

Study of babies born after IVF shows significant improvements in health over 20 years

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Credit: CDC.gov

The last two decades has seen a steady improvement in the health outcomes of children born after assisted reproduction (ART), with fewer babies being born preterm, with low birth weight, stillborn or dying within the first year of life.

These findings come from the largest study to date to investigate the health of ART [babies](#) over time; data from more than 92,000 children in Denmark, Finland, Norway and Sweden were analysed for the study, which is published online today (Wednesday) in *Human Reproduction*, one of the world's leading reproductive medicine journals.

Dr Anna-Karina Aaris Henningsen, from the Fertility Clinic at the

Rigshospitalet, University of Copenhagen, Denmark, and her Nordic colleagues analysed the outcomes of 62,379 singletons (babies born alone) and 29,758 twins born between 1988 and 2007 in the four Nordic countries. They compared them with control groups of 362,215 spontaneously conceived singletons and 122,763 spontaneously conceived twins born in the same countries in the same period.

"During the 20-year period of our study, we observed a remarkable decline in the risk of being born preterm or very preterm," said Dr Henningsen. "The proportion of single ART babies born with a low or very [low birth weight](#) - less than 2500g or 1500g respectively - also decreased. The rates for stillbirths and death during the first year declined among both singletons and twins, and fewer ART twins were stillborn or died during the first year compared with spontaneously conceived twins.

"These data show that if there is a national policy to transfer only one embryo per cycle during [assisted reproduction](#), this not only lowers the rates of multiple pregnancies, but also has an important effect on the health of the single baby," she said. "Transferring several embryos in one cycle, even if it results in only a single baby, can still have a negative impact on the overall neonatal outcomes of singletons. By transferring only a single embryo, you not only avoid multiple births and all the health problems for the babies and mothers associated with these, but it also results in healthier ART singletons because there are fewer instances of 'vanishing twins' or procedures to reduce the number foetuses developing after successful implantation of several in the mother's womb."

Dr Henningsen said that other factors also contributed to the improvement in the health of ART babies over the past 20 years. "We have improved both the technical skills in the laboratory and the clinical skills of the doctors and also perform milder ovarian stimulation. In

addition, the culture media in which the embryos are first developed in the laboratory have improved in quality, as have the hormonal medications used to help women produce a sufficient number of high quality eggs at the right time."

From 1989 to 2002 the proportion of ART twins in the four countries remained stable at around 23%, but it started to decline after that and by 2007 it was only 11.6% overall.

This decline was reflected in the [health outcomes](#) for ART babies. The rate for preterm (babies born before 37 weeks gestation) singletons and twins fell from 27.9% in 1988-1992 to 12.8% in 2003-2007 in Sweden, and it decreased from a similar figure in Denmark, Finland and Norway to 21.1%, 17.8% and 21% respectively in 2003-2007.

In 1988-1992 the rate of preterm singleton babies was 13% for ART and 5.5% for spontaneously conceived babies. For very preterm babies (those born before 32 weeks) the rates were 3% and less than 1% respectively. However, by 2003-2007, these figures had improved: 8% for preterm ART singletons compared to 5% for spontaneously conceived babies, and 1.5% versus less than 1% for very preterm singletons.

For preterm and very preterm ART twins, the rates improved from 50% (ART) versus 42% (spontaneously conceived twins) for preterm twins and 8.5% versus 7% for very preterm twins in 1988-1992, to 47% versus 44% for preterm births and 8.6% versus 8% for very preterm births in 2003-2007.

The rates of ART singletons born small for gestational age (SGA) more than halved between 1988-1992 and 2003-2007, falling from 7.6% to 3.2%, while the rates of SGA births among ART twins fell from 17% to 14%.

Among ART singletons, the rate of stillbirths fell from 0.6% to 0.3% over the same period, and deaths within the first year fell from 1% to 0.3%. For spontaneously conceived singletons, the rate of stillbirths remained the same over the whole period at around 0.3%, while deaths fell from 0.5% to 0.2%.

Among ART twins, stillbirths fell from 1% to 0.5% and deaths from 2.6% to 1.2%. Among spontaneously conceived [twins](#), stillbirths remained at less than 1% over the whole period, while deaths fell from 2.4% to 1.5%.

"These findings show convincingly that, while there has been a considerable increase in assisted reproduction cycles over the past 20 years, this has been accompanied by a significant improvement in health outcomes for these babies, particularly for singleton babies. The most important reason is the dramatic decline in multiple births due to policies of choosing to transfer only one embryo at a time," concluded Dr Henningsen.

More information: "Trends in perinatal health after assisted reproduction: a Nordic study from the CoNARTaS group", by A.A. Henningsen et al. *Human Reproduction* journal. [DOI: 10.1093/humrep/deu345](https://doi.org/10.1093/humrep/deu345)

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