

Annex 10: Number of embryos to transfer – Patient scenarios

These scenarios illustrate the main conclusions of the Guideline on the number of embryos to transfer in ART treatment in clinical settings where there are no legal requirements for single embryo transfer.

Patient scenario 1



Patient scenario 2

Scenario 2



Scenario 3

Decision-making process



A 39-year-old woman and her 41-year-old husband, who already have two children after spontaneous conception, decide to undergo ICSI, as the husband's semen quality has deteriorated due to a pronounced varicocele. Ovarian reserve of the wife, as shown by the tests performed by the physician, seems excellent. While discussing the number of embryos to be replaced, the couple is confronted with the potential risk of a multiple pregnancy. The couple prefers the transfer of two embryos because they intend to become pregnant as fast as possible and because both previous pregnancies were unproblematic.



The physician's recommendation is based on the following facts:

- The couple has two good-quality blastocysts.

However, the woman is already 39 years old.

- Health risks such as premature delivery, pre-eclampsia, gestational diabetes mellitus and operative delivery are increased in multiple pregnancies.

These risks are more pronounced in women of a higher age, which is why the chance of a multiple pregnancy should be kept as small as possible.

- Caring for a pair of twins may put a strain on the relationship within the couple and between them and their older children. This will burden the family financially more than caring for two singletons.

The physician also explains:

- Cumulative live birth rate after two transfers of one embryo per cycle is similar to the one after one transfer of two embryos.

- The risk of a twin pregnancy is much higher after double embryo transfer.

- In case there is no pregnancy after the first transfer, the second one can be carried out soon afterwards, possibly in the next cycle.



Having considered these aspects related to the transfer of one versus two embryos at a time, the couple accepts the physician's recommendation to perform elective single embryo transfer if more than one embryo is created.

Patient scenario 4

Scenario 4

Decision-making process



A single woman, aged 40 years and without previous pregnancies, decides to undergo IVF with donated semen. Intrauterine insemination is not possible due to existing tubal ligation. While discussing the treatment plan with the physician, she is confronted with the decision about the number of embryos to be transferred per treatment trial. She argues that due to her advanced age, the likelihood of pregnancy must be low and that two embryos should be transferred if more than one embryo is available for transfer.



The physician discusses several issues:

- The risk of multiple pregnancy and, in consequence, of premature delivery, is higher after the transfer of two embryos. This can result in health risks for the babies.
- The challenge for the uterus to carry a pregnancy to term at an advanced age and without prior pregnancy results in itself in a higher risk for prematurity, pre-eclampsia, gestational diabetes mellitus, and operative delivery.
- The social and financial issues when raising twins without a partner.

The physician also explains:

- Cumulative live birth rate after two transfers of one embryo per cycle is similar to the one after one transfer of two embryos.
- The risk of a twin pregnancy is much higher after double embryo transfer.
- In case there is no pregnancy after the first transfer, the second one can be carried out soon afterwards, possibly in the next cycle.



Because of these reasons, the physician recommends, and the woman accepts, elective single embryo transfer as the most risk-free treatment plan.

Patient scenario 5

Scenario 5



An infertile couple has undergone an extensive diagnostic workup due to recurrent miscarriages in spontaneous pregnancies. After four early pregnancy losses and faced with no discernable cause, they decide to undergo IVF treatment. Both the man and the woman are 35 years old.



The physician informs the couple:

- Even if no cause was identified for the repeated pregnancy losses, uterine factor may still be involved.
- This may result in higher pregnancy health risks for the mother after a successful implantation.
- A multiple pregnancy will increase the risks of pregnancy complications, which may endanger the future health of the babies.
- Taking care of twins vs. two singletons also burdens the family financially and may put a strain on the relationship of the couple.



Therefore, during the conversation the physician recommends, and the couple accepts, transfer of one embryo at a time regardless of embryo quality.

GLOSSARY (EXPLANATION OF MEDICAL OR RESEARCH TERMS)

Assisted reproductive technologies (ART): medical procedures or techniques that are used to assist individuals or couples in achieving pregnancy when they are facing difficulties conceiving naturally. IVF, ICSI, frozen embryo transfer, and intrauterine insemination are types of ART.

Blastocyst: a developmental stage of the embryo that occurs 5-6 days after fertilisation of the egg.

Cumulative live birth rate: the live birth rate from a series of treatment cycles. The cumulative live birth rate shows the overall chance of live birth.

Delivery (of a pregnancy): the same as childbirth.

