk (unknown PGT)</td>
<td>3.7</td>
</tr>
<tr>
<td>No oocytes</td>
<td>2.0</td>
</tr>
<tr>
<td>No utilizable oocytes</td>
<td>1.6</td>
</tr>
<tr>
<td>Inadequate uterine lining</td>
<td>1.0</td>
</tr>
<tr>
<td>No sperm</td>
<td>0.8</td>
</tr>
</tbody>
</table>

*Categories are mutually exclusive*
Reasons for no embryo transfer

*Categories are mutually exclusive*
Method of insemination

*ART cycles using IVF – own oocytes, 2017*

- **Conventional IVF only**: 13.6%
- **ICSI only**: 77.8%
- **Conventional IVF and ICSI**: 5.3%
- **Rescue ICSI**: 1.2%
- **Not done**: 2.2%

*Conventional IVF and ICSI: a single ET cycle used both conventional IVF and ICSI*
Number of embryos transferred

ART cycles using IVF – own oocytes, 2017

- eSET: 61.4% per ET=1
- eDET: 47.2% per ET=2

* Excludes records with missing number of embryos transferred
† Elective single (eSET) and double (eDET) embryo transfer: transfer of one embryo (eSET) or two embryos (eDET), selected from a larger cohort of available embryos
Number of embryos transferred

ART cycles using IVF – own oocytes, 2017

Percent per ET cycle (%)

<table>
<thead>
<tr>
<th>Number of embryos transferred</th>
<th>&lt;35 years</th>
<th>35–39 years</th>
<th>≥40 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 embryo</td>
<td>34.9</td>
<td>52.3</td>
<td>12.8</td>
</tr>
<tr>
<td>2 embryos</td>
<td>34.9</td>
<td>52.3</td>
<td>12.8</td>
</tr>
<tr>
<td>≥3 embryos</td>
<td>2.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Patient age (years)
Embryo transfer day

*Excludes records with missing embryo transfer day*
Clinical pregnancy and implantation rate

**ART cycles using IVF – own oocytes, 2017**

![Bar chart showing clinical pregnancy and implantation rate by patient age]

- **Clinical pregnancy, per ET cycle**
- **Implantation rate**

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy*

†Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred
Clinical pregnancy and implantation rate

*ART cycles using IVF – own oocytes, 2017*

**Clinical pregnancy, per ET cycle**

- 1 embryo transferred: 33.8%
- 2 embryos transferred: 33.2%
- ≥3 embryos transferred: 21.4%
- Overall: 33.1%

**Implantation rate**

- 1 embryo transferred: 34.2%
- 2 embryos transferred: 21.2%
- ≥3 embryos transferred: 8.7%
- Overall: 25.9%

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

† Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred*
Clinical pregnancy and implantation rate by eSET/eDET

ART cycles using IVF – own oocytes, 2017

Elective single embryo transfer (eSET) vs. Non-elective single embryo transfer vs. Elective double embryo transfer (eDET) vs. Non-elective double embryo transfer vs. OVERALL

Clinical pregnancy, per ET cycle and Implantation rate

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer.

* Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

† Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred
Clinical pregnancy and implantation rate

*ART cycles using IVF – own oocytes, 2017*

<table>
<thead>
<tr>
<th>Embryo transfer day</th>
<th>Clinical pregnancy, per ET cycle</th>
<th>Implantation rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 3</td>
<td>26.3%</td>
<td>18.3%</td>
</tr>
<tr>
<td>Day 5</td>
<td>37.8%</td>
<td>31.7%</td>
</tr>
<tr>
<td>Overall</td>
<td>33.1%</td>
<td>25.9%</td>
</tr>
</tbody>
</table>

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
†Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred*
Proportion of cycles resulting in an ongoing clinical pregnancy

ART cycles using IVF – own oocytes, 2017

<table>
<thead>
<tr>
<th>Patient age (years)</th>
<th>Singleton pregnancy</th>
<th>Multiple pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>36.5</td>
<td></td>
</tr>
<tr>
<td>35–37</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td>38–40</td>
<td>25.2</td>
<td></td>
</tr>
<tr>
<td>41–42</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>≥43</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>OVERALL</td>
<td>30.2</td>
<td></td>
</tr>
</tbody>
</table>

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound; multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat
Percentage of multiple pregnancies

**ART cycles using IVF – own oocytes, 2017**

*Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound*

† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound
Proportion of cycles resulting in an ongoing clinical pregnancy

**ART cycles using IVF – own oocytes, 2017**

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer.

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound

† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound; multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat
Percentage of multiple pregnancies

ART cycles using IVF – own oocytes, 2017

<table>
<thead>
<tr>
<th>Number of embryos transferred</th>
<th>Multiple pregnancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>177</td>
</tr>
<tr>
<td>≥3</td>
<td>10</td>
</tr>
<tr>
<td>OVERALL</td>
<td>210</td>
</tr>
</tbody>
</table>

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound
Proportion of cycles resulting in an ongoing clinical pregnancy by plurality and eSET/eDET

ART cycles using IVF – own oocytes, 2017

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound; multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat
Percentage of multiple pregnancies by eSET/eDET

ART cycles using IVF – own oocytes, 2017

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound

<table>
<thead>
<tr>
<th>Multiple pregnancies</th>
<th>20</th>
<th>3</th>
<th>97</th>
<th>80</th>
<th>210</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective single embryo transfer (eSET)</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-elective single embryo transfer</td>
<td>0.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective double embryo transfer (eDET)</td>
<td>27.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-elective double embryo transfer</td>
<td>23.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OVERALL</td>
<td>9.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Proportion of cycles resulting in an ongoing clinical pregnancy

