

4.02.06	Uterus Transplantation for Absolute Uterine Factor Infertility		
Original Policy Date:	June 1, 2022	Effective Date:	October 1, 2023
Section:	4.0 OB/Gyn/Reproduction	Page:	Page 1 of 14

Policy Statement

- I. Uterus transplantation for absolute uterine factor infertility is considered **investigational**.

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

Policy Guidelines

Coding

The following codes may be used for this procedure:

- **0664T:** Donor hysterectomy (including cold preservation); open, from cadaver donor
- **0665T:** Donor hysterectomy (including cold preservation); open, from living donor
- **0666T:** Donor hysterectomy (including cold preservation); laparoscopic or robotic, from living donor
- **0667T:** Donor hysterectomy (including cold preservation); recipient uterus allograft transplantation from cadaver or living donor
- **0668T:** Backbench standard preparation of cadaver or living donor uterine allograft prior to transplantation, including dissection and removal of surrounding soft tissues and preparation of uterine vein(s) and uterine artery(ies), as necessary
- **0669T:** Backbench reconstruction of cadaver or living donor uterus allograft prior to transplantation; venous anastomosis, each
- **0670T:** Backbench reconstruction of cadaver or living donor uterus allograft prior to transplantation; arterial anastomosis, each

Description

Absolute uterine factor infertility is a condition in which an individual is unable to achieve pregnancy due to an absent or non-functioning uterus. Uterus transplantation may present a childbearing option that is an alternative to existing family planning pathways, including adoption, foster parenting, and gestational carrier pregnancy. Uterus transplantation is a complex, multi-stage process involving a living or deceased donor, recipient, and genetic partner.

Related Policies

- Laparoscopic and Percutaneous Techniques for the Myolysis of Uterine Fibroids

Benefit Application

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

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

Regulatory Status

Solid organ transplants are a surgical procedure and, as such, are not subject to regulation by the U.S. Food and Drug Administration (FDA).

The FDA regulates human cells and tissues intended for implantation, transplantation, or infusion through the Center for Biologics Evaluation and Research, under Code of Federal Regulation Title 21, parts 1270 and 1271. Solid organs used for transplantation are subject to these regulations.

Restorative or life-enhancing uterine vascularized composite allograft (VCA) procurement and transplantation falls under the oversight of the Organ Procurement and Transplantation Network (OPTN).²²

Rationale

Background

Absolute Uterine Factor Infertility

Absolute uterine factor infertility (AUI) refers to infertility that is attributable to an absent or non-functional uterus due to congenital, surgical, anatomical, or acquired factors that prevent embryo implantation and term pregnancy. AUI is estimated to impact 1 in 500 females of childbearing age.^{1,2}

Uterine agenesis or Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome results in the congenital absence of the uterus or presence of a rudimentary solid bipartite uterus. MRKH syndrome accounts for less than 3% of all müllerian malformations with an estimated prevalence of 1 in 4500 females.^{3,4} Individuals with MRKH syndrome type I present with 2 kidneys and are considered ideal candidates for uterine transplantation. Individuals with MRKH syndrome type II presenting with a single kidney have a higher risk of medication-induced nephrotoxicity and associated obstetric complications (e.g., severe preeclampsia).⁵

Hysterectomy is the most common cause of acquired AUI, with 240,000 procedures taking place in females under age 44 in the United States.⁶ In one clinical trial screening study of 239 individuals at the Cleveland Clinic, indications for uterus transplantation included prior hysterectomy (64%) and congenital anomalies (32%). Among individuals with prior hysterectomy, 50% were performed for benign indications, 25% for malignancy, and 25% for obstetric complications.⁷

Uterus Transplantation

Uterus transplantation may provide a unique fertility restoration option for individuals desiring to carry and birth a child.⁸ Uterus transplantation is a complex, multi-stage process involving a living or deceased donor, recipient, and genetic partner. Once screening and consent is established for all involved parties, in-vitro fertilization is performed prior to transplantation to ensure fertilization and normal embryo development.⁹ The transplantation surgery involves radical hysterectomy in the donor to ensure long vascular pedicles for transplantation;¹⁰ however, several cases of robot-assisted laparoscopic approaches have been reported.^{11,12} An advantage of uterus procurement in a deceased donor involves freedom to transect ureters, but this convenience is balanced by the potential for prolonged uterus ischemic time.¹³ The surgical approach in the recipient is dictated by underlying pelvic anatomy which may be impacted by AUI etiology. For example, in individuals with Asherman syndrome, a traditional total hysterectomy must first be performed in the recipient.

