



ASSOCIATION BETWEEN ENDOMETRIAL THICKNESS AND PREGNANCY RATES IN FRESH EMBRYO TRANSFER: AN INDIVIDUAL PATIENT DATA META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS WITH FOLLITROPIN DELTA

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OBJECTIVE

To evaluate the association between endometrial thickness (EMT) at end of stimulation (EOS) and pregnancy rates in the fresh cycle following ovarian stimulation with follitropin delta.

KEY TAKEAWAYS

1 This study suggests optimal pregnancy rates at an EMT of >10 mm at EOS with no impairment at an EMT >14 mm.

2 Few patients (1.9%) had a thin EMT (<7 mm). These patients had acceptable pregnancy rates.

3 No differences in early pregnancy loss by EMT were observed.

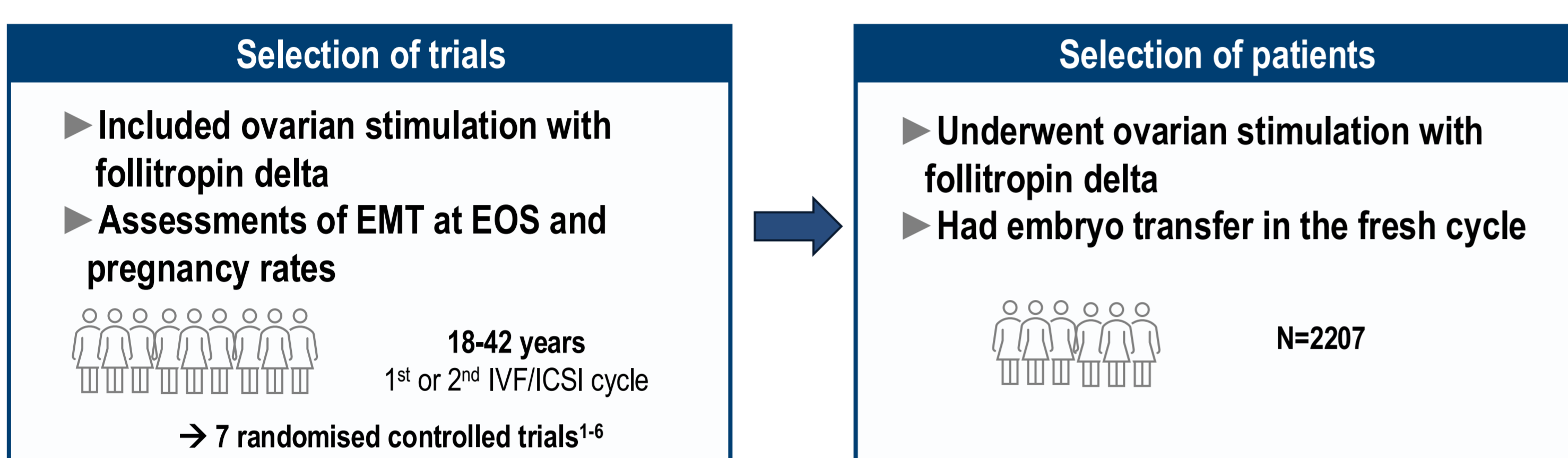
BACKGROUND

- An association between endometrial thickness (EMT) at end of stimulation (EOS) and pregnancy rates has been suggested, with proposed lower rates in patients with a thin endometrium (<7 mm).
- Recently, the importance of EMT has been questioned when transferring euploid embryos.
- This study evaluates the association in the fresh cycle following ovarian stimulation with follitropin delta, in context of randomised controlled trials using untested embryos, reflecting common clinical practice.

METHODS

- Individual patient data (IPD) meta-analysis based on 7 randomised controlled trials. The analysis included 2207 patients. The selection of trials and patients were based on the criteria presented in Figure 1.

FIGURE 1 Individual Patient Data Meta-analysis



- Each patient underwent one stimulation cycle with follitropin delta, with embryo transfer in the fresh cycle. EMT was measured at EOS.
- For patients with transfer in the fresh cycle, triggering was performed with human chorionic gonadotrophin and single or double embryo/blastocyst transfer was performed on Day 3 or Day 5.
- Associations between EMT, grouped into <7, 7-10, >10-14 and >14 mm, and clinical pregnancy rate (at least one gestational sac 5-6 weeks after transfer), ongoing pregnancy rate (at least one intrauterine viable fetus 8-9 or 10-11 weeks after transfer), and early pregnancy loss (loss up to the ongoing pregnancy assessment, 8-9 or 10-11 weeks after transfer), were assessed.
- Logistic regression analyses adjusted for confounding factors (age, anti-Müllerian hormone, EMT, BMI, protocol and trial) were performed.

