COVID-19 vaccination and assisted reproduction

Statement from the ESHRE COVID-19 Working Group
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This present update includes a revision of the currently available vaccines and a modification of the advice on vaccination prior to ART treatment, including consideration of the different types of vaccines. The advice on vaccination during pregnancy is adapted in line with current knowledge. The updated recommendations are:

- *With regards to different vaccines and vaccine types, it is recommended that national and international guidance for vaccination in different age and risk groups is consulted, and applied in men and women contemplating pregnancy.*
- *In men and women who receive the vaccine, it seems prudent to postpone assisted reproduction treatments for at least a few days after the completion of vaccination. The suggestion for a more cautious approach has been removed.*
- *Currently reported data do not indicate a negative impact of COVID-19 vaccination during the periconceptional period, although the number of observations is limited. Pregnant women should have access to vaccination.*

There are different types of COVID-19 vaccines in development (mRNA, protein subunit and vector) (1) and at different approval stages in the EU (2). At the time of publication, mRNA COVID-19 vaccines (Comirnaty from Pfizer/BioNTech and COVID-19 Vaccine Moderna) and viral vector vaccines (COVID-19 Vaccine AstraZeneca, COVID-19 Vaccine Janssen) have been approved for use in the EU, following review by the European Medicines Agency (EMA) and authorisation from the European Commission (2). In the EU member states COVID-19 vaccines were administered from 27/12/2020 (3). In other countries, such as the UK and US, vaccines have also been approved and vaccination programmes introduced.

The European Centre for Disease Control (ECDC) has recommended national vaccination strategies based on prioritisation of groups at risk of severe COVID-19 as well as those with an increased risk of exposure and onward transmission of SARS-CoV-2 (e.g. in professional settings) (4). An ECDC overview of EU vaccination plans indicates that men and women of reproductive age, of whom some may be pregnant or planning pregnancy with fertility treatment, will be included in these programmes based on their individual risk of severe COVID-19 disease and/or professional exposure (5).

Although as a general rule all inactivated and toxoid-based vaccines are considered safe for use during pregnancy (6), the access of reproductive-age people to a COVID-19 vaccination programme raises specific questions that have not yet been formally addressed:

- Should men and women receive the COVID-19 vaccine before attempting conception?
- Should couples who received COVID-19 vaccination postpone conception, and if so, for how long?
- Should pregnant women be vaccinated?

ESHRE reaffirms its earlier recommendation for increased counselling and information provision to patients planning a pregnancy or already pregnant. This should cover the available knowledge on COVID-19 during pregnancy and how to reduce the risk of infection before and during pregnancy, and information on COVID-19 vaccination. Patients starting fertility treatment should be informed that on receiving an invitation for vaccination they should contact their ART centre to discuss the timing of vaccination and their treatment.

Should men and women receive the COVID-19 vaccine before attempting conception?

There is a lack of information on the possible effect of COVID-19 vaccination on assisted reproduction treatment or future pregnancy. The product information for the four authorised vaccines states that animal studies "do not show any harmful effects in pregnancy". However, data during pregnancy are reported as "very limited", with no data on breast-feeding (7,8,10,12).

As vaccination is strongly encouraged for non-pregnant individuals, and considering reassuring data on possible effects of vaccination on reproduction, ESHRE considers it appropriate that men and women attempting to conceive through assisted reproduction receive the vaccine before starting treatment. In women with co-morbidities which put them at higher risk of COVID-19 and/or pregnancy complications, consideration should be given to encouraging vaccination before attempting conception. The same applies to women in whom the risk of exposure to SARS-CoV-2 infection is high and cannot be avoided.

ESHRE recommends that men and women living in countries where the vaccine is not available or choosing not to be vaccinated should not be prevented from access to assisted reproduction treatments.

ESHRE acknowledges that data on different vaccines and vaccine types are continuously emerging, which will make adaptations to the recommended vaccines necessary. ESHRE recommends that national and international guidance for vaccination in different age and risk groups is consulted, and that this guidance is applied in men and women contemplating pregnancy (7,8,10-17).

Should couples who received COVID-19 vaccination postpone conception, and if so, for how long?

There are different viewpoints on the need to postpone conception after vaccination. It seems prudent to postpone the start of assisted reproduction treatments (sperm collection, ovarian stimulation, embryo transfer) for at least a few days after the completion of vaccination (i.e. after the second dose) to allow time for the immune response to settle.

Assisted reproduction treatments should not be started in women who have had any significant side-effects from COVID-19 vaccination (such as an allergic reaction) and until they are considered fit for pregnancy by their physician.

Should pregnant women be vaccinated?

As stated in previous ESHRE statements, pregnant patients with COVID-19 are at a greater risk of more severe illness than their non-pregnant peers (9). Vaccines against diseases, such as tetanus, pertussis and influenza, have been described as safe during pregnancy (6).

For all currently authorised vaccines, the EMA states that the decision on whether to use the vaccine in pregnant women should be made in close consultation with a healthcare professional after considering the individual's benefits and risks (3).

Currently reported data do not indicate a negative impact of COVID-19 vaccination during the periconceptional period, although the number of observations is limited (18). Pregnant women should have access to vaccination.

Vaccination of staff

Vaccination of healthcare workers aims to protect them and help reduce the risk of transmission. Fertility clinic staff are healthcare workers and as such should be given priority for vaccination based on individual risks and benefits.

Summary recommendations and considerations

- ESHRE reaffirms its earlier guidance for safe ART practices. Even after the start of large-scale vaccination programmes, ESHRE recommends continued observance of its previous guidance on modified services and risk mitigation measures in line with local epidemiological data (9).
- ESHRE recommends that men and women should have access to fertility services, and such access should not depend on the availability of COVID-19 vaccines or on the decision of individual patients about vaccination.
- In men and women who receive the vaccine, it seems prudent to postpone assisted reproduction treatments for at least a few days after the completion of vaccination.
- There is currently no information on the role of vaccination in patients and staff who have had COVID-19 disease and could have developed immunity.
- ESHRE recommends monitoring the outcomes of assisted reproduction treatments and to compare them in vaccinated versus non-vaccinated patients.
- ESHRE urges COVID-19 vaccine manufacturers to share any relevant information and advice on vaccination in pregnant women and couples contemplating pregnancy.
- At this stage, there is no information on the safety of different vaccine types during assisted reproduction treatment or pregnancy, and no recommendation can be made on which type of vaccine is the safest for men and women aiming to attempt pregnancy.

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