



The ultimate guide to embryo screening: PGD and PGS/PGT-A



The ultimate guide to embryo screening: PGD and PGS/PGT-A

For intended parents who have turned to in vitro fertilization (IVF) to become pregnant and carry their child, the embryo transfer is the long-awaited final step of this journey.

As an intended parent, you can screen your viable embryos before the embryo transfer procedure through two different techniques:

1. Preimplantation genetic screening (PGS), also called preimplantation genetic testing for aneuploidies (PGT-A)
2. Preimplantation genetic diagnosis (PGD)

PGD and PGS/PGT-A are rapidly evolving assisted reproductive technologies, and the procedure is more beneficial for some patients than others. When pursuing IVF, talk to your fertility doctor about what's best for your unique situation.

In this guide, we'll cover:

- [The definition of PGD and PGS/PGT-A](#)
- [Differences between the two procedures](#)
- [Pros and cons of embryo screening](#)
- [Success rates and outcomes](#)
- [Costs associated with these procedures](#)

Table of Contents

What are PGS, PGT-A, and PGD?	4
The procedures: PGS/PGT-A/PGD	6
Why intended parents choose PGS/ PGT-A/PGD	8
Risks associated with PGS/PGT-A/PGD	10
Success rates and outcomes with PGS/PGT-A/PGD	11
PGS/PGD/PGT-A costs	12
How much does PGS/PGT-A testing cost?	12
Financing your PGS/PGT-A during IVF	13





The basics: What are PGS, PGT-A, and PGD?

What is PGS/PGT-A?

Preimplantation genetic screening, or PGS, is a modern-day fertility advancement used to select the best embryos to increase your chances of successful implantation during IVF. Some fertility clinics may refer to PGS as PGT-A, short for Preimplantation Genetic Testing for Aneuploidy.

PGS/PGT-A is a procedure that checks for the presence of an abnormal number of chromosomes in each of your embryos before the embryo transfer occurs in IVF. Abnormal chromosome numbers, or an aneuploidy, refers to an embryo with more or less than 23 pairs (46 individual) chromosomes.

When an embryo has an abnormal number of chromosomes, there can be no pregnancy, pregnancy loss, or significant health problems in your baby, which can be very difficult for you and your partner. Common conditions caused by chromosomal abnormalities include:

- Down syndrome
- Turner syndrome
- Klinefelter syndrome

In addition to detecting genetic abnormalities, PGS can greatly increase the success rates of an IVF journey by selecting a healthier embryo for implantation.

What is PGD?

PGD testing is a procedure used by fertility specialists to examine the embryos to identify a whole panel of genetic defects that can be detected within embryos created during the IVF process. After the intended parents' eggs are fertilized, your doctor will perform assisted hatching to obtain cells for testing. When the embryo reaches the Blastocyst stage, a few cells on the embryo's exterior are biopsied and genetically analyzed.

PGD detects **specific** genetic diseases that might be passed down to your biological child by examining DNA. In doing so, your doctors can decrease the chances of genetic diseases being passed on to your child in the event of a successful pregnancy. This is especially

important if either intended parents have a known hereditary condition in their families.

Diseases commonly diagnosed through PGD include:

- BRAC 1 & BRAC 2 genetic mutations
- Cystic fibrosis (CF)
- Duchenne muscular dystrophy
- Fragile X syndrome
- Hemophilia A
- Huntington's disease
- Myotonic dystrophy
- Sickle cell anemia
- Spinal muscular atrophy

Tay-Sachs diseasePGD versus PGS/PGT-A: What are the differences?

Genetic testing is an essential part of IVF treatment and allows intended parents to maximize their chances of a successful pregnancy after the embryo transfer. However, PGD and PGS/PGT-A deliver different results and findings, so it's important to know their differences.

You have the option to undergo both PGD and PGS/PGT-A for your embryos. Still, due to the cost, parents typically select PGS if they carry no known genetic diseases and PGD if they carry known genetic diseases.

PGD searches for **specific genetic disorders** with a high probability of being passed down to offspring, such as Cystic Fibrosis. PGT-A, on the other hand, doesn't test for specific diseases. Instead, this testing procedure looks for abnormalities in the chromosomes' number and position. However, PGS/PGT-A does not screen for all genetic disorders, so it's important to make sure you discuss your options with your fertility clinic and doctor before proceeding with embryo screening. Because of this, intended parents with known genetic diseases should undergo Preimplantation Genetic Diagnosis (PGD).

