

IVF SUCCESS RATES - SANATORIUM HELIOS BRNO IN 2020

It is true that all IVF clinics do not operate the same way, they do not have the same procedures, they do not use the same materials and devices, and their staff have not had their training of the same quality. The price you pay for IVF is less or more similar everywhere in the Czech Republic. The health insurance companies also pay the same amount of money to all the clinics. But your chance to fulfill your dream to get pregnant and to give birth to a healthy child, varies considerably, which can be clearly demonstrated on the data available on Czech IVF clinics' websites.

There is currently no independent database to objectively compare success rates of individual clinics. The available data are always cumulative and even outdated. That is why we always try to explain and clarify our results and reveal our data as much as possible.

That's why we always try to explain and reveal as much as possible about our results. We do not give one summary number, because of course the chances will be different for a woman who is 20 years old and different for a woman who is 42 years old. Each center reports results/success differently. For a clear idea, we present the results of positive pregnancy tests (G+), clinical pregnancy with proven fetal heart action (ASP+) and births (P+). Therefore, we only present the final results for the previous year at the end of the following year, when all the patients who had a transfer in the previous year have given birth. However, we consider information on how many patients (unique birth numbers) who came to the center actually gave birth as the most objective indicator. And that regardless of how many IVF cycles or embryo transfers they had in a particular year.

Almost every second patient (52,25 %) of all the patients who underwent at least 1 embryo transfer from their own eggs in Sanatorium Helios in Brno in 2020, gave birth.

Most patients became pregnant and gave birth after the first transfer in the IVF cycle.

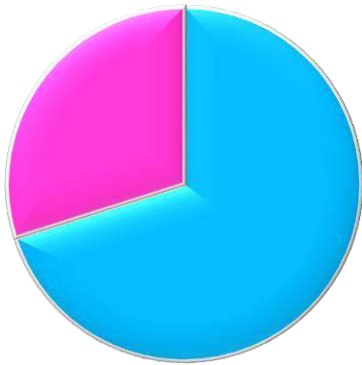
The success rates of IVF cycles ranks us among the best clinics in the world.

(confirmed by the accreditation of the independent company Global Clinic Rating)

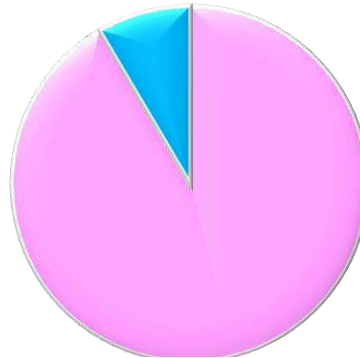
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1. The data about our IVF patients in 2020

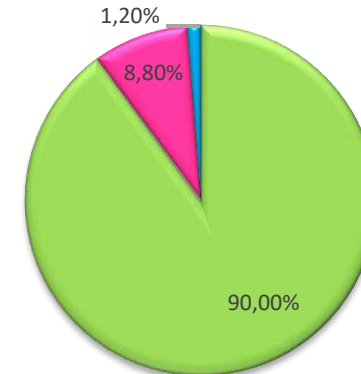
Although many clinics in the Czech Republic specialize in foreign clients, major part of patients in Sanatorium Helios are Czech patients, who are reimbursed by the health insurance company and use their own eggs for IVF.



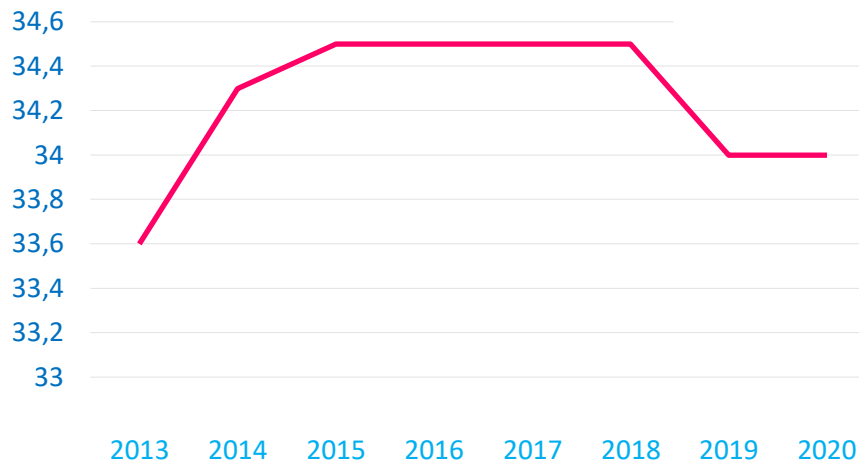
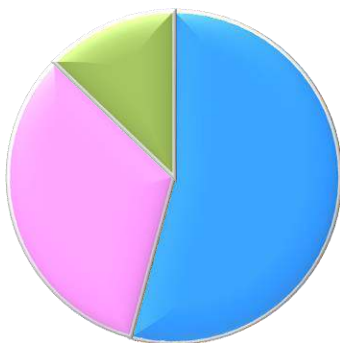
Graph No. 1: More than 70 % of all performed cycles were IVF cycles with the payment of the health insurance company



