FSH DOSE TO STIMULATE DIFFERENT PATIENT' AGES: WHEN LESS IS MORE

Edson Borges Jr[1,2]; Bianca Ferrarini Zanetti[2];Amanda Souza Setti[2];Daniela Paes de Almeida Ferreira Braga[1,3]; Rita de Cássia Sávio Figueira[1]; Assumpto Iaconelli Jr[1,2]

1 FERTILITY MEDICAL GROUP

2 Associação Instituto Sapientiae

3 UNIFESP Universidade Federal de São Paulo 1933

INTRODUCTION

- ✓ The success of in vitro fertilization depends on the **number** and **quality** of retrieved oocytes and obtained embryos

Human Reproduction, Vol.29, No.6 pp. 1218–1224, 2014
Advanced Access publication on March 20, 2014 doi:10.1093/humrep/deu053

human reproduction ORIGINAL ARTICLE *Infertility*

Association between response to ovarian stimulation and miscarriage following IVF: an analysis of 124 351 IVF pregnancies

Sesh Kamal Sunkara[1,*], Yacoub Khalaf[1], Abha Maheshwari[2], Paul Seed[1], and Arri Coomarasamy[3]

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INTRODUCTION

- ✓ Multiple follicle growth by conventional COS regimens may also be **harmful** for women and babies

ORIGINAL ARTICLES: ASSISTED REPRODUCTION

Oocyte number as a predictor for ovarian hyperstimulation syndrome and live birth: an analysis of 256,381 in vitro fertilization cycles

Ryan G. Steward, M.D.,[a] Lan Lan, Ph.D.,[b] Anish A. Shah, M.D., M.H.S.,[a] Jason S. Yeh, M
Thomas M. Price, M.D.,[a] James M. Goldfarb, M.D.,[c] and Suheil J. Muasher, M.D.[a]

[a] Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gyne
Medical Center, Durham, North Carolina; [b] Department of Biostatistics and Bioinformatics, D
North Carolina; and [c] University Hospitals Fertility Center, Beachwood, Ohio

Human Reproduction, Vol.30, No.6 pp. 1473–1480, 2015
Advanced Access publication on April 16, 2015 doi:10.1093/humrep/dev076

human reproduction ORIGINAL ARTICLE *Reproductive epidemiology*

Increased risk of preterm birth and low birthweight with very high number of oocytes following IVF: an analysis of 65 868 singleton live birth outcomes

Sesh Kamal Sunkara[1,*], Antonio La Marca[2], Paul T. Seed[3], and Yacoub Khalaf[3]

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INTRODUCTION

- ✓ How much FSH is sufficient?

Revelli *et al. Reproductive Biology and Endocrinology* 2011, **9**:25
http://www.rbej.com/content/9/1/25

REVIEW Open Access

Milder is better? advantages and disadvantages of "mild" ovarian stimulation for human in vitro fertilization

Alberto Revelli*, Simona Casano, Francesca Salvagno, Luisa Delle Piar

Human Reproduction, Vol.25, No.11 pp. 2678–2684, 2010
Advanced Access publication on September 21, 2010 doi:10.1093/humrep/deq247

human reproduction DEBATE

Mild ovarian stimulation for IVF: 10 years later

Bart C.J.M. Fauser[1,*], Geeta Nargund[2], Anders Nyboe Andersen[3], Robert Norman[4], Basil Tarlatzis[5], Jacky Boivin[6], and William Ledger[7]

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OBJECTIVE

- ✓ To determine the effect of different recombinant FSH doses on oocytes and embryos quality, according to the age of the patient

METHODS

Study Design

JANUARY 2010 – DECEMBER 2016

12,334 normally fertilised zygotes → obtained from 2,877 patients → Embryo transfer on Day 5

AGE GROUPS

≤35 years old (n=1523) | >35 and ≤38 years old (n=652) | >38 and ≤40 years old (n=332) | >40 years old (n=370)

