



The  
Fertility Society  
of Australia



## Assisted reproductive technology in Australia and New Zealand 2011

*Assisted reproductive technology in Australia and New Zealand 2011* provides a detailed statistical picture of assisted reproductive technology (ART) treatment undertaken in fertility clinics in Australia and New Zealand in 2011.

The report describes the numbers and types of treatments undertaken, treatment success rates and treatment outcomes. The report also provides trends in success rates from 2007 to 2011.

### What is assisted reproductive technology?

ART is a group of procedures used to assist women to become pregnant. Treatment usually involves the following five steps over a period of two to three weeks. Together, these treatments are referred to as an ART cycle:

1. Stimulation of a woman's ovaries to produce mature eggs (oocytes).
2. Removal of mature eggs from the ovaries.
3. Fertilisation of the eggs with sperm in the laboratory.
4. Growth and maturation of fertilised eggs in the laboratory for 2-3 days to form a cleavage stage embryo or 5-6 days to form a blastocyst stage embryo.
5. Transfer of one or more embryos into a woman's uterus.

ART cycles are categorized according to whether the embryos are newly fertilised (fresh cycle) or whether the embryos are frozen during the initial cycle, stored and then thawed and used in subsequent ART cycles (thaw cycles). ART cycles are also categorized by whether a woman uses her own eggs (non-donor) or another woman's eggs (donor cycles).

### Fast facts

It is estimated that around 9.0% of couples at any given time experience infertility. Infertility is usually defined as the failure to achieve a clinical pregnancy after 12 or more months of regular unprotected sexual intercourse.

Despite it being common condition, infertility is increasingly being overcome through advancements in fertility treatment.

ART, in particular, has evolved over the last three decades into a suite of mainstream medical interventions that have resulted in the birth of more than 5 million children worldwide.

In Australia and New Zealand, the numbers of ART treatment cycles and live deliveries have grown steadily from 2007 to 2011.

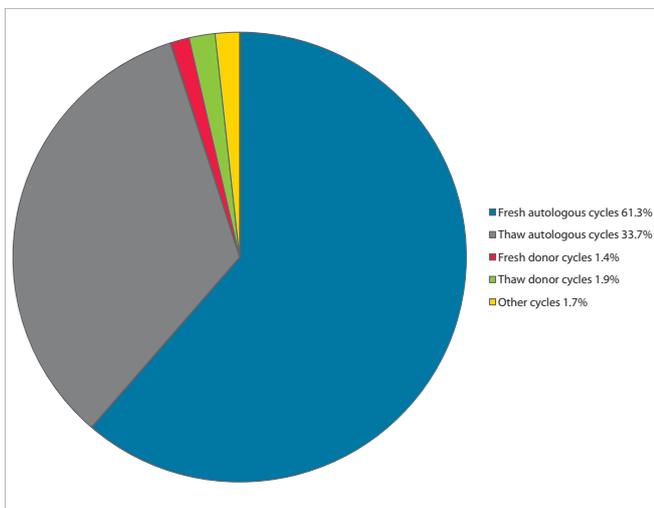
The most recent estimates indicate that 4.1% of all women who gave birth in Australia in 2010 received some form of ART treatment.

## ART cycles in 2011

There were 66,347 ART treatment cycles performed in Australia and New Zealand in 2011, representing an increase of 7.4% on 2010. Of these, 92.2% (61,158) were from Australian clinics and 7.8% (5,189) were from New Zealand clinics.

The vast majority (95.1%) of the ART treatment cycles in 2011 were non-donor cycles. Of these non-donor cycles, 64.5% were fresh cycles and 35.5% were thaw cycles.

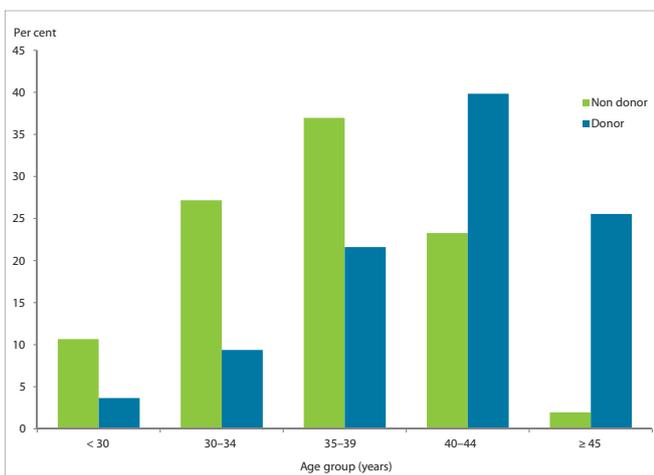
For 3.2% of cycles, donated eggs were used. Other treatment cycles such as surrogacy and GIFT cycles accounted for only a small proportion (1.7%) of cycles.



