

# Novel Approach to Developing Technician Benchmarks in the Contemporary Embryology Laboratory



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## Objective

Objective analysis of timestamped electronic witnessing procedures provides benchmarks that can be used to estimate staffing requirements and measure staff progression. Objective benchmarks serve as standards for unbiased technician review in the assisted reproductive laboratory [1].



## Materials and Methods

A retrospective analysis was conducted to evaluate mean procedure time of four embryologists in one location, each with varying levels of experience (> 10 years, 5-10 years, and < 5 years). A total of 284 procedures were analyzed for mean procedure time (minutes per oocyte/embryo) and evaluated by level of experience. Elapsed time to procedure completion was obtained by an electronic witnessing system (Matcher, IMT International). Mean time in minutes per oocyte or embryo was analyzed for the following procedures: oocyte denudation, intracytoplasmic sperm injection (ICSI), embryo biopsy, vitrification of biopsied and non-biopsied embryos. Data were analyzed with ANOVA, and significance was set at  $p < 0.05$ .

## Results

Mean time in minutes per oocyte or embryo to complete laboratory procedures with varying years of experience

Procedure	Mean time (min)	> 10 years	5-10 years	< 5 years
Oocyte denudation	0.48 ± 0.25	0.39 ± 0.16 <sup>a</sup>	0.52 ± 0.26 <sup>b</sup>	0.58 ± 0.34 <sup>c</sup>
ICSI	1.84 ± 0.95	0.97 ± 0.29 <sup>a</sup>	1.81 ± 0.80 <sup>b</sup>	2.78 ± 0.99 <sup>c</sup>
Embryo biopsy	3.57 ± 2.20	2.50 ± 1.05 <sup>a</sup>	4.05 ± 1.42 <sup>b</sup>	5.83 ± 4.08 <sup>c</sup>
Vitrification biopsied embryo	6.31 ± 1.77	5.48 ± 0.68 <sup>a</sup>	6.98 ± 2.38 <sup>b</sup>	7.12 ± 1.02 <sup>b</sup>
Vitrification non-biopsied embryo	3.96 ± 1.51	2.75 ± 0.48 <sup>a</sup>	4.48 ± 1.38 <sup>b</sup>	7.00 ± 7.00 <sup>b</sup>

\* Differences <sup>a, b, c</sup> within rows denotes ( $p < 0.05$ ).

- Difference noted between all experience levels for ICSI, embryo biopsy and oocyte denudation.
- Difference noted in >10 years vs. 5-10 and <5 years for vitrification of both biopsied and non-biopsied embryos.

## Discussion

Developing technician benchmarks provides unbiased technician comparison and establishes laboratory standards. These standards are then incorporated into annual competencies and improve the quality management system. Objective benchmarks provide clear expectations for employee growth and improve laboratory efficiency. Information obtained from annual performance reviews can then be utilized for broad management goals and objectives.



1. Boone WR, Higdon HL. Defining typical work environment for assisted reproductive technology laboratories in the United States. Fertil Steril 2005; 84:618-26.