Immunosuppression is initiated at the time of transplantation and protocol and for-cause cervical biopsies enable monitoring for organ rejection.^{14,15} After 6 to 12 months of immunosuppression, embryo transfer, pregnancy, and cesarean delivery may follow. When childbearing has been deemed

complete, the transplanted uterus is removed to avoid lifelong immunosuppression. Thus, uterus transplantation is the first form of organ transplantation intended to be temporary.^{1,9}

The first human uterus transplant was performed in 2000 in Saudi Arabia with a 46 year old living donor and 26 year old recipient with acquired AUI due to hysterectomy for prior post-partum hemorrhage. Due to the development of acute vascular thrombosis at 3 months post-transplant, graft hysterectomy was required.¹⁶ The first successful live birth occurred in 2014 in Sweden in a 35 year old recipient with MRKH syndrome via a living, 61 year old, two-parous donor. The recipient was admitted with preeclampsia at 31 weeks, and a healthy male child was born 5 days later via cesarean delivery.¹⁷ The first live birth in the United States occurred in 2017 in a 29 year old recipient with MRKH syndrome via a living, 32 year old, two-parous donor.¹⁸ According to the Organ Procurement and Transplantation Network (OPTN), 35 uterus transplants have been performed in the United States via 13 deceased and 22 living donors as of March 2022.¹⁹

Literature has explored the implications of uterus transplantation in transgender women, identifying several theoretical medical issues in genetic males meriting further investigation. These include creation of adequate de novo uterine vascularization, administration of appropriate hormone replacement therapy, and placement of the donor uterus in a nongynecoid pelvis.^{20,21}

Literature Review

Evidence reviews assess the clinical evidence to determine whether the use of a technology improves the net health outcome. Broadly defined, health outcomes are length of life, quality of life, and ability to function including benefits and harms. Every clinical condition has specific outcomes that are important to patients and to managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of a technology, 2 domains are examined: the relevance and the quality and credibility. To be relevant, studies must represent 1 or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. Randomized controlled trials are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

Due to the nature of absolute uterine factor infertility (AUI), there are no RCTs directly comparing uterus transplant with alternatives. Systematic reviews are based on case series. Studies comparing surgical technique, infection prophylaxis, and immunosuppressive regimens are not germane to this evidence review.

Uterus Transplantation

Clinical Context and Therapy Purpose

The purpose of uterus transplantation in individuals who have AUI is to provide a unique childbearing option that is an alternative to or a desired improvement on existing family planning pathways.

The following PICO was used to select literature to inform this review.

Populations

The relevant population of interest is individuals with AUFI due to an absent or non-functioning uterus. Most congenital cases of uterine agenesis are due to Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome. Individuals with uterine factors contributing to, but not exclusively causing, infertility are generally not considered candidates for uterus transplantation unless established medical or surgical therapeutic options (e.g., hysteroscopic adhesiolysis, myomectomy) have failed. These factors may include müllerian malformations, intrauterine adhesions or Asherman syndrome, radiation injury, poor endometrial receptivity, or uterine leiomyoma(s) of submucosal or intramural type. Most acquired cases of AUFI are due to prior hysterectomy for malignancy, obstetric complications, or uterine fibroids.

Interventions

The therapy being considered is uterus transplantation. Uterus transplantation is a complex, multi-stage process involving a living or deceased donor, recipient, and genetic partner. Uterus transplantation is the first organ transplantation procedure intended to be temporary, concluding with graft hysterectomy to avoid the need for lifelong immunosuppression once childbearing is deemed complete. Pregnancy in the transplanted uterus is achieved through in-vitro fertilization (IVF) and embryo transfer.

Comparators

The relevant comparators are alternative family planning pathways, such as adoption, foster parenting, or gestational carrier pregnancy.