## Age of women undergoing ART treatment

The average age of women undergoing non-donor cycles in 2011 was 35.9 years, with one in four (25.2%) being 40 years or over.

The average age of women undergoing donor cycles was 40.8 years, with nearly two-thirds (65.4%) aged 40 years or older.

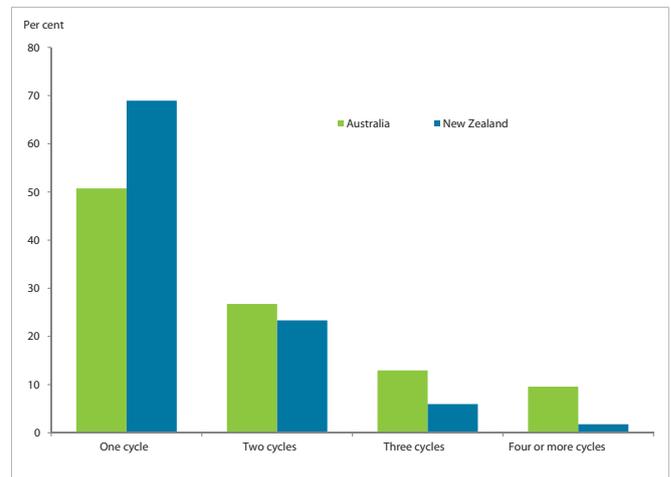


## Number of cycles per woman

In 2011, the number of ART treatment cycles represented 12.9 cycles per 1,000 women of reproductive age (15–44 years) in Australia, compared with 5.7 cycles per 1,000 women of reproductive age in New Zealand.

There were 34,490 women who undertook non-donor fresh or thaw ART treatment in Australia and New Zealand in 2011. On average, 1.8 fresh and/or thaw cycles per woman were undertaken in 2011, with more cycles per woman in Australia (1.9 cycles per woman) than in New Zealand (1.4 cycles per woman).

More than half (50.7%) of the women in Australia had one non-donor treatment cycle compared with 68.9% of women in New Zealand. In line with this, 9.6% of women in Australia had four or more cycles in 2011 compared with 1.8% of women in New Zealand.



## Success rates and multiple pregnancies

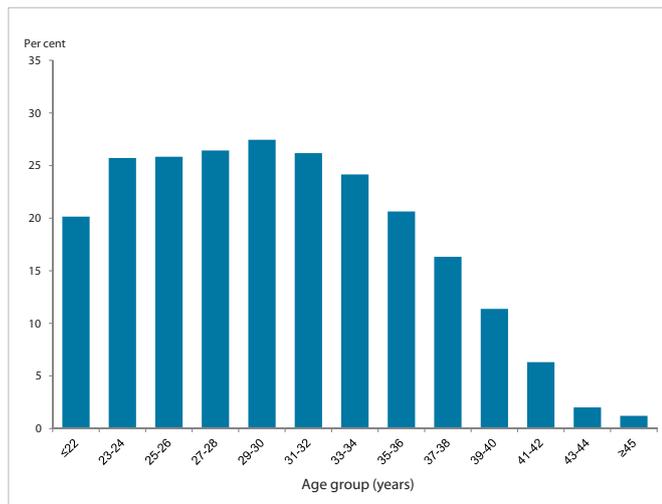
Of the 66,347 ART treatment cycles performed in Australia and New Zealand in 2011, 23.1% (15,319) resulted in a clinical pregnancy, 17.8% (11,792) resulted in a delivery (the birth of at least one baby), and 17.5% (11,640) in a live delivery (the birth of at least one liveborn baby).

Of the 11,769 deliveries following non-donor and donor embryo transfer cycles, 6.8% resulted in the birth of twins and 0.1% resulted in the birth of a higher order multiple.

For fresh non-donor cycles, 17.0% resulted in a live delivery, compared to 19.2% for non-donor thaw cycles and 18.7% for fresh and thaw donor cycles.

