

## **Without Harming Success Shorter Insemination Protects Embryo Availability**

Researchers compared short-term and overnight [insemination](#) methods during in vitro fertilization (IVF) cycles, in which one or two oocytes were retrieved. The primary outcome was cumulative live birth, defined as the first live birth achieved from all embryos generated from a single oocyte retrieval cycle.



### **Study**

This retrospective cohort study was conducted at a single reproductive medicine centre and included patients undergoing [IVF treatment](#) between January 2013 and December 2022. Only cycles retrieving one or two oocytes that resulted in either a live birth or exhaustion of all embryos from that retrieval were included. Patients with uterine abnormalities, intrauterine adhesions, or prior caesarean scar diverticulum were excluded.

Cycles were classified according to insemination duration. Short-term insemination involved five hours of sperm–oocyte co-incubation, while overnight insemination involved approximately 17 hours. Semen preparation and assessment were performed in accordance with [World Health Organization](#) recommendations, using density gradient centrifugation and swim-up techniques.

Normal fertilization was defined by the presence of two pronuclei, assessed approximately  $17 \pm 1$  hours after insemination. Embryos were cultured either to the cleavage stage or to the blastocyst stage, depending on [clinical strategy](#).

Propensity score matching was used to balance baseline characteristics, including age, ovarian reserve, stimulation parameters, and sperm quality. Associations between insemination strategy and cumulative live [birth rate](#) were evaluated using multivariable regression models. Cumulative live birth was defined as the first live birth occurring from all embryos generated during a single oocyte retrieval cycle.

### **Findings**

A total of 2,392 IVF cycles with one or two [oocytes retrieved](#) were analysed. Of these, 2,057 cycles used short-term insemination and 335 used overnight insemination. After propensity score matching, baseline characteristics between groups were well balanced.

Cumulative live birth rates were similar between short-term and overnight insemination, both before and after matching. These findings indicate that reducing sperm–oocyte exposure time did not compromise cumulative live birth outcomes. Although short-term insemination improved certain [fertilization](#) and embryo parameters, these improvements did not translate into a

statistically significant increase in overall live birth rates. Multivariable analyses confirmed the absence of an adverse effect of short-term insemination on cumulative live birth.

Differences emerged when examining intermediate clinical outcomes. Short-term insemination was associated with lower [embryo transfer](#) cancellation rates, fewer cycles with no embryos available, and reduced freeze-all cycle rates. These outcomes are clinically relevant, as cycle cancellation is frequently reported by patients as one of the most emotionally challenging aspects of IVF, although emotional outcomes were not directly measured in this study.

Laboratory outcomes favoured short-term insemination. Normal fertilization rates were higher, while the incidence of multiple pronuclei, an indicator of abnormal fertilization, was lower compared with overnight insemination. These findings are consistent with hypotheses of reduced oxidative or mechanical [stress](#) during fertilization, although causality cannot be inferred from this retrospective design.

In a subgroup analysis of patients whose embryos were cultured to the [blastocyst stage](#), short-term insemination was associated with a numerically higher cumulative live birth rate than overnight insemination. Although crude differences after matching were not statistically significant, adjusted analyses showed lower odds of live birth with overnight insemination. Interaction testing suggested only borderline evidence of effect modification after matching.

[Short-term insemination](#) was also associated with fewer delayed-forming blastocysts, which are generally considered less favourable for transfer, although not categorically of poor quality.

Overall, the findings suggest that although cumulative live birth outcomes were comparable, short-term insemination may confer practical advantages by increasing embryo availability and reducing the risk of [cycle failure](#). These intermediate benefits may have meaningful implications for patient experience and treatment continuity, even though the primary endpoint remained unchanged.

## **Conclusion**

In IVF cycles, retrieving only one or two oocytes, short-term insemination achieved cumulative live birth rates comparable to overnight insemination without compromising overall success. Importantly, it reduced embryo transfer cancellations and improved several laboratory indicators of [embryo quality](#).

For patients already facing the physical, emotional, and financial challenges associated with limited oocyte yield, reducing the risk of cycles with no embryos available may be clinically meaningful. These findings support short-term insemination as a viable and potentially advantageous strategy, particularly when [blastocyst culture](#) is planned. However, interpretation should consider the retrospective, single-centre design, temporal changes in insemination practices, and laboratory-specific factors that may limit generalisability.

## **Source:**

<https://www.news-medical.net/news/20260204/IVF-study-finds-shorter-insemination-protects-embryo-availability-without-harming-success.aspx>