Introduction to SART data

by Ronald F. Feinberg, MD, PhD

The definition of an IVF cycle has become complex. Many initiated IVF stimulation cycles do not include a fresh transfer, yet those cycles often result in one or more healthy live births. The reasons for this include:

- increased use of pre-implantation genetic screening (PGS), also called comprehensive chromosome screening, in member clinics;
- increased use of single embryo transfer (SET), with cryopreservation of remaining embryos;
- adoption of freeze-all-embryo strategies to minimize or avoid ovarian hyperstimulation syndrome;
- enhanced perinatal outcomes in published articles with frozen-thaw cycle pregnancies compared to fresh embryo transfers;
- increased requests for embryo and egg banking, both for medical and elective fertility preservation; and
- patient requests for fewer eggs fertilized to lessen number of spare embryos created.

While annual SART data can provide a snapshot of how individual IVF clinics perform when compared to national averages, most patients want to know their chances of a healthy live birth from one IVF cycle.

The answer to this question often cannot be determined specifically from SART’s data, although estimates of embryo implantation can be made based on age and other factors. SART data can often be misunderstood by patients, leading them to underestimate their chances of achieving a live birth, particularly in light of clinical care pathways commonly performed at RAD and other leading IVF centers.

RAD care pathways and SART national data

When comparing SART national averages to RAD's SART data, one can ascertain some major differences. RAD has made a significant multi-year commitment to SET, and has consistently transferred fewer embryos compared to SART national averages. In addition, RAD’s results demonstrate PGS and frozen embryo transfer can significantly enhance embryo implantation and foster SET, particularly for women over age 34.
RAD also has a low threshold to freeze-all embryos in situations where patients are in a higher risk category for developing ovarian hyperstimulation syndrome. Both age and ovarian reserve impact this risk, which is evaluated on an individualized basis. RAD performs more frozen thaw embryo transfers than fresh transfers, yielding a very different frozen to fresh transfer ratio than SART national averages. Frozen embryo transfers confer several important medical advantages when compared to fresh transfers.

As a member of the OncoFertility Consortium, RAD believes embryo and egg banking is an important fertility preserving strategy for patients with cancer or other serious medical issues. In addition, embryo and egg banking can provide maximal flexibility for patients desiring elective fertility preservation.

Below are three examples of how RAD care pathways and statistics diverge from SART national averages for year 2012, and the positive impact this has had on our patients and their babies:

**Number of embryos transferred in 2012**

- RAD transferred an average of 1.2 fresh embryos in women under 37 years (SART national average 1.9 to 2.0 embryos).
- RAD performed 80.3% fresh SETs in women under 35 years (SART national average 14.8%).
- RAD transferred an average of 1.1 frozen thawed embryos in women under 35 years, and an average of 1.2 embryos for women ages 35 to 42 years (SART national average 1.8 embryos for women under 35; 1.8 to 1.9 embryos for women ages 35 to 42 years).

**Embryo implantation rate for women under 35 years**

- RAD had an implantation rate of 53.7% for fresh transfers in women under 35 years (SART national average 37.5%)
- RAD had a 7.7% twin rate for women under 35 years, no twins in women 35 years old and older, and no triplets in any age category (SART national average of 29.5% twins and 1.1% triplets or more in women under 35 years. SART national averages show significant rates of twins and triplets in all older ages)
- RAD had a 58.9% live birth rate in women under 35 years having frozen thaw transfers, with an average of 1.1 embryos transferred (SART national average of 42.4% live births, transferring 1.8 embryos)

Currently, SART does not calculate or present implantation rates or multiple gestation rates for frozen thaw cycles.
Frozen thaw implantation and ongoing / live birth rate for women 35 years old and older, with or without PGS

RAD has been performing PGS since 2010. To demonstrate for our patients how effective PGS is, RAD has compiled and presented multi-year data from 2010 through 2013. Since the number of abnormal blastocysts obtained from IVF increases with age RAD recommends women over age 34 choose PGS to significantly increase the likelihood of embryo implantation and live birth rate per embryo transfer. Using SET with PGS increases the potential for success, and lowers the chance of miscarriage.

RAD has presented its PGS data on multiple occasions at meetings of the American Society for Reproductive Medicine (ASRM).

**Oral presentations at the ASRM meeting:**

*Overnight survival of thawed and trophectoderm biopsied blastocysts*

*Trophectoderm biopsy — Age matters*
M. Portmann, L. Morrison, S. Carney, C. Boylan, R. Feinberg, G. Kovalevsky. Annual Meeting of the American Society for Reproductive Medicine; October 2011; Orlando, Fla.
Trophectoderm biopsy on day 5, 6, or 7 — Does it matter?
M. Portmann, L. Morrison, S. Carney, C. Boylan, R. Feinberg, G. Kovalevsky. Annual Meeting of the American Society for Reproductive Medicine; October 2011; Orlando, Fla.

Poster presentations at the ASRM meeting:

Is trophectoderm “biopsy and hold” a useful strategy for patients considering future PGS?

Exploring the incidence of trophectoderm mosaicism in a population of previously diagnosed embryos.

Trophectoderm biopsy for aneuploidy testing: Preliminary observations and ongoing pregnancies.

"What are my chances of a healthy live birth from one IVF cycle?"

RAD is committed to providing a personalized answer to this question. For our good prognosis patients, we estimate the cumulative chance of achieving a healthy live birth is greater than 80%, assuming one or more SETs may be required. However, for patients with a more guarded prognosis, factors such as age, ovarian reserve, height and weight, underlying diagnoses, and willingness to perform PGS will impact cumulative chance of success.

RAD has been collaborating with Univfy, a company devoted to IVF prediction modeling for patients and their physicians. Recently, RAD started beta testing a unique semi-customized prediction test by Univfy for estimating the number of euploid (i.e. normal chromosome) blastocysts a couple will produce from one IVF cycle.

The test is performed at RAD, via a secure online portal connected to Univfy. The hope is that this test will allow couples to plan their IVF care in order to maximize their chances of a healthy live birth.