## Medical Policy

# Infertility Services

**Policy Number:** OCA 3.725
**Version Number:** 19
**Version Effective Date:** 09/01/22

## Impacted Products

- ☐ **All Products**
- ☐ NH Medicaid
- ☒ NH Medicare Advantage
- ☐ MA MassHealth ACO
- ☐ MA MassHealth MCO
- ☒ MA Qualified Health Plans/Employer Choice Direct
- ☐ MA Senior Care Options

Note: Disclaimer and audit information is located at the end of this document.

## Policy Summary

I. Infertility services are **covered services** for Plan Qualified Health Plans/ConnectorCare/ Employer Choice Direct (QHP) members and New Hampshire Medicare Advantage HMO members who meet ALL of the criteria in items A through D:

A. The member has Plan coverage for infertility treatment; AND

B. The Plan's medical criteria are met for coverage of infertility services, which are based on the member's medical history, diagnostic testing, and medical evaluations, and medical necessity criteria are met in the Clinical Criteria section and Limitations and Exclusions section; AND

C. The treating provider is a contracted network infertility services provider; AND

D. The member is in active infertility treatment.

**ALL prior authorization requests for covered infertility services for a member diagnosed with infertility require Plan Medical Director review and approval**. It will be determined during the Plan's prior authorization process if the service is considered medically necessary for the requested indication. Diagnostic tests and procedures provided in connection with an infertility evaluation before a confirmed infertility diagnosis ONLY require prior authorization when specified in a Plan medical policy and/or a *Plan Prior Authorization Code Look-Up Tool*.

**II. Plan Prior Authorization Requirements Table for QHP and New Hampshire Medicare Advantage HMO Members:** Review the Clinical Criteria section and Limitations and Exclusions section for medical necessity guidelines.

| ***Services Requiring Plan Prior Authorization – Member Must be Enrolled in the Plan When the Service is Provided*** |
|---|
| 1. Artificial insemination: Intracervical or intrauterine when done with donor sperm; i.e., the partner has a male factor infertility diagnosis; or donor sperm is being used as an alternative to preimplantation genetic testing (PGT) when a couple meets the criteria for PGT. *<br><br>2. Artificial insemination: Intracervical or intrauterine when done with non-donor (partner) sperm; and when there is at least one (1) patent fallopian tube; and spontaneous ovulation or normal ovarian reserve testing.<br><br>3. Assisted hatching (AH).<br><br>4. Retrieval, cryopreservation~~l~~, storage, and thawing (when necessary) of eggs/oocytes up to 12 calendar months for a member in **active fertility treatment** authorized by the Plan. Egg cryopreservation may be used for supernumerary (excess) oocytes that cannot be fertilized during a covered cycle of IVF (i.e., sperm not available or insufficient at the time of oocyte.<br><br>5. Cryopreservation, storage, and thawing of remaining embryos after a Plan-authorized IVF cycle up to 12 calendar months for a member in **active fertility treatment**; these embryos must be used before additional (fresh) IVF cycles according to Plan guidelines specified in the Clinical Criteria section for frozen embryo transfers.<br><br>6. One IVF cycle for oocyte recovery with cryopreservation and storage of EITHER oocytes or embryos (using own oocytes at age 43 or younger) up to 12 calendar months is covered for a female member/member with female reproductive organs age 44 or younger who is **NOT in active fertility treatment** for ANY of the following conditions, as specified below in item a or b:<br><br>a. Member will undergo a medical treatment that is likely to result in infertility (excluding voluntary sterilization), including but not limited to chemotherapy, radiotherapy, hormone therapy for the treatment of gender dysphoria likely to cause infertility, Plan authorized genital gender affirmation surgery for the treatment of gender dysphoria when the |

| ***Services Requiring Plan Prior Authorization – Member Must be Enrolled in the Plan When the Service is Provided*** |
|---|
| procedure is likely to result in loss of reproductive functioning, treatment with other gonadotoxic therapies, and/or risk-reducing bilateral salpingo-oophorectomy in a female member/ member with female reproductive organs with a BRCA1 and/or BRCA2 mutation; AND/OR<br><br>b. The member has a diagnosed medical condition expected to cause infertility, including but not limited to conditions such as primary ovarian insufficiency or documented chromosomal abnormalities causing reproductive dysfunction such as fragile X syndrome or gonadal dysgenesis with or without Turner syndrome. The member must have no prior history of sterilization and the cryopreserved oocytes or embryos are intended to be used by the member.<br><br>Both the medical treatment/condition and the expected outcome of infertility must be documented in the member's medical record. No infertility workup is required for coverage. Frozen embryo or oocyte thawing and transfer are covered when transferred back to the member. The chance of a live birth outcome is less than 5% for a female member/member with female reproductive organs at age 45 or older; therefore, members age 45 or older are NOT eligible for Plan coverage of donor oocytes or assisted reproductive technology (ART) services.<br><br>7. Retrieval/transfer with cryopreservation~~l~~, storage, culture (when necessary) of embryos up to 12 calendar months for a member in **active fertility treatment** authorized by the Plan (e.g., cryopreservation of remaining embryos after an authorized IVF cycle or cryopreservation of embryo in current IVF cycle due to high probability rate of adverse event if embryo transferred). Plan Medical Director review is required for individual consideration if cryopreserved embryos are not used before additional (fresh) IVF.<br><br>8. Donor oocyte (DO) which may include frozen oocyte from donor egg banking.<br><br>9. Electroejaculation.<br><br>10. Frozen embryo transfer (FET).<br><br>11. Gamete intra-fallopian transfer (GIFT).<br><br>12. Zygote intra-fallopian transfer (ZIFT).<br><br>13. Gonadotropins. *<br><br>14. In vitro fertilization and embryo transfer (IVF-ET). |

| ***Services Requiring Plan Prior Authorization – Member Must be Enrolled in the Plan When the Service is Provided*** |
|---|
| 15. Intracytoplasmic sperm injection (ICSI) for the treatment of male factor infertility/infertility related to male reproductive organs when required for infertility treatment after the member's treatment for gender dysphoria or when using frozen oocytes during infertility treatment due to the hardening of the zona pellucida during cryopreservation/ thawing of oocytes.<br><br>16. Microsurgical epididymal sperm aspiration (MESA) for congenital absence or congenital obstruction of the vas deferens or for urologic surgery or inguinal surgery that is likely to result in an acquired obstructive disorder of the vas deferens (excluding voluntary sterilization). The treatment and the expected outcome of infertility must be documented in the member's medical record.<br><br>17. Sperm collection, cryopreservation, and storage/banking up to 12 calendar months for a male member/member with male reproductive organs who is already in **active infertility treatment** authorized by the Plan who also has any of the conditions listed in items a through c (and the member is enrolled in the Plan during the timeframe for cryopreservation and storage):<br><br>a. Male member/member with male reproductive organs who has undergone MESA for congenital absence or congenital obstruction of the vas deferens; OR<br><br>b. Male member/member with male reproductive organs who will undergo medical treatment (excluding voluntary sterilization) that is expected to cause infertility, including chemotherapy, pelvic radiotherapy, hormone therapy for the treatment of gender dysphoria likely to cause infertility, Plan authorized genital gender affirmation surgery for the treatment of gender dysphoria when the procedure is likely to result in loss of reproductive functioning (e.g., hysterectomy, oophorectomy, orchiectomy) or treatment with other gonadotoxic therapies; OR<br><br>c. Male member/member with male reproductive organs has a medical or psychological diagnosis (e.g., situational anxiety) documented in the member's medical record to support the medical necessity of sperm collection and cryopreservation before the scheduled infertility procedure. The condition may not be the result of previous voluntary sterilization.<br><br>18. Sperm collection, cryopreservation, and storage/banking up to 12 calendar months for a male member/member with male reproductive organs **NOT in active fertility treatment** before the member undergoes medical treatment that is expected to cause infertility, including but not limited to chemotherapy, pelvic radiotherapy, hormone therapy for the treatment of gender dysphoria likely to cause infertility, Plan authorized genital gender affirmation surgery for the treatment of gender dysphoria when the procedure is likely to result in loss of reproductive functioning and/or treatment with other gonadotoxic therapies. The member |

| ***Services Requiring Plan Prior Authorization – Member Must be Enrolled in the Plan When the Service is Provided*** |
|---|
| must have no prior history of sterilization and sperm are intended to be used by the member. Both the medical treatment and the expected outcome of infertility from this treatment must be documented in the member's medical record. No infertility workup is required for coverage. Thawing and transfer services are covered for a Plan member.<br><br>19. Testicular tissue cryopreservation‡ in adult members with azoospermia in conjunction with the testicular biopsy only to identify sperm in preparation for an intracytoplasmic sperm injection procedure, if sperm are found. |

**Notes for Plan Prior Authorization Requirements Table:**

* Refer to the Plan's formulary and applicable pharmacy policies for medication coverage and prior authorization requirements (e.g., *Infertility Medications* pharmacy policy). Review the Plan's *Preimplantation Genetic Testing* medical policy, policy number OCA 3.726, for medical criteria for preimplantation genetic testing.

‡ When Plan guidelines are met for cryopreservation of oocytes, embryos, or sperm, all applicable assisted reproductive technology (ART) services to adequately utilize the cryopreserved oocytes, embryos, or sperm to improve fertility rates would be considered medically necessary when it is a covered service and service-specific criteria are met in the Clinical Criteria section.

± Diagnostic tests and procedures provided in connection with an infertility evaluation and/or treatment will NOT require prior authorization UNLESS otherwise specified in the Clinical Criteria, Limitations and Exclusions, and/or Applicable Coding sections of this policy.

II. Massachusetts State-Mandated Services for QHP Members:

The definition of infertility and mandated coverage of infertility services are specified below in items A and B. The external review guidelines and nondiscrimination provisions related to this service are outlined in items C and D.

A. Definition of Infertility for QHP Members:
According to **Massachusetts law** (211 CMR 37.03 and 211 CMR 37.09 issued under the authority of MGL ch 175 section 47H, MGL ch 176A section 8K, MGL ch 176B section 4J, MGL ch 176G section 4), infertility services may be considered medically necessary and covered by the Plan with **infertility defined** as "the condition of an individual who is unable to conceive or produce conception during a period of:

1. 12 months or more of actively trying but unable to conceive or produce conception for a female member/member with female reproductive organs **age 35 or younger** on the date of service (consistent with the age guidelines specified in Massachusetts law); ◊ OR

2. Six (6) months or more of actively trying but unable to conceive or produce conception for a female member/member with female reproductive organs **over the age of 35 (i.e., age 36 or older)** on the date of service (consistent with the age guidelines specified in Massachusetts law). ◊

For purposes of meeting the criteria for infertility, if a person conceives but is unable to carry that pregnancy to live birth, the period of time she attempted to conceive prior to achieving that pregnancy, shall be included in the calculation of the one (1) year or six (6) month period, as applicable." (Definition source: 211 CMR 37.03.); AND

◊ Note: The definition of infertility in MGL c. 175, section 47H **no longer** contains a requirement that the person seeking treatment must be otherwise healthy. If the member is able to conceive but is unable to carry the pregnancy to live birth, the period of time the member attempted to conceive prior to achieving that pregnancy or after a loss of pregnancy shall be included in the calculation (i.e., the 12-month timeframe for a member age 35 or younger or 6-month period for members over the age of 35, as applicable).

B. Mandated Benefit Coverage (as Specified in 211 CMR 37.05) After a Diagnosis of Infertility for QHP Members:

The following procedures in items 1 through 9 must be covered if medically necessary:

1. Artificial insemination (AI) and intrauterine insemination (IUI);

2. Assisted hatching;

3. Cryopreservation of eggs/oocytes;

4. Gamete intrafallopian transfer (GIFT);

5. In vitro fertilization and embryo transfer (IVF-ET);

6. Intracytoplasmic sperm injection (ICSI) for the treatment of male factor infertility/infertility related to male reproductive organs;

7. Sperm, egg, and/or inseminated egg procurement and processing, and banking of sperm or inseminated eggs, to the extent such costs are NOT covered by the donor's insurer, if any;

8. Zygote intrafallopian transfer (ZIFT); AND

9. All other non-experimental infertility procedures.

C. External Review (as Specified in 958 CMR 128.020 and 211 CMR 52.03) for Requested Infertility Services for QHP Members:

When the Plan denies coverage of infertility treatment based on medical necessity, a determination that a procedure is experimental or investigational, or other Plan criteria or guidelines, then these final adverse determinations will be eligible for external review.

II. Section 1557 of the Affordable Care Act (ACA) - Nondiscrimination Provision Related to Infertility Services for All Plan Members with Covered Infertility Services:

The federal law prohibits discrimination on the basis of race, color, national origin, sex, age, or disability in health programs or activities. Transgender and gender non-conforming members have access to the same covered infertility services available to all Plan members when applicable Plan criteria are met according to reproductive capacity. The infertility criteria for a female member also apply to a transgender or gender non-conforming individual with female reproductive organs. Infertility criteria for a male member also apply to a transgender or gender non-conforming member with male reproductive organs. Transgender or gender non-conforming members who no longer have reproductive capacity will be eligible for medically necessary infertility services (e.g., cryopreservation, donor services) consistent with all Plan members who have medical conditions or undergo medical treatments that are likely to result in infertility (according to benefit coverage specified in the member's applicable benefit documents).

## Clinical Criteria

**ALL prior authorization requests for covered infertility services REQUIRE Plan Medical Director review and approval.** The Plan considers infertility services medically necessary for a member when Plan medical criteria are met and documented in the member's medical record and the member has **coverage for infertility treatment**. Review the member's applicable evidence of coverage or benefit document available on the website.

