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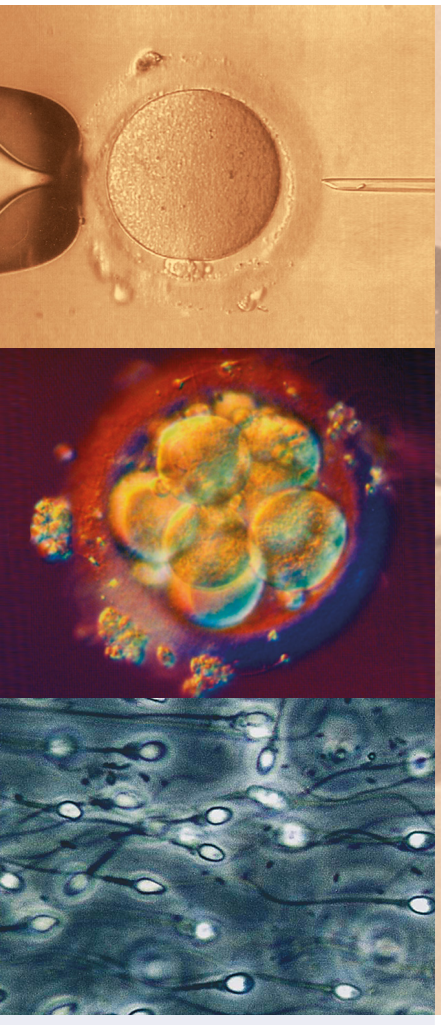

D·I·R Annual 2022 – The German IVF-Registry

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Preface
D·I·R Annual 2022 – The German IVF-Registry

U. Czeromin, J-Steffen Krüssel, A. Tandler-Schneider

Ladies and gentlemen, dear colleagues, dear D·I·R people!

We are very pleased to be able to hand over the 2022 annual to you.

Background of this annual

The D·I·R currently has 140 member centers. This annual contains information on the 2021 treatment cycles (cycle outcomes and births) and the 2022 treatment cycles (cycle outcomes) from all 140 centers. The evaluations were carried out with the status of the database on April 23rd, 2023.

In preparation for this annual, the complexity of register work and the dependence of the quality of the register not only on the care of data collection in the centers, but also on the IT structures in data collection software, interface ARTbox®, and data evaluation tool became apparent to us, the professionals and volunteers. Here, milestones were achieved, all center exports, regardless of the data collection software used, could be integrated into the evaluation.

This annual

As usual we have updated the standard evaluations for the following years – small changes are due to clarity and the space available.

For the 2022 annual, we all benefited from work invested into IT structure through evaluation software QLIK®.

Special evaluations in this annual address:
- results of a double embryo transfer compared to two consecutive single embryo transfers,
- results of different substances used for ovulation induction,
- results of regimes in thaw cycle (hormonal endometrial preparation versus cryotransfer in ovulatory cycle).
- question of whether we have leftover embryos and finding that this is not case.

A result of these evaluations anticipated: all our born children (1997–2021) have reached next „magical" number of our data treasure with 388,716 born children documented in D·I·R. These children represent exactly summed population numbers of large German cities Schwerin, Witten, Erlangen, and Konstanz.

*Ferti*PROTEKT and D·I·R

In this annual, the cooperation of the *Ferti*PROTEKT network comes into play again. We are pleased that these evaluations have become part of our annual!

This cooperation is a pleasant example of the synergetic effects of respectful cooperation between colleagues who work together in solidarity. In July 2021, methods of preserving fertility were included in the reimbursement of statutory health insurance companies. Compared to the number of treatment cycles with *Ferti*POTEKT indication, there had only been a slight increase from 580 in 2020 to 910 cycles in 2022.

DERI and D·I·R

At the beginning of 2023, D·I·R's data and IT structures were extended for also recording and collecting heterologous and homologous inseminations for the new German Registry for Insemination (DERI) and for the DERI members, DERI is located at the Working Group for Donogenic Insemination, e.V.. Utilizing synergies, this registry, operating independently from D·I·R, was coupled with existing structures of data collection software, interfaces from ARTbox®, and the registry's database. Also in this case, the wheel did not have to be reinvented. This integration process is the result of another successful example of collegial cooperation.

GDPR

The enforcement of the GDPR in May 2018 has caused significant additional effort for centers. At the request of D·I·R, staff in centers have obtained consent from patient couples for the transmission of pseudonymized treatment data sets.

For the year 2022, the register contains 91.7% pseudonymized, 7.7% anonymized, and 0.6% subsequently revoked data sets.

Repeated information on this topic: For the transmission of anonymized data sets, merely informing the patients is sufficient. For the transmission of pseudonymized data sets, consent from both partners is required, unless doctors are obligated to report due to a country-specific professional health law.

This results in a renewed plea for the transmission of pseudonymized data sets:

We, as doctors actively working in reproductive medicine, are aware of the effort that the necessity of obtaining patient consent entails, with the necessary substantive discussion and information it involves. It must be emphasized again and again that only a large number of pseudonymized data sets makes patient-related evaluations of cumulative pregnancy rates, *Ferti*PROTEKT, and in the future also for PID possible, even if cross-center evaluation is no longer possible due to the elimination of the National Patient ID.

At this point: Thank you for your effort, your commitment in conversation with the patients, your organizational and documentation performance in the legally compliant implementation of the GDPR for the benefit of the quality of our register!

Politics on a small scale/ Reimbursement ART/Reimbursement *Ferti*PROTEKT

Despite the statements made in the 2021–2025 coalition agreement of the German federal government, nothing has changed in the bureaucratic three-pillar funding program (statutory health insurance benefits, statutory benefits of individual health insurance companies, state/federal funds in individual states). The couple's place of residence still de-

termines the amount of their own costs for reproductive medical treatment. It remains our demand for the resumption of 100% reimbursement according § 27 a SGB V as the right to four ART treatment cycles. A 100% reimbursement within the framework of social legislation § 27 a SGB would be a just social legislative decision that pays the respect it deserves for the financial, emotional and temporal commitment of couples who face the responsibility of wanting to become parents.

Politics at large

Looking at the good result quality and the low multiple pregnancy rate of treatment cycles with single embryo transfer in both fresh and thaw cycles, which are possible when using the German middle way, the call for a reproductive medicine law including a non-limited permission for the creation of a blastocyst culture cannot be loud enough. Everyone is waiting for the implementation of the changes in the field of reproductive medicine announced in the coalition agreement of the German federal government 2021-2025. Announced and quality-improving would be, among other things, the legalization of elective single embryo transfers, legalization of pronuclear stage donation, and 100% cost coverage within the framework of statutory health insurance.

Farewell to Dr. med. Klaus Bühler

Our long-standing chairman of the board, Dr. med. Klaus Bühler, passed away on April 4th, 2023 at the age of 72. In addition to our loss on a collegial level, we would like to express our sympathy to his wife Francine and his family.

Klaus Bühler was chairman of D·I·R from 2007 to 2014 – already an actor in the IVF register advisory board since the X. Annual meeting of the German-speaking IVF groups in 1995, member of the board of trustees since 1998, and member of the D·I·R board since 2001.

He accompanied, shaped, led, and designed D·I·R over decades. He fought for D·I·R as a "convicted perpetrator". He was a source of ideas and initiator. He made D·I·R known at the international level, ensured that the reputation of D·I·R outside the German-speaking area has increased through the publication of the annuals also in English. He changed D·I·R structurally through the founding of the association in 2008 and has driven the digitalization of prospective data collection. He was co-editor of the book „The German IVF Register 1996–2006". He was a mentor and teacher to many of us and was willing to pass on and share knowledge and experience. He was a colleague and friend. He made it easy for us, the current board, not to be afraid to take over, even though it initially seemed to us as if we had to stumble in his much too big shoes.

What remains for us? Dear Klaus, we say thank you for your commitment, your solidarity, and for your friendship.

He also accompanied us here, as this picture of 2014 shows

Thanks

We would like to thank everyone who has contributed to the realization of this annual:

We thank the D·I·R data management and with it Markus Kimmel. He has taken on the challenge of using the evaluation software QLIK®. He worked hard and critically with the service providers Critex GmbH to question, uncover, and insist on improvements in the recording programs MedITEX and DIRproNOVA, and with the company QuinniSoft for their recording software.

Last but not least: With the help of the service provider Transact, he developed, checked and applied the evaluation algorithms for the evaluation using the QLIK® software. This year we were able to harvest the fruits of this work. This applies not only to the annual but also to the centers. Center-specific evaluations in the form of KPIs and center profiles in a national comparison have become more stringent, efficient and flexible thanks to the QLIK® program used by Markus Kimmel.

The effort was worth it: Through good organization and stringent data processing, he provided us with valid evaluation results for this annual. With infinitive patience, he "drove" everyone involved in work. He developed the tools for creating the center-specific KPIs and center profiles. He has thus developed a tool that enables the individual D·I·R member centers to receive their center-specific data on a quarterly basis.

We would like to thank our designer Soo-Hee Kim not only for the beautiful layout, but especially for her patience and dedication. This year, too, it was unavoidable that she had to incorporate our many change requests at the last minute before going to press.

We would like to thank the annual partners who have made their financial contribution through generous support, so that we can once again hold this annual in our hands.

We would like to thank the board of trustees and especially to the board member of AGRBM, Mrs. Dipl. Biol. Verona Blumenauer.

Lastly, the most important thing: Our special thanks go to the centers for the conscientious collection and forwarding the data. We would also like to thank the centers for their generous financial commitment, without further developments and improvements to the data base and data analysis would not be possible.

With the creation of this annual and the necessary (preliminary) work, we experienced a great acceptance of the German IVF Register.

Happy about that and thank you
Your D·I·R Board

Dr. med. Ute Czeromin
(Chairwoman)

Prof. Dr. med. Jan-Steffen Krüssel

Dr. med. Andreas Tandler-Schneider

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In a Nutshell – 2021's and 2022's Findings of the German IVF-Registry

- All 140 centers of the German IVF-Registry exported their data for 2021 and 2022, for 2022 123,332 plausible cycles.
- A subset of 68.8% of the cycles were about fresh cycles, 34.2% concerned with cryo cycles. The proportion of cryo cycles thus continued to rise.
- The pregnancy rate per transfer in fresh cycles was 30.7%, whereas the pregnancy rate per transfer in cryo cycles was 30.6%.
- The increasing pregnancy rates in cryo cycles are remarkable, even though the single embryo transfer has been performed more often. In 2017 the pregnancy rate per cryo transfer was 26.2%, in 2022 it was 30.6%.
- 2021, the documented birth rate per embryo transfer was 23.4% in fresh cycles and 21.3% in cryo cycles.
- The age dependance of pregnancy and birth rate is noteworthy. While women in the 30-34 age group have a 39.7% chance of pregnancy and a 31.6% birth rate per embryo transfer, in the 41-43 age group the pregnancy rates per transfer drop to 16.7% and the birth rate to 8.2%. See example IVF.
- The continuous decrease in multiple births is encouraging. Between 2017 and 2020, the rate of multiple births reduced by 5-6 percentage points in both fresh and cryo cycles. 2021, multiple births added up to 15.5% in fresh cycle and 10.2% in cryo cycles. 2017, multiple births came to 22.0% in fresh cycle and 15.0% in cryo cycles.
- The single embryo transfer has been increasingly used in good prognosis patients. The pregnancy rates are indeed slightly lower in these cases, but the multiple pregnancy rates rise dramatically in this patient group, when double embryo transfer would be performed. Multiple pregnancies imply an additive hazard of pregnancy induced complications and premature births.
- The cumulative birth rate resulting from multiple fresh and cryo cycles following a single oocyte retrieval is considerable when cryopreservation was available and used. After just one fresh transfer and two cryo transfers half of the couples can look forward to having a child, even though only one fresh treatment cycle has been carried out.
- IVF and ICSI with donor sperm are increasing significantly (1,129 treatments in 2018, 1,404 treatments in 2019, 1,861 treatments in 2020, 2,538 treatments in 2021).
- Documented since 1997, 388,716 children were born after in vitro fertilization cycles. This is comparable to the population of a large city like Bochum. In 2021, the proportion of premature births (birth before the 37th week of pregnancy) was 18% for singletons, 85% for twins and 100% for triplets.
- Reproductive medicine techniques are safe – the risk of ovarian overstimulation as a result of hormone therapy was 0.3%, egg retrieval complications such as vaginal bleeding were 0.9%.

Our recommendations if pregnancy does not occur:

Do not be afraid! Get advice from a fertility center and then decide. Choose a center that is a member of the quality-conscious D·I·R.

Don't wait too long, the chances of successful treatment depend on age.

Take advantage of the opportunities offered by single embryo transfer, blastocyst culture and cryopreservation – not a single fertilized oocyte is lost and after thawing you have another chance with very little effort, also for a second child!

Brief overview of the most important results for the public

As in previous years, we start with the presentation of the most important results in a brief overview on this and the following pages of this annual.

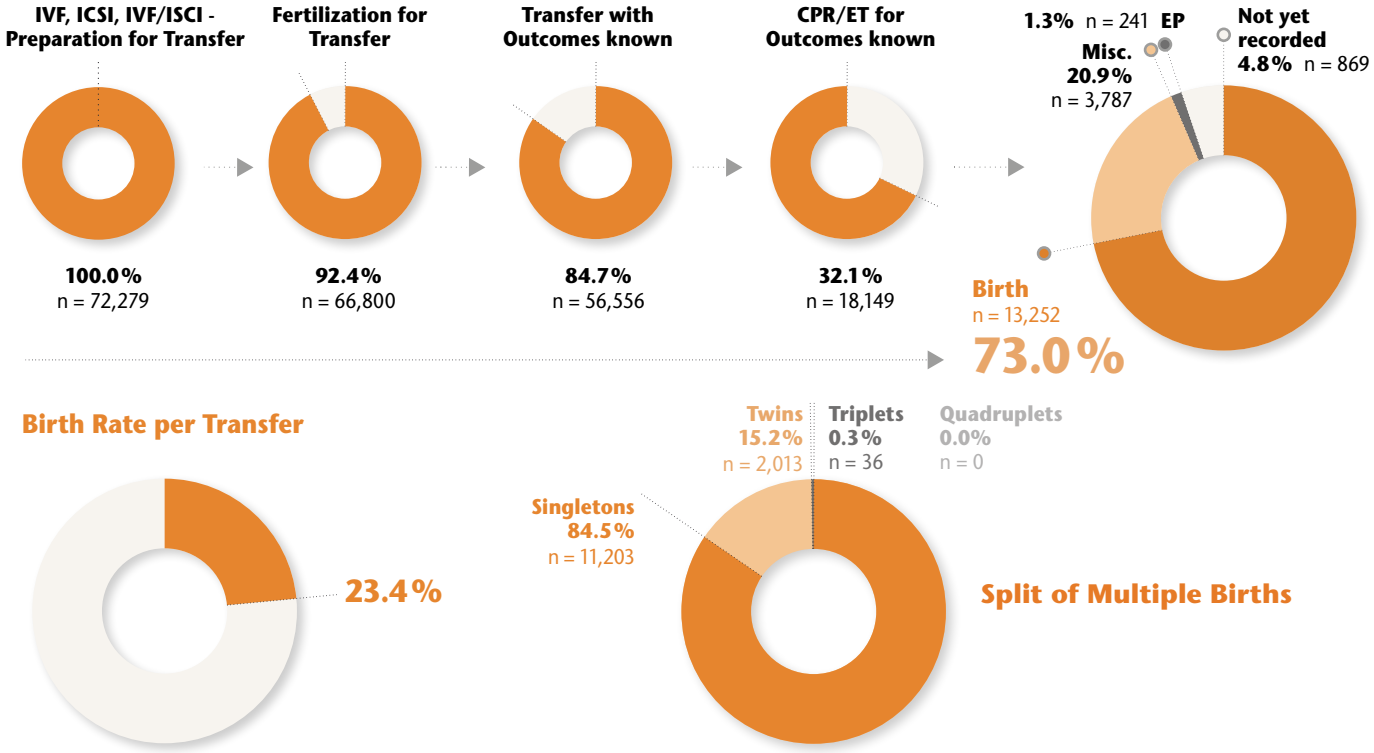
The first evaluation shows the results of the treatments carried out in the year before last 2021 up to the birth.

The second analysis on the next page shows the age-dependent development of both the pregnancy rate per embryo transfer and the number of births and miscarriages.

Moreover, we show the cumulative pregnancy rates per transfer, regardless of whether it is a fresh transfer or a cryo cycle. The cumulative pregnancy rate is 70.5 % after five or more transfers.

Summary D·I·R Statistic in Brief 2021 – CoD May 23rd, 2022

IVF, ICSI, IVF/ISCI - Prospective and Retrospective Data



In 2021, 72,279 fresh oocytes retrieval cycles were carried out in Germany. This puts us above 70,000 cycles per year for the first time.

Transfers with known outcomes occurred in 56,556 cycles. The pregnancy rate was 32.1 % (18,149 pregnancies). Therefore the pregnancy rate remains comparable with the previous year (32.7 %).

The birth rate per transfer was 23.4 %, which is virtually the same as in 2020 (23.5 %). This is rewarding as the number of transferred embryos has decreased and this is also reflected in the distribution of multiple births. Twins and triplets account for just 15.5 %. However single births made up the largest proportion with 84.5 % (11,203 single births).

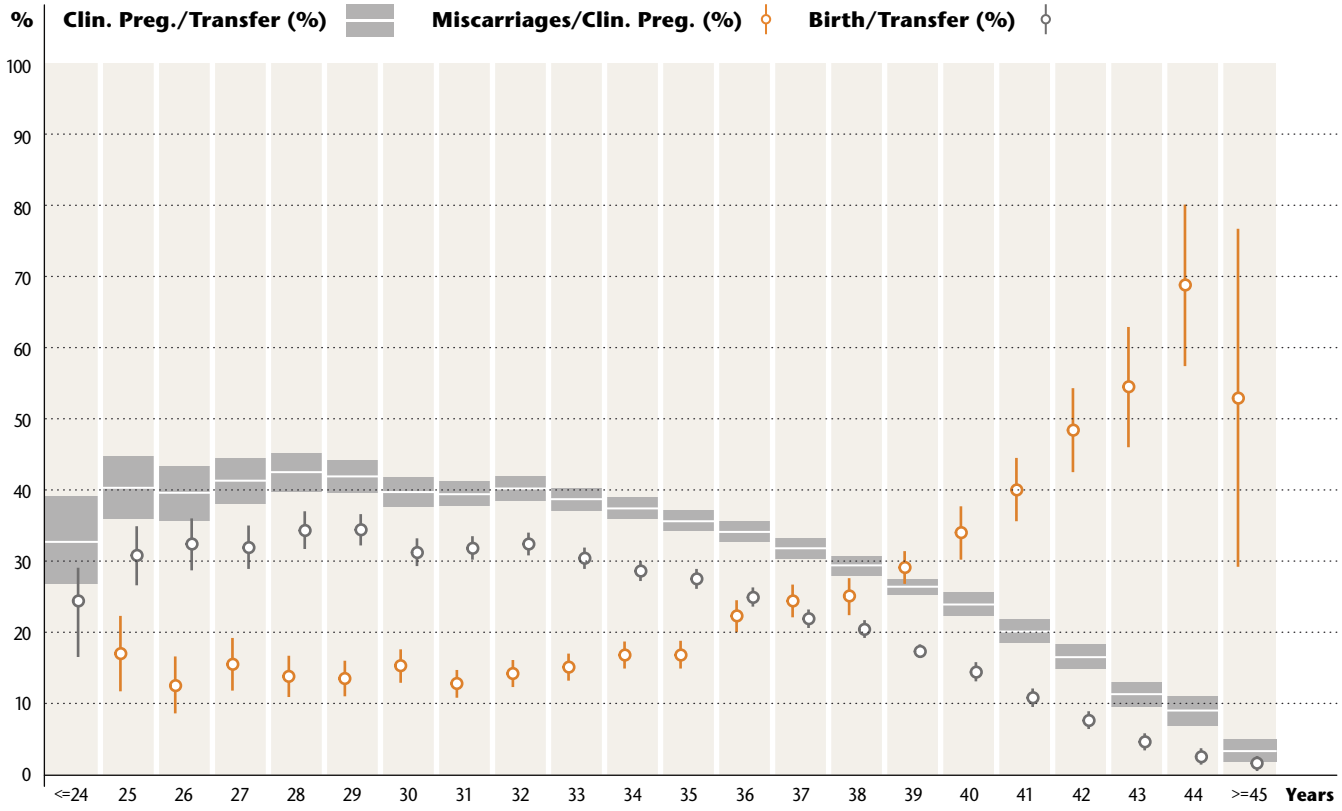
This meant that single births increased from 81.7 % in 2019 to 83.4 % in 2020 and to 84.5 % in 2021.

Even though the 15.5 % multiple birth rate is significantly lower than in previous years, it is still in the upper range in European comparisons. Many countries (Scandinavia, the Netherlands and France) now have multiple birth rates of less than 10 %. Nevertheless we can say that Germany is on the right track here.

Pregnancy Rate and Ongoing Pregnancy as a Function of Female Age 2021

Prospective Data

IVF, ICSI, IVF/ICSI 2021

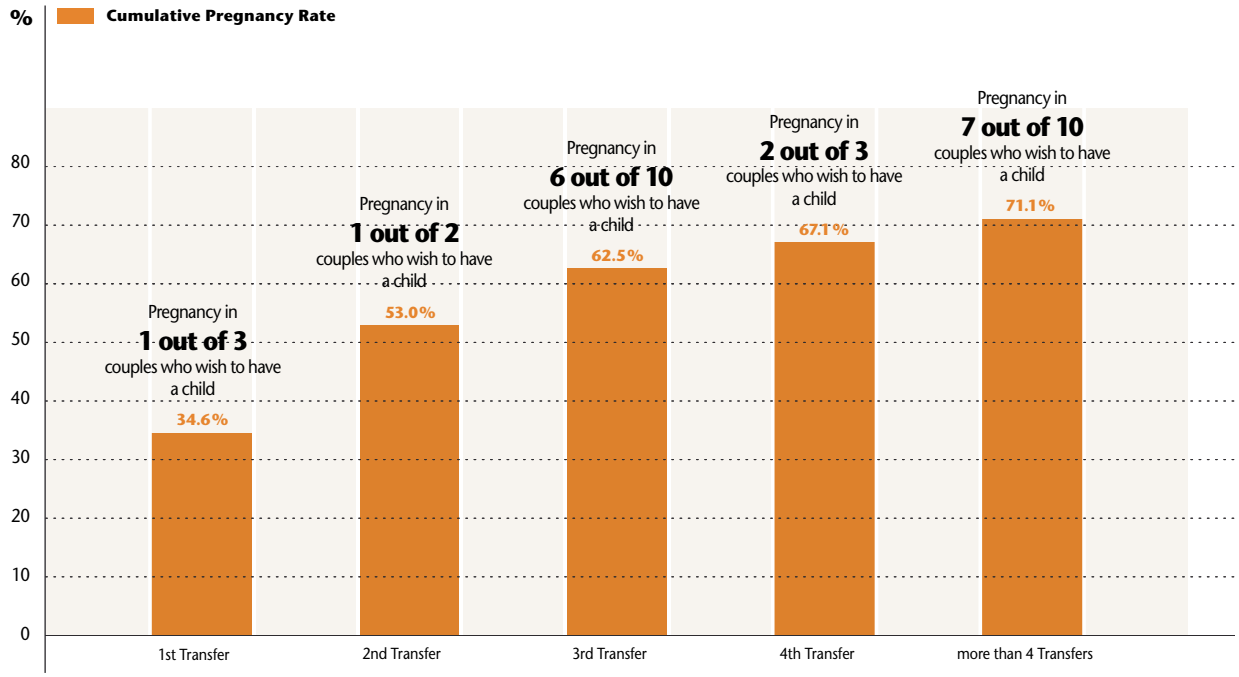


	<=24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	>=45	
n	206	482	628	907	1,265	1,748	2,295	2,890	3,283	3,726	3,958	4,106	3,981	4,065	4,115	5,823	2,591	2,284	1,680	1,199	716	514	**ET**
%	32.7	40.3	39.6	41.3	42.5	41.9	39.7	39.4	40.2	38.7	37.4	35.6	34.1	31.8	29.4	26.3	23.9	20.1	16.5	11.3	9.0	3.3	**CP/ET**
n	50	148	203	289	434	601	716	916	1,064	1,130	1,131	1,128	991	887	839	1,006	373	245	128	55	18	8	**Birth**

Pregnancy, abortion and birth rates are presented here as a 95% confidence interval.
So with a 95%-probability, the true mean lies within the defined confidence interval.