Graph No. 2: 91,6 % of all performed cycles were IVF cycles with own eggs (18,4 % were donors' eggs)

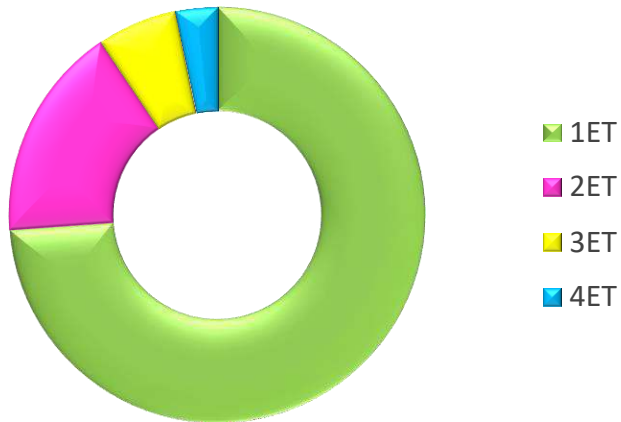


Graph No. 3: In more than 94 % of cycles, sperm partners were used to fertilize the eggs (rest are sperm of an anonymous donor/combined)

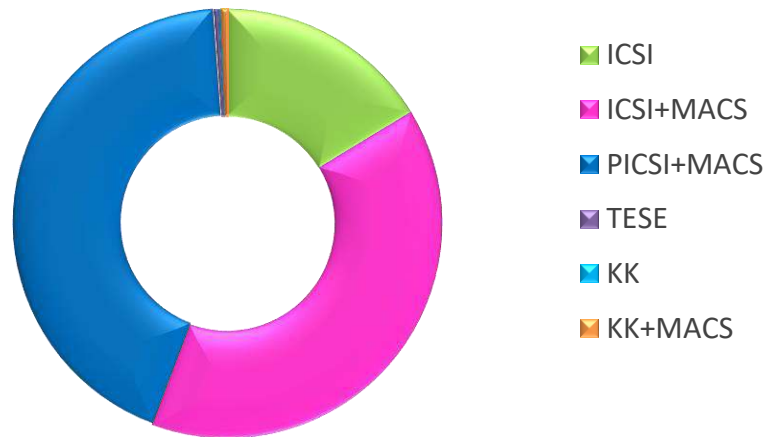


Graphs 4 and 5: More elderly patients undergo IVF each year. In 2020, patients under the age of 35 accounted for more than half of all patients. Every seventh patient in 2020 was more than 40 years old. The average age of patients undergoing IVF over the last 7 years increased slightly year-on-year.

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Graph No. 6: The graph shows the numbers of patients who underwent 1, 2, 3, and 4 transfers from one IVF cycle in one year in 2020. Over 70 % of patients had only 1 transfer of one embryo.



