Preimplantation Genetic Testing (Preimplantation Genetic Diagnosis and Preimplantation Genetic Screening)

Policy Number: OCA 3.726
Version Number: 6
Version Effective Date: 01/01/16

Product Applicability

- All Plan\(^*\) Products

Well Sense Health Plan
- New Hampshire Medicaid
- NH Health Protection Program

Boston Medical Center HealthNet Plan
- MassHealth
- Qualified Health Plans/ConnectorCare/Employer Choice Direct
- Senior Care Options

\(^*\) Note: Disclaimer and audit information is located at the end of this document.

Policy Summary

The Plan considers preimplantation genetic diagnosis (PGD) to be medically necessary when Plan criteria are met (as specified in the Medical Policy Statement and Limitations sections of this Plan policy). Prior authorization is required for all preimplantation genetic testing, including preimplantation genetic diagnosis (PGD) and preimplantation genetic screening (PGS); the Plan considers PGS to be experimental and investigational.

It will be determined during the Plan’s prior authorization process if the service is considered medically necessary for the requested indication. See the Plan policy, *Medically Necessary* (policy number OCA 3.14), for the product-specific definitions of medically necessary treatment. Also, see the following Plan policies for medical guidelines, applicable definitions, and prior authorization requirements for BMC HealthNet Plan members (available at [www.bmchp.org](http://www.bmchp.org)): *Experimental and Investigational Treatment* (policy number OCA 3.12), *Infertility Services* (policy number OCA 3.725), and *Genetic Testing Guidelines and Pharmacogenetics* (policy number OCA 3.726).
Description of Item or Service

Preimplantation Genetic Testing (PGT): Testing technique, which includes both preimplantation genetic diagnosis and preimplantation genetic screening, used to identify genetic defects in embryos soon after fertilization following in vitro fertilization (IVF) and prior to implantation leading to pregnancy.

Preimplantation Genetic Diagnosis (PGD): Testing performed on a preimplantation stage embryo (via single-cell biopsy) to determine if the embryo carries the specific pathogenic mutation(s) present in one or both genetic parents whose genetic abnormality or carrier state is known from prior testing. (See the Medical Policy Statement section of this Plan policy for medical criteria.)

Preimplantation Genetic Screening (PGS): Screening techniques where embryos from presumed chromosomally normal genetic parents are screened for aneuploidy. (See the Limitations section of this Plan policy.)

Medical Policy Statement

The Plan considers preimplantation genetic diagnosis (PGD) to be medically necessary when ALL applicable Plan criteria are met and documented in the member’s medical record, as specified below in item 1 (Member Criteria), item 2 (Medical Record Documentation Criteria), and item 3 (Testing Frequency Criteria):

1. **Member Criteria:**

   ALL of the following member criteria are met, as specified below in items a through d:

   a. Member meets the Plan’s definition of infertility, general eligibility and evaluation requirements, and service-specific criteria for coverage of infertility services, as specified in Plan’s Infertility Services medical policy, policy number OCA 3.725; AND

   b. Member is undergoing in vitro fertilization (IVF) for the evaluation of embryos that have been identified at an increased risk of a genetic disorder, and infertility services, including IVF, are covered for the BMC HealthNet Plan member (as specified in the member’s evidence of coverage or applicable benefit document available at [www.bmchp.org](http://www.bmchp.org)); AND

   c. The results of PGD will impact clinical decision making and/or the clinical outcome; AND

   d. The member has coverage for PGD (as specified in the member’s evidence of coverage or applicable benefit document available at [www.bmchp.org](http://www.bmchp.org) for a BMC HealthNet Plan member); AND
2. **Medical Record Documentation Criteria:**

Documentation in the member’s medical record includes ALL of the following, as specified below in items a through d:

a. The member has received genetic counseling that includes a discussion of alternatives to the procedure such as prenatal diagnosis by ultrasound, chorionic villus sampling, or amniocentesis; AND

b. The member discussed with the provider other reproductive options, including gamete donation, remaining childless, accepting genetic risk without testing, and/or adoption; AND

c. The services are provided in a center where appropriate expertise (i.e., genetic counseling, molecular genetics, maternal-fetal medicine, embryology) is available; AND

d. Documentation of at least ONE (1) of the following conditions, as specified below in items (1) through (6):

