

# VÔ SINH NAM DƯỚI GÓC NHÌN BÁC SỸ HỖ TRỢ SINH SẢN

*Hồ Sỹ Hùng*

*Trung tâm HTSSQG-BVPSTW*

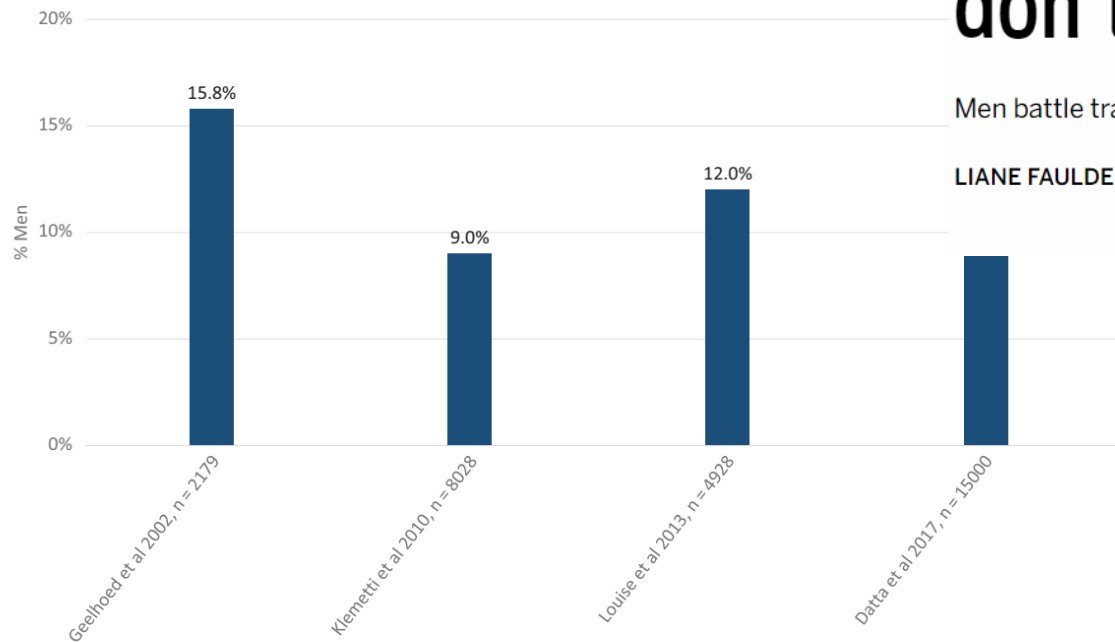
*Bộ môn Phụ sản ĐHY Hà nội*

# Tỷ lệ vô sinh nam giới

## 'It's a huge pride and ego thing': Male infertility affects one in six, but men don't want to talk about it

Men battle traditional gender barriers when confronting tough personal topic

LIANE FAULDER Updated: May 17, 2019



**Figure 2** Prevalence of male infertility. Prevalence of male infertility in surveys of general populations. Male infertility was generally defined as men reporting experience of infertility (generally > 12 months in duration).

# Giảm khả năng sinh sản ở nam giới

## Evidence for decreasing quality of semen during past 50 years

Elisabeth Carlsen, Aleksander Giwercman, Niels Keiding, Niels E Skakkebaek

### Abstract

**Objective**—To investigate whether semen quality has changed during the past 50 years.

**Design**—Review of publications on semen quality in men without a history of infertility selected by means of *Cumulated Index Medicus and Current*

MEDLINE Silver Platter database with the key words: sperm count, sperm density, sperm concentration, male fertility, and semen analysis. (2) For the period 1930-65 we used *Cumulated Index Medicus* (or *Current List* 1957-9, covering the three years when the index was not published) to identify relevant studies

BMJ VOLUME 305 12 SEPTEMBER 1992

- ❑ Một vài nghiên cứu cho thấy khả năng sinh sản của nam giới giảm trong một vài thập kỷ gần đây
- ❑ Ước tính tại Mỹ khả năng sinh sản của nam giới giảm khoảng 1,5% mỗi năm.

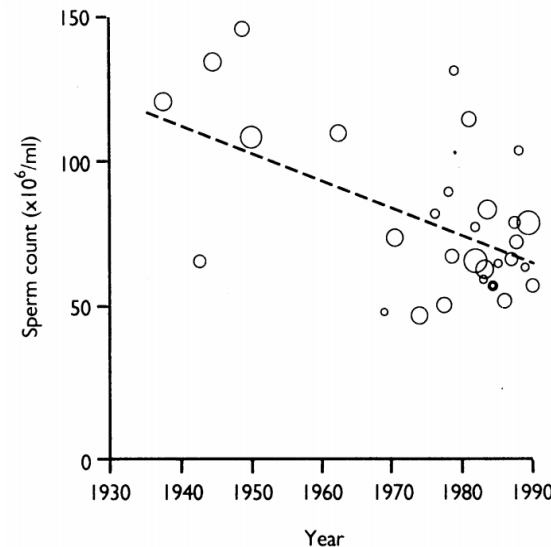


FIG 1—Linear regression of mean sperm density reported in 61 publications (represented by circles whose area is proportional to the logarithm of the number of subjects in study) each weighted according to number of subjects, 1938-90

### Abstract

**Objective**—To investigate whether semen quality has changed during the past 50 years.

**Design**—Review of publications on semen quality in men without a history of infertility selected by means of *Cumulated Index Medicus and Current List* (1930-1965) and MEDLINE Silver Platter database (1966-August 1991).

**Subjects**—14 947 men included in a total of 61 papers published between 1938 and 1991.

**Main outcome measures**—Mean sperm density and mean seminal volume.

**Results**—Linear regression of data weighted by number of men in each study showed a significant decrease in mean sperm count from  $113 \times 10^6/\text{ml}$  in 1940 to  $66 \times 10^6/\text{ml}$  in 1990 ( $p < 0.0001$ ) and in seminal volume from 3.40 ml to 2.75 ml ( $p = 0.027$ ), indicating an even more pronounced decrease in sperm production than expressed by the decline in sperm density.

**Conclusions**—There has been a genuine decline in semen quality over the past 50 years. As male fertility is to some extent correlated with sperm count the results may reflect an overall reduction in male fertility. The biological significance of these changes is emphasised by a concomitant increase in the incidence of genitourinary abnormalities such as testicular cancer and possibly also cryptorchidism and hypospadias, suggesting a growing impact of factors with serious effects on male gonadal function.

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Human Reproduction, Vol.0, No.0 pp. 1–9, 2012

doi:10.1093/humrep/des415

human  
reproduction

ORIGINAL ARTICLE *Reproductive epidemiology*

# Decline in semen concentration and morphology in a sample of 26 609 men close to general population between 1989 and 2005 in France

**M. Rolland<sup>1</sup>, J. Le Moal<sup>1,\*†</sup>, V. Wagner<sup>1</sup>, D. Royère<sup>2</sup>, and J. De Mouzon<sup>3</sup>**

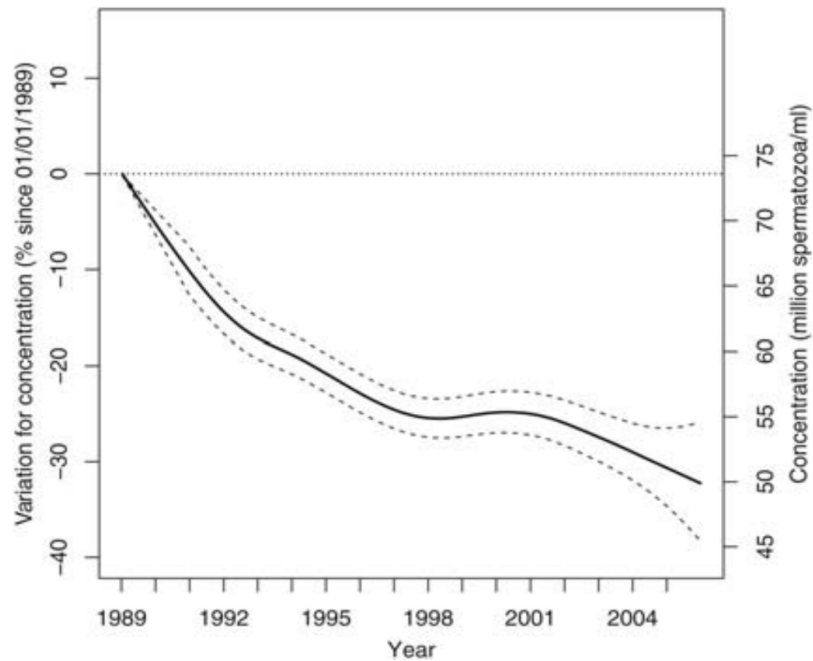
<sup>1</sup>Environmental Health Department, Institut de Veille Sanitaire (InVS), F-94415 Saint Maurice, France <sup>2</sup>Fivnat, Reproductive Biology Unit, CHU Bretonneau, 37000 Tours, France <sup>3</sup>Fivnat and Inserm, Paris-Descartes University, Reproductive Medicine Unit, CHU Cochin-Port Royal, 75014 Paris, France



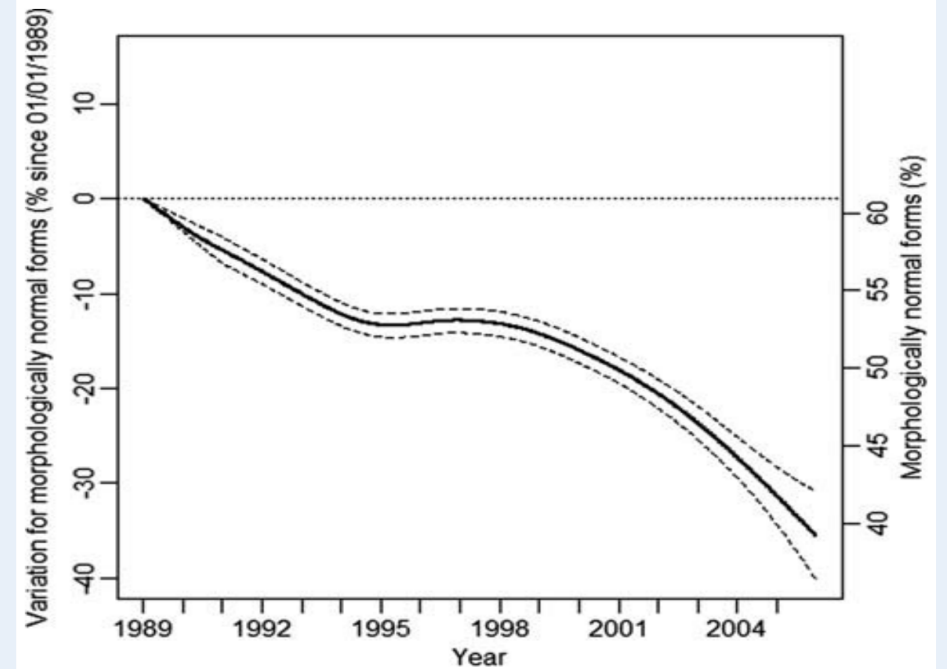
## Decline in semen concentration and morphology in a sample of 26 609 men close to general population between 1989 and 2005 in France

M. Rolland<sup>1</sup>, J. Le Moal<sup>1,\*†</sup>, V. Wagner<sup>1</sup>, D. Royère<sup>2</sup>, and J. De Mouzon<sup>3</sup>

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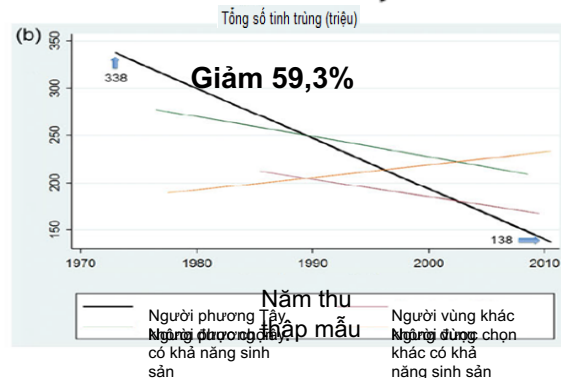
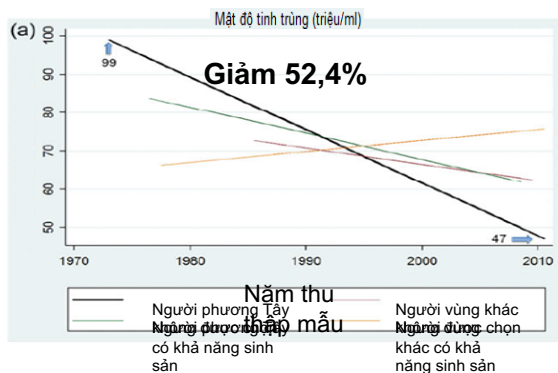
**Figure 2** Variation in percent for concentration since 1 January 1989 for a 35-year-old man in metropolitan France with 95% confidence intervals (left axis). Projected values in million spermatozoa per millilitre (right axis).



**Figure 4** Variation in percent for morphologically normal forms since 1 January 1989 for a 35-year-old man in metropolitan France with 95% confidence intervals (left axis). Projected values in percentage morphologically normal forms (right axis).