Pregnancies Cumulative 2019 – 2021

Prospective Data



2019 – 2021 total	Retrievals	CP (Fresh Cycles)	CP (Fresh Cycles) in %	Cryo Cycles w. Transfer	CP (Cryo Cycles)	CP/ET (Cryo Cycles) in %	Cum. CP	Cumulative Pregnancy Rate in %
1st Transfer	77,774	26,888	34.6	14,983	5,176	34.5	32,064	**34.6**
2nd Transfer	26,908	8,260	30.7	28,342	8,817	31.1	49,141	**53.0**
3rd Transfer	13,819	4,058	29.4	16,071	4,740	29.5	57,939	**62.5**
4th Transfer	6,402	1,818	28.4	8,520	2,442	28.7	62,199	**67.1**
>4 Transfers	5,547	1,430	25.8	9,097	2,361	26.0	65,990	**71.1**

Follow-up clinical pregnancies until Dec. 31st, 2022.

It is not just the pregnancy and birth rate per treatment or per embryo transfer that are important for the consultation, but in times of single embryo transfers, the pregnancy rate over several cycles as well.

It is for these reasons that we have calculated the pregnancy rates per transfer cumulatively, regardless of whether it is a second fresh cycle or a thawing cycle (cryo-transfer).

This means that more than half of our patients become pregnant after just two embryo transfers. After three transfers this increases to 6 out of 10 and after four transfers 2 out of 3 of our patients achieve fertility.
A total of 70% of all of our patients will become pregnant if they undergo four or more transfers.

Also included in this review are the cycles in which the first embryo transfer took place after thawing, e.g. an embryo transfer during the fresh cycle was not carried out for medical reasons. If the first transfer resulted from a thawing cycle, then the pregnancy rate is identical to that in the fresh cycle and is 34.5% in both situations.

A cumulative pregnancy rate can be achieved primarily through cryopreservation and subsequent thawing transfers without the need for further hormonal stimulation and puncturing the oocytes.

Unfortunately, neither freezing nor transferring is paid for by statutory health insurance companies in Germany. The German IVF Registry and the BRZ demand payment for both cryopreservation as well as the subsequent thawing cycles. Unfortunately, this prevents many couples from taking advantage of the freezing and thawing options.

Conclusion: As sad as a negative pregnancy test after a transfer is, the fact that two-thirds become pregnant after four transfers including cryopreservation should be encouraging and is immensely important for a consultation.

Dr. med. Andreas Tandler-Schneider, Berlin (in charge)
Dr. med. Ute Czeromin, Gelsenkirchen
Prof. Dr. med. Jan-Steffen Krüssel, Düsseldorf

Main Topic: Is "less" "more"?

Therapy results after 1x DET vs. 1x SET plus 1x SET

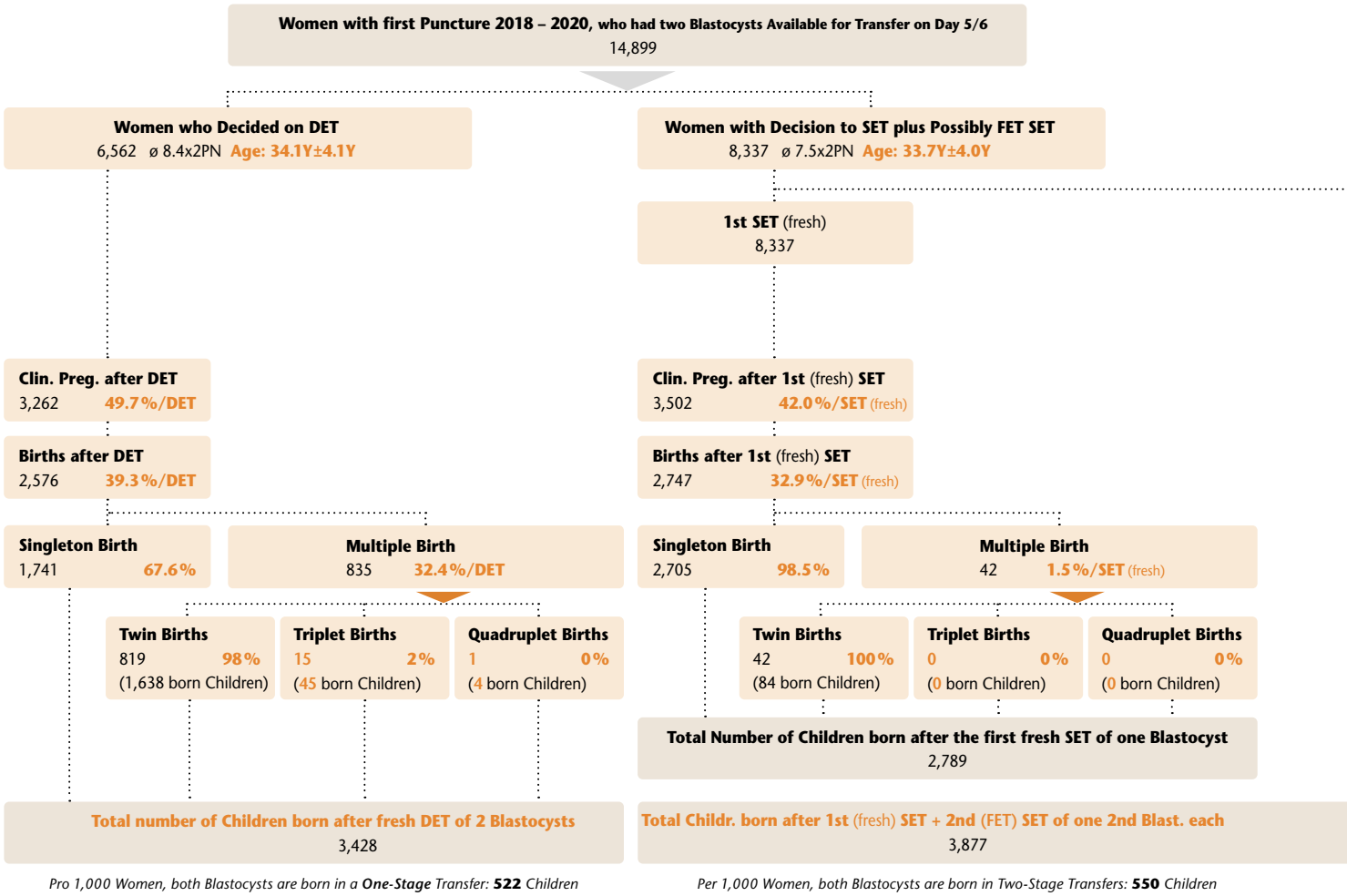
Of the twins born after reproductive medical treatment, only 14.6% are born in the 38th week of pregnancy or later. This means that over 85% are premature births and the children often require neonatal (intensive) care. Especially the higher-grade multiple pregnancies represent a particularly dramatic situation: Triplets are born prematurely 100% of the time, almost half of the triplets already before the 32nd week of pregnancy. The frequency of multiple births can essentially only be reduced by the SET, this is one of the most important tasks of responsible reproductive medicine.

Many couples, however, have the idea on one hand that the probability of pregnancy with DET is significantly better and on the other hand underestimate the probability of multiples and the possible complications associated with pregnancy, during and after birth.

A couple having two blastocysts available on the transfer day after blastocyst culture, must make the decision at this point at the latest, whether both blastocysts should be transferred (DET), or whether only one embryo should be transferred and the other embryo should be cryopreserved for now. The argument for DET is the higher probability of becoming pregnant in this cycle. On the other hand, the probability of multiples is significantly higher, furthermore, multiple pregnancies can also negatively influence each other intrauterine (vanishing twin, genetic abnormality in one of the multiples), which can lead to an impairment of the entire pregnancy.

The argument for SET is the much lower probability of multiples. The probability of pregnancy is however somewhat lower than with DET, but in this case, the couple still has the option of having the cryopreserved embryo transferred as a "second chance". Even if the first transfer would lead to a birth, the cryopreserved embryo is still available to the couple years later for a sibling, with the embryo quality still corresponding to the woman's age at the time of egg retrieval. However, costs for cryopreservation, storage, thawing, and transfer are incurred by the couple, which would not be incurred with DET, and despite significant improvements in cryoprocesses, there is a certain risk that the embryo will not be available for transfer after thawing.

From among the D·I·R members, the specific question was raised to us to take a closer look at exactly this constellation: What are the specific treatment results of women with comparable, good conditions, who either receive a fresh cycle blastocyst DET once, or a fresh cycle blastocyst SET once and a FET SET with a blastocyst created in the fresh cycle and cryopreserved?



Our inclusion criteria for this evaluation were:

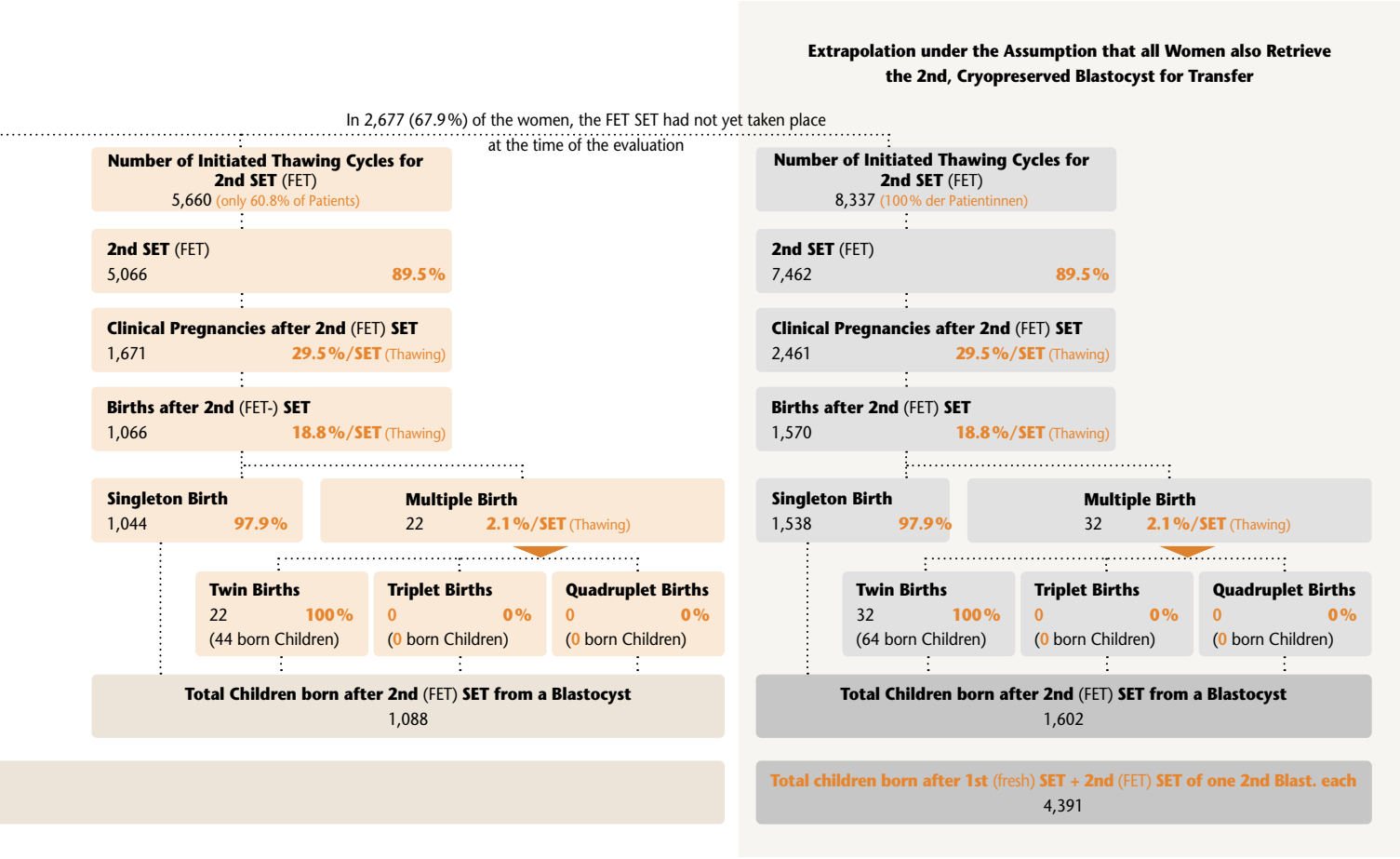
- First IVF or ICSI treatment.
- Fresh cycle between 01.01.2018 and 31.12.2020.
- Tracking of births until 31.12.2021.
- Cryopreservation took place in the fresh cycle (Embryo/PN).
- On day 5/6, two embryos were available.
- Either a DET was performed or a SET with cryopreservation of another blastocyst.

This constellation occurred in the D·I·R dataset in as many as in 14,899 cycles and among other things, the following interesting facts emerged:

- In this "good prognosis" group with the first transfer and comparable average age of women (34.1 ± 4.1 years in the DET group, or 33.7 ± 4.0 years in the SET+SET group), the majority opted for SET plus cryopreservation (56 % vs. 44 %).
- As expected, the live birth rate in the DET group was higher than in the first (fresh cycle) SET: 39.3 % vs. 32.9 %. However, the difference was "only" 6.4 percentage points.
- In return, women after cryopreservation of the second embryo in the FET cycle have an additional probability of a live birth of 18.8 % per thaw and thus a second chance.
- The proportion of multiple births after DET was over 20 times higher at 32.4 % than after the first (fresh cycle) SET (1.5 %).
- After DET, in addition to the 819 twin births, there were also 15 triplet births and one quadruplet birth, after the first (fresh cycle) SET and also the second (FET) SET, there were exclusively twin births (a total of 64).
- Almost half (49.2 %) of the children after DET are multiples, of which 49 children are triplets or quadruplets with the almost certain risk of very early prematurity and the possible resulting long-term health consequences.
- After 2x SET, only 3.6 % of the born children are twins, higher-grade multiples did not occur.
- Per 1,000 women who underwent a DET, 522 children were born. Per 1,000 women who underwent 2x SET, 550 children were born. The lower number of children born after DET may be due to a higher number of miscarriages and the more frequently complicated pregnancy courses in multiples.
- Only 67.9 % of the patients have "picked up" the second, cryopreserved embryo, so 2,677 women in this group still have a chance for a (sibling?) child.

Thus, under real-world conditions of the D·I·R, we were able to show that even more children are born with 2x SET than with DET, with the overwhelming majority (96.7 %) of these children being singletons. However, with DET, almost half of the born (49.2 %) are multiples.

Prof. Dr. med. Jan-Steffen Krüssel, Düsseldorf (leading)
Dr. med. Ute Czeromin, Gelsenkirchen
Dr. med. Andreas Tandler-Schneider, Berlin



Special evaluation: Ovulation Trigger using GnRH versus HCG 2020–2022

Traditionally, the final maturation of oocytes is performed using HCG, both in Germany and worldwide. However, as early as 1986, Leyendecker was able to show that this is also possible using gonadotropin-releasing hormones (GnRH). The trigger using GnRH did not establish itself for a long time, and only with the start of fertility protection and the retrieval of eggs as part of oocyte donation did this form of triggering become more regularly performed. Some centers (Humaidan et al 2006 and various others) also performed transfers after GnRH trigger with good success.

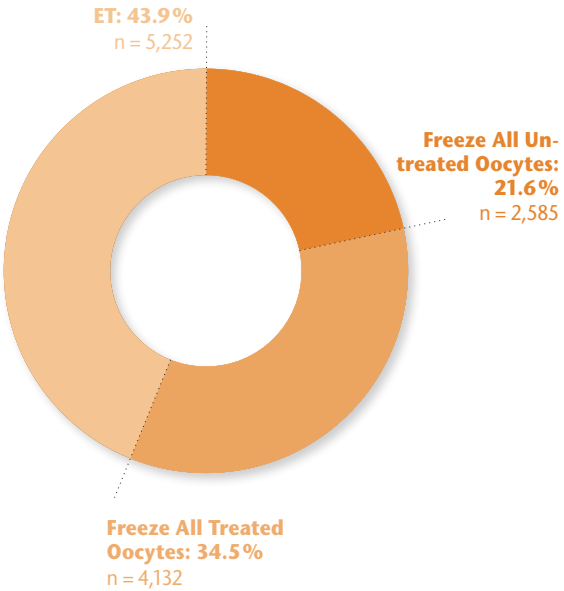
However, a Cochrane analysis last conducted in 2014 (Youssef et al 2014) showed that after an embryo transfer following GnRH ovulation trigger, the pregnancy rate and birth rate were also significantly lower. In 2019, the ESHRE guidelines for ovarian stimulation for IVF and ICSI also advised against a combination of GnRH with an embryo transfer in the same cycle.

Nevertheless, there is a significant proportion of reproductive medicine centers that regularly trigger with GnRH. We were therefore interested in real data from the German IVF Registry for the years 2020-2022. What is the proportion of cycles in which GnRH was triggered? And how high is the proportion of those with a fresh embryo transfer among the GnRH-triggered cycles? Are there differences in the respective HCG or GnRH collectives? And last but not least: what are the pregnancy / miscarriage and birth rates after GnRH triggering compared to the classic HCG triggering?

A total of 196,692 cycles were examined regarding the above-mentioned distribution. GnRH was used in 7.6% of cases in the years 2020-2022, HCG in 92.4% of cases.
The development of the GnRH trigger is slowly increasing from 4,391 cycles in 2020 to 5,124 cycles in 2021 and 5,441 cycles in 2022. Thus, GnRH is increasing at a low level compared to HCG, which became somewhat less from 2021 to 2022 due to overall decreased cycles (see Fig. 1 and 2).

Within the GnRH group, the cycles are distributed with 43.9% embryo transfer, 21.6% freeze all untreated oocytes, and 34.5% treated eggs. Thus, an embryo transfer is performed in almost half of the cycles (Fig. 3).

Fig. 3: Distribution of Ovulation Trigger with GnRH



The average number of oocytes obtained in the GnRH group, at 14.7, is significantly higher than that with HCG ovulation trigger, at 8.4. Even when a transfer was performed, the number of oocytes, at 10.4, was significantly above the average of those with HCG (Fig. 4).

Fig. 1: Distribution of GnRH vs. HCG for Ovulation Trigger in Fresh Cycles 2020–2022

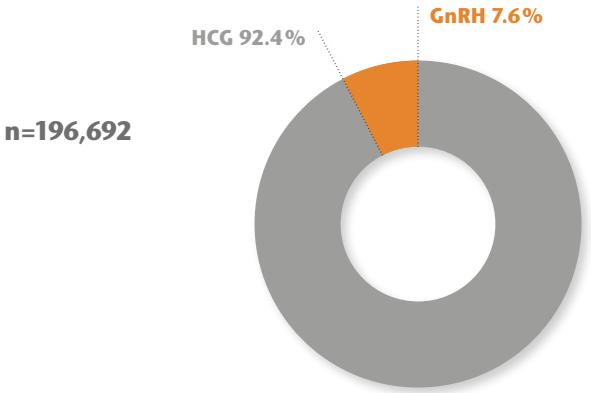


Fig. 2: Ovulation Trigger Development 2020–2022

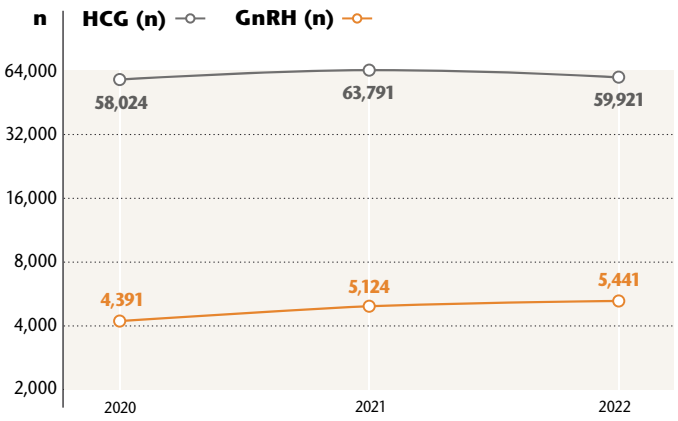


Fig. 4: Oocyte Retrieval Depending on Ovulation Trigger

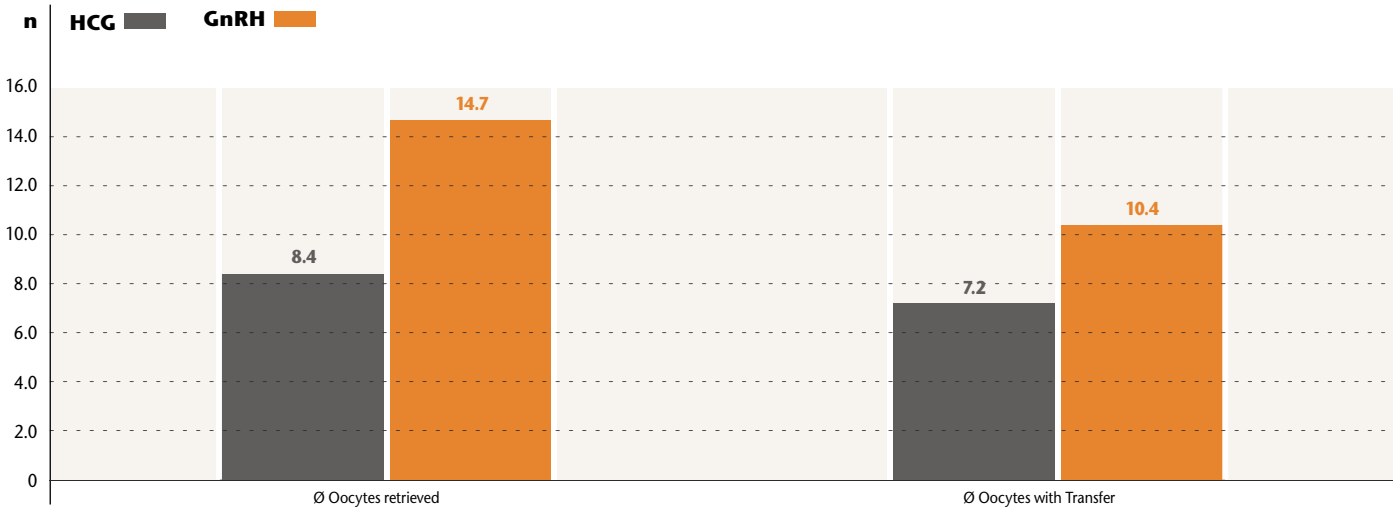
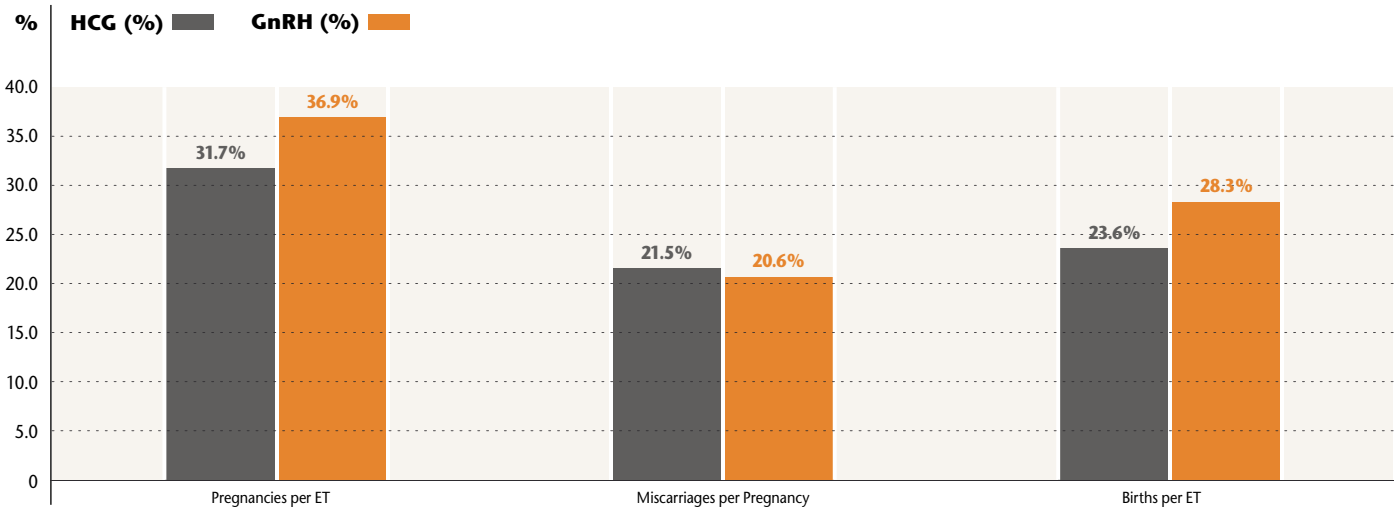


Fig. 5: Pregnancies, Miscarriages and Births after Ovulation Trigger Using HCG vs. GnRH in 2020–2021



However, the average age of patients with GnRH trigger is 34.1 years, while the average age after HCG is 35.8 years.