PGS/PGT-A does not screen for all genetic disorders, so it's important to make sure you discuss your options with your fertility clinic and doctor before proceeding with embryo screening.

The embryo screening procedure

Preimplantation genetic diagnosis (PGD) and PGS/PGT-A use similar processes to analyze embryo cells. This advanced reproductive technique takes place after the egg retrieval and fertilization into embryos. Then, an embryologist will culture the embryos until they've reached the blastocyst stage and perform a biopsy to test a sample of cells from the embryo(s).

Here's a step-by-step breakdown of the entire screening or diagnostic process:

- 01** During IVF, your or your donor's eggs are either harvested and are fertilized with sperm in the laboratory.
- 02** PGD or PGS takes place after the second stage of IVF. The fertilized embryo is cultured for five to six days until it reaches the blastocyst stage (made up of hundred cells).
- 03** Your embryologist removes a small number of cells to test from the pre-placenta area using a laser and a microscopic glass needle.
- 04** Once testing is complete, the healthy embryo of your desired sex (if you choose to know gender) can be transferred into your or your chosen surrogate's uterus.

Candidates for PGS/PGT-A testing

For intended parents with no known genetic diseases, PGT-A can detect embryos with chromosomal abnormalities. Some of these embryos will not implant during the embryo transfer or lead to a miscarriage, so PGS/PGT-A can increase your chances of a successful conception.

Additionally, PGS/PGT-A is an available method for intended parents who wish to select their baby's sex for whatever reason that may be. IVF usually results in several viable embryos, so parents can choose which gender to transfer into the uterus. This also allows fertility doctors to select the embryo with the highest chance of implantation, reducing the chances of a failed implantation.

PGS/PGT-A is recommended for:

- Intended parents with no known genetic abnormalities
- Women older than 37
- Couples or individuals interested in a single embryo transfer
- Couples or individuals interested in sex selection
- Couples or individuals with a history of failed IVF/implantation failure



Candidates for PGD testing

PGD is used to mitigate the risk of passing down genetic disorders or chromosomal abnormalities to your baby. If you and your partner have a recessive disorder, chances of genetic inheritance in reproduction are 25%.

PGS testing is recommended for intended parents with **known** diseases, such as:

- Women older than 37
- Intended parents with known inherited genetic diseases such as Cystic Fibrosis,
- History of recurrent miscarriages due to chromosomal abnormalities

For intended parents with no known genetic diseases, PGT-A can detect embryos with chromosomal abnormalities. Some of these embryos will not implant during the embryo transfer or lead to a miscarriage, so PGS/PGT-A can increase your chances of a successful conception.



The benefits of PGS/PGT-A /PGD

01 Improved embryo selection

The goal of PGS is to increase the likelihood that your selected embryo(s) will lead to a successful, healthy conception for your future family. PGS testing reduces the risk of miscarriage, decreases the time it takes to become pregnant and lowers the need for transferring multiple embryos.

02 Gender selection (if desired)

Also known as Family Planning, you can use PGS/PGT-A to see each embryo's sex chromosomes and transfer the embryo(s) of their desired gender.

Reasons for gender selection may include:

- You're more equipped to raise one gender over another
- You experienced a devastating loss of a child and hope to raise another of the same gender
- You and your partner would like to mitigate the risk of passing down genetic diseases found in one gender more than another

Each intended parent faces different circumstances, and selecting your child's gender is a deeply personal reason. Your fertility clinic will cover this in more depth regarding your unique scenario and should always respect your decision.

03 Prevent genetic transmission of unknown abnormalities

PGS/PGT-A doesn't test for specific diseases but instead looks for chromosomal abnormalities, such as the number and position. By performing PGS on your viable embryos, your fertility doctor can select chromosomally normal embryos and rule out those that would prevent a healthy birth, even if they appear high-quality before screenings.

If one or both intended parents have a known genetic disorder such as cystic fibrosis, preimplantation genetic diagnosis (PGD) is a better option for you.

04 Optimized chance of a successful pregnancy

PGS gives your fertility doctors insight into which embryos will be most likely to implant and develop healthily. If your embryos display specific abnormalities that prevent the transferred embryo from implanting within the uterus or developing during its early stages, your doctor can identify and abstain from transferring these embryos to optimize your IVF process.

Still, some chromosomal abnormalities are less harmful to the embryo and allow it to implant. These can still prevent pregnancy from developing correctly and can lead to pregnancy loss or a child's birth after the embryo transfer.