RESULTS

- The characteristics of the overall study population is presented in Table 1.
- The clinical pregnancy and ongoing pregnancy rates by EMT group are presented in Table 2 and Figure 2.
- Of the 1093 patients with positive beta-hCG, 243 (22.2%) had an early pregnancy loss (Table 1). Early pregnancy loss by EMT group is presented in Table 3 and Figure 3.

TABLE 1 Characteristics of the Study Population

| Overall population | N=2207 |
|-----------------------------------|-------------|
| Age (years) | 33.1 ± 4.1 |
| EMT at EOS (mm) | 10.8 ± 2.2 |
| GnRH antagonist protocol | 1944 (88.1) |
| Single embryo/blastocyst transfer | 2033 (92.1) |
| Clinical pregnancy | 965 (43.7) |
| Ongoing pregnancy | 850 (38.5) |
| Patients with positive beta-hCG | N=1093 |
| Pregnancy loss | 243 (22.2) |

Values are mean ± standard deviation or number (percentage).

EMT, endometrial thickness; EOS, end of stimulation; GnRH, gonadotropin-releasing hormone; hCG, human chorionic gonadotropin

- The mean age of the overall study population was 33.1 years, and the mean EMT was 10.8 mm.
- 1093 patients had a positive beta-hCG and were evaluated for pregnancy loss.

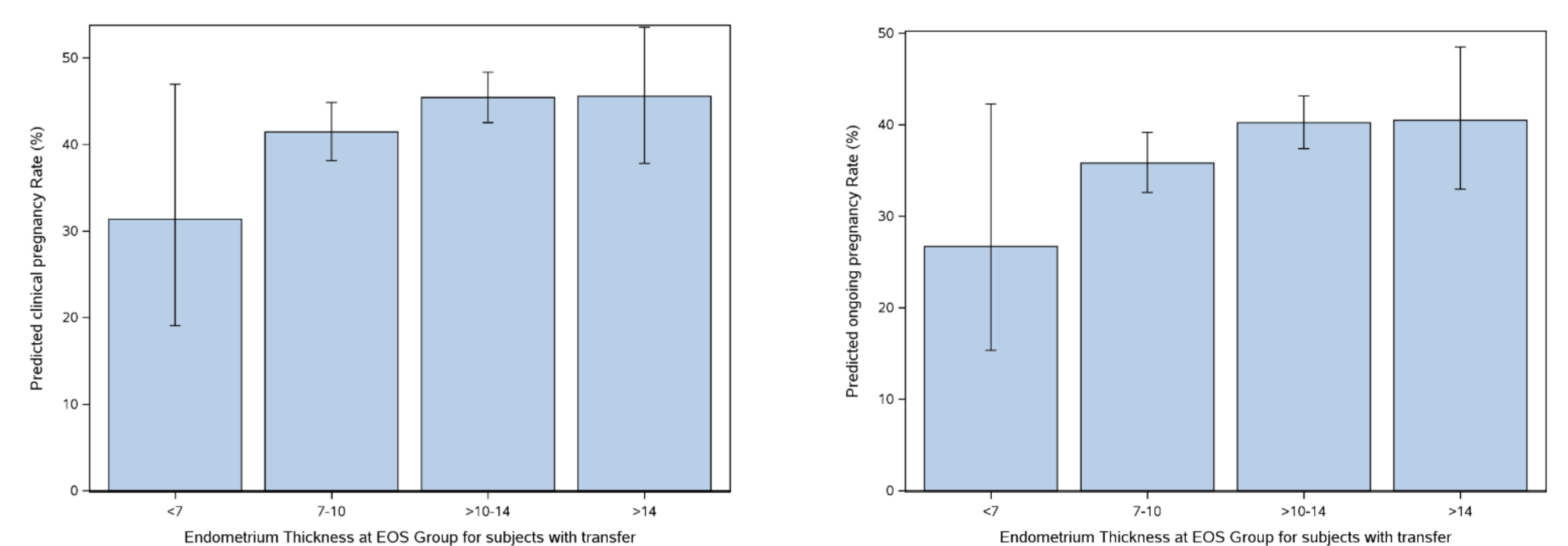
TABLE 2 Clinical and Ongoing Pregnancy Rate by Endometrial Thickness

