

HOM gestations since the publication of the initial SART guidelines on embryo transfer (ET).

**DESIGN:** Descriptive cost analysis and three-point estimation.

**MATERIALS AND METHODS:** A systematic review of the literature was conducted to estimate the hospital costs of singleton and triplet pregnancies and subsequent delivery. National data reported to the CDC from 1996 to 2012 were reviewed. The trends in ET and reductions in resulting HOM gestations were examined. The number of HOM deliveries prevented following the introduction of SART guidelines was estimated. The total costs were estimated based on direct hospital charges for associated obstetric and perinatal conditions/complications, and projected to 2014 US dollars.

**RESULTS:** A singleton gestation (including pregnancy, delivery and up to one year of neonatal care) was estimated to cost between \$17,112-24,212. A triplet gestation was estimated at \$190,788-453,935. Comparable estimates of singleton and triplet gestations demonstrated the latter to be between 11 and 27 times as costly. The percentage of HOM gestations amongst all ART pregnancies decreased from 11.4% in 1997 to 2.0% in 2012, with the sharpest year-to-year decline of 20.3% occurring from 1998-1999, the year following the publication of the initial SART guidelines. Similarly, the number of liveborn HOM infants secondary to ART has decreased from 59.8 per 1,000 fresh non-donor cycles in 1997 to 13.2 in 2012. From 1998 to 2012, the cumulative number of prevented HOM deliveries was estimated to be 13,512. This corresponds to an estimated net total savings in direct hospital-related costs of \$4.27B (range \$2.35-5.85B, 2014 dollars).

**CONCLUSIONS:** Iatrogenic HOM gestations represent a substantial economic burden to our healthcare system. Changes to the practice of ET following the publication of the initial SART guidelines in 1998 have resulted in a dramatic decrease in the HOM rate. The associated cumulative cost savings to the US healthcare system are estimated to be over \$4B.

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**FROZEN BLASTOCYST TRANSFER IN NATURAL CYCLE VS HORMONE REPLACEMENT THERAPY CYCLE.** A. Biryukov,<sup>a</sup> V. Apryshko,<sup>a,b</sup> I. Zorina,<sup>a</sup> E. Osina,<sup>a</sup> N. Dmitrieva,<sup>a</sup> S. Yakovenko.<sup>a,c</sup> <sup>a</sup>Al-travita IVF clinic, Moscow, Russian Federation; <sup>b</sup>Faculty of Biology, Moscow State University, Moscow, Russian Federation; <sup>c</sup>Faculty of Physics, Moscow State University, Moscow, Russian Federation.

**OBJECTIVE:** The introduction of vitrification in assisted reproduction technology leads to significant increase in embryo survival rates by up to 95-100%. Frozen blastocyst transfer (FBT) treatment can be scheduled in a natural ovulatory cycle or in a hormone replacement therapy (HRT) in which the endometrium is prepared with estrogen and progesterone supplementation. Natural cycle FBT is easy to implement and can be offered to women that have a regular menstrual cycle and are proven to ovulate. Conversely, HRT is an option for anovulatory patients and offers flexibility for the doctor by controlling the timing of the cycle. In this research the hypothesis is that there is no significant difference in efficiency between natural FBT and HRT FBT.

**DESIGN:** Retrospective analysis of 500 natural FBT cycles and 500 HRT FBT cycles. Clinical pregnancy, miscarriage and live births rates were compared. Cycles with donor embryo transfers were excluded from this research.

**MATERIALS AND METHODS:** Embryos were cultured in Global total media at 7.3% CO<sub>2</sub>, 36.6° C for 5-6 days and were vitrified using CryoTech vitrification method at blastocyst stage. Only AA, AB, BA and BB grades (Gardner's system) of blastocysts were frozen. After thawing, blastocysts were cultured for 120 minutes prior to transfer in order to make sure of survival. The average number of transferred blastocysts was 1.4 for natural cycle and 1.3 for HRT. The average age of patients was 34.8 for natural cycle and 35.1 for HRT. Statistical differences between the values were made using analysis of variance (ANOVA).

**RESULTS:** Clinical pregnancy rates for natural cycle FBT were greater than HRT FBT (43.7% vs 39.8%). However this was not statistically significant (p=0.26). Miscarriage rates for natural cycle FBT were greater than HRT FBT (33.7% vs 36.4%). However this was not statistically significant (p=0.2). Live birth rates for natural cycle FBT were lower than HRT FBT (38.7% vs 44.3%). However this was not statistically significant (p=0.14).

