Yesterday, today and forever

Dexeus mujer

Endometrial preparation for frozen embryo transfer (FET)

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Hospital Universitario Dexeus (HUD)
Barcelona

- 46% of embryo transfers carried out in our Department in 2017 have been FET

- FET increased 22%

ICMART ART REPORT (2008-2010)

- 4, 461 309 cycles → 1,144 858 babies born
- IVF ↑ 6,4%
- FET ↑ 27,6%
- ICSI 66%

EVERS J.L.H. 2016
Hum. Reprod. 31-7:1381-2

WHAT IS THE REASON FOR THIS FET INCREASE?

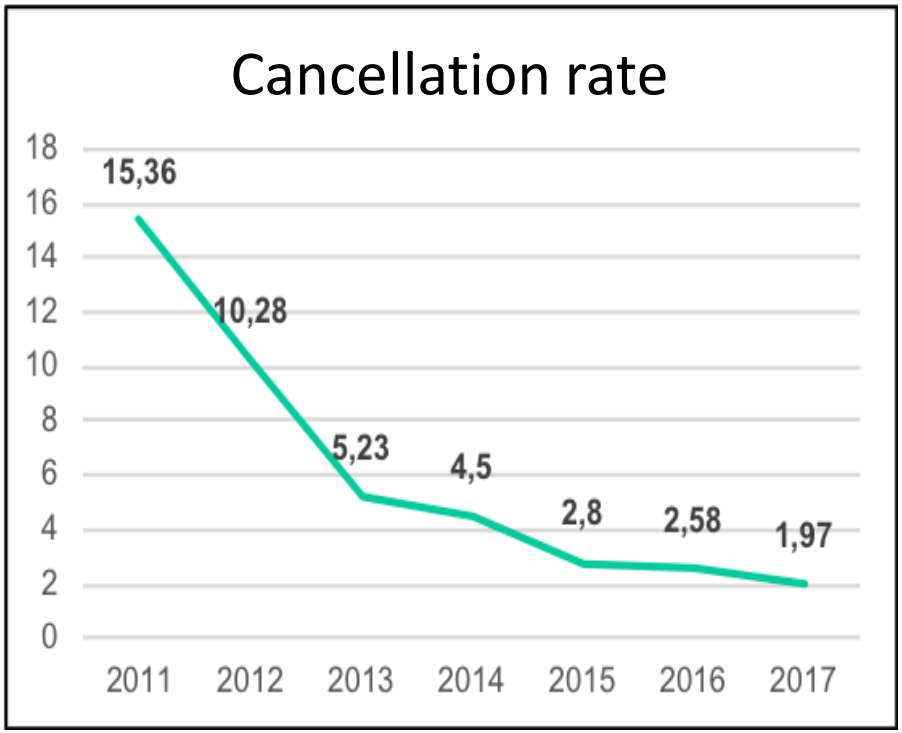
SET policies

Freeze all: *Blockeel et al., 2016*

- OHSS prevention, *Devroey et al., 2011*
- PGT-A (*Preimplantational genetic testing*)
- High Progesterone levels: *Bosch et al., 2010; Roque et al., 2015; Healy et al., 2016*
- Asynchrony embryo-endometrium: *Shapiro et al., 2008*
- Bigger pregnancy rate in FET: *Shapiro et al., 2011; Roque et al., 2013*
- TED risk: *Hansen et al.,2014*
- Endometriosis: *Bourdon et al 2017*
- Elective fertility preservation: *ASRM Ethics Committee 2018*

- New COS protocols: Luteal phase stimulation: *Martinez et al.,2014*
- Improved outcomes following frozen embryo transfer does not provide a “universal license to chill”: *Eapen and Sparks 2018*

H.U.Dexeus EMBRYO SURVIVAL AFTER VITRIFICATION/THAWING



QUESTIONS

1. Is there an ideal endometrial preparation treatment for FET?
2. Are hormone monitoring and measuring of endometrial thickness important?
3. What is the best method for embryo cryopreservation?
4. Is it better to freeze blastocysts?
5. Is there a higher miscarriage rate in FET?
6. Are there greater obstetric and neonatal complications following FET?
7. Does the cost of the treatment vary?

Is there an ideal endometrial preparation treatment for FET?

PROTOCOLS FOR ENDOMETRIAL PREPARATION IN FROZEN EMBRYO TRANSFER (FET)

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Natural Cycle- NC

Artificial Cycle- E2+P

Artificial Cycle under GnRH agonist - E2+P

NATURAL CYCLE

- *Endometrial preparation depends on endogenous hormonal production by a developing follicle and an ovulatory cycle. Ovulation happens 36-40 hours after LH serum peak (Andersen et al., 1995). Embryo transfer 3-5 days after ovulation.*
- *Disadvantages:*

  - Need for monitoring

  - 21 hours gap between serum LH peak and urine tests

  - 30% false negatives in urine tests, sometimes difficult to read

  - Intercycle variability

Human Reproduction, Vol.31, No.12 pp. 2803–2810, 2016
Advanced Access publication on October 25, 2016 doi:10.1093/humrep/dew263

human reproduction ORIGINAL ARTICLE Reproductive Endocrinology

Frozen–thawed embryo transfers in natural cycles with spontaneous or induced ovulation: the search for the best protocol continues

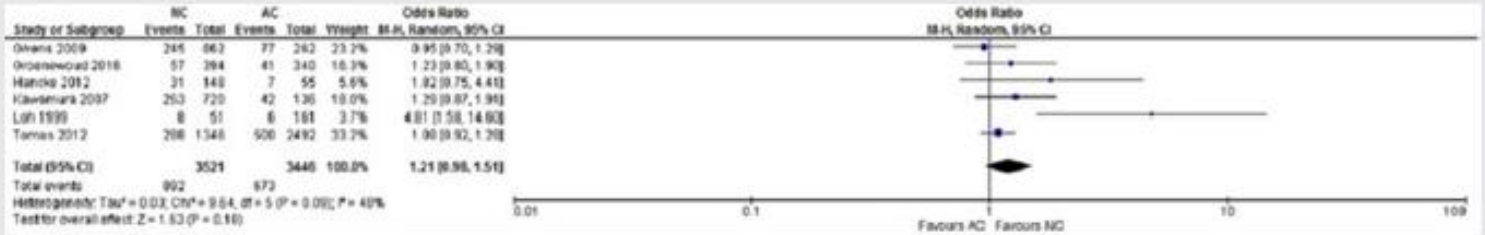
M. Montagut[1], S. Santos-Ribeiro[2,3], M. De Vos[2], N.P. Polyzos[2], P. Drakopoulos[2], S. Mackens[2], A. van de Vijver[2], L. van Landuyt[2], G. Verheyen[2], H. Tournaye[2], and C. Blockeel[2,4,*]

	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
BMI	1.02(1.00-1.05)	1.02 (1.00-1.05)
Oocytes retrieved	1.06 (1.04-1.08)	1.04 (1.02-1.06)
Fresh cycle pregnancy		
Not pregnant	Reference	Reference
Pregnant	1.64 (1.30-2.07)	1.35 (1.06-1.71)
Type of FET		
mNC-FET+LPS	Reference	Reference
NC-FET+LPS	1.73(1.36-2.21)	1.67 (1.31-2.12)
NC-FET	2.40 (1.80-3.19)	2.18 (1.64-2.90)
Double embryo transfer	1.27 (1.03-1.57)	1.23 (0.98-1.54)
Blastocyst transfer	2.02 (1.60-2.54)	2.25 (1.74-2.91)
Endometrial thickness	1.09 (1.04-1.15)	1.08 (1.03-1.14)
Embryo Quality 1	Reference	Reference
Embryo Quality 2	0.63 (0.51-0.78)	0.47 (0.37-0.60)
Embryo Quality 3	0.43 (0.26-0.70)	0.35 (0.21-0.59)
Embryo Quality 4	0.09 (0.03-0.24)	0.14 (0.05-0.38)

Programming the endometrium for deferred transfer of cryopreserved embryos: hormone replacement versus modified natural cycles

Eva R. Groenewoud, M.D., Ph.D.,[a] Bernard J. Cohlen, M.D., Ph.D.,[b] and Nicholas S. Macklon, M.D., Ph.D.[c,d]

[a] Department of Obstetrics and Gynaecology, Noordwest Ziekenhuis, Den Helder, The Netherlands; [b] Isala Fertility Centre, Isala, Zwolle, The Netherlands; [c] London Women's Clinic, London, United Kingdom; and [d] Department of Obstetrics and Gynaecology, Zealand University Hospital, Roskilde, Denmark



Updated meta-analyses comparing live birth NC-FET vs. AC-FET.

Groenewoud. Hormone replacement cycles and modified natural cycles. Fertil Steril 2018.

Summary NC-FET versus AC-FET:

- No difference in clinical and ongoing pregnancy rates and live birth rates between both endometrial preparation methods.
- No difference in costs between both treatment entities.
- No optimal minimal monitoring regimen in NC-FET has been determined.
- Routine use of luteal phase support in NC-FET has not been shown to be advantageous but increases treatment burden.
- Minimal duration of both estrogen and progesterone supplementation need further clarification.
- Further studies comparing the various routes of estrogen and progesterone administration are necessary.

Summary, NC-FET vs. AC-FET.

Groenewoud. Hormone replacement cycles and modified natural cycles. Fertil Steril 2018.

ARTIFICIAL CYCLE E2+P

- *Endometrial preparation depends on exogenous hormonal administration. Warming and embryo transfer depends on progesterone administration.*
- *Disadvantages :*

  - Less physiological

  - Multiple medical administration routes. Costs.

  - Does not guarantee avoiding spontaneous ovulation risk (1.9-7.4 %).

- *Advantages:*

  - Scheduling

ARTIFICIAL CYCLE E2+P + GnRH AGONIST (A-AC)

- *Endometrial preparation depends on exogenous hormonal administration. Agonist GnRH in previous cycle to avoid spontaneous ovulation*
- *Disadvantages :*

  - Less physiological

  - Multiple medical administration routes. Costs. Secondary effects: tiredness, hot flushes,…

- *Advantages:*

  - Scheduling

2017

Cochrane Library

Cochrane Database of Systematic Reviews

Cycle regimens for frozen-thawed embryo transfer (Review)

Ghobara T, Gelbaya TA, Ayeleke RO

Ghobara T, Gelbaya TA, Ayeleke RO.
Cycle regimens for frozen-thawed embryo transfer.
Cochrane Database of Systematic Reviews 2017, Issue 7. Art. No.: CD003414.
DOI: 10.1002/14651858.CD003414.pub3.

www.cochranelibrary.com

18 RCT: 3815 women

CONTROVERSIAL ISSUES IN FROZEN EMBRYO TRANSFER: ESTROGENS SUPPLEMENTATION

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Frozen embryo transfer: a review on the optimal endometrial preparation and timing

S. Mackens[1], S. Santos-Ribeiro[1,2], A. van de Vijver[1], A. Racca[1,3], L. Van Landuyt[1], H. Tournaye[1], and C. Blockeel[1,4,*]

2 WEEKS → Empyrical, reproduces natural cycle *(Lutjen et al., 1984)*

5-7 days →
- Enough for endometrial preparation *(Naboth et al.,1984)*
- Cost benefit
- Higher miscarriage rate *(Borini et al., 2001)*

> 2 WEEKS → No Compromise on pregnancy *(Soares et al., 2005)*

Mackens et al., Hum Reprod 2017;32:2234-42

VARIABLES ASSOCIATED WITH LIVE BIRTH AFTER A FROZEN-THAWED BLASTOCYST TRANSFER: MULTIPLE LOGISTIC REGRESSION ANALYSIS

Parameters	Odds ratio	95% CI
Age>35 y at retrieval	0.72	0.56-0.93
Good-quality embryo transfer	1.74	1.20-2.53
Days of estradiol administration (≤2 I ref)		
22 – 28	0.86	0.63-1.16
29 – 35	0.65	0.45-0.95
36 – 48	0.49	0.26-0.92

Bourdon, et al. 2018

Human Reproduction 33-5:905-913

CONTROVERSIAL ISSUES IN FROZEN EMBRYO TRANSFER: ADMINISTRATION ROUTES

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CURRENT OPINION

Progesterone supplementation in the frozen embryo transfer cycle

Israel Ortega[a] and Juan Antonio García Velasco[a,b]

KEY POINTS

- NC-FTET is the favored option for women with normal ovulatory menstrual cycles and may be programmed either associated with daily blood or urine LH measurements or triggering ovulation with hCG, showing comparable reproductive outcomes.
- In AC-FTET, estrogen and progesterone are sequentially administered, being the option of choice for women with irregular menstrual cycles.
- Nowadays, no differences between the different formulations of progesterone have been observed.
- Final decision must be based on individualization of the treatment based on patient characteristics prior to FTET.