Outcomes

The general outcomes of interest are health status measures, perinatal outcomes, quality of life, treatment-related morbidity, and treatment-related mortality. Benefits and harms should be considered for the donor, recipient, developing fetus, and newborn. Several years of follow-up may be required to fully observe outcomes through all stages of the procedure from procurement through graft removal.

In 2020, the United States Uterus Transplant Consortium issued guidelines for standardized nomenclature and reporting in uterus transplantation trials, identifying 7 progressive stages with milestones of success: (1) technical, (2) menstruation, (3) embryo implantation, (4) pregnancy, (5) delivery, (6) graft removal, and (7) long-term follow-up.²³ Primary outcomes of interest include recipient posttransplant survival, graft survival, and the transplant success rate, defined as the delivery of a child per transplanted recipient reported at 2-year intervals for the duration of the transplant. Secondary outcomes of interest for recipients include onset of menstruation or withdrawal bleeding, clinical pregnancy, failed embryo transfer, miscarriage, rejection episode(s), stricture, acute kidney injury, adjusted live birth rate, preeclampsia, malignancy, metabolic wellness, health of the newborn, and health of the child. The primary outcome of interest for living uterus donors is patient survival at 1 and 2 years after donation. Secondary outcomes for the living donor include complications (e.g., ureteral complications), hospitalizations, and adverse renal events.

Study Selection Criteria

Methodologically credible studies were selected using the following principles:

- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies;
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought;
- Consistent with a 'best available evidence approach,' within each category of study design, studies with larger sample sizes and longer durations were sought;

- Studies with duplicative or overlapping populations were excluded.

Review of Evidence

Systematic Reviews

Brannstrom et al (2021) published a systematic review of all published clinical uterus transplantation data and major interim results from 2000 through 2019.¹ Of 62 uterus transplants identified for the review, the overall technical success rate defined as subsequent regular menstruation, was 76%. Technical success rates for living donors (LD) and deceased donor (DD) procedures were 78% and 64%, respectively. Rates of serious postsurgical complications were 18% for living donors and 19% for recipients. Most uterus transplantation procedures to date have involved LD (51/62; 82%). Complications in LD have included ureteric laceration, urinary bladder hypotonia, unplanned bilateral oophorectomy, vaginal dehiscence, fecal impaction, and unilateral pyelonephritis and hydronephrosis. Postoperative complications in recipients have included vaginal anastomotic stenosis and treatable episodes of minor to severe graft rejection.

The cumulative live birth rate per transplant attempt, and per surgically successful uterus transplant is estimated to be >60% and >80%, respectively, as based on 24 published live birth accounts from interim data. High rates of preterm birth (19/24; 80%) and respiratory distress syndrome in the newborn (9/24; 38%) have been observed across cases. Obstetric complications have included preeclampsia, gestational hypertension, and several cases of placenta previa and gestational diabetes. Newborns had an Apgar score of 8 or higher at 5 minutes. One minor malformation in a female newborn involving an anteriorly caudally displaced urethra was reported, which was surgically corrected at 11 months. The reviewers concluded that "the modest success rate and the fairly high complication rate among [LD], indicate that further research and development under strict governance are needed before this option should be widely offered."

Escandon et al (2022) published a systematic review summarizing data on uterine transplantation from 1995 through November 2020 from PubMed, Cochrane Evidence-Based Medicine Reviews, Scopus, Web of Science, and Cochrane Central Register of Controlled Trials (CENTRAL).²⁴ A total of 64 uterus transplants were included in the review across 40 publications including 16 case reports, 5 case reports which were part of an observational study, 2 commentaries, 13 prospective observational studies, and 4 reviews. The quality of included studies was assessed by dual reviewers using the Newcastle-Ottawa Scale (NOS) for nonrandomized cohort studies and the Oxford Center for Evidence-Based Medicine (OCEBM) levels of evidence. Sixteen total studies were graded 2b (individual cohort study or low-quality RCT, n=7) or 4 (case series or poor-quality cohort and case-control studies, n=9) on the OCEBM and scores of 2 (n=1), 4 (n=2), 5 (n=11) or 6 (n=2) on the NOS with higher scores indicating better quality reporting of patient selection, comparability, and exposure. No overall assessment of the quality of evidence was provided.

