Strict Adherence to ASRM Guidelines for Single Euploid Embryo Transfer Significantly Reduces Multiple Pregnancy Risk: A 2022–2024 SART Data Analysis

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Background

Multiple gestation: Remains one of the most significant complications associated with in vitro fertilization (IVF). Compared to singleton gestations, twin pregnancies carry significantly higher rates of severe maternal complications, including preeclampsia, gestational diabetes, preterm labor, placental abruption, and postpartum hemorrhage.

2021 ASRM Guideline Specifications: The 2021 ASRM Practice Committee Opinion (Guidance on the limits to the number of embryos to transfer) explicitly limits the transfer of demonstrated **euploid embryos to exactly 1 across all maternal age groups** (<35, 35–37, 38–40, and 41–42 years). While the guidelines permit age- and prognosis-based allowances for transferring multiple untested embryos (up to 2–5 depending on age and stage) and require medical record documentation for clinical exceptions, single euploid embryo transfer (SEET) remains the standard for transferring embryos that have been screened for chromosomal abnormalities.

Guideline non-adherence: Despite these standards aimed at limiting risks of multiple gestation, multiple euploid embryo transfers (MEET) continue to occur in clinical practice in the United States.

Objective

To evaluate national delivery outcomes and quantify the specific risk of multiple delivery associated with guideline non-adherence (MEET vs. SEET) across maternal age categories using Society for Assisted Reproductive Technology (SART) national registry data.

Methods

Data Source: Society for Assisted Reproductive Technology (SART) Retrieval and Transfer Outcome Tables (2022–2024).
Study Population: Autologous preimplantation genetic testing for aneuploidy (PGT-A) frozen blastocyst cycles (N = 300,579).
Age Stratification: Data were categorized into four standard clinical age groups: <35 years (n = 124,390), 35–37 years (n = 86,989), 38–40 years (n = 67,335), and 41–42 years (n = 21,865), alongside a pooled overall cohort.
Outcome Measures & Statistical Analysis: Evaluated outcomes included live birth rate (LBR) per transfer cycle and multiple delivery rate among live births. Unadjusted relative risks (RR) with 95% confidence intervals (CI) were calculated to evaluate the multiple delivery risk comparing MEET against SEET across age strata.

Table. Frozen Blastocyst With PGT-A: SEET vs. MEET Outcomes (Pooled 2022–2024)

Maternal age	<35	35–37	38–40	41–42	Pooled
N	124,390	86,989	67,335	21,865	300,579
SEET (%)	120,372/124,390 (96.8%)	84,726/86,989 (97.4%)	65,687/67,335 (97.6%)	21,357/21,865 (97.7%)	292,142/300,579 (97.2%)
LBR SEET	65,787/120,372 (54.7%)	45,397/84,726 (53.6%)	33,953/65,687 (51.7%)	10,783/21,357 (50.5%)	155,921/292,142 (53.4%)
Singleton/LB SEET	65,083/65,787 (98.9%)	44,975/45,397 (99.1%)	33,616/33,953 (99.0%)	10,681/10,783 (99.1%)	154,355/155,921 (99.0%)
Multiple/LB SEET	704/65,787 (1.1%)	422/45,397 (0.9%)	337/33,953 (1.0%)	102/10,783 (0.9%)	1,565/155,921 (1.0%)
MEET (%)	4,018/124,390 (3.2%)	2,263/86,989 (2.6%)	1,648/67,335 (2.4%)	508/21,865 (2.3%)	8,437/300,579 (2.8%)
LBR MEET	2,235/4,018 (55.6%)	1,231/2,263 (54.4%)	812/1,648 (49.3%)	233/508 (45.9%)	4,511/8,437 (53.5%)
Singleton/LB MEET	1,325/2,235 (59.3%)	770/1,231 (62.6%)	532/812 (65.5%)	140/233 (60.1%)	2,767/4,511 (61.3%)
Multiple/LB MEET	909/2,235 (40.7%)	461/1,231 (37.5%)	280/812 (34.5%)	92/233 (39.5%)	1,742/4,511 (38.6%)
RR (95% CI)	38.0 (34.8–41.5)	40.3 (35.8–45.4)	34.7 (30.1–40.1)	41.7 (32.5–53.6)	38.5 (36.2–40.9)

Table 1.