The proportion of those patients who received cryopreservation in addition to the transfer is also significantly higher than with HCG trigger (55.3% vs. 31.7%), which is certainly due to the number of oocytes.

When comparing the results, both the pregnancy rate per transfer at 36.9% vs. 31.7% and the birth rate per ET at 28.3% vs. 23.6% are significantly higher in the GnRH group. The miscarriage rate is the same in both cases, at 20.6% for GnRH and 21.5% for the HCG trigger. However, it should also be noted here that the average age of patients who receive a transfer after GnRH, at 33.8 years, is significantly lower than those in the HCG population at 35.5 years (Fig. 5).

In summary, it can be said that ovulation is induced with GnRH in a relatively small percentage of less than 10% in Germany. The average age of the patients who are triggered with GnRH is significantly younger than with the classic HCG trigger. Overall, it is a collective with a higher number of oocytes and thus certainly a better prognosis. Differences in the overstimulation rate could not be determined. The OHSS risk was 0.4% with GnRH and embryo transfer and 0.7% with HCG trigger.

No statement could be made on luteal phase support after fresh transfer. Likewise, no statement could be made about the so-called "double trigger" with GnRH and HCG. These and other questions should be investigated in future evaluations.

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Dr. med. Ute Czeromin, Gelsenkirchen
Prof. Dr. med. Jan-Steffen Krüssel, Düsseldorf

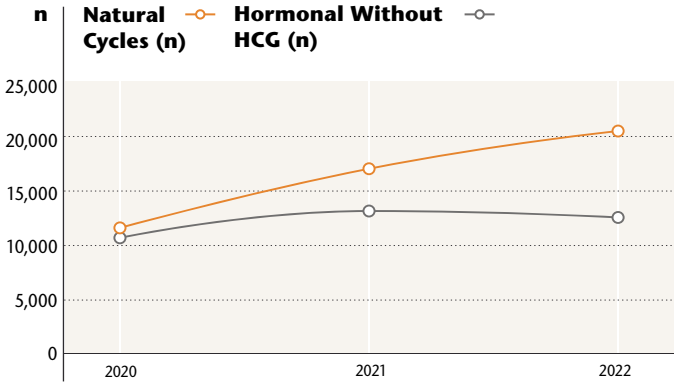
Special Analysis: Endometrial Preparation in Thawing Cycles 2020–2022

In the third special evaluation of this D·I·R annual, we investigate the question of whether there are differences in the pretreatment of FET cycles. Specifically, whether hormonal endometrium preparation using HRT or transfer in the natural cycle leads to better results.

The data on this topic are inconsistent. A large-scale prospective randomized study conducted by the Dutch group led by Groenewoud in 2016, known as the ANTARCTICA study, showed no differences between the HRT cycle and a "managed natural cycle" in frozen embryo transfer. However, a more recent meta-analysis by Wu et al. (Journal of Assisted Reproduction and Genetics, 2021) demonstrated that the natural cycle, compared to endometrial preparation without the corpus luteum and using HRT, resulted in a higher chance of live birth and lower risks of pregnancy and birth complications.

In this special analysis here, a total of 109,303 cycles from the years 2020 to 2022 were examined. Out of these, 36,116 cycles with hormonal endometrial preparation and without HCG, as well as 49,118 cycles in the natural cycle, were eligible for analysis. The increase in natural cycles can be observed, with the numbers rising from 11,577 to 17,010 and finally reaching 20,531 cycles, as shown in Figure 1.

Fig. 1: Distribution of Thawing with known Preparation 2020–2022



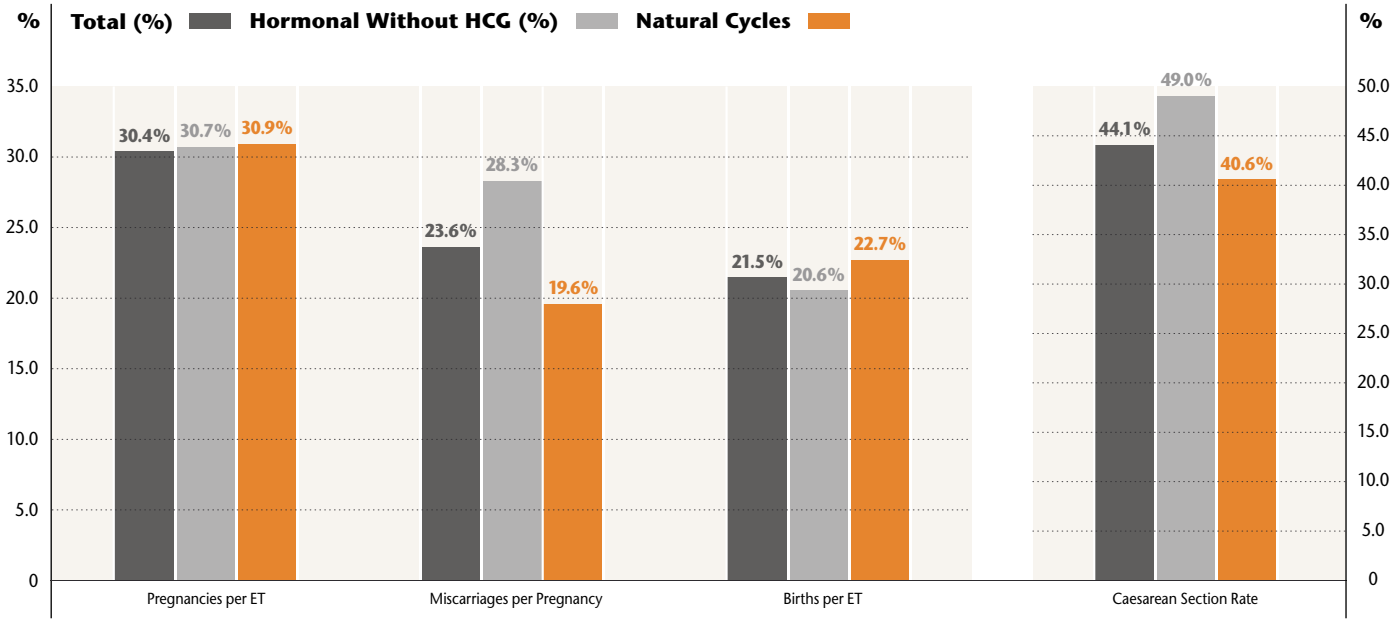
What are the differences in the results between hormonal endometrial preparation (HRT) and the natural cycle?

The pregnancy rates are almost identical with 30.7% in the HRT group vs. 30.9% in the natural cycle.

In contrast, the miscarriage rates in the HRT cycle are significantly higher at 28.3% compared to 19.6% in the natural cycle. This is also reflected in the birth rate per embryo transfer, which is 20.6% after HRT and 22.7% in the natural cycle, two percentage points higher.

Also noticeable is the caesarean section rate, which at 49.0% is significantly higher after HRT than in the natural cycle (40.6%). See Fig. 2.

Fig. 2: Pregnancies, Miscarriages, Births, Caesarean Section Rate Hormonal Endometrial Preparation vs. natural Cycle 2020–2021



The natural cycles were divided into cycles without any ovarian stimulation (42,007 cycles) versus cycles with mild hormonal stimulation (7,111 cycles). In terms of pregnancy rate (31.9% versus 30.7%), the cycles with mild hormonal stimulation are slightly ahead, while the birth rates (22.7% versus 22.4%) are comparable in cycles without any ovarian stimulation. See Fig. 3.

Within the group of natural cycles without any ovarian stimulation, triggering with HCG was examined. The pregnancy rate with HCG is slightly higher at 31.6% compared to without HCG at 30.9% per embryo transfer. Also, the birth rate is slightly higher at 23.8% versus 22.4%. See Fig. 4.

The conclusion of our analysis shows that, with the same age distribution (35.3 years in the natural cycle and 34.8 years in the HRT cycle), the HRT cycle has a higher miscarriage rate than the natural cycle. On the other hand, the birth rate is highest when triggering with HCG in the natural cycle. This is consistent with the data from the above-mentioned meta-analysis by Wu et al. in 2021.

Fig. 3: Natural Cycle Treatment Without any vs. only mild Ovarian Stimulation 2020–2021

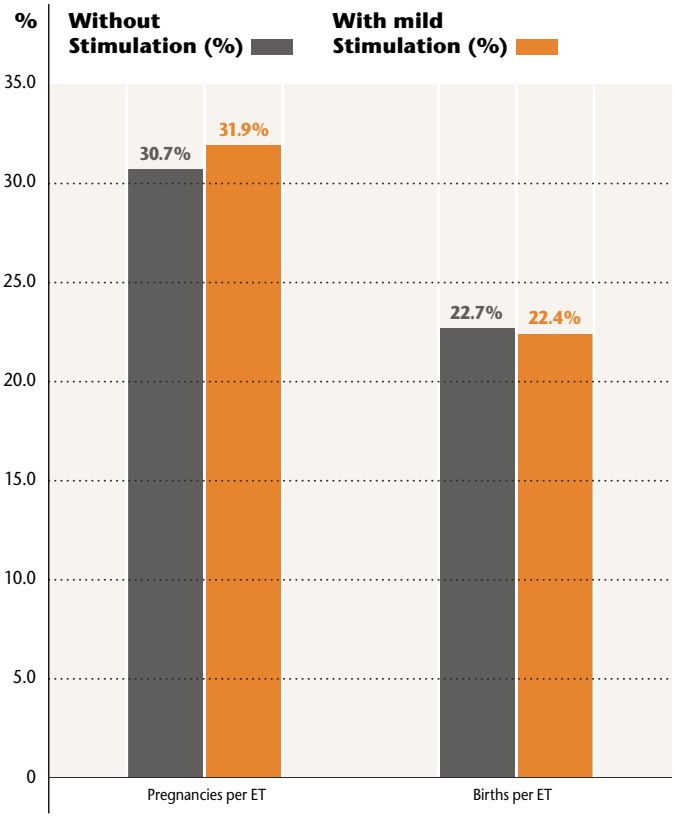
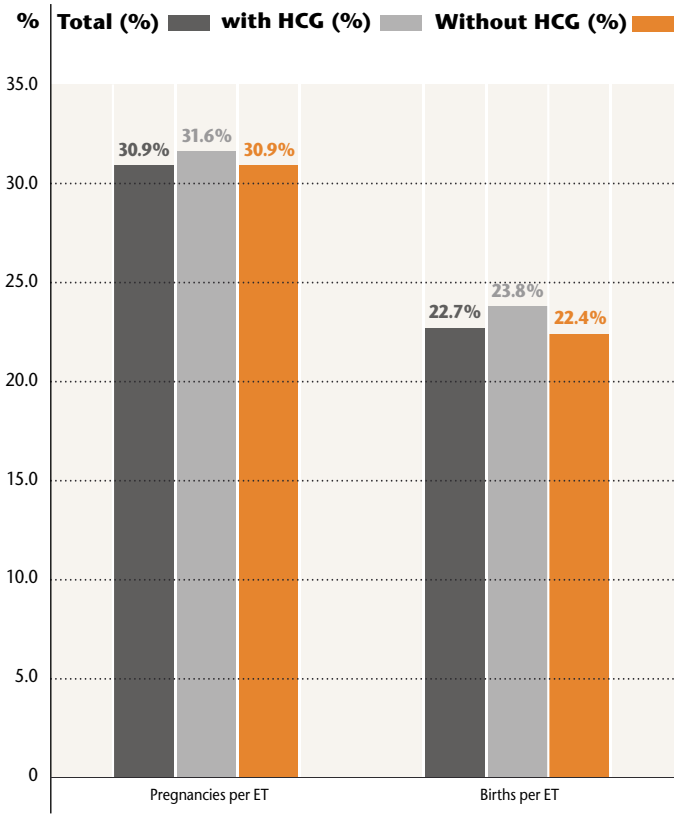


Fig. 4: Treatment in Natural Cycle without any Ovarian Stimulation with or without Trigger 2020–2021



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Dr. med. Ute Czeromin, Gelsenkirchen
Prof. Dr. med. Jan-Steffen Krüssel, Düsseldorf

D·I·R Annual 2022 – Tables

Number of Treatments in 2022

Centers for IVF-, ICSI-, and Cryo Transfer Treatments

Members of the German IVF-Registry 2022	n = 140
Registry Participants 2021 and 2022	n=140
Data Received by Deadline April 23rd 2023	n=140
Documented Treatment Cycles	n=127,920
Number of Women Treated*	n= 67,043
Mean Number of Treatment Cycles per Woman	**1.9**

Type of plausible treatment 2018 – 2022

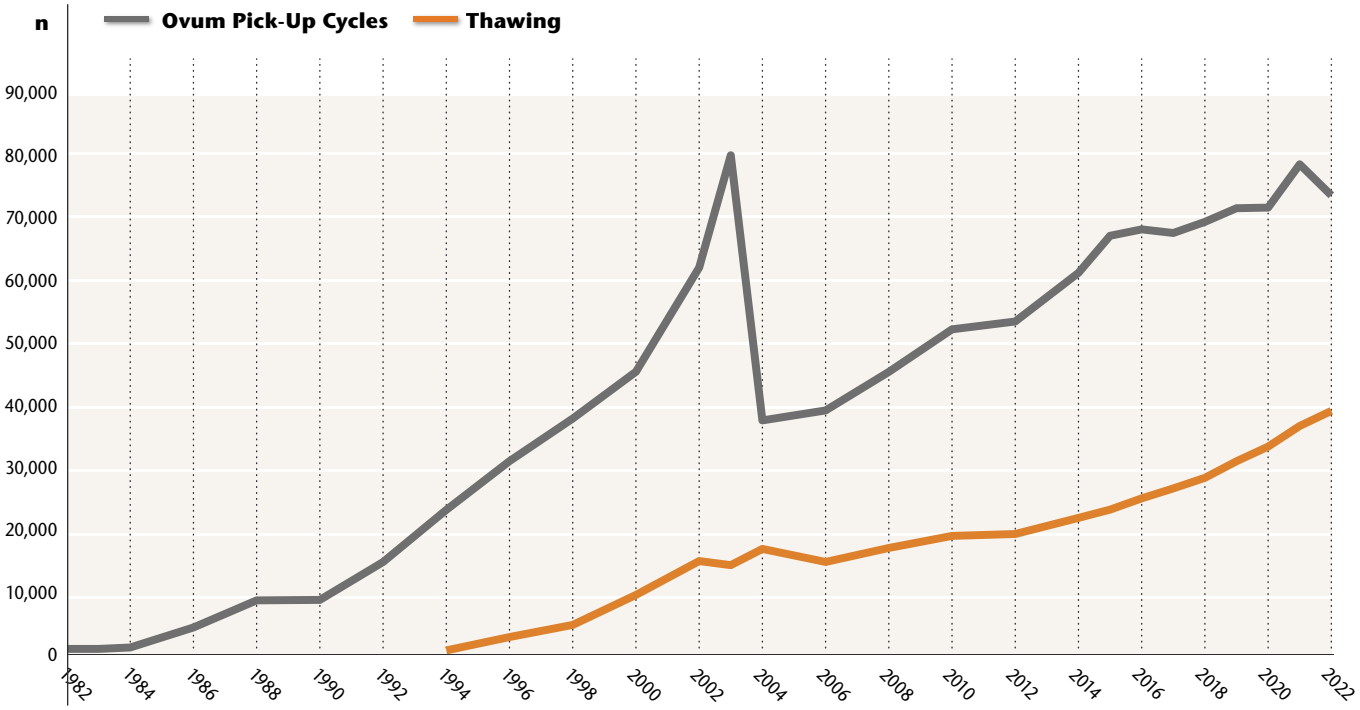
IVF, ICSI, IVF/ICSI, Cryo Transfer – Prospective and Retrospective Data

	2018		2019		2020		2021		2022	
	n	%	n	%	n	%	n	%	n	%
IVF	17,309	16.6	18,561	16.9	19,163	17.0	21,304	17.1	19,866	16.1
ICSI	46,375	44.4	47,057	42.8	46,081	40.8	49,616	39.8	45,993	37.3
IVF/ICSI	1,431	1.4	1,359	1.2	1,500	1.3	1,359	1.1	1,232	1.0
Freeze all - MII	1,615	1.5	1,833	1.7	2,133	1.9	3,091	2.5	3,548	2.9
Freeze All - PNs and Embryos	4,552	4.4	5,087	4.6	5,539	4.9	6,364	5.1	6,328	5.1
Cryo	28,362	27.2	31,035	28.2	33,402	29.6	36,733	29.5	39,168	31.8
Mixed Fresh and Cryo Cycles	1,068	1.0	1,032	0.9	976	0.9	1,103	0.9	1,021	0.8
None (= Break-off before oocyte treatment or thawing)	3,672	3.5	3,956	3.6	4,217	3.7	5,002	4.0	6,176	5.0
Total Plausible Cycles	**104,384**		**109,920**		**113,011**		**124,572**		**123,332**	

**) Base quantity: Total number of women, including implausible treatment cycles.*

Number of Oocyte Retrievals (Freshcycles) 1982 – 2022
Number of Thawing Cycles 1994 – 2022
Registry Participants 1982 – 2022

IVF, ICSI* – Prospective and Retrospective Data



	1982	1986	1990	[...]	2002	2003	2004	[...]	2018	2019	2020	2021	2022
.	742	4,201	8,653		62,306	80,434	37,633		69,679	71,886	71,985	78,970	73,966
IVF	742	3,806	7,343	*For values from 1991 to 2001 see www,deutsches-ivf-register.de*	23,936	28,058	11,848	*For values from 2005 to 2017 see www.deutsches-ivf-register.de*	17,309	18,561	19,163	21,304	19,866
ICSI*					37,692	51,389	25,339		47,806	48,416	47,581	50,975	47,225
Thawing					14,923	14,265	16,883		28,362	31,035	33,402	36,733	39,168
Registry Participants	**5**	**28**	**53**		**112**	**116**	**120**		**128**	**132**	**138**	**140**	**140**

Data for 1982 to 2010 are published and available. Separate presentation of GIFT, ZIFT, IVF/ICSI was abstained from.

**) Where IVF/ICSI is not explicitly mentioned, the treatments were added to ICSI.*

Quality of Documentation 2021/2022

Plausible and Prospectively Documented Cycles, Cycle- and Pregnancy-Outcomes

Any evaluation is only as good the raw data.
The yearbook team thanks the centers für their meticulous work!

Plausible Cycles 2022

123,332 plausible cycles out of **127,920** documented cycles. **96.4%** of all documented cycles are plausible. Unfortunately, that does not mean that all mandatory fields have been entered. This makes detailed evaluation very difficult.