*ART cycles using IVF – own oocytes, 2017*

- **Day 3:** 23.9%
- **Day 5:** 34.5%
- **Overall:** 30.2%

*Singleton pregnancy:* ongoing clinical pregnancy with ≥1 fetal heart beat on ultrasound

† *Multiple pregnancy:* ongoing clinical pregnancy with >1 fetal heart beat
Percentage of multiple pregnancies

ART cycles using IVF – own oocytes, 2017

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound
## Treatment outcomes

*ART cycles using IVF – own oocytes, 2017*

<table>
<thead>
<tr>
<th>Treatment outcome</th>
<th>Number</th>
<th>% per CS</th>
<th>% per ET</th>
<th>% per CP</th>
<th>% per OCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical pregnancy (CP)*</td>
<td>2,320</td>
<td>15.1</td>
<td>33.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ongoing clinical pregnancy (OCP)†</td>
<td>2,112</td>
<td>13.7</td>
<td>30.2</td>
<td>91.0</td>
<td></td>
</tr>
<tr>
<td>Singleton‡</td>
<td>1,902</td>
<td>12.4</td>
<td>27.2</td>
<td>82.0</td>
<td>90.1</td>
</tr>
<tr>
<td>Multiple‡</td>
<td>210</td>
<td>1.36</td>
<td>3.00</td>
<td>9.1</td>
<td>9.9</td>
</tr>
<tr>
<td>Multiple pregnancy‡</td>
<td>210</td>
<td>1.36</td>
<td>3.00</td>
<td>9.1</td>
<td>9.9</td>
</tr>
<tr>
<td>Twins</td>
<td>207</td>
<td></td>
<td></td>
<td>9.1</td>
<td>9.9</td>
</tr>
<tr>
<td>Triplet or higher</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

† Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound

‡ Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound; multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat

98.6% of multiple pregnancies were twin gestations
Oocyte retrieval, embryo transfer, clinical pregnancy and singleton pregnancy

**ART cycles using IVF – own oocytes, 2017**

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound*
TREATMENT CYCLES FOR 2017

ART cycles using FET – own oocytes
Stage of treatment and treatment outcomes

ART cycles using FET – own oocytes, 2017

- Embryo thaw cycles: 13,417
- Embryo transfer cycles (ET): 13,261
- Clinical pregnancies*: 5,009
- Ongoing clinical pregnancies†: 4,527
- Singleton pregnancies‡: 4,223

* Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
‡ Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound
Method of embryo cryopreservation

*ART cycles using FET – own oocytes, 2017*

![Graph showing methods of embryo cryopreservation]

- **Vitrification**: 96.8%
- **Slow freezing**: 3.1%
- **Mixed**: 0.1%
Percentage of no embryo transfer

ART cycles using FET – own oocytes, 2017

Age at time of oocyte retrieval (years)

- <35: 1.1%
- 35–37: 1.0%
- 38–40: 1.1%
- 41–42: 2.1%
- ≥43: 4.6%
- OVERALL: 1.2%
Number of embryos transferred

ART cycles using FET – own oocytes, 2017

* Elective single (eSET) and double (eDET) embryo transfer: transfer of one embryo (eSET) or two embryos (eDET), selected from a larger cohort of available embryos.
Number of embryos transferred

ART cycles using FET – own oocytes, 2017

<table>
<thead>
<tr>
<th>Age at time of oocyte retrieval (years)</th>
<th>1 embryo</th>
<th>2 embryos</th>
<th>≥3 embryos</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35 years</td>
<td>eSET: 87.0</td>
<td>eDET: 12.8</td>
<td>0.1</td>
</tr>
<tr>
<td>35–39 years</td>
<td>eSET: 80.9</td>
<td>eDET: 18.8</td>
<td>0.3</td>
</tr>
<tr>
<td>≥40 years</td>
<td>eSET: 66.7</td>
<td>eDET: 31.6</td>
<td>1.6</td>
</tr>
</tbody>
</table>
Clinical pregnancy and implantation rate

ART cycles using FET – own oocytes, 2017

- Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
- Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred
Clinical pregnancy and implantation rate

ART cycles using FET – own oocytes, 2017

- Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
- Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred
Clinical pregnancy and implantation rate by eSET/eDET

ART cycles using FET – own oocytes, 2017

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer.

* Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred
Proportion of cycles resulting in an ongoing clinical pregnancy

*ART cycles using FET – own oocytes, 2017*

*Singleton pregnancy: ongoing clinical pregnancy with ≥1 fetal heart beat on ultrasound;
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound*
Percentage of multiple pregnancies

ART cycles using FET – own oocytes, 2017

Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound
Proportion of cycles resulting in an ongoing clinical pregnancy

ART cycles using FET – own oocytes, 2017

![Chart showing the proportion of cycles resulting in ongoing clinical pregnancies based on the number of embryos transferred.]