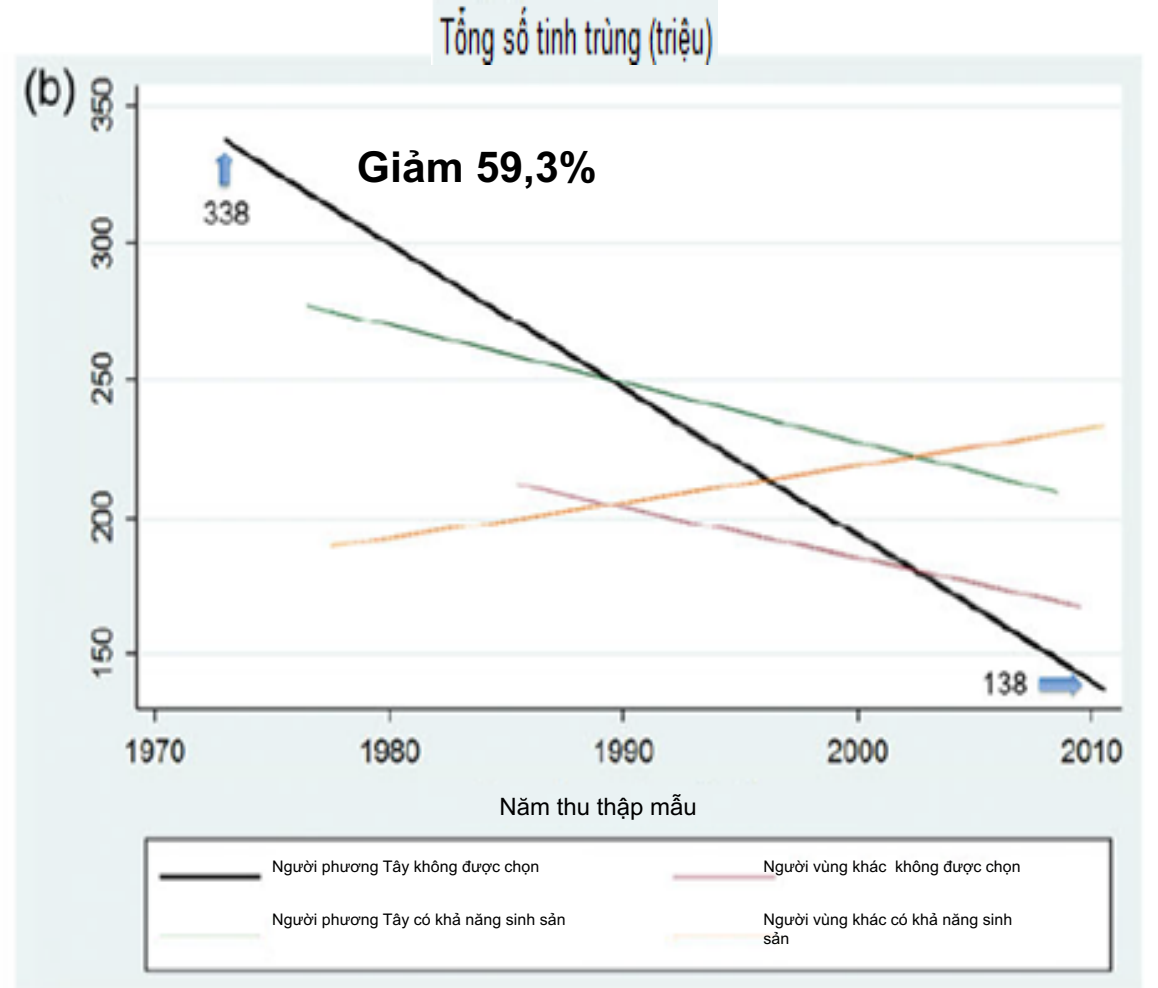
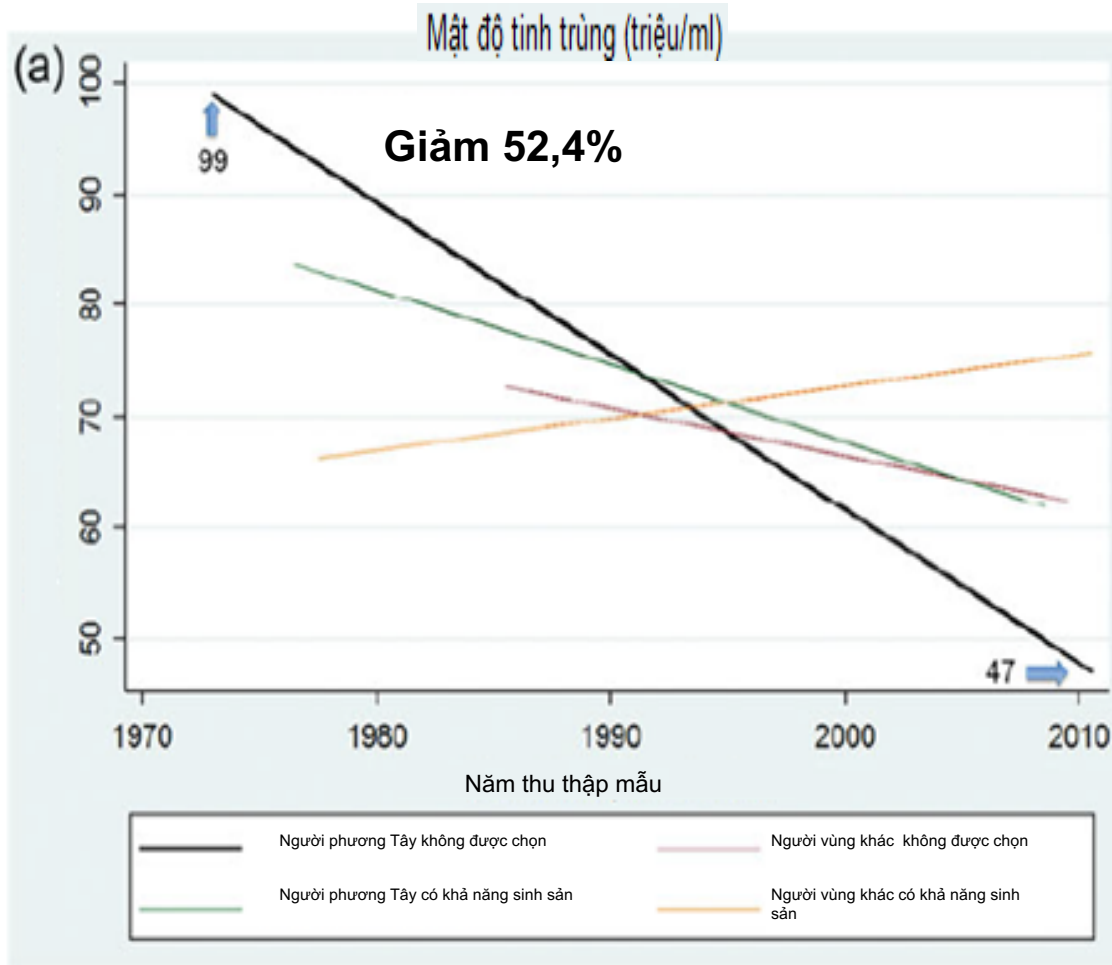
# Temporal trends in sperm count: a systematic review and meta-regression analysis

Hagai Levine <sup>1,2,\*</sup>, Niels Jørgensen <sup>3</sup>, Anderson Martino-Andrade<sup>2,4</sup>, Jaime Mendiola<sup>5</sup>, Dan Weksler-Derri<sup>6</sup>, Irina Mindlis<sup>2</sup>, Rachel Pinotti<sup>7</sup>, and Shanna H. Swan<sup>2</sup>



## Temporal trends in sperm count: a systematic review and meta-regression analysis

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# Các phiên bản TĐĐ của WHO



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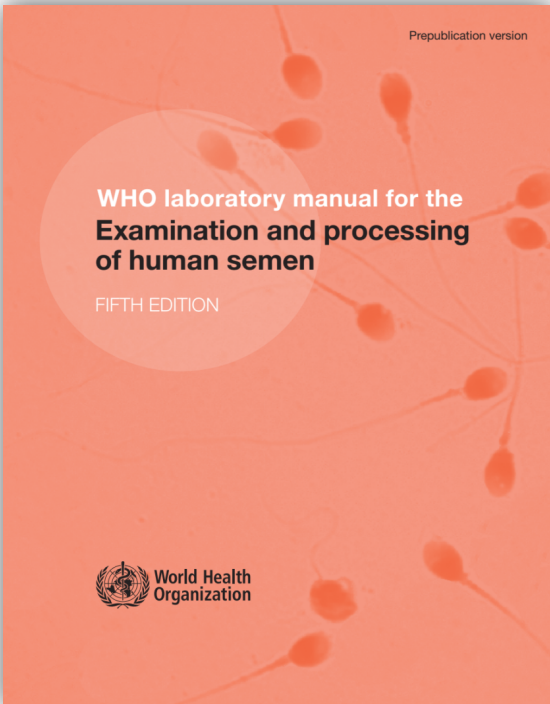
# Controversies Surrounding the 2010 World Health Organization Cutoff Values for Human Semen Characteristics and Its Impact on Unexplained Infertility

3

Sandro C. Esteves

## Conclusions

The 2010 WHO semen analysis criteria are likely to have a significant effect on the management of male infertility, including reclassification of “normal” and “abnormal” semen analyses reports, deferment of patient referral for proper evaluation, and recommendation for treatment. These new reference limits were derived from a limited number of semen samples used to initiate natural conceptions. Albeit values





# Ngưỡng chỉ số tinh dịch đồ qua các phiên bản

**Table 3.1** Cutoff reference values for semen characteristics as published in consecutive WHO manuals. (Esteves et al. [6], with permission from Excerpta Medica, Inc.)

Semen characteristics	WHO 1980	WHO 1987	WHO 1992	WHO 1999	WHO 2010 <sup>a</sup>
Volume (mL)	ND	≥2	≥2	≥2	1.5
Sperm count (10 <sup>6</sup> /mL)	20–200	≥20	≥20	≥20	15
Total sperm count (10 <sup>6</sup> )	ND	≥40	≥40	≥40	39
Total motility (% motile)	≥60	≥50	≥50	≥50	40
Progressive motility <sup>b</sup>	≥2 <sup>c</sup>	≥25 %	≥25 % (grade a)	≥25 % (grade a)	32 % (a+b)
Vitality (% alive)	ND	≥50	≥75	≥75	58
Morphology (% normal forms)	80.5	≥50	≥30 <sup>d</sup>	(14) <sup>e</sup>	4 <sup>f</sup>
Leukocyte count (10 <sup>6</sup> /mL)	<4.7	<1.0	<1.0	<1.0	<1.0

# Chỉ số tinh dịch đồ thay đổi nhiều qua các lần xét nghiệm



Archives of Andrology  
Journal of Reproductive Systems

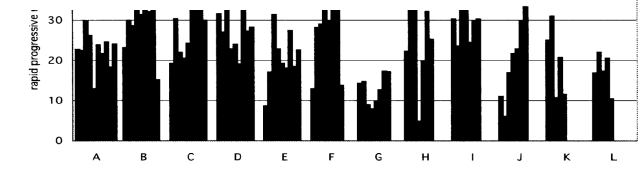
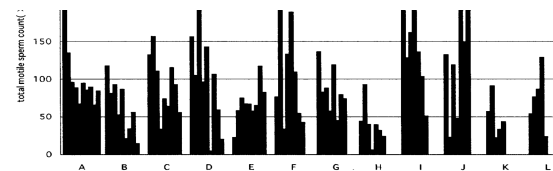
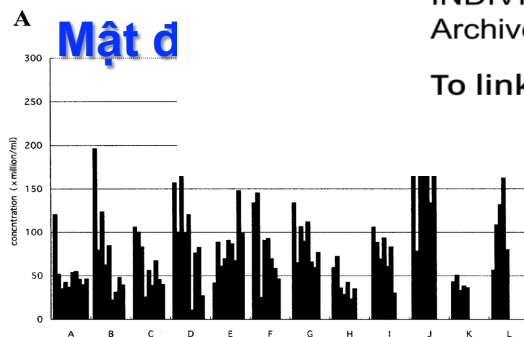
ISSN: 0148-5016 (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/iaan19>

## INDIVIDUAL VARIATION IN SEMEN PARAMETERS OF HEALTHY YOUNG VOLUNTEERS

S. OSHIO, Y. ASHIZAWA, M. YOTSUKURA, Y. TOHYAMA, M. IWABUCHI, Y. ADACHI, H. MATSUDA, H. TOMOMASA, S. YOSHIDA, K. TAKEDA & T. UMEDA

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To link to this article: <https://doi.org/10.1080/01485010490485759>



**ộng nhanh**



# Chỉ số tinh dịch đồ thay đổi nhiều qua các lần xét nghiệm

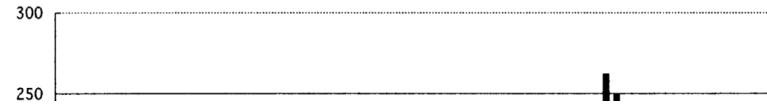
## INDIVIDUAL VARIATION IN SEMEN PARAMETERS OF HEALTHY YOUNG VOLUNTEERS

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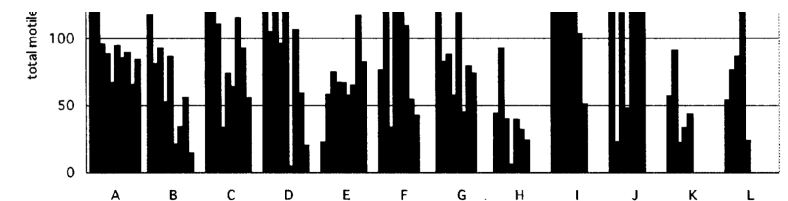
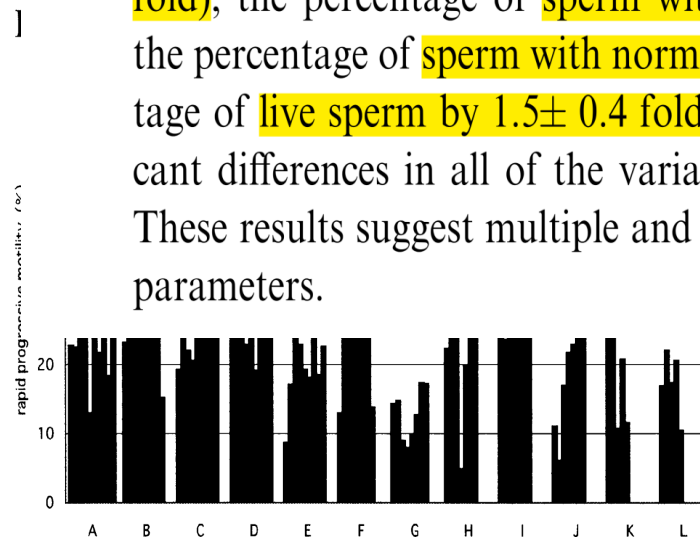
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### A Mật độ tinh trùng



Individual variation in semen parameters was investigated in healthy young volunteers. Semen samples were collected approximately once a month over a one-year period for a total of 93 samples (5 to 10 samples per subject) from 12 volunteers in their twenties. Semen analysis was carried out according to the WHO Manual. The amount of variation in each semen variable was calculated for each subject by dividing the maximum value by the minimum value. The results showed that the semen volume varied by  $1.9 \pm 0.8$  fold (1.3 to 4.2 fold), the sperm concentration by  $4.8 \pm 4.3$  fold (1.5 to 17.2 fold), the percentage of sperm with forward progression by  $2.8 \pm 1.4$  fold (1.6 to 6.4 fold), the percentage of sperm with rapid linear progression by  $3.4 \pm 2.6$  fold (1.7 to 10.9 fold), the percentage of sperm with normal morphology by  $1.9 \pm 0.4$  fold (1.3 to 2.4 fold), and the percentage of live sperm by  $1.5 \pm 0.4$  fold (1.1 to 2.6 fold). A between-group comparison showed significant differences in all of the variables except the percentage of sperm with normal morphology. These results suggest multiple and considerable semen analyses are needed when evaluating semen parameters.