Prospectively Recorded Cycles 2022

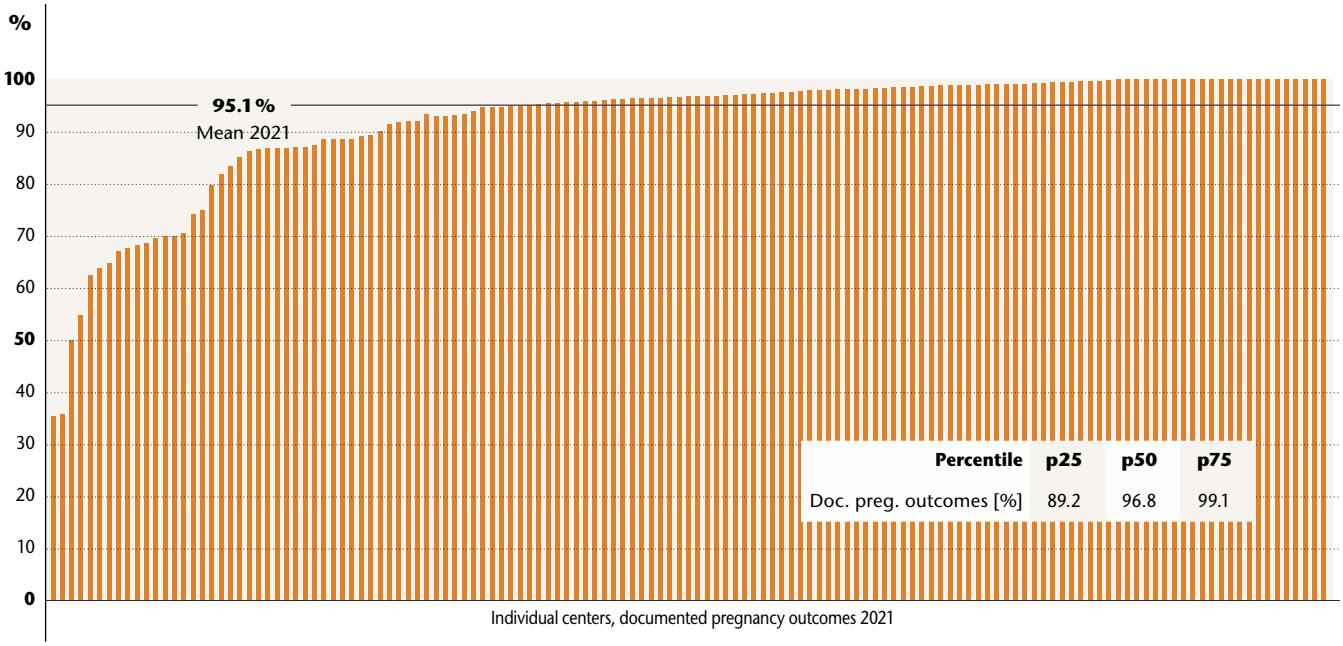
111,443 prospectively recorded cycles out of **123,332** plausible cycles. **90.4%** of all plausible cycles were recorded prospectively. The German IVF Register is the only register worldwide that shows the number of prospectively recorded cycles. This is a quality feature in itself!

Recorded Cycle Outcomes 2022

The result of the cycle was recorded in **87,635** of **88,345** embryo transfers. **99.2%** of cycle outcomes were documented.

Recorded Pregnancy Outcomes 2021

The pregnancy outcome was recorded for **27,413** of **28,824** clinical pregnancies. **95.1%** of pregnancy outcomes were recorded. With this and for the first time, the centers achieved a quota above the D·I·R target of **95%**, and the D·I·R would like to say a special thank you for this complex work!



We know: The work, especially on the documentation qualities mentioned here, is laborious, time-consuming and ties up resources.

With **95.1%** documented pregnancy outcomes, the D·I·R received a quota of more than the **95.0%**-target of the D·I·R for the first time!

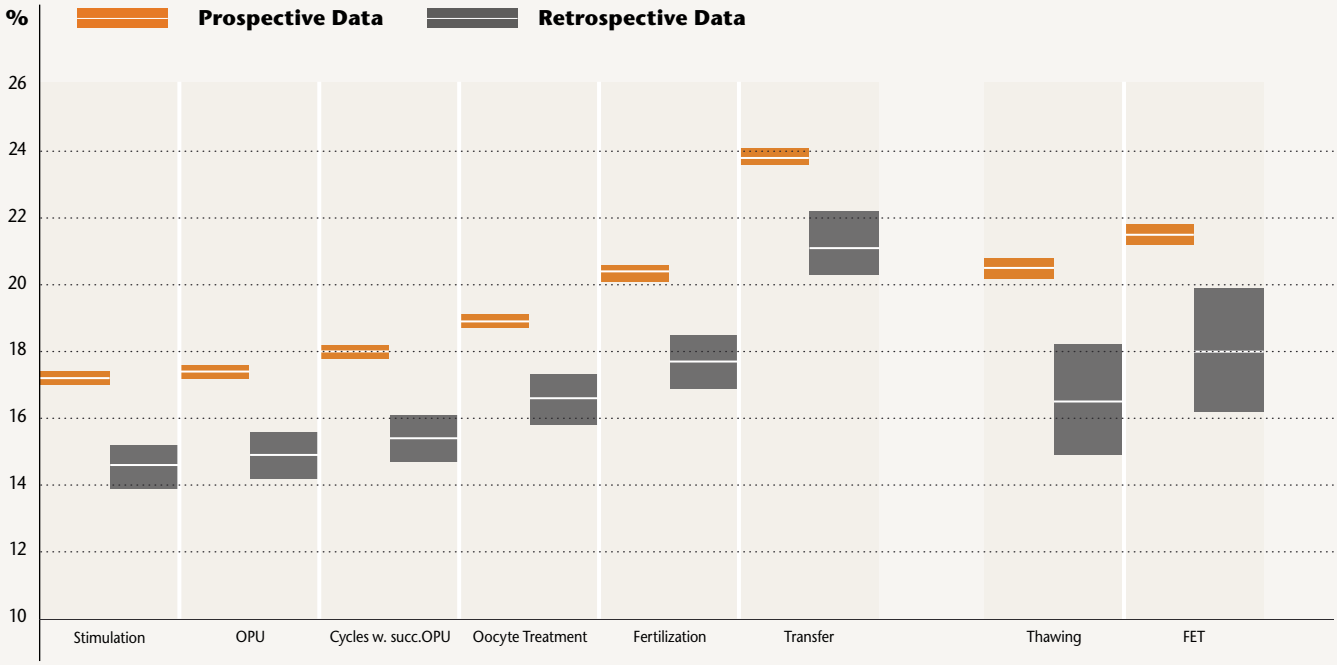
38 centers had a quota of over **99%**, 23 centers even a quota of **100%**.

The aim of the Executive Board and the Board of Trustees is to continue to motivate the centers to draw attention to the parameter of prospectivity.

We are also aiming for a documented pregnancy outcome rate of more than **95%** again.

Birth Rate per Treatment Level in Fresh and Cryo Treatment Cycles 2020 and 2021

Prospective and Retrospective Data

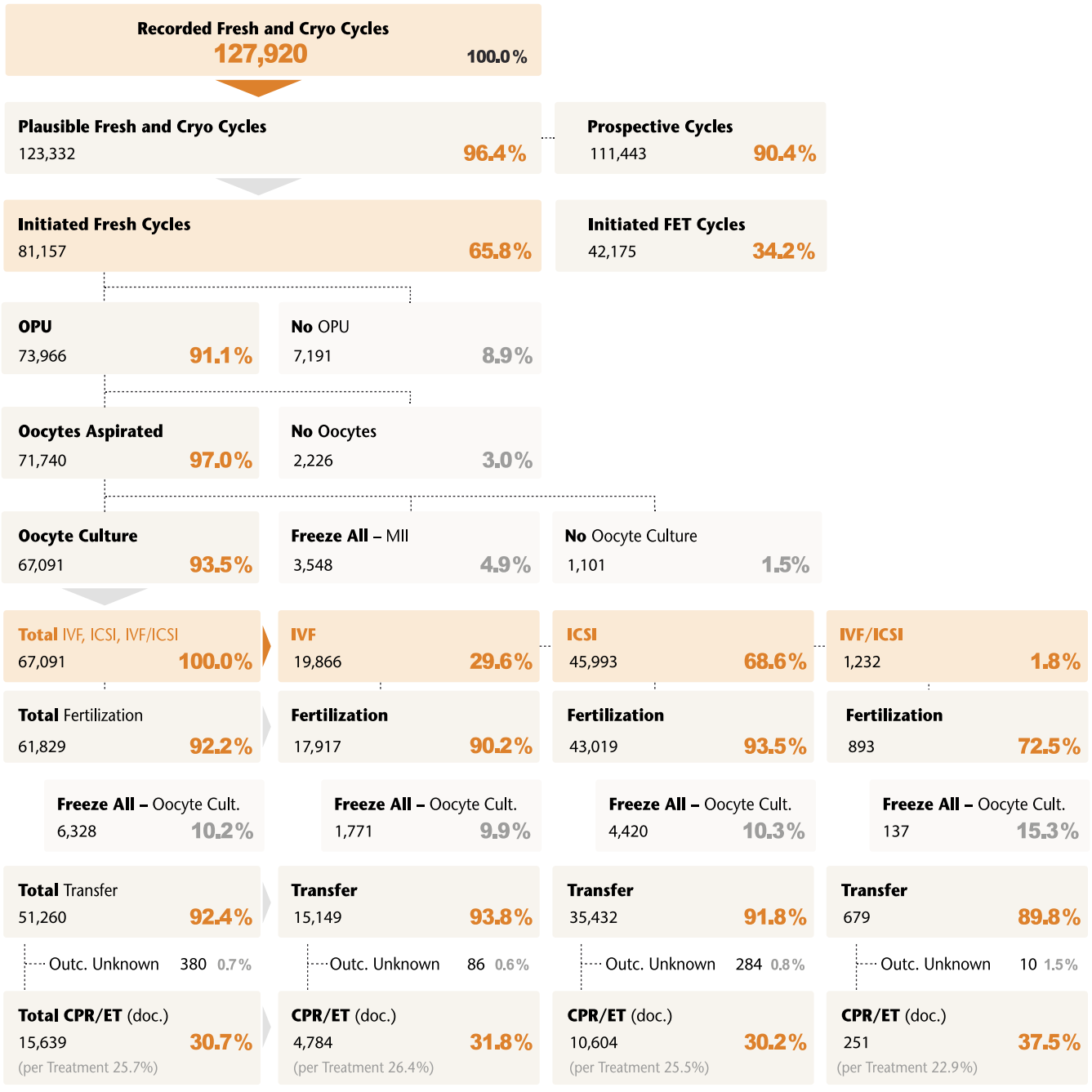


	Stimulation	OPU	Cycles with Successful OPU	Oocyte Treatment	Fertilization	Transfer	Thawing	FET
Prospective Numbers	142,325	140,104	135,835	129,258	119,747	102,648	68,286	65,073
Birth	24,438	24,438	24,438	24,438	24,438	24,438	14,012	14,012
Upper Confid. Limit*	17.4	17.6	18.2	19.1	20.6	24.1	20.8	21.8
Birth/Treatm. %	17.2	17.4	18.0	18.9	20.4	23.8	20.5	21.5
Lower Confid. Limit*	17.0	17.2	17.8	18.7	20.2	23.6	20.2	21.2
Retrospective Numbers	11,089	10,851	10,525	9,765	9,134	7,678	1,855	1,701
Birth	1,617	1,617	1,617	1,617	1,617	1,617	307	307
Upper Confid. Limit*	15.2	15.6	16.1	17.3	18.5	22.2	18.2	19.9
Birth/Treatm. %	14.6	14.9	15.4	16.6	17.7	21.1	16.5	18.0
Lower Confid. Limit*	13.9	14.2	14.7	15.8	16.9	20.3	14.9	16.2

** With a 95 %-probability, the true mean lies within the defined confidence interval.*

D·I·R Statistics in Brief – Fresh Cycles 2022 (CoD April 23rd 2023)

German IVF Registry – Prospective and Retrospective Data



For FertiPROTEKT (medical freezing), 910 cycles have been documented. Among them 740 cycles freeze all oocytes and 42 cycles freeze all oocytes cultured.
For Social Freezing, 2,338 cycles have been documented, resulting in 2,068 aspirations with an average of 11.2 oocyte retrieved. Freeze all oocytes: 1,884 cycles.
For PID, 383 cycles have been documented.

For for this and the next page:
Clinical pregnancy rates per transfer are adjusted by unknown outcomes.
Transfer rate, clinical pregnancy rates per treatment and birth rates per treatment are adjusted by freeze all oocytes cultured.

D·I·R Statistics in Brief – Fresh Cycles 2021 (CoD April 23rd 2023)

German IVF Registry – Prospective and Retrospective Data

Recorded Fresh and Cryo Cycles 128,170 100.0%

Plausible Fresh and Cryo Cycles 124,572 97.2%

Prospective Cycles 114,222 91.7%

Initiated Fresh Cycles 85,389 68.5%

Initiated FET Cycles 39,183 31.5%

OPU 78,970 92.5%

No OPU 6,419 7.5%

Oocytes Aspirated 76,527 96.9%

No Oocytes 2,443 3.1%

Oocyte Culture 72,279 94.4%

Freeze All – MII 3,091 4.0%

No Oocyte Culture 1,157 1.5%

For FertiPROTEKT (medical freezing), 731 cycles have been documented. Among them 533 cycles freeze all oocytes and 75 cycles freeze all oocytes cultured.

For Social Freezing, 2,210 cycles have been documented, resulting in 1,998 aspirations with an average of 10.8 oocyte retrieved. Freeze all oocytes: 1,809 cycles.

For PID, 416 cycles have been documented.

	Total Fresh Cycles	**IVF**	**ICSI**	**IVF/ICSI**
	72,279 100.0%	21,304 29.5%	49,616 68.6%	1,359 1.9%
Total Fertilization	66,800 92.4%	**Fertilization** 19,271 90.5%	**Fertilization** 46,513 93.7%	**Fertilization** 1,016 74.8%
Freeze All – Oocyte Cult.	6,364 9.5%	**Freeze All –** Oocyte Cult. 1,738 9.0%	**Freeze All –** Oocyte Cult. 4,497 9.7%	**Freeze All –** Oocyte Cult. 129 12.7%
Total Transfer	56,729 93.9%	**Transfer** 16,648 95.0%	**Transfer** 39,252 93.4%	**Transfer** 829 93.5%
Outc. Unknown	173 0.3%	Outc. Unknown 37 0.2%	Outc. Unknown 135 0.3%	Outc. Unknown 1 0.1%
Total CPR/ET (doc.)	18,149 32.1% (per Treatment 28.5%)	**CPR/ET** (doc.) 5,484 33.0% (per IVF-Treatment 28.0%)	**CPR/ET** (doc.) 12,364 31.6% (per ICSI-Treatment 27.4%)	**CPR/ET** (doc.) 301 36.4% (per IVF/ICSI-Treatment , 24.5%)
Misc.	3,787 20.9%	**Misc.** 1,180 21.5%	**Misc.** 2,538 20.5%	**Misc.** 69 22.9%
EP	241 1.3%	**EP** 90 1.6%	**EP** 147 1.2%	**EP** 4 1.3%
Not yet Recorded	869 4.8%	**Not yet Recorded** 231 4.2%	**Not yet Recorded** 626 5.1%	**Not yet Recorded** 12 4.0%
Birth (doc.)	13,252 73.0% (per Transfer 23.4%, per Treatm. 20.1%)	**Birth** (doc.) 3,983 72.6% (per Transfer 24.0%, per Treatm. 20.4%)	**Birth** (doc.) 9,053 73.2% (per Transfer 23.1%, per Treatm. 20.1%)	**Birth** (doc.) 216 71.8% (perTransfer 26.1%, per Treatm. 17.6%)

Births	n	%
Singletons	11,203	84.5
Twins	2,013	15.2
Triplets	36	0.3
Quadruplets	0	0.0

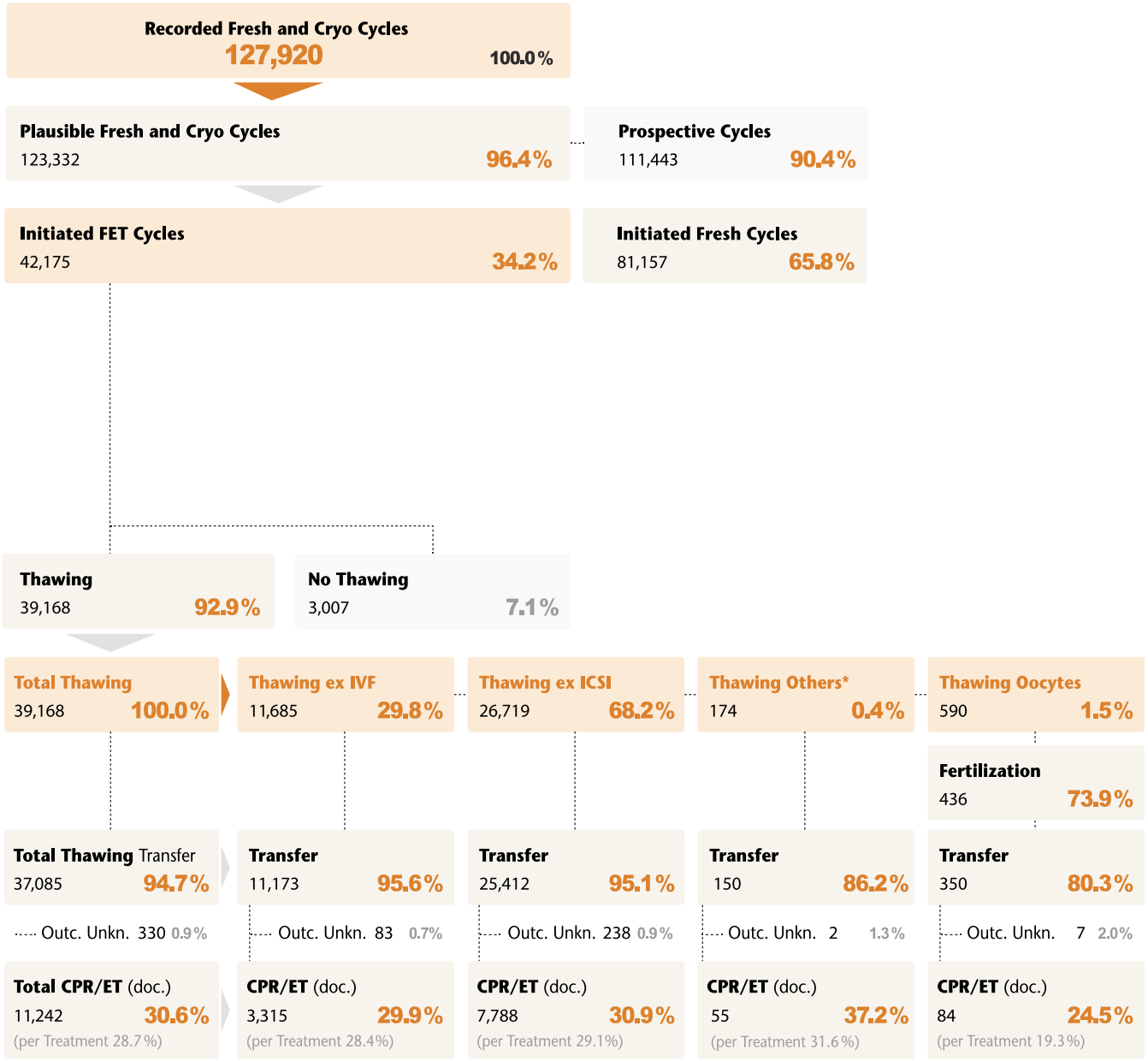
Births	n	%
Singletons	3,371	84.6
Twins	598	15.0
Triplets	14	0.4
Quadruplets	0	0.0

Births	n	%
Singletons	7,647	84.5
Twins	1,384	15.3
Triplets	22	0.2
Quadruplets	0	0.0

Births	n	%
Singletons	185	85.6
Twins	31	14.4
Triplets	0	0,0
Quadruplets	0	0,0

D·I·R Statistics in Brief – Cryo Cycles 2022 (CoD April 23rd 2023)

German IVF Registry – Prospective and Retrospective Data



*) Thawing others means cycles with unknown previous treatment, previous treatment not documented or previous treatment has partly been IVF and ICSI.

D·I·R Statistics in Brief – Cryo Cycles 2021 (CoD April 23rd 2023)

German IVF Registry – Prospective and Retrospective Data

Recorded Fresh and Cryo Cycles 128,170 100.0 %

Plausible Fresh and Cryo Cycles 124,572 97.2 %

Prospective Cycles 114,222 91.7 %

Initiated FET Cycles 39,183 31.5 %

Initiated Fresh Cycles 85,389 68.5 %

Thawing 36,733 93.7 %

No Thawing 2,450 5.4 %

	Total Thawing	Thawing ex IVF	Thawing ex ICSI	Thawing Others*	Thawing Oocytes
	36,733 100.0 %	10,803 29.4 %	25,165 68.5 %	206 0.6 %	559 1.5 %
					Fertilization 411 73.5 %
Transfer	**Total Thawing** Transfer 35,005 95.3 %	10,368 96.0 %	24,119 95.8 %	190 92.2 %	328 79.8 %
	Outc. Unkn. 133 0.4 %	Outc. Unkn. 28 0.3 %	Outc. Unkn. 104 0.4 %	Outc. Unkn. 0 0.0 %	Outc. Unkn. 1 0.3 %
CPR/ET (doc.)	**Total CPR/ET** (doc.) 10,675 30.6 % (per Treatment 21.1 %)	3,170 30.7 % (per Treatment 29.3 %)	7,367 30.7 % (per Treatment 29.3 %)	58 30.5 % (per Treatment 28.2 %)	80 24.5 % (per Treatment 19.5 %)
Misc.	2,541 23.8 %	776 24.5 %	1,728 23.5 %	8 13.8 %	29 36.3 %
EP	125 1.2 %	64 2.0 %	61 0.8 %	0 0.0 %	0 0.0 %
Not yet Rec.	542 5.1 %	168 5.3 %	368 5.0 %	4 6.9 %	2 2.5 %
Birth (doc.)	7,467 69.9 % (per Tr. 21.3 %, p. Treatm. 20.3 %)	2,162 68.2 % (per Tr. 20.9 %, p. Treatm. 20.0 %)	5,210 70.7 % (per Tr. 21.6 %, p. Treatm. 20.7 %)	46 79.3 % (per Tr. 24.2 %, p. Treatm. 22.3 %)	49 61.3 % (per Tr. 14.9 %, p. Treatm. 11.9 %)

Births	n	%
Singletons	6,705	89.8
Twins	744	10.0
Triplets	18	0.2
Quadruplets	0	0.0

Births	n	%
Singletons	1,900	87.9
Twins	255	11.8
Triplets	7	0.3
Quadruplets	0	0.0

Births	n	%
Singletons	4,722	90.6
Twins	477	9.2
Triplets	11	0.2
Quadruplets	0	0.0

Births	n	%
Singletons	38	82.6
Twins	8	17.4
Triplets	0	0.0
Quadruplets	0	0.0

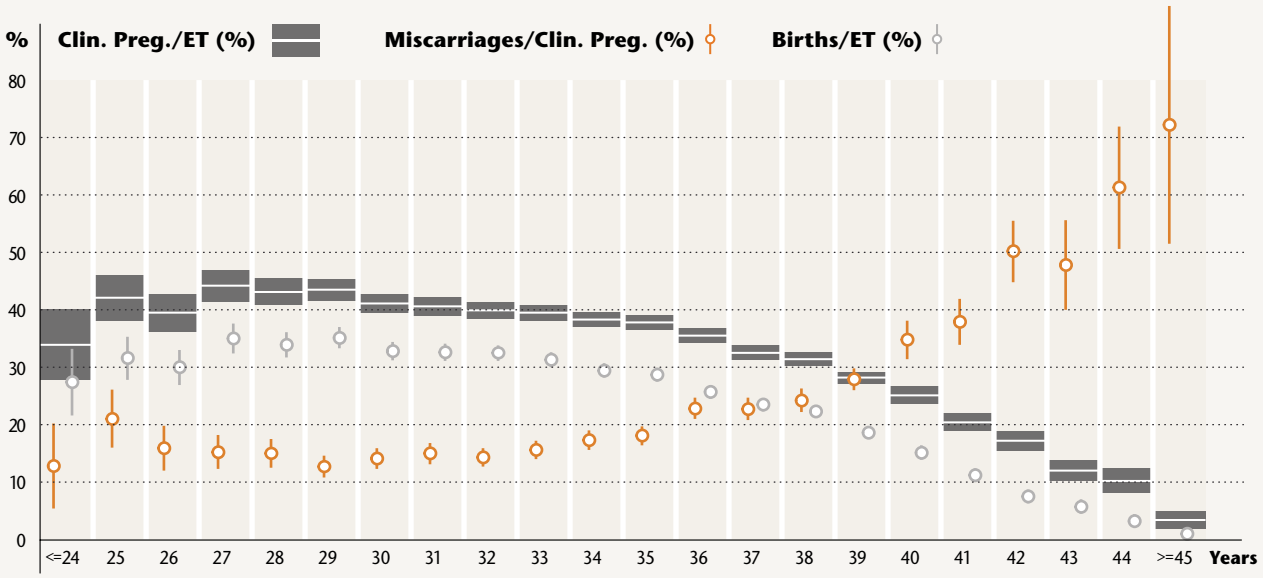
Births	n	%
Singletons	45	91.8
Twins	4	8.2
Triplets	0	0.0
Quadruplets	0	0.0