- **1 ET cycle**: 33.6% with singleton pregnancy; 16.3% with multiple pregnancy
- **2 ET cycles**: 37.0% with singleton pregnancy; 16.3% with multiple pregnancy
- **≥3 ET cycles**: 34.1% with singleton pregnancy; 16.3% with multiple pregnancy

**NOTE**: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer.

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound; multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat
Percentage of multiple pregnancies

*ART cycles using FET – own oocytes, 2017*

**NOTE:** In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer.

- **1** embryo transferred: 1.7%
- **2** embryos transferred: 28.5%
- **≥3** embryos transferred: 50.0%
- **OVERALL**: 6.7%

**Multiple pregnancies**

<table>
<thead>
<tr>
<th>Number of embryos transferred</th>
<th>1</th>
<th>2</th>
<th>≥3</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiples</td>
<td>64</td>
<td>236</td>
<td>4</td>
<td>304</td>
</tr>
</tbody>
</table>

*Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound*

†Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound
Proportion of cycles resulting in an ongoing clinical pregnancy by plurality and eSET/eDET

ART cycles using FET – own oocytes, 2017

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer.

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound; multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat.
Percentage of multiple pregnancies by eSET/eDET

ART cycles using FET – own oocytes, 2017

Elective single embryo transfer (eSET): 1.6%
Non-elective single embryo transfer: 2.0%
Elective double embryo transfer (eDET): 28.6%
Non-elective double embryo transfer: 28.4%
OVERALL: 6.7%

Percent per ongoing clinical pregnancy (%)

NOTE: In rare cases, a single embryo may divide and produce twins or triplets. For this reason, a small percentage of multiple pregnancies can result from a single embryo transfer.

* Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
† Multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat on ultrasound
## Treatment outcomes

*ART cycles using FET – own oocytes, 2017*

<table>
<thead>
<tr>
<th>Treatment outcome</th>
<th>Number</th>
<th>% per embryo thaw</th>
<th>% per ET</th>
<th>% per CP</th>
<th>% per OCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical pregnancy (CP)*</td>
<td>5,009</td>
<td>37.3</td>
<td>37.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ongoing clinical pregnancy (OCP)†</td>
<td>4,527</td>
<td>33.7</td>
<td>34.1</td>
<td>90.4</td>
<td></td>
</tr>
<tr>
<td>Singleton‡</td>
<td>4,223</td>
<td>31.5</td>
<td>31.8</td>
<td>84.3</td>
<td>93.3</td>
</tr>
<tr>
<td>Multiple‡</td>
<td>304</td>
<td>2.3</td>
<td>2.3</td>
<td>6.1</td>
<td>6.7</td>
</tr>
<tr>
<td>Multiple pregnancy‡</td>
<td>304</td>
<td>97.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twins</td>
<td>297</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triplet or higher</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Ongoing clinical pregnancy: clinical pregnancy with ≥1 fetal heart beat on ultrasound
‡ Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound; multiple pregnancy: ongoing clinical pregnancy with >1 fetal heart beat

97.7% of multiple pregnancies were twin gestations
Embryo transfer, clinical pregnancy and singleton clinical pregnancy

**ART cycles using FET – own oocytes, 2017**

<table>
<thead>
<tr>
<th>Age at time of oocyte retrieval (years)</th>
<th>Embryo transfer</th>
<th>Clinical pregnancy*</th>
<th>Singleton pregnancy†</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>99</td>
<td>40</td>
<td>34</td>
</tr>
<tr>
<td>35–37</td>
<td>99</td>
<td>38</td>
<td>32</td>
</tr>
<tr>
<td>38–40</td>
<td>99</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>41–42</td>
<td>98</td>
<td>26</td>
<td>21</td>
</tr>
<tr>
<td>≥43</td>
<td>95</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>OVERALL</td>
<td>99</td>
<td>37</td>
<td>31</td>
</tr>
</tbody>
</table>

* Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound
OVERALL SUMMARY
Clinical pregnancy by age at time of oocyte retrieval and type of treatment cycle

2017

Percent per CS/embryo thaw cycle (%)

- Fresh IVF – own oocytes*
- Fresh IVF – donor oocytes
- Natural/modified natural IVF*
- FET – own oocytes*
- FET – donor oocytes

* Own oocytes exclusively
† Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
Clinical pregnancy by age at time of oocyte retrieval and type of treatment cycle

2017

![Bar chart showing clinical pregnancy rates by age and type of treatment cycle.](chart.png)

- Fresh IVF – own oocytes
- Fresh IVF – donor oocytes
- Natural/modified natural IVF
- FET – own oocytes
- FET – donor oocytes

Percent per ET cycle (%)

- <35
- 35–39
- ≥40
- OVERALL

* Own oocytes exclusively
† Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
Implantation rate
2017

Type of treatment cycle

- Fresh IVF – own oocytes*
  - Percent: 26%
- Fresh IVF – donor oocytes
  - Percent: 49%
- Natural/modified natural IVF*
  - Percent: 26%
- FET – own oocytes*
  - Percent: 34%
- FET – donor oocytes
  - Percent: 38%
- Frozen oocyte IVF – own oocytes*
  - Percent: 28%
- Frozen oocyte IVF – donor oocytes
  - Percent: 39%

* Own oocytes exclusively
† Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred
Implantation rate by age at time of oocyte retrieval and type of treatment cycle

2017

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>&lt;35</th>
<th>35–39</th>
<th>≥40</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh IVF – own oocytes*</td>
<td>35</td>
<td>27</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>Fresh IVF – donor oocytes</td>
<td>42</td>
<td>43</td>
<td>0</td>
<td>43</td>
</tr>
<tr>
<td>Natural/modified natural IVF*</td>
<td>25</td>
<td>26</td>
<td>0</td>
<td>26</td>
</tr>
<tr>
<td>FET – own oocytes*</td>
<td>39</td>
<td>32</td>
<td>21</td>
<td>32</td>
</tr>
<tr>
<td>FET – donor oocytes</td>
<td>39</td>
<td>36</td>
<td>29</td>
<td>36</td>
</tr>
</tbody>
</table>