## Success by age for non-donor fresh cycles

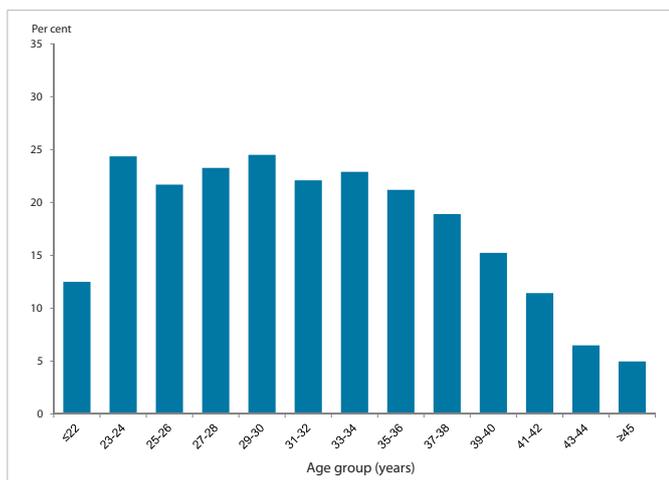
The highest live delivery rate for non-donor fresh cycles were for women aged between 23 and 32 years. The live delivery rate declined steadily for women older than 30 years. For women aged 45 or older, only one delivery resulted from every 100 initiated cycles compared with 26 live deliveries from every 100 initiated cycles in women aged between 23 and 32.



## Success by age for non-donor thaw cycles

The highest live delivery rates for non-donor thaw cycles were for women in their mid-20s to mid-30s. The live delivery rate declined steadily for women aged 35 and older. For women aged 45 or older, 5.0% of initiated non-donor thaw cycles resulted in a live delivery, which is higher than the live delivery rate per initiated non-donor fresh cycle in this age group (1.2%).

The more favourable live delivery rate of thaw cycles probably relates to the fact that a woman's thawed embryos are frozen at the time of her initial fresh cycle and therefore are a younger biological age.



## Stage of embryo development

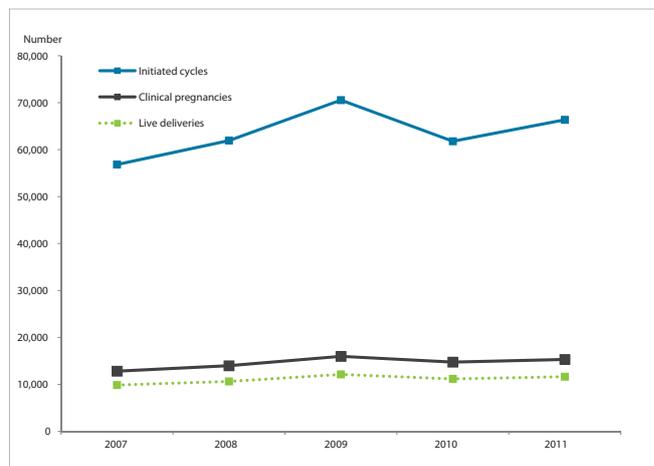
Of the 53,688 embryo transfer cycles in 2011, more than half (57.7%) involved the transfer of day 5–6 embryos (blastocysts) with the remainder day 2–3 embryos (cleavage embryos). Of non-donor cycles, blastocyst transfers made up 64.1% of thaw cycles compared with 53.5% of fresh cycles.

## Slow-frozen and vitrified embryos

In 2011, there were 21,875 frozen/thawed embryo transfer cycles—50.8% involved the transfer of slow-frozen embryos, and 49.2% involved vitrified (ultra-rapid frozen) embryos. The majority (94.7%) of vitrified embryo transfer cycles involved the transfers of 5–6 embryos (blastocyst), much greater than the proportion (33.8%) of slow-frozen embryo transfer cycles.