Ortega and Garcia Velasco., Curr Opin Obstet Gynecol 2015

H.U.Dexeus - STUDY MATERIAL - I

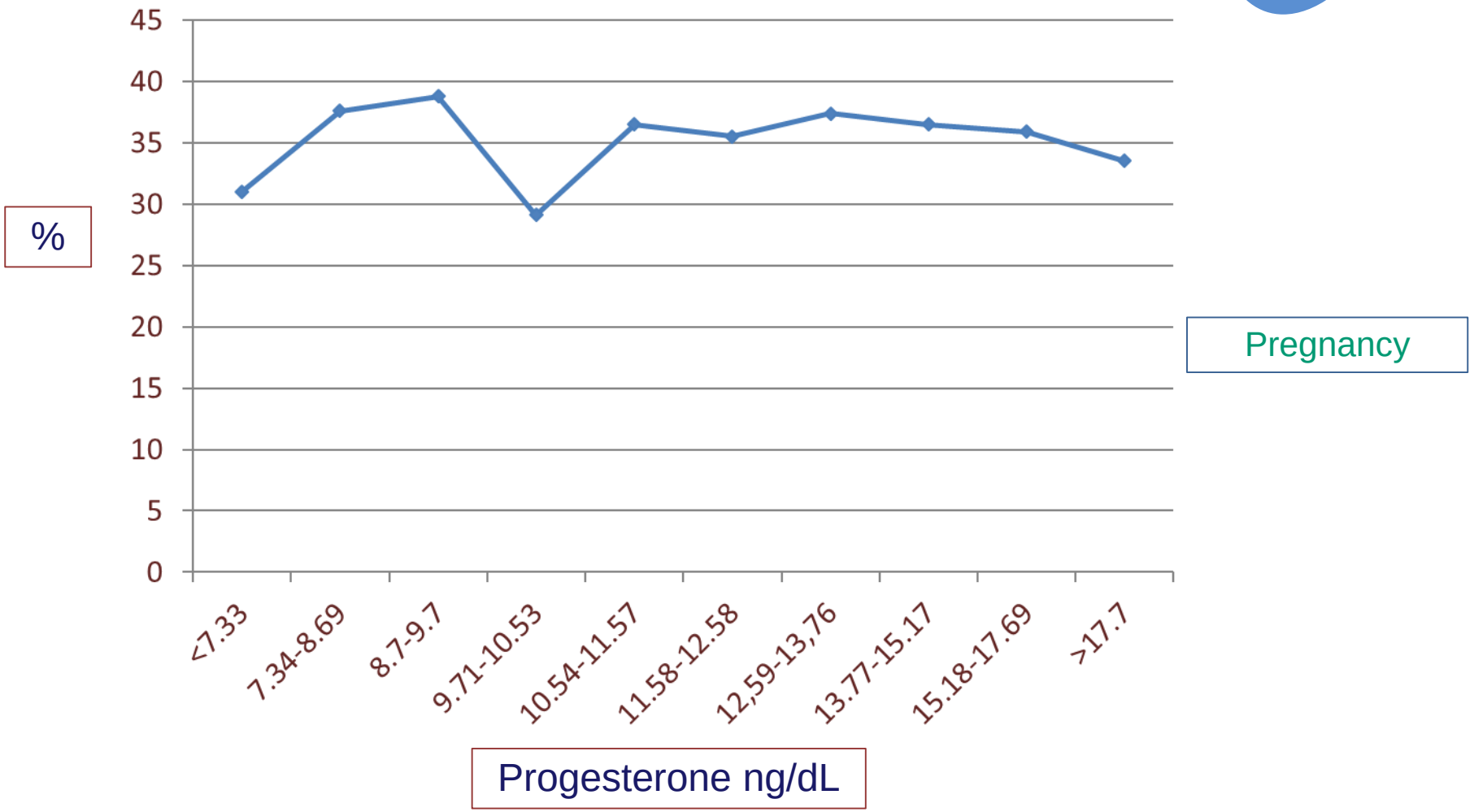
	FET IVF (n=2300)	FET DON (n=993)	p
Clinical Preg (n/%)	759 (33%)	361 (36.4%)	n.s.
Miscarriage (n/%)	235 (31%)	96 (26%)	n.s.
Ectopic (n/%)	6 (0.79%)	6 (1.66%)	n.s.
Livebirth (n/%)	505 (22%)	253 (25.5%)	0,031

H.U.Dexeus - STUDY MATERIAL - II

	NATURAL (n=219)	E2+P (n=388)	AGONIST (n=2686)	*p*
Clinical Preg. n/%	73 (33.3%)	132 (34%)	915 (34.1%)	n.s.
Miscarriage n/%	13 (17.8%)	42 (31.8%)	276 (30.2%)	n.s.
Ectopic n/%	1 (1.3%)	4 (3.03%)	7 (0.77%)	n.s.
Livebirth n/%	57 (26%)	84 (21.6%)	617 (23%)	n.s.

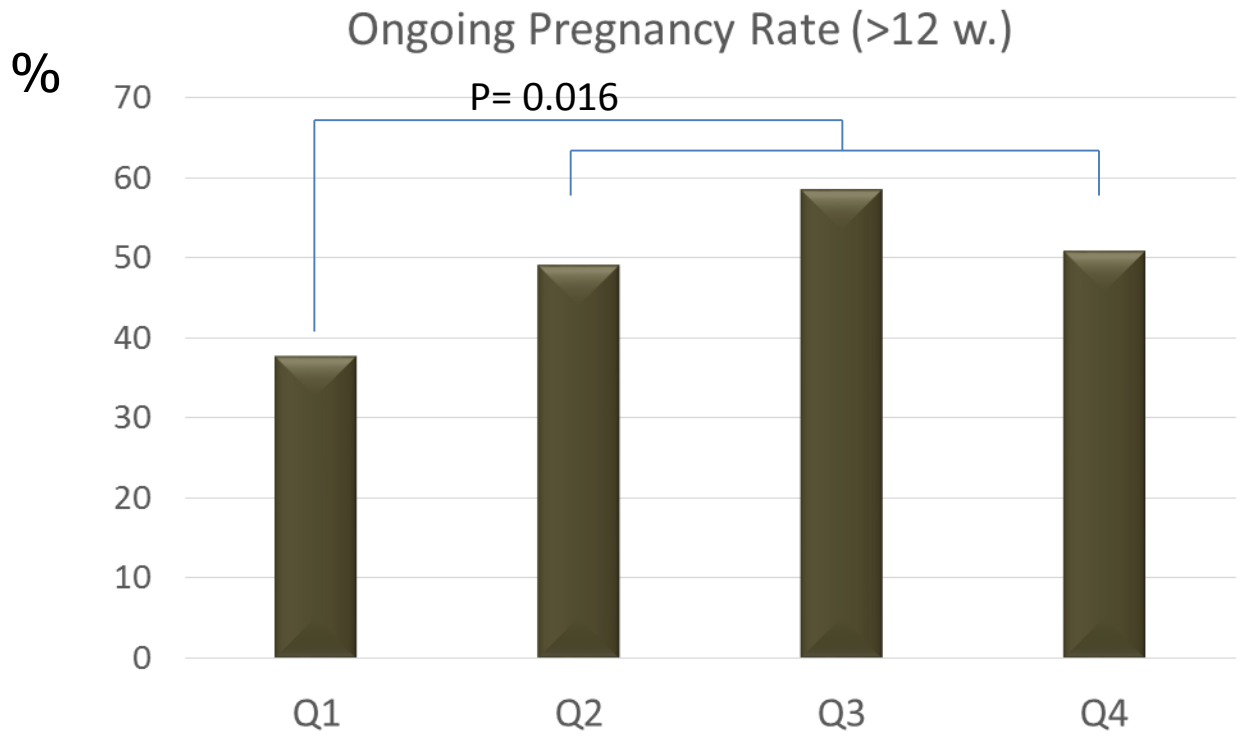
Are hormone monitoring and measuring of endometrial thickness important?

H.U.Dexeus FET RESULTS ACCORDING TO PROGESTERONE SERUM LEVELS



No association was found between Progesterone levels and pregnancy probability in FET (p=0.727)

LOW SERUM PROGESTERONE ON THE DAY OF ET IS ASSOCIATED WITH A DIMINISHED OPR IN ARTIFICIAL ENDOMETRIAL PREPARATION CYCLES



P4 < 9.2 ng/ml vs. ≥9.2 ng/ml
(OR: 0.297; 95%CI: 0.113-0.779); P = 0.013.

Labarta E. et al. *Hum Reprod 2017.*

THE IMPACT OF A THIN ENDOMETRIAL LINING ON FRESH AND FROZEN-THAW IVF OUTCOMES: AN ANALYSIS OF OVER 40 000 EMBRYO TRANSFERS

STUDY DESIGN, SIZE, DURATION: This study is a retrospective cohort analysis of all Canadian IVF fresh and frozen-thaw ET cycles. A total of 24 363 fresh and 20 114 frozen-thaw IVF-ET cycles were reported during this timeframe.

