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# CUMULATIVE CLINICAL PREGNANCY RATES PRIVILEGING ELECTIVE SINGLE EMBRYO TRANSFER: A MATHEMATICAL MODEL FROM THE QUEBEC (CANADA) PUBLICLY-FUNDED *IN VITRO* FERTILISATION (IVF) PROGRAM

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AMERICAN SOCIETY FOR  
REPRODUCTIVE MEDICINE

67<sup>TH</sup> ANNUAL MEETING - 15 - 19th October, 2011  
Convention Center, Orlando, Florida, USA

## OBJECTIVE

To estimate the cumulative pregnancy rates in women commencing in vitro fertilisation (IVF) treatment in the new publicly-funded IVF program in Quebec, Canada.

## DESIGN

Simulation model based on a prospective cohort

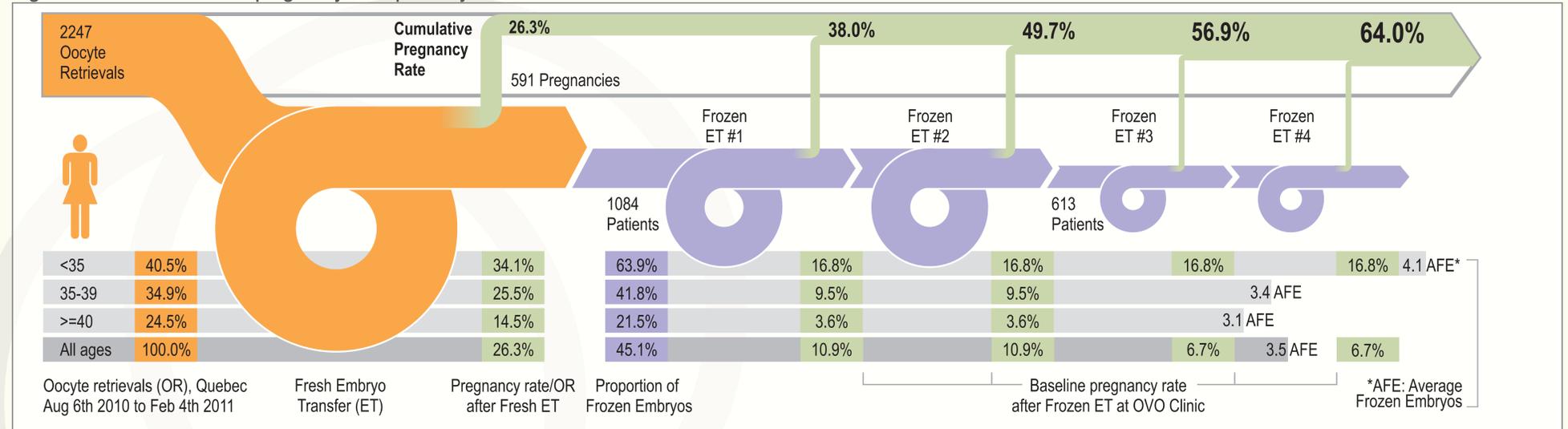
## MATERIALS AND METHODS

Data from fresh IVF cycles performed between August 2010 and February 2011 were submitted to the Canadian ART Register (Quebec) (CARTRQ) by the four assisted reproduction centers in Quebec. Estimation of the cumulative pregnancy rates per cycle started were calculated based on the clinical pregnancy rates of frozen embryo transfer (FET) seen in our clinic during the same time period.

## RESULTS

From 2403 started IVF cycles, 2247 (93.5%) underwent oocyte retrieval. Embryo transfer was performed in 1,942 (81%) cases, from which 943 (49%) were eSET. The clinical pregnancy rate (CPR) per oocyte retrieval was 26.3%. The multiple pregnancy rate (MPR) was 5.2%; all of which were twins. (Table 1) Frozen embryos were available in 46% of the cases, with significant differences by groups of age (< 35 years: 63.82%, 35-39 years: 41.80%, >40 years: 21.49%; p <0.001). The average number of frozen embryos was 3.5, similarly distributed by groups of age (p =1.0). In our simulation model, cumulative clinical pregnancy rates per oocyte retrieval increased by each cycle of frozen embryo transfer (FET #1: 38%, FET #2: 49.7%, FET #3: 56.9%, FET #4: 64.0%). (Figure 1) However it must be noted, only women aged < 35 will have enough frozen embryos to undergo three or more FET.

Figure 1: Cumulative clinical pregnancy rates per oocyte retrieval



AFE: Average Frozen Embryos

Table 1: Characteristic of IVF cycles during six months\* following the implementation of the Québec's Public IVF legislation

	<35 years	35-39 years	>=40 years	Total
<b>Number (%) of cycles</b>	960 (39.9)	840 (35)	603 (25.1)	2403
<b>Retrievals, n (%)</b>	911 (94.9)	785 (93.4)	551 (91.4)	2247 (93.5)
<b>Transfers, n (%)</b>	798 (83.1)	674 (80.2)	470 (77.9)	1942 (80.8)
eSET, n (%)	610 (76.4)	283 (42.0)	50 (10.6)	943 (49.0)
<b>Number of clinical pregnancies</b>	311	200	80	591
% per cycle	32.4%	23.8%	13.3%	24.6%
% per oocyte retrieval	34.1%	25.5%	14.5%	26.3%
% per embryo transfer	39.0%	29.7%	17.0%	30.4%
<b>Single clinical pregnancies, n (%)</b>	307 (98.7)	185 (92.5)	68 (85)	560 (94.8)
<b>Multiple pregnancies, n (%)</b>	4 (1.3)	15 (7.5)	12 (15)	31 (5.2)

\*From August 6th 2010 to February 4th 2011

eSET: Elective Single Embryo Transfer

## CONCLUSION

Prior to publicly-funded IVF, the CPR in Quebec was 42.9% with a 27.2% MPR and only 1.6% eSET rate. With the introduction of publicly-funded IVF the eSET rate increased to nearly 50% but a drop in CPR per oocyte retrieval was seen (26.3%) However considering the available frozen embryos the cumulative CPR per oocyte retrieval could be 64%. Differences in the proportion of available frozen embryos according to maternal age are determining factors that influence success. Cumulative pregnancy rates should be the optimal outcome when measuring the effectiveness of eSET public IVF programs.

## SUPPORT

Velez MP is supported by a CIHR fellowship award and OVO FERTILITY.



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