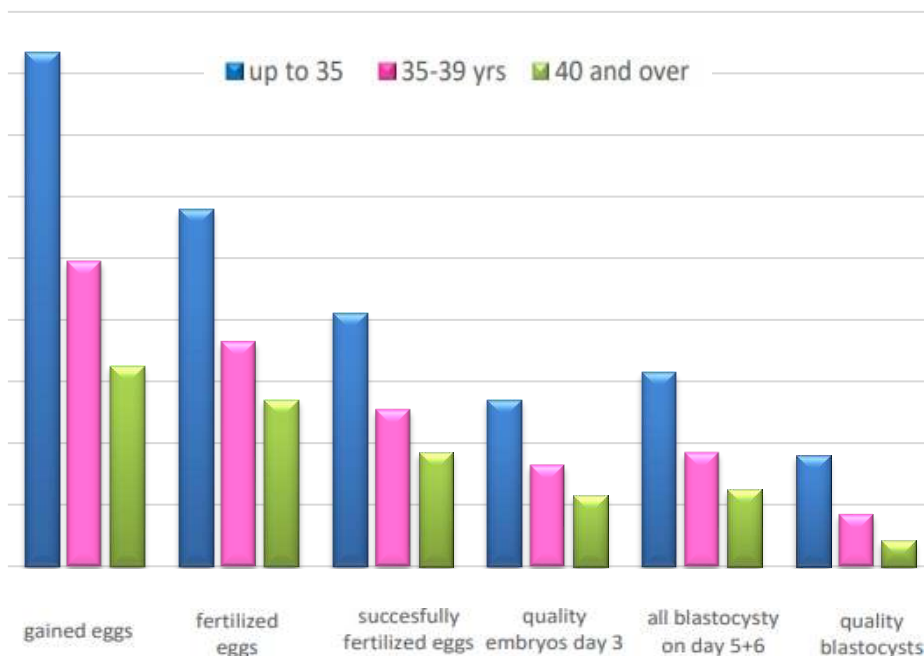
Graph No. 7: The graph shows the percentage of egg fertilization methods within IVF cycles, which were selected based on the results of examinations of both partners.

We have very good experience with the MACS sperm processing method, which we use more and more often, in 2019 in up to 82,3 % of IVF cycles.

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2. Comparison of age groups of patients and embryo development

Year after year, we have more and more patients with a "worse prognosis". They are older and have had more unsuccessful IVF cycles. More and more patients come to us after unsuccessful IVF cycles from other clinics. 12.8 % of our patients who underwent IVF with their own eggs were women over the age of 40 In 2019. To compare the success of IVF, we present only cycles with their own eggs. The cycles in which the eggs of anonymous donors were used, are listed at the end of the review.



Graph No. 8: Comparison of egg fertilization and further development of embryos in patients of different age groups. It is clear that on average more than a third of embryos that develop properly on day 3 would be transferred unnecessarily, as they do not produce good quality blastocysts on days 5 and 6. The graph also shows that although many embryos grow to the blastocyst stage, these embryos are not of good quality and suitable for use (ET, freezing, PGT examination). On average, almost half of the blastocysts are not of sufficient quality (but also depends on the patient's age). In the group of patients under the age of 35, the large difference in the number of eggs collected and fertilized is due to the fact that many couples fertilize only a certain number of mature eggs, even though they have more. Not all mature eggs may always be fertilized.

	up to 35 years	35-39 years	40 and over
number of patients	54,2 %	33 %	12,8 %
average age	30,1	37,0	41,9
average IVF cycle (the one they have just undergone)	1,7	2,2	2,3
cycles without egg gain after stimulation	0,7 %	1,7 %	4,2 %
cycles without ET or embryo to be frozen	13,1 %	27,1 %	47,9 %
average number of collected eggs	16,7	9,9	6,5
average number of fertilized eggs	71 %	70,2 %	68,8 %
cultivation yield	43,6 %	33,5 %	23 %
the average number of embryos introduced in one transfer	1,0	1,0	1,0
the average number of embryos vitrified in one IVF cycle	3,4	1,7	0,8