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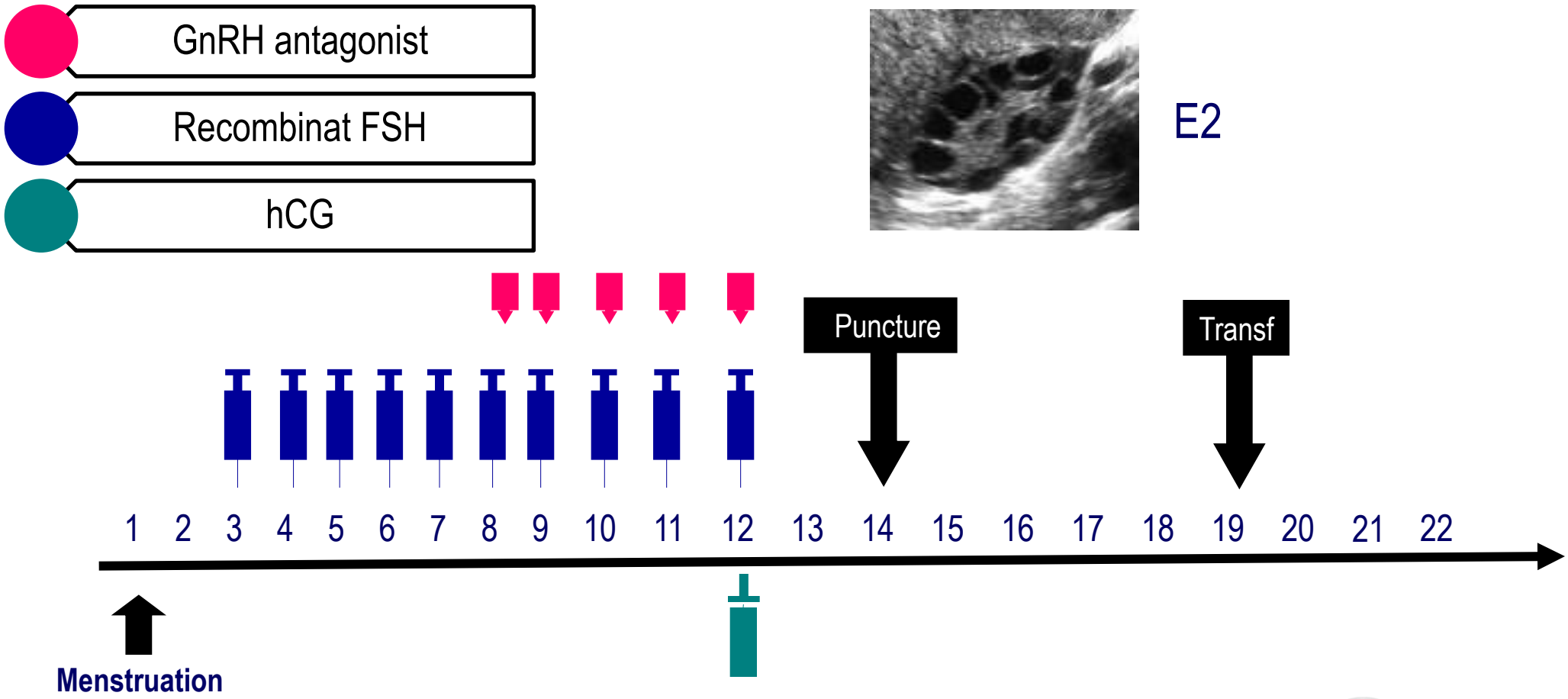
METHODS

Controlled Ovarian Stimulation



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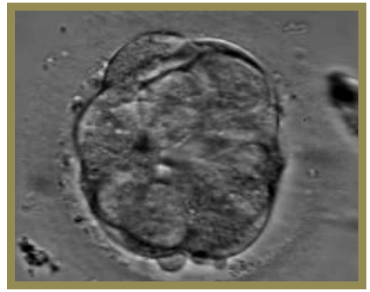
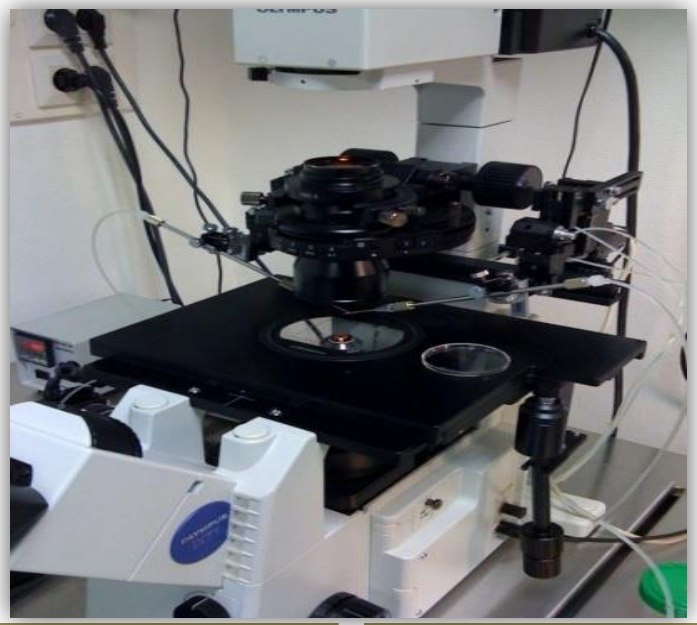
METHODS