| EMT at EOS (grouped) | n (%) N=2207 | Clinical pregnancy rate (95% CI) | Ongoing pregnancy rate (95% CI) |
|----------------------|-----------------|----------------------------------|---------------------------------|
| <7 mm | 42 (1.9) | 31.4 (19.1 – 47.0) | 26.7 (15.3 – 42.2) |
| 7-10 mm | 856 (38.8) | 41.4 (38.1 – 44.8) | 35.8 (32.6 – 39.1) |
| >10-14 mm | 1152 (52.2) | 45.4 (42.5 – 48.3) | 40.2 (37.4 – 43.1) |
| >14 mm | 157 (7.1) | 45.6 (37.8 – 53.5) | 40.5 (32.9 – 48.5) |

Predicted clinical pregnancy rate % (95% CI) and ongoing pregnancy rate % (95% CI) by endometrial thickness in the overall population.

EMT, endometrial thickness; EOS, end of stimulation

FIGURE 2 Clinical and Ongoing Pregnancy Rate by Endometrial Thickness



Predicted clinical pregnancy rate and ongoing pregnancy rate by endometrial thickness in the overall population (N=2207). Lines represent 95% CIs.

- The majority of patients had an EMT of >10-14 mm at EOS.
- Few patients (1.9%) had a thin endometrium (<7 mm) at EOS.
- Pregnancy rates were highest at an EMT >10 mm with no impairment observed in patients with a thick (>14 mm) EMT.
- The pregnancy rates were acceptable in patients with a thin (<7 mm) EMT.

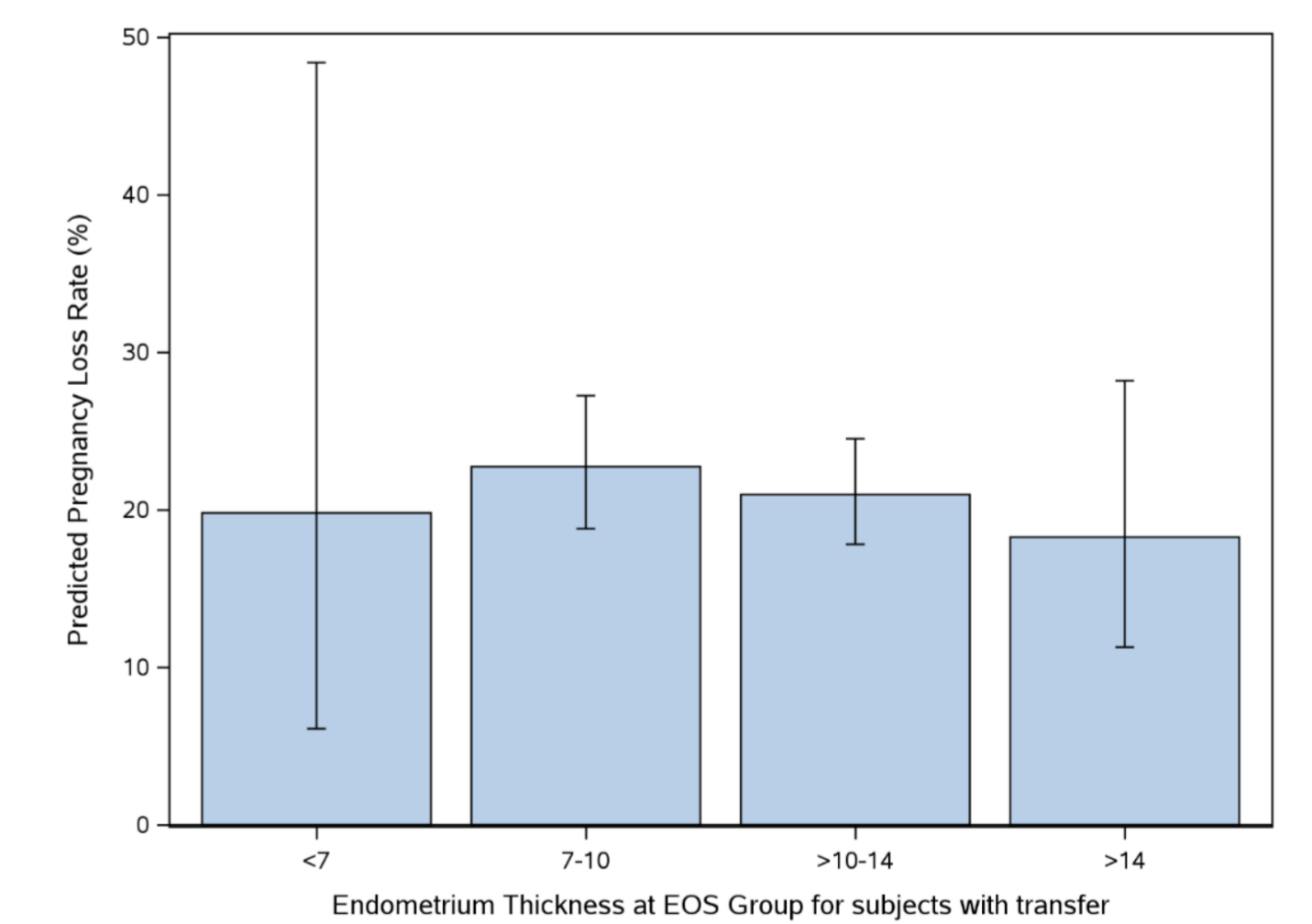
TABLE 3 Early Pregnancy Loss by Endometrial Thickness