Overall a total of 75% (48/64) grafts survived or fulfilled the purpose of transplantation with the majority (41/48; 85%) coming from a LD source. The reasons for transplantation failure included: mechanical occlusion of the uterine vessels (n=1), arterial obstructive disease (n=1), arterial and or venous thrombosis (n=11), or fungal, viral, or bacterial infections (n=3). A total of 25 live child births from patients with a LD (25/53; 47.2%) and 4 from DDs (4/11; 36.4%) were reported with 2 recipients having more than 1 newborn (donor type not specified). Complications for recipients included UTIs (n=5), pleural effusion (n=2), retroperitoneal hematoma (n=1), emotional distress (n=1), significant intraoperative blood loss (n=3), bladder injury (n=1), viral respiratory infection (n=2), vaginosis (n=1), vagina anastomosis (n=7), ovarian hyperstimulation syndrome (n=2), persistent post-operative anemia (n=1) and genital tract infections. Mild or borderline rejection episodes were reported in 9 patients, and 1 patient had acute rejection. However, all episodes were successfully controlled with intravenous and oral corticosteroids.

Case Series

Characteristics and interim results from select case series are summarized in Tables 1 and 2. There is an uncertain level of patient overlap between the international registry study by Brännström et al (2023)²⁵, and the two case series by Fronek et al (2021)²⁶, and Brännström et al (2022)²⁷, which included individuals treated with uterine transplants at centers in the international registry.

Table 1. Summary of Key Case Series Characteristics

Study	Country (Years)	LD Criteria	Recipient Criteria	Participants
Johannesson et al (2021) ²⁸ , Putman et al (2021) ²⁹ , Johannesson et al (2023) ³⁰ .	United States (2016-2012)	NR	Women with AUF1 and intact native ovaries and of childbearing age 20 to 35, negative history of or prior vaccination for HPV, and meets physiological criteria	Median age, 31±4.7 years; 31 (94%) MRKH type I or II; 2 (6%) prior hysterectomy for leiomyoma(s); Mean donor age, 35±7.3 21 (64%) LD UTx; 12 (36%) DD UTx
Fronek et al (2021) ²⁶ .	Czech Republic (2016-2018)	Female 18 to 60 years of age, ≤4 childbirths, ≤1 cesarean section, good general health	Female 18 to 40 years of age, AUF1 based on congenital or acquired uterus absence, desire for a child, having a male partner, and good general health	Mean recipient age, 28±3 years; 9 MRKH type I; 1 MRKH type II; Mean donor age, 46±14 years; 5 LD UTx (all related); 5 DD UTx; 5 postmenopausal; 2 nulliparous
Brannstrom et al (2022) ²⁷ .	Sweden (2016-2021)	NR	Females with AUF1 < 38 years of age, BMI < 30, without systemic or psychiatric illness	Mean recipient age, 31.5±3.9; 8 (89%)MRKH type I or II; Mean donor age, 53±7; 9 LD UTx (all related)
Brannstrom et al (2023) ²⁵ .	International Registry (Sweden, China [2 centers], Czech Republic, Brazil, Germany, Serbia, France, Belgium, Lebanon, Mexico, Spain, and Italy) (2012-2020)	Female with at least 1 normal pregnancy, BMI of < 28, no serious systemic psychiatric illness, and completion of childbearing	Female of fertile age (generally <39 years of age), BMI of <28 and absent overt systemic or psychiatric illness.	Mean recipient age, 29 years (range 22 to 38); 44 (98%) MRKH type I or II; 1 (2%) prior hysterectomy; Mean donor age, NR; 33 LD UTx (all related); 10 DD UTx
Wilson et al (2023) ³¹ .	United States (2016-2019)	NR	Female 20 to 35 years of age, diagnosis of AUF1 with intact native ovaries, BMI ≤ 30, systemic or active infection, history of cancer in previous 5 years, history of solid organ or bone marrow transplant, history of or prior vaccination for HPV, no history of smoking or drug	Mean recipient age, 31 years (range 20 to 35); 13 (93%) MRKH; 1 (7%) prior hysterectomy

Study	Country (Years)	LD Criteria	Recipient Criteria	Participants
			abuse in previous year, meets physiological criteria	

AUFI: absolute uterine factor infertility; DD: deceased donor; HPV: human papillomavirus; LD: living donor; MRKH: Mayer-Rokitansky-Küster-Hauser syndrome; NR: not reported; UTx: uterus transplant.

