BSC_CON_2.03	Genetic Testing: Preimplantation Genetic Testing		
Original Policy Date:	January 1, 2023	**Effective Date:**	January 1, 2025
Section:	4.0 OB/Gyn/Reproduction	**Page:**	Page 1 of 9

Example Test Table

The tests, associated laboratories, CPT codes, and ICD codes contained within this document serve only as examples to help users navigate claims and corresponding coverage criteria; as such, they are not comprehensive and are not a guarantee of coverage or non-coverage. Please see the Concert Platform for a comprehensive list of registered tests.

Policy Statement Sections	Example Tests (Labs)	Common CPT Codes
Preimplantation Genetic Testing for Aneuploidy (PGT-A)	Spectrum - 24-chromosome Preimplantation Genetic Testing for Aneuploidy (PGT-A) (Natera)	81229, 81479, 89290, 89291
	SMART PGT-A (Preimplantation Genetic Testing - Aneuploidy) (Igenomix)	0254U
Preimplantation Genetic Testing for Monogenic Disorders (PGT-M)	Spectrum PGT-M (Natera)	0396U
	PGT-M (CooperSurgical - CooperGenomics)	89290, 89291, 81479
Preimplantation Genetic Testing for Structural Rearrangements (PGT-SR)	Spectrum - Preimplantation Genetic Testing for Structural Rearrangements (PGT-SR) (Natera)	81228, 81229, 81479, 89290, 89291

Policy Statement

PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A)

I. Preimplantation genetic testing for aneuploidy (PGT-A) (81229, 81479, 89290, 89291, 0254U) is considered **investigational**.

PREIMPLANTATION GENETIC TESTING FOR MONOGENIC DISORDERS (PGT-M)

II. Preimplantation genetic testing for monogenic disorders (PGT-M) (89290, 89291, 81479) may be considered **medically necessary** when:
   A. The embryo is at an elevated risk of a genetic disorder due to one of the following:
      1. Both biological parents are known carriers for the same autosomal recessive disorder, **OR**
      2. One biological parent is a known carrier of an autosomal dominant disorder, **OR**
      3. One biological parent is a known carrier of an X-linked recessive disorder.

III. Preimplantation genetic testing for monogenic disorders (PGT-M) (89290, 89291, 81479) is considered **investigational** for all other indications.

PREIMPLANTATION GENETIC TESTING FOR STRUCTURAL REARRANGEMENTS (PGT-SR)

IV. Preimplantation genetic testing for structural rearrangements (PGT-SR) (81228, 81479, 81229, 89290, 89291) may be considered **medically necessary** when:
   A. The embryo is at an elevated risk of a genetic disorder because one biological parent has a chromosomal rearrangement.

V. Preimplantation genetic testing for structural rearrangements (PGT-SR) (81228, 81229, 81479, 89290, 89291) is considered **investigational** for all other indications.

NOTE: Refer to Appendix A to see the policy statement changes (if any) from the previous version.

Policy Guidelines

Definitions

1. **Preimplantation genetic testing for monogenic disorders** (**PGT-M**) and **Preimplantation genetic testing for structural rearrangements** (**PGT-SR**) are used to detect a specific single-gene inherited disorder or chromosome rearrangement in conjunction with in vitro fertilization (IVF).
2. **Preimplantation genetic testing for aneuploidy** (**PGT-A**) is used to screen for chromosomal aneuploidy in conjunction with IVF for couples.

Clinical Considerations

Genetic counseling is highly encouraged for patients considering and undergoing in vitro fertilization. Genetic counseling should be performed by an individual with experience and expertise in genetic medicine and genetic testing methods, such as a genetic counselor, medical geneticist, or advanced practice practitioner specializing in genetics.

All patients who undergo PGT-M or PGT-SR should be offered diagnostic testing via chorionic villus sampling (CVS) or amniocentesis for confirmation of results.

All patients who undergo PGT-A should be offered traditional diagnostic testing or screening for aneuploidy in accordance with recommendations for all pregnant patients.

Coding

See the Codes table for details.

Description

Preimplantation genetic testing involves analysis of biopsied cells from an embryo as a part of an assisted reproductive procedure. Preimplantation genetic testing for monogenic disorders (PGT-M) and preimplantation genetic testing for structural rearrangements (PGT-SR) are used to detect a specific inherited disorder in conjunction with in vitro fertilization (IVF) and aims to prevent the birth of affected children to couples at an increased risk of transmitting either a gene mutation(s) or an unbalanced structural chromosomal rearrangement that can be typically targeted in this context. Preimplantation genetic testing for aneuploidy (PGT-A) is used to screen for potential chromosomal or subchromosomal abnormalities (e.g., chromosomal aneuploidy) in conjunction with IVF for couples; in this case testing is untargeted.