Criteria included in item I (general eligibility requirements), item II (evaluation requirements for coverage), and item III (service-specific criteria for each requested service) must be met for the requested infertility service(s):

I. General Eligibility Requirements for Coverage of Infertility Services:

**Diagnostic tests and procedures provided in connection with an infertility evaluation will NOT require prior authorization UNLESS specified otherwise in Plan documents** available on the website, including but are not limited to the following documents: an applicable Plan medical policy for the requested service(s), including the Policy Summary, Clinical Criteria, Limitations and Exclusions, and Applicable Coding sections of the policy; *Prior Authorization CPT Code Look-up Tool*; *Prior Authorization HCPCS Code Look-up Tool*; and *Prior Authorization/Notification Requirements Matrix*. Verify the Plan's prior authorization requirements categorized by the requested service type and/or the appropriate, industry-standard procedure

code(s). The member must meet ALL applicable eligibility requirements in items A through J to be covered for infertility treatment:

A. The member is a Massachusetts resident enrolled in the QHP product or is a New Hampshire Medicare Advantage HMO member; AND

B. ONE (1) of the following applicable criteria is met in items 1 through 5:

1. The member meets the Plan's definition of infertility when the member has a **diagnosis of infertility** and ANY of the criteria in item a or item b are met:

    a. 12 months or more of actively trying but unable to conceive or produce conception for a female member/member with female reproductive organs **age 35 or younger** on the date of service (consistent with the age guidelines specified in Massachusetts law); ◊ OR

    b. Six (6) months or more of actively trying but unable to conceive or produce conception for a female member/member with female reproductive organs **over the age of 35** (i.e., age 36 or older) on the date of service (consistent with the age guidelines specified in Massachusetts law); OR

2. The member meets the Plan's definition of infertility when the member is **expected to be infertile due to hormone therapy** used for the treatment of gender dysphoria or genital gender reassignment surgery that has resulted in the loss of reproductive functioning or a member treated for gender dysphoria meets the definition of infertility specified above in item IB1; OR

3. The member meets the Plan's definition of infertility when the member **is expected to be infertile** due to ONE (1) of the following conditions, as specified below in items a through c and outlined in the Policy Summary section:

    a. The member has received or will receive a medical **treatment** that is likely to result in infertility, with BOTH the medical treatment and the expected outcome of infertility from this treatment documented in the member's medical record, including but not limited to treatments such as chemotherapy, radiation therapy, hormone therapy, and/or gonadotoxic therapy; OR

    b. A member's **medical condition** is likely to result in infertility, with BOTH the medical condition and the expected outcome of infertility from this medical condition documented in the member's medical record, including but not limited conditions such as primary/premature ovarian insufficiency, tubal factor infertility, pelvic adhesive disease, endometriosis, documented chromosomal abnormalities causing reproductive dysfunction (such as fragile X syndrome or gonadal dysgenesis with or without Turner syndrome), and/or member's biological partner has male factor infertility; OR

c. The member has had or will receive a medical/surgical **procedure** that is likely to result in infertility, with BOTH the procedure and the expected outcome of infertility documented in the member's medical record (including but not limited to procedures such as risk-reducing bilateral salpingo-oophorectomy in a female member/member with female reproductive organs with a BRCA1 and/or BRCA2 mutation, or male member/member with male reproductive organs who has undergone MESA for congenital absence or congenital obstruction of the vas deferens); OR

4. A female member/member with female reproductive organs with an **ovulation disorder** meets the Plan's definition of infertility when the member's ovulation disorder has been treated according to ONE (1) of the guidelines in item a or item b:

   a. Member **age 35 or younger** on the date of service with an ovulation disorder has been treated according to the following guideline:

      Treated with ovulation induction medication(s) with or without intrauterine insemination (IUI) for **6 cycles,** has been unable to conceive (with these IUI cycles counted toward the maximum **covered cycle limit of 3 IUI cycles per member's lifetime for the treatment of infertility** and covered by the Plan ONLY when the member has a diagnosis of infertility), and ALL applicable medical necessity criteria are met for the treatment of infertility using IUI or IVF, as specified in item V (Service-Specific Criteria) of this Clinical Criteria section; OR

   b. Member **age 36 or older** on the date of service whose ovulation disorder has been treated according to the following guideline:

      Treated with ovulation induction medication(s) with or without intrauterine insemination (IUI) for **6 cycles,** has been unable to conceive (with these IUI cycles counted toward the maximum **covered cycle limit of 3 IUI cycles per member's lifetime for the treatment of infertility** and covered by the Plan ONLY when the member has a diagnosis of infertility), and ALL applicable medical necessity criteria are met for the treatment of infertility using IUI or IVF, as specified in item V (Service-Specific Criteria) of this Clinical Criteria section; OR

**5.** Coverage of infertility benefits of an **otherwise healthy** female member/member with female reproductive organs **WITHOUT documented infertility and NO exposure to sperm** requires that ONE (1) of the criteria is met in item a or item b:

   a. Member age **35 or younger** on the date of service:

      An otherwise healthy female member/member with female reproductive organs with no exposure to sperm will meet the Plan's definition of infertility after a minimum of

6 or more cycles of home insemination, IUI, or intracervical insemination/ICI (with ICI used as an alternative to IUI if the treating provider has determined that IUI is technically difficult for the member) and the cycles do NOT result in a live birth.

When an otherwise healthy female member/member with female reproductive organs with no exposure to sperm does NOT meet the Plan's definition of infertility, the initial procedures used to attempt pregnancy (e.g., IUI cycles) would NOT be covered by the Plan before a diagnosis of infertility is established. The member would meet diagnostic criteria for infertility and the Plan's eligibility guidelines infertility services after the sixth cycle of home insemination, IUI, or ICI not resulting in a live birth. Additional IUI cycles would be covered by the Plan and counted toward the member's covered treatment limit of 3 IUI cycles per member's lifetime after the member meets the diagnostic criteria for infertility and medical necessity criteria are met; OR

b. Member **age 36 or older** on the date of service:

An otherwise healthy female member/member with female reproductive organs with no exposure to sperm will meet the Plan's definition of infertility after a minimum of 3 or more cycles of home insemination, IUI, or ICI (with ICI used as an alternative to IUI if the treating provider has determined that IUI is technically difficult for the member) that do NOT result in a live birth.

When an otherwise healthy female member/member with female reproductive organs with no exposure to sperm does NOT meet the Plan's definition of infertility, the initial procedures used to attempt pregnancy (e.g., IUI cycles) would NOT be covered by the Plan before a diagnosis of infertility is established. The member would then meet diagnostic criteria for infertility and the Plan's eligibility guidelines infertility services after the third cycle of home insemination, IUI, or ICI not resulting in a live birth. Additional IUI cycles would be covered by the Plan and counted toward the member's covered treatment limit of 3 IUI cycles per member's lifetime after the member meets the diagnostic criteria for infertility and medical necessity criteria are met; AND

C. The member must be an individual in whom fertility would naturally be expected as specified in this Plan policy (but does NOT require that the member seeking treatment is otherwise healthy) or the member has had a documented medical condition, procedure, or treatment that has caused infertility and the member's infertility diagnosis and etiology are documented in the member's medical record; medically necessary infertility services for an infertile member may include but are not limited to cryopreservation or donor services when applicable Plan criteria are met; AND

D. Clinical factors to be considered in making the coverage decision regarding infertility may include but are not limited to the following: age, hormone levels, medical history, smoking status, and/or a member's body mass index (BMI); AND

E. Coverage for IUI for a female member/member with female reproductive organs **with exposure to sperm and in the absence of a male factor infertility**/infertility related to male reproductive organs with the present male partner/present partner with male reproductive organs requires that the female member/member with female reproductive organs demonstrates the member's own infertility by own inability to conceive through exposure to normal sperm through a period that meets ONE (1) criteria in item 1 or item 2:

   1. 12 menstrual cycles (for a female member/member with female reproductive organs) when the member is age 35 or younger; OR

   2. 6 menstrual cycles (for a female member/member with female reproductive organs) when the member is age 36 or older; AND

F. The infertile member must be the recipient of the intended infertility services; AND

G. Coverage for infertility treatment is based on the member's individual medical history and should demonstrate greater than or equal to a 5% chance of a live birth outcome; AND

H. For an infertile female member/infertile member with female reproductive organs with a clear medical contraindication to pregnancy who is using the member's own oocytes and self-paying for a gestational carrier, the Plan will cover the infertile member's infertility evaluation, stimulation, retrieval, and fertilization; AND

I. Assisted reproductive technology (ART) procedures must be performed by one of the Plan's contracting ART providers; AND

J. Coverage of medications:
Injectable/non-injectable medications (NOT experimental) must be given in conjunction with covered infertility procedures in accordance with the Plan's eligibility requirements, and the member must be entitled to prescription drug coverage under the terms of the member's benefit plan. Refer to the applicable Plan documents on the website for medication coverage and prior authorization requirements, including the drug formulary, Plan guidelines by drug name, and pharmacy policies (e.g., *GnRH Agents* and *Infertility Medications* pharmacy policies); AND

II. Evaluation Requirements for Coverage of Infertility Services by Reproductive Capacity:

ONE (1) of the criteria must be met in item A or Item B:

A. Evaluation of a Female Member/Member with Female Reproductive Organs:

To be considered for eligibility for infertility treatment approval and cycle initiation, ALL of the evaluations/tests in items 1 through 8 must be completed and documented:

1. Thyroid stimulating hormone (TSH); AND

2. Rubella immunity status (Rubella titer); all non-immune members must be vaccinated and wait 1 month thereafter before repeating Rubella testing and again seeking approval for assisted reproductive technology (ART); AND

3. Urine or serum cotinine testing for a member with a history of tobacco/nicotine use:

   Urine or serum cotinine levels must be obtained **within the past 30 calendar days** prior to the date of the requested infertility services for a member/partner with a history of tobacco/nicotine use (i.e., smoking and/or the use of smokeless tobacco products) within the **past 12 calendar months**. The member/partner must remain compliant with a tobacco cessation program/strategy for infertility services to be considered medically necessary. **Cotinine levels documenting nicotine exposure that is consist with active or recent smoking and/or use of nicotine products must be reported to a Plan Medical Director by the treating provider during the prior authorization process**. Smoking by a male partner/partner with male reproductive organs and/or female partner/partner with female reproductive organs negatively impacts the success rates for assisted reproductive technologies; AND

4. Tubal disease has been evaluated with standard testing for the evaluation of tubal status using hysterosalpingogram (HSG), as well as sonohysterogram with tubal patency assessment (also known as sonohysterosalpingogram/sono-HSG, hysterosalpingo contrast sonography/HyCoSy, or laparoscopic chromopertubation); AND

5. BOTH ovarian reserve criteria must be met in items a and b:

   a. ONE (1) or more of the following tests in item (1) or item (2) are documented:

      (1) Anti-Müllerian hormone (AMH) levels at least annually (for a female member/member with female reproductive organs) when the member is age 39 or younger on the date of service; OR

      (2) Estradiol (E2) test and FSH test at least annually on cycle day 3 (for a female member/member with female reproductive organs) when the member is age 39 or younger on the date of service; AND

   b. Clomiphene citrate challenge test (CCCT):

      ONE (1) criteria is met in item (1) or item (2):

      (1) Testing meets BOTH guidelines in item (a) and item (b):

(a) Tested annually (for a female member/member with female reproductive organs) for a member age 40 or older on the date of service; AND

(b) Day 3 FSH test meets the criteria in either item i or item ii:

i. Day 3 FSH test repeated every 6 calendar months for any female member/member with female reproductive organs age 40 or older on the date of service; OR

ii. Day 3 FSH test repeated annually for a female member/member with female reproductive organs age 39 or younger; OR

(2) CCCT test does NOT need to be repeated after the initial result if BOTH criteria are met in items (a) and (b):

(a) Female member/member with female reproductive organs has a history of an abnormal CCCT; AND

(c) Is eligible for donor egg services; AND

6. Normal uterine cavity evaluation (performed with HSG, sonohysterogram, or hysteroscopy) must occur within 1 year prior to any ART cycle; AND

7. A female member/member with female reproductive organs with BMI ≥ 35 must submit documentation of an anesthesiology consult within 6 calendar months prior to the initial approval of coverage of an IVF cycle; AND

8. A female member/member with female reproductive organs with BMI ≥ 40 or BMI < 18 must submit BOTH of the following documentation prior to the initial approval of assisted reproductive treatment including IUI and IVF, as specified below in item a and item b:

a. Nutrition consult within the previous 6 calendar months; AND

b. Maternal fetal medicine/high risk obstetrics consult within the previous 6 calendar months; OR

Note: BMI may affect IVF outcomes at the level of the oocyte. Low or high BMI (outside of the normal range) is associated with infertility and maternal and fetal complications. The Plan recommends a nutrition consult (for a female member/member with female reproductive organs) when the member has a BMI ≤ 18 or BMI ≥ 35 and is requesting infertility treatment. Low or high BMI may also negatively affect male fertility.

B. Evaluation of a Male Member/Member with Male Reproductive Organs:

To be considered for eligibility for infertility treatment approval, ALL evaluations in items 1 through 4 must be completed and documented:

1. Semen analysis must be submitted within 1 year of treatment; AND

2. Urine or serum cotinine testing for a member/partner with a history of tobacco/nicotine use:

   Urine or serum cotinine levels must be obtained **within the past 30 calendar days prior to the date of the requested infertility services** for a member with a history of tobacco/nicotine use (i.e., smoking and/or the use of smokeless tobacco products) within the **past 12 calendar months**. The member/partner must remain compliant with a tobacco cessation program/strategy for infertility services to be considered medically necessary. **Cotinine levels documenting nicotine exposure that is consist with active or recent smoking and/or use of nicotine products must be reported to a Plan Medical Director by the treating provider during the prior authorization process**. Smoking by a male partner/partner with male reproductive organs and/or female partner/partner with female reproductive organs negatively impacts the success rates for assisted reproductive technologies; AND

3. Evaluation by a urologist or reproductive endocrinologist; AND

4. ALL criteria in items a through d are required (for a male member/member with male reproductive organs) found to have abnormal semen analysis with severe male factor infertility/infertility related to male reproductive organs (total motile sperm [TMS] count < 10 million) requesting coverage for donor sperm or ART/ICSI:

   a. Evaluation by an infertility specialist/urologist; AND

   b. Two (2) semen analyses including pH and volume; FSH and testosterone levels would be included with the semen analyses for obstructive azoospermia, sperm count < 5 million/mL, or if recommended by the infertility specialist/urologist; AND

   c. Karyotyping and Y chromosome microdeletion (YCMD) for non-obstructive azoospermia, obstructive azoospermia, and for all semen analyses with concentration of < 5 million/mL;‡ AND

   d. Cystic fibrosis screening for male member/member with male reproductive organs with obstructive azoospermia with congenital absence of the vas deferens (CAVD) and karyotyping;‡ AND

‡ Note: The Plan's prior authorization requirements for genetic testing are based on the type of genetic test requested, indication(s) for testing, and if the test is ordered, administered, and processed by participating providers and participating laboratories (or non-participating providers and non-participating laboratories). Review the Plan's applicable genetic testing medical policy or Plan-adopted InterQual® guidelines for medical necessity criteria for the requested genetic test.