Donated semen: also called donated sperm, it is obtained from a healthy male donor for the purpose of assisted reproduction.

Double embryo transfer: the transfer of two embryos in an ART procedure.

Elective single embryo transfer (eSET): the transfer of one (a single) embryo selected from a larger group of available embryos.

Embryo: the initial form of development of the fertilised egg. It is formed after the fertilised egg's first division. The embryo develops and grows further until eight completed weeks after fertilisation, which is equivalent to 10 weeks of pregnancy. After this, it is called a foetus.

Embryo transfer (ET): placement into the uterus of an embryo from day 1 to day 7 after fertilisation by IVF or ICSI.

Embryo transfer cycle: an ART cycle in which one or more fresh or frozen-thawed embryos are transferred into the uterus.

Gestational diabetes mellitus: a type of diabetes that occurs during pregnancy and is characterised by high blood glucose (sugar) levels. This condition can have short-term and long-term health consequences for both the mother and the offspring.

Implantation: during implantation, the embryo first attaches and then burrows into the uterine lining. Implantation starts 5 to 7 days after fertilisation of the egg.

Intracytoplasmic sperm injection (ICSI): an IVF technique in which fertilisation occurs when a single sperm cell is introduced into an egg cell.

In vitro fertilisation (IVF): fertilisation of an egg cell by a sperm cell outside of the body. The term IVF has two uses. In the stricter sense, IVF means the method of fertilising an egg cell by placing a droplet of sperm cells nearby. The term IVF can also be used in a broader sense to include all methods of fertilisation outside the body, including ICSI, and in these cases is often also abbreviated as IVF/ICSI.

Infertility: a disease characterized by the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse or due to an impairment of a person's capacity to reproduce either as an individual or with his/her partner. Infertility can be diagnosed after a shorter time interval based on medical, sexual and reproductive history, age, physical findings and diagnostic testing.

Intrauterine insemination: a type of ART in which laboratory processed sperm is placed directly into the uterus.

IVF/ICSI: please see IVF (broader meaning).

Live birth: the birth of a living child after 22 completed weeks of pregnancy, or if birth weight is at least 500 grams.

Live birth rate: The success rate in terms of live births (birth of at least one living child) can be calculated in two ways:

- For each separate embryo transfer cycle, called the “live birth rate”. These provide a snapshot of success for a specific transfer.
- For the whole group of embryos available for transfer before freezing, called the “cumulative live birth rate”. Cumulative live birth rates show the overall chance of live birth.

Obstetric risks: also called pregnancy-related risks, these are potential health complications or adverse outcomes that can occur during pregnancy, childbirth, and the period after the birth. These risks can vary in severity and may require medical attention or intervention to ensure a safe and healthy pregnancy and delivery. For a more detailed information on some obstetric risks please refer to the Patient leaflet based on the Guideline on the number of embryos to transfer during IVF/ICSI.

Ovarian reserve: ovarian reserve refers to the quantity and quality of a woman's remaining eggs (oocytes) in her ovaries. It is a critical factor in a woman's reproductive health and fertility potential.

Operative delivery: an obstetric procedure performed if spontaneous birth is judged to pose a health risk. Operations are divided into abdominal methods (caesarean section) and vaginal assisted deliveries (forceps delivery and vacuum extraction).

Pre-eclampsia: a pregnancy condition characterised by high blood pressure and damage to organs, such as the liver and kidneys. Pre-eclampsia can be life-threatening for the mother and offspring and can also affect the growth and well-being of the baby.

Pregnancy loss: the spontaneous loss of a pregnancy at any time before the birth. This includes miscarriages (before the 22th week of pregnancy), also called early pregnancy losses; and stillbirths (after the 22th week), late pregnancy losses.

Premature delivery: a delivery that takes place after 22 weeks and before 37 completed weeks of pregnancy.

Recurrent miscarriage: the loss of two or more clinical pregnancies prior to 22 completed weeks of pregnancy.

Semen count: the number of sperm cells per 1 ml of semen (sperm).

Single embryo transfer (SET): the transfer of one embryo in an ART procedure. There are different types of SET, for example elective single embryo transfer (eSET) and compulsory single embryo transfer.

Tubal factor infertility: a condition in which fallopian tubes are blocked or damaged, leading to difficulties in achieving pregnancy.

Tubal ligation: a surgical procedure that permanently prevents pregnancy. During a tubal ligation, the fallopian tubes are surgically cut, blocked, or sealed, which prevents the eggs from traveling from the ovaries to the uterus and blocks sperm from reaching the eggs.