

Infertility Services — Commercial

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Definitions

Infertility	<p>"Infertility" is a disease or condition characterized by the incapacity to impregnate another person or to conceive, defined by the failure to establish a clinical pregnancy after twelve (12) months of regular, unprotected sexual intercourse or therapeutic donor insemination, or after six (6) months of regular, unprotected sexual intercourse or therapeutic donor insemination for a female thirty-five (35) years of age or older. Earlier evaluation and treatment may be warranted based on a member's medical history or physical findings</p> <p>(See also NYS Mandate Section)</p>
Iatrogenic infertility	<p>An impairment of fertility by surgery, radiation, chemotherapy or other medical treatment affecting reproductive organs or processes.</p> <p>Note: EmblemHealth covers standard fertility preservation services when a medical treatment will directly or indirectly lead to iatrogenic infertility. Standard fertility preservation services include the collecting, preserving, and storing of ova and sperm.</p>
Male infertility	<p>Mild Male Factor: Abnormalities in the semen analysis where the sperm concentration is 10-15 million/mL, motility is 30–40%, and normal morphology at 2-3%</p> <p>Moderate Male Factor: Abnormalities in the semen analysis where the sperm concentration is 5–10 million/mL and motility is 25–30%, and normal morphology at 2-3%</p> <p>Severe Male Factor: Abnormalities in the semen analysis where the sperm concentration is less than 5 million/mL (unwashed specimen), motility is less than 25%, and morphology is < 4%, and normal morphology at 2-3%</p> <p>Isolated teratospermia is considered a male factor when there is <2% normal morphology on at least two semen analyses 1–4 weeks apart.</p>
IUI	<p>Intrauterine insemination (IUI) is a fertility treatment in which a fine catheter is inserted through the cervix into the uterus to deposit a sperm sample directly into the uterus.</p>

IVF	In Vitro Fertilization (IVF) is an assisted reproductive technology (ART). IVF is the process of fertilization by extracting eggs, retrieving a sperm sample, and then manually combining an egg and sperm in a laboratory dish. The embryo(s) is then transferred to the uterus.
Cycle	A "cycle" is defined as either all treatment that starts when preparatory medications are administered for ovarian stimulation for oocyte retrieval with the intent of undergoing in-vitro fertilization using a fresh embryo transfer; or medications are administered for endometrial preparation with the intent of undergoing in-vitro fertilization using a frozen embryo transfer.

Covered Services

<p>Basic infertility services:</p> <ul style="list-style-type: none"> - Initial evaluation - Semen analysis - Laboratory evaluation - Evaluation of ovulatory function - Postcoital test - Endometrial biopsy - Pelvic ultrasound - Hysterosalpingogram - Sono-hystogram - Testis biopsy - Blood tests; and - Medically appropriate treatment of ovulatory dysfunction <p>Note: Additional tests may be covered if the tests are determined to be Medically Necessary</p>	<p>Comprehensive infertility services:</p> <ul style="list-style-type: none"> - Ovulation induction and monitoring - Pelvic ultrasound - Artificial insemination - Hysteroscopy - Laparoscopy - Laparotomy <p>Advanced infertility services:</p> <ul style="list-style-type: none"> - Three (3) cycles per lifetime of in vitro fertilization - Cryopreservation and storage of sperm, ova, and embryos in connection with in vitro fertilization - Coverage for storage ends when 3 IVF cycles have been exhausted <p>Note: Plan benefits should be reviewed to ensure that comprehensive and/or advanced infertility services are covered</p>
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New York State Mandate — New York Insurance Circular Letter #3 (2021)

- A.** Unlimited intrauterine insemination (IUI) for members who meet the clinical definition of infertility (Note: Costs and storage of donor sperm, and IUIs to demonstrate infertility, are not covered except as specifically provided in New York Insurance Circular Letter #3 [2021])
- B.** Coverage for prescription drugs, if applicable, is limited to medications approved by the federal Food and Drug Administration for use in the diagnosis and treatment of infertility
- C.** The identification of the required training, experience and other standards for health care providers for the provision of procedures and treatments for the diagnosis and treatment of infertility determined in accordance with the standards and guidelines established and adopted by the American College of Obstetricians and Gynecologists and the American Society for Reproductive Medicine
- D.** The determination of appropriate medical candidates by the treating physician in accordance with the standards and guidelines established and adopted by the American College of Obstetricians and Gynecologists and/or the American Society for Reproductive Medicine

- E. Every large group contract that provides medical, major medical or similar comprehensive-type coverage shall provide coverage for at least three cycles of in-vitro fertilization (IVF) used in the treatment of infertility, including prescription drugs in connection with IVF

General Section

Section 1: General Indications for Initial and Continuation of Infertility Treatment Coverage

The below general infertility criteria are to be met for consideration of treatment:

- Prognosis for conception must be $\geq 5\%$; AND
- No evidence of significant diminished ovarian reserve (except in cases of requests for donor eggs for members with premature ovarian failure). Markers of significant diminished ovarian reserve include but are not limited to (one or more of the following within the previous 6 months):
 - FSH level ≥ 15 mIU/ml; **OR**
 - AMH level < 0.3 ng/ml; **OR**
 - Antral follicle count (AFC) < 7 (ASRM); **AND**
- If there has been monitored, medicated-stimulated infertility treatment within the previous 6 months it must demonstrate adequate ovarian response to stimulation. Examples include but are not limited to:
 - 1 follicle ≥ 15 mm diameter for IUI
 - Minimum of 1 follicle ≥ 15 mm diameter for ART
- Ovarian failure where a couple is attempting conception with their own gametes
- 2 or more medicated Assisted Reproductive Technologies (ART) cycles without adequate egg production, fertilization and/or embryo development

The general infertility surgery criteria as listed below are to be met for consideration of treatment:

- Pelvic pain that is not responsive to medical management; **OR**
- Presence of a pelvic mass for which gynecologic diagnosis warrants surgical intervention (e.g., hydrosalpinx); **OR**
- As an alternative treatment modality to the Assisted Reproductive Technologies (ART) particularly for individuals who are averse to pursuing ART for religious, social or financial concerns.