## III. Service-Specific Criteria:

In addition to meeting applicable criteria specified above in items I and II, the **member must ALSO meet the applicable service-specific criteria** in items A through F for ALL requested services:

A. Gonadotropin Stimulation with Intrauterine Insemination (IUI) - ART Coverage Criteria:

There is a maximum **cycle limit of 3 IUI cycles per member's lifetime for the treatment of infertility when the Plan's** general eligibility requirements for coverage of infertility services are met (as specified in item I of this Clinical Criteria section); it is typically more appropriate after this point to move from IUI on to IVF-based assisted reproductive technology (ART) for the treatment of infertility. *The Plan's IUI lifetime limit for the treatment of infertility shall INCLUDE IUI treatment cycles completed by the member and covered by the Plan and/or another payer/insurer before Plan membership (AFTER a member's diagnosis of infertility according to Plan guidelines).* **IUI cycles used for the treatment of infertility do NOT count towards the cycle limit of 6 IVF cycles per member's lifetime for the treatment of infertility; IVF cycles used for the treatment of infertility do NOT count towards the 3 cycle coverage limit for IUI cycles for the treatment of infertility.**

ALL criteria in items 1 through 3 are met for gonadotropin stimulation with IUI:

1. Age-specific guidelines:

ONE (1) of the criteria is met in item a or item b:

a. Gonadotropin (FSH) treatment and IUI are covered for a female member/member with female reproductive organs who has a diagnosis of infertility and meets the Plan's infertility definition, the member is ovulatory, the sperm used for IUI will be high quality, and ONE (1) of the age-specific criteria is met in items (1) through (3):

(1) Female members/members with female reproductive organs age 39 or younger:

Within the past 12 calendar month, BOTH of the tests in items (a) and (b) are obtained and documented:

(a) E2 level on cycle day 3 with E2 level < 100 pg/mL (unless there is a clear medical reason for an estradiol level >100, in which case the estradiol level and FSH levels are repeated in a subsequent month; AND

(b) Day 3 FSH test; OR

(2) Female members/members with female reproductive organs aged 40 to 41:

ALL criteria are met in items (a) through (c):

(a) CCCT is required annually; AND

(b) FSH level is < 15 mIU/ml on cycle day 3 and cycle day 10 (tested within the past 6 calendar months); AND

(c) E2 level < 100 pg/mL on cycle day 3 (tested within the past 6 calendar months); OR

(3) Female members/members with female reproductive organs age 42 to 44:

ALL criteria are met in items (a) through (c):

(a) CCCT is required annually; AND

(b) FSH level is < 12 mIU/ml on cycle day 3 and cycle day 10 (tested within the past 6 calendar months); AND

(c) E2 level < 100 pg/mL on cycle day 3 (tested within the past 6 calendar months); OR

b. Female members/members with female reproductive organs age 45 or older will NOT be covered for infertility treatment and/or related services, including but not limited to IUI and/or gonadotropins or IVF cycles using their own eggs (even with a normal clomiphene citrate challenge test/CCCT), as the chance of a live birth outcome is less than 5%. These members should discuss alternative intervention with their provider. Individual consideration may be conducted by a Plan Medical Director if there is significant evidence to support that this member has 5% or greater chance of a live birth outcome. If services are approved by the Plan Medical Director, the member may use the members own previously cryopreserved oocytes if preserved at age 43 or younger. Members age 45 or older are NOT eligible for Plan coverage of donor oocytes; AND

Note: According to data included in the Centers for Disease Control and Prevention Assisted Reproductive Technology (ART) Success Rates Reports, females/individuals

with female reproductive organs who are 45 years of age or older have experienced approximately a 2% rate of live births and individuals age 43-44 experienced approximately a 5% rate of live births with ART.

2. Female members/members with female reproductive organs who have been denied IVF services are generally NOT appropriate candidates for FSH/IUI cycles. Exceptions will be considered by a Plan Medical Director and based upon an individual's medical history; AND

3. IUI treatments are **NOT covered** after a female member/member with female reproductive organs **has done and failed to deliver with IVF** (since there is no study proving these IUI cycles have a 5% or greater live birth rate in women/individuals with ovaries and uteri who have failed prior IVF treatment), EXCEPT when switching to un-medicated IUIs (or either medicated or un-medicated IUI when the member has an ovulation disorder) with donor sperm due to male factor infertility (infertility related to male reproductive organs) in the member's present male partner/present partner with male reproductive organs. In this case, IUI will be covered AFTER a failed IVF cycle (using a biological male partner's sperm) when the female member/member with female reproductive organs is switching to an un-medicated IUI with donor sperm (due to male factor infertility in the members' present biological male partner) and all other applicable criteria are met for IUI.

B. In Vitro Fertilization (IVF) - ART Coverage Criteria:

While IUI is NOT required before IVF, IUI treatments are **NOT covered** after a female member/member with female reproductive organs **has done and failed to deliver with IVF (even after the IVF cycles for the member's lifetime maximum have been utilized).** ALL applicable criteria in items 1 through 7 must be met for IVF and related services:

1. General Guidelines for IVF:

IVF is a covered benefit for female members/members with female reproductive organs who meet infertility criteria as defined in this medical policy (including the definition of infertility in item IA1 and general eligibility requirements for coverage of infertility services in item II) when fertility is otherwise expected as a natural state; AND

Note: A clomiphene citrate challenge test (CCCT) needs to be completed annually with the day 3 FSH and E2 levels repeated every 6 calendar months for any female member/member with female reproductive organs ≥ 40 years of age.

2. Urine or Serum Cotinine Testing for a Member with a History of Tobacco/Nicotine Use:

Urine or serum cotinine levels must be obtained **within the past 30 calendar days prior to ANY fresh cycle of IVF** for a member/partner with a history of tobacco/nicotine use (i.e., smoking and/or the use of smokeless tobacco products) within the **past 12 calendar**

**months**. The member must remain compliant with a tobacco cessation program/strategy for infertility services to be considered medically necessary. **Cotinine levels documenting nicotine exposure that is consist with active or recent smoking and/or use of nicotine products must be reported to a Plan Medical Director by the treating provider during the prior authorization process**. Smoking by a male partner/partner with male reproductive organs and/or female partner/partner with female reproductive organs negatively impacts the success rates for assisted reproductive technologies; AND

3. Embryo Transfer Guidelines:

   The American Society for Reproductive Medicine (ASRM) and the Society for Assisted Reproductive Technology (SART) recommend the use of elective single embryo transfer (eSET) to reduce multiple gestations when clinically appropriate. Elective eSET should be considered for the member according to ASRM and SART guidelines in effect of the prior authorization request for services and include appropriate patient education and meet ANY criteria in item a or item b:

   a. Female member/member with female reproductive organs will utilize eSET according to current ASRM and SART guidelines (as well as taking into consideration the member's prognosis, embryo quality, and the success rates of the utilized cryopreservation program); OR

   b. The treating infertility provider has determined that the female member/member with female reproductive organs does not meet current ASRM and SART guidelines for eSET; AND

4. Age-Specific Guidelines for IVF:

   Age-related infertility is NOT a covered benefit and is demonstrated by an abnormal CCCT in a female member/member with female reproductive organs age 41 or older. This is defined below in item a (for a woman/individual with female reproductive organs age 40 or 41) or item b (for a woman/individual with female reproductive organs age 42 or older):

   a. For a woman/individual with female reproductive organs age 40-41, infertility would be determined to be age-related if EITHER criteria is met in item (1) or item (2):

      (1) Cycle day 3 and/or cycle day 10 FSH levels ≥ 15 mIU/ml; OR

      (2) Cycle day 3 E2 level ≥ 100pg/mL; OR

   b. For a female member/member with female reproductive organs age 42 or older, infertility is determined to be age-related if EITHER criteria in item (1) or item (2) is met:

(1) Cycle day 3 and/or cycle day 10 FSH levels ≥ 12 mIU/ml; OR

(2) Cycle day 3 E2 level ≥ 100pg/mL; AND

5. Guidelines for Oocyte Use with IVF:

BOTH criteria in item a and item b must be met (when applicable for the member's age):

a. IVF using a member's own eggs (either own fresh oocytes or own cryopreserved oocytes) continues to be the treatment of choice for a female member/member with female reproductive organs who are age 43 or younger (with the use of resulting embryos). See the criteria specified below in item 6b of this section (Additional Services Related to IVF – Donor Egg/Donor Embryo/Own Cryopreserved Eggs/Own Cryopreserved Embryo Coverage and Criteria) for the use of donor oocytes, donor embryos, own cryopreserved oocytes, or own cryopreserved embryos; these additional criteria must be met when the service is applicable for the member's infertility treatment. For IVF using the member's own oocytes (either own fresh oocytes or own cryopreserved oocytes), the current guidelines established by the American Society for Reproductive Medicine (ASRM) and/or evidence-based recommendations from the Society of Assisted Reproductive Technologies (SART) in effect on the date of service must be followed for oocyte retrieval/thawing (including the number oocytes) and for the embryo transfer (including the number of embryos to be transferred) in the IVF cycle, adjusted as necessary for the member's age, age at which the oocytes were cryopreserved, prognosis, clinical condition and comorbidities, applicable past medical/surgical history, treatment plan, and the embryo quality and stage (as specified in current ASRM guidelines and/or SART recommendations) and documented in the member's medical record; AND

b. 5% or Greater Expected Live Birth:

ONE (1) of the criteria must be met in item (1) or item (2):

(1) For female members/members with female reproductive organs from age 40-44, the decision for coverage will be based upon a 5% or greater expected chance of a live birth outcome and a current history of infertility as a disease state verses an expected state associated with the menopausal transition; OR

(2) Female members/member with female reproductive organs age 45 or older requesting to use their own eggs will NOT be covered for infertility treatment and/or related services regardless of FSH levels or previous cycle response unless there is significant evidence that the chance of a live birth outcome is 5% or

greater using own previously cryopreserved oocytes by age 43 or earlier according to Plan guidelines; AND

6. Cycle Limits with IVF:

   There is a **maximum limit of 6 fresh IVF cycles (with ovarian hyper stimulation and subsequent egg retrieval) per member's lifetime** for the treatment of infertility when the Plan's general eligibility requirements for coverage are met for infertility services, whether the member's egg or a donor egg is used, and whether or not previous IVF cycles for the treatment of infertility were covered by the Plan. **The IVF cycle coverage limit includes cancelled fresh IVF cycles. The IVF cycle coverage limit does NOT include prior IVF cycles that resulted in a live birth, frozen embryo thaw cycles that do NOT include gonadotropin therapy, IUI cycles, and/or artificial insemination**.

   ALL guidelines must be met in items a through d:

   a. A cycle begins when a member fills her prescription for medications; AND

   b. Guidelines regarding cycle coverage limits are subject to individual consideration based on the member's particular clinical situation and unique medical circumstances; AND

   c. Fewer than 6 cycles may be covered when medically appropriate, including situations where additional cycles are unlikely (less than 5% probability) to result in a live birth; AND

   c. Previous assisted reproductive technology (ART) IVF cycles resulting in a live birth, thaw cycles in the absence of gonadotropin therapy, and IUI cycles do NOT count toward the 6 cycle coverage limit for IVF (and IVF cycles do NOT count toward the 3 cycle coverage limit for IUI). The maximum cycle limit of 6 IVF covered cycles per member's lifetime DOES include cancelled IVF cycles; AND

7. Additional Services Related to IVF:

   Applicable criteria are met in items a through c when additional IVF services are requested:

   a. Assisted Hatching Coverage Criteria:

      While not generally recommended (for female members/members with female reproductive organs) age 39 or younger, the service may be covered when ANY of the criteria is met in item (1) or item (2):

      (1) 2 to 3 (or more) failed IVF cycles that produced > 3 good quality embryos with failure to implant after embryo transfer; OR

(2) Documented prior pregnancy following IVF that required assisted hatching.

b. Donor Egg/Donor Embryo/Own Cryopreserved Egg/Own Cryopreserved Embryo Coverage and Criteria:

The current guidelines established by the American Society for Reproductive Medicine (ASRM) in effect on the date of service must be followed for the embryo transfer (including the number of embryos to be transferred in the IVF cycle, adjusted as necessary for the member's age, age of the egg source, prognosis, embryo quality and stage, and the member's clinical condition as specified in the ASRM guidelines and documented in the member's medical record). BOTH criteria in item (1) and item (2) must be met:

(1) Coverage Guidelines for Donor Egg/Donor Embryo/Own Cryopreserved Egg/Own Cryopreserved Embryo:

Recipient of a donor egg or donor embryo or member using own cryopreserved oocyte/own cryopreserved embryo/ART treatment may be covered for female members/members with female reproductive organs who meet infertility criteria, the member's fertility would be expected as a natural state, and when ANY criteria is met in items (a) through (c):

(a) Medical illness or medical treatment causes an unnatural egg/oocyte quantity for the member, including hormonal therapy, premature menopause or premature ovarian failure/ diminished ovarian reserve (with onset prior to age 40 with an FSH ≥ 15 mIU/ml on cycle days 3 or 10); OR

Note: A female member/member with female reproductive organs with abnormal FSH levels after age 40 is NOT eligible for coverage for the use of donor egg, donor embryo.

(b) Previously (before the age of 40) failed IVF in a female member/member with female reproductive organs with normal ovarian reserve for a member between ages 40 and 42 are defined below. ONE (1) of the following applicable criteria must be met for coverage for the use of a donor egg, donor embryo, own cryopreserved egg, own cryopreserved egg, own cryopreserved embryo, as specified in items i through iii:

i. For female members/members with female reproductive organs age 40-41, BOTH criteria in items (i) and (ii) are met:

(i) FSH levels which are < 15 mIU/ml on cycle day 3 and cycle day 10 for use of a donor egg; AND

(ii) E2 level is < 100 pg/mL on cycle day 3; OR

ii. For female members/members with female reproductive organs from age 42-44, BOTH of the criteria in items (i) and (ii) are met:

(i) FSH levels which are < 12 mIU/ml on cycle day 3 and cycle day 10; AND

(ii) E2 level is < 100 pg/mL on cycle day 3; OR

iii. Female members/members with female reproductive organs age 45 or older who are unable to achieve a viable birth outcome using their own eggs/embryos (either own fresh oocytes/embryos or own cryopreserved oocytes/embryos) are NOT covered for infertility services (including donor egg) since these members are experiencing normal and expected age-related decline in fertility and not changes consistent with a disease process; OR

(c) Absent ovaries from chemotherapy, radiation therapy, or surgical removal (which may include genital gender reassignment surgery) or female members/members with female reproductive organs who are born without ovaries; AND

(2) Donor Egg/Oocyte Criteria:

Anonymous or designated donors for oocytes (which may include frozen oocytes from donor egg banking) must be between the ages of 21 and 35 years of age at the time of the donation with cycle day 3 FSH levels < 10 mIU/ml and a day 3 E2 level < 80 pg/mL; OR

c. Frozen Embryo Transfers (FET) Coverage Criteria: **

BOTH criteria in items (1) and (2) must be met for FET (for either donor embryo or own cryopreserved embryo):

(1) Cryopreserved embryos must be used prior to authorization for additional fresh ART cycles under the following circumstances listed in either item (a) or item (b):

(a) Maternal age 35 or younger and 3 cryopreserved embryos of a similar developmental stage are available for transfer; OR

(b) Maternal age 36 or older and 4 cryopreserved embryos of a similar developmental stage are available for transfer; AND

(2) Members seeking coverage for FET must meet the definition of infertility and when fertility would be expected as a natural state.