05 Quicker time to pregnancy

Using PGS, your fertility clinic can avoid unsuccessful embryo transfers by transferring the healthiest embryos first. By understanding which embryos will help you achieve a full-term pregnancy, you can ensure you're not spending months transferring embryos that won't lead to a successful pregnancy and birth.

06 Reduced monetary burden

PGS testing is sometimes an additional expense, depending on your provider and payment options. Still, the procedure gives you insight into which embryos are worth transferring and freezing. Even with the additional cost of PGS/PGT-A, there's a long-term payoff from understanding which embryos are viable for storage and which embryos are worth transferring.

07 Less uncertainty

A significant benefit of PGS/PGT-A is the reduced level of uncertainty patients may experience before and after the embryo transfer. PGS provides you with an ensured healthy embryo, a lower risk of pregnancy loss, and less emotional stress, especially for patients who've experienced the saddening loss of miscarriage before.

08 Identify fertility treatment options

When undergoing PGS, you should prepare for the possibility of genetically flawed embryos, meaning that your fertility doctor can't transfer them to the uterus. As heartbreaking as this is, your doctors will walk you through your best plan of action and get you back on track for a successful, healthy conception and pregnancy.

Costs and Risks associated with PGS/PGT-A/PGD

01 Additional time and costs

IVF is a lengthy and expensive procedure, especially if you're using a gestational carrier (or surrogate) to carry your child. PGS/PGT-A testing prices can range between \$4,000 and \$10,000 for screening on eight embryos.

Pricing varies by fertility clinic, and determining the exact cost of PGS/PGT-A testing will vary from patient to patient. Factors that can influence treatment costs include:

- The number of IVF cycles needed, including egg retrievals, fertilization, testing, and transfers
- The number of embryos tested
- The inheritance pattern of the genetic disease
- The technology required for PGS/PGT-A testing at your clinic

Additionally, depending on your fertility clinic, you may not have the option to test your embryos in-house. If you select a fertility clinic that cannot perform this, there may be associated costs and time spent shipping embryos if there are transportation delays. At PFCLA, our doctors are well-versed in preimplantation genetic diagnosis and screening, and you can select payment packages that include complimentary testing on up to eight embryos.

Contact us to find out more.

02 Can't determine specific conditions present

Suppose you or your partner have known genetic diseases, and you're using your sperm and eggs for embryo creation. In that case, preimplantation genetic screening can't determine specific conditions present in your embryo's chromosomes. Instead, preimplantation genetic diagnosis (PGD) is an excellent alternative to identify specific genetic disorders.

03 No guarantees or promises

Remember that playing with genes is like roulette - you can tip the odds, but there are no guarantees on the outcomes. There's always a small possibility that the embryos selected through PGS/PGT-A won't lead to a successful pregnancy, and other factors like your fertility clinic also determine this. Talk to your fertility doctor to hear about your clinic's success rates and outcomes surrounding PGS/PGT-A.

Additionally, PGS/PGT-A only tests a few cells, and the results may not provide the big-picture. There is a slight margin of error with PGS/PGT-A, although the medical process has become more effective over time.

For patients over 37, PGT-A can dramatically increase pregnancy rates. Still, for women under 37, this may not significantly increase their chances of conception. Each fertility clinic's track record with PGS/PGT-A and PGD will give patients better insight into if PGS/PGT-A is a risk to their embryos.

04 Invasiveness of the procedure

There's a possibility for damage during the biopsy and freezing process, even if the tested embryos are normal. The risk of a damaged embryo has reduced significantly over the last few years by performing the biopsy on day five embryos instead of day three embryos. Due to this recent advancement, PGS is now less likely to impact your embryo viability negatively.

Note: If executed properly, PGS/PGT-A/PGD doesn't damage the embryo, so you can successfully undergo an IVF embryo transfer after this procedure.

Success rates and outcomes with PGS/PGT-A/PGD

PGS/PGT-A testing success rates

PGT-A improves IVF success rates by disqualifying any embryos with chromosomal abnormalities and transferring the healthiest embryos to improve your chances of a successful implantation. PGT-A also reduces the chances of miscarriage because the most common cause is a chromosome abnormality. Still, there's limited research surrounding the effectiveness of PGS/PGT-A.

A recent study conducted by the Colorado Center for Reproductive Medicine found that women between the ages of 38-42 had a similar live birth rate to women 37 or younger if a high-quality, healthy embryo was transferred. The study also found that women ages 38-42 had a chromosomal error rate of about 62% compared to women under 38, who had a chromosomal error rate of 37%.