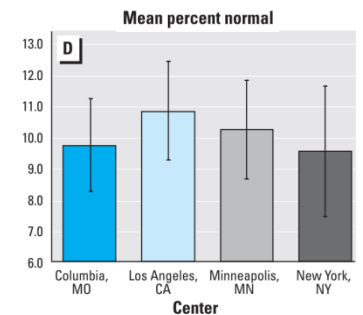
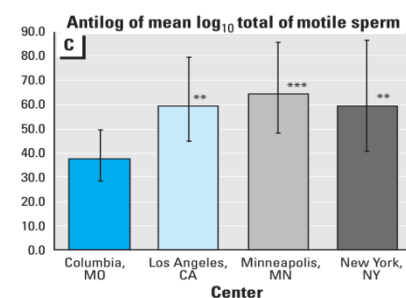
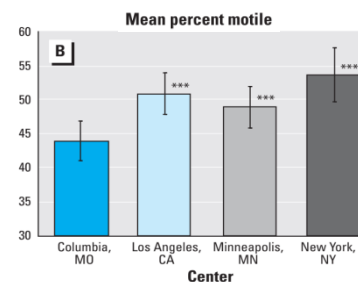
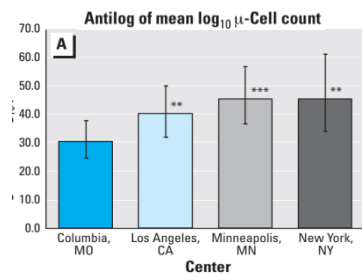
# Khác biệt chỉ số tinh dịch đồ tùy vùng địa lý

## Research | Articles

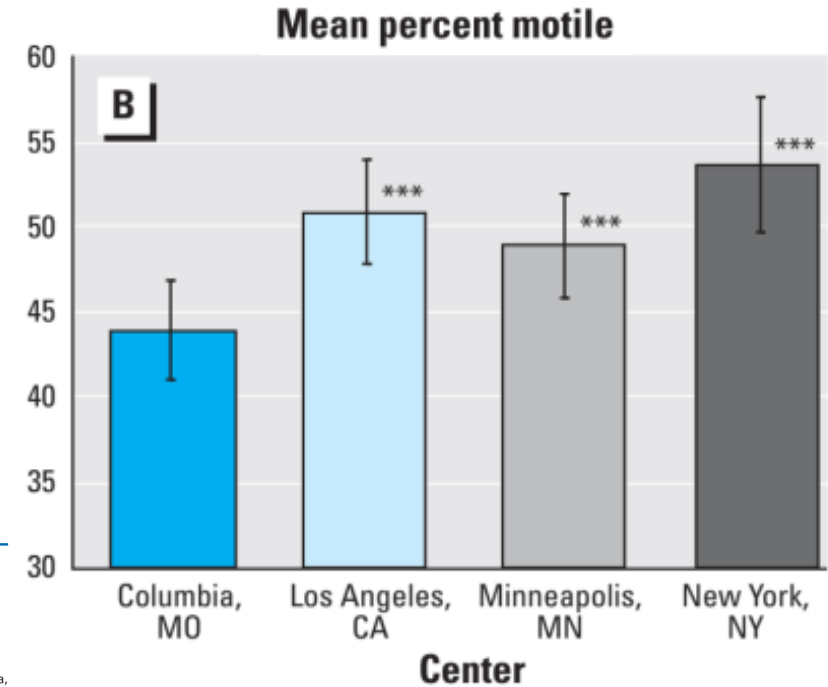
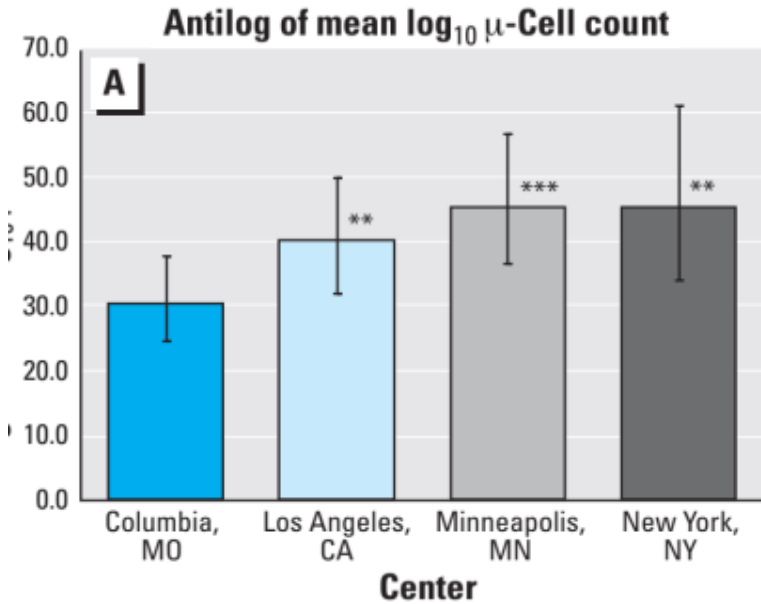
### Geographic Differences in Semen Quality of Fertile U.S. Males

*Shanna H. Swan,<sup>1</sup> Charlene Brazil,<sup>2</sup> Erma Z. Drobnis,<sup>3</sup> Fan Liu,<sup>1</sup> Robin L. Kruse,<sup>1</sup> Maureen Hatch,<sup>4</sup> J. Bruce Redmon,<sup>5</sup> Christina Wang,<sup>6</sup> James W. Overstreet,<sup>2</sup> and The Study for Future Families Research Group*

<sup>1</sup>Department of Family and Community Medicine, University of Missouri-Columbia School of Medicine, Columbia, Missouri, USA; <sup>2</sup>University of California, Davis, California, USA; <sup>3</sup>Department of Obstetrics and Gynecology, University of Missouri-Columbia, Columbia, Missouri, USA; <sup>4</sup>Mount Sinai School of Medicine, New York, New York, USA; <sup>5</sup>Departments of Medicine and Urologic Surgery, University of Minnesota, Minneapolis, Minnesota, USA; <sup>6</sup>Harbor-UCLA Medical Center and Research and Education Institute, Torrance, California, USA



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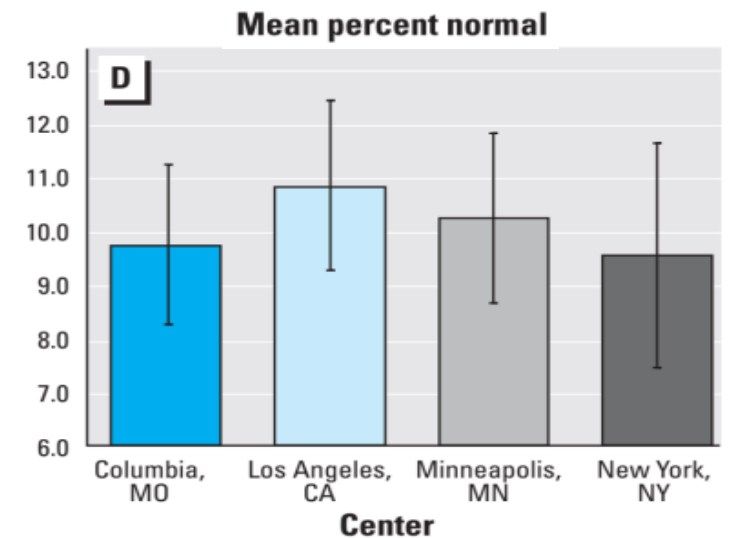
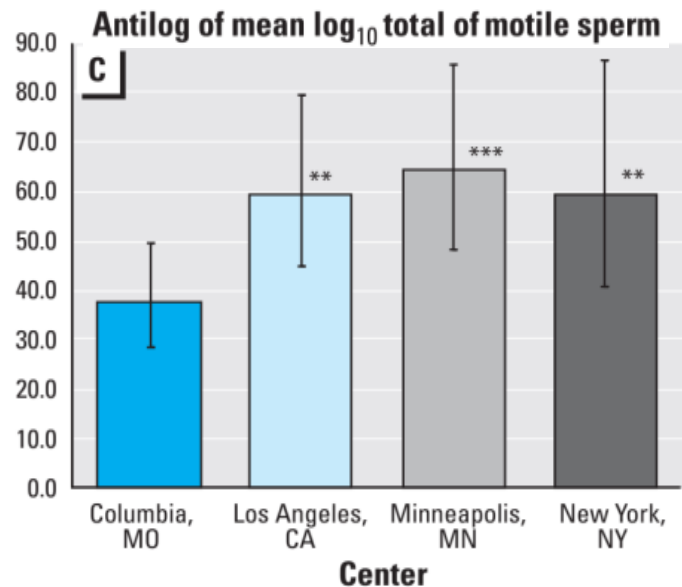


[Research | Articles](#)

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# Khác biệt chỉ số tinh dịch đồ tùy vùng địa lý

Human Reproduction Vol.16, No.5 pp. 1012–1019, 2001

## Regional differences in semen quality in Europe

Niels Jørgensen<sup>1,7</sup>, Anne-Grethe Andersen<sup>1</sup>, Florence Eustache<sup>2</sup>, D.Stewart Irvine<sup>3</sup>, Jyrki Suominen<sup>4</sup>, Jørgen Holm Petersen<sup>1,5</sup>, Anders Nyboe Andersen<sup>6</sup>, Jacques Auger<sup>2</sup>, Elizabeth H.H.Cawood<sup>3</sup>, Antero Horte<sup>4</sup>, Tina Kold Jensen<sup>1</sup>, Pierre Jouannet<sup>2</sup>, Niels Keiding<sup>5</sup>, Matti Vierula<sup>4</sup>, Jorma Toppari<sup>4</sup> and Niels E.Skakkebak<sup>1</sup>

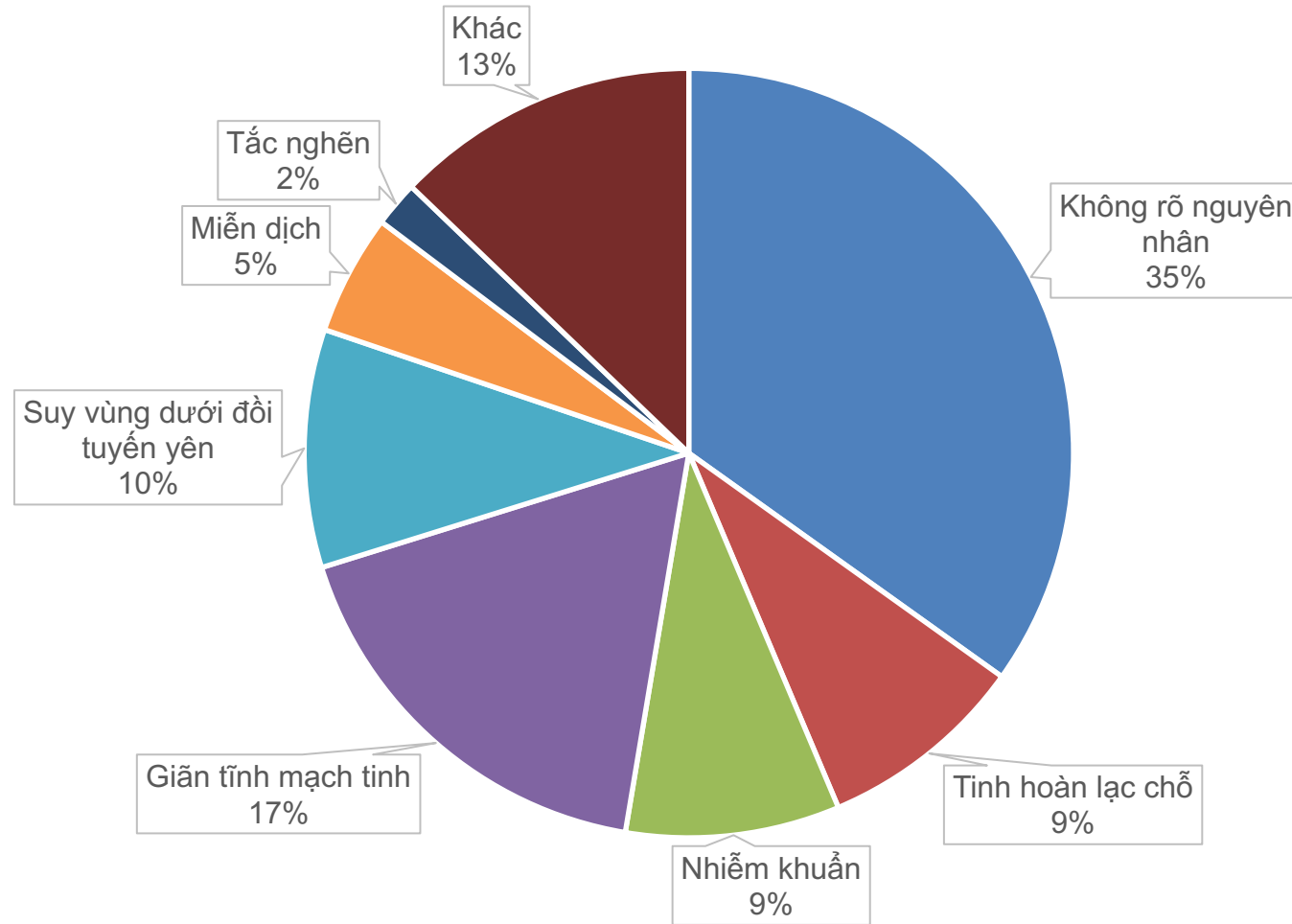
## Regional differences in semen quality in Europe