** Note: It is recognized that some female members/members with female reproductive organs may elect to undergo an FET cycle regardless of the number of available embryos before proceeding to another fresh cycle. Such requests will be approved as long as the member continues to be eligible for coverage of infertility treatment. The current guidelines established by the American Society for Reproductive Medicine (ASRM) in effect on the date of service must be followed for the embryo transfer (including the number of embryos to be transferred in the IVF cycle, adjusted as necessary for the member's age, age at the time of embryo cryopreservation, prognosis, embryo quality and stage, and the member's clinical condition as specified in the ASRM guidelines and documented in the member's medical record).

C. Moderate Male Factor Infertility/Infertility Related to Male Reproductive Organs with IVF Only - ART Coverage Criteria:

Moderate male factor infertility or infertility related to male reproductive organs may impact a male member/member with male reproductive organs. IVF (alone) is approved for coverage if criteria are met for moderate male factor infertility or infertility related to male reproductive organs for semen analyses performed on 2 or more occasions at least 2 weeks apart containing EITHER criteria in item 1 or item 2:

1. A total motile sperm count on 2 semen analyses at least 2 weeks apart showing < 10 million total motile sperm; OR

2. A post-wash sperm count at the time of IUI (if applicable) between > 5 and < 10 million total motile sperm.

D. Severe Male Factor Infertility/Infertility Related to Male Reproductive Organs with IVF Plus Intracytoplasmic Sperm Injection (ICSI) - ART Coverage Criteria:

Severe male factor infertility/infertility related to male reproductive organs may impact a male member/member with male reproductive organs. IVF plus ICSI is approved for coverage if criteria are met for severe male factor infertility/infertility related to male reproductive organs as defined by ANY criteria in items 1 through 4:

1. Semen analysis on 2 separate specimens, performed at least 2 weeks apart, with either of the following results listed in item a or item b:

    a. < 5 million total motile sperm/ejaculate (pre-wash specimen); OR

    b. < 3 million total motile sperm (post-wash specimen); OR

2. The rate of standard fertilization in the previous cycle is poor (less than 50%); OR

3. When required for infertility treatment after the member's treatment for gender dysphoria; OR

4. When using frozen oocytes during infertility treatment due to the hardening of the zona pellucida during cryopreservation/thawing of oocytes. (Note: ICSI on cryopreserved oocytes is the preferred method for achieving fertilization, although limited data currently exist to support this procedure. Source: 2020 ASRM committee opinion for ICIS for non-male factor indications.)

E. Donor Sperm or Therapeutic Donor Insemination (TDI) Services – Coverage Criteria:
Plan provides coverage for donor sperm or TDI/IUI services for ANY condition listed in item 1 or item 2:

1. Plan members who have partners diagnosed with severe male factor infertility/infertility related to male reproductive organs; OR

2. In addition, coverage decisions regarding donor sperm services will be based upon ALL information listed in items a through c (as applicable):

    a. Member's past medical/infertility history including but not limited to past infertility interventions; AND

b. If approved by an Authorized Reviewer, the Plan may initially authorize up to 3 donor sperm /IUI cycles; AND

    c. After the authorization end date, or completion of the authorized cycles, the member must go through a new prospective review approval process for coverage of additional cycles; AND

F. In Vitro Fertilization Due to Inadvertent Ovarian Hyperstimulation during Preparation for a Stimulated Intrauterine Insemination Cycle - Coverage Criteria:

Coverage for IVF services due to inadvertent ovarian hyperstimulation during stimulation in preparation for a stimulated intrauterine insemination cycle may be approved when ALL criteria in items 1 through 3 are met:

1. Member has a diagnosis of infertility; AND

2. Member is eligible for coverage of medically necessary infertility treatment as defined by the Plan and ALL criteria are met in items a through c:

    a. Member is 39 years of age or younger with an infertility diagnosis; AND

    b. The estradiol (E2) level is greater than 800 pg/mL; AND

    c. ANY criteria in items (1) through (3) is met:

        (1) There are at least 3 or more follicles > 16mm; OR

        (2) There are 4-8 follicles that are greater than or equal to 14mm; OR

        (3) There are a large number of smaller follicles on day the decision is made to convert; AND

3. If the member is age 41 or older, it is not Medically Necessary to convert an IUI cycle to IVF due to ovarian hyperstimulation unless E2 is > 2000 and therefore coverage will be based on prior cycle response and individual history.

**Note: Members must receive IVF services with a Plan contracted ART provider.** When considering infertility treatment, the Plan recommends that treating providers and members review and implement (when clinically appropriate) current recommendations from public health agencies/organizations that establish industry-standard guidelines (e.g., Centers for Disease Control and World Health Organization), as well as industry-standard professional guidelines established to improve clinical outcomes for reproductive health, maternal care, and/or infant/child health (e.g., clinical practice guidelines from the American Academy of Pediatrics, American College of Obstetricians and Gynecologists, American Society for Reproductive Medicine, and Society for Assisted Reproductive Technology). An example of a clinical guideline related to a public health issue is the "Guidance for Providers Caring for Women and Men of Reproductive Age with Possible Zika Virus Exposure" developed by the American Society for Reproductive Medicine.

## Limitations and Exclusions

I. Unless specified otherwise in the member's applicable benefit document or the Plan Prior Authorization Requirements Table included in the Policy Summary section of this policy, infertility services are ONLY covered by the Plan for a member with a documented diagnosis of infertility.

II. The Plan either does NOT cover or limits the services specified below in items A through Z. Individual consideration by a Plan Medical Director will be conducted for prior authorization requests for any of these services within the member's benefit guidelines.

A. Any assisted reproductive technology (ART) procedure or related infertility treatment that does NOT meet applicable Plan criteria in the Policy Summary or Clinical Criteria sections requires individual consideration by a Plan Medical Director. Applicable clinical information must be submitted to the Plan by the treating provider, including but is not limited to the following: member's medical, surgical, and infertility history (of member and partner, as applicable); findings from physical examination; menstrual history (when applicable); documentation of preconception counseling to optimize natural fertility (when applicable) and promote maternal and neonatal health; treatment to date and associated clinical outcomes; results of diagnostic work up and/or other pertinent testing to investigate contributing factors (e.g., semen analysis, hormone levels, genetic testing‡, hysterosalpingogram, hysteroscopy, sonohysterogram, laparoscopy, pelvic ultrasound, vasography, scrotal ultrasonography); the member's individualized treatment plan; and documentation of the medical necessity for the requested infertility service(s). Review the Plan's *Clinical Review Criteria* administrative policy, policy number OCA 3.201, for a description of how the Plan makes the utilization determination for the requested service(s) based on established clinical review criteria and the member's condition and other unique circumstances.

B. Any assisted reproductive technology (ART) procedure or related/add-on treatments that are deemed experimental or investigative or NOT medically necessary based on the scientific body of evidence with input from the American Society of Reproductive Medicine, the American College of Obstetrics and Gynecology, or another infertility expert recognized by the Massachusetts Division of Insurance are NOT covered (including but NOT limited to artificial egg activation, endometrial scratching).

C. The Plan considers ANY of the procedures and products listed below in items 1 through 4 to be experimental and investigational or NOT medically necessary as a treatment for infertility or as an effective artificial reproductive technology because there are insufficient data to verify the safety, clinical validity, and/or clinical utility of each of these procedures or products:

1. Co-culture of embryos; OR

2. EmbryoGlue® (a medium developed for embryo transfer by Vitrolife); OR

3. In vitro maturation (IVM) of oocytes; OR

4. Uterine transplant, including all associated services (e.g., donor hysterectomy, backbench procedures).

D. The Plan considers ANY of the following tests or treatments in items 1 through 10 to be experimental and investigational or NOT medically necessary when used as reproductive biomarkers, to reliably predict a predict treatment response, determine etiology of infertility, or assist with infertility treatment because there are insufficient data to verify the clinical validity and/or clinical utility of each of these services:

1. Acrosome reaction/sperm acrosome reaction test; OR

2. Computer-aided semen analysis/CASA (since the data do not suggest that the predictive value of CASA is superior compared with conventional semen analysis); OR

3. Endometrial receptivity genetic testing‡/gene profiling‡ to estimate the receptivity of the endometrium for embryo transfer and implantation during ART (e.g., Endometrial Receptivity Analysis/ERA® by Igenomix); OR

4. Hyaluronan binding assay (HBA)/Sperm HBA; OR

5. Immune treatment (e.g., peri-implantation glucocorticoids, anti-tumor necrosis factor agents, leukocyte immunization, IV immunoglobulins); OR

6. Immunological testing (e.g., antiphospholipid antibodies, antiprothrombin antibodies, circulating natural killer cell measurement, embryotoxicity assay, reproductive immunophenotype/RIP) unless the member has a medical history of recurrent pregnancy loss (with recurrent pregnancy loss defined as 2 or more failed clinical pregnancies with at least 5 weeks gestation confirmed with ultrasound); OR

7. Inhibin B levels when used to assess male infertility/infertility for a member with male reproductive organs, ovarian reserve for a female member/member with female reproductive organs, or for any other indication related to infertility services; OR

8. Postcoital cervical mucus penetration test; OR

9. Reactive oxygen species (ROS) test; OR

10. Sperm DNA integrity (fragmentation) tests including but not limited to any of the following: Comet assay (single cell gel electrophoresis), TUNEL assay (terminal deoxynucleotidyl transferase-mediated dUDP nick end labelling assay), sperm chromatin dispersion (SCD) test, sperm chromatin structure assay (SCSA®), or Sperm DNA Decondensation™ Test (SDD).

E. Infertility treatment when infertility is the result of prior voluntary sterilization.

F. Infertility services for individuals who have NOT met the Plan's definition of infertility or the likelihood of a live birth outcome for the member is less than 5%.

G. There is a Plan limit for coverage of 3 cycles of IUI per member's lifetime (including gonadotropin stimulation with Clomiphene Citrate/Clomid and/or Letrozole IUI cycles).

H. Coverage for fresh IVF cycles is limited to a maximum of 6 cycles per member's lifetime, whether the member's oocyte or donor egg (including frozen oocyte from egg banking) is used, and whether or not previous cycles were covered by the Plan.

I. Fewer than 6 cycles of IVF may be covered when medically appropriate, including situations where additional cycles are unlikely (less than 5% probability) to result in a live birth.

J. The maximum limit of 6 fresh IVF cycles per member's lifetime does NOT include prior IVF cycles that resulted in a live birth, frozen embryo thaw cycles that do not include gonadotropin therapy, IUI cycles, and/or artificial insemination. The maximum limit of 6 fresh IVF cycles covered per member's lifetime DOES include cancelled IVF cycles.

K. Infertility treatment is NOT covered by the Plan for female members/members with female reproductive organs with age-related infertility (40 years of age or older) based upon hormonal testing or who do not demonstrate infertility as a disease state. Any single elevation in FSH level for these members 40 years of age or older (which was not elevated prior to age 40) is considered infertility as a natural state and therefore infertility services are NOT covered.

L. Female members/members with female reproductive organs who are age 45 or older will NOT be covered for infertility treatment and/or related services (including but not limited to IUI and/or gonadotropins or IVF cycles using their own eggs even with a normal clomiphene citrate challenge test/CCCT), as the chance of a live birth outcome is less than 5%. Individual consideration may be conducted by a Plan Medical Director if there is significant evidence to support that this member has 5% or greater chance of a live birth outcome; if services are approved, the member may use the members own previously cryopreserved oocytes if preserved by the age of 43 or earlier. Members age 45 or older are NOT eligible for Plan coverage of donor oocytes.

   Note: According to data included in the Centers for Disease Control and Prevention Assisted Reproductive Technology (ART) Success Rates Reports, females/individuals with female reproductive organs age 45 or older experience approximately a 2% rate of live births and individuals age 43-44 experience approximately a 5% rate of live births with ART.

M. Use of donor egg (which may include frozen oocyte from donor egg bank) and gestational carrier together is NOT covered, as the female member/member with female reproductive organs is not physically treated in this situation and is effectively a surrogate service.

N. An ART - IVF cycle is NOT covered by the Plan when it is known at the initiation of a cycle that none of the resulting embryos will be transferred during the same cycle, and/or the intent is to cryopreserve all of the embryos for future use (unless necessary for the transfer of a specimen for accurate and timely preimplantation genetic testing when Plan criteria are met for preimplantation genetic testing.

O. Infertility treatment when the infertile member is NOT the recipient of said services (e.g., donor egg in conjunction with gestational carrier) and drugs that are directly related to a stimulated ART cycle for anonymous or designated donors unless the ART service is prior authorized by the Plan, and the member is the sole recipient of the donor's eggs.

P. Surrogacy/gestational carrier-related costs are NOT covered by the Plan; this includes all procedures and costs incurred by a fertile woman/individual with female reproductive organs to achieve a pregnancy as a surrogate or gestational carrier for an infertile member.

Q. ART/infertility services for members who consume any medications or substances that are against medical advice, and are known to negatively affect fertility potential and/or outcome.

R. Gonadotropin usage greater than 600 IU/day (8 amps/day) as there is no proven medical necessity or efficacy to support utilization beyond this amount.

S. Intrauterine insemination (IUI) or IVF-based forms of assisted reproductive technology (ART) in the absence of male factor infertility/infertility related to male reproductive organs or the absence of a male partner/partner with male reproductive organs, until the female member/member with female reproductive organs meets the definition of infertility (if ever) and coverage criteria for said services.

T. The cost of donor sperm, IUI, IVF with or without ICSI, and related services, if the male partner/partner with male reproductive organs has a history of prior vasectomy.

U. The cost of donor sperm, if the infertile member does NOT have a male partner/partner with male reproductive organs with a diagnosis of male factor infertility.

V. Services or drugs directly related to non-covered services. (Specifically, there is no coverage of ART procedures or drugs when related to, or in conjunction with a non-covered benefit, or when the procedure is outside the scope of this medical policy.)

W. Infertility services for female members/members with female reproductive organs who are NOT Rubella immune or who actively smoke.

X. Cryopreservation and storage limitations include ANY of services in items 1 through 5:

1. Cryopreservation and storage of oocytes/eggs:

a. Cryopreservation of donor eggs is NOT covered.

b. Cryopreservation and/or storage of eggs from a female member/member with female reproductive organs are NOT covered for ANY condition in items (1) through (3):

(1) Female member/member with female reproductive organs has NOT maintained eligibility for Plan coverage during the timeframe for cryopreservation and/or storage; OR

(2) Cryopreservation and storage of eggs for greater than 12 calendar months in duration from a female member/member with female reproductive organs who is NOT in active infertility treatment; OR

Note: Cryopreservation and/or storage of oocytes for the convenience, lifestyle, professional, personal, and/or religious preference of the member requesting this service is NOT covered unless applicable Plan medical necessity guidelines are met in the Plan Authorization Table.