   (1) Both partners are known carriers of a single gene autosomal recessive disorder; OR

   (2) One (1) partner is a known carrier of a single gene autosomal recessive disorder and the partners have one offspring that has been diagnosed with that recessive disorder; OR

   (3) One (1) partner is a known carrier of a single gene autosomal dominant disorder; OR

   (4) One (1) partner is at risk (50%) of carrying a mutation of a single-gene dominant disorder (by virtue of having an affected parent or sibling) but does not wish to know his/her carrier status (which would be revealed if standard prenatal diagnosis were performed and the fetus revealed to be affected); IVF/PGD allows for unaffected embryos to be selected and implanted without revealing to the parents whether or not any affected embryos were also detected; OR

   (5) One (1) partner is a known carrier of a single X-linked disorder; OR

   (6) Evaluation is for an embryo identified to be at an elevated risk of chromosomal abnormality based on one (1) partner having EITHER of the following conditions, as specified below in item (a) or item (b):

      (a) A balanced (reciprocal or non-Robertsonian) chromosomal translocation; OR

      (b) An unbalanced (Robertsonian) chromosomal translocation; AND

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3. **Testing Frequency Criteria:**

BOTH of the following PGD testing frequency criteria must be met, as specified below in item a and item b:

a. The Plan considers **up to two (2) PGD procedures** medically necessary in conjunction with IVF for members who meet the above criteria (as specified in the Member Criteria and Documentation Criteria sections); AND

b. The member is eligible for **up to two (2) additional PGD procedures** with IVF (beyond testing frequency specified in item 3a of this section) when ALL of the following criteria are met, as specified below in item (1), item (2), and item (3):

(1) The member had previously undergone two (2) cycles of PGD with IVF; AND

(2) The member continues to meet the PGD criteria specified above in this Medical Policy Statement section; AND

(3) There has been an intervening birth.

**Limitations**

1. The Plan considers PGD testing for non-medical gender selection and/or testing for non-medical traits to NOT be medically necessary.

2. The Plan considers ONE (1) or more of the following services to be experimental, investigational, or unproven, as specified below in items a through e:

   a. Carrier testing to determine the embryo’s carrier status; OR

   b. Human leukocyte antigen (HLA) typing of an embryo to identify a future suitable stem cell, tissue, or organ transplantation donor; OR

   c. Preimplantation genetic screening (PGS) (i.e., screening embryos for chromosomal abnormalities in the absence of specific inherited genetic conditions identified in either parent); OR

   d. Aneuploidy screening (AS) in the setting of PGS (also called PGD-AS) for purposes of optimizing IVF outcomes in women with advanced maternal age, history of failed IVF cycles, or recurrent miscarriages, in the absence of inherited genetic abnormalities; OR
e. PGD for chromosomal microarray or whole-genome sequencing.

Definitions

Autosomal Recessive Disorder: A chromosome abnormality where two (2) copies of a mutated gene, one (1) from each biological parent, must be present in order for the disease or trait to develop.

Chromosomal Translocation: A chromosome abnormality caused by rearrangement of parts between non-homologous chromosomes. A gene fusion may be created when the translocation joins two (2) otherwise separated genes. There are two (2) main types:

1. Balanced (Reciprocal or Non-Robertsonian): An even exchange of material with no genetic information extra or missing.

2. Unbalanced (Robertsonian): An unequal exchange of chromosome material resulting in extra or missing genes.

Applicable Coding

The Plan uses and adopts up-to-date Current Procedural Terminology (CPT) codes from the American Medical Association (AMA), International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) diagnosis codes developed by the World Health Organization and adapted in the United States by the National Center for Health Statistics (NCHS) of the Centers for Disease Control under the U.S. Department of Health and Human Services, and the Health Care Common Procedure Coding System (HCPCS) established and maintained by the Centers for Medicare & Medicaid Services (CMS). Because the AMA, NCHS, and CMS may update codes more frequently or at different intervals than Plan policy updates, the list of applicable codes included in this Plan policy is for informational purposes only, may not be all inclusive, and is subject to change without prior notification. Whether a code is listed in the Applicable Coding section of this Plan policy does not constitute or imply member coverage or provider reimbursement. Providers are responsible for reporting all services using the most up-to-date industry-standard procedure and diagnosis codes as published by the AMA, NCHS, and CMS at the time of the service.