**) Thawing others means cycles with unknown previous treatment, previous treatment not documented or previous treatment has partly been IVF and ICSI.*

Pregnancy Rate and Ongoing Pregnancy as a Function of Female Age 2017 – 2021

Prospective Data

IVF 2017 – 2021



	<=24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	>=45	
n	230	599	863	1,293	1,783	2,613	3,408	3,831	4,519	4,956	5,197	5,464	5,553	5,294	5,555	7,980	3,117	2,804	1,940	1,327	786	527	ET
%	33.9	42.1	39.5	44.2	43.1	43.5	41.1	40.6	39.9	39.5	38.3	37.8	35.5	32.5	31.4	28.2	25.1	20.4	17.2	12.0	10.2	3.4	CP/ET
n	63	189	258	452	603	916	1,117	1,247	1,464	1,548	1,527	1,563	1,424	1,239	1,234	1,482	469	313	145	76	25	5	Birth

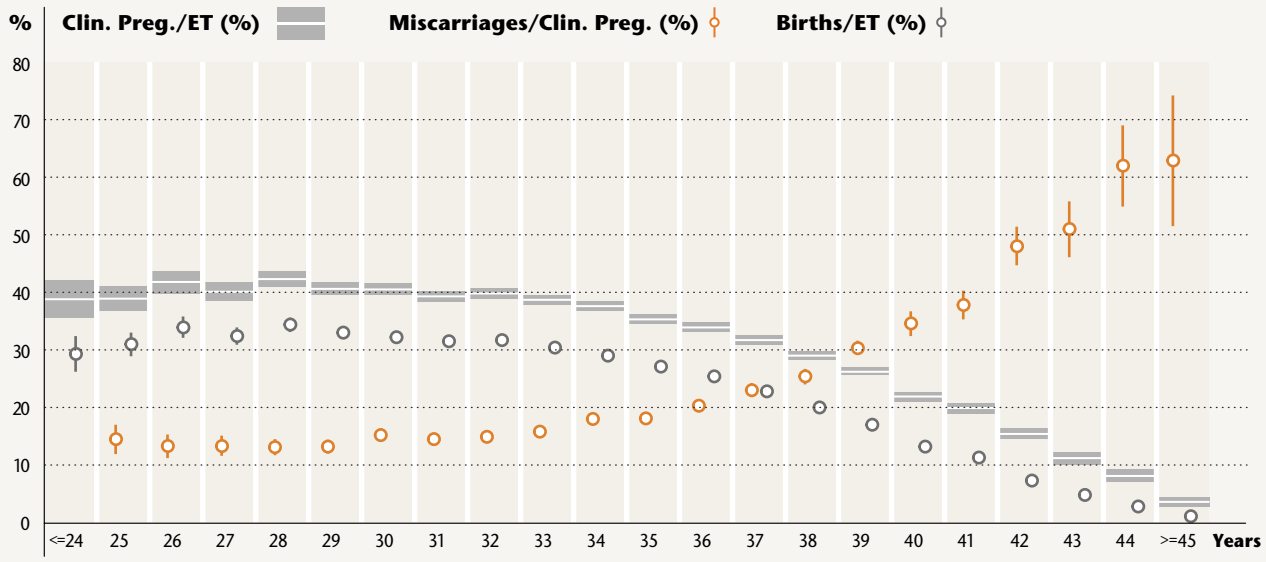
Age in Years	<= 29	30 – 34	35 – 39	40	41	42	43	44	>=45	Total
OPU	9,406	26,999	36,332	3,882	3,482	2,468	1,709	1,033	744	**86,055**
Oocytes[1]	11.5	10.4	8.3	6.7	6.3	5.8	5.3	5.0	4.0	**8.9**
Insemination[1]	11.3	10.2	8.2	6.6	6.2	5.7	5.2	5.0	4.0	**8.8**
Transfer	7,381	21,911	29,846	3,117	2,804	1,940	1,327	786	527	**69,639**
ET/OPU %	78.5	81.2	82.1	80.3	80.5	78.6	77.6	76.1	70.8	**80.9**
Trans. Embr.[1]	1.66	1.64	1.65	1.66	1.67	1.70	1.68	1.70	1.60	**1.65**
CP	3,140	8,688	9,727	779	570	333	159	80	18	**23,494**
CP/OPU %	33.4	32.2	26.8	20.1	16.4	13.5	9.3	7.7	2.4	**27.3**
CP/ET Upper Confidence Limit*%	43.8	40.4	33.2	26.6	21.9	18.9	13.8	12.3	5.0	**34.2**
CP/ET %	**42.6**	**39.7**	**32.7**	**25.1**	**20.4**	**17.2**	**12.0**	**10.2**	**3.4**	**33.7**
CP/ET Lower Confidence Limit*%	41.5	39.1	32.1	23.6	18.9	15.5	10.3	8.1	1.9	**33.5**
CP/ET %: 2 Embr. Transf. + min. 2 2PN Surplus	48.4	46.7	39.9	35.9	28.4	24.2	15.9	17.9	8.8	**41.1**
CP/ET %: 1 Embr. Transf. + min. 3 2PN Surplus	44.1	39.9	34.9	33.5	26.5	16.9	8.6	19.6	0.0	**37.1**
Misc./CP Upper Confidence Limit*%	16.0	16.1	24.1	38.1	41.9	55.5	55.6	71.9	92.9	**21.2**
Misc./CP %	**14.7**	**15.4**	**23.2**	**34.8**	**37.9**	**50.2**	**47.8**	**61.3**	**72.2**	**20.6**
Misc./CP Lower Confidence Limit*%	13.5	14.6	22.4	31.4	33.9	44.8	40.0	50.6	51.5	**20.1**
Births/ET Upper Confidence Limit*%	34.8	32.2	23.8	16.4	12.4	8.7	7.0	4.4	1.8	**25.3**
Births/ET %	33.7	31.6	23.3	15.1	11.2	7.5	5.7	3.2	1.0	**24.9**
Births/ET Lower Confidence Limit*%	32.6	30.9	22.8	13.9	10.0	6.3	4.5	2.0	0.1	**24.7**

1) Mean
** With a 95%-probability, the true mean lies within the defined confidence interval.*

Pregnancy Rate and Ongoing Pregnancy as a Function of Female Age 2017 – 2021

Prospective Data

ICSI 2017 – 2021



	<=24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	>=45	
n	828	1,919	2,532	3,730	5,411	7,239	9,179	10,746	12,044	12,714	13,599	14,394	14,167	14,304	14,628	19,950	8,526	7,104	5,451	3,652	2,274	1,933	ET
%	38.8	38.9	41.8	40.1	42.3	40.6	40.5	39.3	39.8	38.7	37.6	35.3	33.9	31.7	29.0	26.2	21.9	19.9	15.4	11.2	8.1	3.6	CP/ET
n	242	594	858	1,205	1,856	2,387	2,940	3,376	3,820	3,851	3,932	3,898	3,586	3,247	2,920	3,382	1,117	802	399	173	64	22	Birth

Age in Years	<= 29	30 – 34	35 – 39	40	41	42	43	44	>=45	Total
OPU	26,287	69,639	92,748	10,556	8,916	6,944	4,788	3,023	2,719	**225,620**
Oocytes[1]	12.3	11.1	8.8	7.0	6.6	5.9	5.4	4.8	4.0	**9.5**
Insemination[1]	9.6	8.7	7.0	5.6	5.3	4.8	4.3	3.9	3.3	**7.5**
Transfer	21,659	58,282	77,443	8,526	7,104	5,451	3,652	2,274	1,933	**186,324**
ET/OPU %	82.4	83.7	83.5	80.8	79.7	78.5	76.3	75.2	71.1	**82.6**
Trans. Embr.[1]	1.70	1.69	1.69	1.69	1.69	1.68	1.68	1.68	1.64	**1.69**
CP	8,835	22,712	23,831	1,855	1,405	839	406	184	70	**60,137**
CP/OPU %	33.6	32.6	25.7	17.6	15.8	12.1	8.5	6.1	2.6	**26.7**
CP/ET Upper Confidence Limit*%	41.5	39.4	31.2	22.7	20.8	16.4	12.2	9.2	4.5	**32.6**
CP/ET %	**40.9**	**39.0**	**30.9**	**21.9**	**19.9**	**15.4**	**11.2**	**8.1**	**3.6**	**32.3**
CP/ET Lower Confidence Limit*%	40.2	38.6	30.5	21.0	18.9	14.5	10.1	7.0	2.8	**32.1**
CP/ET %: 2 Embr. Transf. + min. 2 2PN Surplus	46.0	44.8	38.5	27.8	27.9	23.3	18.0	13.2	10.8	**40.5**
CP/ET %: 1 Embr. Transf. + min. 3 2PN Surplus	39.5	39.6	32.7	27.5	25.4	19.7	14.6	18.3	18.2	**35.6**
Misc./CP Upper Confidence Limit*%	14.1	16.2	24.0	36.7	40.3	51.4	55.8	69.0	74.2	**20.8**
Misc./CP %	**13.3**	**15.8**	**23.4**	**34.6**	**37.8**	**48.0**	**51.0**	**62.0**	**62.9**	**20.4**
Misc./CP Lower Confidence Limit*%	12.6	15.3	22.9	32.4	35.3	44.7	46.1	54.9	51.5	**20.1**
Births/ET Upper Confidence Limit*%	33.7	31.2	22.3	13.9	12.1	8.0	5.5	3.5	1.6	**24.2**
Births/ET %	33.0	30.8	22.1	13.2	11.3	7.3	4.8	2.8	1.1	**24.0**
Births/ET Lower Confidence Limit*%	32.4	30.4	21.8	12.4	10.6	6.6	4.1	2.1	0.7	**23.8**

1) Mean
** With a 95%-probability, the true mean lies within the defined confidence interval.*

Results IVF, ICSI (COHS) and IVF and ICSI in Natural Cycles 2021

Prospective Data

IVF 2021 – Ø Avg. Patient Age: 35.6

	n	%	Fertilization %	Embryo exist. %	Transfer %	Clin. Preg. %
Performed ICSI Treatm.	20,082	100.0				
Successful Fertilization*	18,137	90.3	100.0			
Freeze All Oozyte Culture	1,598	8.0	8.8			
Minimum 1 Embryo**	16,462	89.1	99.5	100.0		
ET Performed**	15,728	85.1	95.1	95.5	100.0	
Clin. Pregnancy	5,177	**25.8**	28.5	31.4	**32.9**	100.0
Birth	3,788	**18.9**	**20.9**	**23.0**	**24.1**	**73.2**
Miscarriage	1,104					21.3
Ectopic Pregnancy	80					1.5
Not Yet Recorded	205					4.0

ICSI 2021 – Ø Avg. Patient Age: 35.5

	n	%	Fertilization %	Embryo exist.%	Transfer %	Clin. Preg. %
Performed ICSI Treatm.	47,319	100.0				
Successful Fertilization*	44,111	93.2	100.0			
Freeze All Oozyte Culture	4,222	8.9	9.6			
Minimum 1 Embryo**	39,598	91.9	99.3	100.0		
ET Performed**	37,229	86.4	93.3	94.0	100.0	
Clin. Pregnancy	11,816	**25.0**	26.8	29.8	**31.7**	100.0
Birth	8,677	**18.3**	**19.7**	**21.9**	**23.3**	**73.4**
Miscarriage	2,445					20.7
Ectopic Pregnancy	139					1.2
Not Yet Recorded	555					4.7

IVF and ICSI in Natural Cycles 2021** – Ø Avg. Patient Age: 38.7

	n	%	Cycle %	Fertilization %	Embryo exist. %	Transfer %	Clin. Preg. %
Started Cycles	3,701	100.0					
No Oocyte Treatment	1,240	33.5					
Treatm. in Natural Cycles***	2,461	66.5	100.0				
ø Oocytes Retrieved	2.11						
Successful Fertilization*	1,861	50.3	75.6	100.0			
Freeze All Oozyte Culture	99	2.7	4.0	5.3			
Minimum 1 Embryo**	1,706	47.4	72.2	96.8	100.0		
ET Performed**	1,675	46.5	70.9	95.1	98.2	100.0	
Clin. Pregnancy	350	**9.5**	**14.2**	18.8	20.5	**20.9**	100.0
Birth	236	**6.4**	**9.6**	**12.7**	**13.8**	**14.1**	**67.4**
Miscarriage	85						24.3
Ectopic Pregnancy	7						2.0
Not Yet Recorded	22						6.3

**) Successful fertilization of at least one oocyte per cycle.*
***) %-rates adjusted by freeze all oocytes culture.*
****) Evaluation for "IVF and ICSI in Natural Cycles" if "Yes, without any ovarian stimulation" or "Yes, with mild ovarian stimulation (e.g. with CC, letrozole, low dose FSH/HMG)" was documented manually.*

Results of Thawing-Cycles, TESE, IVF and ICSI with Donor Semen 2021

Prospective Data

Cryo Transfer Cycles 2021

	n	%	PN/Embryo %	Transfer %	Clin. Preg. %
Cryo Transfer Cycles	35,935	100.0			
Thawed PN/Embryo	35,395	98.5	100.0		
ET Performed	34,275	95.4	96.8	100.0	
Clin. Pregnancy	10,475	**29.1**	29.6	**30.6**	100.0
Birth	7,340	**20.4**	**20.7**	**21.4**	**70.1**
Miscarriage	2,509				24.0
Ectopic Pregnancy	123				1.2
Not Yet Recorded	503				4.8

TESE 2021 – Ø Avg. Patient Age: 34.7

	n	%	Fertilization %	Embryo %	Transfer %	Clin. Preg. %
Perf. ICSI/TESE Treatm.	2,289	100.0				
Successful Fertilization*	2,070	90.4	100.0			
Freeze All Oozyte Culture	198	8.7	9.6			
Minimum 1 Embryo**	1,825	87.3	97.5	100.0		
ET Performed**	1,658	79.3	88.6	90.8	100.0	
Clin. Pregnancy	517	**22.6**	25.0	28.3	**31.2**	100.0
Birth	409	**17.9**	**19.8**	**22.4**	**24.7**	**79.1**
Miscarriage	82					15.9
Ectopic Pregnancy	4					0.8
Not Yet Recorded	22					4.3

IVF and ICSI with Donor Semen 2021 – Ø Avg. Patient Age: 37.1

	n	%	Fertilization %	Embryo %	Transfer %	Clin. Preg. %
ART-Treatm. (donor sperm)	2,583	100.0				
Successful Fertilization*	2,422	93.8	100.0			
Freeze All Oozyte Culture	184	7.1	7.6			
Minimum 1 Embryo**	2,222	92.6	99.3	100.0		
ET Performed**	2,100	87.5	93.8	94.5	100.0	
Clin. Pregnancy	692	**26.8**	28.6	31.1	**33.0**	100.0
Birth	509	**19.7**	**21.0**	**22.9**	**24.2**	**73.6**
Miscarriage	162					23.4
Ectopic Pregnancy	6					0.9
Not Yet Recorded	15					2.2

**) Successful fertilization of at least one oocyte per cycle.*
***) %-rates up to fertilization adjusted by freeze all oocytes culture.*

Culture According to the "German Compromise" and Impact on Therapy Outcome – Fresh Cycles 2021

Prospective and Retrospective Data

Number of centers choosing >=3 x 2PN for extended culture: n=135

Oocyte Treatment (All) - Culture >= 3 x 2PN
31,313

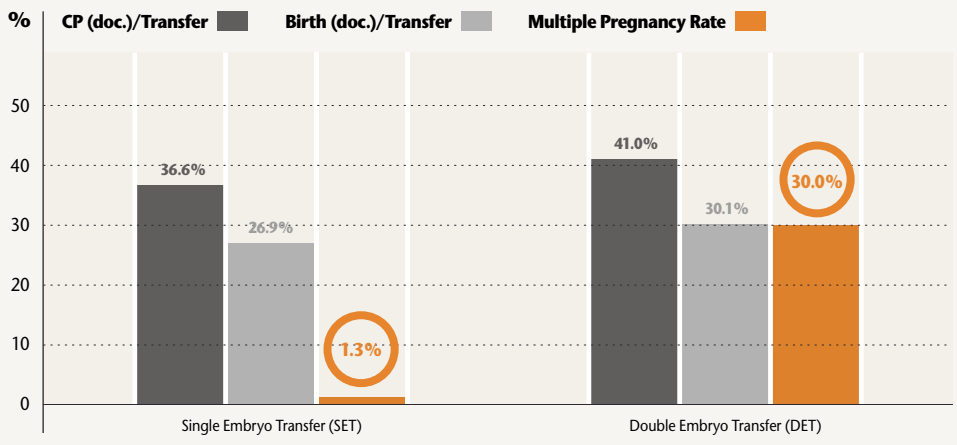
Oocyte Treatment - Culture >= 3 x 2PN for Transfer on Day 4-6
22,935

	Number of Transfer Cycles with SET Day 4-6 11,919 Mean age woman: 34.5		Number of Transfer Cycles with DET Day 4-6 10,614 Mean age woman: 35.5	
CP/ET (doc. and outcome known)*	4,357	**36.6%**	4,332	**41.0%**
Outcome unknown	24	**0.2%**	50	**0.5%**
Miscarriage	906	20.8%	866	20.0%
EP	53	1.2%	57	1.3%
Not yet Recorded	197	4.5%	215	5.0%
Birth (doc.)	**3.201**	**73.5%**	**3.194**	**73.7%**
per Transfer		26.9%		30.1%

Births	**n**	**%**	**Births**	**n**	**%**
Singletons	3.158	98.7	Singletons	2,235	70.0
Twins	42	1.3	Twins	943	29.5
Triplets	1	0.0	Triplets	16	0.5
Quadruplets	0	0.0	Quadruplets	0	0.0
Multiple Pregnancy Rate		**1.3%**	**Multiple Pregnancy Rate**		**30.0%**

**) please note: documented clinical pregnancies (9,460) per transfer with outcome known (34,097) on other days than 4-6: 27.7%*

Comparison SET and DET "German Compromise" Fresh Cycles 2021



SET versus DET:
A clinical pregnancy after DET likely increases by factor 1.15. A multiple birth after DET likely increases by factor 21.2. **For a good 4 pp higher pregnancy rate, the risk of multiple births increases by more than 20 times!**

Culture According to the "German Compromise" and Impact on Therapy Outcome – Thawing Cycles Embryos 2021

Prospective and Retrospective Data

Number of centers transfering previously cryopreserved embryos: n=129

Thawing total
33,560

Thawing Embryos
12,897

Transfer Single ET
9,405

CP/ET (doc. and outcome known)
2,982 — 31.8%

Outcome unknown
32 — 0.3%

Miscarriage	705	23.6%
EP	20	0.7%
Not yet Recorded	157	5.3%
Birth (doc.)	**2,100**	**70.4%**
	per Transfer	22.3%

Births	**n**	**%**
Singletons	2,064	98.3
Twins	36	1,7
Triplets	0	0.0
Quadruplets	0	0.0

Multiple Pregnancy Rate 1.7%

Transfer Double ET
3,085

CP/ET (doc.)
1,106 — 36.0%

Outcome unknown
13 — 0.4%

Miscarriage	240	21.7%
EP	11	1.0%
Not yet Recorded	80	7.2%
Birth (doc.)	**775**	**70.1%**
	per Transfer	25.1%

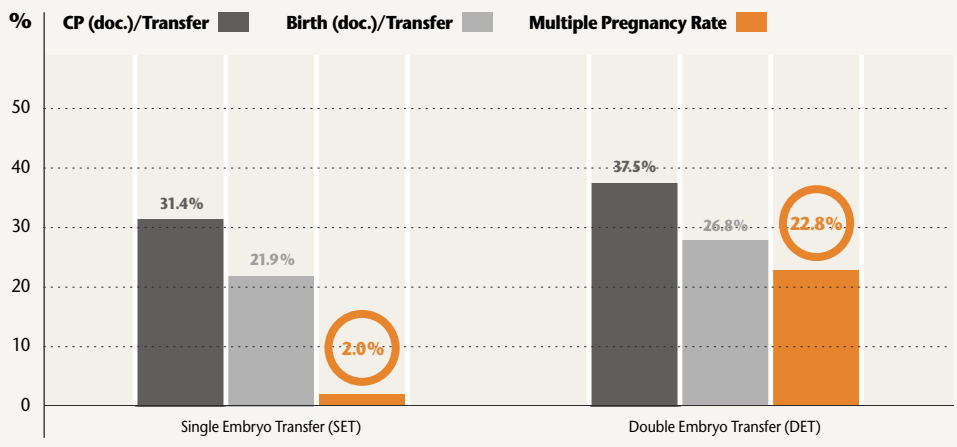
Births	**n**	**%**
Singletons	535	73.2
Twins	192	26.3
Triplets	4	0.5
Quadruplets	0	0.0

Multiple Pregnancy Rate 24.3%

Compared to thawing 2PNs:

	SET (n)	CP/Transfer (%)	Births/Transfer (%)	MBR (%)	DET (n)	CP/Transfer (%)	Births/Transfer (%)	MBR (%)
Transfers (outcome kown)	8,171	27.7	19.0	2.0	11,032	30.3	21.3	19.9
Transfers d2/3	2,794	17.1	11.4	1.3	6,468	24.6	17.1	13.9
Transfers d5/6	4,743	34.5	24.0	2.3	3,672	40.4	28.9	13.9
others	634	23.5	14.5	1.1	892	30.6	20.5	21.5

Comparison SET and DET "German Compromise" Thawing Cycles Embryos 2021



SET versus DET:
A clinical pregnance after DET likely increases by factor 1.19. A multiple birth after DET likely increases by factor 11.3. **For a good 6 pp higher pregnancy rate, the risk of multiple births increases by more than 10 times!**

Pregnancies Cumulative 2019 – 2021 as a Function of Female Age

IVF, ICSI, Cryo Cycles – Prospective Data

Age Group <= 29	Transfers	CP (Fresh Cycles)	CP (Fresh Cycles) in %	Cryo Cycle with Transfer	CP (Cryo Cycles)	CP/ET (Cryo Cycles) in %	Cum. CP	Cumulative Pregnancy Rate in %
1st Transfer	10,420	4,461	42.8	2,315	904	39.0	5,365	**42.1**
2nd Transfer	3,067	1,194	38.9	4,425	1,511	34.1	8,070	**63.4**
3rd Transfer	1,440	545	37.8	2,449	853	34.8	9,468	**74.3**
4th Transfer	671	247	36.8	1,197	404	33.8	10,119	**79.5**
>4 Transfers	453	168	37.1	1,126	340	30.2	10,627	**83.4**

Age Group 30-34	Transfers	CP (Fresh Cycles)	CP (Fresh Cycles) in %	Cryo Cycle with Transfer	CP (Cryo Cycles)	CP/ET (Cryo Cycles) in %	Cum. CP	Cumulative Pregnancy Rate in %
1st Transfer	26,762	10,753	40.2	5,599	2,127	38.0	12,880	**39.8**
2nd Transfer	8,612	3,225	37.4	11,012	3,712	33.7	19,817	**61.2**
3rd Transfer	4,341	1,556	35.8	6,357	2,038	32.1	23,411	**72.3**
4th Transfer	2,021	686	33.9	3,315	1,034	31.2	25,131	**77.7**
>4 Transfers	1,600	494	30.9	3,331	964	28.9	26,589	**82.2**

Age Group 35-39	Transfers	CP (Fresh Cycles)	CP (Fresh Cycles) in %	Cryo Cycle with Transfer	CP (Cryo Cycles)	CP/ET (Cryo Cycles) in %	Cum. CP	Cumulative Pregnancy Rate in %
1st Transfer	30,665	9,976	32.5	5,130	1,709	33.3	11,685	**32.6**
2nd Transfer	11,403	3,217	28.2	10,366	3,127	30.2	18,029	**50.4**
3rd Transfer	6,088	1,662	27.3	5,872	1,603	27.3	21,294	**59.5**
4th Transfer	2,790	765	27.4	3,267	893	27.3	22,952	**64.1**
>4 Transfers	2,477	639	25.8	3,768	917	24.3	24,508	**68.5**

Age Group >= 40	Transfers	CP (Fresh Cycles)	CP (Fresh Cycles) in %	Cryo Cycle with Transfer	CP (Cryo Cycles)	CP/ET (Cryo Cycles) in %	Cum. CP	Cumulative Pregnancy Rate in %
1st Transfer	9,911	1,696	17.1	1,935	435	22.5	2,131	**18.0**
2nd Transfer	3,822	623	16.3	2,536	467	18.4	3,221	**27.2**
3rd Transfer	1,947	295	15.2	1,393	246	17.7	3,762	**31.8**
4th Transfer	920	120	13.0	740	111	15.0	3,993	**33.7**
>4 Transfers	1,017	129	12.7	872	140	16.1	4,262	**36.0**

Follow-up clinical pregnancies until Dec. 31st, 2022.