Following successful infertility surgery, in the absence of other infertility factors, additional treatment is not immediately indicated for 6 months after surgery. Infertility treatment is warranted when an infertility factor has been identified. This would include but is not limited to:

- Two abnormal semen analyses (abnormal count and/or motility), ovulatory dysfunction; compromise of the fallopian tubes; documented untreated or recurrent endometriosis; sexual dysfunction; abnormalities of the cervix or uterus that may interfere with conception.

Poor Prognosis and Futility

Examples where continued treatment may be futile:

- Markedly elevated FSH levels (≥ 15)
 - FSH levels should be evaluated in the context of other markers of ovarian reserve, such as AMH, AFC and response to prior ovarian stimulation
 - In the absence of a history of prior ovarian stimulation, a cycle of ART may be considered with premature diminished ovarian reserve.

- AMH level < 0.3 ng/ml
- Lack of viable spermatozoa
- Ovarian failure where a couple is attempting conception with their own gametes
- 2 or more medicated ART cycles without adequate egg production, fertilization and/or embryo development for transfer

Section 2: Artificial Insemination (IUI)

Member must meet the general definitions for infertility and prognosis and **all** of the following:

1. Diagnostic imaging report (i.e., hysterosalpingogram (HSG), sonohysterosalpingogram, sonohysterosalpingogram, HSG/hysteroscopy, sonohystogram, 3D ultrasound, or hysterosalpingo contrast sonography (HyCoSy) performed within 2 years showing **all** of the following:
 - Tubal patency of at least one tube
 - Normal endometrial cavity
2. Semen analysis (one sample within one year) demonstrating **one** of the following:
 - Normal semen analysis
 - Male factor infertility (excludes severe male factor infertility)
3. Must have **one** of the following:
 - Unexplained infertility
 - Polycystic Ovary Syndrome (PCOS), anovulation, or oligoovulation
 - Minimal or mild endometriosis
 - Cervical factors (i.e., cervical trauma, surgical or conization procedures, anatomical irregularities)
 - Male factor infertility (excluding severe)
 - Vaginismus diagnosis
 - Sexual dysfunction
 - Use of stored sperm from male members who required sperm banking/storage as a result of medical treatment (e.g., cancer treatment) likely to cause infertility
 - Women without Male Partners or Exposure to Sperm (single female/same sex couple) (i.e., single female who has failed 6 consecutive medically managed IUI cycles using donor sperm)
4. If member had prior IUI cycles, results must be submitted and demonstrate **one** of the following:
 - Adequate ovarian response to stimulation (i.e., at least 2 follicles > 12 mm diameter or 1 follicle ≥15 mm)
5. IUI after IVF
 This request is to obtain IUI services after IVF services have been rendered and **one** of the following apply:
 - There has been a spontaneous live birth after an unsuccessful IVF cycle
 - Members who opt to use donor sperm after discovery of a male genetic disorder
 - IUI after IUI-to-IVF conversion for hyperstimulation if the stimulation that was initially given is reduced
6. Conversion from IUI-to-IVF hyperstimulation conversion services if the stimulation was reduced and **all** of the following apply:

- Estradiol level of ≥ 800 pg/ml
- Production of at least 5 follicles > 12 mm in diameter
- Age < 40

Section 3: Assisted Reproductive Technology (ART) cycles (including Fresh, Freeze-All, and Frozen embryo transfer cycles) all of the following

1. Member has a history of at least three failed IUI cycles unless medically indicated to go straight to IVF
2. All transferrable and/or viable oocytes/embryos have been utilized prior to this request.
Note: The first embryo transfer performed within 120 days of a freeze-all cycle will still be considered a continuation of the prior freeze-all cycle.
3. Diagnostic imaging report within two years showing a normal endometrial cavity (i.e., hysterosalpingogram (HSG), sonohysterosalpingogram, HSG/hysteroscopy, sonohystogram, 3D ultrasound, or hysterosalpingo contrast sonography (HyCoSy))
4. Semen analysis (one sample within one year) (excluding frozen embryo transfer (FET) – no semen analysis)
5. There is the presence of **one** of the following:
 - Unexplained infertility
 - Premature ovarian failure
 - Ovulatory dysfunction as demonstrated by **one** of the following:
 - Ovulation induction has not resulted in conception
 - Poor response to ovulation induction
 - Hyper-response to ovulation induction
 - Female member with bilateral fallopian tube absence (excluding elective sterilization) or bilateral fallopian tube obstruction due to prior tubal disease with history of failed conventional therapy
 - History of severe endometriosis and/or failed medical/surgical therapies
 - Severe male factor infertility
 - Women without Male Partners or Exposure to Sperm (single female/same sex couple)
 - Conversion of fresh to freeze-all cycle with **one** of the following:
 - Member's progesterone concentration (P4) is > 1 ng/mL at the time of administration of hCG trigger injection
 - Management of Ovarian Hyperstimulation Syndrome (OHSS) or suspected OHSS
6. IVF Cycle Protocol (Note: if member meets criteria for 2 embryo transfer cycle and only one embryo is available, then a new IVF cycle may be authorized if benefit is available) related to **one** of the following:
 - 1st IVF treatment cycle: SET (single embryo transfer) is required
 - If there are no top-quality embryos after thawing, then two or more embryos of any quality may be transferred
 - 2nd and subsequent IVF treatment cycles:
 - SET/FET is required if member has **one or more** embryos frozen
 - If there are no top-quality embryos after thawing, then two embryos of any quality may be transferred
 - Fresh IVF cycle with SET if no frozen embryos available