* Own oocytes exclusively
† Implantation rate: number of gestational sacs observed on ultrasound, divided by the total number of embryos transferred
Singleton ongoing clinical pregnancy by age at time of oocyte retrieval and type of treatment cycle

2017

* Own oocytes exclusively
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound
Singleton ongoing clinical pregnancy by age at time of oocyte retrieval and type of treatment cycle

2017

Percent per ET cycle (%)

<table>
<thead>
<tr>
<th></th>
<th>&lt;35</th>
<th>35–39</th>
<th>≥40</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh IVF – own oocytes*</td>
<td>34</td>
<td>27</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Fresh IVF – donor oocytes</td>
<td>42</td>
<td>41</td>
<td>44</td>
<td>41</td>
</tr>
<tr>
<td>Natural/modified natural IVF*</td>
<td>25</td>
<td>26</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>FET – own oocytes*</td>
<td>35</td>
<td>31</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>FET – donor oocytes</td>
<td>37</td>
<td>36</td>
<td>35</td>
<td>36</td>
</tr>
</tbody>
</table>

* Own oocytes exclusively
† Singleton pregnancy: ongoing clinical pregnancy with only one fetal heart beat on ultrasound
PRIMARY TRANSFER PREGNANCY RATE
Primary transfer

• **Cohort:**
  – Patients with first IVF cycle in CARTR Plus and no documented prior treatment cycle using own oocytes
  – The first treatment cycle with an embryo transfer
    • IVF with own oocytes
    • FET with own oocytes
Primary transfer rate

• Several options for calculation:

  – **Per patient**: treatment cycle outcomes can be linked for a patient throughout the database

  – **Per batch of oocytes collected**: treatment cycles that used frozen oocytes or embryos can be linked to the IVF cycle where the oocytes were collected
Primary transfer clinical pregnancy rate per patient


<table>
<thead>
<tr>
<th>Patient age (years)</th>
<th>Clinical pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>13,623</td>
</tr>
<tr>
<td>≥35</td>
<td>9,947</td>
</tr>
<tr>
<td>OVERALL</td>
<td>23,570</td>
</tr>
</tbody>
</table>

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
Primary transfer clinical pregnancy rate per patient by oocyte type per patient

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy*
Primary transfer clinical pregnancy rate per patient with and without PGT-A

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

<table>
<thead>
<tr>
<th></th>
<th>Excluding cycles with PGT-A</th>
<th>Cycles with PGT-A</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical pregnancy</td>
<td>22,316</td>
<td>1,254</td>
<td>23,570</td>
</tr>
<tr>
<td>Percent per primary transfer (%)</td>
<td>39.9</td>
<td>50.6</td>
<td>40.4</td>
</tr>
</tbody>
</table>

Primary transfer clinical pregnancy rate per batch of oocytes

*IVF and FET, 2013, 2014, 2015, 2016 and 2017*

- **<35 years**: 46.8%
- **≥35 years**: 34.4%
- **Overall**: 39.7%

**Clinical pregnancy**: clinical intrauterine, heterotopic, or ectopic pregnancy

| Clinical pregnancy | 12,021 | 11,899 | 23,920 |

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy*
Primary transfer clinical pregnancy rate per batch of oocytes with and without PGT-A

*Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy*
CUMULATIVE PREGNANCY RATE
Cumulative pregnancy rate

• **Definition:**
  – The number of clinical pregnancies resulting from one or more ART cycles, including the cycle when fresh embryos are transferred and all related subsequent frozen/thawed embryo transfer cycles if the fresh embryo transfer did not result in a pregnancy

• **Rationale:**
  – Estimates cumulative success with ongoing treatment, rather than success per individual stage of the treatment process
Cumulative pregnancy rate

- Several options for calculation:
  - **Per patient**: treatment cycle outcomes can be linked for a patient throughout the database
  - **Per batch of oocytes collected**: treatment cycles that used frozen oocytes or embryos can be linked to the IVF cycle where the oocytes were collected
Cumulative pregnancy rate

- **Optimistic:**
  - Assumes that women who did not return for subsequent treatment cycles had the same chance of a clinical pregnancy as those who did return for treatment

- **Conservative:**
  - Assumes that women who did not return for subsequent treatment cycles did not have a clinical pregnancy

Malizia BA et al., NEJM 2009; 360: 236-243
Cumulative pregnancy rate, per patient

All ART treatment cycles (fresh and frozen), 2013, 2014, 2015, 2016 and 2017

Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
Optimistic: Assumes that women who did not return for subsequent treatment cycles had the same chance of a clinical pregnancy as those who did return for treatment.
Conservative: Assumes that women who did not return for subsequent treatment cycles did not have a clinical pregnancy.
Cumulative pregnancy rate, per batch of oocytes retrieved


Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
Optimistic: Assumes that women who did not return for subsequent treatment cycles had the same chance of a clinical pregnancy as those who did return for treatment.
Conservative: Assumes that women who did not return for subsequent treatment cycles did not have a clinical pregnancy.
Optimistic cumulative pregnancy rate, per batch of oocytes retrieved


Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

Optimistic: Assumes that women who did not return for subsequent treatment cycles had the same chance of a clinical pregnancy as those who did return for treatment.
Conservative cumulative pregnancy rate, per batch of oocytes retrieved


Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

Conservative: Assumes that women who did not return for subsequent treatment cycles did not have a clinical pregnancy.
Cumulative pregnancy rate, per batch of oocytes retrieved