Table 2. Summary of Key Case Series Results

Study	Survival	Embryo Transfers, total (range)	Clinical Pregnancy, total (n)	Live Births, total (n)	Live Birth Success Rate	Complications
Johannesson et al (2021) ²⁸ , Putman et al (2021) ²⁹ , Johannesson et al (2023) ³⁰ ,	Graft: 23/31 (74% at 1 year)	59 (1 to 4+)	NR	21 (19); 12 LD and 7 DD	Overall: 61%; With surgical success: 83%	acute rejection, gestational hypertension, preeclampsia, gestational diabetes mellitus, placenta previa, preterm delivery
Fronek et al (2021) ²⁶ ,	Graft: 7/10 (70% at 1 year); Recipient: 10/10 (100% at 2 years)	40 (4 to 11)	7 (5)	3 (3); 2 LD and 1 nulliparous DD	Overall: 30%; With surgical success: 43%	vaginal stenosis, leukopenia, UTI, acute rejection, CMV replication, graft HSV infection, <i>C. difficile</i> infection; HLA mismatch, CKD
Brannstrom et al (2022) ²⁷ ,	Graft: 7/9 (78% at 4 years); Recipient: 9/9 (100% at 4 years)	46 (1 to 11)	15 (7)	9 (6); 6 LD	Overall: 66.7%; With surgical success: 86%	acute rejection, anxiety, depression, preeclampsia, respiratory distress syndrome
Brannstrom et al (2023) ²⁵ ,	Graft: 26/39 (67% at 7 mos)	32 (71%) underwent embryo transfer	NR	19 (16); 14 LD and 2 DD	With surgical success: 40%	acute rejection, arterial hypertension, cholestasis, elevated creatine, gestational diabetes, gestational hypertension, hematologic cytopenia, opportunistic infection, premature rupture of membranes, subchorionic hematoma
Wilson et al (2023) ³¹ ,	Graft: 14/21 (67% at 1 mo);	NR	23 (14)	14 (12)	Overall: 57%; With surgical success: 86%	acute rejection, CMV viremia, gestational

Study	Survival	Embryo Transfers, total (range)	Clinical Pregnancy, total (n)	Live Births, total (n)	Live Birth Success Rate	Complications
	13 LD and 1 DD					diabetes, gestational hypertension, nausea, opportunistic infection, preeclampsia, prepregnancy hypertension, renal toxicity, UTI, vomiting,

CKD: chronic kidney disease; CMV: cytomegalovirus; DD: deceased donor; HLA: human leukocyte antigen; HSV: herpes simplex virus; LD: living donor; MRKH: Mayer-Rokitansky-Küster-Hauser syndrome; NR: not reported; UTI: urinary tract infection.

Section Summary: Uterus Transplantation

Case series of uterus transplantation for AUFI have predominantly enrolled individuals with MRKH syndrome type I. Two systematic reviews of interim trial data have reported live birth success estimates exceeding 60% overall and 80% among transplant attempts with surgical success. Slightly higher technical success rates have been reported for living donor compared to deceased donor procedures (78% vs. 64%, respectively). Rates of serious complications are high among both recipients (19%) and living donors (18%). High rates of preterm birth (80%) and episodes of acute respiratory distress syndrome in the newborn have been reported. Long-term health outcomes in children born via uterus transplantation and recipients following graft hysterectomy continue to accumulate in ongoing trials.

Supplemental Information

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the evidence review conclusions.

Practice Guidelines and Position Statements

Guidelines or position statements will be considered for inclusion in 'Supplemental Information' if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

American College of Obstetricians and Gynecologists

In 2018 (reaffirmed 2020), the American College of Obstetricians and Gynecologists (ACOG) Committee on Adolescent Health Care issued a Committee Opinion (Number 728) on the diagnosis, management, and treatment of müllerian agenesis.³² Regarding future fertility options, the opinion states that while live births have resulted from uterine transplantation, "given limited data, this procedure currently is considered experimental and is not widely available."