Related Policies

This policy document provides coverage criteria for preimplantation genetic testing. Please refer to:

- ***Genetic Testing: Prenatal and Preconception Carrier Screening*** for coverage criteria related to carrier screening.
- ***Genetic Testing: Prenatal Diagnosis (via amniocentesis, CVS, or PUBS) and Pregnancy Loss*** for coverage related to diagnostic genetic testing during pregnancy or for a pregnancy loss.
- ***Genetic Testing: Prenatal Cell-Free DNA Testing*** for coverage criteria related to prenatal cell-free DNA screening tests.
- ***Genetic Testing: Multisystem Inherited Disorders, Intellectual Disability, and Developmental Delay*** for coverage criteria related to diagnostic genetic testing in the postnatal period.
- ***Genetic Testing: General Approach to Genetic and Molecular Testing*** for coverage criteria related to preimplantation genetic testing that is not specifically discussed in this or another non-general policy, including known familial variant testing.

Benefit Application

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

Rationale

Background
Preimplantation Genetic Testing for Aneuploidy (PGT-A)

American Society of Reproductive Medicine
The American Society for Reproductive Medicine issued an opinion on the use of preimplantation genetic testing (PGS) for aneuploidy (2018) which concluded, "Large, prospective, well-controlled studies evaluating the combination of multiple approaches (genomics, time-lapse imaging, transcriptomics, proteomics, metabolomics, etc.) for enhanced embryo selection applicable in a more inclusive IVF population are needed to determine not only the effectiveness, but also the safety and potential risks of these technologies. PGT-A will likely be part of a future multidimensional approach to embryo screening and selection. At present, however, there is insufficient evidence to recommend the routine use of blastocyst biopsy with aneuploidy testing in all infertile patients." (p. 34)

This position was reaffirmed in a 2020 committee opinion regarding clinical management of mosaic results from preimplantation genetic testing for aneuploidy of blastocysts, stating, "It should be recognized that this document does not endorse nor does it suggest that PGT-A is appropriate for all cases of IVF." (p. 253)

American College of Obstetricians and Gynecologists (ACOG)
The American College of Obstetricians and Gynecologists issued Committee Opinion No. 799 (2020, reaffirmed 2023) regarding Preimplantation Genetic Testing. The recommendations include the following:

"The clinical utility of preimplantation genetic testing-monogenic and preimplantation genetic testing-structural rearrangements is firmly established; however, the best use of preimplantation genetic testing-aneuploidy remains to be determined." (p. e133)

Preimplantation Genetic Testing for Monogenic Disorders (PGT-M)

American Society for Reproductive Medicine

The American Society for Reproductive Medicine published an opinion on the use of preimplantation genetic diagnosis (PGD) for serious adult-onset conditions (2013). The statement includes the following:

- "Preimplantation genetic diagnosis (PGD) for adult-onset conditions is ethically justifiable when the conditions are serious and when there are no known interventions for the conditions or the available interventions are either inadequately effective or significantly burdensome."
- "For conditions that are less serious or of lower penetrance, PGD for adult[-]onset conditions is ethically acceptable as a matter of reproductive liberty. It should be discouraged, however, if the risks of PGD are found to be more than merely speculative."

The opinion also stated that physicians and patients should be aware that much remains unknown about the long-term effects of embryo biopsy on the developing fetus and that experienced genetic counselors should be involved in the decision process. (p. 54)

American College of Obstetricians and Gynecologists (ACOG)

The American College of Obstetricians and Gynecologists issued Committee Opinion No. 799 (2020, reaffirmed 2023) regarding Preimplantation Genetic Testing. The recommendations include the following:

"Preimplantation genetic testing comprises a group of genetic assays used to evaluate embryos before transfer to the uterus. Preimplantation genetic testing-monogenic (known as PGT-M) is targeted to single gene disorders. Preimplantation genetic testing-monogenic uses only a few cells from the early embryo, usually at the blastocyst stage, and misdiagnosis is possible but rare with modern techniques. Confirmation of preimplantation genetic testing-monogenic results with chorionic villus sampling (CVS) or amniocentesis should be offered." (p. 133)

Preimplantation Genetic Testing for Structural Rearrangements (PGT-SR)

American College of Obstetricians and Gynecologists (ACOG)

The American College of Obstetricians and Gynecologists issued Committee Opinion No. 799 (2020, reaffirmed 2023) regarding Preimplantation Genetic Testing. The recommendations include the following:

"To detect structural chromosomal abnormalities such as translocations, preimplantation genetic testing-structural rearrangements (known as PGT-SR) is used. Confirmation of preimplantation genetic testing-structural rearrangements results with CVS or amniocentesis should be offered." (p. 133)

References

1. Ethics Committee of American Society for Reproductive Medicine. Use of preimplantation genetic diagnosis for serious adult onset conditions: a committee opinion. Fertil Steril. 2013;100(1):54-57. doi:10.1016/j.fertnstert.2013.02.043
2. Preimplantation Genetic Testing: ACOG Committee Opinion, Number 799. Obstet Gynecol. 2020 (reaffirmed 2023);135(3):e133-e137. doi:10.1097/AOG.0000000000003714
3. Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology. Electronic address: ASRM@asrm.org; Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted

Reproductive Technology. The use of preimplantation genetic testing for aneuploidy (PGT-A): a committee opinion. Fertil Steril. 2018;109(3):429-436. doi:10.1016/j.fertnstert.2018.01.002

4. Practice Committee and Genetic Counseling Professional Group (GCPG) of the American Society for Reproductive Medicine. Electronic address: asrm@asrm.org. Clinical management of mosaic results from preimplantation genetic testing for aneuploidy (PGT-A) of blastocysts: a committee opinion. Fertil Steril. 2020;114(2):246-254. doi:10.1016/j.fertnstert.2020.05.014

Documentation for Clinical Review

Please provide the following documentation:

- Name of the test being requested or the Concert Genetics GTU identifier.
  The Concert Genetics GTU can be found at https://app.concertgenetics.com
- CPT codes to be billed for the particular genetic test (GTU required for unlisted codes)
- History and physical and/or consultation notes including:
  - Clinical findings:
    - Signs/symptoms leading to a suspicion of genetic condition
    - Family history if applicable
  - Prior evaluation/treatment:
    - Previous test results (i.e., imagining, lab work, etc.) related to reason for genetic testing
    - Family member's genetic test result, if applicable
  - Rationale
    - Reason for performing test
    - How test result will impact clinical decision making

Post Service (in addition to the above, please include the following):

- Results/reports of tests performed

Coding

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy.

The following codes are included below for informational purposes. Inclusion or exclusion of a code(s) does not constitute or imply member coverage or provider reimbursement policy. Policy Statements are intended to provide member coverage information and may include the use of some codes for clarity. The Policy Guidelines section may also provide additional information for how to interpret the Policy Statements and to provide coding guidance in some cases.

Type	Code	Description
CPT®	0254U	Reproductive medicine (preimplantation genetic assessment), analysis of 24 chromosomes using embryonic DNA genomic sequence analysis for aneuploidy, and a mitochondrial DNA score in euploid embryos, results reported as normal (euploidy), monosomy, trisomy, or partial deletion/duplication, mosaicism, and segmental aneuploidy, per embryo tested
	0396U	Obstetrics (pre-implantation genetic testing), evaluation of 300000 DNA single-nucleotide polymorphisms (SNPs) by microarray, embryonic tissue, algorithm reported as a probability for single-gene germline conditions ***(Deleted code effective 10/1/2024)***

Type	Code	Description
	81228	Cytogenomic (genome-wide) analysis for constitutional chromosomal abnormalities; interrogation of genomic regions for copy number variants, comparative genomic hybridization [CGH] microarray analysis
	81229	Cytogenomic (genome-wide) analysis for constitutional chromosomal abnormalities; interrogation of genomic regions for copy number and single nucleotide polymorphism (SNP) variants, comparative genomic hybridization (CGH) microarray analysis
	81479	Unlisted molecular pathology procedure
	89290	Biopsy, oocyte polar body or embryo blastomere, microtechnique (for pre-implantation genetic diagnosis); less than or equal to 5 embryos
	89291	Biopsy, oocyte polar body or embryo blastomere, microtechnique (for pre-implantation genetic diagnosis); greater than 5 embryos
HCPCS	None	

Policy History

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.

Effective Date	Action
01/01/2023	New policy.
08/01/2023	Coding update.
01/01/2024	Annual review. Policy statement and literature updated. Coding update.
11/01/2024	Coding update.
01/01/2025	Annual review. No change to policy statement. Literature review updated.

Definitions of Decision Determinations

Medically Necessary: Services that are Medically Necessary include only those which have been established as safe and effective, are furnished under generally accepted professional standards to treat illness, injury or medical condition, and which, as determined by Blue Shield, are: (a) consistent with Blue Shield medical policy; (b) consistent with the symptoms or diagnosis; (c) not furnished primarily for the convenience of the patient, the attending Physician or other provider; (d) furnished at the most appropriate level which can be provided safely and effectively to the patient; and (e) not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of the Member's illness, injury, or disease.