MAIN RESULTS AND THE ROLE OF CHANCE: In fresh IVF-ET cycles, clinical pregnancy and live birth rates decreased (P<0,0001) and pregnancy loss rates increased (P=0,01) with each millimeter decline in endometrial thickness below 8 mm. In frozen-thaw ET cycles, clinical pregnancy (P=0,007) and live birth rates decreased (P=0,002) with each millimeter decline in endometrial thickness below 7 mm. With no significant difference in pregnancy loss rates. The likehood of achieving and endometrial thickness ≥8 mm decreased with age (89,7, 87,8 and 83,9% in women <35, 35-39 and ≥40, respectively) (P<0,0001)

K.E. Liu, et al. 2018

Human Reproduction, pp.1-6

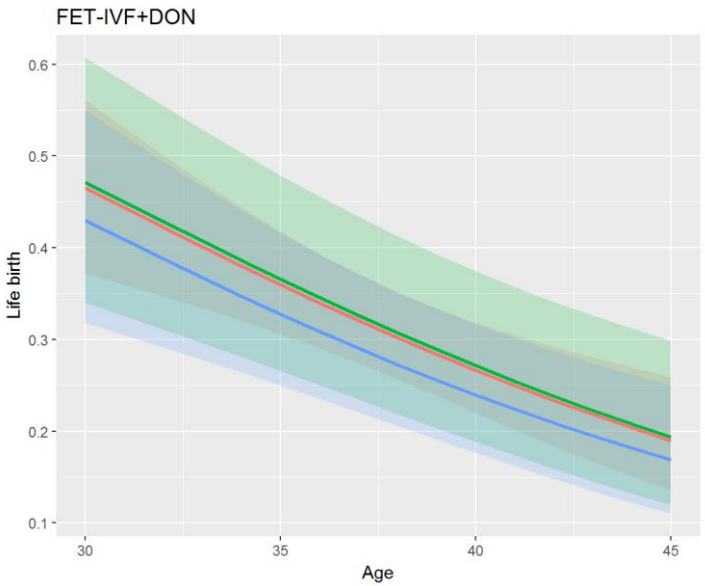
H.U.Dexeus - STUDY MATERIAL - III

	NATURAL (n=219)	E2+P (n=388)	AGONIST (n=2686)
Estradiol pg/ml	140 ± 72.5*	243 ± 106	231 ± 101
Progesterone ng/ml	14 ± 32	13 ± 10	12.4 ± 9,3
End. thickness mm	11.1 ± 2,1	10.4 ± 2,1*	10.8 ± 2,1

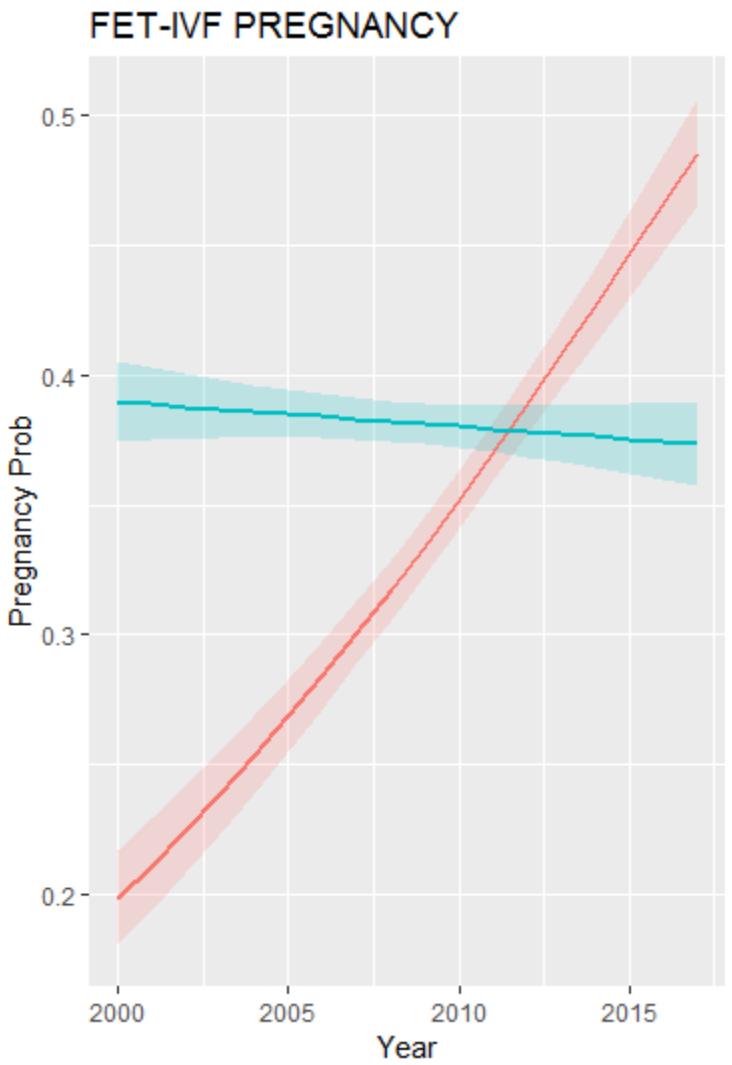
* $p<0.05$

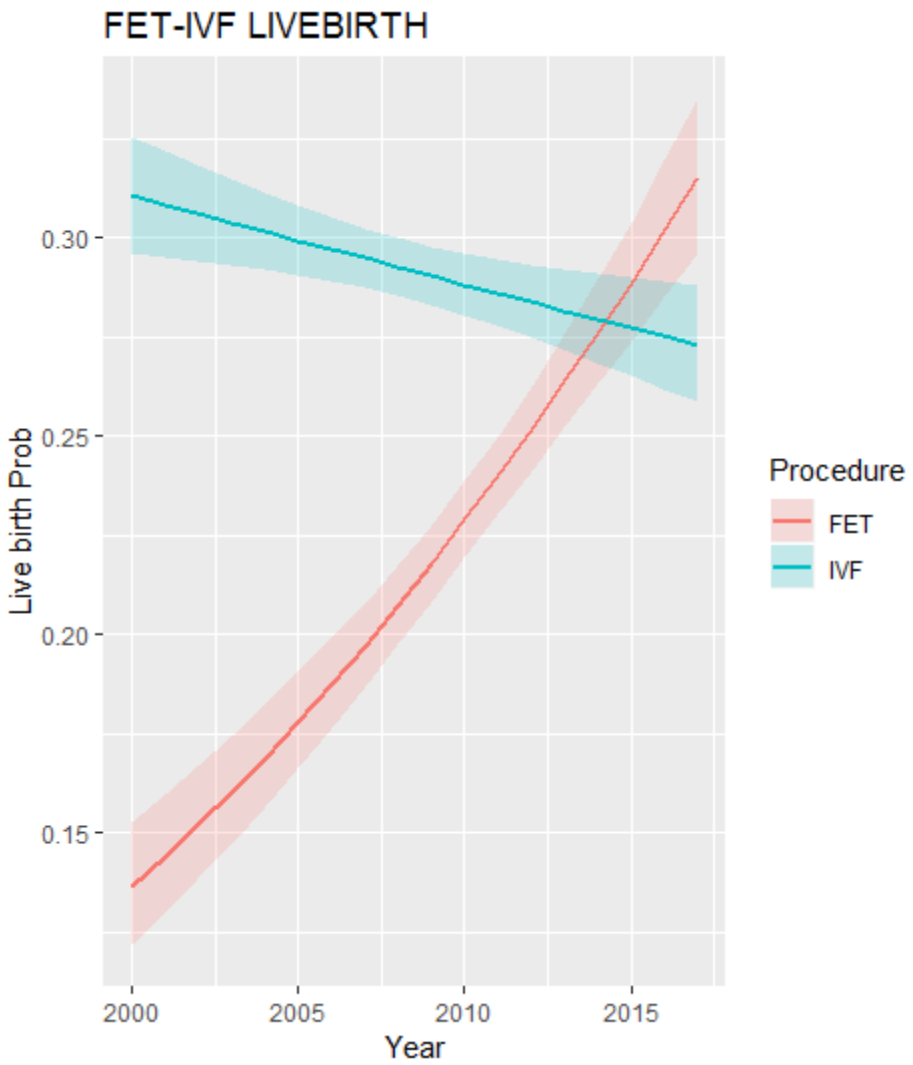
H.U.Dexeus - PREGNANCY RATE-LOGISTIC REGRESSION

	OR 95% CI
Intercept	1.45 [0.20; 10.52]
FET-Don	4.76 [0.67; 34.07]
FET-IVF	1
Age at oocyte retrieval	0.95 [0.91; 0.99]*
Age at FET	0.98 [0.94; 1.02]
Oocytes inseminated	1.01 [0.99; 1.03]
Treatment-Natural	1.03 [0.66; 1.57]
Treatment- E2+P	0.87 [0.62; 1.20]
Treatment-Agonist	1
Embryo stage-Cells	0.60 [0.45; 0.78]*
Embryo stage-Blastocyst	1
Freezing procedure-Slow	0.24 [0.01; 1.31]
Freezing procedure-Vitrification	1
Embryos transferred	1.63 [1.36; 1.97]*
Endometrial thickness	1.04 [0.99; 1.09]
Progesterone	1.00 [1.00; 1.01]
Estradiol	1.00 [1.00; 1.00]
Cells*Slow	3.11 [0.55; 58.55]
Group*Age at oocyte retrieval	0.97 [0.91; 1.02]