American Society for Reproductive Medicine

In 2018, the American Society for Reproductive Medicine (ASRM) issued a position statement recognizing uterus transplantation as the first successful medical treatment for absolute uterine factor infertility, emphasizing its experimental nature.³³ The statement recommends that the procedure should be performed within an Institutional Review Board-approved research protocol, with recommendations for the composition of "well-coordinated and multidisciplinary" uterus transplantation teams and suggested recipient inclusion and exclusion criteria.

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

Ongoing and Unpublished Clinical Trials

Some currently unpublished trials that might influence this review are listed in Table 3.

Table 3. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
<i>Ongoing</i>			
NCT02573415	Uterine Transplantation for the Treatment of Uterine Factor Infertility	10	Oct 2023
NCT03252795	Uterus Transplantation From a Multi-organ Donor: A Prospective Trial	20	Dec 2023
NCT04244409	INvestigational Study Into Transplantation of the Uterus (INSITU)	10	Feb 2024
NCT05089513	Uterus Transplantation by Robotics and in Donor and Recipient (Robot2)	5	Aug 2024
NCT03689842	Feasibility Study of Uterine Transplantation From Living Donors in Terms of Efficacy and Safety in Patients With Mayer-Rokitansky-Küster-Hauser Syndrome (MRKH)	20	Jun 2025
NCT04026893	Deceased Uterine Transplant in Absolute Uterine Infertility	250	Oct 2025
NCT03277430	Uterus Transplantation From Live Donors and From Deceased Donors - Clinical Study (UTxLD/DBD)	20	Dec 2025
NCT03581019	Uterus Transplantation From Deceased Donor - Gothenburg III	8	Dec 2025
NCT02656550	Uterine Transplantation and Pregnancy Induction in Women Affected by Absolute Uterine Infertility	20	Jan 2026
NCT03307356	The University of Pennsylvania Uterus Transplant for Uterine Factor Infertility Trial (UNTIL)	5	Jul 2029
NCT05263076	Uterine Transplantation and Pregnancy Induction in Women Affected by Absolute Uterine Factor Infertility	10	Dec 2030
NCT05646992	Uterus Transplantation to Treat Infertility (OPRTUNTI)	40	Feb 2033
NCT05726305	Transplantation of Uterus for Uterine infertility From Living Donor or Deceased Donor (TULIPE)	16	Dec 2037
<i>Unpublished</i>			
NCT02741102	Uterine Transplant in Absolute Uterine Infertility (AUIF)	10	Jan 2023

NCT: national clinical trial

References

1. Brannstrom M, Belfort MA, Ayoubi JM. Uterus transplantation worldwide: clinical activities and outcomes. *Curr Opin Organ Transplant*. Dec 01 2021; 26(6): 616-626. PMID 34636769
2. Hellstrom M, El-Akouri RR, Sihlbom C, et al. Towards the development of a bioengineered uterus: comparison of different protocols for rat uterus decellularization. *Acta Biomater*. Dec 2014; 10(12): 5034-5042. PMID 25169258
3. Grimbizis GF, Camus M, Tarlatzis BC, et al. Clinical implications of uterine malformations and hysteroscopic treatment results. *Hum Reprod Update*. Mar-Apr 2001; 7(2): 161-74. PMID 11284660
4. Folch M, Pigem I, Konje JC. Mullerian agenesis: etiology, diagnosis, and management. *Obstet Gynecol Surv*. Oct 2000; 55(10): 644-9. PMID 11023205

