

Increased fertility rate for IVF patients achieved by new equipment design

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A novel system for processing embryos during IVF treatment has been shown to significantly improve the chances of pregnancy – by more than a quarter.

Pioneered by a Newcastle team of fertility experts at the University and within the NHS, the innovative design of interlinked incubators provides a totally enclosed and controlled environment within which every step of the IVF process can be performed.

Research published today in the journal [PLoS ONE](#) reveals that the introduction of the new system into the Newcastle Fertility Centre at Life, part of the Newcastle Hospitals NHS Foundation Trust, resulted in a 27% increase in pregnancy rate compared with conventional equipment used in IVF treatment labs.

Traditionally, in IVF procedures embryos are cultured in incubators, which provide a controlled environment. However, it is necessary to check embryo development under the microscope.

This generally involves removing them from the controlled environment of the incubators, which may be harmful. The system developed by the Newcastle team overcomes this problem by enabling all procedures to be conducted within an enclosed and controlled environment.

Initially the new system was tested extensively to make sure that it maintained stable environmental conditions (for air quality and

temperature). Subsequent studies on embryos donated to research showed a significant increase in the proportion of embryos developing normally over a period of 6-7 days.

After introduction into the laboratories at Newcastle Fertility Centre at Life, the team were able to compare the treatment outcomes over a period of three years. The study, found that 45% achieved a clinical pregnancy compared to 32% and 35% in each of the preceding two years. This represents a minimum increase of 27% in the clinical pregnancy rate; a clinical pregnancy means that a heart beat was seen on the scan at 7 weeks gestation.

The study, which took account of variability between patients, included women aged 37 or less, undergoing their first cycle of IVF or ICSI, and who had more than ten ovarian follicles (the structures which contain a mature egg).

This is the first and only system of its kind to be installed in the UK, however, based on the innovative design from the Newcastle team, similar systems have already been exported to IVF clinics in the Netherlands, Canada and Thailand.

This positive benefit to IVF patients came from investment into cutting edge research in embryonic stem cell research and was funded by the Medical Research Council and One North East.

Newcastle University's Professor Mary Herbert who led the research team at Newcastle Fertility Centre at Life, part of the Newcastle Hospitals NHS Foundation Trust and based at the Centre for Life, said: "Our aim was to keep eggs and embryos in conditions similar to those they would experience naturally - inside a woman's body. This led our team to design and develop a system in which it is possible to perform all of the technical procedures while maintaining stable conditions

throughout the IVF process."

Alison Murdoch, Professor of Reproductive Medicine who leads the clinical service at Newcastle Fertility Centre at Life said: "Growing good [embryos](#) is the key to [IVF](#) success and everyone, even those who have a very small prospect of success, deserve to have the best possible chance. Since installing this new technology over 850 babies have now been born."

More information: Hyslop L, Prathalingam N, Nowak L, Fenwick J, Harbottle S, et al. (2012) A Novel Isolator-Based System Promotes Viability of Human Embryos during Laboratory Processing. PLoS ONE 7(2): e31010. [doi:10.1371/journal.pone.0031010](https://doi.org/10.1371/journal.pone.0031010)

Provided by Newcastle University

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