Here again, we present cumulative chances after several cycles depending on age. Patients under 34 years of age have around an 80% chance of becoming pregnant with four transfers.

In patients between 35 and 39 years of age, 2 out of 3 patients achieve pregnancy with four cycles.

In patients aged 40 and over, the chances increase to "only" a third. So even in a cumulative view, the age of our patients plays a decisive role.

These figures can help assess the chances during counselling.

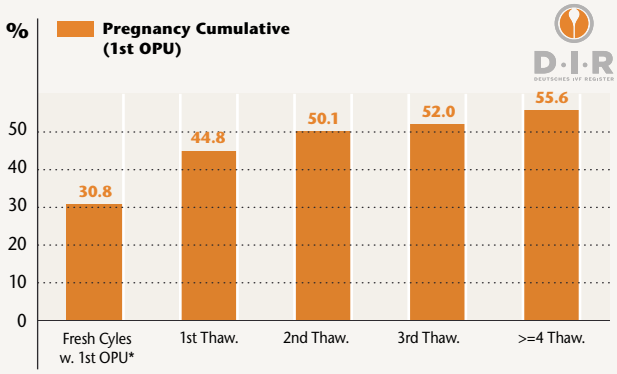
Live Births Cumulative 2018 – 2020 Based on First OPU

IVF, ICSI, Cryo Cycles – Prospective Data

This evaluation presents cumulative probability of having a child per aspiration. Other evaluations present cumulative probability of pregnancies with regard to transfers.
After first aspiration, the chance of birth in Germany is just over 30 %. Subsequent thawing transfers can increase birth rate to more than 50 %.

And this is after only one aspiration for oocyte retrieval!

The relatively small percentage increase after the 3rd transfer is due to the small number of those having 4 or more transfers from one puncture.



2017 – 2019 (Total)	1st OPU*	Thawings Based on 1st OPU	Live Births	Live Births/OPU / Live Births/FET (%)	Live Births Cumulative	Live Births/OPU Cumulative (%)
Fresh Cyles with 1st OPU*	30,110		9,260	30.8	9,260	**30.8**
1st Thawing		20,298	4,243	20.9	13,503	**44.8**
2nd Thawing		8,389	1,583	18.9	15,086	**50.1**
3rd Thawing		3,172	566	17.8	15,652	**52.0**
>= 4 Thawings		4,759	1,080	22.7	16,732	**55.6**

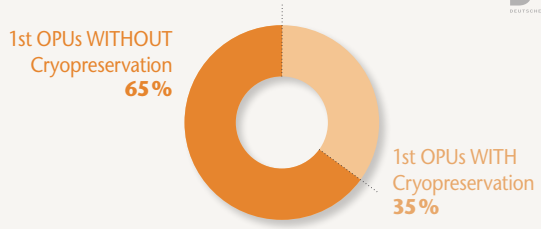
1st OPU 2017	1st OPU*	Thawings Based on 1st OPU	Live Births	Live Births/OPU / Live Births/FET (%)	Live Births Cumulative	Live Births/OPU Cumulative (%)
Fresh Cyles with 1st OPU*	10,034		3,059	30.5	3,059	**30.5**
1st Thawing		6,890	1,529	22.2	4,588	**45.7**
2nd Thawing		2,837	547	19.3	5,135	**51.2**
3rd Thawing		1,068	199	18.6	5,334	**53.2**
>= 4 Thawings		1,478	401	27.1	5,735	**57.2**

1st OPU 2018	1st OPU*	Thawings Based on 1st OPU	Live Births	Live Births/OPU / Live Births/FET (%)	Live Births Cumulative	Live Births/OPU Cumulative (%)
Fresh Cyles with 1st OPU*	10,106		3,168	31.3	3,168	**31.3**
1st Thawing		6,755	1,406	20.8	4,574	**45.3**
2nd Thawing		2,781	542	19.5	5,116	**50.6**
3rd Thawing		1,064	186	17.5	5,302	**52.5**
>= 4 Thawings		1,554	353	22.7	5,655	**56.0**

1st OPU 2019	1st OPU*	Thawings Based on 1st OPU	Live Births	Live Births/OPU / Live Births/FET (%)	Live Births Cumulative	Live Births/OPU Cumulative (%)
Fresh Cyles with 1st OPU*	10,106		3,168	31.3	3,168	**31.3**
1st Thawing		6,755	1,406	20.8	4,574	**45.3**
2nd Thawing		2,781	542	19.5	5,116	**50.6**
3rd Thawing		1,064	186	17.5	5,302	**52.5**
>= 4 Thawings		1,554	353	22.7	5,655	**56.0**

Follow-up births until Dec. 31st, 2021.
**) Cycles without fresh transfer (freeze all) and cycles without cryopreservation were excluded. Sample sizes: 1st OPU = 96,765; 1st OPU without freeze all = 85,550; Cycles without cryopreservation = 55,440; Cycles with Cryopreservation = 30,110.*

1st OPU without Freeze All: Ratio Cycles with and without Cryopreservation



Only about 1/3 of all first follicle punctures are frozen at all. This is undoubtedly partly because the statutory health insurance funds do not cover the costs.

It would therefore be desirable if more patients took advantage of this option. Then, patients could benefit even more from additional opportunities offered by freezing and thawing. We assume that single embryo transfer will also lead to increased freezing in the future. According to the motto: 1 plus 1 is better than 2 plus 0!

Positive Pregnancy Outcomes 2021

IVF, ICSI – Prospective and Retrospective Data

	Fresh Cycles		Cryo Cycles	
	n	%	n	%
Clinical Pregnancies	18,149	100.0	10,675	100.0
Outcome documented	17,280	95.2	10,133	94.9
Transfer	56,729		35,005	
Births	13,252		7,467	
Life-Birth-Rate/Birth	13,209	99.7	7,450	99.8
Life-Birth-Rate/ET	13,209	23.3	7,450	21.3
SET Good Prognosis Patient*				
Number of Transfers	3,315			
Life-Birth-Rate/ET	1,064	32.1		
Multiple Pregnancies	18	1.7		
DET Good Prognosis Patient*				
Number of Transfers	2,908			
Life-Birth-Rate/ET	1,102	37.9		
Number of Multiple Births	356	32.3		

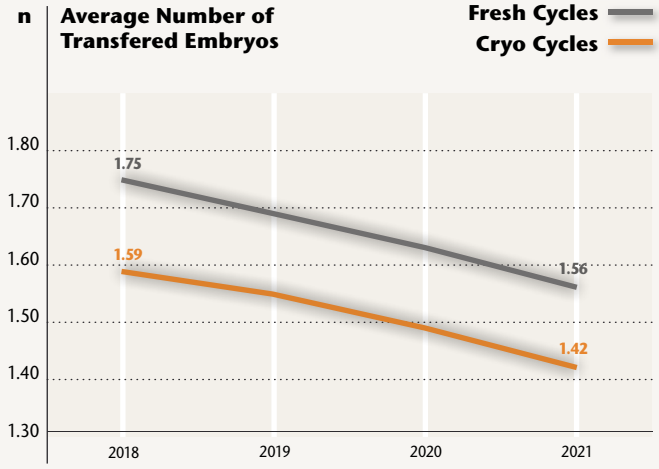
Loss of Pregnancy 2021

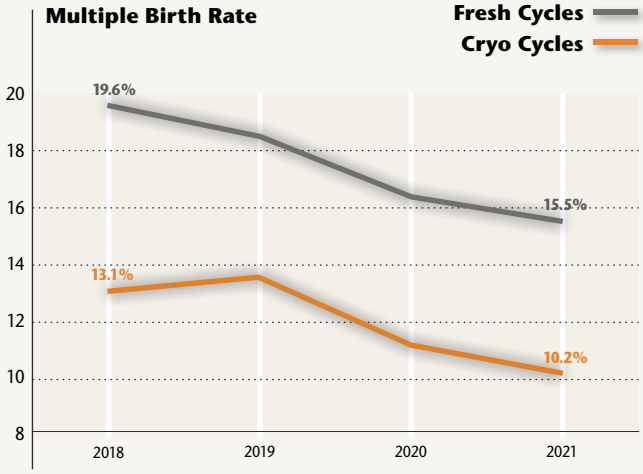
Prospective and Retrospective Data

	Fresh Cycles		Cryo Cycles	
	n	%	n	%
Clinical Pregnancies	18,149	100.0	10,675	100.0
Outcome documented	17,280	95.2	10,133	94.9
Miscarriages	3,787	20.9	2,541	23.8
Among those: Induced Abortions	266	7.0	152	6.0
Stillbirths	46	0.3	17	0.2

Embryos per Transfer[1] and Multiple Birth Rate 1997 – 2021

IVF, ICSI, Cryo – Prospective and Retrospective Data





		1997	[...]	2018	2019	2020	2021
Fresh Cycles	ø Number of Transf. Embryos	2.56	*For values from 1998 to 2017 see www.deutsches-ivf-register.de*	1.75	1.69	1.63	1.56
	Multiple Birth Rate	25.2		19.6	18.5	16.4	15.5
Cryo Cycles	ø Number of Transf. Embryos	2.34		1.59	1.55	1.49	1.42
	Multiple Birth Rate	11.6		13.1	13.6	11.2	10.2

In recent years there has been a significant reduction in the multiple birth rate. This is thanks to the fact that many centers have successively reduced the number of embryos per transfer. The single embryo transfer has become increasingly widespread in Germany.

**) Good prognosis patient in D·I·R: age <=35, fresh cycle, 1st cycle, oocytes retrieved >=8, 2PNs >=5, sperm collection anterograde*
1) Mean

Special laboratory evaluation: Do we have any embryos surplus?

Over the past decade, the culture of all normally fertilized oocytes (2PN cells) for 5-6 days with the transfer of only one embryo in fresh cycles has become established internationally. Since the success rates with the transfer of a well-developed blastocyst are very high, multiple pregnancies can largely be avoided. This protects the health of mothers and children. Additionally, due to highly successful cryopreservation of additional embryos, they can be used in case of failed pregnancy, pregnancy loss, or when there is a desire for sibling children.

The German Embryo Protection Act (ESchG) prohibits the stockpiling of embryos, and it is not intended to culture multiple 2PN cells for this purpose. Not all 2PN cells develop into blastocysts; the proportion varies from <10% to >60% of the 2PN cells. The developmental rate depends on the quality of the embryos and the individual circumstances of the patient couple (e.g., age, conditions such as PCOS, endometriosis). For this reason, the German compromise has established itself in a liberal interpretation of the ESchG.

This describes the cultivation of a specifically determined number of 2PN cells into embryos (depending on the individual circumstances of the intended parents), aiming to achieve a balanced approach between the rights of the woman (intended mother) and the protection of the embryo's life. The goal is to develop one to two embryos with a good developmental prognosis. To ensure satisfactory success rates of the treatment, the cultivation should not be carried out with too few 2PN cells due to variable rates of failure. Despite the good experience in laboratories, it is not always possible to predict the development of all embryos beforehand. Any additional embryos that are unintentionally created are typically not destroyed but rather cryopreserved in agreement with the couple.

In the years 2018-2022, almost 1.5 million retrieved oocytes were fertilized and cultured for 4-6 days (as shown in the figure below). Out of 843,094 2PN cells, over 55 % were used for fresh transfer (218,216, 26 %), cryopreservation of 2PN cells (170,459, 20 %), and cryopreservation of embryos (78,561, 9 %).

Overall, as seen, only about 9 % of the 2PN cells were cryopreserved as embryos because the development could not be precisely predicted or the transfer could not be performed for various reasons. An overview of the proportion of cryopreservation in each center can be found on the next page at the top - with a wide variation in approaches among the individual centers.

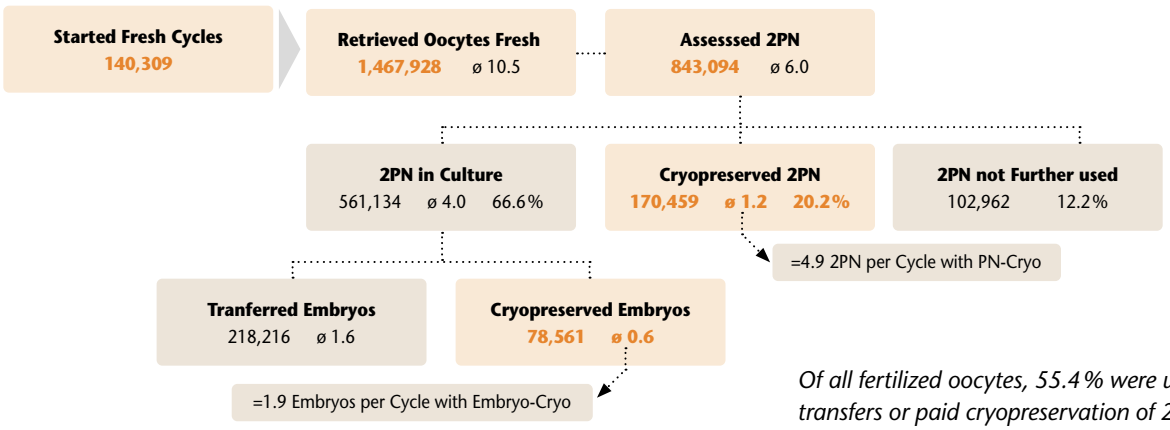
Couples mostly use these 2PN cells and embryos for further treatments without undergoing hormone stimulation again. The cryopreserved cells are needed by the patients at different times. Couples who did not conceive in the fresh cycle often use their frozen 2PN stages and embryos after a few weeks or months. After a successful fresh cycle with pregnancy and birth, several years usually pass until the cryopreserved cells are transferred for a sibling. Therefore, a first evaluation of the use of cryopreserved 2PN cells and embryos is meaningful only after several years and will be conducted in the future. (However, the D·I·R does not have data on currently stored cryo entities and contract terminations by the affected couples).

Do we have any embryos surplus? - No, the embryos are used, and most couples wish to use them for further treatments.

Senior Clinical Embryologist Verona Blumenauer, Leipzig

Total Cycle Years 2018 – 2022

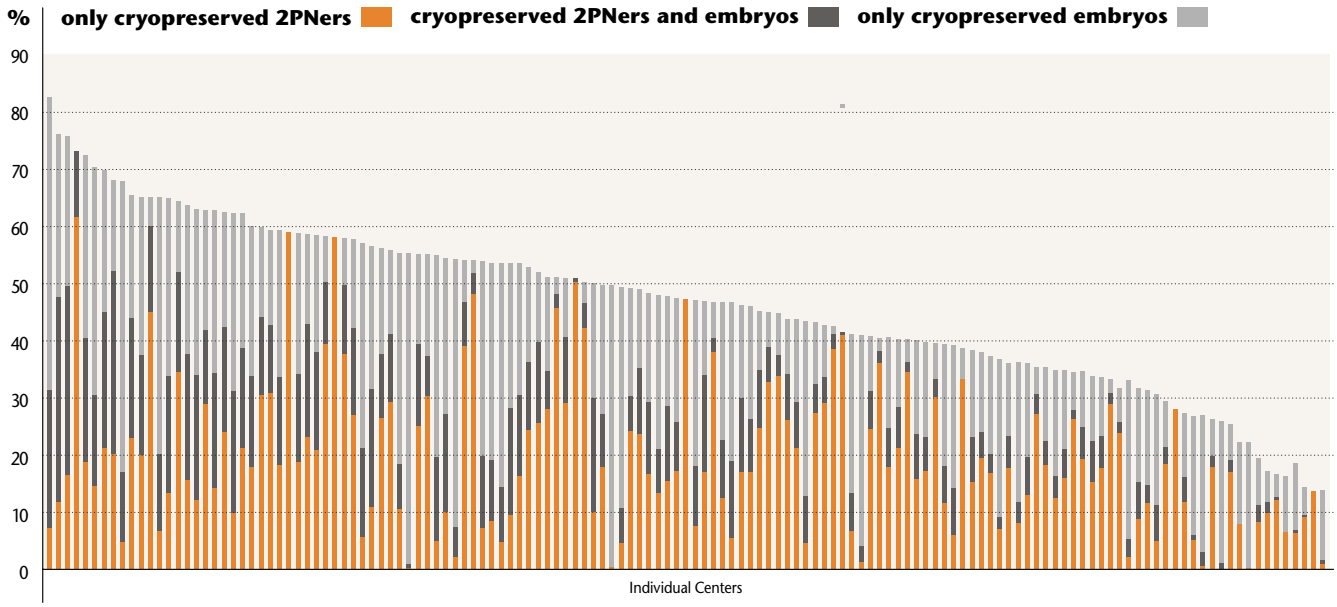
Plausible Fresh Cycles, Culture Duration 4-6 Days



Of all fertilized oocytes, 55.4 % were used for fresh transfers or paid cryopreservation of 2PN or embryos.

Special Laboratory Evaluation: Distribution in the Centers 2018–2022: Proportion of Fresh Cycles with Cryopreservation

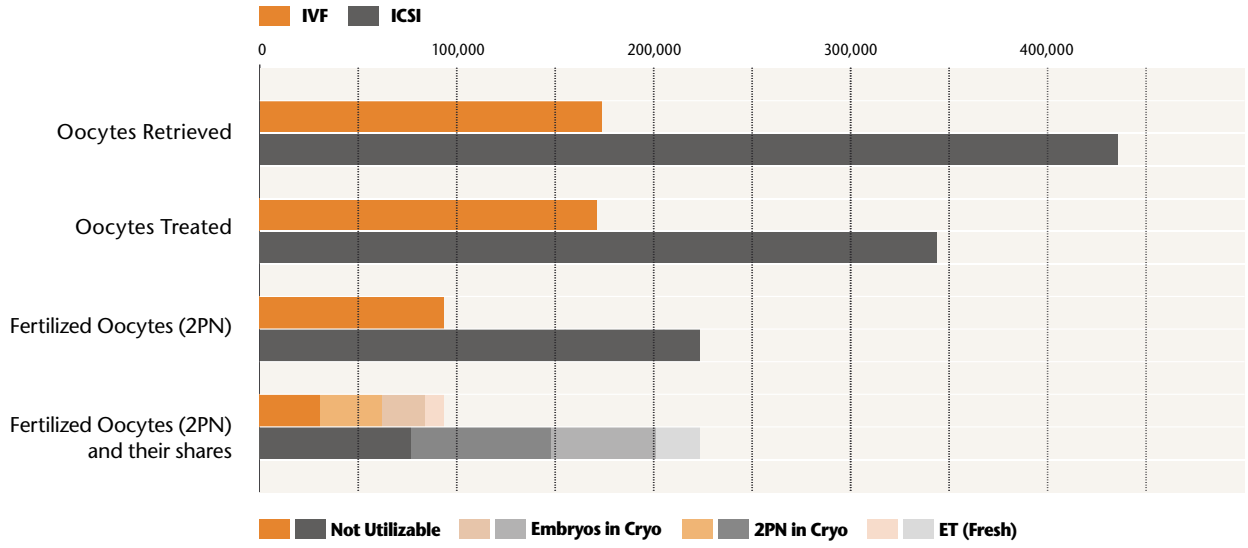
Plausible Fresh Cycles, Culture Duration 4-6 days



Evolution of Retrieved Oocytes (IVF or ICSI) 2022

IVF, ICSI – Prospective and Retrospective Data

	IVF	%		ICSI	%	
Oocytes Retrieved	173,629	100.0		435,635	100.0	
Oocytes Treated	171,307	98.7	100.0	343,845	78.9	100.0
Fertilized Oocytes (2PN)	93,509	53.9	54.6	100.0	223,326	51.3	64.9	100.0
2PN Cryopreserved	31,639			33.8	71,217			31.9
transf. Embryos	21,739			23.2	53,175			23.8
Embr. Cryopreserved	9,618			10.3	22,084			9.9



Clinical Pregnancies (CP)/Fresh Transfer as a Function of Embryo Quality 2022

IVF, ICSI, IVF/ICSI – Prospective Data

Quality		<= 29 Years		30 – 34 Years		35 – 39 Years		>= 40 Years		Total*	
Ideal	Not Ideal	ET	CP/ET %	ET	CP/ET %	ET	CP/ET %	ET	CP/ET %	ET	CP/ET %
0	1	347	17.7	1,287	16.2	1,947	11.8	912	5.0	4,493	12.1
0	2	236	25.4	792	24.1	1,174	19.6	540	11.9	2,742	19.9
0	3	2	0.0	10	10.0	9	11.1	20	10.5	41	10.0
1	0	2,196	42.3	7,283	38.3	9,094	30.1	3,534	14.2	22,107	31.5
1	1	272	38.7	928	37.6	1,487	30.2	675	18.4	3,362	30.6
1	2	2	50.0	6	16.7	22	28.6	30	23.3	60	25.4
2	0	1,351	45.1	4,316	46.1	6,212	37.8	2,642	22.8	14,430	38.2
2	1	4	25.0	8	12.5	24	29.2	41	22.0	77	23.4
3	0	7	28.6	32	21.9	80	40.0	117	17.5	236	36.3
Total*		**4,418**	**40.0**	**14,667**	**37.8**	**19,967**	**30.1**	**8,520**	**16.2**	**47,572**	**30.9**

**) 24 transfers could not be allocated.*

Clinical Pregnancies (CP)/Frozen Transfer as a Function of Embryo Quality 2022

Cryo Transfer – Prospective Data

Quality		IVF		ICSI	
ideal	Not Ideal	ET	CP/ET %	ET	CP/ET %
0	1	701	16.3	1,725	16.3
0	2	391	18.9	1,056	19.4
0	3	7	14.3	33	12.1
1	0	6,702	31.1	14,453	32.3
1	1	544	26.6	1,371	29.2
1	2	6	16.7	26	19.5
2	0	2,488	33.6	5,667	35.4
2	1	16	31.3	48	33.3
3	0	45	24.4	115	37.2
Total**		**10,919**	**30.0**	**24,528**	**31.1**

***) 53 transfers could not be allocated.*

Children Born as a Function of Week of Gestation (WoG) and Birth Weight (BW) 2021

Prospective and Retrospective Data

IVF, ICSI, IVF/ICSI

Current WoG	20 - 26		27 - 31		32 - 37		38 - 41		>= 42		Total	% of total
Singletons (n and %)	50	0.5	136	1.3	1,661	16.5	8,168	81.0	68	0.7	10,083	73.1
Average Birth Weight (g)	687		1,330		2,718		3,402		3,527		3,249	
Twins (n and %)	72	2.0	286	7.9	2,736	75.5	522	14.4	6	0.2	3,622	26.3
Average Birth Weight (g)	660		1,367		2,415		2,782		2,929		2,354	
Triplets (n and %)	6	7.4	33	40.7	42	51.9	-	-	-	-	81	0.6
Average Birth Weight (g)	448		1,224		1,892		-		-		1,524	

Percentage of preterm deliveries in singleton pregnancies is 18.3%.
Percentage of preterm deliveries in twin pregnancies is 85.4%.
Percentage of preterm deliveries in triplets pregnancies is 100.0%.