Providers are responsible for obtaining prior authorization for the services specified in the Medical Policy Statement section and Limitation section of this Plan policy, even if an applicable code appropriately describing the service that is the subject of this Plan policy is not included in the Applicable Coding section of this Plan policy. Coverage for services is subject to benefit eligibility under the member’s benefit plan. Please refer to the member’s benefits document in effect at the time of the service to determine coverage or non-coverage as it applies to an individual member. See Plan reimbursement policies for Plan billing guidelines. Review the following Plan medical policies for further prior authorization requirements: Genetic Testing Guidelines and Pharmacogenetics (policy number OCA 3.726) and Infertility Services (policy number OCA 3.725). See the Plan’s reimbursement...
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Policy, Reimbursement Guidelines – Infertility Services (policy number 4.34) available at www bmchp org.

### CPT Codes

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<th>CPT Codes</th>
<th>Description: Codes Covered When Medically Necessary</th>
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<td>89290</td>
<td>Biopsy, oocyte polar body or embryo blastomere, microtechnique (for preimplantation genetic diagnosis); less than or equal to 5 embryos</td>
</tr>
<tr>
<td>89291</td>
<td>Biopsy, oocyte polar body or embryo blastomere, microtechnique (for preimplantation genetic diagnosis); greater than 5 embryos</td>
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**Clinical Background Information**

During preimplantation genetic diagnosis (PGD), one (1) or two (2) cells are removed by biopsy from the embryos created by in vitro fertilization (IVF) and tested. This cell biopsy is typically performed at the polar body (for maternal chromosomal abnormalities) or on the embryo at cleavage (8 cell) stage which occurs three (3) days after fertilization. Once the cell has been extracted, its genetic material can be amplified to analyze for single gene defect via polymerase chain reaction (PCR), most commonly used to identify Tay Sachs disease or cystic fibrosis.

An alternative method involves fluorescent in situ hybridization (FISH), a method which allows direct visualization of specific (but not all) chromosomes to determine the number or absence of chromosomes. This technique is utilized most commonly to screen for aneuploidy, gender determination, or to identify chromosomal translocations. Although FISH cannot be used to diagnose single genetic defect disorders, molecular techniques can be applied along with FISH to identify single gene defects such as microdeletions and duplications.

A third technique, called array comparative genome hybridization (aCGH), involves testing at either the 8 cell or more often, the blastocyst stage. This test may be used for 24 chromosome aneuploidy screening, as well as screening for unbalanced translocations and inversions and other types of abnormal losses and gains of chromosomal material.

PGD is used to screen out embryos carrying a genetic disease with the intended goal of a healthy pregnancy and offspring free of genetic abnormalities. Based on the results of genetic tests, parents and maternal-fetal medicine specialists are able to select or deselect which embryos to implant. Given that only unaffected embryos are transferred to the uterus for implantation, preimplantation genetic testing provides an attractive alternative to current in utero diagnostic procedures (i.e., amniocentesis or chorionic villus sampling), which are frequently followed by the difficult decision of selective pregnancy termination for affected fetuses. The American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology recommend the following guidelines for pre-implantation genetic testing:

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1. Before PGD is performed, genetic counseling must be provided.

2. PGD can reduce the risk for conceiving a child with a genetic abnormality carried by one (1) or both parents if that abnormality can be identified with tests performed on a single cell.

3. Prenatal diagnostic testing by traditional methods (amniocentesis or CVS) to confirm the results of PGD is encouraged strongly because PGD has technical limitations that include the possibility of false negatives (due to “allele drop-out” or other technical problems).

PGD should only be offered in centers where there is expertise in genetic counseling, molecular genetics, and embryology because it is imperative that patients be aware of the potential diagnostic errors, risks of the IVF procedure, and the unknown (though presumed low) risks of the embryo biopsy procedure to the future fetus.