ICSI and embryo quality evaluation





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METHODS

Statistical analyses

Linear regression on the <u>different age intervals</u>

Effect of FSH dose on:

number of follicles	embryo quality
number of retrieved oocytes	blastocyst formation rate
oocyte yield	endometrial thickness
number of mature oocytes	cycle's cancelation rate
mature oocyte rate	implantation rate
fertilization rate	pregnancy rate
	miscarriage rate

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RESULTS

Table 1- Descriptive analysis of patient demographics and COS outcomes

	General		≤ 35 years old		36-38 years old		39-40 years old		>40 years old	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Patient's demographics										
Maternal age (y)	**35.17**	4.572	**31.7**	2.8	**36.9**	0.8	**39.4**	0.5	**42.6**	1.8
Paternal age (y)	**38.05**	6.659	**35.7**	5.9	**39.3**	6.1	**41.3**	6.0	**43.0**	6.7
Total FSH (IU)	**2318.8**	607.9	**2185.9**	580.2	**2442.7**	574.5	**2508.9**	621.0	**2476.9**	637.4
COS outcomes										
Aspirated follicles (n)	**16.58**	12.1	**15.0**	9.8	**14.6**	10.7	**11.0**	8.0	**8.0**	6.8
Retrieved oocytes (n)	**11.84**	9.3	**12.5**	19.8	**10.2**	8.0	**7.7**	6.2	**5.6**	5.3
Oocyte Yield (%)	**70.33**	22.5	**72.5**	19.8	**68.5**	22.7	**66.9**	25.1	**67.5**	28.2
Mature oocytes MII (n)	**8.97**	7.0	**11.2**	7.5	**7.7**	6.0	**6.0**	4.8	**4.3**	4.0
Mature oocytes rate (%)	**74.51**	21.0	**75.1**	18.5	**71.4**	22.4	**74.5**	22.8	**72.8**	26.6

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RESULTS

Table 2- Descriptive analysis of laboratorial and clinical outcomes

	General		≤ 35 years old		36-38 years old		39-40 years old		>40 years old	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Laboratory outcomes										
Fertilization rate (%)	**83.4**	19.5	**86.1**	17.3	**83.2**	19.9	**81.9**	23.4	**82.1**	23.9
High quality D3 embryos (n)	**3.1**	2.96	**3.8**	3.2	**2.8**	2.8	**2.2**	2.3	**1.6**	1.7
High quality Embryo rate (%)	**45.8**	31.1	**48.1**	28.6	**42.7**	32.4	**42.0**	32.8	**45.4**	37.1
Blastocyst formation rate (%)	**41.2**	28.5	**44.3**	27.9	**36.6**	28.1	**41.3**	29.7	**27.5**	26.9
Transferred embryos (n)	**1.56**	.65	**1.6**	0.6	**1.5**	0.7	**1.5**	0.7	**1.4**	0.7
Endometrium (mm)	**11.0**	7.02	**11.1**	5.7	**10.9**	6.6	**10.9**	2.2	**11.3**	13.6
Clinical outcomes										
Cancelation rate (%)	**22.5**		**20.4**		**20.7**		**24.7**		**32.7**	
Implantation rate (%)	**29.51**		**34.9**		**26.7**		**28.9**		**10.7**	
Clinical pregnancy rate (%)	**38.8**		**45.6**		**35.1**		**24.7**		**14.1**	
Miscarriage rate (%)	**13.64**		**11.0**		**16.5**		**17.9**		**28.6**	

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RESULTS

Table 3- Linear regression models of the effect of FSH dose on COS outcomes, in different maternal age intervals.