**Table II.** Semen parameters of fertile men from four cities in Europe

Parameter	Copenhagen ( <i>n</i> = 349) <sup>a</sup>		Paris ( <i>n</i> = 207) <sup>a</sup>		Edinburgh ( <i>n</i> = 251) <sup>a</sup>		Turku ( <i>n</i> = 275) <sup>a</sup>	
	Mean ± SD	Median (5–95)	Mean ± SD	Median (5–95)	Mean ± SD	Median (5–95)	Mean ± SD	Median (5–95)
Semen volume (ml)	3.8 ± 1.7	3.6 (1.4–6.7)	4.2 ± 2.0	3.9 (1.6–8.2)	3.9 ± 1.8	3.6 (1.4–7.6)	4.1 ± 1.6	3.9 (2.1–7.4)
Sperm conc. (×10 <sup>6</sup> /ml)	77 ± 66	61 (10–207)	94 ± 72	74 (15–231)	92 ± 63	77 (15–222)	105 ± 73	82 (19–262)
Total spermatozoa (×10 <sup>6</sup> )	276 ± 240	215 (32–795)	385 ± 350	293 (46–1177)	343 ± 279	280 (58–925)	412 ± 312	328 (71–1063)
Motile spermatozoa (%)	60 ± 12	61 (40–79)	56 ± 12	55 (40–78)	67 ± 10	68 (51–83)	66 ± 10	66 (49–81)
Normal morphology (%)	49 ± 15	51 (23–71)	50 ± 16	54 (20–72)	50 ± 15	52 (21–71)	52 ± 15	53 (24–74)

# Nguyên nhân vô sinh nam

Tỷ lệ vô sinh tại VN ~ 7,7%, vô sinh nam chiếm khoảng 40% các trường hợp



Infertility-associated factor (male)	Percentage of patients affected (n = 10,469)
Idiopathic male infertility	31
Maldescended testes	7.8
Urogenital infection	8.0
Disturbances of semen deposition and sexual factors	5.9
General and systemic disease	3.1
Varicocele	15.6
Hypogonadism	8.9
Immunological factors	4.5
Obstructions	1.7
Other abnormalities	5.5

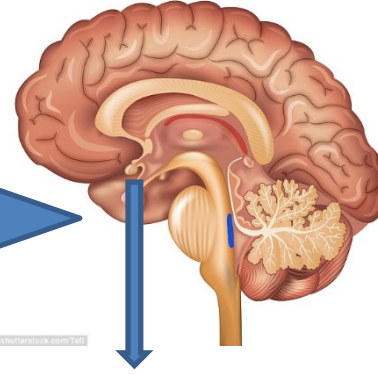
*Nieschlag E. Classification of andrological disorders. In: Nieschlag E, Behre HM, eds. Andrology: Male Reproductive Health and Dysfunction, 2nd ed. Berlin: Springer Verlag, 2000:83–87.*



# Nguyên nhân và hướng xử trí

Liệu pháp hormon

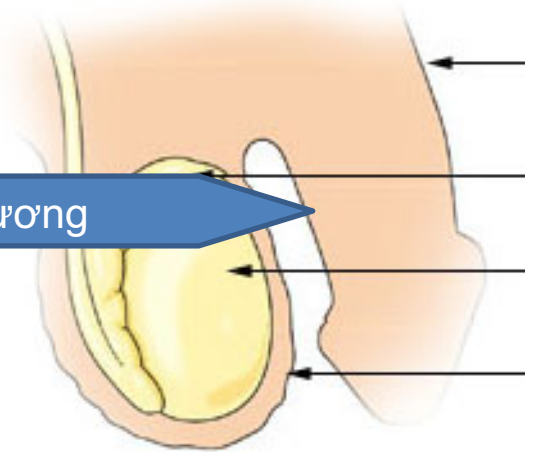
Suy dưới đồi tuyến yên



Đa số trường hợp đều dẫn tới IUI hoặc IVF

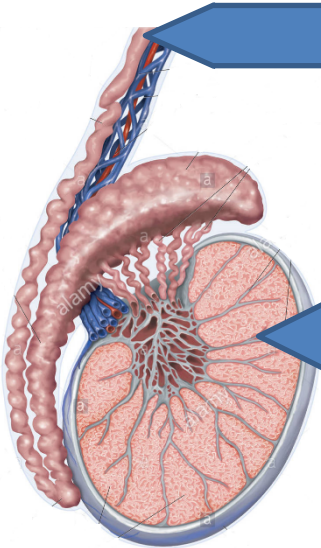
Dùng thuốc

Rối loạn cương dương



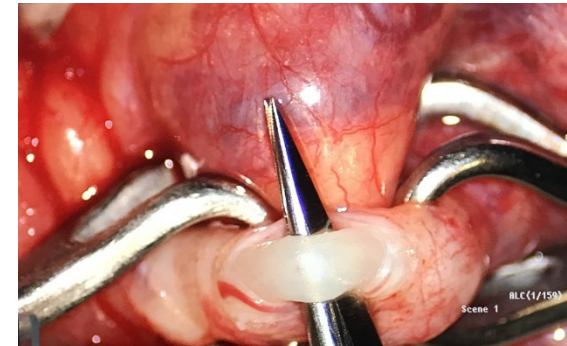
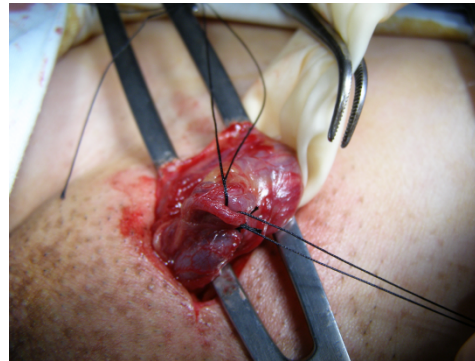
Tắc nghẽn đường dẫn tinh

- ✓ Viêm nhiễm
- ✓ Bất sản ống dẫn tinh
- ✓ Thất ống dẫn tinh

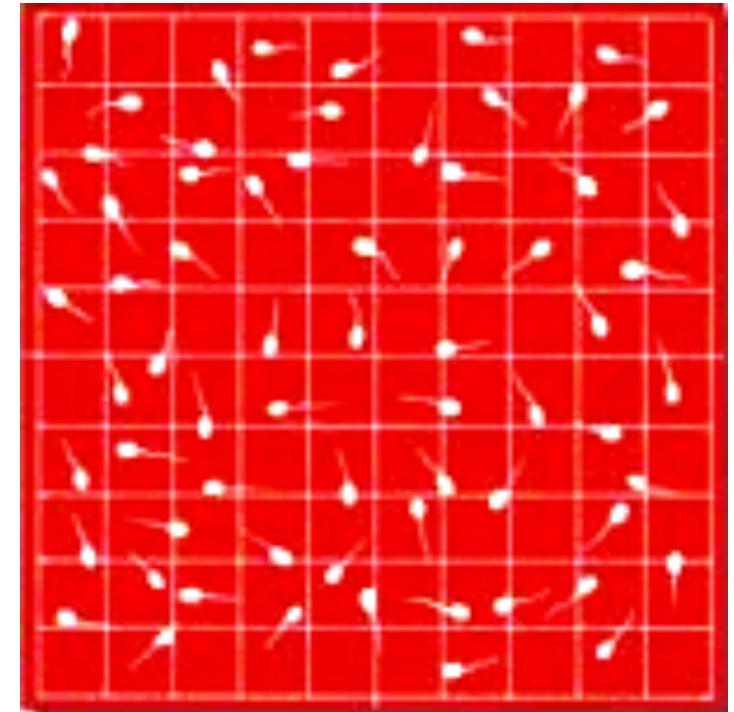
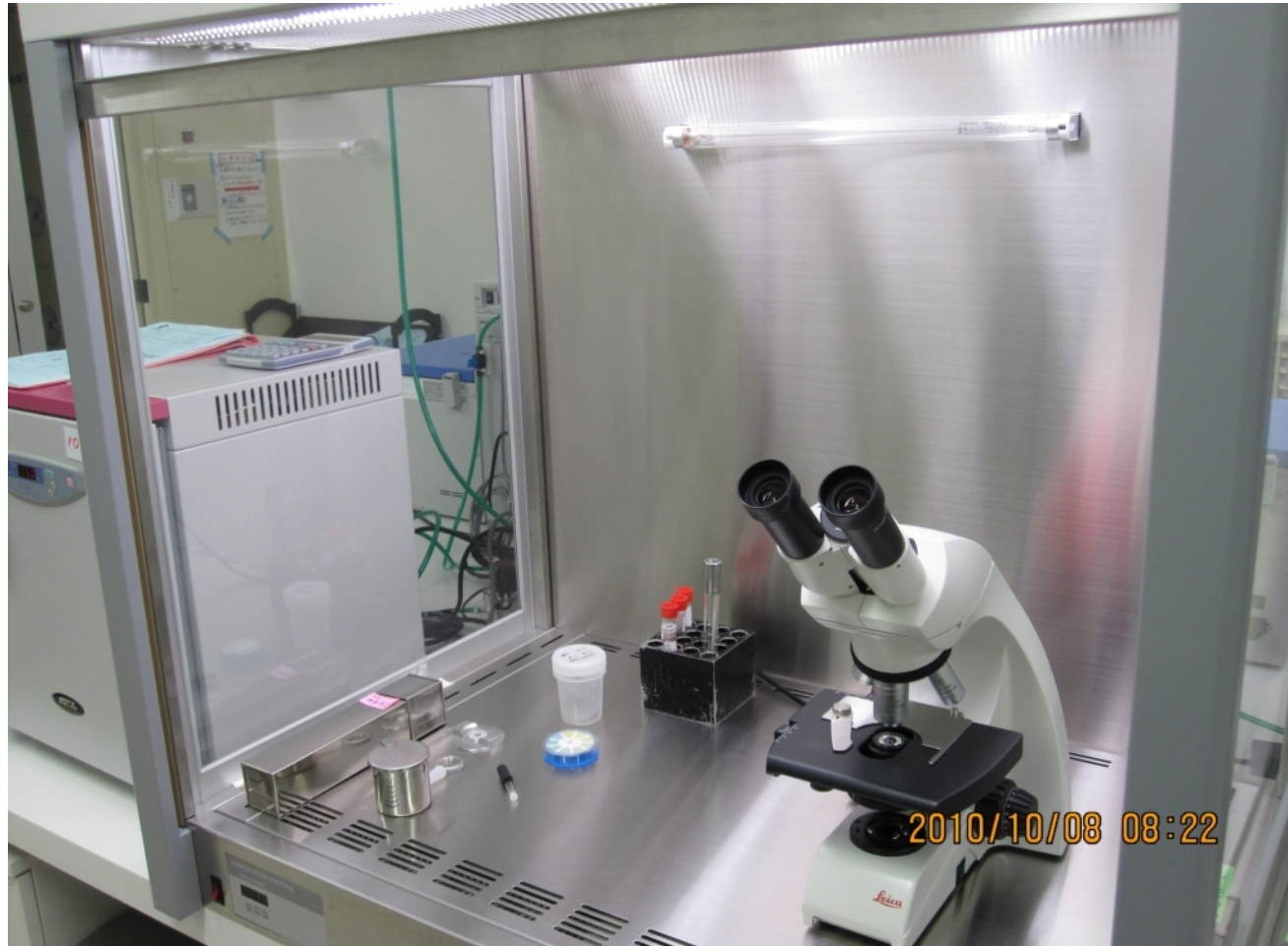


Giảm sản xuất tinh trùng

- Nguyên nhân di truyền
- Tinh hoàn lạc chỗ
- Nhiễm trùng
- Giãn tĩnh mạch tinh
- Tia xạ, hóa chất, nhiệt độ
- Kháng thể
- Thuốc
- Không rõ nguyên nhân



# Xét nghiệm tinh dịch đồ



Xét nghiệm tinh dịch đồ quyết định chẩn đoán và phương pháp điều trị



# Yếu tố nam giới không được chú ý khi ra quyết định

Original Article

## The use of assisted reproductive technology before male factor infertility evaluation

Madhur Nayan<sup>1</sup>, Nahid Punjani<sup>2</sup>, Ethan Grober<sup>1</sup>, Kirk Lo<sup>1,3,4</sup>, Keith Jarvi<sup>1,3,4</sup>