Cryo Transfer

Current WoG	20 - 26		27 - 31		32 - 37		38 - 41		>= 42		Total	% of total
Singletons (n and %)	16	0.3	57	1.0	815	13.8	4,914	83.2	102	1.7	**5,904**	**81.2**
Average Birth Weight (g)	721		1,547		2,874		3,524		3,638		**3,408**	
Twins (n and %)	22	1.7	54	4.1	1,008	76.6	226	17.2	6	0.5	**1,316**	**18.1**
Average Birth Weight (g)	615		1,427		2,481		2,931		2,652		**2,487**	
Triplets (n and %)	3	6.3	12	25.0	33	68.8	-	-	-	-	**48**	**0.7**
Average Birth Weight (g)	423		1,329		1,975		-		-		**1,711**	

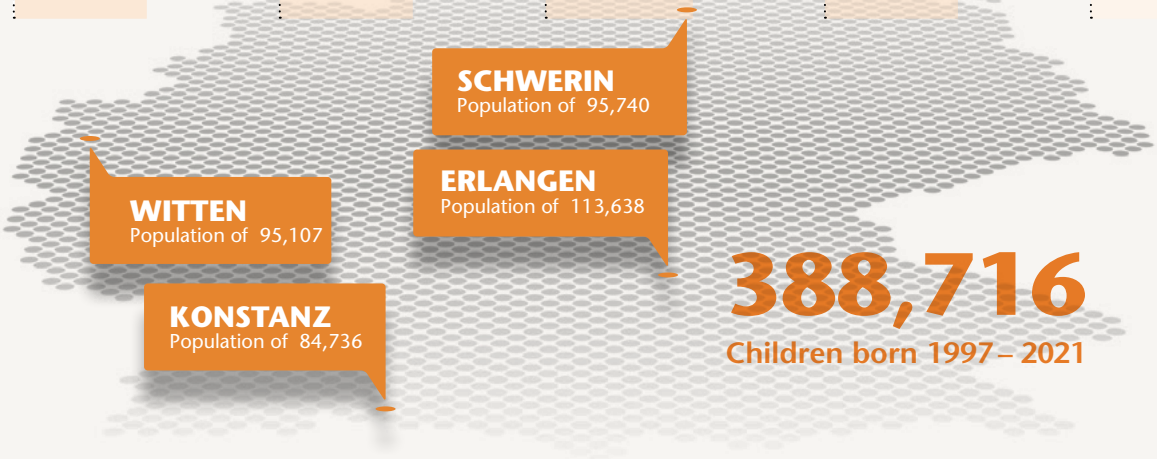
Percentage of preterm deliveries in singleton pregnancies is 15.0%.
Percentage of preterm deliveries in twin pregnancies is 82.4%.
Percentage of preterm deliveries in triplets pregnancies is 100.0%.

Children Born 1997 – 2021

Prospective and Retrospective Data

Total (IVF, ICSI, IVF/ICSI, Cryo Transfer)

	Singletons		Twins		Triplets		Quadruplets		Total
	n	%	n	%	n	%	n	%	n
1997	4,175	58.7	1,902	32.8	492	8.4	8	0.1	6,577
1998	5,357	58.2	3,152	34.2	702	7.6	0	-	9,211
1999	6,116	60.5	3,396	33.6	600	5.9	4	0.0	10,116
2000	6,143	60.5	3,504	34.5	507	5.0	4	0.0	10,158
2001	7,726	62.2	4,252	34.3	435	3.5	0	-	12,413
2002	8,930	63.8	4,662	33.3	387	2.8	8	0.1	13,987
2003	11,922	63.1	6,334	33.6	597	3.2	24	0.1	18,877
2004	6,891	65.6	3,336	31.8	273	2.6	0	-	10,500
2005	7,038	65.8	3,440	32.1	213	2.0	12	0.1	10,703
2006	7,419	66.9	3,450	31.1	222	2.0	4	0.0	11,095
2007	8,407	66.4	4,076	32.2	183	1.4	4	0.0	12,670
2008	8,444	65.7	4,142	32.3	240	1.9	8	0.1	12,834
2009	9,016	67.3	4,152	31.0	216	1.6	8	0.1	13,392
2010	8,619	66.2	4,156	31.9	249	1.9	0	-	13,024
2011	9,388	63.3	5,131	34.7	300	2.0	0	-	14,819
2012	10,188	66.4	4,906	32.0	249	1.6	0	-	15,343
2013	11,713	64.9	6,003	33.3	327	1.8	8	0.0	18,051
2014	13,092	65.5	6,566	32.9	309	1.5	12	0.1	19,979
2015	13,702	65.4	6,942	33.2	297	1.4	8	0.0	20,949
2016	13,692	66.0	6,800	32.8	258	1.2	4	0.0	20,754
2017	14,580	67.2	6,800	31.3	321	1,5	8	0.0	21,709
2018	15,434	70.0	6,408	29.0	222	1.0	0	-	22,064
2019	16,387	70.7	6,514	28.1	273	1.2	0	-	23,174
2020	16,845	74.3	5,648	24.9	159	0.7	8	0.0	22,660
2021	17,959	75.9	5,536	23.4	162	0.7	0	-	23,657
Total	**259,183**	**66.7**	**121,208**	**31.2**	**8,193**	**2.1**	**132**	**0.0**	**388,716**



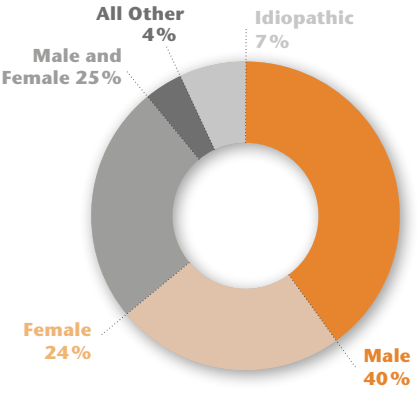
Distribution of Indications 2022

IVF and ICSI – Prospective Data

	Ø Age Pat.	Treatments	Transfers		Clin. Preg.	
	n	n	n	%	n	%*
No Information	34.3	630	560	88.9	166	29.6
Idiopathic	35.7	4,554	3,373	74.1	1,043	31.1
Male	35.1	24,945	19,641	78.7	6,378	32.6
Female	35.8	14,842	11,156	75.2	3,386	30.5
Male and Female	36.4	15,280	11,345	74.3	3,206	28.5
Single Woman	37.4	1,287	1,044	81.1	272	26.1
Lesbian Couple	35.8	535	453	84.7	167	37.2
Total	**35.7**	**62,073**	**47,572**	**76.6**	**14,618**	**30.9**

*) CPR/ET for outcomes known

Shares of Indications (Cycles) 2022



IVF

Male Factor	Normal		Red. Semen Quality		Unknown		Other***		Total****	
Female Factor	n	%	n	%	n	%	n	%	n	%
Normal	3,093	12.9	688	2.9	68	0.3	542	2.3	4,391	18.3
Tubal Pathology	2,822	11.8	439	1.8	70	0.3	520	2.2	3,851	16.1
Endometriosis	2,501	10.4	411	1.7	72	0.3	470	2.0	3,454	14.4
Hyperandrog./PCO	696	2.9	113	0.5	21	0.1	162	0.7	992	4.1
Ovulatory Dysf.	1,010	4.2	297	1.2	47	0.2	270	1.1	1,624	6.8
Psychogen. Factors	22	0.1	5	0.0	1	0.0	7	0.0	35	0.1
Age	1,320	5.5	272	1.1	58	0.2	211	0.9	1,861	7.8
Other**	4,950	20.6	920	3.8	142	0.6	1,030	4.3	7,042	29.4
No Information	584	2.4	31	0.1	3	0.0	108	0.5	726	3.0
Total**	**16,998**	**70.9**	**3,176**	**13.2**	**482**	**2.0**	**3,320**	**13.8**	**23,976**	**100.0**

ICSI

Male Factor	Normal		Red. Semen Quality		Azoospermia		Unknown		Other***		Total****	
Female Factor	n	%	n	%	n	%	n	%	n	%	n	%
Normal	4,135	7.1	8,583	14.8	1,131	1.9	163	0.3	2,304	4.0	16,316	28.1
Tubal Pathology	1,257	2.2	1,731	3.0	103	0.2	44	0.1	860	1.5	3,995	6.9
Endometriosis	1,518	2.6	2,348	4.0	196	0.3	66	0.1	1,098	1.9	5,226	9.0
Hyperandrog./PCO	487	0.8	996	1.7	114	0.2	27	0.0	403	0.7	2,027	3.5
Ovulatory Dysf.	830	1.4	2,051	3.5	211	0.4	51	0.1	878	1.5	4,021	6.9
Psychogen. Factors	28	0.0	55	0.1	9	0.0	0	0.0	44	0.1	136	0.2
Age	1,362	2.3	2,431	4.2	279	0.5	71	0.1	970	1.7	5,113	8.8
Other**	6,885	11.9	6,707	11.6	719	1.2	204	0.4	3,785	6.5	18,300	31.5
No Information	1,174	2.0	686	1.2	574	1.0	2	0.0	474	0.8	2,910	5.0
Total**	**17,676**	**30.5**	**25,588**	**44.1**	**3,336**	**5.7**	**628**	**1.1**	**10,816**	**18.6**	**58,044**	**100.0**

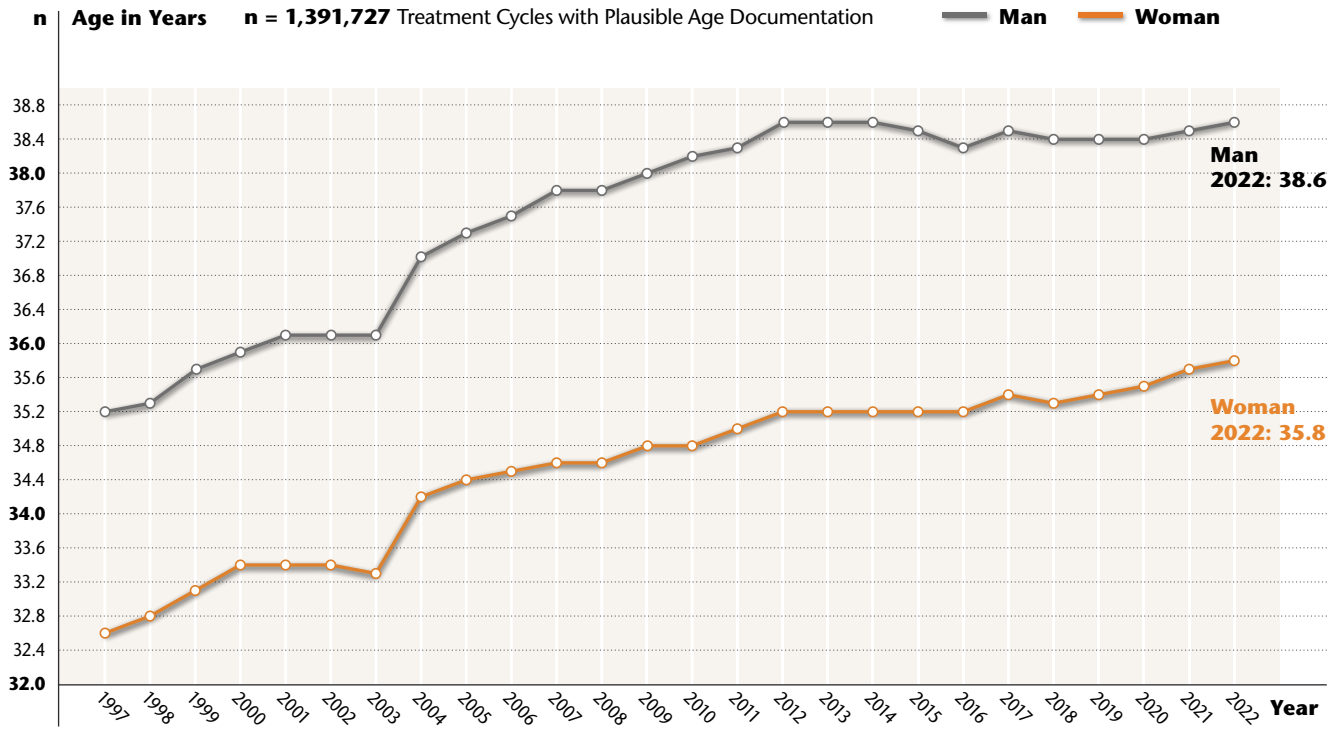
***) This includes the following indications: diminished ovarian reserve, medical freezing, single women, genetic testing (polar body analysis, trophectoderm biopsy for PGT-A, PGT-SR, PGT-M), lesbian couple, social freezing, uterine or cervical factor, others.*

****) This includes following indications: anejaculation, medical freezing, preimplantation genetic testing, CBAVD, pathological function test, psychogenic disturbances, retrograde ejaculation, urogenital malformation, failed or bad fertilization rate in conventional ivf-procedure, condition after genital cancer, condition after severe genital infection, condition after vasectomy, others.*

*****) Multiple answers per cycle permitted.*

Mean Age for Women and Men 1997 – 2022

IVF, ICSI, IVF/ICSI – Prospective and Retrospective Data



Social Freezing 2019 – 2022

Fresh Cycles – Prospective and Retrospective Data

	2019	2020	2021	2022
No. of Centers	89	104	112	117
Recorded Cycles	1,200	1,606	2,210	2,338
Plausible Cycles	1,185	1,556	2,119	2,233
Plausible Cycles %	98.8	96.9	95.9	95.5
Number of Patients	910	1,178	1,562	1,688
Ø-Age of Patients	35.6	35.6	35.7	35.6
OPU	1,103	1,454	1,998	2,068
Oocytes Aspirated	1,069	1,413	1,945	2,004
Avg. Oocytes Aspirated / Cycle	10.6	10.5	10.8	11.0
Freeze All MII	983	1,306	1,809	1,884
Share (%) of Cycles with Cryo-preserved from Retrieved Oocytes	76.7	76.3	77.2	77.1

Either therapy or patient are marked as social freezing.
Follow up social freezings: up to now, only a few pregnancies and births out of former social freezing cycles are recorded.

Clinical Pregnancy Rate as a Function of Stimulation 2022

Prospective Data

Total	recFSH	hMG	recFSH a, recLH	recFSH a, hMG	Long-Acting recFSH	hrFSH	Antiestrogen +/- Gonadotropin	Other*	No Inform.	Total
Stimulations (n)	24,775	7,986	20,156	6,087	1,984	1,140	4,162	3,092	1,942	71,324
Transfers (n)	17,018	4,971	13,615	3,961	1,217	765	1,914	2,345	1,060	46,866
Transfer (%)	68.7	62.2	67.5	65.1	61.3	67.1	46.0	75.8	54.6	65.7
CP (n)	5,902	1,311	4,158	1,090	315	283	382	724	333	14,498
CP/ET (%)	34.7	26.4	30.5	27.5	25.9	37.0	20.0	30.9	31.4	30.9
CP/Stim, (%)	23.8	16.4	20.6	17.9	15.9	24.8	9.2	23.4	17.1	20.3
Ø-Age of Patients	34.0	37.8	35.8	36.4	37.0	33.9	38.9	35.4	36.1	35.6

Short GnRHa	recFSH	hMG	recFSH a, recLH	recFSH a, hMG	Long-Acting recFSH	hrFSH	Antiestrogen +/- Gonadotropin	Other*	No Inform.	Total	Share (%) from total
Stimulations (n)	236	380	556	505	12	4	108	33	70	1,904	2.7
Transfers (n)	150	227	378	277	3	3	26	23	54	1,141	2.4
Transfer (%)	63.6	59.7	68.0	54.9	25.0	75.0	24.1	69.7	77.1	59.9	
CP (n)	37	49	89	57	0	0	7	7	16	262	1.8
CP/ET (%)	24.7	21.6	23.5	20.6	0.0	0.0	26.9	30.4	29.6	23.0	
CP/Stim, (%)	15.7	12.9	16.0	11.3	0.0	0.0	6.5	21.2	22.9	13.8	
Ø-Age of Patients	36.6	38.5	37.1	37.2	38.7	36.0	39.8	38.5	35.0	37.5	

Long GnRHa	recFSH	hMG	recFSH a, recLH	recFSH a, hMG	Long-Acting recFSH	hrFSH	Antiestrogen +/- Gonadotropin	Other*	No Inform.	Total	Share (%) from total
Stimulations (n)	2,032	1,479	2,830	1,166	161	46	34	345	306	8,399	11.8
Transfers (n)	1,567	1,047	2,061	880	118	29	21	253	178	6,154	13.1
Transfer (%)	77.1	70.8	72.8	75.5	73.3	63.0	61.8	73.3	58.2	73.3	
CP (n)	615	301	620	264	33	11	3	80	56	1,983	13.7
CP/ET (%)	39.2	28.7	30.1	30.0	28.0	37.9	14.3	31.6	31.5	32.2	
CP/Stim, (%)	30.3	20.4	21.9	22.6	20.5	23.9	8.8	23.2	18.3	23.6	
Ø-Age of Patients	34.3	37.4	36.0	36.2	37.2	33.8	37.9	36.4	36.9	36.0	

GnRH-Antagonists	recFSH	hMG	recFSH a, recLH	recFSH a, hMG	Long-Acting recFSH	hrFSH	Antiestrogen +/- Gonadotropin	Other*	No Inform.	Total	Share (%) from total
Stimulations (n)	20,906	5,445	15,517	4,101	1,622	1,060	2,866	2,440	1,351	55,308	77.5
Transfers (n)	14,618	3,371	10,570	2,676	1,030	723	1,491	1,864	739	37,082	79.1
Transfer (%)	69.9	61.9	68.1	65.3	63.5	68.2	52.0	76.4	54.7	67.0	
CP (n)	5,024	882	3,278	732	268	267	309	576	245	11,581	79.9
CP/ET (%)	34.4	26.2	31.0	27.4	26.0	36.9	20.7	30.9	33.2	31.2	
CP/Stim, (%)	24.0	16.2	21.1	17.8	16.5	25.2	10.8	23.6	18.1	20.9	
Ø-Age of Patients	33.9	37.9	35.7	36.3	37.0	33.9	38.9	35.3	35.7	35.4	

4,866 stimulations (6,8 %) have been realized without Analoga or Antagonists, resulting in 1,891 transfers (38,9%) and 518 clinical pregnancies (27,4 % CP/ET),

847 stimulations (1,2 %) could not been allocated to a specific protocol, resulting in 598 transfers (70,6 %) and 154 clinical pregnancies (25,8 % CP/ET),

*) *e.g. uFSH, uFSH and hMG etc.*

Ovarian Hyperstimulation Syndrome (OHSS) as a Function of Stimulation Protocol and Age Cohort 2022

IVF, ICSI, IVF/ICSI – Prospective Data

	Stimulations Started	%	Oocytes Retrieved	OHSS III (WHO)	OHSS III/Cycles %
Short GnRHa	**1,904**	**2.7**	**6.6**	**1**	**0.1**
< = 29 Years	73		10.4	0	0.0
30 – 34 Years	397		8.1	0	0.0
35 – 39 Years	805		6.6	1	0.1
> = 40 Years	629		5.1	0	0.0
Long GnRHa	**8,399**	**11.9**	**9.0**	**61**	**0.7**
< = 29 Years	602		11.3	10	1.7
30 – 34 Years	2,354		10.6	30	1.3
35 – 39 Years	3,909		8.5	19	0.5
> = 40 Years	1,534		7.0	2	0.1
GnRHa-Antagonists	**55,308**	**78.5**	**9.4**	**128**	**0.2**
< = 29 Years	5,577		12.2	20	0.4
30 – 34 Years	17,182		10.9	48	0.3
35 – 39 Years	22,708		8.8	47	0.2
> = 40 Years	9,841		6.1	13	0.1
No Analoga / no Antagonists	**4,866**	**6.9**	**6.8**	**6**	**0.1**
< = 29 Years	382		1.5	0	0.0
30 – 34 Years	1,174		9.5	2	0.2
35 – 39 Years	2,024		7.0	2	0.1
> = 40 Years	1,286		3.3	2	0.2
Total*	**70,477**	**100**	**9.1**	**196**	**0.3**

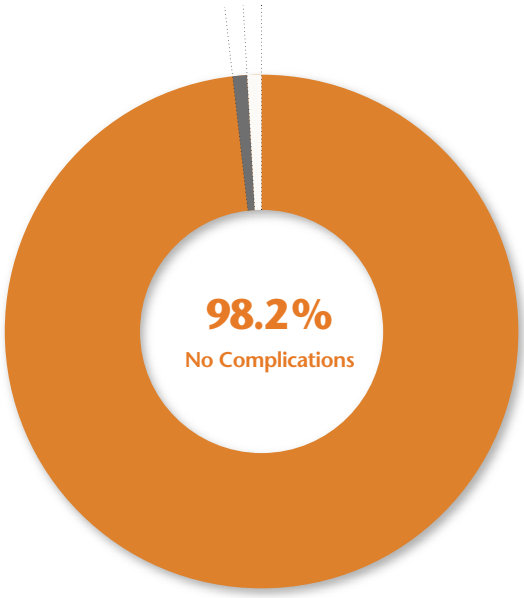
**) in 847 cycles, the protocol could not be reliably determinated*

Complications as a Function of Ovum Pick-up (OPU) 2022

IVF, ICSI, IVF/ICSI, Prospective Data

Total OPU´s	**66,219**	**100.0%**
No Information	627	0.9%
No Complications	65,023	98.2%
Complications	**569**	**0.9%**

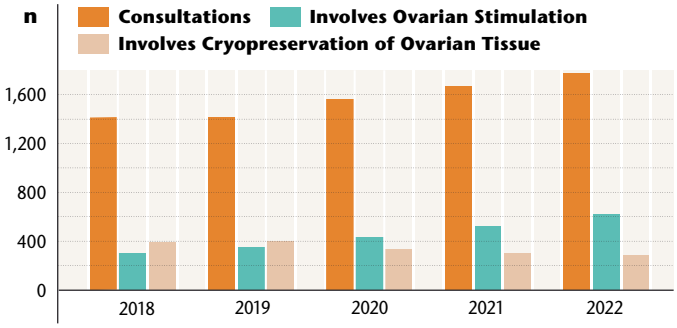
Complications	n	%
Vaginal Bleeding	382	67.1
Intraabdom. Bleeding	86	15.1
Intestinal Tract Injury	1	0.2
Peritonitis	26	4.6
Other	74	13.0
Total	**569**	**100.0**



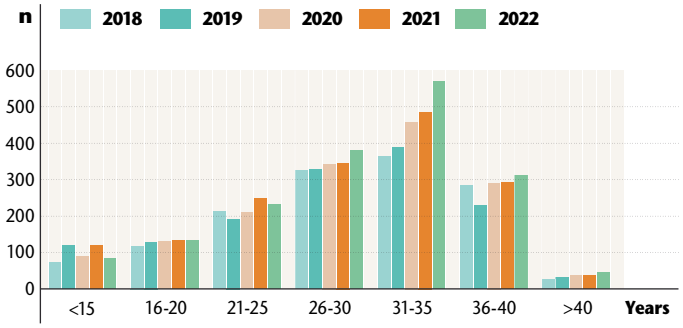
FertiPROTEKT
Netzwerk für fertilitätsprotektive Maßnahmen

We are pleased to present again the consultations and therapies for medically indicated fertility preservation (medical freezing) documented in the *Ferti*PROTEKT Network e.V. in comparison to the last years. Due to the stipulation of the current governmental cryo guideline, which primarily covers the costs of ovarian stimulation and ovarian cryopreservation by health insurances, we have evaluated all data with respect to these two invasive techniques.