References


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<th>Original Approval Date</th>
<th>Original Effective Date and Version Number</th>
<th>Policy Owner</th>
<th>Approved by</th>
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<tbody>
<tr>
<td>Regulatory Approval: N/A</td>
<td>01/01/12 Version 1</td>
<td>Medical Policy Manager as Chair of Medical Policy, Criteria, and Technology Assessment Committee (MPCTAC) and member of Quality Improvement Committee (QIC)</td>
<td>MPCTAC and QIC</td>
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<td>Internal Approval: 07/11/11: MPCTAC 07/27/11: QIC</td>
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<tr>
<td>06/01/12</td>
<td>Review for effective date 08/01/12. Referenced Plan policy, <em>Genetic Testing Guidelines</em>, policy number (OCA: 3.726). Revised the introductory paragraph in Applicable Coding section and updated references.</td>
<td>08/01/12 Version 2</td>
<td>06/20/12: MPCTAC 07/25/12: QIC</td>
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<td>06/01/13</td>
<td>Review for effective date 08/01/13. Revised title. Referenced applicable Plan policies. Revised Summary section. Reformatted Medical Policy Statement section and Limitations without changing criteria. Removed redundant text from Clinical Background Information section and added relevant documentation.</td>
<td>08/01/13 Version 3</td>
<td>06/19/13: MPCTAC 07/18/13: QIC</td>
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<td>06/01/14</td>
<td>Review for effective date 08/01/14. Revised Policy Summary, Description of Item or Service, Definitions, and Clinical Background Information sections. Moved criteria from the Summary section to the Medical Policy Statement section without changing Plan criteria. Revised introductory paragraph in the Applicable Coding section without changing the applicable code list. Updated references.</td>
<td>08/01/14 Version 4</td>
<td>06/18/14: MPCTAC 07/09/14: QIC</td>
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<td>Review for effective date 10/01/15. Updated References and Description of Item or Service section. Revised title and the Limitations section.</td>
<td>10/01/15 Version 5</td>
<td>06/17/15: MPCTAC 07/08/15: QIC</td>
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**Last Review Date**

11/25/15

**Next Review Date**

06/01/16

**Authorizing Entity**

QIC
Other Applicable Policies

Medical Policy - *Experimental and Investigational Treatment*, policy number OCA 3.12
Medical Policy - *Genetic Testing Guidelines and Pharmacogenetics*, policy number OCA 3.726
Medical Policy - *Infertility Services*, policy number OCA 3.725
Medical Policy - *Medically Necessary*, policy number OCA 3.14
Reimbursement Guidelines - *Infertility Services*, policy number 4.34

Disclaimer Information: *

Medical Policies are the Plan’s guidelines for determining the medical necessity of certain services or supplies for purposes of determining coverage. These Policies may also describe when a service or supply is considered experimental or investigational, or cosmetic. In making coverage decisions, the Plan uses these guidelines and other Plan Policies, as well as the Member’s benefit document, and when appropriate, coordinates with the Member’s health care Providers to consider the individual Member’s health care needs.

Plan Policies are developed in accordance with applicable state and federal laws and regulations, and accrediting organization standards (including NCQA). Medical Policies are also developed, as appropriate, with consideration of the medical necessity definitions in various Plan products, review of current literature, consultation with practicing Providers in the Plan’s service area who are medical experts in the particular field, and adherence to FDA and other government agency policies. Applicable state or federal mandates, as well as the Member’s benefit document, take precedence over these guidelines. Policies are reviewed and updated on an annual basis, or more frequently as needed. Treating providers are solely responsible for the medical advice and treatment of Members.

The use of this Policy is neither a guarantee of payment nor a final prediction of how a specific claim(s) will be adjudicated. Reimbursement is based on many factors, including member eligibility and benefits on the date of service; medical necessity; utilization management guidelines (when applicable); coordination of benefits; adherence with applicable Plan policies and procedures; clinical coding criteria; claim editing logic; and the applicable Plan – Provider agreement.

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