7. Cryopreservation of Embryos: In conjunction with an approved infertility cycle, the Plan will authorize cryopreservation of embryos for **one** of the following:
 - For women in active infertility treatment cryopreservation for any embryos remaining after an IVF cycle. Cryopreserved embryos must be used before fresh IVF cycles using the member's or a donor's eggs are authorized.
8. Fertility Preservation: Fertility preservation services are a separate benefit to preserve fertility when a medical treatment will directly or indirectly result in iatrogenic infertility and do not count towards the three-cycle limit on IVF benefits. No infertility workup is required for coverage. (NOTE: Preservation is only covered for egg [oocytes] retrievals and sperm collection). Preservation is considered medically necessary for one of the following medical situations:
 - Members undergoing gonadotoxic cancer treatments
 - Members planning gender affirming treatment
 - Other medically necessary treatment that is expected to render the member permanently infertile (excluding voluntary sterilization)
9. Assisted Hatching
Assisted Hatching is considered medically necessary as part of any IVF procedure for advanced maternal age women > 38 years of age when documentation confirms **one** of the following:
 - Prior failed IVF cycles that produced three or more euploid embryos with failure to implant after embryo transfer
 - Prior pregnancy resulting from IVF where assisted hatching was performed
 - Thickened zona pellucida on microscopy
10. ICSI — Intracytoplasmic Sperm Injection (ICSI) or other Male Factor Procedures (MESA/TESE)
Member must meet the general definitions for infertility and prognosis and **any** of the following:
 - Severe male factor infertility evidenced by two abnormal semen analyses within the past year, and at least one abnormal result within 3 months of the request, which demonstrates one of the following:
 - < 5 million/mL (unwashed specimen)
 - < 25% motility
 - < 4% normal morphology
 - Reduced fertilization on a prior IVF cycle using non-donor sperm if the rate of fertilization on the prior cycle is < 40% fertilization with the standard insemination of mature eggs
 - Obstruction of the male reproductive tract unrelated to prior sterilization or sterilization reversal, and not amenable to repair (necessitating sperm retrieval via Microsurgical Epididymal Sperm Aspiration)
 - Nonobstructive azoospermia (necessitating sperm retrieval via Testicular Sperm Extraction)
 - ICSI is performed when fertilizing previously frozen oocytes in association with or without donor sperm, as exposure to cryoprotectants often lead to the hardening of the zona
 - Member has met criteria for Preimplantation Genetic Testing (PGT)
 - Retrospective authorizations will be allowed for ICSI if on the day of IVF, the egg retrieval post-processing semen is performed
 - Microepididymal Sperm Aspiration (MESA) is covered only for congenital absence or congenital obstruction of the vas deferens (typically diagnosed by the absence of fructose in semen) and confirmed by exam

- Microdissection - Testicular Excisional Sperm Extraction (TESE) is covered for non-obstructive azoospermia and spinal cord injury resulting in inability to ejaculate

11. Preimplantation Genetic Testing (PGT)

PGT is considered medically necessary as part of an IVF procedure when documentation confirms **one** of the following:

- Both partners are known carriers of a single gene autosomal recessive disorder with high risk for morbidity
- One partner is known to have a balanced translocation
- One partner has a single gene autosomal dominant disorder
- One partner is a known carrier of an x-linked disorder
- Testing is being conducted to determine the sex of an embryo when there is a documented history of an x-linked disorder, and decisions regarding management can be made based on sex alone
- A specific mutation, or set of mutations, has been identified, that specifically identifies the genetic disorder with a high degree of reliability

12. Donor Services

A. Donor Egg (Donor Oocyte): Use of Donor egg during infertility procedures is a covered benefit for women who meet the general requirements for treatment, the recommended treatment is considered standard of care, and there is documentation of **any** of the following:

- Congenital or surgical absence of ovaries
- Clinically documented premature ovarian failure / premature menopause in women < 40 years of age who have elevated FSH levels in the menopausal range (at least 30–40 mIU/mL) and amenorrhea as defined by American College of Obstetricians and Gynecologists)
- Clinically documented primary ovarian insufficiency or inadequate ovarian response in women < 40 years of age (i.e., fewer than 3 follicles >12 mm diameter), or inadequate embryo numbers and quality, during authorized IVF cycles within the prior 6 months. (Note: When donor egg criteria are met, a donor egg cycle is authorized for up to 6 months)
- Genetic abnormality

B. Donor Sperm: Use of donor sperm of normal quality is medically necessary when documentation includes any of the following:

- Bilateral congenital absence of vas deferens (BCAVD)
- Non-obstructive azoospermia confirmed through MESA/TESE results
- Previous radiation or chemotherapy treatment resulting in abnormal semen analyses
- Two or more abnormal semen analyses at least 30 days apart in the last 3 months
- A high risk of transmitting the male partner's genetic disorder to the offspring
- HIV+ male partner
- Donor sperm for biological males with genetic sperm defects
- For biological females without a biological male partner

Limitations/Exclusions

ART Limitations and Exclusions — members are not eligible for the following tests and/or procedures:

1. Infertility treatment if, based on the member's individual medical history, they have < 5% chance of a birth outcome
2. ART/Infertility services for members when clinical documentation confirms an individual or couple are using substances known to negatively interfere with fertility or fetal development (e.g., marijuana, opiates, cocaine, tobacco, or alcohol) (Note: Medical record documentation of 3 months of abstinence from substance use may be required before ART/Infertility services will be approved)
3. Embryo and/or egg cultures (CPT codes 89250 and 89272) for FET cycles only
4. Infertility treatment when infertility is the result of a non-reversed or unsuccessful reversal of a voluntary sterilization
5. Ovarian Reserve Assessment results (Clomiphene Citrate Challenge Test [CCCT])
6. Selective fetal reduction without known disorders that are non-compatible with life
7. Sperm DNA integrity/fragmentation tests [e.g., sperm chromatin structure assay (SCSA), single-cell gel electrophoresis assay (Comet), deoxynucleotidyl transferase-mediated dUTP nick end labeling assay (TUNEL), sperm chromatin dispersion (SCD) or Sperm DNA Decondensation™ Test (SDD)]
8. Sperm wash without approved cycle
9. Laboratory tests for cycle monitoring when IUI or IVF cycle has not been approved
10. Gender selection
11. Co-culture of embryos
12. Sperm-Hyaluronan Binding Assay
13. Embryo Glue
14. In vitro maturation of eggs
15. Genetic engineering
16. Egg harvesting, or other infertility treatment, performed during an operation not related to an infertility diagnosis
17. Chromosome studies of a donor (sperm or egg)
18. Infertility services in cases in which normal embryos have been or will be discarded because of gender selection
19. ICSI for any IVF cycle involving use of donor sperm (unless fertilizing previously frozen oocytes)
20. Treatments requested solely for the convenience, lifestyle, personal or religious preference of the member in the absence of medical necessity
21. Treatment to reverse voluntary sterilization, i.e., MESA/TESE, for a member who has undergone prior sterilization
22. Reciprocal IVF (including co-maternity retrievals and transfers)
23. Oocyte, ovarian or testicular tissue cryopreservation (excluding fertility preservation services)
24. Gamete intrafallopian tube transfers (GIFT) or zygote intrafallopian tube transfers (ZIFT)
25. Surrogacy (Note: Maternity service benefits are available for members acting as surrogate mothers)
26. Mock embryo transfer is not a covered procedure, as such planning, performed in anticipation of embryo transfer, is inclusive to the evaluation and management service provided
27. Preimplantation Genetic Testing (PGT) is not covered when being used for the selection of embryos with the sole purpose of determining the gender of the resultant offspring
28. Uterine transplant for the treatment of uterine factor infertility

29. All experimental/investigational procedures and treatments are not covered for the diagnosis and treatment of infertility as determined in accordance with the standards and guidelines established and adopted by the American College of Obstetricians and Gynecologists and the American Society for Reproductive Medicine
30. Fresh IVF cycles require normal intrauterine cavity
31. Embryo transfers when the member has not undergone infertility surgical interventions to relieve symptoms of any of the following:
 - Pelvic pain that is not responsive to medical management
 - Presence of a pelvic mass for which gynecologic diagnosis warrants surgical intervention (e.g., hydrosalpinx)
 - As an alternative treatment modality to the Assisted Reproductive Technologies (ART) particularly for individuals who are averse to pursuing ART for religious, social or financial concerns.
 - Abnormal intrauterine cavity
32. Following successful infertility surgery, in the absence of other infertility factors, additional treatment is not immediately indicated for 6 months after surgery.
33. Embryo banking: There is no evidence in the medical literature to support the practice of repeated ART cycles for the purpose of accumulating (banking) embryos for later use (egg retrievals without a fresh or frozen embryo transfer) with the exception of freeze all cycles for medical necessity.
34. Long-term sperm, oocyte, or embryo storage outside of NYS mandated coverage (excluding fertility preservation)
35. Sperm cryopreservation as a routine procedure for sperm backup in the absence of a confirmed physical or psychological diagnosis requiring cryopreservation (excluding fertility preservation)
36. Non-medical services related to donor egg/embryo or sperm procurement (e.g., finder fees, broker fees, legal fees, medications, donor screening, donor testing, and oocyte retrievals) are not covered
37. Infertility treatment when the infertile member is not the recipient of said services (e.g., donor egg in conjunction with gestational carrier)
38. After proceeding to a donor egg cycle, further IVF cycles using the member's eggs are not covered
39. Donor sperm without documented biological male factor infertility proven with 2 abnormal semen analyses with the same defect
40. The cost of donor sperm and storage, IUI, ART, and related services, if the male partner has a history of prior vasectomy with no subsequent successful vasectomy reversal procedure
41. Cost of procurement and storage of Donor Sperm (e.g., HCPCS S4026)
42. Cryopreservation of embryos or eggs or sperm for fertility preservation purposes other than chemotherapy or other treatments that may render an individual infertile
43. Cryopreservation of embryos or eggs or sperm for reciprocal IVF
44. Sperm storage/banking for males requesting this service for convenience or "back-up" for a fresh specimen
45. ART services are not covered in any of the following situations:
 - To convert an ART cycle to IUI when at least 3 follicles ≥ 15 mm in diameter are present (particularly in the setting of diminished ovarian reserve or on the 2nd or greater ART cycle when maximal dosage of gonadotropins is being used)

- Following an ART cycle that fails to result in conception due to poor ovarian response or poor-quality oocytes or embryos
- Following ≥ 2 ART cycles that have failed to result in a conception despite good quality oocytes or embryos

IUI Limitations and Exclusions — members are not eligible for the following tests and/or procedures:

1. Women who have been denied or failed ART services are generally not appropriate candidates for IUI cycles (exceptions based upon an individual's medical history will be considered)
2. Infertility services for members when clinical documentation confirms an individual or couple are using substances known to negatively interfere with fertility or fetal development (e.g., marijuana, opiates, cocaine, tobacco, or alcohol) (Note: Medical record documentation of 3 months of abstinence from substance use may be required before ART/Infertility services will be approved)
3. Infertility treatment when infertility is the result of a non-reversed or unsuccessful reversal of a voluntary sterilization
4. Ovarian reserve assessment results (i.e., Clomiphene Citrate Challenge Test [CCCT] is not covered)
5. Selective fetal reduction without known disorders that are non-compatible with life
6. Sperm DNA integrity/fragmentation tests (e.g., sperm chromatin structure assay [SCSA], single-cell gel electrophoresis assay [Comet], deoxynucleotidyl transferase-mediated dUTP nick end labeling assay [TUNEL], sperm chromatin dispersion [SCD] or Sperm DNA Decondensation™ Test [SDD])
7. Sperm wash without approved cycle
8. Laboratory tests for cycle monitoring when IUI or IVF cycle has not been approved
9. Chromosome studies of a donor (sperm or egg)
10. Treatments requested solely for the convenience, lifestyle, personal or religious preference of the member in the absence of medical necessity
11. Treatment to reverse voluntary sterilization, i.e., MESA/TESE, for a member who has undergone prior sterilization
12. Uterine transplant for the treatment of uterine factor infertility
13. All experimental/investigational procedures and treatments are not covered for the diagnosis and treatment of infertility as determined in accordance with the standards and guidelines established and adopted by the American College of Obstetricians and Gynecologists and the American Society for Reproductive Medicine
14. Member has not undergone infertility surgical interventions to relieve symptoms of any of the following:
 - Pelvic pain that is not responsive to medical management
 - Presence of a pelvic mass for which gynecologic diagnosis warrants surgical intervention (e.g., hydrosalpinx)
 - As an alternative treatment modality to the Assisted Reproductive Technologies (ART) particularly for individuals who are averse to pursuing ART for religious, social or financial concerns.
15. Following successful infertility surgery, in the absence of other infertility factors, additional treatment is not immediately indicated for 6 months after surgery.
16. > 1 insemination per cycle
17. Severe male factor infertility

18. Bilateral tubal factor infertility
19. Moderate or severe endometriosis unless treatment has previously been rendered and there is documentation of at least one uncompromised fallopian tube
20. Recurrent pregnancy loss
21. In the setting of ART in any of the following situations:
 - To convert an ART cycle to IUI when at least 3 follicles ≥ 15 mm in diameter are present (particularly in the setting of diminished ovarian reserve or on the 2nd or greater ART cycle when maximal dosage of gonadotropins is being used)
 - Following an ART cycle that fails to result in conception due to poor ovarian response or poor-quality oocytes or embryos
 - Following ≥ 2 ART cycles that have failed to result in a conception despite good quality oocytes or embryos

Revision History

Mar. 13, 2026	Clarification edits within Section 12, Donor Services, regarding ovarian insufficiency
Sept. 13, 2024	<ol style="list-style-type: none"> 1. Added note pertaining to costs and storage of donor sperm and IUIs commensurate with New York Insurance Circular Letter #3 2. Replaced “numerous” (ARTs) with “2 or more medicated” (ARTs) within poor prognosis section 3. Added clarification RE women without male partners or exposure to sperm regarding IUI cycle prerequisite 4. Corrected “fresh” to “frozen” RE semen analysis in ART section 5. Added noncovered HCPCS code example to cost of procurement/storage limitation RE donor sperm
Jun. 14, 2024	<ol style="list-style-type: none"> 6. Removed age parameters associated with FSH levels and IVF cycles throughout the policy 7. Definition <ul style="list-style-type: none"> ▪ Added normal morphology parameters to male factor infertility definitions and replaced “\leq” 4% with “<” RE severe male factor 8. General Indications <ul style="list-style-type: none"> ▪ Reinstated poor prognosis language 9. ICSI <ul style="list-style-type: none"> ▪ Added severe infertility language, i.e., that 2 abnormal semen analyses must be within the past year and that at least 1 abnormal result must be within 3 mos. of the request ▪ Replaced “\leq” 4% with “<” RE severe male factor infertility 10. Preimplantation genetic testing <ul style="list-style-type: none"> ▪ Added high risk of morbidity to the prerequisite pertaining to autosomal recessive disorder 11. Donor Sperm section <ul style="list-style-type: none"> ▪ Added “Donor sperm for biological males with genetic sperm defects ▪ Added “For biological females without a biological male partner” 12. Limitations/Exclusions <ul style="list-style-type: none"> ▪ Added that fresh IVF cycles require normal intrauterine cavity ▪ Added Sperm-Hyaluronan Binding Assay and Embryo Glue as investigational
March 14, 2024	<ol style="list-style-type: none"> 1. General section: Wording clarifications and moved relevant limitations/exclusions 2. ART: Combined all cycle type, wording clarifications and moved relevant limitations/exclusions

	<ol style="list-style-type: none"> 3. Assisted Hatching: Wording clarifications and moved relevant limitations/exclusions 4. Male Infertility Factor: Moved to definition section 5. ICSI: Wording clarification for severe male factor infertility and moved relevant limitations/exclusions 6. Cryopreservation of Embryos: Wording clarification for severe male factor infertility and moved relevant limitations/exclusions 7. Donor services: Wording clarification for severe male factor and moved relevant limitations/exclusions 8. Fertility Preservation: Wording clarification for severe male factor infertility and moved relevant limitations/exclusions 9. Limitations/Exclusions: 10. Added relevant section criteria, clarified substance use definition
Dec. 8, 2023	<ol style="list-style-type: none"> 1. Freeze-All Cycles section <ul style="list-style-type: none"> ▪ Clarified that approval for a frozen embryo transfer (FET), as a continuation of the same IVF cycle, will be conditional on the preimplantation genetic testing (PGT) being performed ▪ Added note stating that a current semen analysis is not required when FET is requested 2. Sections pertaining to Donor Services and IVF for Women without Male Partners or Exposure to Sperm <ul style="list-style-type: none"> ▪ Added “storage” to notes pertaining to noncovered expenses 3. Fertility Preservation Section <ul style="list-style-type: none"> ▪ Added note stating that fertility preservation services are a separate benefit to preserve fertility when a medical treatment will directly or indirectly result in iatrogenic infertility and do not count towards the three-cycle limit on IVF benefits 4. Limitations/Exclusions <ul style="list-style-type: none"> ▪ Added Sperm-Hyaluronan Binding Assay (HBA) as E/I for selection of sperm for use with assisted reproduction technologies
May 12, 2023	<ol style="list-style-type: none"> 1. Section 3: Assisted Reproductive Technology (ART): <ul style="list-style-type: none"> ▪ Added “Hysterosalpingogram (HSG), sonohysterosalpingogram, or hysteroscopic documentation of a normal endometrial cavity within the past 2 years” to IVF section (for consistency with IUI section) ▪ Replaced “Diminished ovarian reserve (not due to age) with “Premature ovarian failure” 2. Section 5: Donor Services <ul style="list-style-type: none"> ▪ Replaced (Clinically documented) “diminished premature ovarian reserve” (as defined by American College of Obstetricians and Gynecologists) with “premature ovarian failure”
Feb. 10, 2022	<ol style="list-style-type: none"> 13. Added noncoverage of uterine transplant for the treatment of uterine factor infertility to Limitations/Exclusions 14. Clarification edits (shown below in <i>italics</i>) General indications: <ul style="list-style-type: none"> ▪ No evidence of significant diminished ovarian reserve (<i>except in cases of requests for donor eggs for members with premature ovarian failure</i>) General infertility surgery: <ul style="list-style-type: none"> ▪ Presence of a pelvic mass for which gynecologic diagnosis warrants surgical intervention (e.g., <i>hydrosalpinx</i>) Noncovered services: <ul style="list-style-type: none"> ▪ Cryopreservation of embryos or eggs or sperm for fertility preservation purposes other than chemotherapy or other treatments that may render an individual infertile