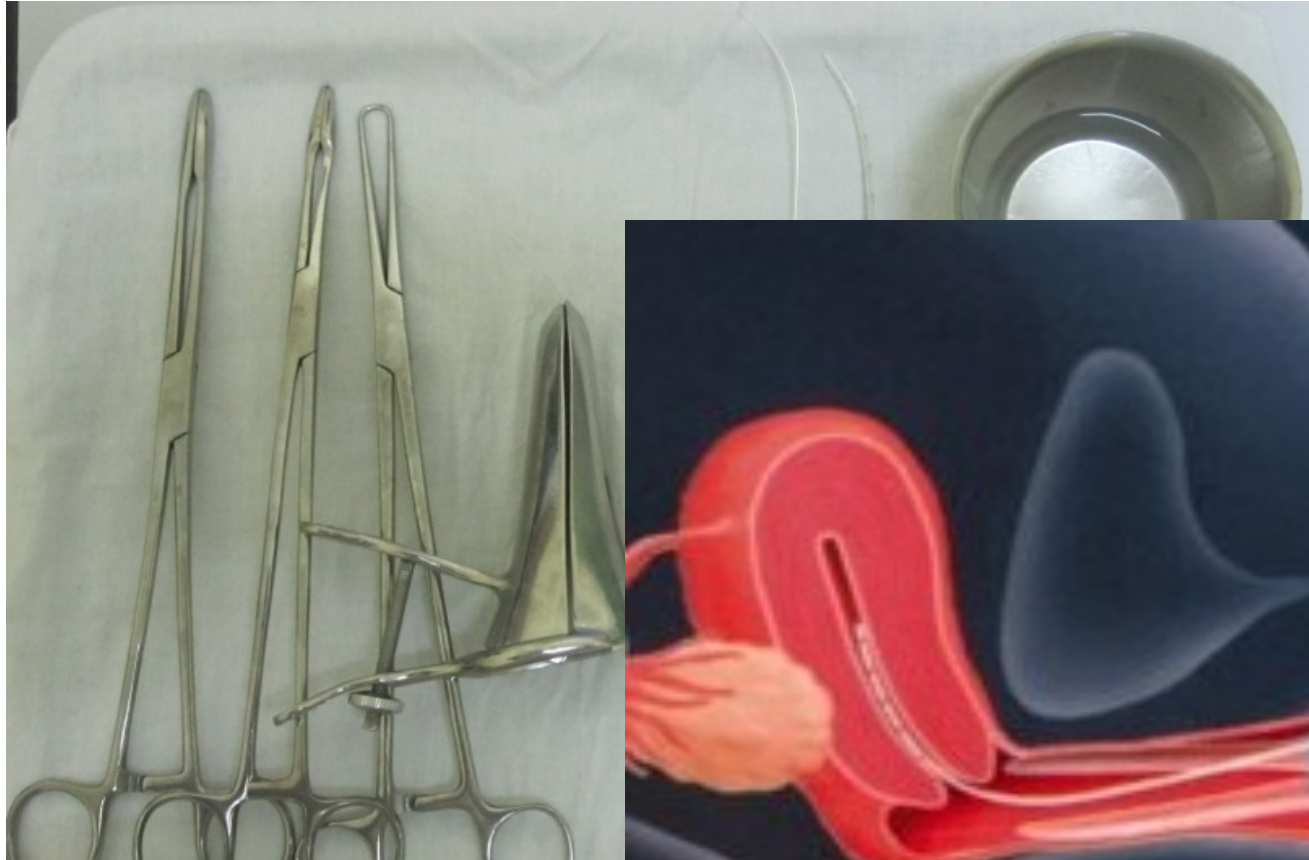
<sup>1</sup>Division of Urology, Department of Surgery, University of Toronto, Toronto, Canada; <sup>2</sup>Division of Urology, London Health Sciences Centre, Western University, London, Canada; <sup>3</sup>Lunenfeld Tannenbaum Research Institute, Mount Sinai Hospital, Toronto, Canada; <sup>4</sup>Faculty of Medicine, Institute of Medical Science, University of Toronto, Toronto, Canada

Nhiều trường hợp yếu tố nam giới không được chú trọng khi ra quyết định điều trị

**Results:** One thousand and five hundred forty-five out of 8,962 (17.2%) men reported use of ARTs prior to evaluation. Of these, 258 tried both IUI and IVF. More than one attempt was reported in 470 (37.2%) and 154 (28.2%) of men with prior IUI and IVF, respectively. Younger male age [adjusted odds ratio (aOR) 0.97/year; 95% confidence interval (CI), 0.95 to 0.99], older female partner age (aOR 1.07/year; 95% CI, 1.04 to 1.10), and year of visit (aOR 1.05/year; 95% CI, 1.01 to 1.09) were significantly associated with prior IUI. Older female partner age (aOR 1.07/year; 95% CI, 1.02 to 1.12) was significantly associated with prior IVF, but not male age or year of visit. Semen analysis parameters were not associated with prior ART.

**Conclusions:** The prior use of ART is common among men presenting for an initial evaluation at a male infertility specialty clinic. Older female partner age was associated with use of reproductive technologies prior to evaluation, however, semen analysis parameters were not.

# Lựa chọn phương pháp điều trị?



2011/02/17 11:05

# IVF or IUI as first-line treatment in unexplained subfertility: the conundrum of treatment selection markers

Table 1 Characteristics of INeS trial participants.

	IVF-SET (n = 201)	IUI-OS (n = 207)
Baseline characteristics		
Mean female age, years (SD)	33 (3.39)	34 (3.67)
Caucasian ethnicity, n (%)	182 (91%)	178 (86%)
Smoking, n (%)	45 (23%)	46 (22%)
Primary subfertility, n (%)	160 (80%)	157 (76%)
Median duration of subfertility, years (IQR)	2.13 (1.73–3.01)	2.30 (1.82–3.13)
Median BMI, kg/m <sup>2</sup> (IQR)	23 (21–26)	23 (21–26)
Median total motile sperm count, $\times 10^6$ (IQR)	51 (25–100)	59 (30–124)
Mean Hunault score (SD)	20 (6.56)	19 (6.38)
Pregnancy outcomes		
Healthy child, n (%)	104 (52%)	97 (47%)
Ongoing pregnancy, n (%)	121 (60%)	119 (57%)

IQR, interquartile range; SET, single embryo transfer. There were missing values in the following variables: duration of subfertility (0.2%), Caucasian ethnicity (2.7%), smoking (1.0%), BMI (4.9%), total motile sperm count (7.1%) and Hunault score (7.6%). There were two couples lost to follow-up in the IVF-SET group and one couple lost to follow-up in the IUI-OS group. One couple in the IVF-SET group with an ongoing pregnancy could not be contacted further.

**In conclusion**, we did not identify any potential treatment selection markers indicating better chances of a healthy child with IVF-SET as first-line treatment instead of IUI-OS. **IUI rather than IVF should remain the preferred first-line treatment for couples** with unexplained or mild male subfertility and a female age between 18 and 38 years.

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# IUI khi nào?

Reproductive BioMedicine Online (2014) 28, 300–309



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## MINI-REVIEW

# Semen quality and prediction of IUI success in male subfertility: a systematic review



**In conclusion**, the literature did not reveal level 1 evidence on the relationship between sperm quality and IUI success. Although more prospective observational cohort studies and well-organized retrospective analyses are urgently needed, **this structured review indicates that IMC >1 million with IUI is probably the best cost-effective treatment before starting IVF**, irrespective of sperm morphology. More answers to the question as to when to perform IUI in male factor infertility cases will never be obtained until more multicentre prospective trials according to standard protocols are organized. Despite the current ongoing debate concerning cost-effectiveness of IUI versus IVF in moderate male factor infertility, other factors might be important, such as the well-known differences between both strategies in risk profile and patient satisfaction.

**<sup>a,b,\*</sup>, Nathalie Dhont <sup>a</sup>, Annelies Thijssen <sup>a,b</sup>,  
<sup>a</sup>, Thinus Kruger <sup>c</sup>**

# IUI khi nào?

Reproductive BioMedicine Online (2014) 28, 300–309



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MINI-REVIEW

Semen quality and prediction of IUI success  
in male subfertility: a systematic review



Willem Ombelet <sup>a,b,\*</sup>, Nathalie Dhont <sup>a</sup>, Annelies Thijssen <sup>a,b</sup>,  
Eugene Bosmans <sup>a</sup>, Thinus Kruger <sup>c</sup>

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# ICSI: Intracytoplasmic sperm injection

## Palermo (1992)

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Volume 340, No. 8810, p17-18, 4 July 1992

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## Pregnancies after intracytoplasmic injection of single spermatozoon into an oocyte

G. Palermo, MD, H. Joris, MT, P. Devroey, MD, Prof A.C. Van Steirteghem, MD

Centre for Reproductive Medicine, Academisch Ziekenhuis, Vrije Universiteit Brussel, Laarbeeklaan 101, 1090 Brussels, Belgium

Published: 04 July 1992

[Altmetric](#) 10

DOI: [http://dx.doi.org/10.1016/0140-6736\(92\)92425-F](http://dx.doi.org/10.1016/0140-6736(92)92425-F)

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#### Summary

#### Abstract

Intracytoplasmic sperm injection (ICSI) is a promising assisted-fertilisation technique that may benefit women who have not become pregnant by in-vitro fertilisation (IVF) or subzonal insemination (SUZI) of oocytes. We have used ICSI to treat couples with infertility because of severely impaired sperm characteristics, and in whom IVF and SUZI had failed. Direct injection of a single spermatozoon into the ooplasm was done in **47 metaphase-II oocytes: 38 oocytes remained intact after injection, 31 became fertilised, and 15 embryos were replaced in utero.** Four pregnancies occurred after eight treatment cycles—two singleton and one twin pregnancy, and a preclinical abortion. **Two healthy boys have been delivered from the singleton pregnancies and a healthy boy and girl from the twin pregnancy.**

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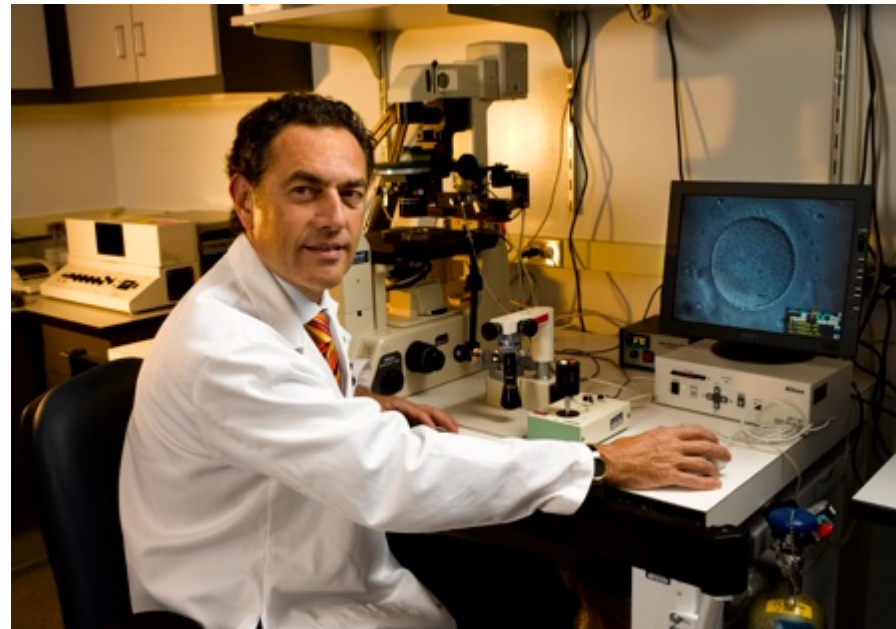
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# Xu hướng ICSI trên thế giới





# NIH Public Access

## Author Manuscript

*JAMA*. Author manuscript; available in PMC 2015 February 27.

Published in final edited form as:

*JAMA*. 2015 January 20; 313(3): 255–263. doi:10.1001/jama.2014.17985.

## Trends in Use of and Reproductive Outcomes Associated With Intracytoplasmic Sperm Injection

**Sheree L. Boulet Dr, PH, MPH, Akanksha Mehta, MD, Dmitry M. Kissin, MD, MPH, Lee Warner, PhD, Jennifer F. Kawwass, MD, and Denise J. Jamieson, MD, MPH**

Division of Reproductive Health, Centers for Disease Control and Prevention, Atlanta, Georgia (Boulet, Mehta, Kissin, Warner, Kawwass, Jamieson); Department of Urology, Emory University School of Medicine, Atlanta, Georgia (Mehta); Department of Obstetrics and Gynecology, Emory

### Conclusions

Among fresh-embryo IVF cycles in the United States, the use of **ICSI increased from 36.4% in 1996 to 76.2% in 2012**, with the largest relative increase noted among cycles without a diagnosis of male factor infertility. **Compared with conventional IVF, use of ICSI was not associated with improved reproductive outcomes irrespective of male factor infertility diagnosis.**