5. Garg AX, Nevis IF, McArthur E, et al. Gestational hypertension and preeclampsia in living kidney donors. *N Engl J Med*. Jan 08 2015; 372(2): 124-33. PMID 25397608
6. Brett KM, Higgins JA. Hysterectomy prevalence by Hispanic ethnicity: evidence from a national survey. *Am J Public Health*. Feb 2003; 93(2): 307-12. PMID 12554591
7. Arian SE, Flyckt RL, Farrell RM, et al. Characterizing women with interest in uterine transplant clinical trials in the United States: who seeks information on this experimental treatment?. *Am J Obstet Gynecol*. Feb 2017; 216(2): 190-191. PMID 27865979
8. Jarvholm S, Enskog A, Hammarling C, et al. Uterus transplantation: joys and frustrations of becoming a 'complete' woman—a qualitative study regarding self-image in the 5-year period after transplantation. *Hum Reprod*. Aug 01 2020; 35(8): 1855-1863. PMID 32619006
9. Malasevskaia I, Al-Awadhi AA. A New Approach for Treatment of Woman With Absolute Uterine Factor Infertility: A Traditional Review of Safety and Efficacy Outcomes in the First 65 Recipients of Uterus Transplantation. *Cureus*. Jan 18 2021; 13(1): e12772. PMID 33614361
10. Johannesson L, Diaz-Garcia C, Leonhardt H, et al. Vascular pedicle lengths after hysterectomy: toward future human uterus transplantation. *Obstet Gynecol*. Jun 2012; 119(6): 1219-25. PMID 22617587
11. Wei L, Xue T, Tao KS, et al. Modified human uterus transplantation using ovarian veins for venous drainage: the first report of surgically successful robotic-assisted uterus procurement and follow-up for 12 months. *Fertil Steril*. Aug 2017; 108(2): 346-356.e1. PMID 28778283
12. Ayoubi JM, Carbonnel M, Pirtea P, et al. Laparotomy or minimal invasive surgery in uterus transplantation: a comparison. *Fertil Steril*. Jul 2019; 112(1): 11-18. PMID 31277761
13. Gauthier T, Piver P, Pichon N, et al. Uterus retrieval process from brain dead donors. *Fertil Steril*. Aug 2014; 102(2): 476-82. PMID 24837613
14. Molne J, Broecker V, Ekberg J, et al. Monitoring of Human Uterus Transplantation With Cervical Biopsies: A Provisional Scoring System for Rejection. *Am J Transplant*. Jun 2017; 17(6): 1628-1636. PMID 27868389
15. Balko J, Novackova M, Skapa P, et al. Histopathological examination of the ectocervical biopsy in non-transplanted uteri: A study contributing to the provisional scoring system of subclinical graft rejection after uterus transplantation. *Acta Obstet Gynecol Scand*. Jan 2022; 101(1): 37-45. PMID 34693986
16. Fageeh W, Raffa H, Jabbad H, et al. Transplantation of the human uterus. *Int J Gynaecol Obstet*. Mar 2002; 76(3): 245-51. PMID 11880127
17. Brannstrom M, Johannesson L, Bokstrom H, et al. Livebirth after uterus transplantation. *Lancet*. Feb 14 2015; 385(9968): 607-616. PMID 25301505
18. Testa G, McKenna GJ, Gunby RT, et al. First live birth after uterus transplantation in the United States. *Am J Transplant*. May 2018; 18(5): 1270-1274. PMID 29575738
19. Organ Procurement and Transplantation Network (OPTN). National data: Transplants by Donor Type [GU: Uterus]. March 2022; <https://optn.transplant.hrsa.gov/data/view-data-reports/national-data/#>. Accessed June 16, 2023.
20. Lefkowitz A, Edwards M, Balayla J. Ethical considerations in the era of the uterine transplant: an update of the Montreal Criteria for the Ethical Feasibility of Uterine Transplantation. *Fertil Steril*. Oct 2013; 100(4): 924-6. PMID 23768985
21. Jones BP, Rajamanoharan A, Vali S, et al. Perceptions and Motivations for Uterus Transplant in Transgender Women. *JAMA Netw Open*. Jan 04 2021; 4(1): e2034561. PMID 33471119
22. Organ Procurement and Transplantation Network (OPTN). Vascular composite allograft. n.d.; <https://optn.transplant.hrsa.gov/professionals/by-organ/vascular-composite-allograft>. Accessed June 14, 2023.
23. Johannesson L, Testa G, Flyckt R, et al. Guidelines for standardized nomenclature and reporting in uterus transplantation: An opinion from the United States Uterus Transplant Consortium. *Am J Transplant*. Dec 2020; 20(12): 3319-3325. PMID 32379930
24. Escandón JM, Bustos VP, Santamaría E, et al. Evolution and Transformation of Uterine Transplantation: A Systematic Review of Surgical Techniques and Outcomes. *J Reconstr Microsurg*. Jul 2022; 38(6): 429-440. PMID 34535036

