a $p=.0034$,   **b** $p=.0000$
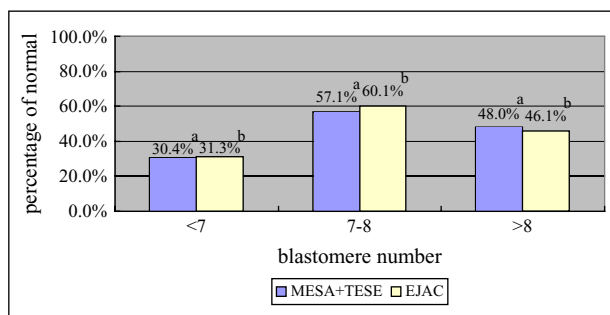
Figure 2. Normal chromosome rates by embryo grade.

a $p=.038$,   **b** $p=.0000$.

Figure 3. Relationship between chromosomal abnormality and blastomere number.

O-13

Insulin and Not Human Chorionic Gonadotropin is Significantly Correlated with Total Testosterone and Free Testosterone in Pregnancies Affected by Gestational Diabetes. P.S. Uzelac, F.Z. Stanczyk, S.T. Nakajima. Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, University of Louisville, Louisville, KY; Department of Obstetrics and Gynecology, University of Southern California, Los Angeles, CA.

Background and Significance: Previous studies have demonstrated increased levels of maternal serum androgens in pregnancies affected by gestational diabetes (GDM). The mechanism behind this is unclear, but may be similar to that which is seen in polycystic ovarian syndrome (PCOS), where hyperinsulinemia causes hyperandrogenemia. Another possible mechanism could involve human chorionic gonadotropin (hCG) cross-reacting with ovarian luteinizing hormone receptor. Finally, obesity, which is commonly associated with GDM, may play a significant role in androgen production.

Objective: The objective of the current study was to correlate fasting insulin, hCG and BMI with total testosterone (T), free T, and sex hormone-binding globulin (SHBG) in pregnancies with GDM.

Materials and Methods: Twenty-five pregnancies were analyzed. All patients had a diagnosis of GDM based upon either 1) a value >200 mg/dL on a 50-g 1-hour post-glucose blood sugar or 2) two or more elevated values on a 100-g 3-hour glucose tolerance test (GTT). Fasting blood samples were obtained from all subjects. Serum levels of T were quantified by RIA following organic solvent extraction and Celite column partition chromatography. SHBG and insulin were quantified by direct specific immunoassays. Free T values were calculated. Data was analyzed by partial correlation to control for multiple variables, then further simple regression analysis for any variable that was initially significant.

Results: Mean (range) maternal age was 32.5 years (21–42), mean (range) gestational age was 24 weeks (15–34), and mean (range) BMI was 34.3 (27–45). Partial correlation coefficients and R^2 statistics are shown below. Adjusting for the effects of hCG and BMI, there was a significant positive correlation between insulin and total T, as well as insulin and free T. Further

analysis demonstrated that insulin alone accounted for 30% of the variance in total T and 49% of variance of free T.

	Total T	Free T	SHBG
Insulin	$r = 0.53, p = .01$	$r = 0.72, p < .0005$	$r = -0.19, p = .39$
hCG	$r = 0.15, p = .49$	$r = 0.38, p = .07$	$r = -0.18, p = .41$
BMI	$r = 0.07, p = .76$	$r = 0.02, p = .93$	$r = 0.03, p = .90$
R^2 statistic for all three variables	0.32	0.57	0.07
R^2 statistic for insulin alone	0.30	0.49	Not applicable

Conclusions: Insulin, and not hCG, is significantly correlated with total and free testosterone in pregnancies affected by GDM. Since insulin alone accounts for almost half the variance in free T, it is likely that the major mechanism behind increased androgens in GDM pregnancies is similar to PCOS, where hyperinsulinemia causes hyperandrogenemia.

O-14

The Demographics of Acupuncture's Impact on IVF Outcomes: Infertility Diagnosis and SART/CDC Age Groups. P.C. Magarelli, D. Cridennda, M. Cohen. Reproductive Medicine & Fertility Center; East Winds Acupuncture, Colorado Springs, CO.