(3) Cryopreservation and storage of eggs for greater than 12 calendar months in duration from a female member/member with female reproductive organs in active infertility treatment.

Note: Cryopreservation and/or storage of oocytes for the convenience, lifestyle, professional, personal, and/or religious preference of the member requesting this service is NOT covered unless applicable Plan medical necessity guidelines are met in the Plan Authorization Table.

c. Oocyte retrieval, freezing, and storage greater than 12 calendar months in duration for transgender member undergoing Plan authorized genital sex reassignment surgery.

Note: Oocyte retrieval, freezing, and storage for the convenience, lifestyle, professional, personal, and/or religious preference of the member requesting this service is NOT covered unless applicable Plan medical necessity guidelines are met in the Plan Authorization Table.

2. Cryopreservation and/or storage of embryos are NOT covered for ANY condition in items a through e:

a. Member has NOT maintained eligibility for Plan coverage during the timeframe for cryopreservation and/or storage; OR

b. Cryopreservation and storage of member's embryo's greater than 12 calendar months in duration when the member is NOT in active infertility treatment; OR

   Note: Cryopreservation and/or storage of embryos for the convenience, lifestyle, professional, personal, and/or religious preference of the member requesting this service is NOT covered unless applicable Plan medical necessity guidelines are met in the Plan Authorization Table.

c. Cryopreservation and storage of embryos greater than 12 calendar months in duration when the member is in active infertility treatment; OR

d. Embryo retrieval/transfer, freezing, and storage greater than 12 calendar months in duration for transgender member undergoing Plan authorized genital sex reassignment surgery; OR

   Note: Embryo retrieval, freezing, and storage for the convenience, lifestyle, professional, personal, and/or religious preference of the member requesting this service is NOT covered unless applicable Plan medical necessity guidelines are met in the Plan Authorization Table.

e. The embryo(s) is intended for implantation in a person other than the member.

3. Cryopreservation, storage, thawing, and/or re-implantation of ovarian tissue or an entire ovary are considered experimental and investigational infertility services and therefore are NOT covered by the Plan. Cryopreservation of ovarian tissue or an entire ovary with subsequent auto- or heterotopic transplant has been investigated as a technique to sustain the reproductive function of a female member/member with female reproductive organs who will undergo medical treatment that is likely to result in infertility or requires a sterilizing procedure, including but not limited to chemotherapy, radiotherapy, or surgery due to a malignant disease; these techniques have not has not been sufficiently studied to determine the clinical utility and clinical validity for fertility treatment.

4. Testicular tissue cryopreservation, storage, thawing, and/or re-implantation or grafting of human testicular tissue are NOT Plan covered infertility services. The clinical utility and clinical validity of these techniques to preserve fertility have not been established and therefore are considered experimental and investigational or NOT medically necessary.

   Note: As specified in the Prior Authorization Table, testicular tissue cryopreservation is considered medically necessary in adults with azoospermia in conjunction with the testicular biopsy only to identify sperm in preparation for an intracytoplasmic sperm injection procedure, if sperm are found.

5. Sperm storage/banking is NOT covered for ANY condition in items a through d:

a. Member has NOT maintained eligibility for Plan coverage during the timeframe for sperm storage/banking; OR

b. Sperm storage/banking greater than 12 calendar months for male members NOT in active infertility treatment/members with male reproductive organs NOT in active infertility treatment; OR

   Note: Sperm storage/banking for the convenience, lifestyle, professional, personal, and/or religious preference of the member requesting this service or as an alternate specimen is NOT covered unless applicable Plan medical necessity guidelines are met in the Plan Authorization Table.

c. Sperm storage/banking greater than 12 calendar months for male members already in active infertility treatment/members with male reproductive organs already in active infertility treatment; OR

d. Sperm retrieval, freezing, and storage greater than 12 calendar months in duration for a transgender member undergoing Plan authorized genital sex reassignment surgery.

Y. Turner syndrome is a relative contraindication for pregnancy. Cardiology and maternal-fetal medicine consultation and careful screening are recommended before considering pregnancy by oocyte donation and other types of assisted reproductive technology (ART). When a cardiac assessment for the female member/member with female reproductive organs identifies a significant cardiac abnormality, Turner syndrome is an absolute contraindication for pregnancy. Female members with Turner syndrome with Turner syndrome /members with female reproductive organs with Turner syndrome having normal results from the cardiac assessment are still at a higher risk for associated morbidity and mortality and require careful clinical observation and reevaluation throughout gestation and postpartum.

Z. Bariatric surgery of a female member/member with female reproductive organs within the last 12 calendar months is a contraindication for assisted reproductive technology (ART). The American Society for Reproductive Medicine (ASRM) recommends that individuals who have bariatric surgery should wait one (1) year postoperatively before becoming pregnant.

## Variations

The Plan uses guidance from the Centers for Medicare & Medicaid Services (CMS) for medical necessity and coverage determinations for the Plan's New Hampshire Medicare Advantage HMO members, including but not limited to national coverage determinations (NCDs), local coverage determinations (LCDs), local coverage articles (LCAs), and documentation included in Medicare manuals. Verify CMS criteria in effect for the requested service on the date of the prior authorization request for a New Hampshire Medicare Advantage HMO member. When there is no guidance from CMS for the requested service for the specified indication on the date of the prior authorization

request, Plan-adopted clinical review criteria will be used to determine the medical necessity of the service.

## Applicable Coding

The Plan utilizes up-to-date, industry-standard Current Procedural Terminology (CPT) codes, Health Care Common Procedure Coding System (HCPCS) codes, and International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) diagnosis codes in the Plan's medical policies. Since these codes may be updated at different intervals than the medical policy review cycle, the list of applicable codes included in a policy is informational only and may not be all inclusive. Applicable codes are subject to change without prior notification and do not guarantee member coverage or provider reimbursement. Review the Plan's reimbursement policies for Plan billing guidelines. Providers are responsible for obtaining prior authorization for the services specified in the Clinical Criteria section and Limitations and Exclusions section of a medical policy, even if an applicable code appropriately describing the service is not included in the policy's Applicable Coding section. Providers are expected to report all services using the most up-to-date, industry-standard procedures and diagnosis codes at the time of the service.

| **CPT Codes** | **Description: Services Covered When Medically Necessary for Infertility Treatment for QHP and New Hampshire Medicare Advantage HMO Members** |
|---|---|
| 55870 | Electroejaculation |
| 58321 | Artificial insemination, intra-cervical |
| 58322 | Artificial insemination, intra-uterine |
| 58323 | Sperm washing for artificial insemination |
| 58970 | Follicle puncture for oocyte retrieval, any method |
| 58974 | Embryo transfer, intrauterine |
| 58976 | Gamete, zygote, or embryo intrafallopian transfer, any method |
| 59866 | Multifetal pregnancy reduction(s) (MPR) |
| 74742 | Transcervical catheterization of fallopian tube, radiological supervision and interpretation |
| 76948 | Ultrasonic guidance for aspiration of ova, imaging supervision and interpretation |
| 89250 | Culture of oocyte(s)/embryo(s), less than 4 days<br><br>Plan note: Code used to report in vitro maturation of oocytes, including cryopreservation, storage, and thawing of immature oocytes. |
| 89253 | Assisted embryo hatching, microtechniques (any method) |
| 89254 | Oocyte identification from follicular fluid |
| 89255 | Preparation of embryo for transfer (any method) |
| 89257 | Sperm identification from aspiration (other than seminal fluid) |

| | |
|---|---|
| 89258 | Cryopreservation; embryo(s) |
| 89259 | Cryopreservation; sperm |
| 89260 | Sperm isolation; simple prep (e.g., sperm wash and swim-up) for insemination or diagnosis with semen analysis |
| 89261 | Sperm isolation; complex prep (e.g., Percoll gradient, albumin gradient) for insemination or diagnosis with semen analysis |
| 89264 | Sperm identification from testis tissue, fresh or cryopreserved |
| 89268 | Insemination of oocytes |
| 89272 | Extended culture of oocyte(s)/embryo(s), 4-7 days |
| 89280 | Assisted oocyte fertilization, microtechnique; less than or equal to 10 oocytes |
| 89281 | Assisted oocyte fertilization, microtechnique; greater than 10 oocytes |
| 89325 | Sperm antibodies |
| 89329 | Sperm evaluation; hamster penetration test |
| 89330 | Sperm evaluation; cervical mucus penetration test, with or without spinnbarkeit test |
| 89331 | Sperm evaluation, for retrograde ejaculation, urine (sperm concentration, motility, and morphology, as indicated) |
| 89335 | Cryopreservation, reproductive tissue, testicular |
| 89337 | Cryopreservation, mature oocyte(s) |
| 89342 | Storage (per year); embryo(s) |
| 89343 | Storage (per year); sperm/semen |
| 89344 | Storage (per year); reproductive tissue, testicular/ovarian |
| 89346 | Storage (per year); oocyte(s) |
| 89352 | Thawing of cryopreserved; embryo(s) |
| 89353 | Thawing of cryopreserved; sperm/semen, each aliquot |
| 89354 | Thawing of cryopreserved; reproductive tissue, testicular/ovarian |
| 89356 | Thawing of cryopreserved; oocytes, each aliquot |
| 89398 | Unlisted reproductive medicine laboratory procedures |

| **HCPCS Codes** | **Description: Services Covered When Medically Necessary for Infertility Treatment for QHP Members**<br><br>Plan note: All of the following HCPCS codes are NOT covered and NOT payable for the New Hampshire Medicare Advantage HMO product. See the applicable CPT codes for infertility services requested for a New Hampshire Medicare Advantage HMO member. |
|---|---|
| S4011 | In vitro fertilization; including but not limited to identification and incubation of mature oocytes, fertilization with sperm, incubation of embryo(s), and subsequent visualization for determination of development |
| S4013 | Complete cycle, gamete intrafallopian transfer (GIFT), case rate |

| | |
|---|---|
| S4014 | Complete cycle, zygote intrafallopian transfer (ZIFT), case rate |
| S4015 | Complete in vitro fertilization cycle, not otherwise specified, case rate |
| S4016 | Frozen in vitro fertilization cycle, case rate |
| S4017 | Incomplete cycle, treatment cancelled prior to stimulation, case rate |
| S4018 | Frozen embryo transfer procedure cancelled before transfer, case rate |
| S4020 | In vitro fertilization procedure cancelled before aspiration, case rate |
| S4021 | In vitro fertilization procedure cancelled after aspiration, case rate |
| S4022 | Assisted oocyte fertilization, case rate |
| S4023 | Donor egg cycle, incomplete, case rate |
| S4025 | Donor services for in vitro fertilization (sperm or embryo), case rate |
| S4026 | Procurement of donor sperm from sperm bank |
| S4028 | Microsurgical epididymal sperm aspiration (MESA) |
| S4030 | Sperm procurement and cryopreservation services; initial visit |
| S4031 | Sperm procurement and cryopreservation services; subsequent visit |
| S4035 | Stimulated intrauterine insemination (IUI), case rate |
| S4037 | Cryopreserved embryo transfer, case rate |

| **CPT Codes** | **Description: Services Considered Experimental and Investigational or NOT Medically Necessary for Infertility Treatment for QHP and Medicare Advantage HMO Members** |
|---|---|
| 82397 | Chemiluminescent assay<br><br>Plan note: Code used to bill for the reactive oxygen species testing. Prior authorization is required when this procedure code is used for infertility treatment and billed with ICD-10 diagnosis codes N97.0-N97.9 and/or N46.01-N46.9. |
| 83520 | Immunoassay for analyte other than infectious agent antibody or infectious agent antigen; quantitative, not otherwise specified<br><br>Plan note: Code used to report serum inhibin B testing. Prior authorization is required when this procedure code is used for infertility treatment and billed with ICD-10 diagnosis codes N97.0-N97.9 and/or N46.01-N46.9. |
| 89240 | Unlisted miscellaneous pathology test<br><br>Plan note: Code used to report media preparation for storage of oocytes, sperm, or embryos (e.g., EmbryoGlue®). Prior authorization is required when this procedure code is used for infertility treatment and billed with ICD-10 diagnosis codes N97.0-N97.9 and/or N46.01-N46.9. |
| 89251 | Culture of oocyte(s)/embryo(s), less than 4 days; with co-culture of oocyte(s)/embryos |

## References

Agency for Healthcare Research and Quality (AHRQ). Myers ER, Eaton JL, McElligott KA, Moorman PG, Chatterjee R, Zakama AK, Goldstein K, Strauss J, Coeytaux RR, Goode A, Borre E, Swamy GK, McBroom AJ, Lallinger K, Schmidt R, Davis JK, Hasselblad V, Sanders GD. Management of Infertility. Comparative Effectiveness Review No. 217. (Prepared by the Duke Evidence-based Practice Center under Contract No. 290-2015-00004-I.) Management of Infertility. Comparative Effectiveness Review Number 217. AHRQ Publication Number 19-EHC014-EF. 2019 May. doi: 10.23970/AHRQEPCCER217.

Alviggi C, Humaidan P, Howles CM, Tredway D, Hillier SG. Biological versus chronological ovarian age: implications for assisted reproductive technology. Reprod Biol Endocrinol. 2009 Sep 22;7:101. doi: 10.1186/1477-7827-7-101. PMID: 19772632.

The American College of Obstetricians and Gynecologists (ACOG). ACOG Practice Bulletin No. 194: Polycystic Ovary Syndrome. Obstet Gynecol. 2018 Jun;131(6):e157-71. doi: 10.1097/AOG.0000000000002656. PMID: 29794677.

The American College of Obstetricians and Gynecologists (ACOG), American Society for Reproductive Medicine (ASRM). ACOG Committee on Gynecologic Practice and the Practice Committee of the ASRM. Female Age-Related Fertility Decline. Committee Opinion. Number 589. Fertil Steril. 2014 Mar;101(3):633-4. doi: 10.1016/j.fertnstert.2013.12.032. PMID: 24559617.

The American College of Obstetricians and Gynecologists (ACOG). Committee on Adolescent Health Care. Primary Ovarian Insufficiency in Adolescents and Young Women. Committee Opinion. Number 605. Obstet Gynecol. 2014 Jul;124(1):193-197. doi: 10.1097/01.AOG.0000451757.51964.98. PMID: 24945456.

The American College of Obstetricians and Gynecologists (ACOG). Committee on Ethics. Multifetal Pregnancy Reduction. Committee Opinion. Number 719. Obstet Gynecol. 2017 Sep;130(3):670-671.doi: 10.1097/AOG.0000000000002292. PMID: 28832481.

The American College of Obstetricians and Gynecologists (ACOG). Committee on Gynecologic Practice. Oocyte Cryopreservation. Committee Opinion Number 584. Obstet Gynecol. 2014 Jan;123(1):221-222. doi: 10.1097/01.AOG.0000441355.66434.6d. PMID: 24463693.