	<ul style="list-style-type: none"> ▪ Cryopreservation of embryos or eggs or sperm for reciprocal IVF
Jul. 8, 2022	Added noncoverage note to Limitations/Exclusions for mock embryo transfers
Nov. 16, 2021	<ol style="list-style-type: none"> 1. Clarified that advanced infertility coverage includes cryopreservation and storage of sperm, ova, and embryos in connection with IVF 2. Clarified that prescription drugs in connection with IVF are covered in large group contracts that provide medical, major medical or similar comprehensive-type coverage 3. Modified age parameters pertaining to ovarian reserve within General Indications section 4. Added two indications to General Indications section regarding ovarian failure using a couple's own gametes and ART cycles without adequate egg production, fertilization and/or embryo development 5. Removed age parameters from note pertaining to additional treatment after infertility surgery 6. Clarified that IUI is not indicated for women with a less than 5% success rate for conception with IUI versus alternative therapies and removed age parameter 7. Progesterone concentration (P4) revised to read > 1ng/mL in Freeze All section 8. Added that freeze-all cycles are covered for surrogacy when the infertility benefit is met 9. Amended note pertaining to costs of donor sperm and IUIs within IVF section for women without male partners or exposure to sperm to communicate that costs are not covered except as specifically provided in New York Insurance Circular Letter #3 (2021) 10. Removed age parameters from Donor Services section 11. Added "gender affirming treatment, or other medically necessary treatment" as covered services to Fertility Preservation section 12. Added note pertaining to illicit/abusing substances communicating that medical record documentation of 3 months of abstinence may be required for review 13. Clarified that maternity service benefits are available for members acting as surrogate mothers
June 11, 2021	<ol style="list-style-type: none"> 1. Retitled New York State Limitations section to New York State Mandate and added the following note: Per New York Insurance Circular Letter #3, EmblemHealth covers infertility treatments (e.g., intrauterine insemination procedures) that are provided to individuals covered under an insurance policy or contract who are unable to conceive due to their sexual orientation or gender identity. Medical necessity criteria must be met for services to be authorized. 2. Added re-direct link from infertility definition to New York State Mandate section 3. Changed "conservative" management to "medical" pertaining to pelvic pain in General Indications section 4. Corrected progesterone concentration (P4) to read < 1ng/mL in Freeze All section 5. Added to ICSI section that ICSI is authorized when PGT is medically indicated 6. Added to section for women without male partners or exposure to sperm that New York Insurance Circular Letter #3 supersedes this section and added re-direct link to NYS Mandate Section 7. Added clarification to Donor Egg section communicating that use of a donor egg during infertility procedures is a covered benefit for women < 40 8. Changed "chemotherapy" to "gonadotoxic" in Fertility Preservation section as a descriptive for treatment that is causal to infertility 9. Added clarification in Limitations/Exclusions, Ovulation "predictor" kits 10. Added Home Artificial Insemination Kits to Limitations/Exclusions
Dec. 11, 2020	<ol style="list-style-type: none"> 1. Changes to Section 1(General Indications for Initial and Continuation of Infertility Treatment Coverage): <ul style="list-style-type: none"> ▪ Age parameters changed from 35 to 40 years of age regarding ovarian reserve FSH levels

	<ul style="list-style-type: none"> ▪ Removed, “Treatment is not indicated in the setting of using autologous oocytes in females \geq 44 years of age” <ol style="list-style-type: none"> 2. Removed all instances of “STEET” (single thawed elective embryo transfer) acronym throughout the policy and retained “SET” (single embryo transfer) 3. Clarified storage coverage per NYS Mandate throughout various sections of the policy, i.e.: <ul style="list-style-type: none"> ▪ Embryo storage ends when 3 IVF cycles have been exhausted ▪ Removed note previously communicating that embryo storage is covered only during an active cycle ▪ Clarified that long-term sperm, oocyte or embryo storage is not covered outside of the NYS Mandate (noting that per the mandate, storage is covered until benefits have been exhausted for IVF) ▪ Removed noncoverage language pertaining to cryopreservation and storage from Limitations/Exclusions
Sept. 1, 2020	Added note to Section 3A bullet RE failed IUI cycles regarding 3 IUIs before IVF
Aug. 14, 2020	<ol style="list-style-type: none"> 1. Added General Indications section that communicates ovarian reserve markers commensurate with age, poor prognosis factors and number of IUIs prior to IVF 2. Added sonohysterosalpingogram as a covered screening option for tubal occlusion 3. Enhanced male factor infertility definition (i.e., mild, moderate and severe factor parameters) 4. Clarified that the first embryo transfer performed within 60 days of a freeze all cycle will be considered a continuation of the freeze-all cycle 5. Clarified that ICSI is also clinically indicated when fertilizing previously frozen oocytes 6. Clarified that IUIs to demonstrate infertility are not covered for women without male partners or exposure to sperm 7. Noncovered additions to Limitations/Exclusions: <ul style="list-style-type: none"> ▪ Sperm DNA integrity/fragmentation tests [e.g., sperm chromatin structure assay (SCSA), single-cell gel electrophoresis assay (Comet), deoxynucleotidyl transferase-mediated dUTP nick end labeling assay (TUNEL), sperm chromatin dispersion (SCD) or Sperm DNA Decondensation™ Test (SDD)] ▪ Sperm wash without approved cycle ▪ Laboratory tests for cycle monitoring when IUI or IVF cycle has not been approved ▪ Infertility treatment when medically contraindicated (e.g., uterine or tubal abnormalities)
Feb. 14, 2020	Added pre-implantation genetic testing criteria to ART section
Jan. 17, 2019	Clarified IVF protocol for members between 35–38 years of age Added that SET is not necessary for members > 38 undergoing IVF
Nov. 25, 2019	Updated commensurate with New York State Mandate eff. Jan. 1, 2020