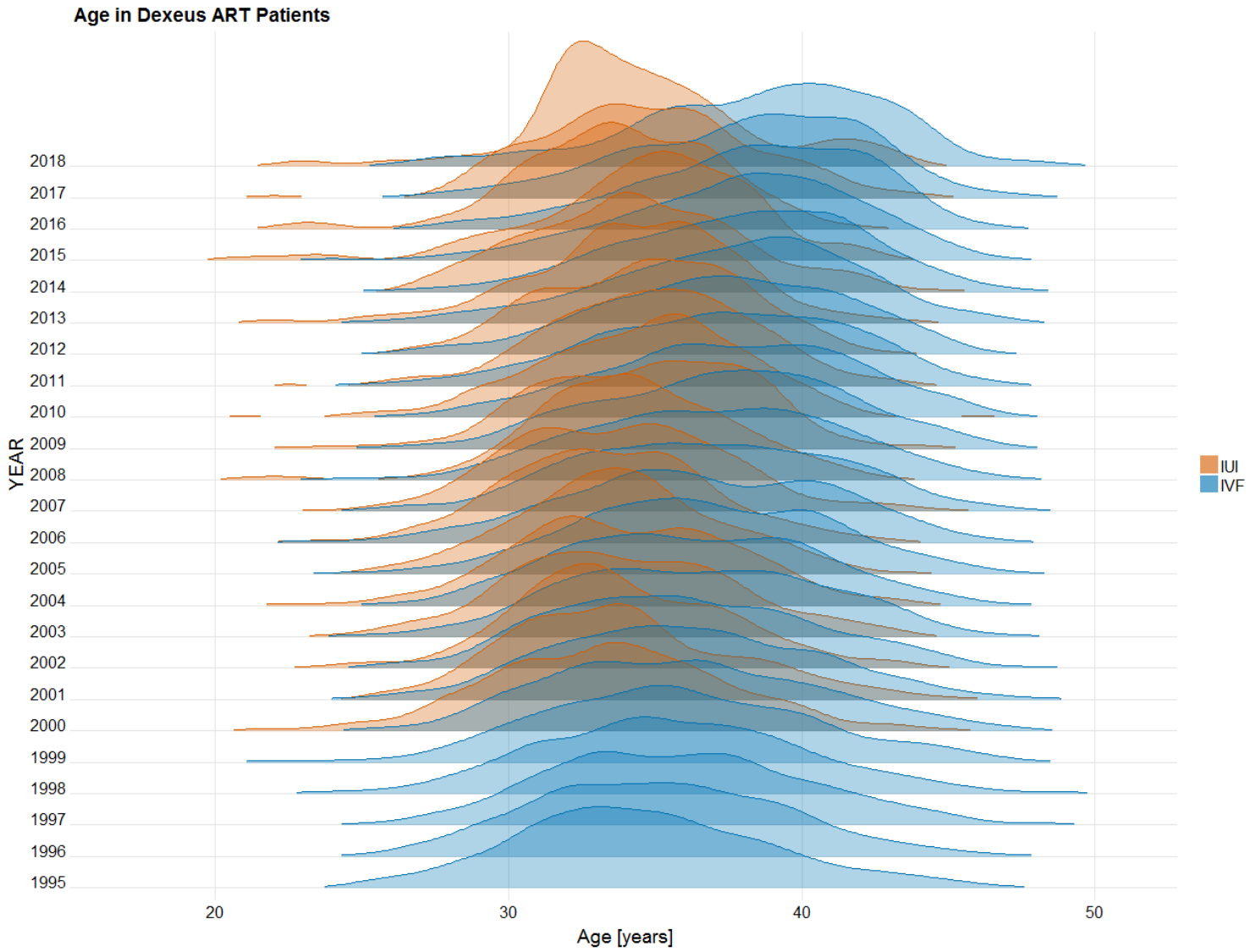


H.U.Dexeus - IVF vs FET PREGNANCY AND LIVEBIRTH RATES





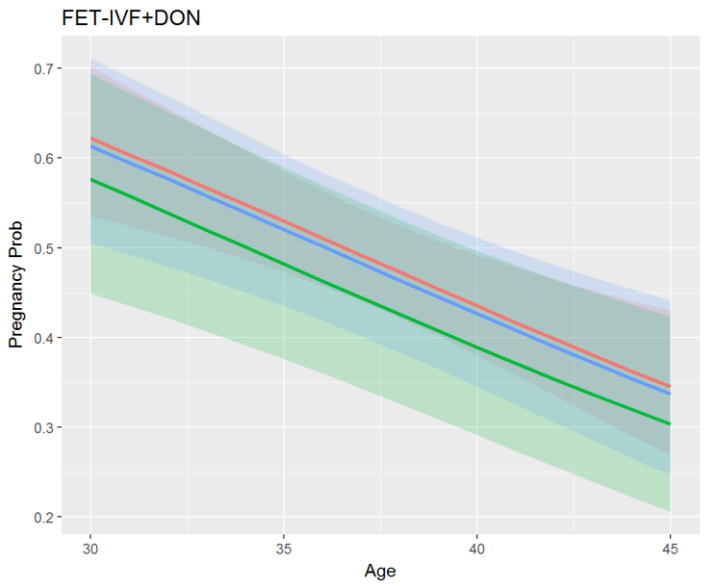
IUI/IVF. PATIENTS' AGE EVOLUTION



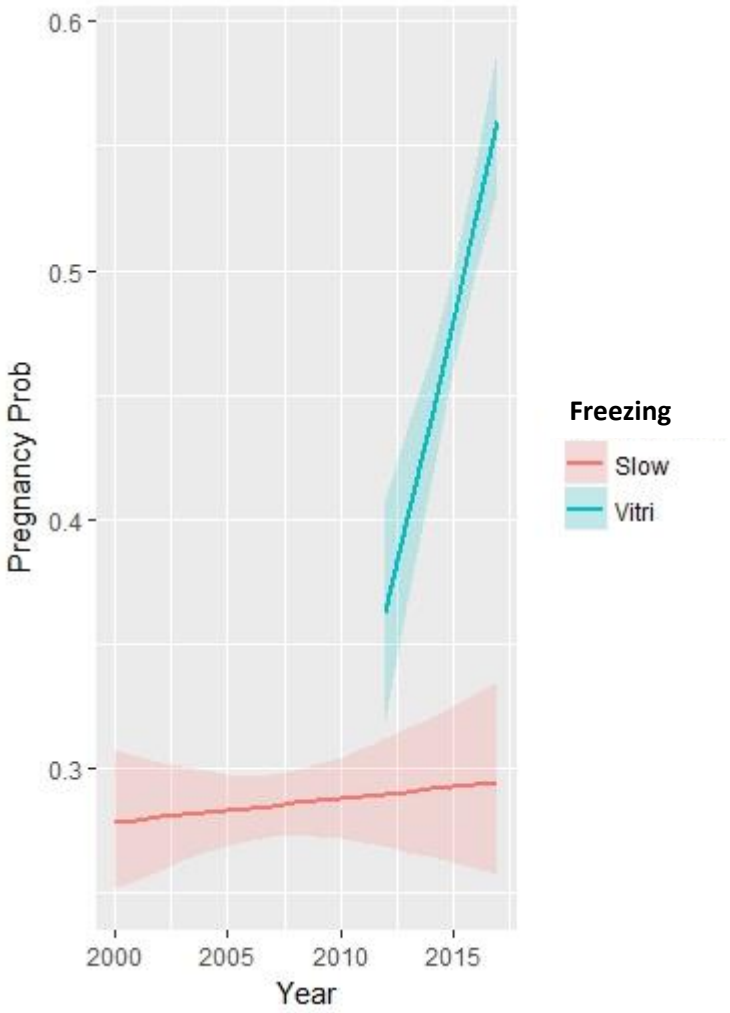
What is the best method for embryo cryopreservation?

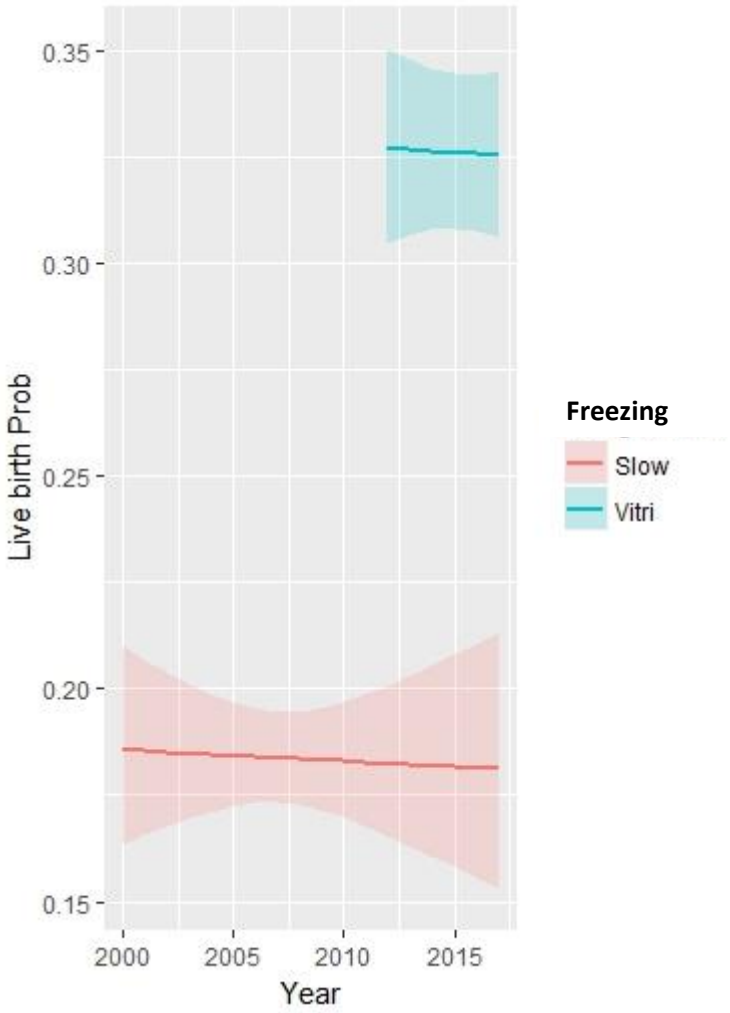
H.U.Dexeus - LIVE BIRTH RATE - LOGISTIC REGRESSION

	OR 95% CI
Intercept	1.24 [0.20; 7.50]
FET-Don	6.01 [1.00; 36.33]*
FET-IVF	1
Age at oocyte retrieval	0.97 [0.94; 1.00]
Age at FET	0.99 [0.95; 1.02]
Oocytes inseminated	1.01 [0.99; 1.03]
Treatment-Natural	0.83 [0.55; 1.23]
Treatment- E2+P	0.96 [0.72; 1.29]
Treatment-Agonist	1
Embryo stage-Cells	0.55 [0.43; 0.71]*
Embryo stage-Blastocyst	1
Freezing procedure-Slow	0.12 [0.01; 0.67]*
Freezing procedure-Vitrification	1
Embryos transfered	1.65 [1.40; 1.95]*
Endometrial thickness	1.04 [0.99; 1.08]
Progesterone	1.00 [0.99; 1.01]
Estradiol	1.00 [1.00; 1.00]
Cells*Slow	6.11 [1.10; 114.56]*
Group*Age at oocyte retrieval	0.96 [0.91; 1.01]



H.U.Dexeus - VITRIFICATION vs SLOW FREEZING. PREGNANCY AND LIVEBIRTH RATES





Is it better to transfer blastocysts?

BLASTOCYST VS CLEAVAGE FET SART 2004 - 2013

Outcome	Adjusted Odds ratios	Confidence interval
Live birth	1.49	1.44, 1.54
Clinical pregnancy rate	1.68	1.63, 1.74
Miscarriage rate	0.93	0.88, 0.98
Preterm delivery <37 wk gestation	1.16	1.06, 1.27

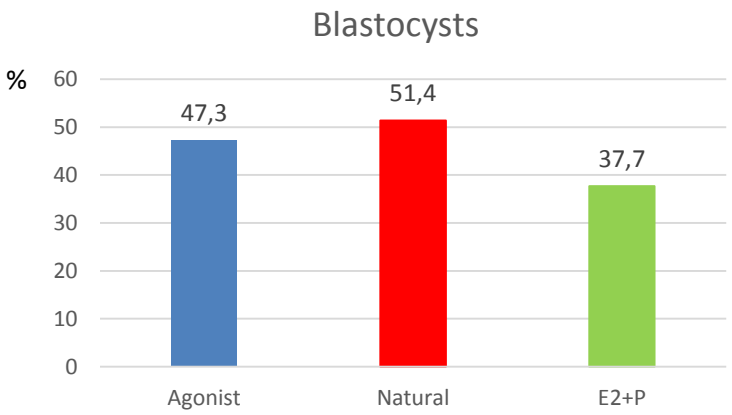
Blastocyst (118572) vs Cleavage (117619)