The American College of Obstetricians and Gynecologists (ACOG). FAQs BRCA1 and BRCA2 Mutations.

American Society of Clinical Oncology (ASCO). Oktay K, Harvey BE, Partridge AH, Quinn GP, Reinecke J, Taylor HS, Wallace WH, Wang ET, Loren AW. Fertility Preservation in Patients With Cancer: ASCO Clinical Practice Guideline Update. J Clin Oncol. 2018 Jul 1;36(19):1994-2001. doi: 10.1200/JCO.2018.78.1914. Epub 2018 Apr 5. PMID: 29620997.

American Society for Reproductive Medicine (ASRM), American College of Obstetricians and Gynecologists (ACOG). ASRM and ACOB Committee on Gynecologic Practice. Prepregnancy Counseling. Committee Opinion Number 762. Fertil Steril. 2019 Jan;111(1):32-42. doi: 10.1016/j.fertnstert.2018.12.003. PMID: 30611411.

American Society for Reproductive Medicine (ASRM). Coding Committee of the ASRM. Correct coding for laboratory procedures during assisted reproductive technology cycles. Fertil Steril. 2016 Apr;105(4):e5-8. doi: 10.1016/j.fertnstert.2015.12.042. Epub 2015 Dec 30. PMID: 26746136.

American Society for Reproductive Medicine (ASRM). Ethics Committee of the ASRM. Access to fertility services by transgender persons: an Ethics Committee opinion. Fertil Steril. 2015 Nov;104(5):1111-5. doi: 10.1016/j.fertnstert.2015.08.021. Epub 2015 Sep 9. PMID: 26363388.

American Society for Reproductive Medicine (ASRM). Ethics Committee of the ASRM. Fertility treatment when the prognosis is very poor or futile: a committee opinion. Fertil Steril. 2012 Jul;98(1):e6-9. doi: 10.1016/j.fertnstert.2012.03.045. Epub 2012 Apr 25. PMID: 22537382.

American Society for Reproductive Medicine (ASRM). Ethics Committee of the ASRM. Planned oocyte cryopreservation for women seeking to preserve future reproductive potential: an Ethics Committee opinion. Fertil Steril. 2018 Nov;110(6):1022-1028. doi: 10.1016/j.fertnstert.2018.08.027. PMID: 30396539.

American Society for Reproductive Medicine (ASRM), European Society of Human Reproduction and Embryology (ESHRE). Giannaroli L, Racowsky C, Geraedts J, Cedars M, Makrigiannakis A, Lobo RA. Best Practices of ASRM and ESHRE: a journey through reproductive medicine. Fertil Steril. 2012 Dec;98(6):1380-94. doi: 10.1016/j.fertnstert.2012.07.1164. Epub 2012 Oct 24. PMID: 23102857.

American Society for Reproductive Medicine (ASRM). Guidance for Providers Caring for Women and Men of Reproductive Age with Possible Zika Virus Exposure. (Modified from CDC, FDA, and WHO Published Guidance.) Updated 2019 July.

American Society for Reproductive Medicine (ASRM). Patient Resources.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. The clinical utility of sperm DNA integrity testing: a guideline. Fertil Steril. 2013 Mar 1;99(3):673-7. doi: 10.1016/j.fertnstert.2012.12.049. Epub 2013 Feb 1. PMID: 23391408.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Definition of experimental procedures: a committee opinion. Fertil Steril. 2013 Apr;99(5):1197-8. doi: 10.1016/j.fertnstert.2012.12.036. Epub 2013 Feb 1. PMID: 23391407.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Definitions of Infertility and Recurrent Pregnancy Loss: A Committee opinion. Fertil Steril. 2020 Mar; 13(3):533-535. doi: 10.1016/ j.fertnstert.2019.11.025. Epub 2020 Feb 27. PMID: 32115183.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Diagnostic evaluation of the infertile female: a committee opinion. Fertil Steril. 2015 Jun;103(6):e44-50. doi: 10.1016/j.fertnstert.2015.03.019. Epub 2015 Apr 30. PMID: 25936238.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Evidence-based treatments for couples with unexplained infertility: a guideline. Fertil Steril. 2020 Feb;113(2):305-322. doi: 10.1016/j.fertnstert.2019.10.014. PMID: 32106976.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Evaluation and treatment of recurrent pregnancy loss: a committee opinion. Fertil Steril. 2012 Nov;98(5):1103-11. doi: 10.1016/j.fertnstert.2012.06.048. Epub 2012 Jul 24. PMID: 22835448.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Fertility drugs and cancer: guideline. 2016 Dec;106(7):1617-1626. doi: 10.1016/j.fertnstert.2016.08.035. Epub 2016 Aug 26. PMID: 27573989.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Fertility preservation in patients undergoing gonadotoxic therapy or gonadectomy: a committee opinion. Fertil Steril. 2019 Dec;112(6):1022-1033. doi: 10.1016/j.fertnstert.2019.09.013. PMID: 31843073.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Increased maternal cardiovascular mortality associated with pregnancy in women with Turner syndrome. Fertil Steril. 2012 Feb;97(2):282-4. doi: 10.1016/j.fertnstert.2011.11.049. Epub 2011 Dec 21. PMID: 22192347.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. The management of obstructive azoospermia: a committee opinion. Fertil Steril. 2019 May;111(5):873-880. doi: 10.1016/ j.fertnstert.2019.02.013. PMID: 31029241.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Obesity and Reproduction: a committee opinion. Fertil Steril. 2015 Nov;104(5):1116-26. doi: 10.1016/ j.fertnstert.2015.08.018. Epub 2015 Oct 1. PMID: 26434804.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Ovarian tissue cryopreservation: a committee opinion. Fertil Steril. 2014 May;101(5):1237-43. doi: 10.1016/ j.fertnstert.2014.02.052. Epub 2014 Mar 28. PMID: 24684955.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Penzias A, Bendikson K, Butts S, Coutifaris C, Falcone T, Fossum G, Gitlin S, Gracia C, Hansen K, Mersereau J, Odem R, Rebar R, Reindollar R, Rosen M, Sandlow J, Vernon M. ASRM standard embryo transfer

protocol template: a committee opinion. Fertil Steril. 2017Apr;107(4):897-900. doi: 10.1016/j.fertnstert.2017.02.108. Epub 2017 Mar 11. PMID: 28292611.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Role of tubal surgery in the era of assisted reproductive technology: a committee opinion. Fertil Steril. 2021 May;115(5):1143-1150. doi: 10.1016/j.fertnstert.2021.01.051. Epub 2021 Feb 26. PMID: 33642065.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Smoking and infertility: a committee opinion. Fertil Steril. 2018 Sep;110(4):611-618. doi: 10.1016/j.fertnstert.2018.06.016. PMID: 30196946.

American Society for Reproductive Medicine (ASRM). Practice Committee and Genetic Counseling Professional Group (GCPG) of the ASRM. Clinical management of mosaic results from preimplantation genetic testing for aneuploidy (PGT-A) of blastocysts: a committee opinion. Fertil Steril. 2020 Aug;114(2):246-254. doi: 10.1016/j.fertnstert.2020.05.014. PMID: 32741460.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Subclinical hypothyroidism in the infertile female population: a guideline. Fertil Steril. 2015 Sep;104(3):545-53. doi: 10.1016/j.fertnstert.2015.05.028. PMID: 26239023.

American Society for Reproductive Medicine (ASRM). Practice Committee of ASRM. Testing and interpreting measures of ovarian reserve: a committee opinion. Fertil Steril 2020 Dec;114(6):1151–7. doi: 10.1016/j.fertnstert.2020.09.134. PMID: 33280722.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART). Practice Committees of ASRM and SART. Blastocyst culture and transfer in clinical-assisted reproduction: a committee opinion. Fertil Steril. 2018 Dec;110(7):1246-1252. doi: 10.1016/j.fertnstert.2018.09.011. PMID: 30503113.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART). Practice Committees of ASRM and SART. Guidance on the limits to the number of embryos to transfer: a committee opinion. Fertil Steril. 2017 Apr;107(4):901-903. doi: 10.1016/j.fertnstert.2017.02.107. Epub 2017 Mar 11. PMID: 28292618.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART). Practice Committee of ASRM and SART. Intracytoplasmic sperm injection (ICSI) for non-male factor indications: a committee opinion. Fertil Steril. 2020 Aug;114(2):239-245. doi: 10.1016/j.fertnstert.2020.05.032. Epub 2020 Jul 9. PMID: 32654822.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART). Practice Committees of the ASRM and SART. Mature Oocyte Cryopreservation: A Guideline. Fertil Steril. 2013 Jan;99(1):37-43. doi: 10.1016/j.fertnstert.2012.09.028. Epub 2012 Oct 22. PMID: 23083924.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART). Practice Committees of ASRM and SART. Optimizing natural fertility: a committee opinion. Fertil Steril. 2017 Jan;107(1):52-58. doi: 10.1016/j.fertnstert.2016.09.029. Epub 2016 Oct 26. PMID: 28228319.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART). Practice Committees of ASRM and SART. Recommendations for gametes and embryo donation: a committee opinion. Fertil Steril. 2013 Jan;99(1):47-62.e1. doi: 10.1016/j.fertnstert.2012.09.037. Epub 2012 Oct 22. PMID: 23095142.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART). Practice Committees of ASRM and SART. Role of assisted hatching in in vitro fertilization: a guideline. Fertil Steril. 2014 Aug;102(2):348-51. doi: 10.1016/ j.fertnstert.2014.05.034. Epub 2014 Jun 18. PMID: 24951365.

American Society for Reproductive Medicine (ASRM), Society for Assisted Reproductive Technology (SART), Society of Reproductive Biology and Technology (SRBT). Practice Committees of ASRM, SART, and SRBT. Revised minimum standards for practices offering assisted reproductive technologies: a committee opinion. Fertil Steril. 2014 Sep;102(3):682-6. doi: 10.1016/j.fertnstert.2014.05.035. Epub 2014 Jun 19. PMID: 24954775.

American Society for Reproductive Medicine (ASRM), Society of Reproductive Biologists and Technologists (SRBT), Society for Assisted Reproductive Technology (SART). Practice Committees of ASRM, SRBT, and SART. In vitro maturation: a committee opinion. Fertil Steril. 2021 Feb;115(2):298-304. doi: 10.1016/j.fertnstert.2020.11.018. Epub 2020 Dec 24. PMID: 33358333.

American Urological Association (AUA), American Society for Reproductive Medicine (ASRM). Schlegel PN, Sigman M, Collura B, De Jonge CJ, Eisenberg ML, Lamb DJ, Mulhall JP, Niederberger C, Sandlow JI, Sokol RZ, Spandorfer SD, Tanrikut C, Treadwell JR, Oristaglio JT, Zini A. Diagnosis and treatment of infertility in men: AUA/ASRM guideline part I. Fertil Steril. 2021 Jan;115(1):54-61. doi: 10.1016/j.fertnstert.2020.11.015. Epub 2020 Dec 9.PMID: 33309062.

American Urological Association (AUA), American Society for Reproductive Medicine (ASRM). Schlegel PN, Sigman M, Collura B, De Jonge CJ, Eisenberg ML, Lamb DJ, Mulhall JP, Niederberger C, Sandlow JI, Sokol RZ, Spandorfer SD, Tanrikut C, Treadwell JR, Oristaglio JT, Zini A. Diagnosis and treatment of infertility in men: AUA/ASRM guideline part II. Fertil Steril. 2021 Jan;115(1):62-69. doi: 10.1016/j.fertnstert.2020.11.016. Epub 2020 Dec 9. PMID: 33309061.

American Urological Association (AUA). Clinical Guidelines, Best Practice Statements, Policy Statements, Position Statements, White Papers, and Other Clinical Guidance.

American Urological Association (AUA). Jarow J, Sigman M, Kolettis PN, Lipshultz LR, McClure RD, Nangia AK, Naughton CK, Prins GS, Sandlow JI, Schlegel PN. Best Practice Statement. The Evaluation of the Azoospermic Male. 2011.

Anderson RA. What does anti-Müllerian hormone tell you about ovarian function? Clin Endocrinol (Oxf). 2012 Nov;77(5):652-5. doi: 10.1111/j.1365-2265.2012.04451.x. PMID: 22640495.

Arian SE, Goodman L, Flyckt RL, Falcone T. Ovarian transposition: a surgical option for fertility preservation. Fertil Steril. 2017 Apr;107(4):e15. doi: 10.1016/j.fertnstert.2017.01.010. Epub 2017 Feb 24. PMID: 28238491.

Erberelli RF, Salgado RM, Mendes Pereira DH, Wolff P. Hyaluronan-binding system for sperm selection enhances pregnancy rates in ICSI cycles associated with male factor infertility JBRA Assist Reprod. 2017 Feb 1;21(1):2-6. doi: 10.5935/1518-0557.20170002. PMID: 28333023.

Esteves SC, Sanchez-Martin F, Sanchez-Martin P, Schneider DT, Gosalvez J. Comparison of reproductive outcome in oligozoospermic men with high sperm DNA fragmentation undergoing intracytoplasmic sperm injection with ejaculated and testicular sperm. Fertil Steril. 2015 Dec; 104(6):1398-405. doi: 10.1016/j.fertnstert.2015.08.028. Epub 2015 Oct 1. PMID: 26428305.

European Society for Medical Oncology (ESMO). Peccatori FA, Azim HA Jr, Orecchia R, Hoekstra HJ, Pavlidis N, Kesic V, Pentheroudakis G; ESMO Guidelines Working Group. Cancer, pregnancy and fertility: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol 2013 Oct;24 Suppl 6:vi160-70. doi: 10.1093/annonc/mdt199. Epub 2013 Jun 27. PMID: 23813932.

Fedorcsák P, Dale PO, Storeng R, Ertzeid G, Bjercke S, Oldereid N, Omland AK, Abyholm T, Tanbo T. Impact of overweight and underweight on assisted reproduction treatment. Hum Reprod. 2004 Nov;19(11):2523-8. doi: 10.1093/humrep/deh485. Epub 2004 Aug 19. PMID: 15319380.

FertiPROTEKT Network. Schüring AN, Fehm T, Behringer K, Goeckenjan M, Wimberger P, Henes M, Henes J, Fey MF, von Wolff M. Practical recommendations for fertility preservation in women by the FertiPROTEKT network. Part I: Indications for fertility preservation. Arch Gynecol Obstet. 2018 Jan;297(1):241-255. doi: 10.1007/s00404-017-4594-3. Epub 2017 Nov 24. PMID: 29177593.

Ganguly I, Singh A, Bhandari S, Agrawal P, Gupta N. Pregnancy Predictors after Intrauterine Insemination in Cases of Unexplained Infertility: A Prospective Study. Int J Reprod Med. 2016;2016:5817823. doi: 10.1155/2016/5817823. Epub 2016 Sep 21. PMID: 27738654.