### Optimistic cumulative pregnancy rate

- **<35 years**
  - Cycle 1: 29.4%
  - Cycle 2: 61.1%
  - Cycle 3: 75.9%
  - Cycle 4: 83.6%

- **≥35 years**
  - Cycle 1: 20.4%
  - Cycle 2: 49.7%
  - Cycle 3: 65.0%
  - Cycle 4: 74.7%

### Conservative cumulative pregnancy rate

- **<35 years**
  - Cycle 1: 29.4%
  - Cycle 2: 45.9%
  - Cycle 3: 49.9%
  - Cycle 4: 50.8%

- **≥35 years**
  - Cycle 1: 20.4%
  - Cycle 2: 29.8%
  - Cycle 3: 31.6%
  - Cycle 4: 32.0%

**Clinical pregnancy:** clinical intrauterine, heterotopic, or ectopic pregnancy

**Optimistic:** Assumes that women who did not return for subsequent treatment cycles had the same chance of a clinical pregnancy as those who did return for treatment.

**Conservative:** Assumes that women who did not return for subsequent treatment cycles did not have a clinical pregnancy.
Cumulative pregnancy rate, per batch of oocytes retrieved

2013, 2014, 2015, 2016 and 2017

Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy

Optimistic: Assumes that women who did not return for subsequent treatment cycles had the same chance of a clinical pregnancy as those who did return for treatment.

Conservative: Assumes that women who did not return for subsequent treatment cycles did not have a clinical pregnancy.
Cumulative pregnancy rate, per batch of oocytes retrieved

*PGT-A/PGT-M – IVF and FET – own oocytes with an embryo transfer*

2013, 2014, 2015, 2016 and 2017

Probability of clinical pregnancy (%)

Optimistic: Assumes that women who did not return for subsequent treatment cycles had the same chance of a clinical pregnancy as those who did return for treatment.

Conservative: Assumes that women who did not return for subsequent treatment cycles did not have a clinical pregnancy.

Clinical pregnancy: clinical intrauterine, heterotopic, or ectopic pregnancy
BIRTH OUTCOMES FOR 2016

All ART treatment cycles (fresh and frozen)
Birth outcomes

All ART treatment cycles (fresh and frozen), 2016

- Live birth: 6,514
- Singleton live birth: 5,957
- Live birth, Good perinatal outcome*: 5,070

* Good perinatal outcome: singleton live birth at ≥37 weeks’ gestation and a birth weight ≥2,500 grams
† Cycle starts, oocyte retrievals/thaws and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)
Birth outcome rates

*Good perinatal outcome: singleton live birth at ≥37 weeks’ gestation and a birth weight ≥2,500 grams

OCP - Ongoing clinical pregnancy: a clinical pregnancy with documentation of at least one fetal heart beat on ultrasound

Cycle starts, oocyte retrievals/thaws and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)
Distribution of birth outcomes among ongoing clinical pregnancies

*ART cycles using IVF and FET – own oocytes, 2013*

**IVF – own oocytes**
- Singleton live birth: 64.1%
- Multiple live birth: 12.2%
- Miscarriage: 18.2%
- Stillbirth: 0.9%
- Unknown: 4.6%

**FET – own oocytes**
- Singleton live birth: 64.2%
- Multiple live birth: 9.6%
- Miscarriage: 20.4%
- Stillbirth: 0.7%
- Unknown: 5.1%
Distribution of birth outcomes among ongoing clinical pregnancies

**ART cycles using IVF and FET – own oocytes, 2015**

**IVF – own oocytes**
- Singleton live birth: 66.6%
- Multiple live birth: 8.9%
- Miscarriage: 19.0%
- Stillbirth: 0.7%
- Unknown: 4.7%
- Total: n=3,771

**FET – own oocytes**
- Singleton live birth: 65.5%
- Multiple live birth: 7.2%
- Miscarriage: 21.4%
- Stillbirth: 0.8%
- Unknown: 5.2%
- Total: n=3,726
Distribution of birth outcomes among ongoing clinical pregnancies

ART cycles using IVF and FET – own oocytes, 2016

**IVF – own oocytes**  
- Singleton live birth: 68.6%
- Multiple live birth: 7.7%
- Miscarriage: 20.0%
- Stillbirth: 1.0%
- Unknown: 2.8%
  
n= 2,942

**FET – own oocytes**  
- Singleton live birth: 67.4%
- Multiple live birth: 5.2%
- Miscarriage: 21.2%
- Stillbirth: 0.7%
- Unknown: 5.5%
  
n= 4,818
Birth outcome rates

ART cycles using IVF – own oocytes, 2016

Percent per ET cycle (%)
Patient age (years)

- Ongoing clinical pregnancy
- Live birth
- Singleton live birth
- Live birth

* Good perinatal outcome: singleton live birth at ≥37 weeks’ gestation and a birth weight ≥2,500 grams
Birth outcome rates

*ART cycles using FET – own oocytes, 2016*

*Good perinatal outcome: singleton live birth at ≥37 weeks’ gestation and a birth weight ≥2,500 grams*
Proportion of miscarriages and stillbirths

ART cycles using IVF – own oocytes, 2016

*Stillbirths: birth outcome where no fetus(es) was born alive and at least one stillbirth at ≥ 20 weeks’ gestation
†Miscarriage: birth outcome where all fetuses were a ‘pregnancy loss’ at <20 weeks’ gestation
Proportion of miscarriages and stillbirths