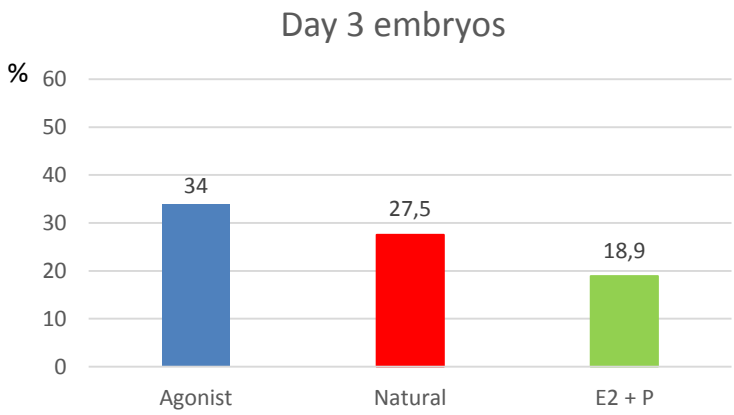
Holden, et al. 2018

Fertility and Sterility 110-1:89-94

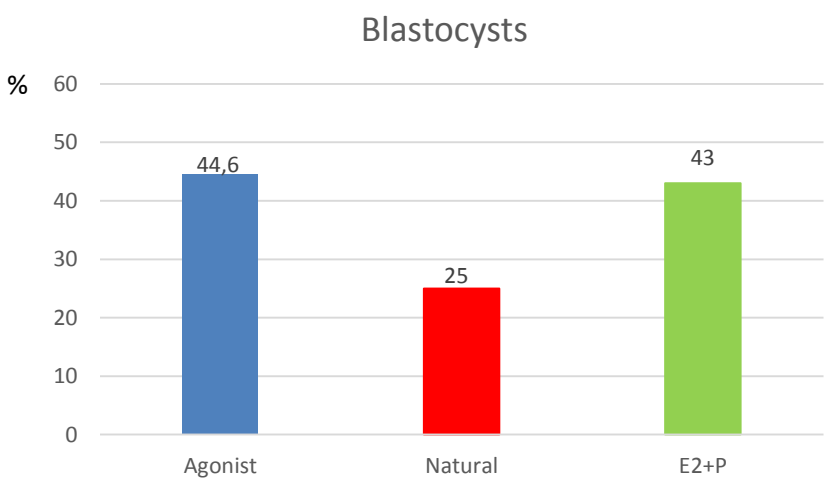
H.U.Dexeus - PREGNANCY

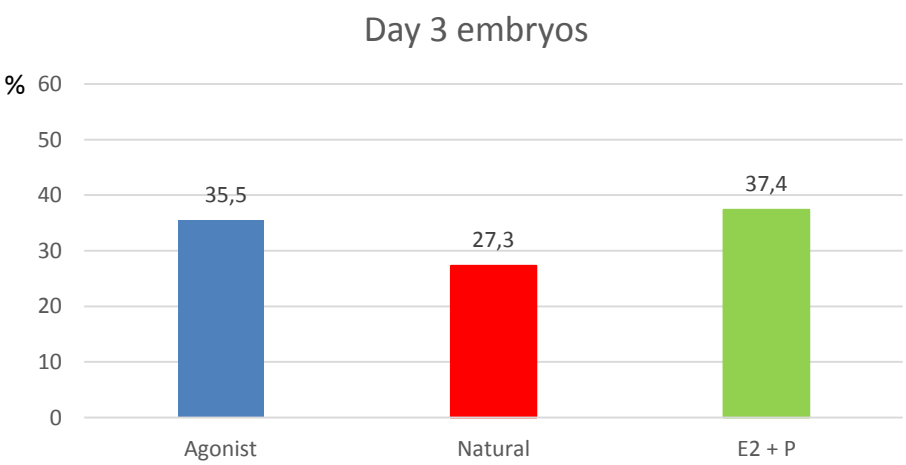
FET-IVF





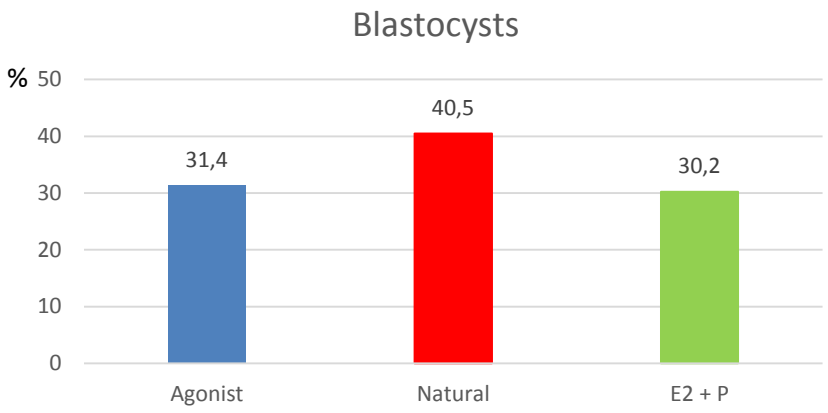
FET-DON

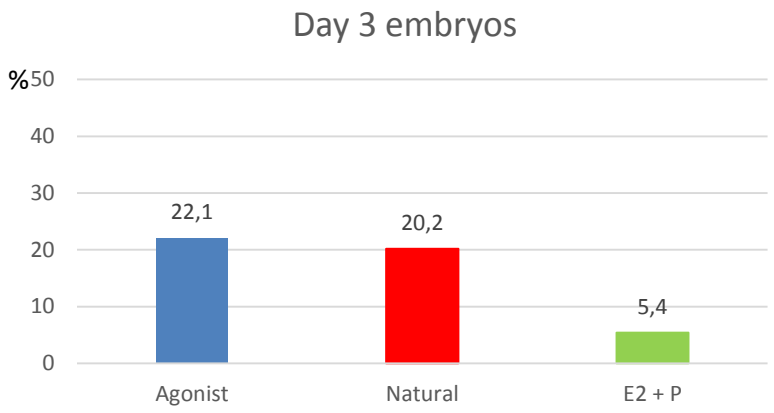




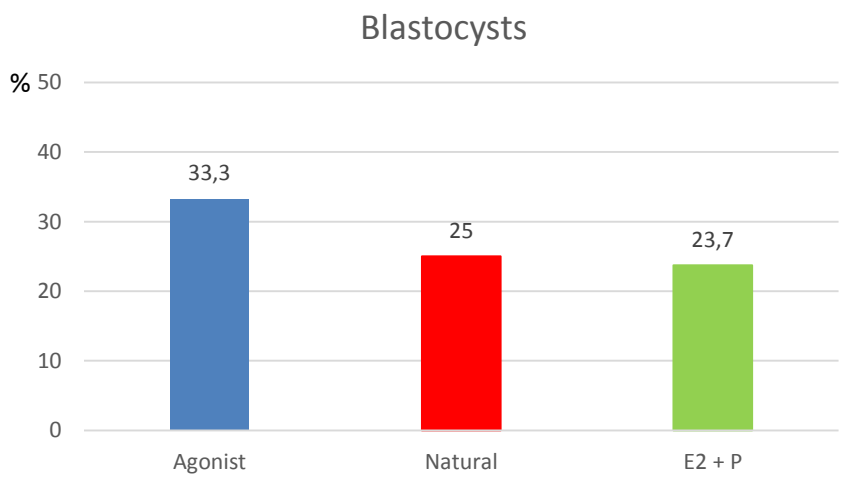
H.U.Dexeus - LIVEBIRTH

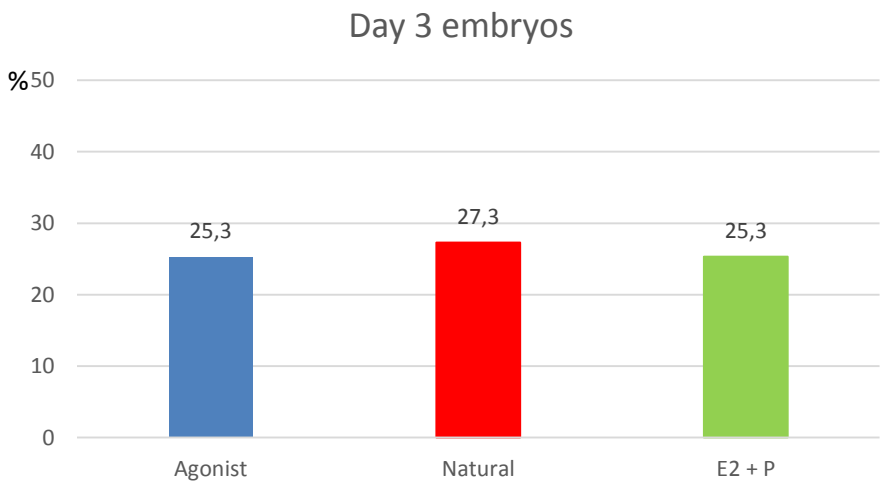
FET-IVF





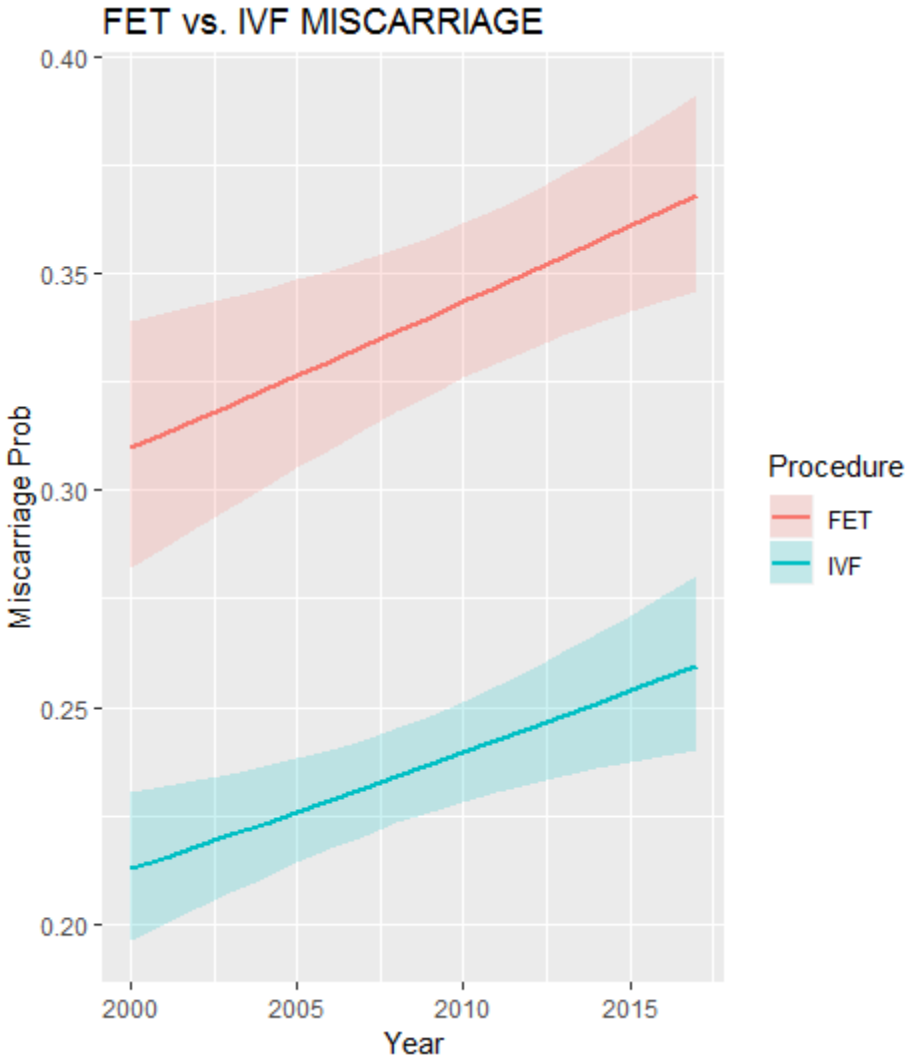
FET-DON

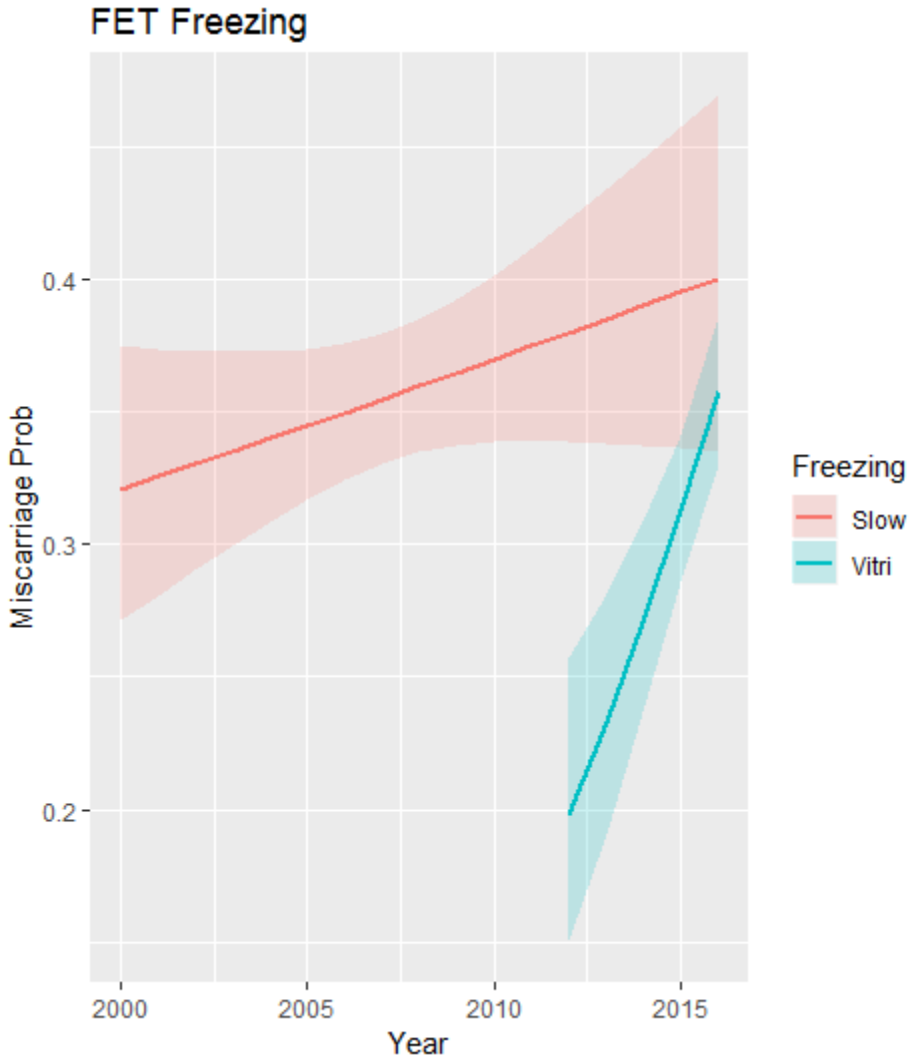




Is there a higher miscarriage rate in FET?

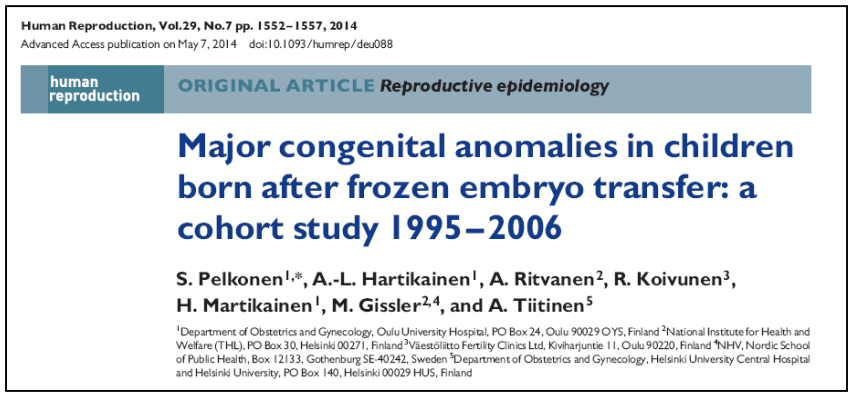
H.U.Dexeus - MISCARRIAGE RATES IN IVF/ FET AND VITRIFICATION AND SLOW FREEZING





Are there greater obstetric and neonatal complications following FET?

PERINATAL AND OBSTETRICAL RISKS/CONGENITAL ANOMALIES



Human Reproduction, Vol.29, No.7 pp. 1552–1557, 2014
Advanced Access publication on May 7, 2014 doi:10.1093/humrep/deu088

human reproduction

ORIGINAL ARTICLE *Reproductive epidemiology*

Major congenital anomalies in children born after frozen embryo transfer: a cohort study 1995–2006

S. Pelkonen[1,*], A.-L. Hartikainen[1], A. Ritvanen[2], R. Koivunen[3], H. Martikainen[1], M. Gissler[2,4], and A. Tiitinen[5]

[1]Department of Obstetrics and Gynecology, Oulu University Hospital, PO Box 24, Oulu 90029 OYS, Finland [2]National Institute for Health and Welfare (THL), PO Box 30, Helsinki 00271, Finland [3]Väestöliitto Fertility Clinics Ltd, Kiviharjuntie 11, Oulu 90220, Finland [4]NHV, Nordic School of Public Health, Box 12133, Gothenburg SE-40242, Sweden [5]Department of Obstetrics and Gynecology, Helsinki University Central Hospital and Helsinki University, PO Box 140, Helsinki 00029 HUS, Finland

Major congenital anomalies are similar to IVF
Adjusted Odd Ratio (aOR) 0.95; 0.71-1.27

Pelkonen et al.,Human Reprod 2014

Human Reproduction Update, Vol.24, No.1 pp. 35–58, 2018
Advanced Access publication on November 13, 2017 doi:10.1093/humupd/dmx031

human reproduction update

Is frozen embryo transfer better for mothers and babies? Can cumulative meta-analysis provide a definitive answer?

Abha Maheshwari [1,*], Shilpi Pandey[2], Edwin Amalraj Raja[3], Ashalatha Shetty[1], Mark Hamilton[1], and Siladitya Bhattacharya[3]

[1]Aberdeen Maternity Hopsital NHS Grampian, AB 25 2ZL, Scotland, UK [2]CARE Fertility Nottingham, John Webster House, 6 Lawrence Drive, Nottingham Business Park, Nottingham NG8 6PZ, UK [3]School of Medicine and Dentistry, University of Aberdeen, Foresterhill, Aberdeen AB25 2ZD, UK