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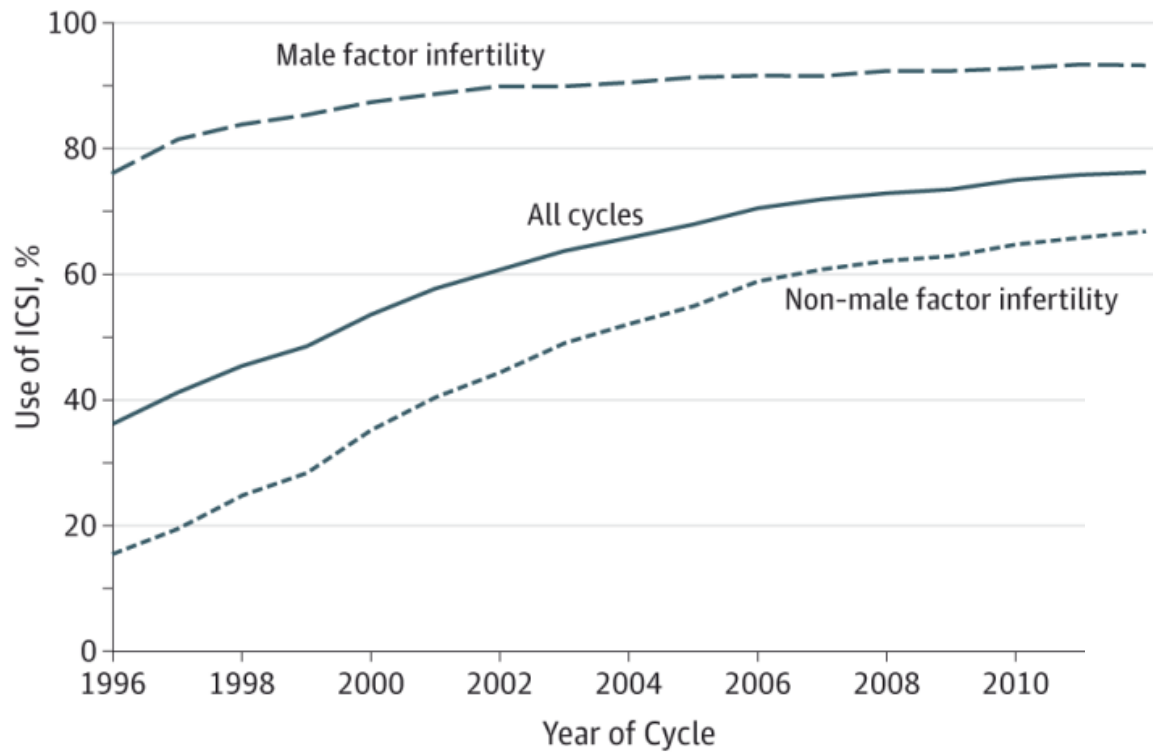
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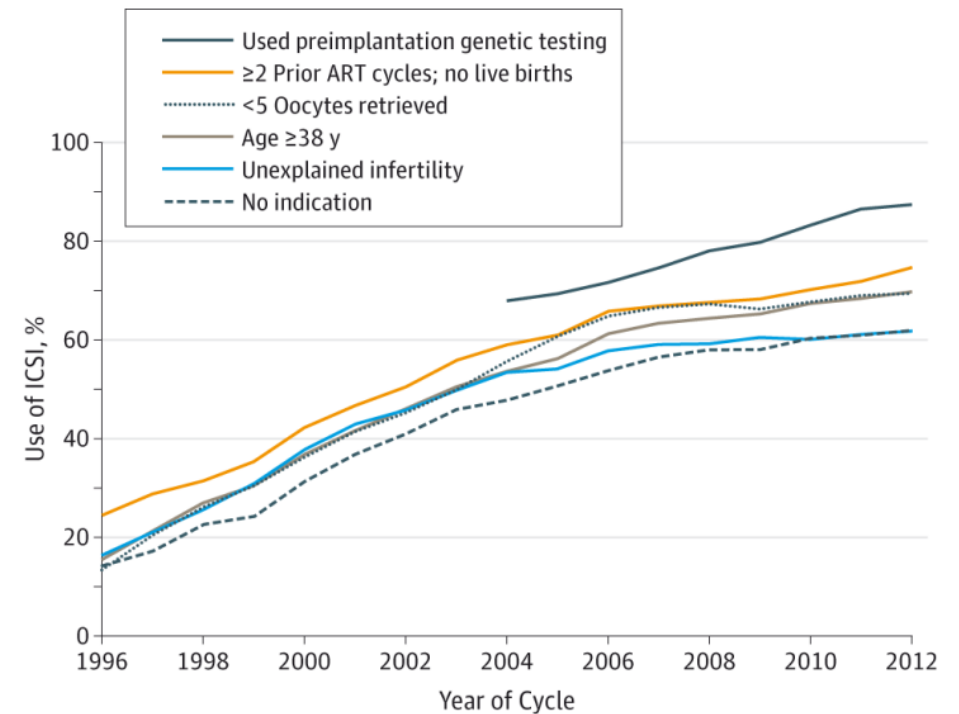
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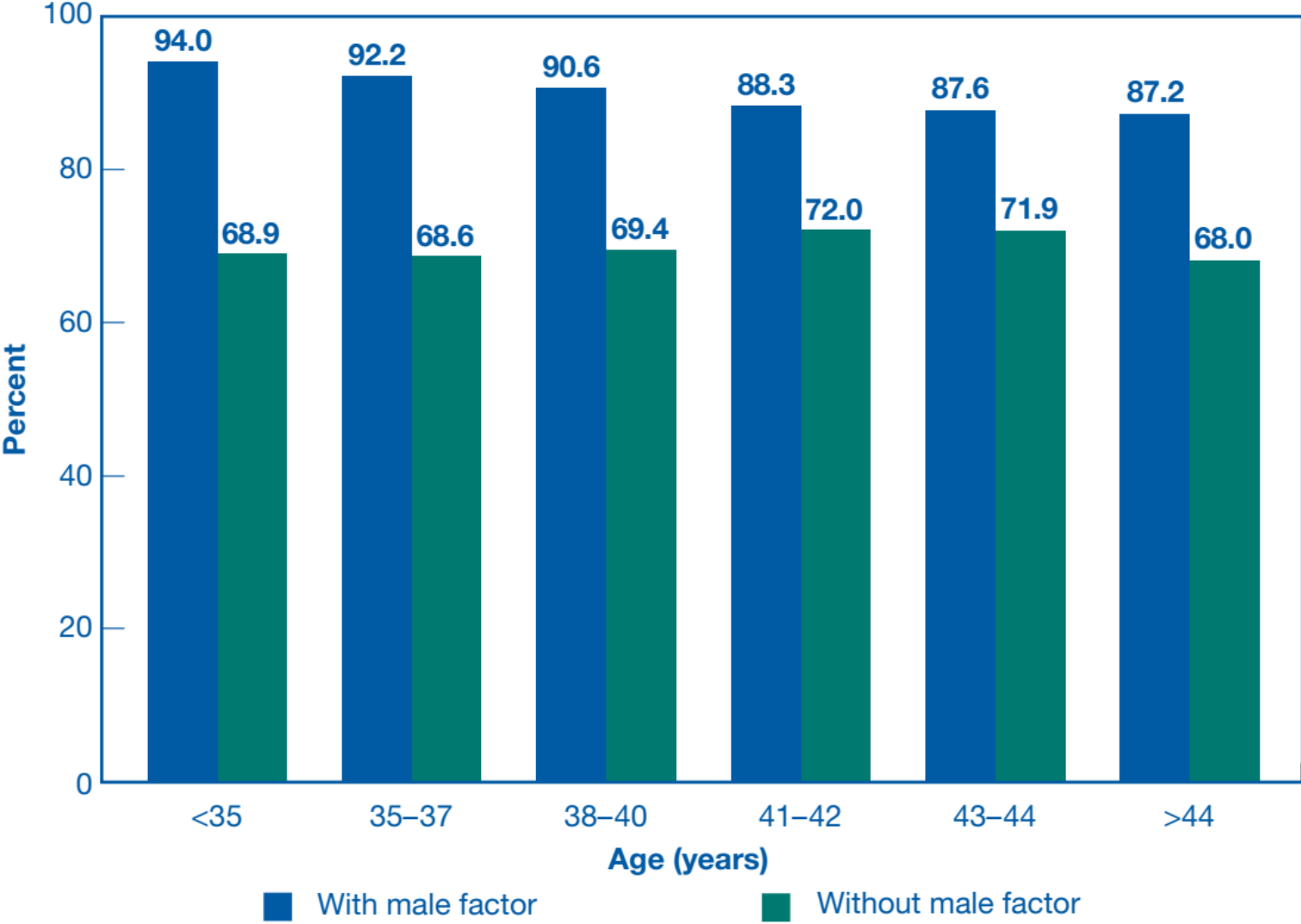


**Figure 1.**  
Use of ICSI Among Fresh IVF Cycles With and Without Male Factor Infertility  
ICSI indicates intracytoplasmic sperm injection; IVF, in vitro fertilization.

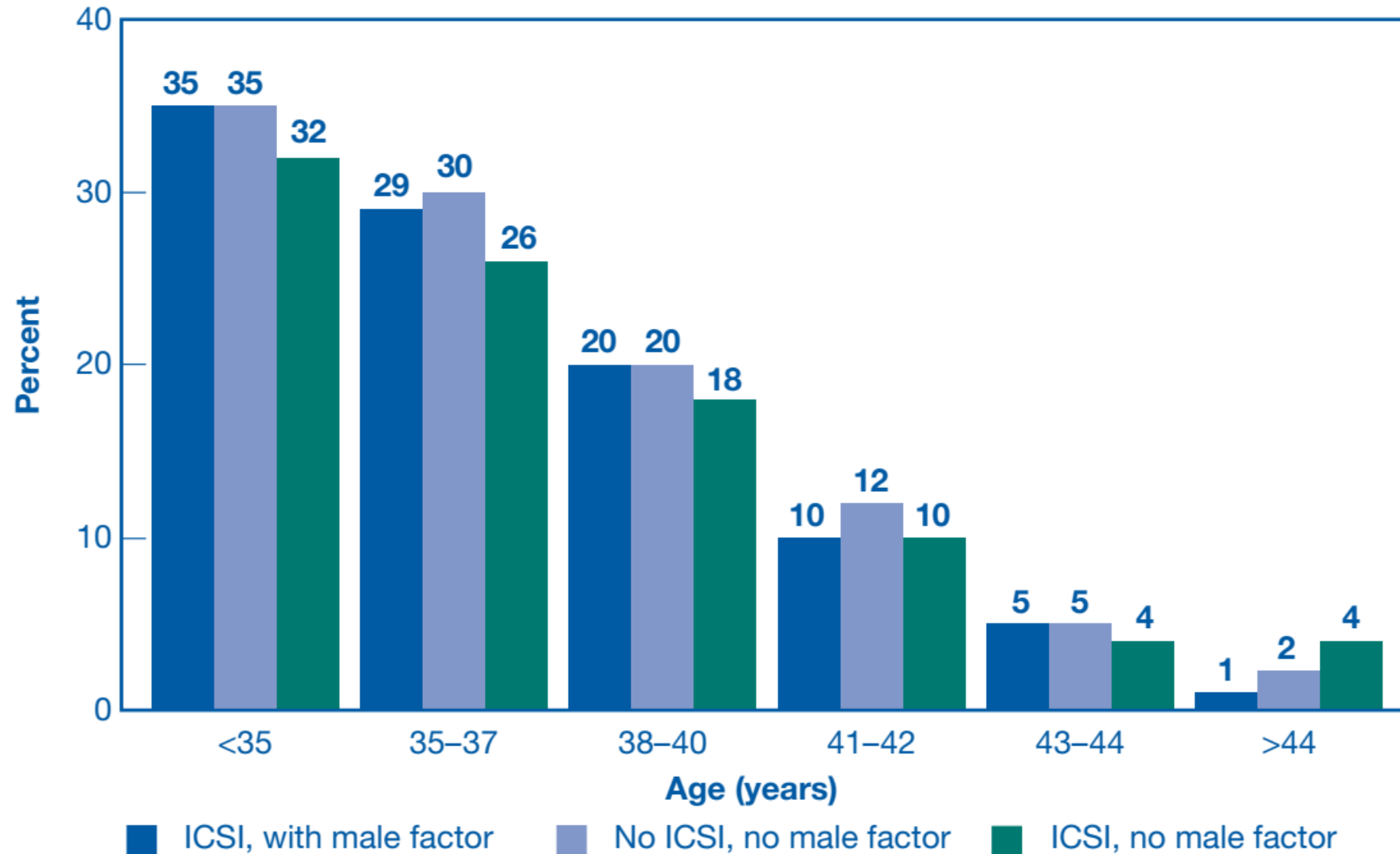


**Figure 2.**  
Use of ICSI Among Fresh IVF Cycles With Non-Male Factor Infertility by Type of Indication, 1996-2012  
ART indicates assisted reproductive technology; ICSI, intracytoplasmic sperm injection; IVF, in vitro fertilization.

# Tỷ lệ thực hiện ICSI nhóm bệnh nhân nam có và không vô sinh



# Tỷ lệ có thai trên nhóm ICSI có và không vô sinh nam





# Tỷ lệ ICSI tăng trong khi tỷ lệ có thai giảm

https://www.mdedge.com/obgyn/article/96491/womens-health/icsi-use-without-male-factor-infertility-climbs-births-decline

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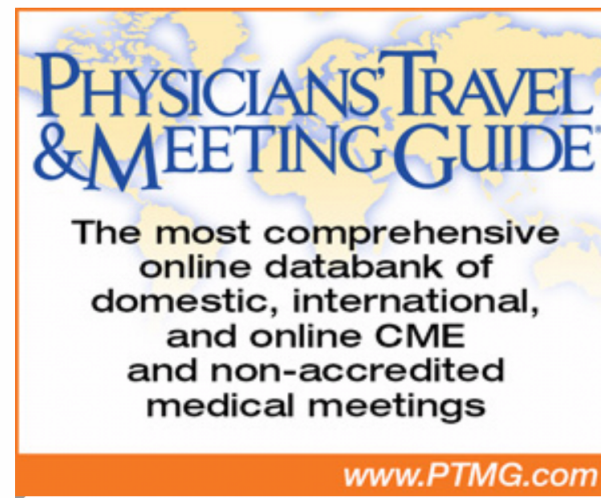
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## ICSI use without male factor infertility climbs, but births decline

**Publish date:** January 20, 2015

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<https://doi.org/10.5653/cerm.2017.44.4.224>  
pISSN 2233-8233 • eISSN 2233-8241  
Clin Exp Reprod Med 2017;44(4):224-231



# Impact of sperm DNA fragmentation on clinical *in vitro* fertilization outcomes

Hwa Young Choi<sup>1,2</sup>, Seul Ki Kim<sup>2,3</sup>, Seok Hyun Kim<sup>2,4</sup>, Young Min Choi<sup>2,4</sup>, Byung Chul Jee<sup>2,3</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Maria Fertility Hospital, Seoul; <sup>2</sup>Department of Obstetrics and Gynecology, Seoul National University College of Medicine, Seoul; <sup>3</sup>Department of Obstetrics and Gynecology, Seoul National University Bundang Hospital, Seongnam; <sup>4</sup>Department of Obstetrics and Gynecology, Seoul National University Hospital, Seoul, Korea

In conclusion, **no association was found between SDF levels and the fertilization rate or pregnancy rate** in IVF/ICSI cycles. However, the **SDF level significantly affected the miscarriage rate**, especially in women with POR. These findings indicate that SDF testing should be performed in couples with POR to provide additional information on the prognosis of pregnancy.