Gunn DD, Bates GW. Evidence-based approach to unexplained infertility: a systematic review. Fertil Steril. 2016 Jun;105(6):1566-1574.e1. doi: 10.1016/j.fertnstert.2016.02.001. Epub 2016 Feb 19. PMID: 26902860.

Guo N, Yang F, Liu Q, Ren X, Zhao H, Li Y, Ai J. Effects of cumulus cell removal time during in vitro fertilization on embryo quality and pregnancy outcomes: a prospective randomized sibling-oocyte study. Reprod Biol Endocrinol. 2016 Apr 12; 14:18. doi: 10.1186/s12958-016-0151-3. PMID: 27072537.

Hayes. Health Technology Assessment. Ovarian Tissue Cryopreservation for Preservation of Fertility in Patients Undergoing Gonadotoxic Cancer Treatment. Dallas, TX: Hayes; 2019 Oct 1. Annual Review 2021 Nov 17.

Hayes. Precision Medicine Research Brief. Endometrial Receptivity Analysis (Igenomix). Dallas, TX: Hayes; 2017 Aug 10.

Hembree W. Guidelines for pubertal suspension and gender reassignment for transgender adolescents. Clind Adolesc Psychiatric Clin N Am. 2011 Oct;20(4):725-32. doi: 10.1016/j.chc.2011.08.004. PMID: 22051008.

Herrel LA, Goodman M, Goldstein M, Hsiao W. Outcomes of microsurgical vasovasostomy for vasectomy reversal: a meta-analysis and systematic review. Urology. 2015 Apr;85(4):819-25. doi: 10.1016/j.urology.2014.12.023. PMID: 25817104.

Huszar G, Ozkavukcu S, Jakab A, Celik-Ozenci C, Sati GL, Cayli S. Hyaluronic acid binding ability of human sperm reflects cellular maturity and fertilizing potential: selection of sperm for intracytoplasmic sperm injection. Curr Opin Obstet Gynecol. 2006 Jun;18(3):260-7. doi: 10.1097/01.gco.0000193018.98061.2f. PMID: 16735824.

The International Committee for Monitoring Assisted Reproductive Technologies (ICMART), American Society for Reproductive Medicine (ASRM), European Society of Human Reproductive and Embryology (ESHRE), International Federation of Fertility Societies (IFFS), March of Dimes (MOD), African Fertility Society (AFS), Groupe Inter-African d'Etude de Recherche et d'Application sur la Fertilite (GIERAF), Asian Pacific Initiative on Reproduction (ASPIRE), Middle East Fertility Society (MEEFS), Red Latinoamericana de Reproduccion Asistida (REDLARA), International Federation of Gynecology and Obstetrics (FIGO). Zegers-Hochschild F, Adamson GD, Dyer S, Racowsky C, de Mouzon J, Sokol R, Rienzi L, Sunde A, Schmidt L, Cooke ID, Simpson JL, van der Poel S. The International Glossary on Infertility and Fertility Care, 2017. Hum Reprod. 2017 Sep 1;32(9):1786-1801. doi: 10.1093/humrep/dex234. PMID: 29117321.

Jahromi BN, Mosallanezhad Z, Matloob N, Davari M, Ghobadifar MA. The potential role of granulosa cells in the maturation rate of immature human oocytes and embryo development: A co-culture study. Clin Exp Reprod Med. 2015 Sep;42(3):111-7. doi: 10.5653/cerm.2015.42.3.111. Epub 2015 Sep 30. PMID: 26473111.

Jin J, Pan C, Fei Q, NiW, Yang X, Zhang L, Huang X. Effect of sperm DNA fragmentation on the clinical outcomes for in vitro fertilization and intracytoplasmic sperm injection in women with different ovarian

reserves. Fertil Steril. 2015 Apr;103(4):910-6. doi: 10.1016/j.fertnstert.2015.01.014. Epub 2015 Mar 4. PMID: 25747135.

Jungheim ES, Meyer M, Broughton DE. Best practices for controlled ovarian stimulation in IVF. Semin Reprod Med. 2015 Mar;33(2):77–82. doi: 10.1055/s-0035-1546424. Epub 2015 Mar 3. PMID: 25734345.

Kissin DM, Jamieson DJ, Barfield WD. Monitoring health outcomes of assisted reproductive technology. N Engl J Med. 2014 Jul 3;371(1):91-3. doi: 10.1056/NEJMc1404371. PMID: 24988584.

Kovanci E, Schutt AK. Premature ovarian failure: clinical presentation and treatment. Obstet Gynecol Clin North Am. 2015 Mar; 42(1):153-61. doi: 10.1016/j.ogc.2014.10.004. PMID: 25681846.

Kudesia R, Wu H, Hunter Cohn K, Tan L, Lee JA, Copperman AB, Yurttas Beim P. The effect of female body mass index on in vitro fertilization cycle outcomes: a multi-center analysis. J Assist Reprod Genet. 2018 Nov;35(11):2013-2023. doi: 10.1007/s10815-018-1290-6. Epub 2018 Aug 21. PMID: 30132171.

Kuohung W, Hornstein MD. Patient education: Evaluation of the infertile couple (Beyond the Basics). UpToDate. 20221 Aug 12.

Lambertini M, Del Mastro L, Pescio MC, Andersen CY, Azim HA Jr. Peccatori FA, Costa M, Revelli A, Salvagno F, Gennari A, Ubaldi FM, La Sala GB, De Stefano C, Wallace WH, Patridge AH, Anserini P. Cancer and fertility preservation: international recommendations from an expert meeting. BMC Medicine. 2016;14:1. doi: 10.1186/s12916-015-0545-7. PMID: 26728489.

Landersoe SK, Forman JL, Petersen KB, Larsen EC, Nohr B, Hvidman HW, Nielsen HS, Andersen AN. Ovarian reserve markers in women using various hormonal contraceptives. Eur J Contracept Reprod Health Care. 2020 Feb;25(1):65-71. doi: 10.1080/13625187.2019.1702158. Epub 2019 Dec 19. PMID: 31852271.

Levi Setti PE, Albani E, Morenghi E, Morreale G, Delle Piane L, Scaravelli G, Patrizio P. Comparative analysis of fetal and neonatal outcomes of pregnancies from fresh and cryopreserved/thawed oocytes in the same group of patients. Fertil Steril. 2013 Aug;100(2):396-401. doi: 10.1016/j.fertnstert.2013.03.038. Epub 2013 Apr 19. PMID: 23608156.

Levin J, Canada A, Stern CJ. Fertility preservation in adolescents and young adults with cancer. J Clin Oncol. 2010 Nov 10;28(32):4831-41. doi: 10.1200/JCO.2009.22.8312. Epub 2010 May 10. PMID: 20458029.

Lim JJ, Lee JI, Kim DH, Song SH, Kim HJ, Lee WS, Lee DR. DNA fragmentation of human sperm can be detected by ligation-mediated real-time polymerase chain reaction. Fertil Steril. 2013 Dec;100(6):1564-71.e1-5. doi: 10.1016/j.fertnstert.2013.08.017. Epub 2013 Sep 11. PMID: 24034935.

Luke B, Brown MB, Wantman E, Stem JE, Baker VL, Widra E, Coddington CC, Gibbons WE, Van Voorhis BJ, Ball GD. Application of a validated prediction model for in vitro fertilization: comparison of live birth rates and multiple birth rates with 1 embryo transferred over 2 cycles vs 2 embryos in 1 cycle. Am J Obstet Gynecol. 2015 May;212(5):676.e1-7. doi: 10.1016/j.ajog.2015.02.005. Epub 2015 Feb 13. PMID: 25683965.

Mahajan N. Endometrial receptivity array: Clinical application. J Hum Reprod Sci. 2015 Jul-Sep; 8(3):121–9. doi: 10.4103/0974-1208.165153. PMID: 26538853.

Mbarek H, Steinberg S, Nyholt DR, Gordon SD, Miller MB, McRae AF, Hottenga JJ, Day FR, Willemsen G, de Geus EJ, Davies GE, Martin HC, Penninx BW, Jansen R, McAloney K, Vink JM, Kaprio J, Plomin R, Spector TD, Magnusson PK, Reversade B, Harris RA, Aagaard K, Kristjansson RP, Olafsson I, Eyjolfsson GI, Sigurdardottir O, Iacono WG, Lambalk CB, Montgomery GW, McGue M, Ong KK, Perry JRB, Martin NG, Stefánsson H, Stefánsson K, Boomsma D. Identification of Common Genetic Variants Influencing Spontaneous Dizygotic Twinning and Female Fertility. Am J Hum Genet. 2016 May 5;98(5):898–908. doi: 10.1016/j.ajhg.2016.03.008. Epub 2016 Apr 28. PMID: 27132594.

McLean M, Wellons MF. Optimizing natural fertility: the role of lifestyle modification. Obstet Gynecol Clin North Am. 2012 Dec;39(4):465-77. doi: 10.1016/j.ogc.2012.09.004. PMID: 23182554.

Mehta A, Bolyakov A, Schlegel PN, Paduch DA. Higher pregnancy rates using testicular sperm in men with severe oligospermia. Fertil Steril. 2015 Dec;104(6):1382-7. doi: 10.1016/j.fertnstert.2015.08.008. Epub 2015 Sep 9. PMID: 26363389.

Melnick AP, Murphy EM, Masbou AK, Sapra KJ, Rosenwaks Z, Spandorfer SD. Autologous endometrial coculture biopsy: is timing everything? Fertil Steril. 2015 Jul;104(1):104-9.e1. doi: 10.1016/j.fertnstert.2015.04.026. Epub 2015 May 16. PMID: 25989976.

Nardelli AA, Stafinski T, Motan T, Klein K, Menon D. Assisted reproductive technologies (ARTs): evaluation of evidence to support public policy development. Reprod Health. 2014 Nov 7;11(1):76. doi: 10.1186/1742-4755-11-76. PMID: 25376649.

National Institute for Health and Care Excellence (NICE). Fertility problems: assessment and treatment. Clinical guideline (CG156). Published 2013 Feb. Last Updated 2017 Sept.

National Institutes of Health. News Releases. Media Advisory. Experimental Zika virus vaccines restrict in utero virus transmission in mice. Vaccines protect against Zika-related congenital damage. 2017 Jul 13. U. S. Department of Health and Human Services.

National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Adolescent and Young Adult (AYA) Oncology. Version 1.2021. 2020 Sep 10.

Oehninger S, Franken DR, Ombelet W. Sperm functional tests. Fertil Steril. 2014 Dec; 102(6):1528-33. doi: 10.1016/j.fertnstert.2014.09.044. Epub 2014 Oct 24. PMID: 25450304.

Oldfield AL, Kazemi M, Lujan ME. Impact of Obesity on Anti-Mullerian Hormone (AMH) Levels in Women of Reproductive Age. J Clin Med. 2021 Jul 20;10(14):3192. doi: 10.3390/jcm10143192. PMID: 34300357.

Olszewska M, Fraczek M, Huleyuk N, Czernikiewicz A, Wiland E, Boksa M, Zastavna D, Panasiuk B, Midro AT, Kurpisz M. Chromatin structure analysis of spermatozoa from reciprocal chromosome translocation (RCT) carriers with known meiotic segregation patterns. Reprod Biol. 2013 Sep;13(3):209-20. doi: 10.1016/j.repbio.2013.06.002. Epub 2013 Jul 18. PMID: 24011192.

Palomba S, Homburg R, Santagni S, La Sala GB, Orvieto R. Risk of adverse pregnancy and perinatal outcomes after high technology infertility treatment: a comprehensive systematic review. Reprod Biol Endocrinol. 2016 Nov 4;14(1):76. doi: 10.1186/s12958-016-0211-8. PMID: 27814762.

Parmegiani L, Cognigni GE, Bernardi S, Troilo E, Ciampaglia W, Filicori M. ''Physiologic ICSI'': hyaluronic acid (HA) favours selection of spermatozoa without DNA fragmentation and with normal nucleus, resulting in improvement of embryo quality. Fertil Steril. 2010 Feb;93(2):598-604. doi: 10.1016/j.fertnstert.2009.03.033. Epub 2009 Apr 25. PMID: 19393999.

Quinn GP, Vadaparampil ST, McGowan Lowrey K, Eidson S, Knapp C, Bukulmez O. State laws and regulations addressing third-party reimbursement for infertility treatment: implications for cancer survivors. Fertil Steril. 2011 Jan;95(1):72-8. doi: 10.1016/j.fertnstert.2010.05.017. Epub 2010 Jun 23. PMID: 20576264.

Ramasamy R, Bryson C, Reifsnyder JE, Neri Q, Palermo GD, Schlegel PN. Overweight men with nonobstructive azoospermia have worse pregnancy outcomes after Microdissection testicular sperm extraction. Fertil Steril. 2013 Feb;99(2):372-6. doi: 10.1016/j.fertnstert.2012.10.025. Epub 2012 Oct 31. PMID: 23122830.

Reindollar RH, Regan MM, Neumann PJ, Levine BS, Thornton KL, Alper MM, Goldman MB. A randomized clinical trial to evaluate optimal treatment for unexplained infertility: the fast track and standard treatment (FASTT) trial. Fertil Steril. 2010 Aug; 94(3):888-99. doi: 10.1016/j.fertnstert.2009.04.022. Epub 2009 Jun 16. PMID: 19531445.

Rodriguez-Wallberg KA, Oktay K. Fertility preservation during cancer treatment: clinical guidelines. Cancer Manag Res. 2014 Mar 4;6:105-17. doi: 10.2147/CMAR.S32380. eCollection 2014. PMID: 24623991.

Rowell EE, Duncan FE, Laronda MM. ASRM removes the experimental label from Ovarian Tissue Cryopreservation (OTC): pediatric research must continue. Fertil Steril. 2020 Mar 26.

Schattman GL. Clinical Practice. Cryopreservation of Oocytes. N Engl J Med. 2015 Oct 29;373(18):1755-60. doi: 10.1056/NEJMcp1307341. PMID: 26510023.

Scott KL, Hong KH, Scott RT Jr. Selecting the optimal time to perform biopsy for preimplantation genetic testing. Fertil Steril. 2013 Sep;100(3):608-14. doi: 10.1016/j.fertnstert.2013.07.004. PMID: 23993663.

Silber SJ. Ovary cryopreservation and transplantation for fertility preservation. Mol Hum Reprod. 2012 Feb; 18(2):59-67. doi: 10.1093/molehr/gar082. Epub 2011 Dec 28. PMID: 22205727.

Silber S. Ovarian tissue cryopreservation and transplantation: scientific implications. J Assist Reprod Genet. 2016 Dec;33(12):1595-1603. Epub 2016 Oct 8. PMID: 27722934.