| EMT at EOS (grouped) | n (%) N=1093 | Early pregnancy loss (95% CI) |
|----------------------|-----------------|-------------------------------|
| <7 mm | 14 (1.3) | 19.8 (6.1 – 48.4) |
| 7-10 mm | 401 (36.7) | 22.7 (18.8 – 27.2) |
| >10-14 mm | 598 (54.7) | 21.0 (17.8 – 24.5) |
| >14 mm | 80 (7.3) | 18.3 (11.3 – 28.2) |

Predicted early pregnancy loss by endometrial thickness in patients with positive beta-hCG.

EMT, endometrial thickness; EOS, end of stimulation

FIGURE 3 Early Pregnancy Loss by Endometrial Thickness



Predicted early pregnancy loss by endometrial thickness in patients with positive beta-hCG (N=1093). Lines represent 95% CIs.

No differences in early pregnancy loss by EMT were observed

CONCLUSIONS

- This IPD meta-analysis suggests optimal pregnancy rates at an EMT >10 mm for embryos untested for euploidy.
- Few patients had a thin endometrium; these patients still demonstrated reasonable pregnancy rates.

References

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Acknowledgements

Part of the results were previously presented at the 41st annual meeting of the European Society of Human Reproduction and Embryology, 29 June-02 July 2025, Paris, France. The study was sponsored by Ferring Pharmaceuticals.

Disclosures

AP has received grants from Cryos, grants and payments from Gedeon Richter, Ferring Pharmaceuticals and Merck A/S, payments from Organon, consulting fees from IBSA, Ferring Pharmaceuticals, Gedeon Richter, Cryos and Merck A/S, and travel support from Gedeon Richter. SSR has received research funding from Organon/MSD, Theramex and Gedeon-Richter, consulting fees from Organon/MSD, Ferring Pharmaceuticals, Merck Serono, and IBSA, payment or honoraria from Organon/MSD, Besins and Gedeon-Richter, support for attending meetings from Gedeon-Richter and Besins, is an advisory board member for TTRANSPORT and Deputy of the ESHRE SQART SIG, and owns stocks of IVI Lisboa, Clinica de Reprodução assistida Lda.. NSM has received speaker and consultancy fees from Ferring Pharmaceuticals, IBSA, Merck, Freya and Gedeon Richter, and is a shareholder in Verso Biosense. AF, PP and RL are employees of Ferring Pharmaceuticals.

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Abbreviations

BMI, body mass index; EMT, endometrial thickness; EOS, end of stimulation; hCG, human chorionic gonadotropin; ICSI, intracytoplasmic sperm injection; IPD, individual patient data; IVF, in vitro fertilisation