*ART cycles using FET – own oocytes, 2016*

Live birth

<table>
<thead>
<tr>
<th>Age at time of oocyte retrieval (years)</th>
<th>&lt;35</th>
<th>35–39</th>
<th>≥40</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>32.4</td>
<td>28.5</td>
<td>16.4</td>
<td>29.2</td>
</tr>
<tr>
<td>35–39</td>
<td>7.8</td>
<td>9.2</td>
<td>9.7</td>
<td>8.5</td>
</tr>
<tr>
<td>≥40</td>
<td>0.37</td>
<td>0.19</td>
<td>0.07</td>
<td>0.28</td>
</tr>
</tbody>
</table>

*Stillbirths: birth outcome where no fetus(es) was born alive and at least one stillbirth at ≥ 20 weeks’ gestation*

†Miscarriage: birth outcome where all fetuses were a ‘pregnancy loss’ at <20 weeks’ gestation
Percentage of birth outcomes by method of insemination

**ART cycles using IVF – own oocytes, 2016**

* Ongoing clinical pregnancy
* Live birth
* Singleton live birth
* Live birth - Good perinatal outcome*

* Good perinatal outcome: singleton live birth at ≥37 weeks' gestation and a birth weight ≥2,500 grams
† Conventional IVF and ICSI: a single ET cycle used both conventional IVF and ICSI
Proportion of singleton and multiple live births

Baby level - All ART treatment cycles (fresh and frozen), 2016

<table>
<thead>
<tr>
<th>Embryos</th>
<th>Singleton live birth</th>
<th>Twin live birth</th>
<th>Triplet+ live birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 embryo</td>
<td>97.0</td>
<td>3.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2 embryos</td>
<td>58.5</td>
<td>0.73</td>
<td>0.0</td>
</tr>
<tr>
<td>≥3 embryos</td>
<td>66.2</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Live births

- Singleton live birth: one live birth
- Twin live birth: two births and at least one live birth
- Triplet+ live birth: three or more births and at least one live birth

<table>
<thead>
<tr>
<th>Live births</th>
<th>Single</th>
<th>Twin</th>
<th>Triplet+</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,627</td>
<td>1,279</td>
<td>51</td>
<td></td>
</tr>
</tbody>
</table>
Proportion of preterm births by plurality

Baby level - All ART treatment cycles (fresh and frozen), 2016

<table>
<thead>
<tr>
<th></th>
<th>Singleton</th>
<th>Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh IVF – own oocytes*</td>
<td>10</td>
<td>58</td>
</tr>
<tr>
<td>Fresh IVF – donor oocytes</td>
<td>10</td>
<td>64</td>
</tr>
<tr>
<td>FET – own oocytes*</td>
<td>9</td>
<td>63</td>
</tr>
<tr>
<td>FET – donor oocytes</td>
<td>15</td>
<td>59</td>
</tr>
</tbody>
</table>

* Own oocytes exclusively

Preterm birth <37 weeks’ gestation

Total number of live births were used as the denominator for these calculations.
Birth outcomes by province

All ART treatment cycles (fresh and frozen), 2016

* Good perinatal outcome: singleton live birth at ≥37 weeks’ gestation and a birth weight ≥ 2,500 grams

Cycle starts, and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)
Birth outcomes by province

All ART treatment cycles (fresh and frozen), 2016

Ontario
Quebec
Rest of Canada

Live birth
Singleton live birth
Live birth

Percent per ET cycle (%)

* Good perinatal outcome: singleton live birth at ≥37 weeks’ gestation and a birth weight ≥2,500 grams
Cycle starts, and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)
Percentage of multiple live births by province

Baby level - All ART treatment cycles (fresh and frozen), 2016

<table>
<thead>
<tr>
<th>Province</th>
<th>Multiple births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario</td>
<td>428</td>
</tr>
<tr>
<td>Quebec</td>
<td>48</td>
</tr>
<tr>
<td>Rest of Canada</td>
<td>600</td>
</tr>
<tr>
<td>Overall</td>
<td>1,076</td>
</tr>
</tbody>
</table>

Ongoing clinical pregnancy: documentation of at least one fetal heart beat on ultrasound
Multiple birth: At least one live birth from a multiple pregnancy
BIRTH OUTCOME TRENDS

All ART treatment cycles (fresh and frozen)

2013-2016
Proportion of live births

**ART cycles using IVF – own oocytes, 2013-2016**

*Stillbirths: birth outcome where no fetus(es) was born alive and at least one stillbirth at ≥ 20 weeks’ gestation*

*Miscarriage: birth outcome where all fetuses were a ‘pregnancy loss’ at <20 weeks’ gestation*
Proportion of live births

ART cycles using FET – own oocytes, 2013-2016

<table>
<thead>
<tr>
<th>Age at time of oocyte retrieval (years)</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;35</td>
<td>30.9</td>
<td>33.6</td>
<td>32.3</td>
<td>33.0</td>
</tr>
<tr>
<td>35–39</td>
<td>26.1</td>
<td>27.1</td>
<td>27.7</td>
<td>29.2</td>
</tr>
<tr>
<td>≥40</td>
<td>15.8</td>
<td>15.9</td>
<td>17.5</td>
<td>18.6</td>
</tr>
</tbody>
</table>

* Stillbirths: birth outcome where no fetus(es) was born alive and at least one stillbirth at ≥ 20 weeks’ gestation

Ɨ Miscarriage: birth outcome where all fetuses were a ‘pregnancy loss’ at <20 weeks’ gestation
Proportion of stillbirth rates