**CONCLUSIONS:** This retrospective cohort study found no significant difference in clinical pregnancy, miscarriage and live birth rates between natural cycle FBT and HRT FBT. At present our success rates for natural

cycle vs HRT FBT suggest that if a patient has a regular menstrual cycle then they should be offered a natural cycle FBT. This avoids the use of multiple medications, reduces the cost for patients, and simplifies the treatment.

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**DEMOGRAPHIC CHARACTERISTICS ASSOCIATED WITH ELECTIVE SINGLE EMBRYO TRANSFER IN IVF: WHO CHOOSES JUST ONE?** E. M. Munch,<sup>a</sup> K. M. Summers,<sup>a</sup> G. Ryan,<sup>a</sup> J. D. Kapfhamer,<sup>a</sup> B. Collura,<sup>b</sup> G. D. Adamson.<sup>c</sup> <sup>a</sup>Reproductive Endocrinology and Infertility, University of Iowa Hospitals and Clinics, Iowa City, IA; <sup>b</sup>RESOLVE, McLean, VA; <sup>c</sup>PAMF Fertility Physicians of Northern California, Saratoga, CA.

**OBJECTIVE:** Younger patient age has been found in previous IVF studies to be associated both with desire for twins and the choice of single embryo transfer; we sought to examine this and other demographic and geographic parameters in relation to elective single embryo transfer (eSET).

**DESIGN:** Descriptive analysis of online survey results from a cross-sectional sample of U.S. community women.

**MATERIALS AND METHODS:** An online survey, advertised through RESOLVE (the National Infertility Association) was conducted over 5 weeks in 2014. Interested participants were screened for gender and cycle eligibility and gave consent by acknowledging an online privacy statement. Inclusion criteria were age < 40 and the completion of at least one IVF cycle with embryo transfer. Participants were asked to identify their age, race, income, highest education completed, and insurance coverage in the survey. The outcome of interest was the election of single embryo transfer (eSET, defined as multiple embryos available for transfer but electing a single embryo transfer) versus multiple embryo transfer (MET) in the first IVF cycle. We examined geographic characteristics by US Census region and by state IVF access quartile, as previously published.<sup>1</sup> All variables, including age and income, were categorical, and X<sup>2</sup> was used to compare proportions among groups.

**RESULTS:** Of 888 participants, 587 met age and cycle inclusion criteria. Participants who chose eSET tended to be younger than those choosing MET, with 25% of participants under 29 choosing eSET, compared to 12% of those aged 35-39 (p=0.014). Education level, race, income, and insurance coverage for infertility did not differ between eSET and MET groups. There was no association between eSET or MET with regard to accessibility to IVF in the participant's state. When comparing patterns of eSET and MET according to US Census region, patients from the Midwest were significantly more likely to choose MET over eSET (91% for the Midwest vs an average of 80% for other census regions, p=0.003).

**CONCLUSIONS:** Even in patients <40 years old, younger age may be associated with electing to transfer a single embryo in a first IVF cycle. Reassuringly, other non-modifiable demographic characteristics such as education, race, income and insurance status may not be as vital as once thought in the decision-making around embryo transfer number. Patients and providers in the Midwest US census region may particularly benefit from increased education about the risks of MET.

**Reference:**

1. Nangia AK, Likosky DS, Wang D. "Access to assisted reproductive technology centers in the United States." *Fertil Steril*. 2010;93:745-61.

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**BUILDING A MODEL TO INCREASE LIVE BIRTH RATE THROUGH PATIENT-SPECIFIC OPTIMIZATION OF EMBRYO TRANSFER DAY.** R. H. Goldman,<sup>a,b</sup> S. A. Missmer,<sup>a,b,c</sup> D. J. Kaser,<sup>a,b</sup> M. D. Hornstein,<sup>a,b</sup> S. S. Srouji,<sup>a,b</sup> C. L. Bormann,<sup>a,b</sup> C. Racowsky.<sup>a,b</sup> <sup>a</sup>Center for Infertility and Reproductive Surgery, Dept of ObGyn, Brigham and Women's Hospital, Boston, MA; <sup>b</sup>Harvard School of Medicine, Boston, MA; <sup>c</sup>Harvard School of Public Health, Boston, MA.

**OBJECTIVE:** Despite the increasing use of day 5 embryo transfer (ET) in IVF, the criteria most important for selecting day of ET to maximize healthy live birth rates remain unclear. We sought to identify patient and cycle characteristics most strongly associated with live birth following day 3 or day 5 ET, and then to develop a predictive model for improving prospective day of transfer determination on an individual basis.