Table No. 1: Comparison of parameters in different age groups of patients

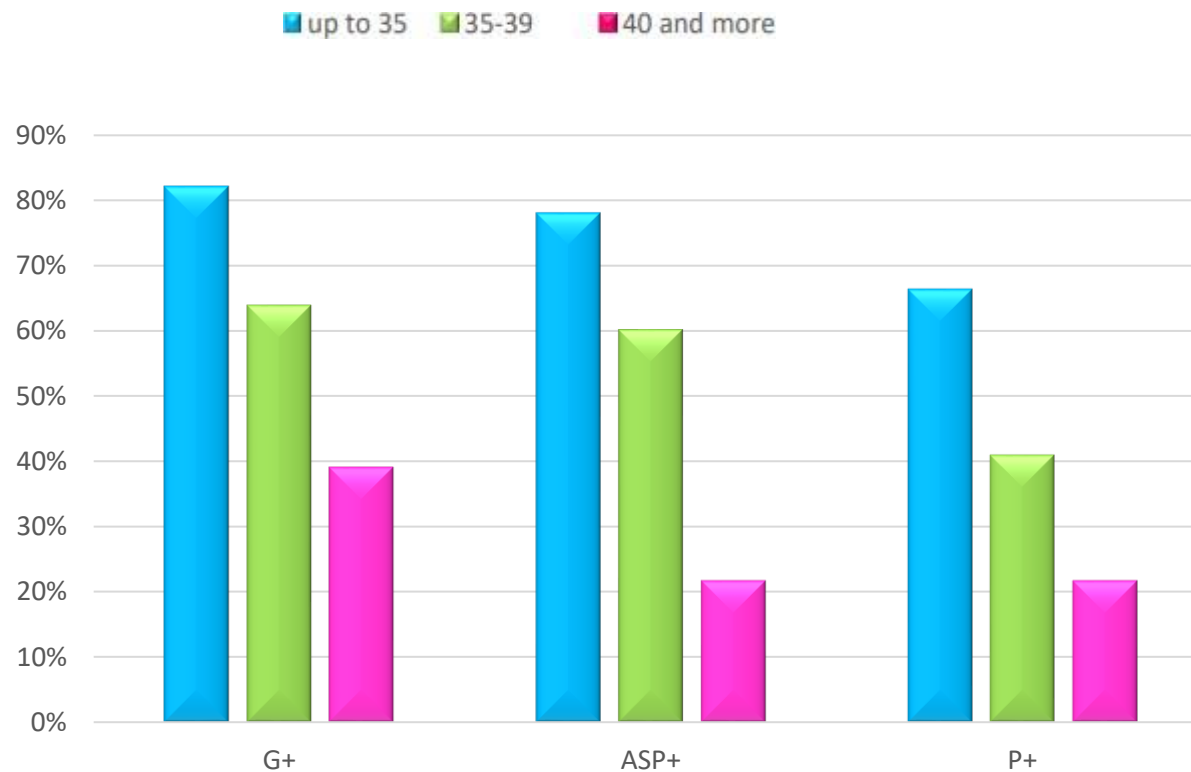
Processed by RNDr. Kateřina Wagnerová, Head of IVF Laboratory

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3. Success rate of IVF cycles

3.1 One transfer of one embryo

Some patients have 1 transfer in one year, others 2, 3 and 4 (from one cycle). Therefore, not all transfers and patients can be counted together for an objective calculation of success and comparison of IVF cycle parameters. Some patients have more chances (transfers), others less. Most patients (74 %) in our country completed only one transfer last year, which is a sufficiently representative group for any comparison. - see graph no. 6.



Graph No. 9: The overall success of all patients who had 1 embryo transfer from their own eggs in 2020. A significant decrease in success rate is evident in relation to the patient's age.

G + are positive pregnancy tests, ASP + clinical pregnancy proven by fetal heart rate, P + childbirth

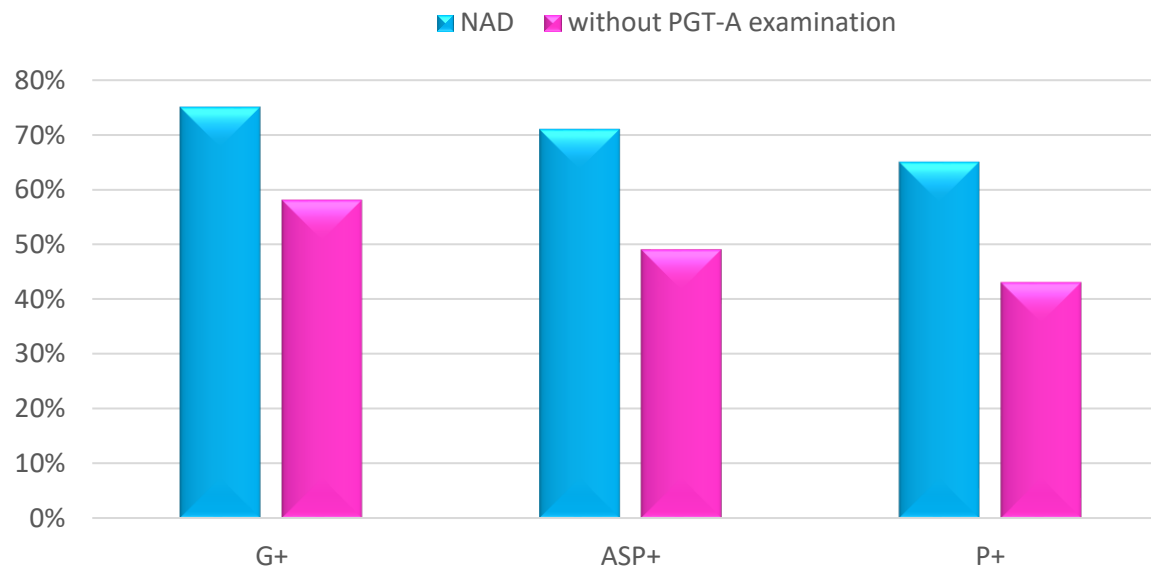
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3.2 Genetic testing of embryos