Group	≤ 35 years old		36-38 years old		39-40 years old		>40 years old	
Variable	RC	p	RC	P	RC	p	RC	p
COS outcomes								
Aspirated follicles	-0.004	NS	-0.003	NS.	0.000	NS	0.001	NS
Retrieved oocytes	-0.002	NS	-0.001	NS	0.000	NS	0.000	NS
Oocyte Yield	0.003	**0.002**	0.003	NS	0.003	NS	0.000	NS
Mature oocytes MII	-0.002	NS	-0.001	NS	0.000	NS	0.000	NS
Mature oocytes rate	-0.001	NS	-0.002	NS	0.002	NS	-0,001	NS

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RESULTS

Table 4- Linear regression models of the effect of FSH dose on laboratorial outcomes, in different maternal age intervals

Group	≤ 35 years old		36-38 years old		39-40 years old		>40 years old	
Variable	RC	p	RC	P	RC	p	RC	p
Laboratory outcomes								
Fertilization rate	-0.001	NS	0.000	NS	0.001	NS	-0.002	NS
High quality D3 embryos	-0.001	NS	0.000	NS	0.000	NS	0.000	NS
High quality Embryo rate	-0.005	**<0.01**	-0.006	**0.025**	0.002	NS	-0.002	NS
Blastocyst formation rate	-0.005	**<0.01**	-0.007	**0.042**	0.004	NS	-0.004	NS
Transferred embryos	0.000	NS	0.000	NS	0.000	NS	0.000	NS
Endometrium	0.000	NS	0.000	NS	0.001	NS	0.000	NS

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RESULTS

Table 5- Linear regression models of the effect of clinical outcomes, in different maternal age intervals

Group	≤ 35 years old		36-38 years old		39-40 years old		>40 years old	
Variable	RC	p	RC	P	RC	p	RC	p
Clinical outcomes								
Cancelation rate	0.000	**0.022**	0.000	**0.039**	0.000	NS	0.000	NS
Implantation rate	-0.002	NS	-0.004	NS	-0.001	NS	0.001	NS
Clinical pregnancy rate	0.000	NS	0.000	NS	0.000	NS	0.000	NS
Miscarriage rate	0.001	NS	0.002	NS	0.001	NS	0.003	NS

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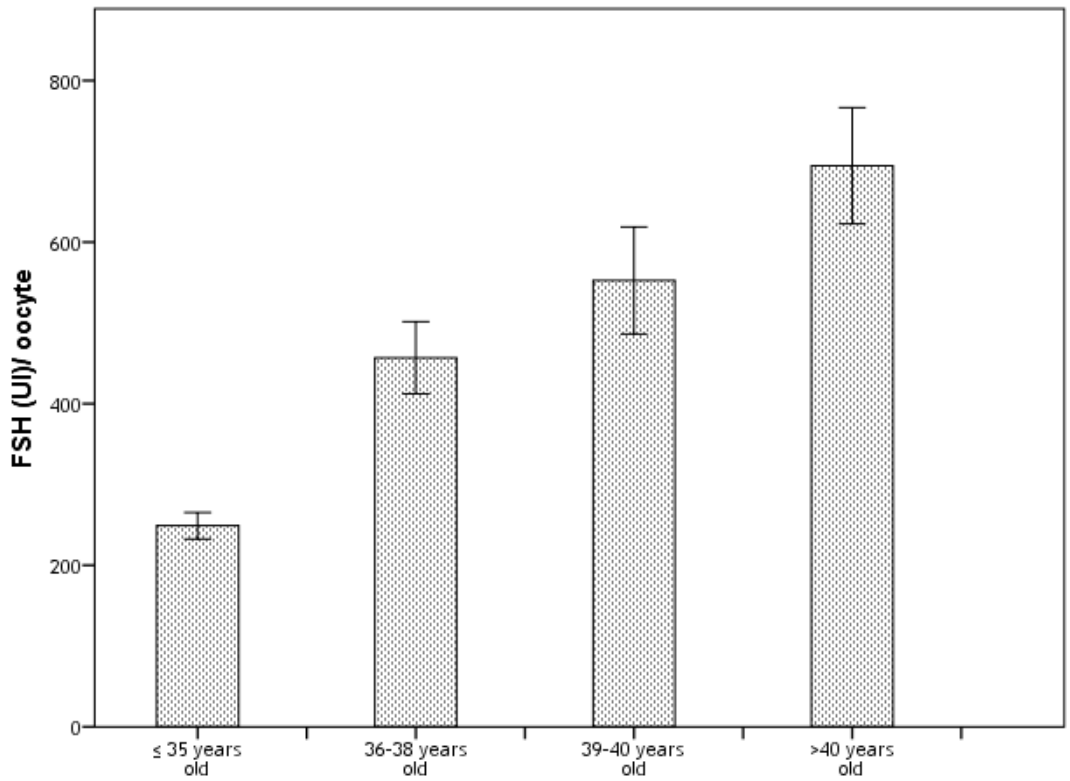
RESULTS

FSH / oocyte (FSH total dose (UI)/ number of retrieved oocytes)