*ART cycles using IVF – own oocytes, 2013-2016*

- **0.48**
- **0.38**
- **0.13**
- **0.37**
- **0.26**
- **0.14**
- **0.33**
- **0.31**
- **0.22**
- **0.42**
- **0.31**
- **0.25**

*Stillbirths: birth outcome where no fetus(es) was born alive and at least one stillbirth at ≥ 20 weeks' gestation*

| Miscarriage: birth outcome where all fetuses were a ‘pregnancy loss’ at <20 weeks’ gestation |

---

**Age at time of oocyte retrieval (years)**

- **<35**
- **35–39**
- **≥40**

**Percent per ET cycle (%)**

- **2013**
- **2014**
- **2015**
- **2016**
Proportion of stillbirth rates

*ART cycles using FET – own oocytes, 2013-2016*

Stillbirths: birth outcome where no fetus(es) was born alive and at least one stillbirth at ≥ 20 weeks’ gestation

*Miscarriage: birth outcome where all fetuses were a ‘pregnancy loss’ at <20 weeks’ gestation*
Proportion of singleton and multiple live births

All ART treatment cycles, 2013-2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Multiple Live Births</th>
<th>Singleton Live Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>23.4</td>
<td>5,800</td>
</tr>
<tr>
<td>2014</td>
<td>22.5</td>
<td>6,215</td>
</tr>
<tr>
<td>2015</td>
<td>22.2</td>
<td>6,379</td>
</tr>
<tr>
<td>2016</td>
<td>21.5</td>
<td>6,514</td>
</tr>
</tbody>
</table>

Live Births  | 5,800 | 6,215 | 6,379 | 6,514 |
Singletons   | 4,932 | 5,413 | 5,658 | 5,957 |
Multiples    | 868   | 802   | 721   | 557   |

† Cycle starts, oocyte retrievals/thaws and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)
Proportion of singleton and multiple live births

*All ART treatment cycles, 2013-2016*

<table>
<thead>
<tr>
<th>Year</th>
<th>Multiple Live Births</th>
<th>Singleton Live Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>29.8</td>
<td>29.8</td>
</tr>
<tr>
<td>2014</td>
<td>30.2</td>
<td>30.2</td>
</tr>
<tr>
<td>2015</td>
<td>30.3</td>
<td>30.3</td>
</tr>
<tr>
<td>2016</td>
<td>29.4</td>
<td>29.4</td>
</tr>
</tbody>
</table>

† Cycle starts, oocyte retrievals/thaws and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)
Proportion of singleton and multiple live births by province

*All ART treatment cycles, 2013-2016*

<table>
<thead>
<tr>
<th>Year</th>
<th>Ontario</th>
<th>Quebec</th>
<th>Rest of Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>23.7</td>
<td>16.8</td>
<td>30.8</td>
</tr>
<tr>
<td>2014</td>
<td>22.9</td>
<td>17.9</td>
<td>27.0</td>
</tr>
<tr>
<td>2015</td>
<td>21.4</td>
<td>18.9</td>
<td>26.1</td>
</tr>
<tr>
<td>2016</td>
<td>19.5</td>
<td>19.7</td>
<td>25.1</td>
</tr>
</tbody>
</table>

*Cycle starts, oocyte retrievals/thaws and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)*
Proportion of singleton and multiple live births by province

All ART treatment cycles, 2013-2016

- **Ontario**
  - 2013: 29.7%
  - 2014: 30.0%
  - 2015: 30.0%
  - 2016: 28.6%

- **Quebec**
  - 2013: 24.6%
  - 2014: 27.3%
  - 2015: 27.1%
  - 2016: 24.9%

- **Rest of Canada**
  - 2013: 35.7%
  - 2014: 33.8%
  - 2015: 34.0%
  - 2016: 33.6%

† Cycle starts, oocyte retrievals/thaw and embryo transfers with an unknown birth outcome were removed from the denominator (n=444)
CUMULATIVE LIVE BIRTH RATE
Cumulative live birth rate

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Cumulative live birth rate

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Cumulative live birth rate

_All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016_

*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.*

*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.*
Cumulative live birth rate

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

Ontario

Rest of Canada

All of Canada

% per CS

<35  35-37  38-40  41-42  ≥43

<35  35-37  38-40  41-42  ≥43

<35  35-37  38-40  41-42  ≥43

Term\n
Preterm\n
Very Preterm

*Per batch of oocytes

*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.

*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.
Cumulative live birth rate within one year of retrieval

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Cumulative live birth rate within one year of retrieval

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Cumulative live birth rate within one year of retrieval

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes
*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.
*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.
Cumulative live birth rate within one year of retrieval

*All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016*

- **Ontario**
- **Rest of Canada**
- **All of Canada**

*Per batch of oocytes*
*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.*
*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.*
PRIMARY TRANSFER LIVE BIRTH RATE
Live birth rate for primary embryo transfer cycle

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Live birth rate for primary embryo transfer cycle

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Live birth rate for primary embryo transfer cycle

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes
*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.
*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.
Live birth rate for primary embryo transfer cycle

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

Ontario

Rest of Canada

All of Canada

*Per batch of oocytes

*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.