Background: Over the past 3 years the authors have presented data suggesting that Acupuncture, when added to Assisted Reproductive Technologies such as IVF, could enhance reproductive outcomes. Those outcomes included: improved pregnancy rates, reduced miscarriage rates, markedly reduced ectopic rates, significantly more Take Home Babies, and lower multiples. Our data has been referenced and cooborated in Prospective Randomized Controlled Trials (RCTs), published May 2006 in Fertility & Sterility. At ASRM 2006, we recently presented our poster explaining a proposed mechanism for the observed data, i.e., changes in Prolactin and Cortisol levels during IVF stimulation mimic the nature cycle more closely than non-acupuncture–treated patients. We continue to dissect the mechanisms involved with the phenomenon of improved outcomes with acupuncture treatments.

Objective: We investigate the impact of acupuncture on the population demographics in patients treated by a sole acupuncturist and sole reproductive endocrinologist, specifically based on infertility diagnosis and age groups of our patients.

Materials and Methods: In this study 232 IVF cycles were reviewed in a retrospective fashion. The following patients' demographics were reviewed: Age groups as reported to SART/CDC, infertility disease status, both individually and in combination. All patients who completed an IVF cycle (retrieval, transfer) were included. There were 60 in the Control (C) group (no acupuncture) and 172 in the Acupuncture (Ac) group. For the C vs. Ac groups, a summary of their clinical statistics are reported in the table below (Table 1). The impact of patient Age Groups is reported in Table 2.

Results: Overall pregnancy rates (PR) for the Ac group were statistically similar to the C (Ac 45% vs. 52%). Summary statistics are in Table 1 below. With regard to infertility diagnosis, there were statistically significant differences between the Controls and Acupuncture-treated groups for the following factors: Tubal Factor, Failed IUI, and PCOS combined with Male Factor and with the Tubal Factor, with PCOS and Male Factor demonstrating significant improvement with Acupuncture ($P<.05$) and the Failed IUI not revealing a similar effect. Factors such as Endometriosis diagnosis and pure Male Factor did not demonstrate statistically significant differences between the groups.

When the data for Age groups were analyzed, acupuncture benefits seem to be best observed in the >40 year old group ($p<.05$). No similar benefits were noted for the other Age groups, with the 35–38 group demonstrating statistically significantly better outcomes when not treated with acupuncture (Table 2).

TABLE 1. Impact of acupuncture of IVF outcomes based on infertility diagnosis

	#	Percent
	232	
Acupuncture	172	74
Non Acupuncture	60	26

	Acupuncture			Non-Acupuncture			
	#	Preg	%	#	Preg	%	p value
Diseases							
- PCOS	42	23	55	17	9	53	
- Tubal Factor	27	13	48	16	2	12	<.05
- Endometriosis	14	8	57	8	4	50	
- Over 35	73	22	30	23	8	34	
- Failed IUI	24	15	63	12	9	75	<.05
- Male Factor	133	61	46	46	24	52	
- PCOS & Tubal	2	2	100	2	0	0	
- PCOS & endo	3	2	67	2	0	0	
- PCOS & >35	8	3	38	4	2	50	
- PCOS & IUI	7	4	57	4	4	100	
- PCOS & male	35	20	57	14	7	50	<.05
- Tubal & endo	3	1	33	4	1	25	
- Tubal & >35	11	2	18	7	1	14	
- Tubal & IUI	4	4	100	1	0	0	
- Tubal & male	18	7	39	12	5	41	
- Endo & >35	3	2	67	3	0	0	
- Endo & IUI	2	2	100	2	1	50	
- Endo & Male	9	6	67	5	2	40	
- Tubal/>35/male	8	1	13	6	1	17	

Utilizing the Mann-Whitney U test for multivariance, it was found that IVF patients having a Male Factor diagnosis and a female factor of Age >38 treated with acupuncture results in a 29% greater chance of pregnancy than controls.

