

# 6 years experience of transport and in-house PGD : A retrospective analysis of the PGD program at CARE Fertility, Nottingham

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## Introduction

The CARE team was the first UK fertility centre to be licensed by the Human Fertilisation and Embryology Authority (HFEA) to perform PGD and HLA tissue typing. The program has been running for 6 years, initially operating as a transport PGD centre sending blastomeres to the Genesis Genetics Institute, Detroit. Since October 2006 PGD analysis has been performed in-house through the Genesis Genetics Europe laboratory located on-site.

As our cycle numbers have increased over the past 6 years we wished to examine any shifting trends with regards to patient demographics, history and funding arrangements. We also hoped to identify positive prognosticators for treatment outcome and any operational changes within the unit which may have contributed to rising success rates.

## Data

2003-2009 Fresh and frozen	Mean Mat Age	No. Cycles	No. ETs	% Blastocyst formation	+ve βhCG/OR	+ve βhCG/ET	Clin preg/OR	Clin preg/ET	Implantation Rate
2003-2005	36	9	6	45%	-	-	-	-	-
2006	38	12	6	40%	17%	30%	17%	30%	27%
2007	35	14	9	60%	36%	56%	21%	33%	21%
2008	32	22	20	74%	36%	40%	27%	30%	19%
2009 YTD	34	12	10	61%	67%	80%	36% *	50% *	40% *

\*Excluding 3 cycles still awaiting scan outcome

2006-2009 Fresh only	No. Conditions	No. Cycles	Funded Cycles	Mean Mat Age & Range	No. ETs	Mean no. embryos transferred	% embryos biopsied	% blastocyst formation	Mean no. embryos frozen	% clin preg by 3 <sup>rd</sup> cycle
Autosomal recessive	11	28	16	34 (30-40yrs)	26	1.7	97%	75%	0.6	37%
Autosomal dominant	5	8	5	33 (29-43yrs)	6	1.8	91%	60%	0.4	75%
Autosomal recessive + HLA	4	6	4	36 (31-42yrs)	2	1.5	100%	62%	1	25%
X linked	5	8	4	28 (19-37yrs)	7	1.9	98%	67%	0.9	80%
HLA only	-	7	0	40 (36-44yrs)	2	1.5	100%	35%	0.4	50%

## Results & Discussion

The number of PGD cycles performed for single gene disorders has increased year on year. This has been accompanied by increasing success rates characterised by blastulation and implantation rates. Several important operational changes were identified in laboratory practice

- Change in biopsy media (Aug '05)
- Use of laser for biopsy rather than acid tyrodes (Aug '06)
- Change in culture system (Oct '06)
- Strict limiting of time embryo is in biopsy medium and increasing aperture of zona breach (June '08)

The change in the laboratory culture systems led to an increase in blastulation rates while the stricter embryo biopsy protocols have increased implantation and pregnancy rates.

While we had felt that a higher proportion of younger patients were seeking PGD due to increased awareness of it as a reproductive option, the mean maternal age does not appear to have significantly changed over the period examined.

Approximately 50% of couples receive NHS funding to undergo PGD. It is clear that local Primary Care Trusts do not seem to think it is appropriate to fund HLA typing unless testing is also being performed to exclude a genetic condition. Also, it appears a lower proportion of couples with autosomal recessive disorders receive funding. This may be due to the fact that many Trusts apply IVF funding criteria and exclude couples who already have children. This is unfortunate as most families are not aware of the genetic risk factor in these cases until they have an affected child.

It is encouraging to note that the majority of embryos are biopsied and that the majority of these continue to blastocyst, and also that the majority of cycles proceed to embryo transfer.

## Conclusions

Our results have highlighted to us the importance of having a robust blastocyst culture with respect to offering PGD as a service and the importance of the skill of the biopsy practitioner.

Outside of the laboratory we would like to further investigate a number of clinical aspects to decide if they had any effect on treatment outcome, including

- Stimulation regimes
- Timing of hCG
- Reproductive history i.e. any existing children

We are pleased that from 2006 our clinical pregnancy rate per oocyte retrieval and per embryo transfer has exceeded cumulative data published by the ESHRE PGD Consortium (18% and 25% respectively, Data I-VIII). The latest data from the ESHRE PGD consortium (Data VIII) reports an average clinical pregnancy rate per oocyte retrieval of 19%, with a range of 0 – 37%. Our year to date results, therefore, compare very favourably with this.

## References

V Goossens, C Harton, C Moutou, PN Scriven, J Traeger-Synodinos, K Sermon & JC Harper. 2008. ESHRE PGD Consortium data collection VIII: cycles from January to December 2005 with pregnancy follow up to October 2006. Human Reproduction 23(12); 2629-2654.

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