THE CANADIAN FERTILITY AND ANDROLOGY SOCIETY'S 71ST ANNUAL MEETING

September 18 - 20, 2025
Centre des Congrès de Québec, Quebec City

P 30- How Age, Stimulation Protocol, and Cycle Number Affect Pregnancy Outcomes in Donor Insemination: Analysis of 1,961 Cycles

Naameh MOUSSAOUMAY[1,2], Robert HEMMINGS[1,2], Camille SYLVESTRE[1,2,3].
[1]University of Montreal , Montréal, Canada
[2]Ovo clinic, Reproductive endocrinology and Infertility, Montréal, Canada
[3]Sainte Justine Hospital, Montréal, Canada

INTRODUCTION

Donor artificial insemination (AID) is a widely used fertility treatment for single women and same-sex female couples. Success rates are influenced by maternal age, ovarian stimulation protocols, and the number of cycles performed. With advancing maternal age, oocyte quality and ovarian reserve decline, reducing pregnancy chances. The role of natural versus stimulated cycles remains debated, and the optimal number of cycles to attempt is not well established.

AIM

To determine how age, stimulation protocol, and the number of cycles affect pregnancy outcomes in donor artificial insemination.

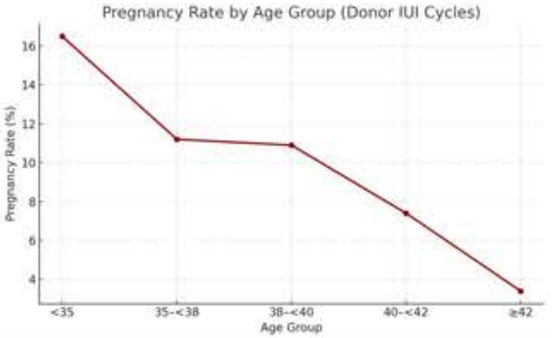
METHOD

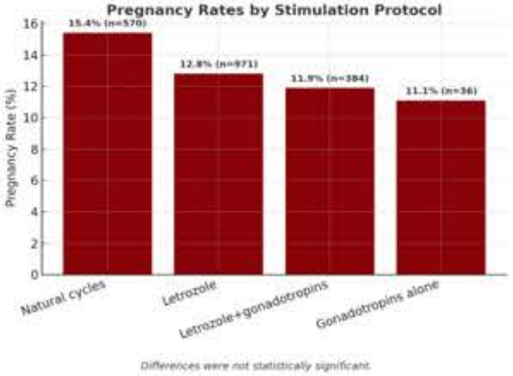
Design: Retrospective observational cohort study
Setting: University-affiliated fertility clinic in Montreal, Canada
Duration: January 2023 – August 2024
Participants: 745 women undergoing 1,961 donor intra-uterine insemination (IUI) cycles were included.
Participants stratified into five age groups: <35, 35–38, 38–40, 40–42, and ≥42 years.
Cycle protocols classified as natural or stimulated, including letrozole alone, letrozole + gonadotropins, or gonadotropins alone.
Primary outcome: positive pregnancy test per cycle.
Pregnancy rates analyzed by age group, protocol type, and number of insemination attempts.

RESULTS

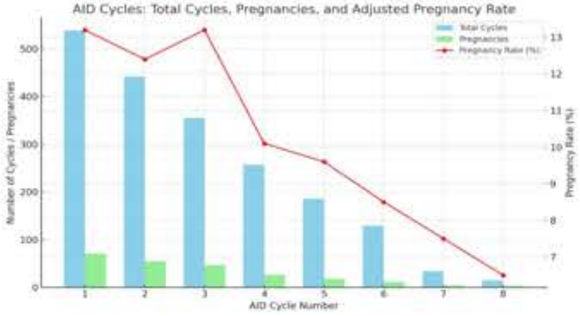
Total cycles analyzed: 1,961; total pregnancies: 262

Pregnancy rates significantly declined with age:
<35 years (n=1,048): 16.5%
35–38 years: 11.2% (p=0.01 vs <35)
38–40 years: 10.9% (p=0.02)
40–42 years: 7.4% (p=0.006)
≥42 years: 3.4% (p=0.001)
No pregnancies observed in women ≥43 years.





Pregnancy rates by protocol (no significant differences):
Natural cycles (n=570): 15.4%
Letrozole alone (n=971): 12.8% (p=0.15 vs natural)
Letrozole + Gonadotropins (n=384): 11.9% (p=0.12)
Gonadotropins alone (n=36): 11.1% (p=0.47)



Most pregnancies (84%) occurred within first 4 cycles; 92% by 5th cycle (241/262).
No significant pregnancy rate improvement after 5 cycles (p=0.22).

LIMITATIONS AND REASONS FOR CAUTION

Retrospective design limits causal inference.
Outcome based on positive pregnancy test rather than live birth rates.
Randomized controlled trials needed to validate findings.

CONCLUSIONS

Donor IUI is most effective in women under 35 and remains viable up to age 42. Natural cycles may reduce costs and risks without compromising success rates. Most pregnancies occur within 5 cycles, suggesting this as an optimal threshold for repeated attempts.

REFERENCES

1. Zhang D, Cai H, Xie J, Chen L, Zhang Z, Shi J. Cumulative live birth rates following intrauterine insemination using donor and husband sperm in different age groups: A cohort study of 10 415 insemination cycles. *Int J Gynaecol Obstet*. 2024 Oct;167(1):142–153. doi:10.1002/ijgo.15539.

2. Frank R, Steiner N, Al Shatti M, Tulandi T, Buckett W, Holzer H. Outcomes of donor versus partner sperm in IUI in women aged 38–43 years: a retrospective cohort study. *Int J Gynaecol Obstet*. 2022;156(3):516-20.

3. Diamond MP, Legro RS, Coutifaris C, et al. Assessment of Multiple Intrauterine Gestations from Ovarian Stimulation (AMIGOS) trial: baseline characteristics. Fertil Steril. 2015;103:962–973. e4. - PMC - PubMed

4. Ferrara I, Balet R, Grudzinskas JG. Intrauterine insemination with frozen donor sperm. Pregnancy outcome in relation to age and ovarian stimulation regime. Hum Reprod. 2002;17:2320-2324.

ACKNOWLEDGEMENTS

Dr Robert Hemmings
Dr Camille Sylvestre
Marion Vivien

CONTACT INFORMATION

naameh.moussaoumay@gmail.com