Despite the fact, that quality blastocysts are formed (developmental stage on the 5th and 6th day of embryo development) and both parents are genetically OK (they have a normal karyotype), genetically defective embryos can be formed. Such embryos usually stop developing very early, but these errors may also be the reason why a quality embryo (in terms of development and morphology) does not get caught in the uterus, or even pregnancy, but a miscarriage.

Elder women develop significantly more chromosomally abnormal blastocysts than younger women - according to our results, younger women (under 35) develop on average about a third of genetically abnormal embryos, while older women (35 years and older) are genetically abnormal. After PGT-A examination, almost every second embryo is marked as abnormal. If embryos are identified as genetically abnormal after PGT-A testing, such genetically defective embryos are excluded from further use, increasing success and reducing the time required for a successful pregnancy.

If the embryos are examined PGT and pass the examination to be suitable for transfer, then after such transfer gives birth almost half more patients than when embryos have not been tested.



Graph No. 10: Comparison of the success of embryo transfers after preimplantation genetic testing of aneuploidies PGT-A (formerly PGS) and without PGT-A examination - G + are positive pregnancy tests, ASP + clinical pregnancy proven by fetal heart rate, P + childbirth.

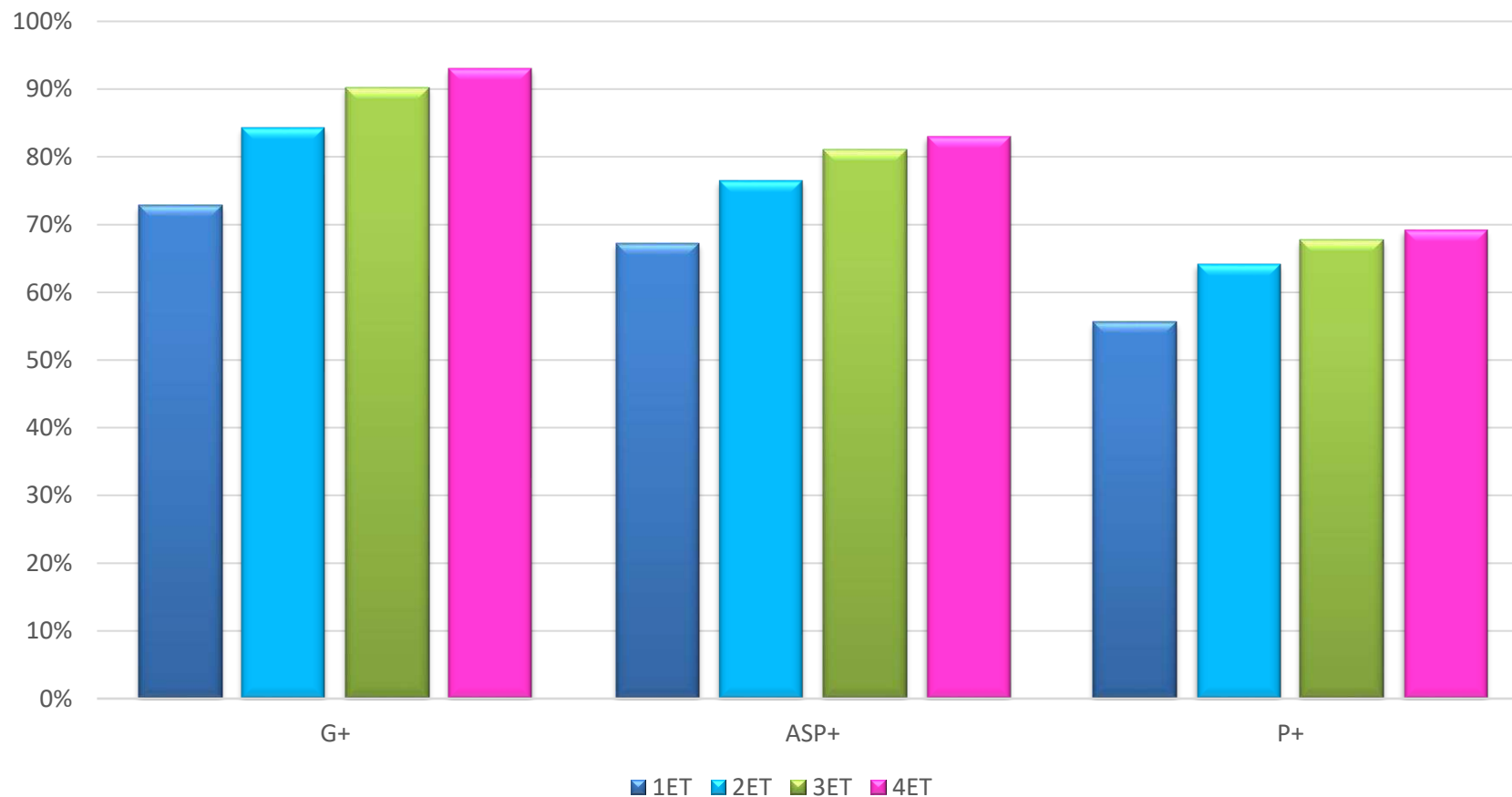
Embryos for which no genetic defects were found in the PGT examination and embryos were recommended for transfer are designated as NAD.