Society for Assisted Reproductive Technology (SART). Luke B, Brown MB, Missmer SA, Bukulmez O, Leach R, Stern JE; SART Writing Group. The effect of increasing obesity on the response to and outcome of assisted reproductive technology: a national study. Fertil Steril. 2011 Oct;96(4):820-5. doi: 10.1016/j.fertnstert.2011.07.1100. Epub 2011 Aug 6. PMID: 21821244.

Society for Assisted Reproductive Technology (SART). SART Tool.

Society of Gynecologic Oncology and American Society for Reproductive Medicine (ASRM). Chen LM, Blank SV, Burton E, Glass K, Penick E, Woodard T. Reproductive and Hormonal Considerations in Women at Increased Risk for Hereditary Gynecologic Cancers: Society of Gynecologic Oncology and American Society for Reproductive Medicine Evidence-Based Review. Gynecol Oncol. 2019 Dec;155(3):508-514. doi: 10.1016/j.ygyno.2019.06.017. Epub 2019 Oct 9. PMID: 31606283.

Steiner AZ, Pritchard D, Stanczyk FZ, Kesner JS, Meadows JW, Herring AH, Baird DD. Association Between Biomarkers of Ovarian Reserve and Infertility Among Older Women of Reproductive Age. JAMA. 2017 Oct 10;318(14):1367-1376. doi: 10.1001/jama.2017.14588. PMID: 29049585.

Tan O, Ha T, Carr BR, Nakonezny P, Doody KM, Doody KJ. Predictive value of postwashed total progressively motile sperm count using CASA estimates in 6871 non-donor intrauterine insemination cycles. J Assist Reprod Genet. 2014 Sep;31(9):1147-53. doi: 10.1007/s10815-014-0306-0. Epub 2014 Aug 10. PMID: 25106939.

Tomao F, Lo Russo G, Spinelli GP, Stati V, Prete AA, Prinzi N, Sinjari M, Vici P, Papa A, Chiotti MS, Benedetti Panici P, Tomao S. Fertility drugs, reproductive strategies and ovarian cancer risk. J Ovarian Res. 2014 May 8;7:51. doi: 10.1186/1757-2215-7-51. eCollection 2014. PMID: 24829615.

T'Sjoen G, Van Caenegem E, Wierckx K. Transgenderism and reproduction. Current Opin Endocrinol Diabetes Obes. 2013 Dec;20(6):575-9. doi: 10.1097/01.med.0000436184.42554.b7. PMID: 24468761.

Tulandi T. Ovarian transposition before pelvic radiation. UpToDate. 2022 Jan 14.

van Heesch MM, van Asselt AD, Evers JL, van der Hoeven MA, Dumoulin JC, van Beijsterveldt CE, Bonsel GJ, Dykgraaf RH, van Goudoever JB, Koopman-Esseboom C, Nelen WL, Steiner K, Tamminga P, Tonch N, Torrance HL, Dirksen CD. Cost-effectiveness of embryo transfer strategies: a decision analytic model using long-term costs and consequences of singletons and multiples born as a consequence of IVF. Hum Reprod. 2016 Nov;31(11):2527-2540. Epub 2016 Oct 6. doi: 10.1093/humrep/dew229. PMID: 27907897.

Vaughan DA, Leung A, Resetkova N, Ruthazer R, Penzias AS, Sakkas D, Alper MM. How many oocytes are optimal to achieve multiple live births with one stimulation cycle? The one-and-done approach. Fertil Steril. 2017 Feb;107(2):397-404.e3. doi: 10.1016/j.fertnstert.2016/10.037. PMID: 27916206.

Ventimiglia E, Capogrosso P, Boeri L, Ippolito S, Scano R, Moschini M, Gandaglia G, Papaleo E, Montorsi F, Salonia A. Validation of the American Society for Reproductive Medicine guidelines/ recommendations in white European men presenting for couple's infertility. Fertil Steril. 2016 Oct;106(5):1076-1082.e1. doi: 10.1016/j.fertnstert.2016.06.044. Epub 2016 Jul 26. PMID: 27473348.

Vogiatzi P, Chrelias C, Cahill DJ, Creatsa M, Vrachnis N, Iliodromiti Z, Kassanos D, Siristatidis C. Hemizona assay and sperm penetration assay in the prediction of IVF outcome: a systematic review. Biomed Res Int. 2013; 2013:945825. doi: 10.1155/2013/945825. Epub 2013 Oct 21. PMID: 24228261.

von Wolff M, Germeyer A, Liebenthron J, Korell M, Nawroth F. Practical recommendations for fertility preservation in women by the FertiPROTEKT network. Part II: fertility preservation techniques. Arch Gynecol Obstet. 2018;297(1): 257-267. doi: 10.1007/s00404-017-4595-2. PMID: 29181578.

Witt KD, Beresford L, Bhattacharya S, Brian K, Coomarasamy A, Cutting R, Hooper R, Kirkman-Brown J, Khalaf Y, Lewis SE, Pacey A, Pavitt S, West R, Miller D, Cutting R. Hyaluronic Acid Binding Sperm Selection for assisted reproduction treatment (HABSelect): study protocol for a multicentre randomized controlled trial. BMJ Open. 2016 Oct 7; 6(10):e012609. doi: 10.1136/bmjopen-2016-012609. Erratum in: BMJ Open. 2017 Jun 26;7(6):e012609corr1. PMID: 27855103.

World Health Organization (WHO). WHO laboratory manual for the examination and processing of human semen. 5th ed. WHO Press, Switzerland; 2010 Jul 2:56–8.

The World Professional Association for Transgender Health (WPATH). Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People. 7th Version
Wright C, Milne S, Leeson H. Sperm DNA damage caused by oxidative stress: modifiable clinical, lifestyle and nutritional factors in male infertility. Reprod Biomed Online. 2014 Jun;28(6):684-703. doi: 10.1016/j.rbmo.2014.02.004. Epub 2014 Mar 4. PMID: 24745838.

Zhao J, Zhang Q, Wang Y, Li Y. Whether sperm deoxyribonucleic acid fragmentation has an effect on pregnancy and miscarriage after in vitro fertilization/intracytoplasmic sperm injection: a systematic

review and meta-analysis. Fertil Steril. 2014 Oct;102(4):998-1005.e8. doi: 10.1016/j.fertnstert.2014.06.033. Epub 2014 Sep 1. PMID: 25190048.

Zini A. Use of testicular sperm for intracytoplasmic sperm injection in oligozoospermic couples with high levels of sperm deoxyribonucleic acid fragmentation. Fertil Steril. 2015 Dec;104(6):1376-7. doi: 10.1016/j.fertnstert.2015.09.011. Epub 2015 Oct 9. PMID: 26453982.

## Next Review Date

06/01/23

## Authorizing Entity

MPCTAC

## Appendix

Appendix: Policy History

**Disclaimer Information:**
*Plan* refers to Boston Medical Center Health Plan, Inc. which operates under the trade name WellSense Health Plan. 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.

## Appendix: Policy History

| Original Approval Date and Version Number | Original Effective Date and Version Number | Policy Owner | Original Policy Approved by |
|---|---|---|---|
| Regulatory Approval: N/A<br><br>Internal Approval:<br>06/29/11: Medical Policy, Criteria, and Technology Assessment Committee (MPCTAC)<br>07/27/11: Quality Improvement Committee (QIC) | 01/01/12<br>Version 1 | Director of Medical Policy Manager as Chair of MPCTAC | MPCTAC and QIC |

***Effective Date for the QHP Commercial Product: 01/01/12**
***Effective Date for the New Hampshire Medicare Advantage HMO Product: 01/01/22**

| Policy Revisions History | | | |
|---|---|---|---|
| **Review Date** | **Summary of Revisions** | **Revision Effective Date and Version Number** | **Approved by** |
| 07/01/12 | Updated references, revised applicable code list, and revised the introductory paragraph in Applicable Coding section. Added eligibility requirement that a female member seeking infertility services with a BMI < 18 (as well as BMI ≥ 40) must submit to Plan nutrition consult and maternal fetal medicine/high risk obstetrics consult. | 11/01/12<br>Version 2 | 06/20/12: MPCTAC<br>07/18/12: MPCTAC<br>08/22/12: QIC |
| 06/01/13, 07/01/13, and 08/01/13 | Review for effective date 12/01/13. Reformatted Summary section. Revised Description of Item or Service section. Updated and added references. Deleted CPT codes 89290 and 89291 for preimplantation genetic testing; these codes are included in the Plan's *Preimplantation Genetic Testing* medical policy. Applicable Plan policies referenced. Deleted duplicate text. Revised definition of infertility (which no longer contains a requirement that the member seeking treatment must be otherwise healthy), revised list of covered infertility services, and referenced external review process for final adverse determinations to comply with the Commonwealth of Massachusetts mandated benefits. Added criteria for male infertility without ICSI, revised criteria for male infertility with ICSI, revised definition of male infertility, and added guidelines for coverage for a female member with no exposure to | 12/01/13<br>Version 3 | 06/19/13: MPCTAC<br>07/17/13: MPCTAC<br>08/21/13: MPCTAC<br>09/19/13: QIC |

| Policy Revisions History | | | |
|---|---|---|---|
| | sperm. Added definitions and moved definitions from the Description of Item or Service Section to the Definitions section. Add introductory sentence and reformatted Medical Policy Statement section. Reformatted and revised Limitations section and the prior authorization table in the Summary section. Added 24-month timeline for cryopreservation of embryos when member in active infertility treatment, added 24-month timeline for cryopreservation of eggs for female member in active infertility treatment, and added 12-month timeframe for sperm banking for male member in active infertility treatment. | | |
| 01/01/14 | Review for effective date 05/01/14. Updated table in Summary section. Revised criteria for ovarian reserve in the Medical Policy Statement section. | 05/01/14<br>Version 4 | 01/15/14: MPCTAC<br>02/18/14: QIC |
| 06/01/14 | Review for effective date 10/01/14. Reformatted Medical Policy Statement section and Limitations section without changing criteria. Revised Summary section. Deleted CPT codes 59866 and 74742 since these services may be utilized for indications unrelated to infertility service. Added CPT code 89353 as an applicable code. | 10/01/14<br>Version 5 | 06/18/14: MPCTAC<br>07/09/14: QIC |
| 12/01/14 | Review for 2015 code revisions effective 03/01/15. Added CPT code 89337. | 03/01/15<br>Version 6 | 12/02/14: MPCTAC (electronic vote)<br>12/10/14: QIC |
| 06/01/15 | Review for effective date 10/01/15. Updated template. Updated criteria in the Plan Prior Authorization Requirements Table in the Summary section, the Medical Policy Statement section, and the Limitations section. Defined active infertility treatment as Plan authorized active infertility treatment in the Summary section. Updated Definitions and References sections. | 10/01/15<br>Version 7 | 06/17/15: MPCTAC<br>07/08/15: QIC |
| 11/01/15 | Review for effective date 01/01/16. Updated template with list of applicable products. Revised language in the Applicable Coding section. | 01/01/16<br>Version 8 | 11/18/15: MPCTAC<br>11/25/15: MPCTAC (electronic vote)<br>12/09/15: QIC |
| 06/01/16 | Review for effective 10/01/16. Added language in the Clinical Background Information section for increased risk of impaired reproductive function with obesity and/or exposure to cigarette smoke. Revised criteria in the Plan Prior Authorization Requirements Table (in the Policy Statement section), Medical Policy Statement section, and Limitations section. Revised applicable code list and added Plan notes in the Applicable Coding section. Updated Definitions, References, and Reference to Applicable Laws and Regulations sections. | 10/01/16<br>Version 9 | 06/15/16: MPCTAC<br>07/13/16: QIC |

| Policy Revisions History | | | |
|---|---|---|---|
| 09/28/16 | Review for effective date 11/01/16. Administrative changes made to clarify language related to gender. | 11/01/16 Version 10 | 09/30/16: MPCTAC (electronic vote) 10/12/16: QIC |
| 07/01/17 | Review for effective date 10/01/17. Administrative changes made to the Policy Statement, Definitions, References, and Other Applicable Policies sections. Updated coding and revised Plan notes in the Applicable Coding section. Criteria revised in the Medical Policy Statement and Limitations sections. | 10/01/17 Version 11 | 07/19/17: MPCTAC |
| 02/01/18 | Review for effective date 03/01/18. Administrative changes made to the Policy Summary, Medical Policy Statement, and Limitations section to clarify the prior authorization process. | 03/01/18 Version 12 | 02/21/18: MCPTAC |
| 06/01/18 | Review for effective date 09/01/18. Administrative changes made to the Policy Summary, Description of Item or Service, Definitions, Applicable Coding, References, Other Applicable Policies, and Reference to Applicable Laws and Regulations sections. Criteria updated in the Medical Policy Statement and Limitations sections. | 09/01/18 Version 13 | 06/20/18: MPCTAC |
| 06/01/19 | Review for effective date 09/01/19. Administrative changes made to the Policy Summary, Limitations, Applicable Coding, References, Other Applicable Policies, and Reference to Applicable Laws and Regulations sections. Criteria revised in the Medical Policy Statement section. | 09/09/19 Version 14 | 06/19/19: MPCTAC |
| 11/01/19 | Review for effective date 12/01/19. Administrative changes made to the Limitations section. | 12/01/19 Version 15 | 11/20/19: MPCTAC |
| 07/01/20 | Review for effective date 10/01/20. Administrative changes made to the Policy Summary, Description of Item or Service, Definitions, Clinical Background Information, and References sections. Criteria revised in the Medical Policy Statement and Limitations sections. | 10/01/20 Version 16 | 07/15/20: MPCTAC |
| 08/01/21 | Review for effective date 11/01/21. Administrative changes made to the Description of Item or Service, Definitions, References, and Reference to Applicable Laws and Regulations sections. Criteria revised in the Plan Prior Authorization Requirements Table in the Policy Summary, Medical Policy Statement, and Limitations sections. | 11/01/21 Version 17 | 08/27/21: MPCTAC (electronic vote) |
| 11/01/21 | Review for effective date 12/01/21. Adopted new medical policy template; removed administrative sections, the Medical Policy Statement section renamed the Clinical Criteria section, and the Limitations section renamed the Limitations and Exclusions section. Added WellSense | 12/01/21 Version 18 | 11/30/21: MPCTAC (electronic vote) |

| Policy Revisions History | | | |
|---|---|---|---|
| | Medicare Advantage HMO as an applicable product effective 01/01/22. Administrative changes made to the Policy Summary, Clinical Criteria, Limitations and Exclusions, Applicable Coding, and References sections. | | |
| 06/01/22 | Review for effective date 09/01/22. Administrative changes made to the Policy Summary, Clinical Criteria, Limitations and Exclusions, Applicable Coding, and References sections. Adopted new medical policy template. Clinical Criteria revised with material changes. | 09/01/22 Version 19 | 06/15/22: MPCTAC |