## Trends in ART treatment

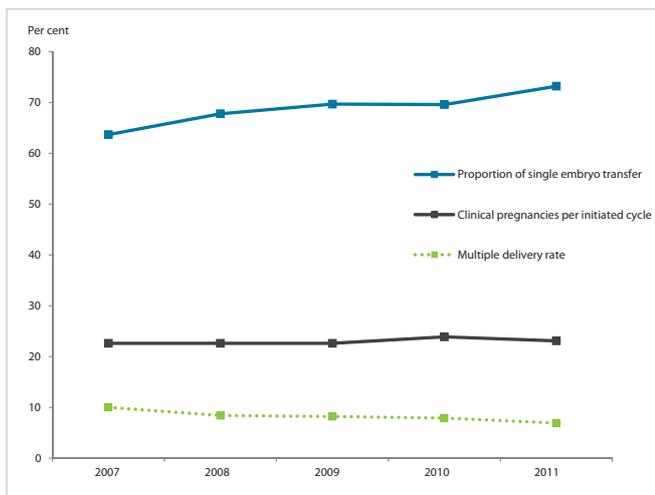
The 2011 figure shows a rise of 7.4% in the number of treatment cycles performed in 2010 and an increase of 16.8% on 2007. Between 2007 and 2011, the pregnancy and live delivery rates per initiated cycle ranged from 22.6% to 23.9% and from 17.2% to 18.1% respectively.



## Fewer multiple births

A continuing trend in ART treatment over the last five years has been the reduction in the rate of multiple deliveries. The multiple delivery rate was 6.9% in 2011, compared with 7.9% in 2010 and 10.0% in 2007. This reduction is due to a shift in practice to single embryo transfer (SET), with the proportion of SET cycles increasing from 63.7% in 2007 to 73.2% in 2011.

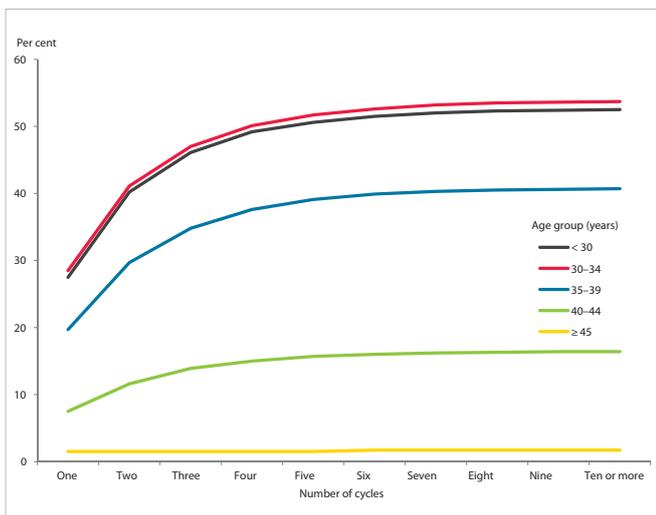
Importantly the substantial decrease in multiple deliveries has been achieved while the clinical pregnancy rate has remained stable, at around 23%.



### Cumulative live delivery rate 2009-2011

Since 2009, the Australian and New Zealand Assisted Reproduction Database has included data items that make it possible to follow a woman from her first fresh ART treatment cycle through subsequent fresh and thaw cycles.

For women who undertook their first autologous fresh cycle between 2009 and 2011, the cumulative live delivery rate was 21.1% after the first cycle, increasing to 31.1% after two cycles, 36.0% after three cycles, 38.6% after four cycles, and 40.0% after five cycles. The cumulative live delivery rate did not increase markedly with additional treatments after five cycles.



### About the babies

- There were 12,599 babies born to women who had non-donor or donor embryo transfer cycles in 2011 (11,294 from Australia and 1,305 were from New Zealand).
- Among the babies who were born using ART treatment, 87.0% were singletons, 12.7% were twins and 0.3% were triplets
- Of the 12,443 liveborn babies, 9,477 (76.2%) were singletons at term with normal birthweight.
- Among all ART babies, more than one in six (17.3%) were preterm (born at less than 37 weeks gestation), and almost one in seven liveborn babies (13.0%) were of low birthweight (less than 2,500 grams).
- The average gestational age of ART singletons was 38.4 weeks, with 9.9% of singletons being preterm.
- The average gestational age for ART twins was 34.7 weeks, with 65.3% of twins being preterm.
- The average birthweight for ART liveborn singletons was 3,342 grams; 6.4% of singletons were of low birthweight.
- The average birthweight for ART liveborn twins was 2,316 grams; 56.3% of twins were of low birthweight.
- The high proportion of ART babies born preterm and/or of low birthweight is mainly related to the higher proportion of multiple births among women who had ART treatment.

### Further information and enquiries

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