Group	**≤ 35 years old**		**36-38 years old**		**39-40 years old**		**>40 years old**		
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	p
FSH/oocyte ratio	***248.99***	334.72	***456.59***	590.53	***552.59***	662.94	***694.59***	725.88	**<0.05**



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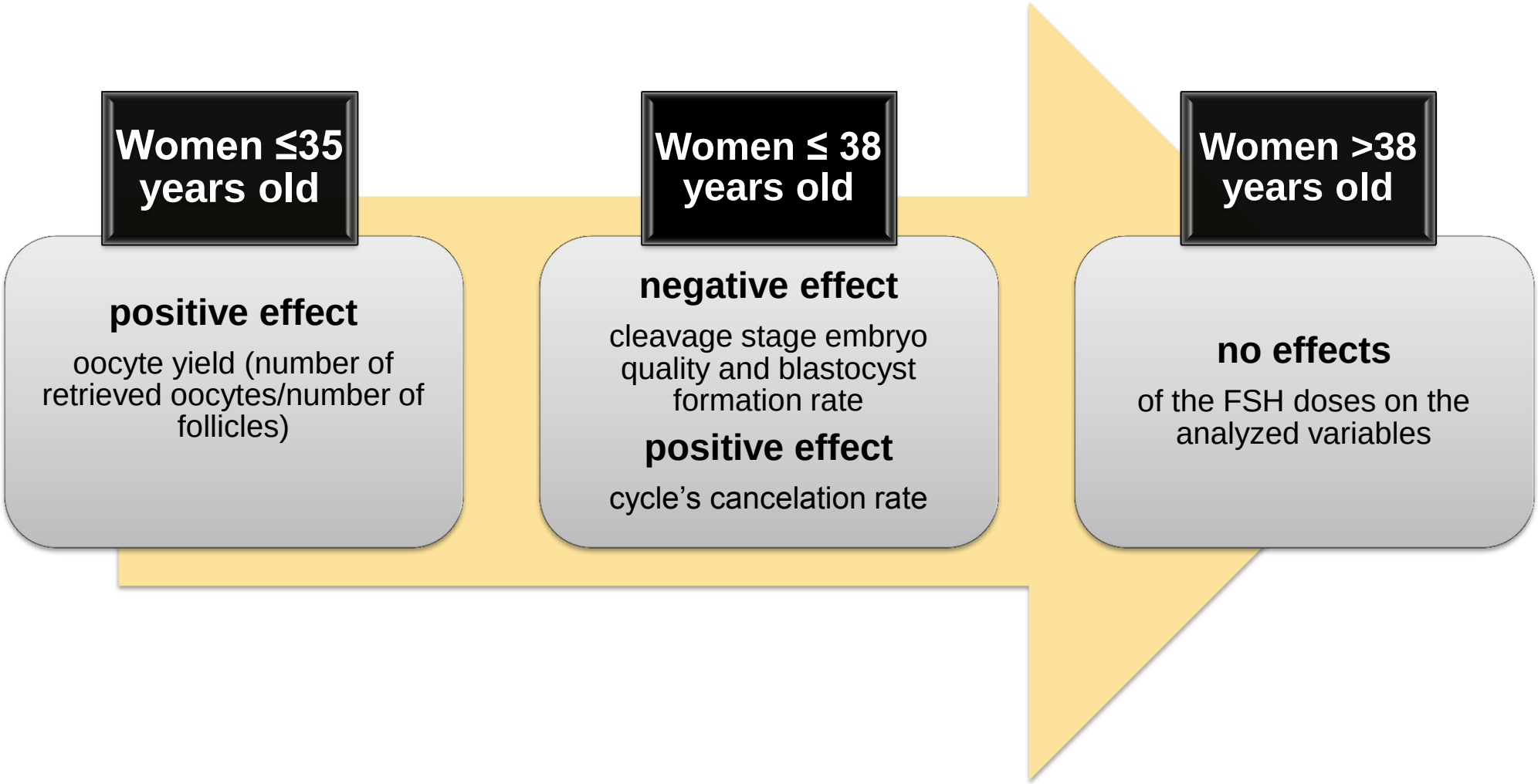
DISCUSSION



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DISCUSSION

Younger Women (≤38 years old)

Poor embryo quality
Less blastocyst developed
Increase in cancelation rate
Risk of OHSS

Mild stimulation

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DISCUSSION

Older Woman (>38 years old)

Higher FSH dose are needed for sufficient number of retrieved oocytes.

No effects on embryo morphology

Convencional COS

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Obrigado!
Gracias!

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