*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.
Live birth rate for subsequent embryo transfer cycle

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Live birth rate for subsequent embryo transfer cycle

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes*
Live birth rate for subsequent embryo transfer cycle

All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016

*Per batch of oocytes
*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.
*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.
### Live birth rate for subsequent embryo transfer cycle

**All ART treatment cycles (fresh and frozen) own oocytes, 2013-2016**

<table>
<thead>
<tr>
<th></th>
<th>&lt;35</th>
<th>35-37</th>
<th>38-40</th>
<th>41-42</th>
<th>≥43</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ontario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preterm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Very Preterm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Term</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rest of Canada</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preterm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Very Preterm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Term</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>All of Canada</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preterm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Very Preterm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Term</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Per batch of oocytes
*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.
*Very preterm birth is defined as live birth or stillbirth at ≤32 weeks gestation.
PREGNANCY AND BIRTH OUTCOMES

ART vs. Non-ART – Ontario
## Birth outcomes


<table>
<thead>
<tr>
<th></th>
<th>Total births</th>
<th>ART</th>
<th>Non-ART</th>
<th>RR (95% CI)</th>
<th>Adj. RR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Live birth</strong></td>
<td>654,712</td>
<td>10,651</td>
<td>99.0</td>
<td>644,061</td>
<td>0.99 (0.99-1.00)</td>
</tr>
<tr>
<td><strong>Stillbirth</strong></td>
<td>4,264</td>
<td>109</td>
<td>1.01</td>
<td>4,155</td>
<td>1.44 (1.19-1.75)</td>
</tr>
</tbody>
</table>

*Adjusted for maternal age at delivery.
Live birth defined as all births are live births.
Stillbirth defined as any stillbirth.
Preterm birth


• Preterm birth:
  – <37 weeks’ gestation
  – RR = 2.25 95% CI: 2.16–2.36
  – adjusted RR = 2.14 95% CI: 2.05–2.24

• Singleton preterm births:
  – <37 weeks’ gestation
  – RR = 1.70 95% CI: 1.60–1.80
  – adjusted RR = 1.63 95% CI: 1.54–1.73

* Adjusted for maternal age at delivery.
Preterm birth in Ontario


*Preterm birth is defined as live birth or stillbirth at ≤37 weeks gestation.
*Error bars represent 95% Confidence Intervals.
## Gestational age at time of delivery


<table>
<thead>
<tr>
<th>Gestational age at delivery</th>
<th>Total births</th>
<th>ART</th>
<th>Non-ART</th>
<th>RR (95% CI)</th>
<th>Adj. RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;32 weeks</td>
<td>9,769</td>
<td>382</td>
<td>9,387</td>
<td>2.45 (2.22-2.71)</td>
<td>2.25 (2.03-2.50)</td>
</tr>
<tr>
<td>32 weeks</td>
<td>2,087</td>
<td>91</td>
<td>1,996</td>
<td>2.75 (2.23-3.39)</td>
<td>2.63 (2.13-3.28)</td>
</tr>
<tr>
<td>33 weeks</td>
<td>3,192</td>
<td>152</td>
<td>3,040</td>
<td>3.01 (2.56-3.54)</td>
<td>2.87 (2.43-3.39)</td>
</tr>
<tr>
<td>34 weeks</td>
<td>5,697</td>
<td>233</td>
<td>5,464</td>
<td>2.57 (2.26-2.92)</td>
<td>2.43 (2.13-2.77)</td>
</tr>
<tr>
<td>35 weeks</td>
<td>9,578</td>
<td>331</td>
<td>9,247</td>
<td>2.16 (1.93-2.40)</td>
<td>2.10 (1.88-2.35)</td>
</tr>
<tr>
<td>36 weeks</td>
<td>19,408</td>
<td>607</td>
<td>18,801</td>
<td>1.94 (1.80-2.10)</td>
<td>1.87 (1.72-2.02)</td>
</tr>
<tr>
<td>≥37 weeks</td>
<td>609,219</td>
<td>8,964</td>
<td>600,255</td>
<td>0.90 (0.89-0.91)</td>
<td>0.90 (0.90-0.91)</td>
</tr>
</tbody>
</table>

*Adjusted for maternal age at delivery.*
# Gestational age at time of delivery for singleton pregnancies


<table>
<thead>
<tr>
<th>Gestational age at delivery</th>
<th>Total births</th>
<th>ART</th>
<th>Non-ART</th>
<th>RR (95% CI)</th>
<th>Adj. RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;32 weeks</td>
<td>8,717</td>
<td>256</td>
<td>2.69</td>
<td>8,461</td>
<td>1.33</td>
</tr>
<tr>
<td>32 weeks</td>
<td>1,737</td>
<td>57</td>
<td>0.60</td>
<td>1,680</td>
<td>0.26</td>
</tr>
<tr>
<td>33 weeks</td>
<td>2,662</td>
<td>75</td>
<td>0.79</td>
<td>2,587</td>
<td>0.41</td>
</tr>
<tr>
<td>34 weeks</td>
<td>4,859</td>
<td>118</td>
<td>1.24</td>
<td>4,741</td>
<td>0.74</td>
</tr>
<tr>
<td>35 weeks</td>
<td>8,348</td>
<td>191</td>
<td>2.01</td>
<td>8,157</td>
<td>1.28</td>
</tr>
<tr>
<td>36 weeks</td>
<td>17,186</td>
<td>376</td>
<td>3.96</td>
<td>16,810</td>
<td>2.63</td>
</tr>
<tr>
<td>≥37 weeks</td>
<td>604,076</td>
<td>8,427</td>
<td>88.71</td>
<td>595,649</td>
<td>93.35</td>
</tr>
</tbody>
</table>

* Adjusted for maternal age at delivery.
CLOSING REMARKS
Key messages

- Continuing to decrease the multiple pregnancy rate
  - Increase in the proportion of single embryo transfers
- Increased proportion:
  - freeze all cycles
  - PGT