Title:

WHAT IS THE IDEAL NUMBER OF VIALS OF DONOR SPERM TO PURCHASE FOR PATIENTS UNDERGOING DONOR SPERM INTRAUTERINE INSEMINATION (DIUI)?

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Objective:

Gamete donation has provided patients who would not otherwise have the ability to conceive the opportunity to have a healthy child via screened selected eggs and sperm. Donor sperm is a limited resource, and scare literature exists to inform patients regarding the optimal number of vials to purchase to maximize the chances of conceiving while minimizing cost. The objective of this study is assess the number of donor sperm vials needed to achieve ongoing pregnancy (OP) for patients who are undergoing donor sperm intrauterine insemination (DIUI).

Design:

Retrospective, cohort study

Materials and Methods:

The study included patients at a single academic center who underwent a natural cycle or medicated ovulation induction cycle (with clomiphene citrate or letrozole) with DIUI from 2010-2019. Exclusion criteria included gonadotropin use or imaging showing tubal pathology, uterine myomas, or polyps >0.5 cm. r-hCG was administered when ≥1 18mm follicle was visualized. DIUI was performed 36 hours later. The primary outcome was OP. A Kaplan-Meier curve was

created for each SART age group to determine the cumulative probability of OP from each DIUI cycle. A second curve stratified by anti-Mullerian hormone (AMH) levels: (low <0.7 ng/mL, normal 0.7-8.4 ng/mL, and high >8.4 ng/mL).[1] Patients were censored when they dropped out or progressed to IVF.

Results:

A total of 913 patients were included in the study (Groups A: 257, B: 199, C: 168, D: 142, E: 147). The cumulative percent of patients that achieved OP in each cycle is shown in Table 1.

	SART Age Group					AMH Group		
Cycle	A	B	C	D	E	Low	Normal	High
1	18.3	14.6	11.9	11.2	2.0	3.3	7.7	15.4
2	32.5	23.0	19.1	16.0	4.0	3.3	14.9	27.9
3	42.5	28.1	28.2	20.5	4.0	12.8	21.2	**36.9**
4	50.0	32.8	31.7	25.6	**6.4**	12.8	27.4	36.9
5	53.6	44.6	38.9	37.0	6.4	12.8	36.2	
6	61.1	50.1	42.3	**46.7**		**30.2**	44.5	
7	64.4	**54.7**	42.3	46.7		30.2	44.5	
8	69.5	54.7	42.3				49.8	
9	**76.3**		**55.1**				**57.0**	
10	76.3		55.1				57.0	

Conclusion:

Until now, there has not been a personalized algorithm to predict how many vials of donor sperm should be purchased prior to attempting DIUI. Using Kaplan-Meier curves stratified by age and AMH, we developed a starting point from which clinicians can further tailor their recommendations to incorporate patient characteristics and preferences for family size. The cumulative OP rate per cycle can also be used to counsel patients about when to transition their treatment strategy to one that includes assisted reproductive technologies. Future studies might

include a financial analysis that includes time and cost as variables of both low-tech and high treatments, so that we can best inform our patients.