## Impact of sperm DNA fragmentation on clinical *in vitro* fertilization outcomes

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## REVIEW

# The effect of sperm DNA fragmentation on live birth rate after IVF or ICSI: a systematic review and meta-analysis



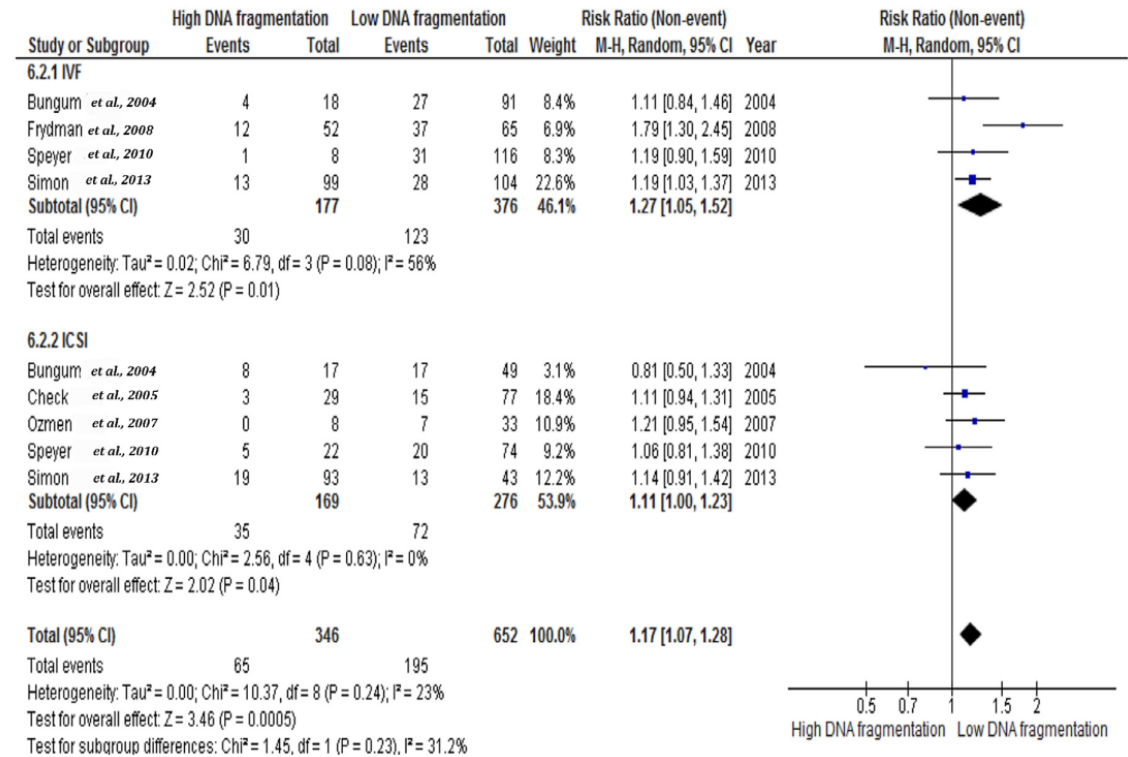


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REVIEW

# The effect of sperm DNA fragmentation on live birth rate after IVF or ICSI: a systematic review and meta-analysis



In conclusion, high sperm DNA fragmentation in couples undergoing assisted reproductive techniques seems to be associated with lower LBR. The results of this meta-analysis suggest that IVF treatment in men with high sperm DNA fragmentation is associated with lower LBR outcome compared with those with low DNA fragmentation. This detrimental






# Cần có sự cải thiện ...



















- ❑ Cần phải tăng số lượng tinh trùng, chất lượng tinh trùng tương tự tăng số lượng chất lượng noãn như ở giới
- ❑ Khác nữ giới, hormon có thể kích thích nang noãn phát triển, còn nam giới rất khó sử dụng hormon để kích thích sinh sản tinh trùng
- ❑ Rất ít các bằng chứng lâm sàng về điều trị nội khoa cho nam giới

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 **eau** **Ít nhất 44% nam giới vô sinh không rõ nguyên nhân**

## Guidelines

- > Individual Guidelines
  - > Oncology Guidelines
  - > Non-Oncology Guidelines
  - > Discontinued Topics
  - > General Topics
- > Compilations of all Guidelines

Male Sexual Dysfunction	Male Infertility
 Full Text Guidelines	 Full Text Guidelines
 Summary of Changes	 Summary of Changes
 Scientific Publications & Appendices	 Scientific Publications & Appendices
 Pocket Guidelines	 Pocket Guidelines
 Archive	 Archive
 Panel	 Panel

## Male Infertility

-  Full Text Guidelines
-  Summary of Changes
-  Scientific Publications & Appendices
-  Pocket Guidelines
-  Archive
-  Panel

# Vô sinh nam không rõ nguyên nhân – Gốc tự do

- ❑ Nam giới vô sinh không rõ nguyên nhân có nồng độ các gốc tự do cao và rất ít các chất chống oxy hóa trong tinh dịch so với nam giới bình thường.
- ❑ 30-80% nam giới vô sinh có tăng các marker oxy hóa ([Agarwal et al, urology 2006](#))
- ❑ Gốc tự do phản ứng với các phân tử xung quanh, làm tổn thương và thay đổi đặc tính sinh học của protein, AND & lipid ([Protoctor, 1989](#); [Favier, 2003](#); [Pincemail 1998](#); [Minn 2005](#); [Fouad 2006](#)).

# Hình thành gốc tự do

Ô nhiễm môi trường



Ô nhiễm công nghiệp

Dùng nhiều rượu và thuốc lá

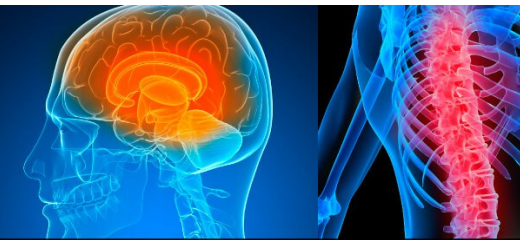


Thức ăn giàu chất béo





# Các bệnh do gốc tự do



**INFLAMMATION**

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 cancer



# Tinh trùng dễ bị tổn thương

- ❑ Bản thân tinh trùng có thể tạo ra các gốc tự do.
- ❑ Màng tinh trùng chứa nhiều axit béo không bão hòa (PUFA - *polyunsaturated fatty acids*).
- ❑ Không có khả năng sửa chữa màng tế bào.
- ❑ Thiếu hệ thống chống oxy hóa (*antioxidant system*) trong bào tương.
- ❑ DNA tinh trùng dễ bị tổn thương
  - ❑ DNA nhân quan trọng và cần thiết cho quá trình thụ tinh,
  - ❑ DNA ty thể (mtDNA) sản xuất ATP giúp tinh trùng di chuyển.
  - ❑ Tổn thương DNA dẫn đến vô sinh.



# Nguồn gốc của ROS trong tinh dịch

## ① Bạch cầu:

- ❑ Chủ yếu là bạch cầu trung tính. (*Aitken et al, 1995*)
- ❑ Liên quan chặt chẽ giữa số lượng bạch cầu trong tinh dịch với lượng ROS được tạo ra. (*Aitken et al., 1994; Sharma et al., 2001*)
- ❑ Bạch cầu tạo ra ROS với tốc độ nhanh gấp 1000 lần so với tinh trùng. (*Plante et al., 1994*)

## ② Tinh trùng:

- ❑ Khả năng tinh trùng tạo ra ROS liên quan ngược với tình trạng trưởng thành của tinh trùng.
- ❑ Kết quả, tinh trùng dị dạng tạo ra nhiều ROS hơn so với tinh trùng bình thường.

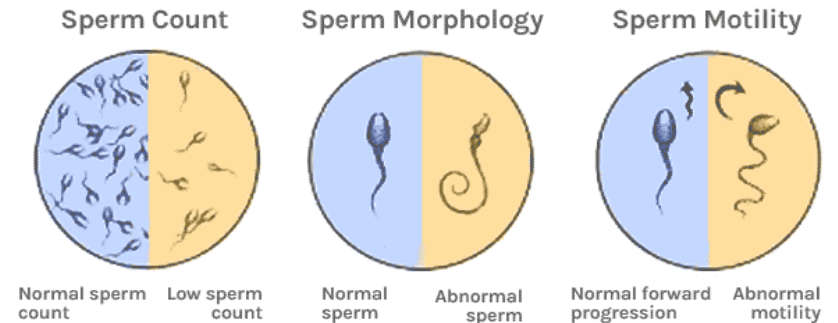
# Gốc tự do tác động lên DNA tinh trùng



**DNA đầu TT**  
(Quan trọng với sự thụ tinh)



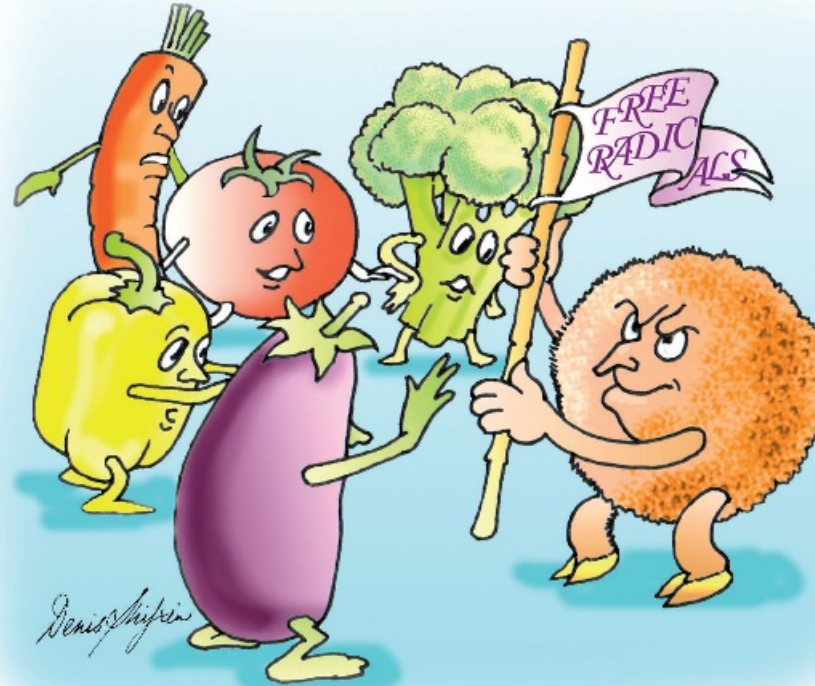
**DNA ti thể - Tạo năng lượng cho TT**





# Lựa chọn...

**Bổ sung sung  
thức ăn..."**



**Thay đổi lối sống**





# Các chất chống oxy hóa

Selen 60 mg

Glutathione

CoQ 10

L-Carnitine 1000 mcg

Zn 40 mg

Acid folic

L-Arginine 200  
mcg

# Tổng hợp các nghiên cứu bổ sung chất chống oxy hóa

## The role of antioxidant therapy in the treatment of male infertility: an overview

Francesco Lombardo, Andrea Sansone, Francesco Romanelli, Donatella Paoli, Loredana Gandini and Andrea Lenzi

### Vitamin C

Abel *et al.*, 1982<sup>50</sup>

No effects (200 mg day<sup>-1</sup> for 6 months, *in vivo*)

Hargreave *et al.*, 1984<sup>51</sup>

Hughes *et al.*, 1998<sup>38</sup>

Reduced DNA damage after Percoll preparation (300–600 μmol l<sup>-1</sup> vitamin C, *in vitro*)

Hughes *et al.*, 1998<sup>38</sup>

Increased DNA damage after Percoll preparation (300–600 μmol l<sup>-1</sup> vitamin C +

### Carnitine

Costa *et al.*, 1994<sup>61</sup>

Improved motility, morphology and concentration (3 g day<sup>-1</sup> L-carnitine for 2 months, *in vivo*)

Vicari and Calogero, 2001<sup>62</sup>

Increased motility and viability, reduced ROS quantity; no effects on concentration or

### Selenium

Iwanier and Zachara, 1995<sup>75</sup>

No effects (200 μg day<sup>-1</sup> for 3 months, *in vivo*)

Vezina *et al.*, 1996<sup>35</sup>

Increased motility, morphology, viability; no effects on concentration [100 μg day<sup>-1</sup>

Scott *et al.*, 1998<sup>76</sup>

(1 month) + 200 μg day<sup>-1</sup> (5 months) + 400 mg vitamin E for 6 months, *in vivo*]

Improved motility; no increase in concentration (100 μg day<sup>-1</sup> Se, or Se + 1 mg vitamin A, 10 mg

Keskes-Ammar *et al.*, 2003<sup>43</sup>

vitamin C, 15 mg vitamin E daily, for 3 months, *in vivo*)

Safarinejad and Safarinejad, 2009<sup>60</sup>

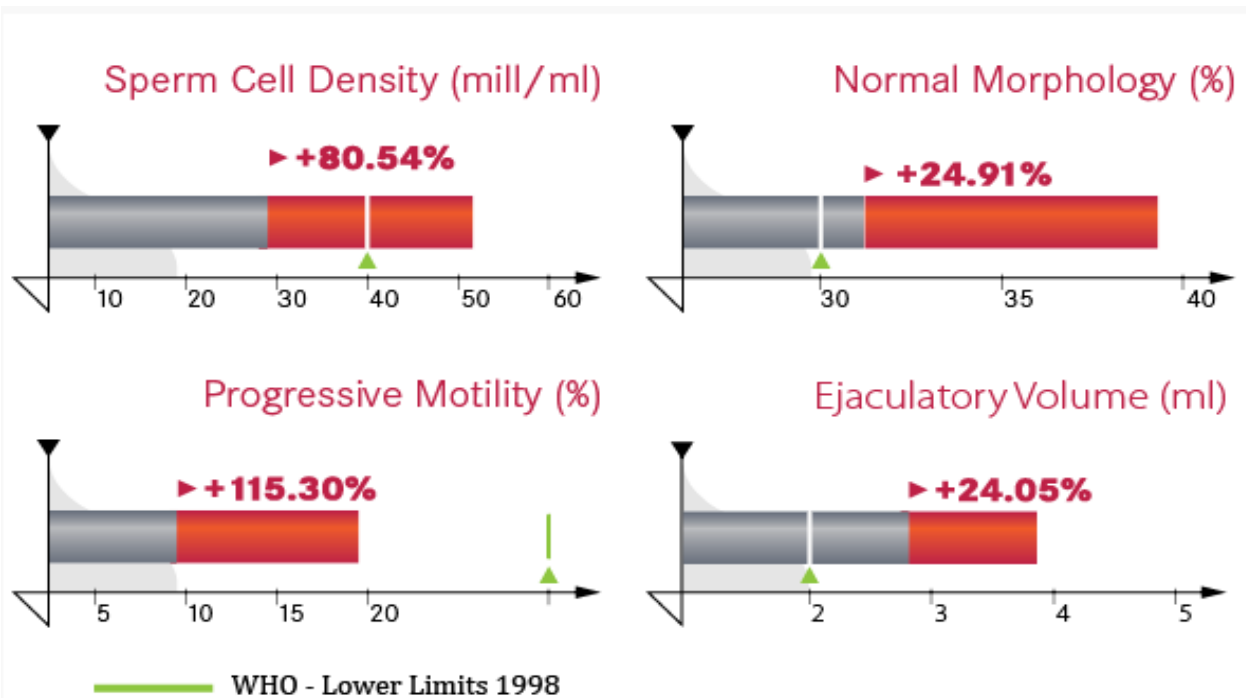
Increased motility (400 mg vitamin E + 225 μg Se daily, for 3 months, *in vivo*)