Women in both groups had frozen embryo transfers (FET) of healthy embryos with similar live birth rates – 60% live birth rate for women 38-42 and 64% live birth rate for women under 38 years.

PGD testing success rates

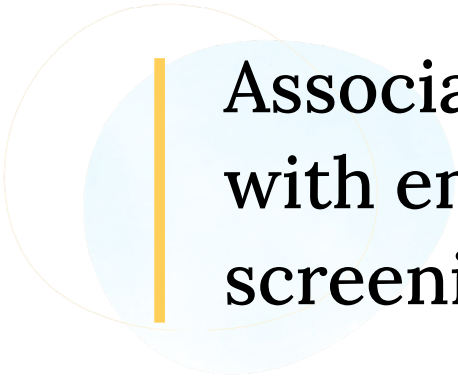
While there are no concrete results collected from the Center for Disease Control and Prevention (CDC), private research has shown PGD testing to increase success rates of IVF. According to one 2012 study with 229,096 ART cycles performed, 10,407 (4.5%) reported use of PGD.

Research focused on ART cycles between 2011 and 2012 found that PGD cycles showed a decreased odds

of miscarriage among women ages 35 to 37 years, and women over 37. Additionally, PGD testing was associated with a 95% chance of clinical pregnancy, a 95% chance of live-birth delivery, and a 95% chance of multiple-birth delivery among women over 37.

However, the study notes that PGD was not observed to be associated with an increased chance of clinical pregnancy or live birth for women less than 35.





Associated costs with embryo screening

How much does PGS/ PGT-A testing cost?

PGS/PGT-A testing is typically performed during the IVF procedure, which can cost anywhere from \$10,000 to \$30,000 without a third-party surrogate or egg donor. Outside of this base package, the price of PGS/PGT-A testing can range between \$4,000 and \$10,000.

However, every fertility clinic's pricing varies and determining the exact cost of PGS/PGT-A testing can vary greatly from patient to patient. Factors that can influence PGS/PGT-A costs include the number of IVF cycles needed (including egg retrievals, fertilization, testing, and transfers), the number of embryos to test, the inheritance pattern of the genetic disease, and the technology required for PGS/PGT-A testing at your clinic.

At PFCLA, we understand how costly ART procedures can be and try to reduce these expenses whenever possible to ensure that you're able to achieve the family of your dreams. Our PGS/PGT-A costs \$6,000 for testing on up to eight embryos. For intended parents undergoing IVF that may require additional IVF cycles, you can screen your additional embryos for \$250/embryo. PGS/PGT-A is included in several of PFCLA's IVF packages, so you won't incur any separate charge if you decide to pursue this.

How much does PGD testing cost?

Like PGS/PGT-A, PGD is an additional stage of the IVF journey for intended parents before the long-awaited embryo transfer. PGD is performed to ensure that intended parents aren't passing down any detectable genetic diseases to their children. Because PGD examines specific genes within your embryos, the process typically costs between \$6,000 and \$12,000.

However, this price can vary significantly depending on your medical provider and which tests are ordered.



Next steps for intended parents considering PGD/PGS/PGT-A

As one of the country's oldest fertility clinics, we know how stressful assisted reproductive treatment can be. We want to make sure you have as many resources as possible to increase your chances of a successful pregnancy and help bring you a happy and healthy baby.

PGS/PGT-A is a valuable technology that, if used correctly, can significantly improve your chances of successful implantation and reduce the risk of passing on genetic disorders to your baby.

If you're an intended parent considering IVF with PGS/PGT-A testing, get in contact with our team of fertility specialists for free and discuss your options for financing and pricing.

There are many factors to consider when it comes to preimplantation genetic screening and IVF. Our fertility experts are more than happy to discuss them with you and cover the entire process and what you should consider about it. We will help you make the right decision for your needs.

If you're an intended parent considering IVF with PGS/PGT-A testing, get in contact with our team of fertility specialists for free and discuss your options for financing and pricing.

About Pacific Fertility Center Los Angeles

Parenthood is a universal blessing, and everyone deserves the opportunity to bring a new family member into this world. Pacific Fertility Center of Los Angeles has been bringing babies into the world since 1991, supporting patients in over 75 countries and setting standards of transparency and accountability across the ART community for 30 years.

If you would like to learn more about preimplantation genetic screening or diagnosis during IVF and why it may be a good option to consider, we encourage you to **contact our team of fertility doctors**. You can reach Pacific Fertility Center by calling (310) 853-1440.



Pacific
Fertility Center
Los Angeles