Table III Summary of findings from cumulative meta-analysis.

Risk of outcome	Evidence	Evidence available by year	No further change in precision, magnitude or direction	More observational data needed
Small for gestational age	Lower in Frozen embryo transfer	2010	2014	No
Low birth weight	Lower in Frozen embryo transfer	1997	2014	No
Very low birth weight	Lower in Frozen embryo transfer	2013	2016	No
Large for gestational age	Higher in Frozen embryo transfer	2010	2014	No
High birth weight	Higher in Frozen embryo transfer	2014	2016	No
Very high birth weight	Higher in Frozen embryo transfer	2013	2014	No
Preterm delivery	Lower in Frozen embryo transfer	2005	2014	No
Very preterm delivery	Lower in Frozen embryo transfer	2016	2016	No
Antepartum haemorrhage	No difference	2010	2014	Yes
Admission to NICU	No difference	2012	2013	Yes
Congenital anomalies	No difference	2014	2016	Yes
Perinatal mortality	No difference	2014	2014	Yes
Hypertensive disorders of pregnancy	Higher in Frozen embryo transfer	2015	2015	Yes

H.U.Dexeus - IVF/DON. FRESH vs FROZEN CYCLES. OBSTETRICAL AND NEONATAL COMPLICATIONS

	FET-DON (n=52)	FET-IVF (n=221)	IVF (n=763)	DON (n=337)	*p*
NICU admission	1,9%	1,4%	2,6%	3,9%	ns
Perinatal death	0,0%	0,0%	0,4%	0,3%	ns
Postnatal death	0,0%	0,0%	0,3%	0,0%	ns
Prematurity < 28	0,0%	0,0%	0,1%	0,6%	ns
Prematurity < 34	0,0%	0,5%	1,4%	2,7%	ns
Prematurity < 37	7,7%	2,7%	7,2%	10,1%	<.05
Cesarean section	65,4%	44,3%	34,6%	62,9%	<.001
Gestational diabetes	23,1%	15,4%	11,7%	19,0%	<.05
Postpartum hemorrage	15,4%	9,0%	4,5%	6,5%	<.05
Congenital abnormalities	3,8%	5,4%	2,5%	4,7%	ns
Hypertension	5,8%	4,1%	2,6%	9,5%	<.05
Male babies	55,8%	51,6%	48,9%	53,7%	ns
Fetal weight	3221+493	3416+459	3141+520	3183+551	<.001

Does the cost of the treatment vary?

Table II Outcomes per embryo transfer.

	Overall	Type of frozen embryo transfer cycle		OR (95% CI)	P-value
		Modified natural	Artificial		
Clinical pregnancy/ET	167/734 (22.8%)	94/394 (23.9%)	75/340 (22.1%)	0.8 (0.64–1.27)	0.6
Ongoing pregnancy/ET	101/734 (13.8%)	57/394 (14.5%)	45/340 (13.2%)	0.8 (0.52–1.22)	0.3
Live birth/ET	98/734 (13.4%)	57/394 (14.5%)	41/340 (12.1%)	0.8 (0.53–1.25)	0.3

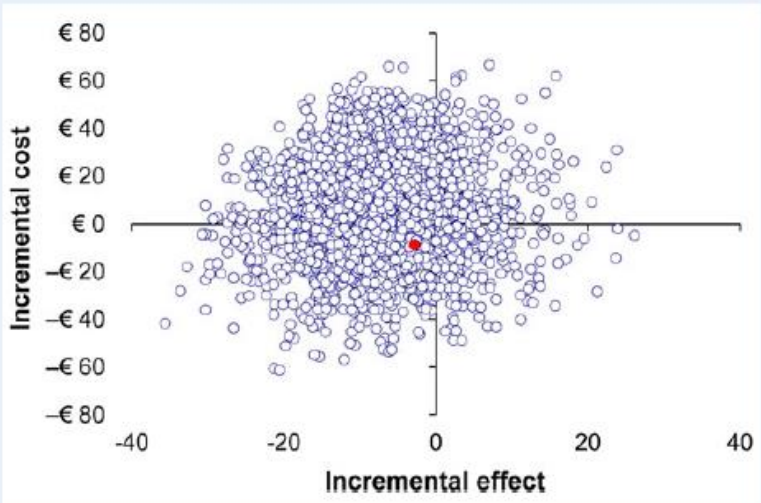


Figure 3 Cost-effectiveness plane based on bootstrap analysis displaying differences in LBR compared with differences in cost between modified natural cycle and artificial cycle frozen embryo transfer. The red dot represents the actual difference in LBR and costs.