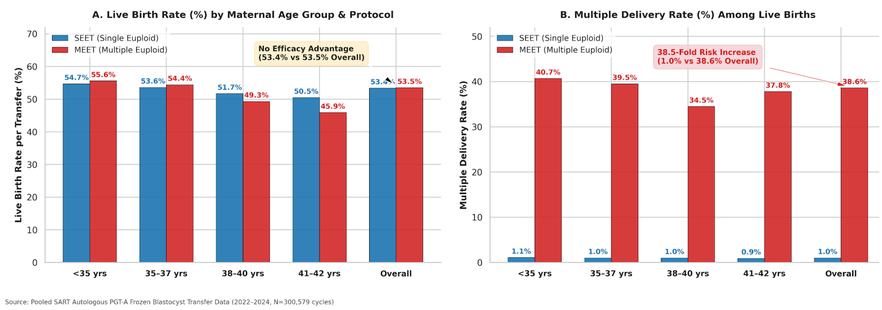
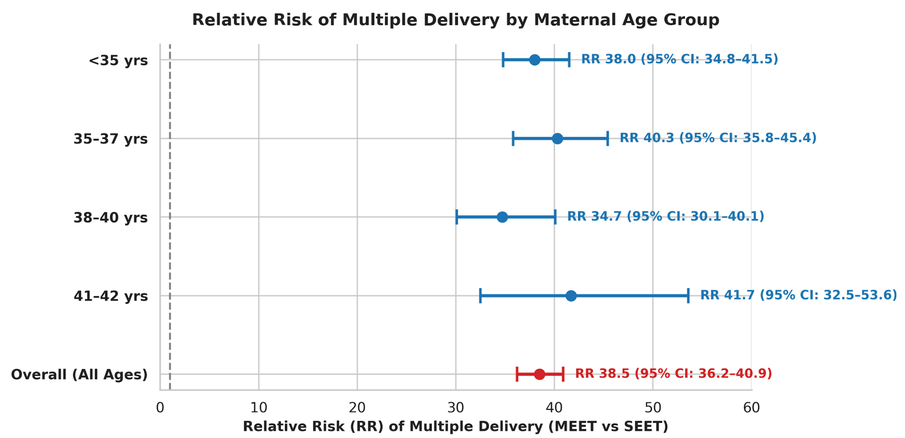


Figure 1.



Source: Pooled SART Autologous PGT-A Frozen Blastocyst Transfer Data (2022–2024, N=300,579 cycles)

Figure 2.

Results

- Among 300,579 euploid blastocyst transfers, 292,142 (97.2%) were SEET and 8,437 (2.8%) MEET (Table 1).
- Live birth rates were 53.4% from SEET and 53.5% from MEET (Table 1, Figure 1).
- Multiple delivery rates after MEET ranged from 38.6%–40.7% vs. SEET (0.9%–1.1%) across all age groups (Figure 1).
- MEET carried 35- to 42-fold increased multiple delivery risk vs. SEET (Figure 2).

Discussion

- Live birth rates were statistically indistinguishable between SEET (53.4%) and MEET (53.5%), meaning a second euploid embryo added no live-birth benefit.
- Multiple delivery rates, however, diverged sharply: 0.9–1.1% with SEET versus 34.5–40.7% with MEET across every age group, for a pooled 38-fold increased risk (RR 38.5; 95% CI 36.2–40.9).
- The elevated risk held even at ages 41–42, where guideline exceptions are most often invoked.
- Because public SART data cannot identify which MEET cycles met a documented ASRM exception, this analysis cannot confirm whether those transfers were clinically justified, underscoring the need for patient-level follow-up research.

Conclusion

Transferring multiple euploid embryos increases multiple pregnancy risk **38-fold** with no improvement in overall live birth rates.

1. Practice Committee of the American Society for Reproductive Medicine. Multiple gestation associated with infertility therapy: a committee opinion. Fertil Steril. 2022
2. Practice Committee of the American Society for Reproductive Medicine. Guidance on the limits to the number of embryos to transfer: a committee opinion. *Fertil Steril*. 2021.
3. Society for Assisted Reproductive Technology (SART) Clinic Outcome Reporting System (2022–2024 Data).

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