TABLE 2. Impact of acupuncture of IVF outcomes based on age groups of female patients

	Acupuncture			Non-acupuncture			
Age Groups	#	Preg	%	#	Preg	%	p value
< 35	90	49	54	35	20	57	
35–38	39	16	41	9	6	67	p<.05
38–40	18	3	17	7	2	28	
>40	25	8	32	9	2	22	p<.05

Conclusions: There were statistically significant differences in the impact of acupuncture on IVF patients when categorized by infertility diagnosis. Those patients with Tubal factor, PCOS, and Male factor had better outcomes when IVF was combined with Acupuncture treatments. We also observed significantly improved outcomes in patients with female age >40. The reverse was true with patients in the 35–38 year groups. With multivariance statistical analysis, we determined that the "ideal" patient who would benefit from adding acupuncture to their IVF treatments were >38 with Male factor infertility. Further studies of traditional Chinese medicine modalities of treatment are underway. We are organizing a multicenter prospective study to confirm our observations.

O-15

Outcomes of Natural Cycles vs. Programmed Cycles for 1390 Frozen Embryo Transfers. C. Givens, I. Ryan, P. Chenette, C. Herbert, E. Schriock. Pacific Fertility Center, San Francisco, CA.

Objective: To compare cycle outcomes when patients with frozen embryos are having the thawed embryo transfer timed to natural ovulation vs. cycles in which the endometrial timing is programmed with estrogen and progesterone in own-egg and ovum-donor recipient FETs.

Design: Retrospective database analysis.

Setting: A large private ART practice.

Patients: 1,145 patients undergoing 1,390 FET cycles with embryos derived from their own eggs (n = 785 patients) or from donor-egg–derived embryos (n = 360 patients) between January 1, 2000 and December 31, 2005.

Main Outcome Measures: Delivered pregnancy and pregnancy loss rates were determined based on whether the endometrial preparation was natural (i.e., an ovulatory cycle) vs. programmed (sequential exogenous intramuscular estrogen and progesterone). Comparisons were also made for patients undergoing natural and programmed FET cycles using donor-egg–derived embryos.

Results:

	Own eggs—Natural	Own eggs—Programmed	OD—Natural	OD—Programmed
# Transfers	730	211	113	336
# Pregnant	433	147	67	185
Biochemical	68	19	10	34
Delivered	198	61	30	82
SAB	32	23	4	18
Ectopic	1	1	3	1
TAB	4	1	0	2
#Clinical Pregnancies	234	85	34	102
%Clin Preg/ET	32.05	40.28	30.09	30.36
%Delivered/ET	27.12	28.91	26.55	24.40
%Loss/ET	33.09	24.09	7.09	19.10

Clinical pregnancy (gestational sac on 7 week ultrasound) rates were higher in programmed FET cycles in patients using their own eggs. However, there were no differences in delivered pregnancies between these cycle types.

Clinical pregnancy and delivered pregnancy rates were not different in natural vs. programmed cycles for patients undergoing FET with donor-egg–derived embryos.

O-16

Are Embryos Normal Obtained from Second-Day Intracytoplasmic Sperm Injection (ICSI), Single Pronucleus (1PN), or Cleaved Embryos from No Pronuclei (0PN) Initially Seen? L.B. Werlin

Body: In an effort to determine if embryos obtained from second-day ICSI, 1PN, or 0PN that cleave appropriately are normal and viable for embryo transfer (ET), we retrospectively reviewed 75 patients undergoing preimplantation genetic diagnosis (PGD) from 01/04 through 11/06 who fell into at least one of these groups. All patients reviewed underwent IVF and ICSI, with subsequent PGD for either advanced maternal age (AMA), recurrent pregnancy loss (RPL), two or more failed cycles of IVF (FC), or severe male factor (MF). These indications are known to be associated with increased risk for aneuloidy.

Standard stimulation protocols were administered. Ultrasound-guided oocyte retrieval was performed at approximately 35 hours post hCG administration. All mature oocytes underwent ICSI and fertilization was checked the following day. All intermediate and immature oocytes were evaluated 24 hours post oocyte retrieval and, if normal maturation occurred, second-day ICSI was performed. At 72 hours post retrieval, all embryos that were at least 4–8 cells underwent embryo biopsy for PGD. All 0PN and 1PN that cleaved appropriately were also biopsied. Blastomere fixation was performed and slides were sent to Reprogenetics (San Francisco, CA) for flourescence in situ hybridization (FISH). A total of 9–12 chromosomes were evaluated; 8, 13, 14, 15, 16, 17, 18, 20, 21, 22, x, and y.