Embryos were examined by NGS or aCGH (if eggs were collected and embryos vitrified before 2018).

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3.4 Success after multiple transfers

Of course, we cannot count only on patients who had only one transfer of one embryo (408 patients). Sometimes more transfers are needed to succeed. On average, in one IVF cycle we obtain 3 quality blastocysts. From the data for 2020 it is clear, that after 3 transfers (1, 2 or 3 transfers) over 70 % of patients gave birth! This is a calculation of the cumulative success rate from all transfers that took place in our country in 2020.



Graph No. 11: The graph shows how successful the patients were in the other "groups" - those who had during 2020 2 transfers (100 patients), 3 transfers (38 pacientek), 4 transfers (13 pacientes).

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3.5 Sperm quality

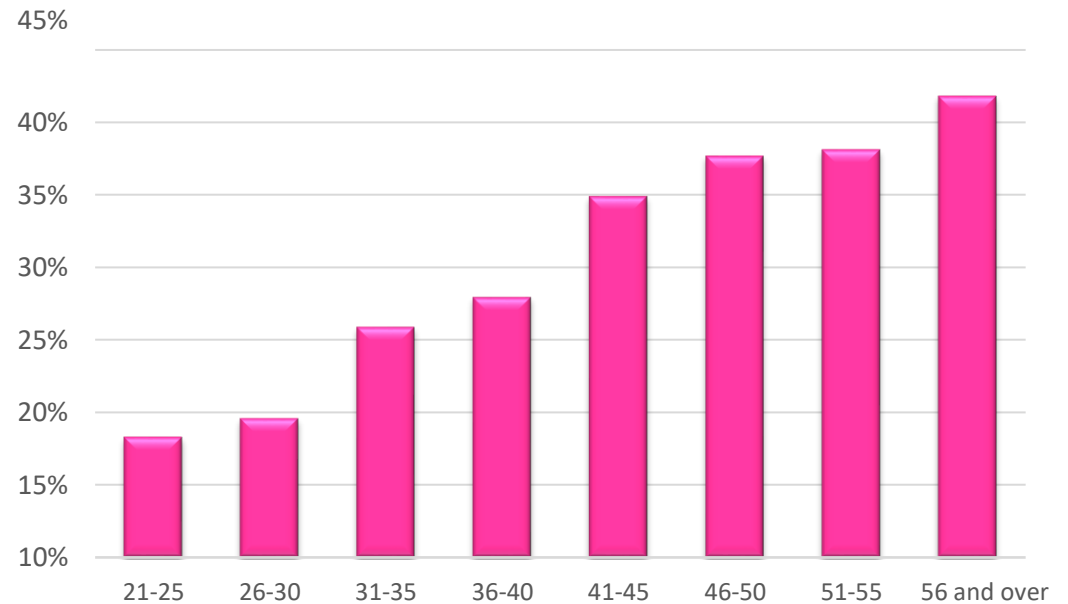
Although the main factor influencing the success of IVF is the age and quality of the eggs, and thus the age of the woman, we must not forget the andrological factor, which also contributes to the quality of the embryos. In the last few years, we have noticed a relatively large increase in pathological values, especially in the parameter of DNA fragmentation (integrity) in sperm. Therefore, before fertilizing eggs, in these cases we recommend using the MACS and PICSI selection methods, which remove a large part of the damaged sperm.