Groenewoud, et al.2016

Human Reproduction 31-7:1483-92

H.U.Dexeus- FROZEN THAWED EMBRYO TRANSFER (FET) COST

	Agonist	E_2 - P	Natural
Cost / Cycle (€)	412 (↑ 206%)	330 (↑165%)	200
Cost / Livebirth (€)	1794 (↑233%)	1524 (↑198%)	768

Is hormone monitoring important?

EUPLOID BLASTOCYSTS FET

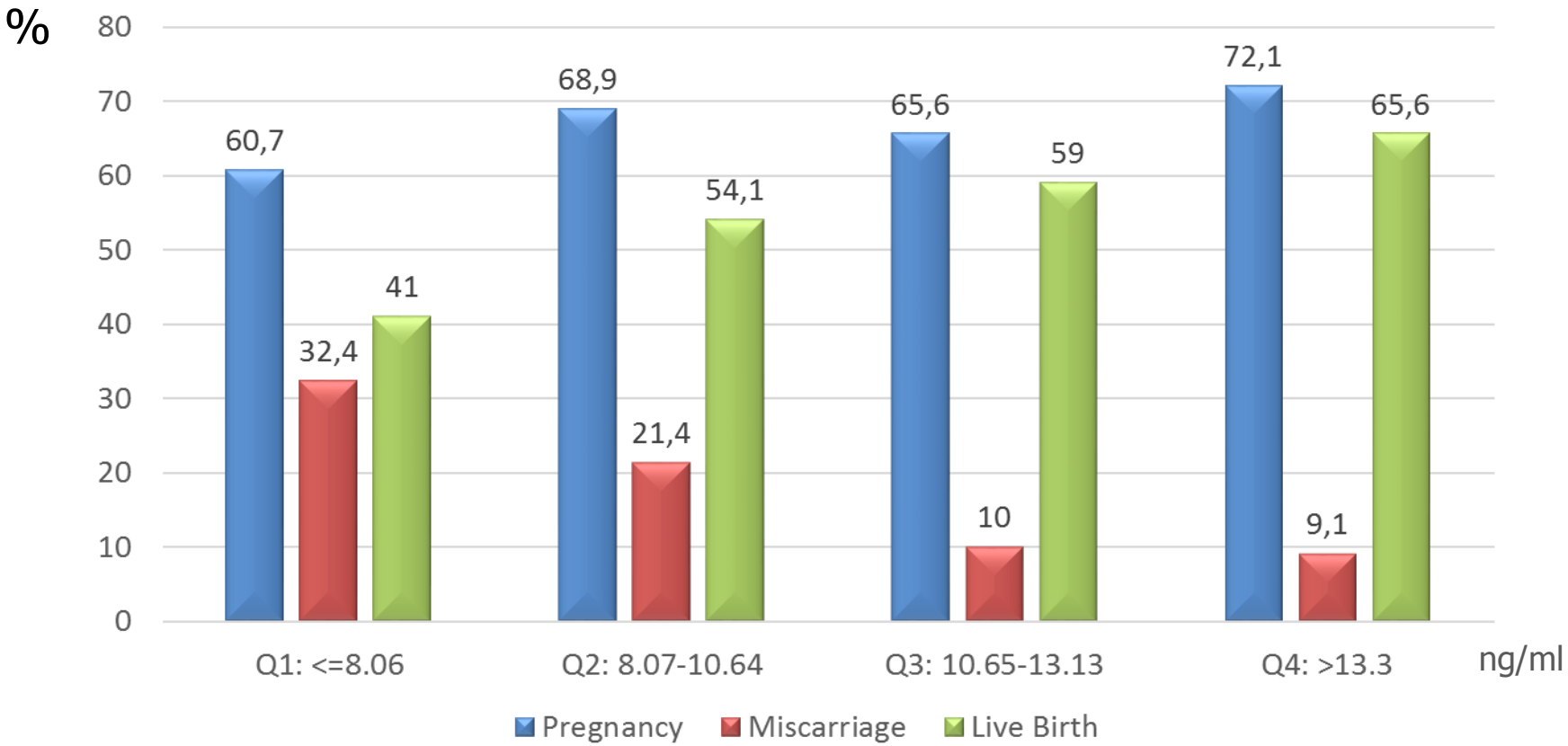
"Low serum progesterone the day prior to frozen embryo transfer of euploid embryo is associated with significant reduction in live birth rates".

- 244 frozen euploid transfer
- January 2016- June 2017
- Retrospective cohort study (NCT03395665)
- Endometrial preparation:
  - Estradiol Valerate (6 mg/d)
  - Vaginal micronized Progesterone (200 mg/8h)
- A multivariate analysis to assess the relationship between serum P4 level and miscarriage and live birth (LBR) was performed, adjusted for confounding variables (maternal age at OPU, endometrial thickness, embryo quality and estradiol)

Gaggiotti-Marre S. et al. *Gynecol. Endocrinology, 2018.*

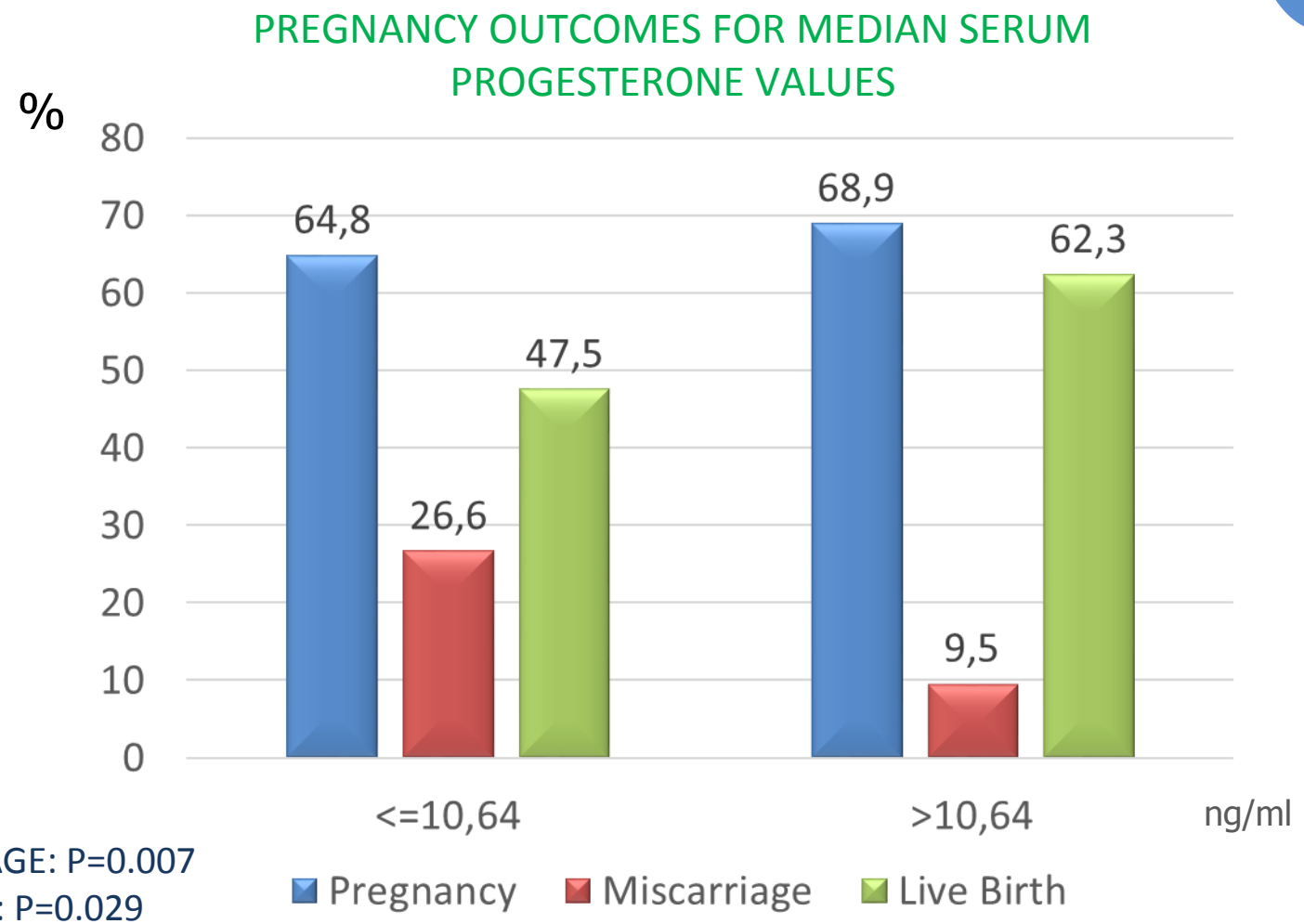
EUPLOID BLASTOCYSTS FET

PROGESTERONE LEVELS DAY PRIOR FET



Gaggiotti-Marre S. et al. *Gynecol. Endocrinology, 2018.*

EUPLOID BLASTOCYSTS TRANSFERS



MISCARRIAGE: P=0.007
LIVE BIRTH: P=0.029

Gaggiotti-Marre S. et al. *Gynecol. Endocrinology, 2018.*

Could we reduce the miscarriage rate in patients with P4 <10.64 ng/ml (day prior FET) by increasing progesterone levels with higher doses of progesterone?