Investigational/Experimental: A treatment, procedure, or drug is investigational when it has not been recognized as safe and effective for use in treating the particular condition in accordance with generally accepted professional medical standards. This includes services where approval by the federal or state governmental is required prior to use, but has not yet been granted.

Split Evaluation: Blue Shield of California/Blue Shield of California Life & Health Insurance Company (Blue Shield) policy review can result in a split evaluation, where a treatment, procedure, or drug will be considered to be investigational for certain indications or conditions, but will be deemed safe and effective for other indications or conditions, and therefore potentially medically necessary in those instances.

Prior Authorization Requirements and Feedback (as applicable to your plan)

Within five days before the actual date of service, the provider must confirm with Blue Shield that the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an authorization prior to services being rendered based on cancellation of the member's eligibility. Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization Department at (800) 541-6652, or the Transplant Case Management Department at (800) 637-2066 ext. 3507708 or visit the provider portal at www.blueshieldca.com/provider.

We are interested in receiving feedback relative to developing, adopting, and reviewing criteria for medical policy. Any licensed practitioner who is contracted with Blue Shield of California or Blue Shield of California Promise Health Plan is welcome to provide comments, suggestions, or concerns. Our internal policy committees will receive and take your comments into consideration.

For utilization and medical policy feedback, please send comments to: MedPolicy@blueshieldca.com

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over medical policy and must be considered first in determining covered services. Member contracts may differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.

Appendix A

POLICY STATEMENT (No changes)	
BEFORE	**AFTER**
Genetic Testing: Preimplantation Genetic Testing BSC_CON_2.03 **Policy Statement:** **Preimplantation Genetic Testing for Aneuploidy (PGT-A)** I. Preimplantation genetic testing for aneuploidy (PGT-A) (81229, 81479, 89290, 89291, 0254U) is considered **investigational**. **Preimplantation Genetic Testing for Monogenic Disorders (PGT-M)** II. Preimplantation genetic testing for monogenic disorders (PGT-M) (89290, 89291, 81479) may be considered **medically necessary** when: A. The embryo is at an elevated risk of a genetic disorder due to one of the following: 1. Both biological parents are known carriers for the same autosomal recessive disorder, **OR** 2. One biological parent is a known carrier of an autosomal dominant disorder, **OR** 3. One biological parent is a known carrier of an X-linked recessive disorder. III. Preimplantation genetic testing for monogenic disorders (PGT-M) (89290, 89291, 81479) is considered **investigational** for all other indications. **Preimplantation Genetic Testing for Structural Rearrangements (PGT-SR)** IV. Preimplantation genetic testing for structural rearrangements (PGT-SR) (81228, 81229, 81479, 89290, 89291) may be considered **medically necessary** when:	**Genetic Testing: Preimplantation Genetic Testing BSC_CON_2.03** **Policy Statement:** **PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A)** I. Preimplantation genetic testing for aneuploidy (PGT-A) (81229, 81479, 89290, 89291, 0254U) is considered **investigational**. **PREIMPLANTATION GENETIC TESTING FOR MONOGENIC DISORDERS (PGT-M)** II. Preimplantation genetic testing for monogenic disorders (PGT-M) (89290, 89291, 81479) may be considered **medically necessary** when: A. The embryo is at an elevated risk of a genetic disorder due to one of the following: 1. Both biological parents are known carriers for the same autosomal recessive disorder, **OR** 2. One biological parent is a known carrier of an autosomal dominant disorder, **OR** 3. One biological parent is a known carrier of an X-linked recessive disorder. III. Preimplantation genetic testing for monogenic disorders (PGT-M) (89290, 89291, 81479) is considered **investigational** for all other indications. **PREIMPLANTATION GENETIC TESTING FOR STRUCTURAL REARRANGEMENTS (PGT-SR)** IV. Preimplantation genetic testing for structural rearrangements (PGT-SR) (81228, 81479, 81229, 89290, 89291) may be considered **medically necessary** when:

POLICY STATEMENT (No changes)	
BEFORE	**AFTER**
A. The embryo is at an elevated risk of a genetic disorder because one biological parent has a chromosomal rearrangement. V. Preimplantation genetic testing for structural rearrangements (PGT-SR) (81228, 81229, 81479, 89290, 89291) is considered **investigational** for all other indications.	A. The embryo is at an elevated risk of a genetic disorder because one biological parent has a chromosomal rearrangement. V. Preimplantation genetic testing for structural rearrangements (PGT-SR) (81228, 81229, 81479, 89290, 89291) is considered **investigational** for all other indications.