

## PRIORITISING EMBRYOS FOLLOWING PRE-IMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A) FOR TRANSFER: MOSAIC vs. UNTESTED EMBRYOS

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### Abstract Body

Some patients have a combination of cryopreserved untested embryos and embryos that had Pre-implantation Genetic Testing for Aneuploidy (PGT-A). These patients may then have euploid, mosaic and untested embryos available for future transfers. When only mosaic and untested embryos are available, we lack evidence to decide which embryo to transfer first. This study was performed to evaluate the clinical outcomes of mosaic and untested embryos.

Frozen blastocyst transfer cycles (n=799) from January 2017 to December 2018 were analyzed. Blastocysts were screened using Next Generation Sequencing (Veriseq, Illumina). Mosaic embryos were grouped according to type and degree of mosaicism. Clinical pregnancy rate (CPR; +FHB) was compared between euploid (n=395), untested (n=226) and mosaic (n=178) eSET cycles using logistic regression controlled for age, number of embryos and blastocyst quality.

Results were influenced by type of mosaicism observed (whole vs segmental). The adjusted odds ratio (aOR) relative to euploid embryo transfers were 0.85 (0.56-1.26) for segmental mosaic, 0.44 (0.22-0.90) for whole chromosome mosaic and 0.45 (0.31-0.65) for untested embryos. Segmental mosaic embryos had higher CPR compared to untested embryos (aOR 1.88, 1.20-3.0) whereas there was no difference in CPR between whole chromosome mosaic and untested embryos. This study did not show significant differences in CPR between mosaic embryos with low (25-30%), moderate (35-50%), and high (55-75%) levels of mosaicism, single or double mosaic aneuploid embryos, or embryos with complex mosaicism.

These results demonstrate similar outcomes for untested vs mosaic embryos, regardless of degree of mosaicism and number of chromosomes affected, indicating that decision to transfer can be based on blastocyst morphology and day of biopsy. In contrast, mosaic segmental embryos should be prioritized for transfer over untested embryos and euploid embryos should always be given highest priority when available.

### Abstract image

Groups	No. of transfer cycles	No. of fetal heart beats seen	Clinical pregnancy rate (%)
Euploid	395	194	49.11
Untested	226	75	33.19
Mosaic	178	74	41.57
<b>Mosaic type</b>			
Segmental mosaic	137	62	45.26
Whole chromosome mosaic	41	12	29.27
Single or double mosaic aneuploid	129	54	41.86
Complex mosaic	49	20	40.82
<b>Degree of mosaicism</b>			
Low (25 - 30%)	121	50	41.32
Moderate (35 - 50%)	50	21	42.00
High (55 - 75%)	7	3	42.86