Applicable Procedure Codes

58321	Artificial insemination; intra-cervical
58322	Artificial insemination; intra-uterine
58323	Sperm washing for artificial insemination
58340	Catheterization and introduction of saline or contrast material for saline infusion sonohysterography (SIS) or hysterosalpingography
58345	Transcervical introduction of fallopian tube catheter for diagnosis and/or re-establishing patency (any method), with or without hysterosalpingography

58752	Tubouterine implantation
58760	Fimbrioplasty
58970	Follicle puncture for oocyte retrieval, any method
58974	Embryo transfer, intrauterine
76831	Saline infusion sonohysterography (SIS), including color flow Doppler, when performed
76948	Ultrasonic guidance for aspiration of ova, imaging supervision and interpretation
89250	Culture of oocyte(s)/embryo(s), less than 4 days;
89251	Culture of oocyte(s)/embryo(s), less than 4 days; with co-culture of oocyte(s)/embryos
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
89290	Biopsy, oocyte polar body or embryo blastomere, microtechnique (for pre-implantation genetic diagnosis); less than or equal to 5 embryos
89291	Biopsy, oocyte polar body or embryo blastomere, microtechnique (for pre-implantation genetic diagnosis); greater than 5 embryos
89300	Semen analysis; presence and/or motility of sperm including Huhner test (post coital)
89310	Semen analysis; motility and count (not including Huhner test)
89320	Semen analysis; volume, count, motility, and differential
89321	Semen analysis; sperm presence and motility of sperm, if performed
89322	Semen analysis; volume, count, motility, and differential using strict morphologic criteria (e.g., Kruger)
89331	Sperm evaluation, for retrograde ejaculation, urine (sperm concentration, motility, and morphology, as indicated)
89337	Cryopreservation, mature oocyte(s)
89342	Storage (per year); embryo(s)
89343	Storage (per year); sperm/semen
89346	Storage (per year); oocyte(s)
89352	Thawing of cryopreserved; embryo(s)
89353	Thawing of cryopreserved; sperm/semen, each aliquot

89356	Thawing of cryopreserved; oocytes, each aliquot
Q0115	Postcoital direct, qualitative examinations of vaginal or cervical mucous
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
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
S4027	Storage of previously frozen embryos
S4035	Stimulated intrauterine insemination (IUI), case rate
S4037	Cryopreserved embryo transfer, case rate

References

- New York State Department of Financial Services. IVF and Fertility Preservation Law Q&A Guidance. https://www.dfs.ny.gov/apps_and_licensing/health_insurers/ivf_fertility_preservation_law_qa_guidance. Accessed May 23, 2022.
- Agency for healthcare research and quality (AHRQ), U.S. Department of Health and Human Services, National Guideline Clearinghouse | Fertility: assessment and treatment for people with fertility problems. <http://guideline.gov/content.aspx>
- Wang, Ange, M.D., et al. Freeze-Only Versus Fresh Embryo Transfer in a Multicenter Matched Cohort Study: Contribution of Progesterone and Maternal Age to Success Rates. *Fertility and Sterility*. August 2017; 108 (2): 254-261.
- American Society of Reproductive Medicine. A practice committee report: definition of infertility. July 1993. Available online: asrm.org.
- Smith, Andrew D., et al. Live-Birth Rate Associated With Repeat In Vitro Fertilization Treatment Cycles. *Journal of the American Medical Association*. December 2015; 314 (24):2654-2662
- Published jointly by the Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology, 'Criteria for number of embryos to transfer: a committee opinion', *Fertility and Sterility*. 2013 Jan;99(1):pp. 44-46
- ASRM. The Practice Committee of the American Society for Reproductive Medicine: Testing and interpreting measures of ovarian reserve. *Fertil Steril* 2015;103(3):e9-e17.
- ASRM. The Ethics Committee of the American Society for Reproductive Medicine. Fertility Treatment When the Prognosis is Very Poor or Futile: a Committee Opinion. *Fertil Steril* 2012;98:e6–e9.
- ASRM. The Practice Committee of the American Society for Reproductive Medicine: Use of Clomiphene Citrate in Infertile Females: a Committee Opinion. *Fertil Steril* 2013; 100: 341-8.
- ASRM. The Ethics Committee of the American Society for Reproductive Medicine. Oocyte or embryo donation to women of advanced reproductive age: an ethics committee opinion. *Fertil Steril* 2016;106:e3-e7.
- ASRM. Mature oocyte cryopreservation: a guideline. Practice Committees of American Society for Reproductive Medicine, Society for Assisted Reproductive Technology. *Fertil Steril* 2013;99:37–43
- Crawford S, Boulet SL, Mneimneh AS, et al. Costs of achieving live birth from assisted reproductive technology: a comparison of sequential single and double embryo transfer approaches. *Fertil Steril* 2016 Feb;105(2):444–50.

