

What are your chances of having a second IVF baby after fertility treatment for the first?

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Women have a good chance of having a second child with the help of fertility treatment after the birth of their first child born this way, according to the first study to investigate this, published today (Friday) in *Human Reproduction*, one of the world's leading reproductive medicine journals.

Researchers in Australia calculated that after a woman successfully achieved a [live birth](#) using in vitro fertilisation (IVF), also known as assisted reproductive technology (ART), the chances of a second ART baby were between 51% and 88% after six cycles of treatment. These calculations depended on whether or not previously frozen [embryos](#) were used or fresh embryos from a new ovarian stimulation cycle, and on assumptions made about the likely success rate for [women](#) who discontinued treatment.

The chances of a second ART baby decreased with increased maternal age. Compared to women younger than 30 years, the likelihood of women aged 35-39 having a second ART-conceived baby reduced by 22% if they recommenced treatment with a frozen embryo from a previous cycle and by 50% if they recommenced treatment with a new

cycle and a fresh embryo. Factors that improved their chances of a successful second pregnancy included requiring only one cycle and a single embryo transfer to achieve a first live birth, and where infertility was caused by factors affecting the male partner.

Although many parents would like more than one child, there has been no published report on the chances of achieving a second ART-conceived baby after a first ART child until now. The researchers hope that this information can be used to counsel patients.

Professor Georgina Chambers, director of the National Perinatal Epidemiology and Statistics Unit at the University of New South Wales (Sydney, Australia), looked at data from 35,290 women who received ART treatment between 2009 and 2013 in Australia and New Zealand and had a live baby during this time. These women were followed for a further two years to 2015, providing between two and seven years of follow-up data, and live births up to October 2016 were included.

"We calculated two measures: what is a woman's chance of achieving a second live birth in a particular cycle of treatment if previous cycles have failed, for instance in cycle three if the first two cycles have failed; and what is the overall, or cumulative, chance of a woman achieving a live birth after a particular number of cycles, including all the previous cycles. For example, what is the overall chance of a woman having a baby after up to three cycles," said Prof Chambers.

A cycle includes the stimulation of the ovaries to mature multiple eggs, the collection of eggs for fertilisation in the laboratory to create embryos, and then all embryo transfer procedures that use the embryos from the egg retrieval procedure. This can include fresh embryo transfers and frozen embryo transfers.

Prof Chambers and her colleagues calculated estimates of cumulative live birth rates (CLBR) for women who were trying for a second ART baby that took account not only of the women who continued treatment, but also those who discontinued treatment. The conservative CLBR assumed that women who dropped out would have no chance of achieving a second live birth if they had continued treatment. The optimal CLBR assumed these women would have the same chance of a live birth in a particular cycle as women who had continued treatment. The range between the conservative and optimal estimates gives a realistic idea of success rates.

Just over 43% (15,325) of the 35,290 women, with an average (median) age of 36, returned for treatment to conceive a [second child](#) by December 2015.

Among these women, 73% used a frozen embryo from the egg retrieval cycle that had resulted in their first child, and for them the CLBR ranged from 61% (conservative estimate) to 88% (optimal estimate) after six cycles. Among the women who had a new stimulation cycle and used a fresh embryo, the CLBR ranged from 51% to 70%.

"Overall, 43% of women who recommence treatment with one of the frozen embryos from a previous stimulation cycle will have a baby after their first embryo transfer procedure. Between 61% and 88% of these women will have a baby after six cycles," said Prof Chambers. "Among those who recommence treatment with a new stimulation cycle and a fresh embryo transfer, 31% will have a baby after their first cycle and between 51% and 70% after six cycles."

Although success rates declined with female age, the researchers found that after three cycles of treatment, the conservative and optimal CLBRs in women aged 40 to 44 years were 38% and 55% respectively in those that started with a frozen embryo, and 20% and 25% in those recommencing with a new stimulated cycle and fresh embryos.

Prof Chambers said: "Couples can be reassured by these figures. Our findings also underline the fact that ART treatment should be considered as a

course of treatment, rather than just one single cycle of treatment: if couples don't achieve a pregnancy in the first cycle, it could very well happen in the next. However, it would be best not to wait too long, especially if a new stimulation [cycle](#) is needed."

Co-author, Dr. Devora Leiberman, a fertility clinician at City Fertility, Sydney, added: "These results can be used to counsel patients, but it is important to note that these are population estimates and every couple is different. Our analysis does not take account of all individual factors that affect a woman's chance of ART success, including duration of infertility, and body mass index. Whether ART treatment should be commenced or continued should ultimately be a decision for the fertility clinician and patient, taking into account all medical and non-medical factors. But this study provides the range of results that could be expected."

Another limitation is that in Australia and New Zealand, couples are funded to have treatment for infertility with no restrictions on the number of cycles or on the mothers' age, numbers of previous children and factors such as body max index and smoking. Therefore, the findings may not be generalisable to other countries with less supportive funding provision for ART.

Dr. Christos Venetis, a fertility clinician and clinical academic from the research team at the University of New South Wales, concluded: "As the restrictions imposed due to the COVID-19 pandemic on the provision of non-urgent ART services are gradually being lifted in many countries, including Australia and New Zealand, many people are considering expanding their family through ART. This study can provide reassurance that, in most cases, the chance of them having a second baby through ART is quite favourable."

More information: Repon C Paul et al, Cumulative live birth rates for women returning to ART treatment for a second ART-conceived child, *Human Reproduction* (2020). [DOI: 10.1093/humrep/deaa030](https://doi.org/10.1093/humrep/deaa030)

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