

ESHRE 2020 Virtual (5-8 July 2020)

Questions for the speakers

Session 52: AI. a new tool to assess ART outcomes and help patients?

Patient-oriented counselling: predicting live birth probability (LBP) at each step of the In Vitro Fertilization (IVF) process via machine learning. - Véronika Grzegorzczuk Martin (France)

Q: It looks like you categorized age, BMI and AMH. Why did you not use the continuous values of these predictors which add more information?

A: Our core model indeed uses continuous variables. However, the associated odd ratios (OR) are less interpretable because less intuitive based on the literature (which almost exclusively uses categorized predictors). We therefore decided to present a model with categorized predictors as well, which we also believe is more applicable clinically.

Q: How was AMH measured - one lab method or several?

A: All 5 IVF centers sent their samples to two laboratories for AMH measurement and both used the ELISA Method

Q: Do the models estimate cumulative LB? Will the planned tool integrate with clinic workflow or require separate data entry?

A: The purpose of our model is to be dynamic, namely to readjust the probability of live birth at each step of the IVF process (the step being defined by the the addition of new clinical and biological parameters as they become available), for the fresh and each frozen embryo transfer.

We can also create a model which evaluates the cumulative live birth probability after the first complete IVF cycle integrating the fresh and all the subsequent embryo transfers. This would be another kind of model, which would not be dynamic like the one we presented, but would of course be perfectly legitimate (and easy to produce based on our work).

Time to pregnancy for women using a fertility awareness based mobile application to plan a pregnancy - Jack Pearson (Sweden)

Q: For patients using spont fertility apps, should infertility investigations start earlier than 1 year? Currently 1y is recommended for everyone.

A: This is an excellent question. Depending on the patient's age and medical history I think a detailed digital record of menstrual physiology coupled with appropriately timed intercourse could be used to fast track those women who are older. From the clinician's perspective it would be useful to see logged data showing 12 months appropriately timed unprotected intercourse for referral for initial fertility investigations.

Q: The studies present with a huge drop-out rate! Imo we can't draw any conclusion resp. safety or efficacy if we don't know what "happened" to these women

A: I believe this question relates to our effectiveness studies which is not the topic of the presentation. However, yes our drop out rate is a limitation of our study sample. Here we make numerous attempts to contact users that drop out and follow up on their pregnancy status. We then include them in different types of analysis depending on their likelihood of pregnancy based on where they were in their cycle when they dropped out.

Q: Is there a role for natural cycles app monitoring in a stimulated IVF cycle where monitoring by ultrasound is difficult?

A: As it currently stands, Natural Cycles is not suitable for women taking any synthetic hormones (such as those administered during IVF stimulation).

Q: I am wondering why you used 1 anovulatory cycle as a cut-off for less favorable cycle? WHO anovulatory guideline has another cut-off.

A: This is a great question and I thank the attendee for highlighting this. At the time of analysis, we simply chose two categories (i) No ovulation and (ii) 1 or more anovulatory cycles. In our upcoming research, we will take the WHO guideline into account now that we are aware of it.

Q: You declared some of the users not continuing with the use of the app as "users very unlikely to be pregnant". Could you state on this?

A: We considered users *very unlikely* to be pregnant if they discontinued at a point in their cycle when it was very improbable that they were pregnant (e.g., between menstruation and ovulation). We do not find it accurate to denote a possible later pregnancy of such a user as due to contraceptive failure. We treated these women as not pregnant for all calculations unless they stated explicitly in follow-up that they were.

Q: What happened after natural cycles have been reported to the Swedish authorities after the increase of unwanted pregnancies?

A: The outcome of this investigation revealed the number of pregnancies was in line with the published typical use effectiveness rate for Natural Cycles (93%), which is based on a study of over 22,000 women. This meant the MPA [declared its assessment complete](#), with no further action required by the company.

Q: If I understand these apps do not include preconception lifestyle advice (yet). Is this something you plan to do include in the future?

A: The app itself is a great educational tool for those women embarking on pregnancy planning. For those that know little about their cycle and fertile window, its use can benefit them greatly. We are working to include preconception support to those in plan mode in addition to our blog posts on pregnancy related topics such as PCOS, endometriosis etc.

Interactive information provision during IVF/ICSI treatment by using an app: A randomized controlled trial - Jesper M.J. Smeenk (The Netherlands)

Q: If I understand these apps do not include preconception lifestyle advice (yet). Is this something you plan to do include in the future?

A: Preconception lifestyle advice/counselling is not a part of the current app yet. However, a new version/app is being developed at this moment and will be introduced in clinical practice in 2020, lifestyle modification is one of the important new features.

Q: RCT: how did you correct for provider bias? Did providers (physicians/nurses) know which patients had the app, and which did not? Lack of blinding?

A: Due to the way the study was developed, it was not possible to do a complete blinding towards health care workers. (It was or became very obvious that women were using an app, or not..) Obviously, this could have introduced a form of bias.

Q: Was the app only used by women? or also by men or by the couple?

A: In the pilot study only women were included. Psychosocial issues related to ART treatment are important in both men and women and can be differently perceived. The next version of the app will therefore be developed for both women and men.