Improved sperm count, motility and morphology (600 mg day<sup>-1</sup> N-acetyl-cysteine, or 600 mg

day<sup>-1</sup> N-acetyl-cysteine and Se 200 μg day<sup>-1</sup>, or Se 200 μg day<sup>-1</sup> daily, for 6 months)

# Pilot Study 2006 – 2008

The search for alternative treatment approaches to improve sperm quality  
“The use of the nutraceutical PROfertil® – a therapy of the male factor”



M. Imhof: “The use of the nutraceutical PROfertil - a therapy of the male factor” EAU Bratislava 2010

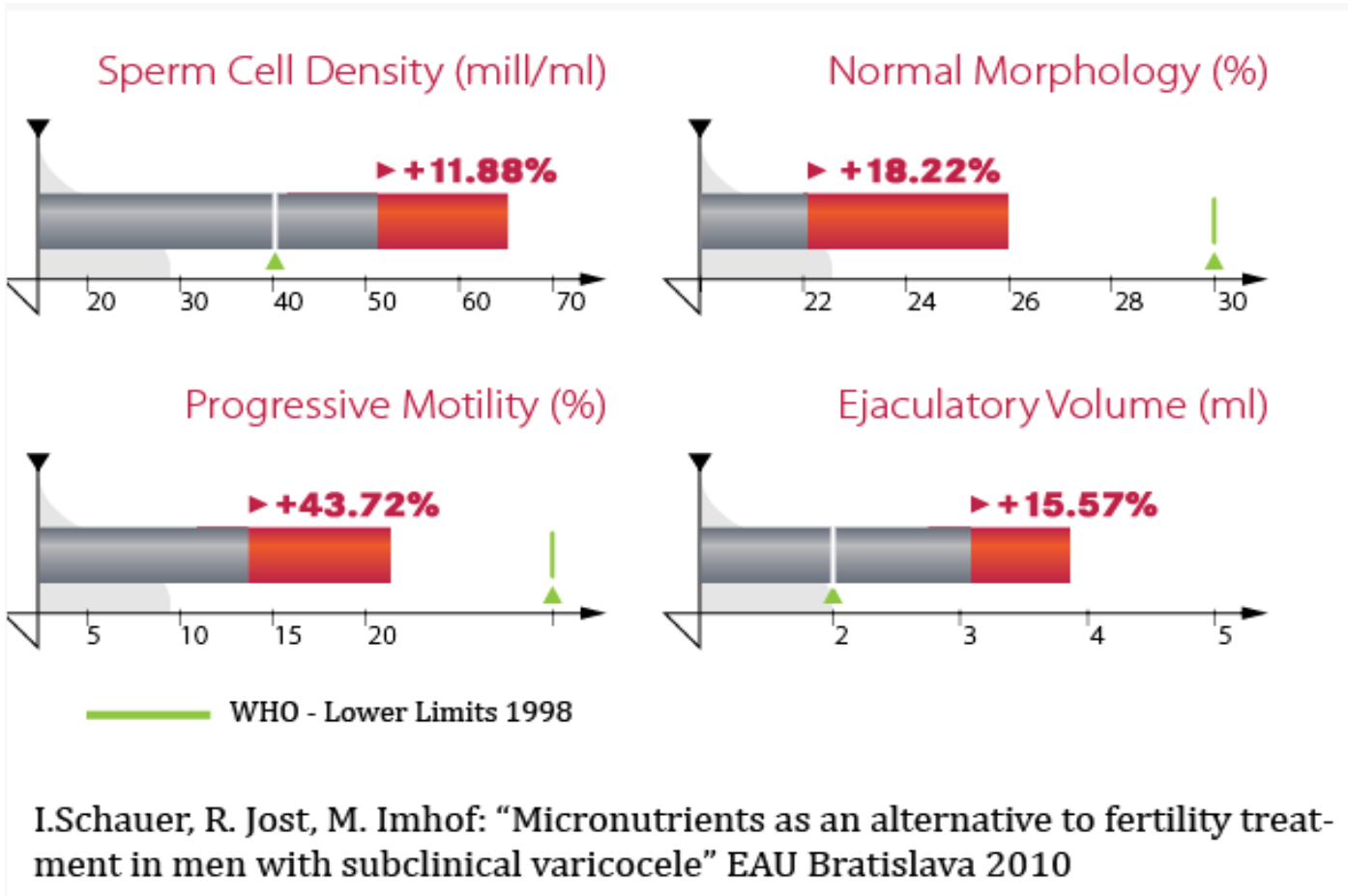
## Thiết kế nghiên cứu

- ❑ Nghiên cứu tại Trung tâm sinh sản International Medical Clinic, Vien.
- ❑ 120 nam giới tuổi trung bình 35,9 (23-58 tuổi)
- ❑ Vô sinh > 2 năm, ít nhất 2 lần xét nghiệm TĐĐ bất thường trong tiền sử
- ❑ Loại trừ: azoospermia, aspermia, giãn tĩnh mạch và nhiễm khuẩn tiết niệu sinh dục.
- ❑ Uống 2 viên PROfertil®/ngày trong 3 tháng.
- ❑ Xét nghiệm TĐĐ sau 3 tháng dùng thuốc.

# Varicocele Study 2009

What is the role of varicocele in male infertility?

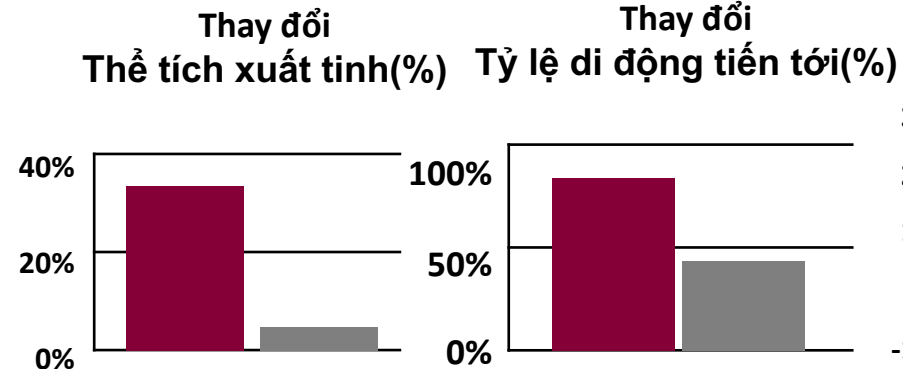
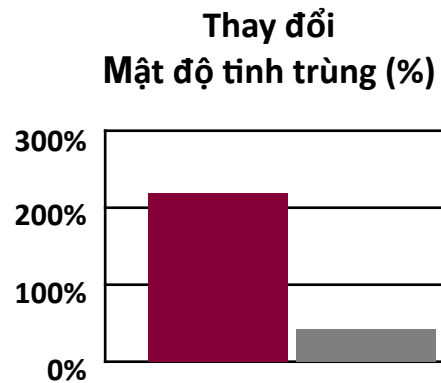
“Micronutrients as an alternative to fertility treatment in men with subclinical varicocele”



## Kết luận:

Bổ sung vi chất dưỡng như là lựa chọn để cải thiện chất lượng tinh trùng và khả năng sinh sản, đặc biệt trên nam giới giãn tĩnh mạch tinh mức độ tiền lâm sàng và nhẹ không có chỉ định phẫu thuật hoặc rủi ro nhiều nếu phẫu thuật

# Cải thiện tất cả các thông số tinh dịch đồ



**PROfertil® 2 viên/ngày >>> 25.75% có thai sau 6 tháng**

— Nhóm đối chứng, n=73

— Nhóm **PROfertil**, n=132

*Imhof & cộng sự 2011*

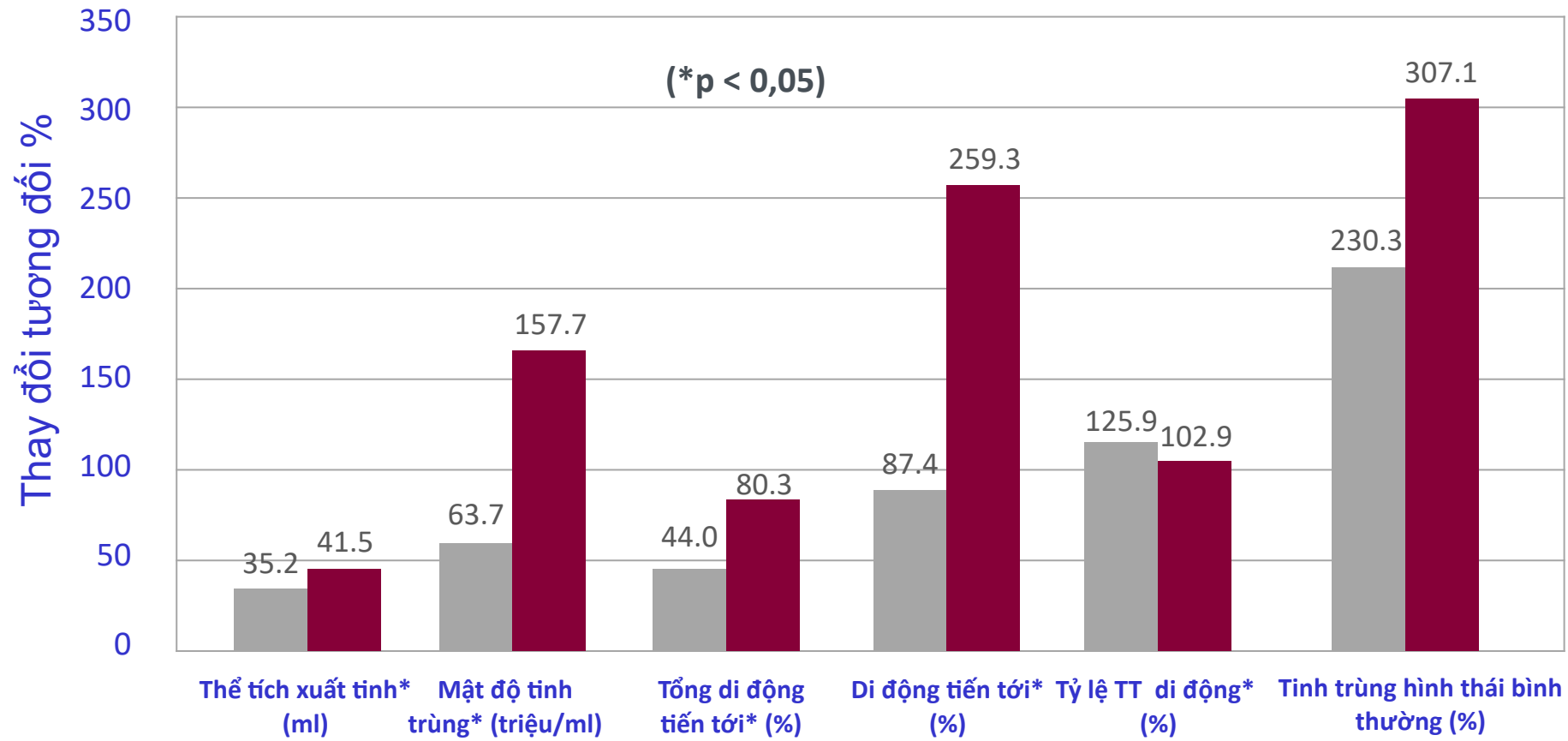




# Cải thiện các chỉ số tinh dịch so với L-Carnitine đơn thuần

L-carnitine Study  
2016

 **BioMed** Central  
Reproductive Biology  
and Endocrinology

“Comparison of the effect of a combination of eight micronutrients versus a standard mono preparation on sperm parameters”



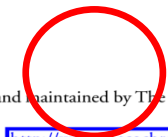
 Nhóm sử dụng **PROfertil** ( n = 143)  
 Nhóm sử dụng L-Cartinite (n = 156)

*Lipovac M, Bodner F, Imhof M và cộng sự, 12/2016*

# THE COCHRANE COLLABORATION®

## Antioxidants for male subfertility (Review)

Showell MG, Brown J, Yazdani A, Stankiewicz MT, Hart RJ



This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2011, Issue 1

<http://www.thecochranelibrary.com>

Medium risk population

0 per 1000

0 per 1000  
(0 to 0)

- ❑ Số liệu Cochrane cho thấy: nam giới vô sinh được bổ sung chất chống oxi hóa có thể cải thiện tỷ lệ có thai và tỷ lệ sinh sống trong các chu kỳ HTSS so với nhóm placebo.
- ❑ Cần thêm nghiên cứu so sánh giữa các loại chất chống oxi hóa khác nhau.

# Kết luận

- ❑ Vô sinh nam gày càng tăng lên, chẩn đoán dựa chủ yếu xét nghiệm tinh dịch đồ. Chỉ số TDĐ không ổn định
- ❑ Cân nhắc lựa chọn phương pháp điều trị giữa IUI và IVF tùy mức độ bất thường. Không nên quá lạm dụng ICSI
- ❑ Vai trò của gốc tự do và chất chống oxy hoá được nghiên cứu nhiều
- ❑ Bằng chứng cho thấy antioxidant có tác dụng trong các trường hợp vô sinh nam không rõ nguyên nhân, đặc biệt là hỗ trợ trong các chu kỳ IUI và IVF

**Trân trọng cảm ơn sự chú ý lắng nghe của  
quý đồng nghiệp!**