Consultations and Interventions without GnRH 2018–2022

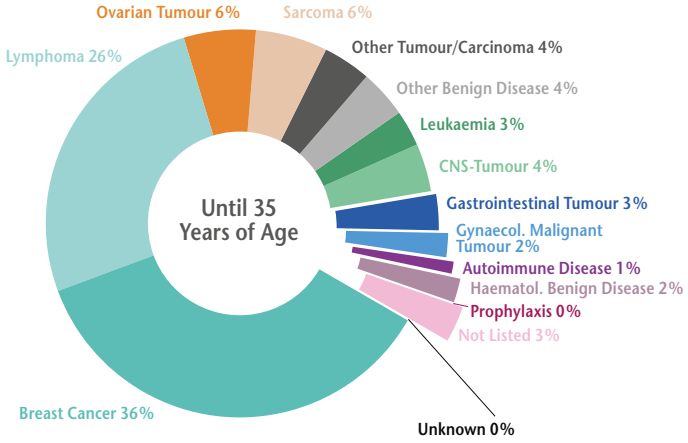


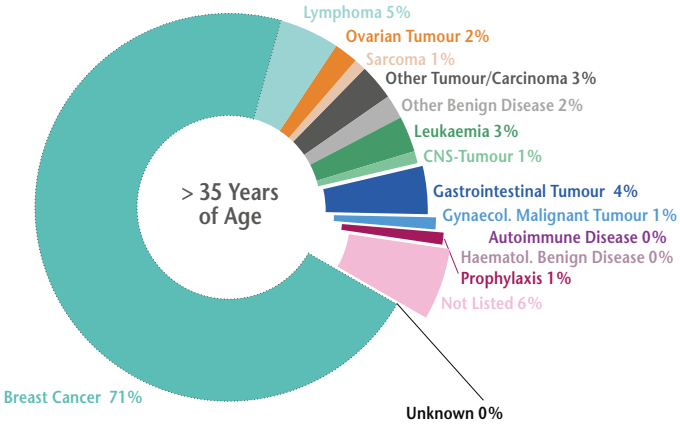
Age Distribution at Time Point of Consultation 2018–2022



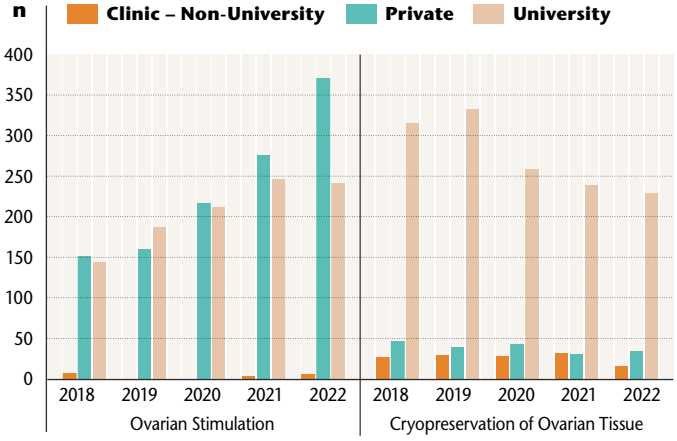
The trend of declining ovarian tissue cryopreservation since 2020 continues, while ovarian stimulation is steadily increasing (Fig. 1). The age distribution of patients who received counselling shows an increasingly higher proportion of women older than 30 years – with a clear peak in the age group of 31-35 years (Fig. 2).

Underlying diseases of the patients in the *Ferti*PROTEKT Network e.V. – until 35 and >35 years of age





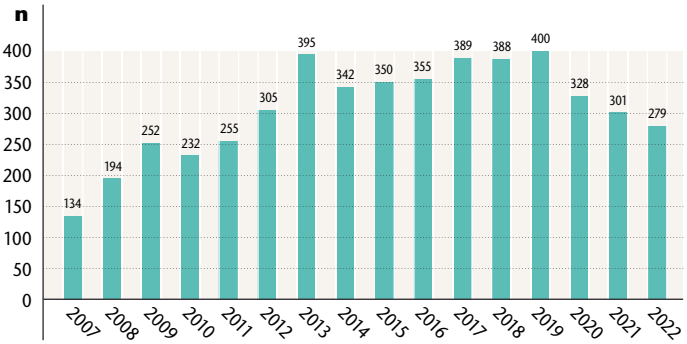
Therapy According to Type of Centre



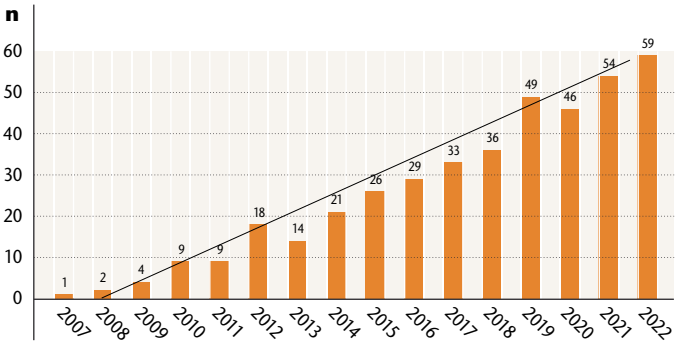
Clear differences become apparent if one looks at the underlying diseases for fertiprotective consultations depending on age. In women up to the age of 35 years, lymphomas are recorded in ¼ of the cases, patients with breast cancer in approx. 1/3 of the cases and 6% of these women show ovarian tumours and sarcomas, respectively. Whereas in women over the age of 35 years, breast cancer clearly dominates with 71% of the cases, followed by lymphomas with only 5% (Fig. 3).

A newly added graph shows the type of therapy depending on the type of centre: as expected, a clear increase in ovarian stimulation can be seen in private centres while this intervention decreases in private centres or university hospitals. As supposed, ovarian cryopreservation is still primarily carried out at the universities and decreases significantly at non-university clinics in the last years (Fig. 4).

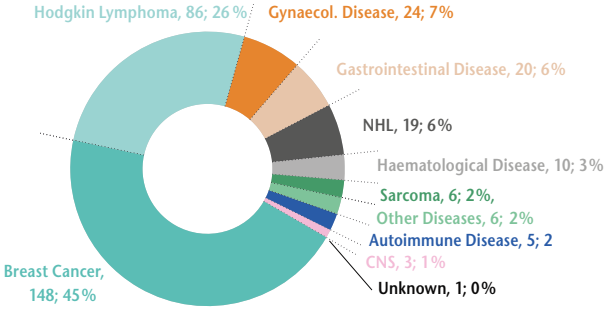
Number of Cryopreservations of Ovarian Tissue for Later Transplantation



Number of Transplantations of Ovarian Tissue



Underlying Disease of Patients who have Undergone Transplantation (n; %)



The data represent the results of 21 university and 6 non-university *Ferti*PROTEKT centres (Germany: 20, Austria: 3, Switzerland: 4) since 2007. By 12/2022, 410 transplantations had been performed in 328 patients. The current retrieval rate is thus 6.7 %.

Compared to the last evaluation in 2020, the results achieved have been maintained or even improved in some cases.

The majority of transplantations has been performed heterotopically into the peritoneum (n=343), a combined transplantation into the ovary and peritoneum was performed in 20 cases, transplants exclusively into the ovary were performed in 14 cases and a heterotopic transplantation was performed in 2 cases. Unfortunately, no information on location was given in 31 transplantations.

General Data and Success Rates of Ovarian Tissue Transplantations

Total Number of Transplantations Performed (2007-2022) (n)	Total Number of Patients, who had at Least one Transplantation (n)	Mean Age at Time of Cryopreservation (Min-Max Years)	Mean Age at Time of Transplantation (Min-Max Years)	Mean Storage Time of Cryopreserved ovarian tissue
410	328	30.7 14-44 Years	36.2 23-47 Years	5.6 1-21 Years

252 (76.8%) 1 TX
70 (21.3%) 2 TX
6 (1.8%) 3 TX
TX and lost of follow up (LOF): 27 (6.6%)

		n (%)	No POI** before TX*, n (%)	POI, n (%)	Without Specification, n (%)
Endocrine Activity After Transplantation	In Relation to Total Number of Transplantations	341 (83.2%)	176 (42.9%)	206 (50.2%)	28 (6.8%)
	In Relation to Total Number of Transplanted Patients	280 (85.4%)	142 (43.3%)	163 (49.7%)	23 (7.0%)

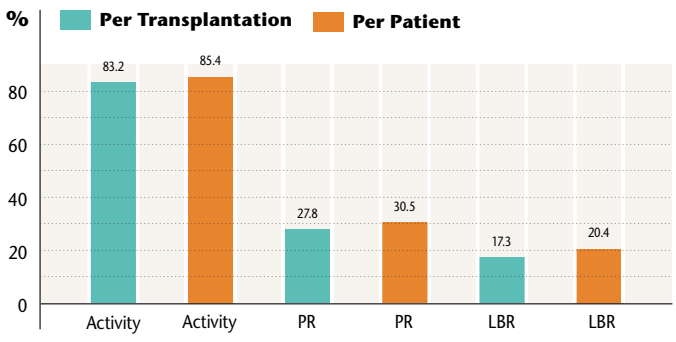
		n (%)	Spont. Conception, n (%)	Conception Using ART***, n (%)
Pregnancies	In Relation to Total Number of Transplantations	114 (27.8%)	73 (64.0%)	41 (36.0%)
	In Relation to Total Number of Transplanted Patients	100 (30.5%)	63 (63.0%)	37 (37.0%)

		n (%)	Ongoing Pregnancies, n (%)
Births	In Relation to Total Number of Transplantations	71 (17.3%)	6 (1.5%)
	In Relation to Total Number of Transplanted Patients	67 (20.4%)	6 (1.8%)

The recurrence rate in relation to all transplanted patients is 2.1 % (n=7).

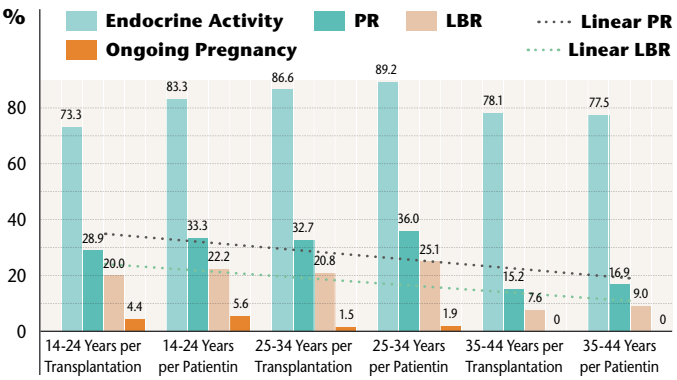
) TX – Transplantation(s); **) POI – Premature Ovarian Failure; *) ART – Assisted Reproduction Techniques (IVF,ICSI)*

Graphical Representation of the Success Rates of all Transplantations



PR – Pregnancy Rate, LBR – Live-Birth Rate

Graphical Representation of the Success Rates in Different Age Groups



DERI | Deutsches Register für Insemination

For the first time, data of homologous insemination treatments (IUI) and inseminations with donor sperm (AID) performed in Germany from 2017 to 2022 will be presented with great pleasure by the German Register for Insemination (DERI)!

Thus, we have begun to close the significant gap that has existed for 22 years due to the lack of systematic recording of IUI and AID treatments in both German reproductive medicine and according to that at the European IVF Monitoring of ESHRE too.

Our goal is to use the analyses from DERI to depict and improve the quality of AID/IUI treatments, provide all treatment metrics to healthcare professionals and the public, and present facts that can be used for appropriate medical counseling of our patients in reproductive medicine institutions. Only patients who are aware of the chances and limitations of their AID/IUI treatment are able to make the right therapy decision for themselves.

What is DERI? DERI was officially launched in 2019 by the members of the Arbeitskreis Donogene Insemination e.V. (AKDI) after long preparatory work and is currently based at the AKDI. Initially, the aim was to record and evaluate only the totality of all AID treatments in Germany in this register.

At that time - founded in 2018, the official German Donor Registry was already active. But solely the births of one year and the associated donor identities have been documented there with the sole aim of securing the right to know the genetic parentage of donor conceived children.

During the development of the DERI project, the AKDI quickly encountered immense interest and strong support from the overwhelming majority of our colleagues in reproductive medicine. As a result, the idea of expanding data collection to include homologous insemination treatments (IUI) in addition to AID treatments was born. By establishing the German DERI Register for both AID and IUI treatments, we hope to gain even more support and participation from our colleagues and important professional societies such as the D·I·R, BRZ, and DVR.

Furthermore, Merck Healthcare recognized the significance of this data collection for all IUI/AID treatments and the potential of DERI, and they provided support for the implementation of DERI right from the beginning.

Markus Kimmel, with his extensive experience in organizing and leading the D·I·R for many years, has been an invaluable asset to the DERI team as he brought his expertise to the establishment and management of the new DERI.

But we especially thank you, dear colleagues, who are already participants in the DERI and who have made this first data evaluation possible.

With best regards
The Board of AKDI with DERI: Dr. med. Andreas Hammel, Erlangen, Diplom Psychologin Constanze Bleichrodt, Munich, Dr. Petra Thorn, Mörfelden, Dr. med. Rüdiger Andreeßen, Berlin

Overview IUI-Cycles 2017 – 2022 (CoD July 13th, 2023)

DERI | Deutsches Register für Insemination

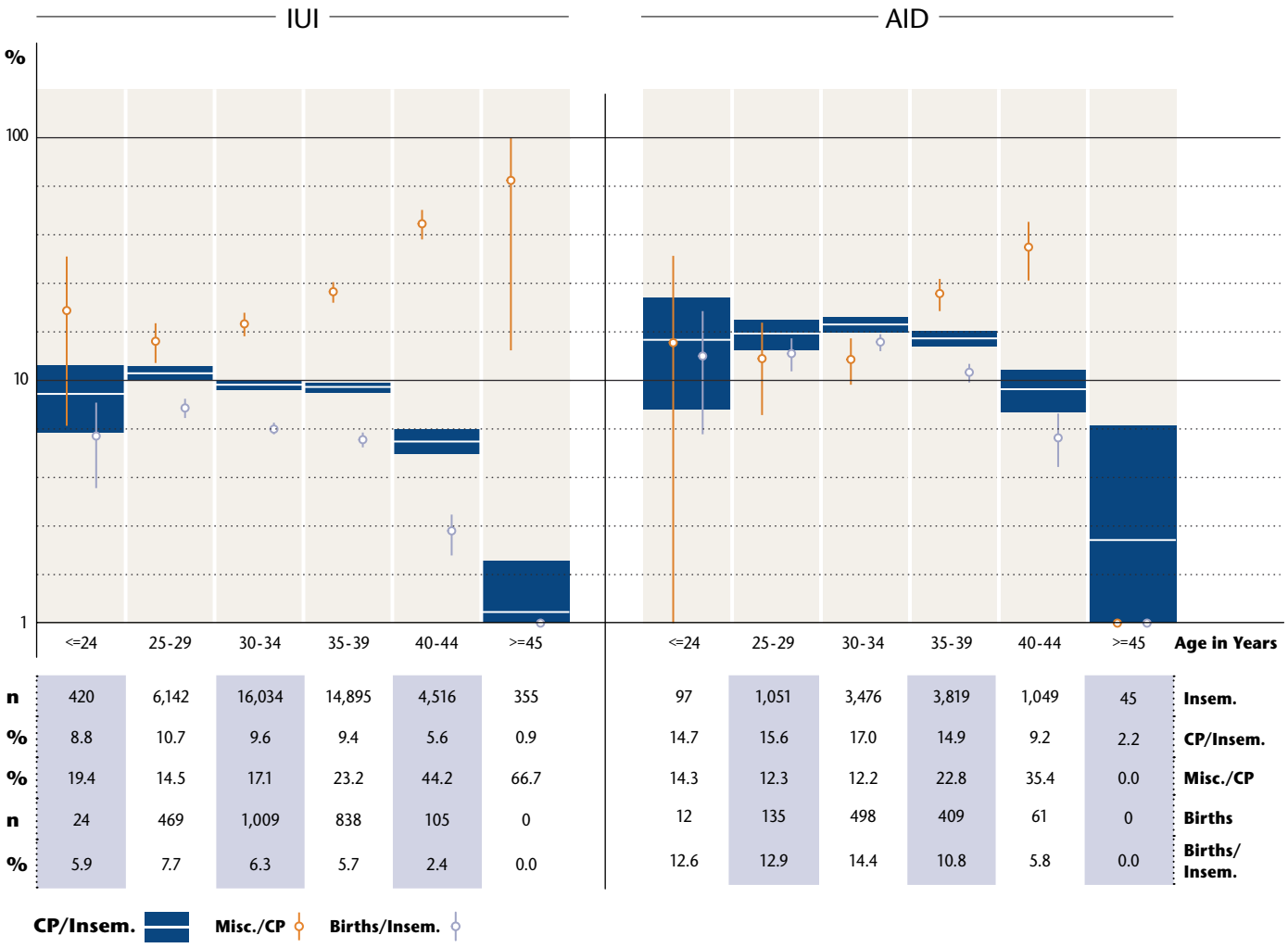
Year	2017	2018	2019	2020	2021	2022
Registry Participants IUI	30	31	31	33	34	33
Recorded Cycles IUI	10,662	10,835	11,039	11,367	11,998	12,260
Number of Patients IUI	4,914	5,089	4,682	4,216	4,466	4,857
Avg. Patient Age IUI	34.3	34.1	34.2	34.0	34.1	33.9
Inseminations IUI	9,239	9,441	8,258	7,284	8,140	8,969
Clinical Pregnancies IUI	866	831	755	673	719	790
Clin. Pregn. / Inseminations % IUI*	9.5	8.9	9.2	9.3	8.9	8.9
Miscarriages IUI	185	172	148	139	151	
Miscarriages / Clin. Pregn. % IUI	21.4	20.7	19.6	20.7	21.0	
Births IUI	551	535	510	417	432	
Births / Inseminations % IUI*	6.1	5.7	6.2	5.8	5.3	
Singletons / Births % IUI	95.6	92.5	93.7	93.8	94.9	
Twins / Births % IUI	4.4	6.9	5.7	6.0	5.1	
Number of Children IUI	575	578	545	445	454	

**) Adjusted by unknown outcomes.*

Pregnancy Rate and Ongoing Pregnancy as a Function of Female Age 2017–2021

Plausible Cycles (CoD July 13th, 2023)

DERI Deutsches Register für Insemination



	IUI <=24	IUI 25-29	IUI 30-34	IUI 35-39	IUI 40-44	IUI >=45	AID <=24	AID 25-29	AID 30-34	AID 35-39	AID 40-44	AID >=45	
n	420	6,142	16,034	14,895	4,516	355	97	1,051	3,476	3,819	1,049	45	Insem.
%	8.8	10.7	9.6	9.4	5.6	0.9	14.7	15.6	17.0	14.9	9.2	2.2	CP/Insem.
%	19.4	14.5	17.1	23.2	44.2	66.7	14.3	12.3	12.2	22.8	35.4	0.0	Misc./CP
n	24	469	1,009	838	105	0	12	135	498	409	61	0	Births
%	5.9	7.7	6.3	5.7	2.4	0.0	12.6	12.9	14.4	10.8	5.8	0.0	Births/ Insem.

Overview AID-Cycles 2017–2022 (CoD July 13th, 2023)

DERI Deutsches Register für Insemination

Year	2017	2018	2019	2020	2021	2022
Registry Participants AID	28	29	28	33	33	34
Recorded Cycles AID	1,991	2,093	2,455	2,977	3,047	3,045
Number of Patients AID	830	899	938	1,037	1,101	1,094
Avg. Patient Age AID	34.3	34.5	34.6	34.7	34.7	34.4
Inseminations AID	1,772	1,843	1,874	1,985	2,063	2,073
Clinical Pregnancies AID	248	275	274	319	313	298
Clin. Pregn. / Inseminations % AID*	14.1	15.0	14.7	16.1	15.2	14.5
Miscarriages AID	52	39	60	56	50	
Miscarriages / Clin. Pregn. % AID	21.0	14.2	21.9	17.6	16.0	
Births AID	177	223	209	254	252	
Births / Inseminations % AID*	10.1	12.2	11.2	12.8	12.2	
Singletons / Births % AID	94.4	96.0	95.7	95.3	97.6	
Twins / Births % AID	5.1	3.6	4.3	4.7	2.0	
Number of Children AID	188	233	218	266	259	

**) Clinical pregnancy rates per insemination are adjusted by unknown outcomes.*

Deutsches IVF-Register e.V. (D·I·R)®
List of D·I·R Members

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