25. Brännström M, Tullius SG, Brucker S, et al. Registry of the International Society of Uterus Transplantation: First Report. *Transplantation*. Jan 01 2023; 107(1): 10-17. PMID 35951434
26. Fronek J, Kristek J, Chlupac J, et al. Human Uterus Transplantation from Living and Deceased Donors: The Interim Results of the First 10 Cases of the Czech Trial. *J Clin Med*. Feb 04 2021; 10(4). PMID 33557282
27. Brännström M, Dahm-Kähler P, Kvarnström N, et al. Reproductive, obstetric, and long-term health outcome after uterus transplantation: results of the first clinical trial. *Fertil Steril*. Sep 2022; 118(3): 576-585. PMID 35697530
28. Johannesson L, Testa G, Putman JM, et al. Twelve Live Births After Uterus Transplantation in the Dallas UtErus Transplant Study. *Obstet Gynecol*. Feb 01 2021; 137(2): 241-249. PMID 33416285
29. Putman JM, Zhang L, Gregg AR, et al. Clinical pregnancy rates and experience with in vitro fertilization after uterus transplantation: Dallas Uterus Transplant Study. *Am J Obstet Gynecol*. Aug 2021; 225(2): 155.e1-155.e11. PMID 33716072
30. Johannesson L, Richards E, Reddy V, et al. The First 5 Years of Uterus Transplant in the US: A Report From the United States Uterus Transplant Consortium. *JAMA Surg*. Sep 01 2022; 157(9): 790-797. PMID 35793102
31. Wilson NK, Schulz P, Wall A, et al. Immunosuppression in Uterus Transplantation: Experience From the Dallas Uterus Transplant Study. *Transplantation*. Mar 01 2023; 107(3): 729-736. PMID 36445981
32. Amies Oelschlager AE. ACOG Committee Opinion No. 728: Mullerian Agenesis: Diagnosis, Management, And Treatment. *Obstet Gynecol*. Jan 2018; 131(1): e35-e42. PMID 29266078
33. Allyse M, Amer H, Coutifaris C, et al. American Society for Reproductive Medicine position statement on uterus transplantation: a committee opinion. *Fertil Steril*. Sep 2018; 110(4): 605-610. PMID 30196945

Documentation for Clinical Review

- No records required

Coding

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

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

Type	Code	Description
CPT®	0664T	Donor hysterectomy (including cold preservation); open, from cadaver donor
	0665T	Donor hysterectomy (including cold preservation); open, from living donor
	0666T	Donor hysterectomy (including cold preservation); laparoscopic or robotic, from living donor
	0667T	Donor hysterectomy (including cold preservation); recipient uterus allograft transplantation from cadaver or living donor
	0668T	Backbench standard preparation of cadaver or living donor uterine allograft prior to transplantation, including dissection and removal of

Type	Code	Description
		surrounding soft tissues and preparation of uterine vein(s) and uterine artery(ies), as necessary
	0669T	Backbench reconstruction of cadaver or living donor uterus allograft prior to transplantation; venous anastomosis, each
	0670T	Backbench reconstruction of cadaver or living donor uterus allograft prior to transplantation; arterial anastomosis, each
HCPCS	None	

Policy History

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

Effective Date	Action
06/01/2022	New policy.
06/01/2023	Annual review. No change to policy statement.
10/01/2023	No change to policy statement. Literature review updated.

Definitions of Decision Determinations

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

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

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

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

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

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

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

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

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

Appendix A

POLICY STATEMENT (No changes)	
BEFORE	AFTER
<p>Uterus Transplantation for Absolute Uterine Factor Infertility 4.02.06</p> <p>Policy Statement:</p> <ul style="list-style-type: none"> I. Uterus transplantation for absolute uterine factor infertility is considered investigational. 	<p>Uterus Transplantation for Absolute Uterine Factor Infertility 4.02.06</p> <p>Policy Statement:</p> <ul style="list-style-type: none"> I. Uterus transplantation for absolute uterine factor infertility is considered investigational.