Devine S, Connell MT, Richter KS, et al. Single vitrified blastocyst transfer maximizes liveborn children per embryo while minimizing preterm birth. *Fertil Steril*. 2015 Jun;103(6):1454–60.

Diamond MP, Legro RS, Coutifaris C, et al. Letrozole, clomiphene or gonadotropin for unexplained infertility. *N Engl J Med* 2015;373:1230-40

Fauque P, Jouannet P, Davy C, Guibert J, et al. Cumulative results including obstetrical and neonatal outcome of fresh and frozen-thawed cycles in elective single versus double fresh embryo transfers. *Fertil Steril* 2010;94:927-935.

Fujimoto A, Morishima K, Harada M, et al. Elective single-embryo transfer improves cumulative pregnancy outcome in young patients but not in women of advanced reproductive age. *J Assist Reprod Genet*. 2015 Dec;32(12):1773–1779.

Griffo J, Hodes-Wertz B, Lee H-L. Single thawed euploid embryo transfer improves IVF pregnancy, miscarriage, and multiple gestation outcomes and has similar implantation rates as egg donation. *J Assist Reprod Genet*. 2013 Feb;30(2):259-64.

Milliman Care Guideline: Assisted Reproductive Technology. MCG Ambulatory Care 2013: 17th edition; ACG: A0504 (AC).

Scott, RT. Diminished ovarian reserve and access to care. *Fertil Steril* 2004; 81:1489-1492.

Shapiro BS, Daneshmand ST, Garner FC, et al. Evidence of impaired endometrial receptivity after ovarian stimulation for in vitro fertilization: a prospective randomized trial comparing fresh and frozen-thawed embryo transfer in normal responders. *Fertil Steril* 2011;96:344–348.

Shapiro BS, Daneshmand ST, Restrepo H, et al. Matched-cohort comparison of single-embryo transfers in fresh and frozen-thawed embryo transfer cycles *Fertil Steril* 2013;99:389–92.

Shapiro BS, Harris DC, Richter KS. Predictive value of 72-hour blastomere cell number on blastocyst development and success of subsequent transfer based on the degree of blastocyst development. *Fertil Steril* 2000;73:582–6.

Mastenbroek S, Twisk M, van Echten-Arends J, et al. In vitro fertilization with preimplantation genetic screening. *New Eng J Med*. 2007 July;357(1):9-17.

Staessen C, Platteau P, Van Assche E, et al. Comparison of blastocyst transfer with or without pre-implantation genetic diagnosis for aneuploidy screening in couples with advanced maternal age: A prospective randomized controlled trial. *Hum Reprod*. 2004 Dec;19(12):2849-2858.

Sermon KD, Michiels A, Harton G, et al. ESHRE PGD consortium data collection VI: Cycles from January to December 2003 with pregnancy follow-up to October 2004. *Hum Reprod*. 2007 Feb;22(2):323-336.

Twisk M, Mastenbroek S, van Wely M, et al. Pre-implantation genetic screening for abnormal number of chromosomes (aneuploidies) in in vitro fertilization or intracytoplasmic sperm injection.

Cochrane Database Syst Rev. 2006 Jan;25(1):CD005291. Verlinsky Y, Cohen J, Munne S, et al. Over a decade of experience with pre-implantation genetic diagnosis. *Fertil Steril*. 2004 Aug;82(2):302-303.

Wright, TE . Screening, brief intervention, and referral to treatment for opioid and other substance use during infertility treatment. *Fertil Steril*. 2017 Aug; 108(2):214–221. PMID: 28697912.

Chua SJ, Danhof NA, Mochtar MH, van Wely M, McLernon DJ, Custers I, Lee E, Dreyer K, Cahill DJ, Gillett WR, Righarts A, Strandell A, Rantsi T, Schmidt L, Eijkemans MJC, Mol BWJ, van Eekelen R. Age-related natural fertility outcomes in women over 35 years: a systematic review and individual participant data meta-analysis. *Hum Reprod*. 2020 Aug 1;35(8):1808-1820. doi: 10.1093/humrep/deaa129. PMID: 32696041.

Lean SC, Derricott H, Jones RL, Heazell AEP. Advanced maternal age and adverse pregnancy outcomes: A systematic review and meta-analysis. *PLoS One*. 2017 Oct 17;12(10):e0186287. doi: 10.1371/journal.pone.0186287. PMID: 29040334; PMCID: PMC5645107.

Rademaker D, Hukkelhoven CWPM, van Pampus MG. Adverse maternal and perinatal pregnancy outcomes related to very advanced maternal age in primigravida and multigravida in the Netherlands: A population-based cohort. *Acta Obstet Gynecol Scand*. 2021 May;100(5):941-948. doi: 10.1111/aogs.14064. Epub 2021 Feb 27. PMID: 33314021.

Toner JP, Grainger DA, Frazier LM. Clinical outcomes among recipients of donated eggs: an analysis of the U.S. national experience, 1996-1998. *Fertil Steril*. 2002 Nov;78(5):1038-45. doi: 10.1016/s0015-0282(02)03371-x. PMID: 12413990.

Williams RS, Ellis DD, Wilkinson EA, Kramer JM, Datta S, Guzick DS. Factors affecting live birth rates in donor oocytes from commercial egg banks vs. program egg donors: an analysis of 40,485 cycles from the Society for Assisted Reproductive Technology registry in 2016-2018. *Fertil Steril*. 2022 Feb;117(2):339-348. doi: 10.1016/j.fertnstert.2021.10.006. Epub 2021 Nov 19. PMID: 34802685.

Hayes Inc. Evidence Analysis Research Brief. Uterus Transplantation for Treatment of Uterine Factor Infertility. December 2022.