PROSPECTIVE STUDY: EUPLOID BLASTOCYSTS FET

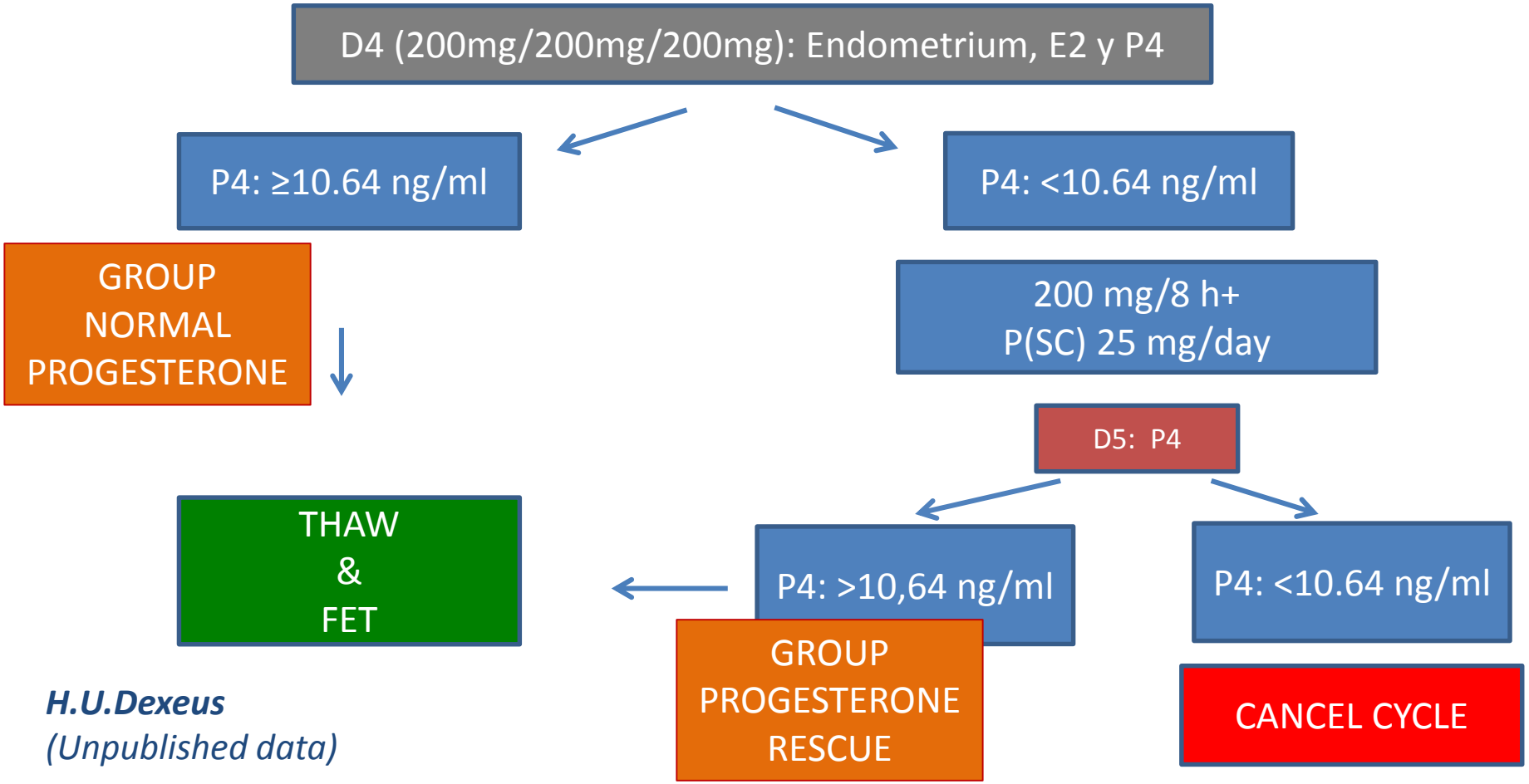
115 EUPLOID BLASTOCYSTS FET

ARTIFICIAL CYCLE

a-GnRH (optional)

Estradiol Valerate: 6 mgrs/day

Vaginal micronized progesterone: 200/8h.



H.U.Dexeus

(Unpublished data)

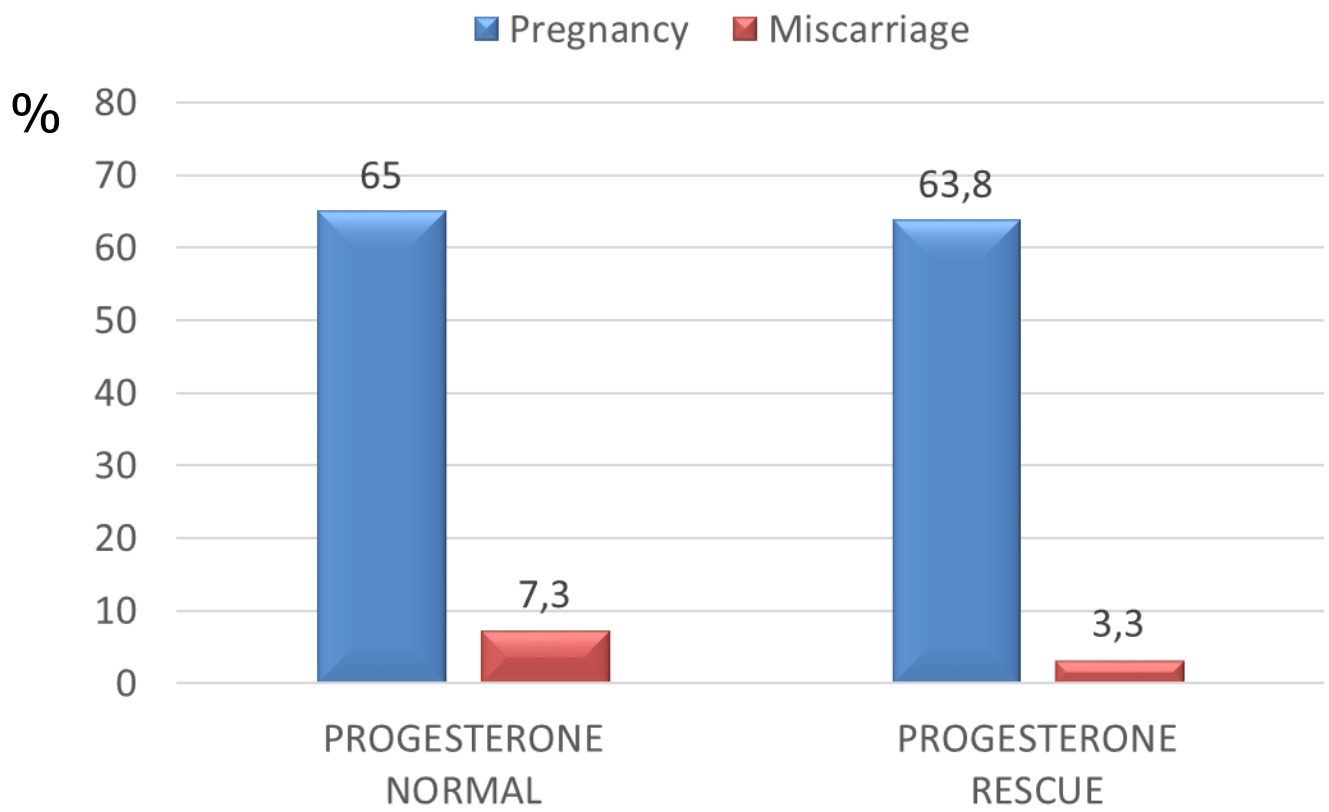
PROSPECTIVE STUDY: EUPLOID BLASTOCYSTS FET

	PROGESTERONE NORMAL	PROGESTERONE RESCUE
FET	65 (56.5%)	55 (43.5%)
AGE	39.8±4.2	39.1±2.7
BMI	24.2±3.6	24.1±2.9
ENDOMETRIAL THICKNESS (mm)	10.4±1.6	10.9±1.5
ESTRADIOL (pg/ml)	209.1±73.7	223.1±130.9
P4 PRE-FET DAY (ng/ml)	15.0±7.1	8.5±1.5
P4 FET DAY (ng/ml)		20.8±10.5
EUPLOID BLASTOCYSTS TRANSFERRED	1.1±0.3	1.1±0.3
TRANSFER SCORE	9.5±0.8	9.1±1.2

H.U.Dexeus

(Unpublished data)

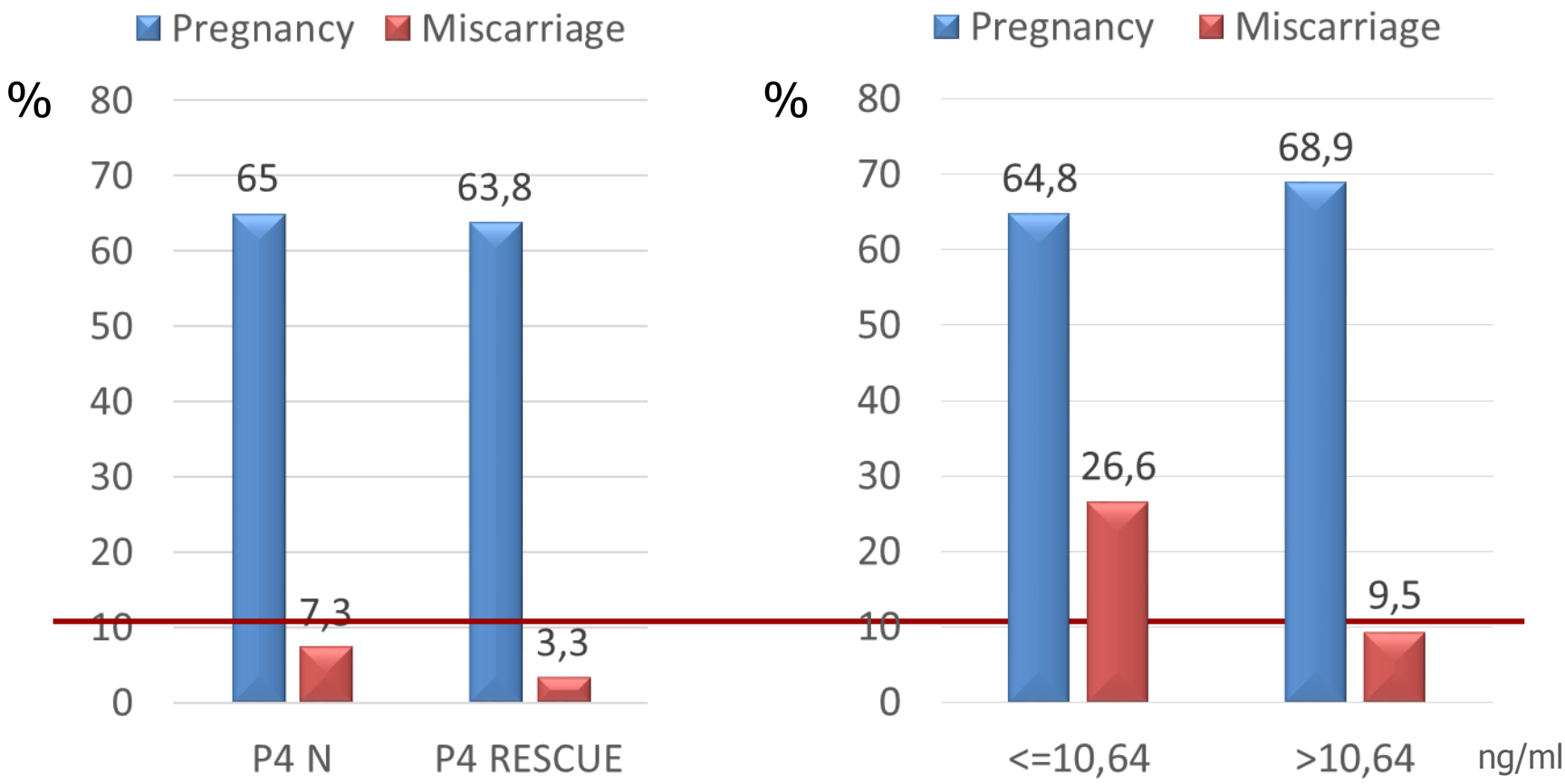
PROSPECTIVE STUDY: EUPLOID BLASTOCYSTS FET



H.U.Dexeus

(Unpublished data)

PROSPECTIVE STUDY: EUPLOID BLASTOCYSTS FET



H.U.Dexeus
(Unpublished data)

Gaggiotti-Marre S. et al. *Gynecol. Endocrinology,2018*

TAKE-HOME MESSAGES!!

- Strong trend towards FET
- There is no actual evidence of the superiority of one single endometrial preparation over the others
- According to treatment there is no consensus about dosage or administration routes. So, we should not forget about novel administration routes
- TREATMENT ELECTION: depends on age, menstrual cycle type, costs, medical secondary effects, physician and PATIENT preferences
- Low progesterone levels on the day prior to FET are associated with a decreased livebirth rates
- Low progesterone levels can be rescued with a daily s.c. administration of progesterone decreasing miscarriage rates and improving livebirth rates

Yesterday, today and forever

Dexeus mujer

Thank you for your attention
Muchas gracias por su atención

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