■ 0-10% ■ 11-20% ■ 21-30% ■ 31-50% ■ 51% +



Graph No. 12: Proportion of fragmented sperm (2481 examinations)

The limit for the norm is 30 %, yet at 20 % every fifth sperm already has damaged DNA. Such samples were 65 % of all examined!



Graph No. 13: Proportion of fragmented sperm by age of man (2481 examinations)

Although the production of germ cells does not decrease as significantly in men as in women, thanks to the examination of DNA fragmentation in sperm, we can also evaluate the quality, not only the quantity of sperm. In the graph we can see a clear correlation of the average proportion of fragmented sperm with the age of the man.

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3.6 Success of IVF using donor eggs and embryos

Although assisted reproduction methods are nowadays high, it is sometimes necessary to use the eggs of an anonymous donor to achieve pregnancy. This is especially true in the case of a woman's older age, when the chances of having their own child fall sharply, which can be seen in previous results.

At our clinic, most patients are women who undergo IVF with their own eggs. As with IVF patients, anonymous egg donors require proper initial examination and subsequently controlled and optimized ovarian stimulation for best results.

All donor cycles are performed as cryocycles (all quality embryos are vitrified at the end of cultivation - frozen), in addition with a guarantee of transfer of a 5 or 6-day-old embryo - blastocyst. The patient - the recipient of the donated eggs (or embryos) does not have to stress about how many eggs the donor gains, how many will be fertilized or how the embryos will develop. She is aware that an embryo at the blastocyst stage will be ready for the embryo transfer.

In 2020, each second recipient of donated eggs (unique birth number) gave birth to a cryoembryotransfer.

On average, 3 or 4 blastocyst embryos were vitrified (frozen) in each recipient of donated eggs. In most cases, however, not all such embryos are even used, because patients usually become pregnant from the first or second transfer. We perform all cycles with donated eggs as cryocycles (unsynchronized, without fresh transfer).

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Our practices differ from other IVF centers in particular by the facts that:

- Before starting treatment, we perform a comprehensive examination of both partners (hormonal profile, immunological examinations, genetic tests, semen analysis and sperm functional tests, etc.),
- We perform monitoring during the stimulation with three to four check-ups (blood sampling + ultrasonic examination),
- We try to optimize the timing of both egg retrieval (oocyte pick up) and transfer. Sometimes it is necessary to prolong or shorten the length of stimulation according to the results of the check-ups. That is why we work 7 days a week. We adjust the timing so as to achieve the optimal result.
- We always perform so-called prolonged cultivation until the 5th - 6th day of embryo development, and we transfer only embryos in the blastocyst stage.
- We transfer only one embryo, always after prolonged cultivation and at the correct time with respect to the cycle phase.
- We perform PGT examinations to help eliminate genetically defective embryos from further use. This reduces the number of unnecessarily used transfers and thus increases success and shortens the time required for a healthy pregnancy.
- Most cycles are done as so-called freeze all cycles, so we prefer not to perform a fresh ET, but we freeze (vitrify) all high-quality embryos. Fresh transfers account for only a small part of all transfers in 2020.

We hope, that not only our results have been persuasive, that Sanatorium Helios is the best choice for you.

Please come and convince about it yourself. We look forward to meeting you.

On behalf of the whole team of Sanatorium Helios Brno

prim. MUDr. Pavel Texl, Chief Physician