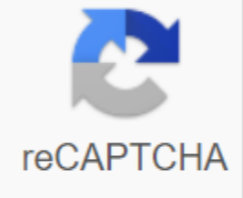




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Artificial reproductive technology pdf

Auxiliary reproductive technologyIllustration, depicting intracytoplasmic sperm injection (ICSI), an example of assisted reproductive technologies. Other titles ARTMeSHD027724 (edited on Wikidata) Assisted Reproductive Technology (ART) includes medical procedures used primarily to address infertility. This item includes procedures such as in vitro fertilization, intracytoplasmic sperm injection (ICSI), cryopreservation of gametes or embryos and/or the use of fertility drugs. When used to address infertility, ART can also be convened as fertility treatment. ART mainly refers to the field of reproductive endocrinology and infertility. Some forms of ART can be used for fertile pairs for genetic purposes (see pre-implantation of genetic diagnosis). ART can also be used in surrogacy mechanisms, although not all surrogacy mechanisms are associated with ART. Procedures common with ART, the process of sexual intercourse costs and fertilization of eggs occurs in the laboratory (i.e. in vitro fertilization). In the US, the Centers for Disease Control and Prevention (CDC) - which -defines ART to include all fertility treatments in which both eggs and sperm are processed. Typically, ART procedures involve surgical removal of eggs from a woman's ovaries, combining them with sperm in the laboratory and returning them to a woman's body or donating to another woman. According to the CDC, they do not include treatments in which only sperm is worked out (i.e., intrauterine-or artificially-insemination) or procedures in which a woman takes medicine only to stimulate egg production without the intention of having eggs retrieved. In Europe ART also artificially eliminates fertilization and involves only procedures in which eggs are processed. WHO, or the World Health Organization, also defines ART in this way. Induction ovulation Main article: Induction ovulation induction is commonly used in the sense of stimulation of the development of ovarian follicles. In vitro fertilization Additional information: Incorporative Fertilization Steps of IVF Treatment of in vitro fertilization is a method of allowing fertilization of male and female gametes (sperm and egg) to occur outside the female body. Techniques commonly used in in vitro fertilization include: Transvaginal Egg Search (OVR) is a process by which a small needle is inserted through the back of the vagina and guided by ultrasound in the ovarian follicles to collect the fluid that contains the eggs. The transfer of embryos is a step in the process in which one or more embryos are placed in the uterus of the female with establish pregnancy. Less commonly used methods of in vitro fertilization: Auxiliary hatching of the zone (AA) is performed shortly before the embryo of the embryo To the uterus. A small hole is made in the outer layer surrounding the egg to help the embryo hatch and help in the process of implanting the growing embryo. Intracytoplasmic sperm injection (ICSI) Intracytoplasmic sperm injection (ICSI) is useful in the case of male infertility factor, where the number of sperm very low or unsuccessful fertilization occurred with the previous attempt of IVF (s). The ICSI procedure involves one sperm carefully inserted into the center of the egg using a microneedle. With ICSI, only one sperm per egg is required. Without ICSI you need 50,000 to 100,000. This method is also sometimes used when donor sperm is used. Autologic endometrial coculture is a possible treatment for patients who have failed previous IVF attempts or who have a poor quality embryo. The patient's fertilized eggs are placed on top of a layer of cells from the patient's own mucosa, creating a more natural environment for embryo development. In intraphalopian transfer, the egg zigota is removed from the woman's ovaries and fertilized in the laboratory; the resulting zygota is placed in the fallopian tube. Cytoplasmic transmission is a method by which the contents of a fertile egg from the donor is injected into the patient's infertile egg along with the sperm. Egg donors are resources for women without eggs due to surgery, chemotherapy or genetic causes; or with poor egg quality, previously unsuccessful IVF cycles or advanced maternal age. During the donation of eggs, the eggs are extracted from the donor's ovaries, fertilized in the laboratory with sperm from the recipient's partner, and the resulting healthy embryos are returned to the recipient's uterus. Sperm donation can provide the source of sperm used in IVF procedures, where a male partner does not produce sperm or has a hereditary disease, or where a woman is being treated without a male partner. Pre-implantation-genetic diagnosis (PGD) involves the use of genetic screening mechanisms such as on-site fluorescent hybridization (FISH) or comparative genomic hybridization (CGH) to help identify genetically abnormal embryos and improve healthy outcomes. The splitting of embryos can be used for twins to increase the number of available embryos. Pre-implanted genetic diagnosis Preimplantation of genetic diagnosis can be carried out on embryos before implantation (as a form of embryo profiling), and sometimes even eggs before fertilization. PGD is considered in the same way as prenatal diagnosis. PGD is an addition to ART procedures and requires in vitro fertilization to obtain eggs or embryos for evaluation. Embryos are usually obtained using blastomer or blastocyst biopsy. The latter method was less for the embryo, so it is advisable to perform a biopsy about day 5 or 6 Choosing sex is an attempt to control the sex of offspring to achieve the desired sex. This can be achieved in several ways, both before and after embryo implantation, as well as at birth. Pre-implantation methods include PGD, but also sperm sorting. Other other assistive reproduction methods include: Mitochondrial replacement therapy (MRT), sometimes called mitochondrial donation) is a replacement for mitochondria in one or more cells to prevent or improve disease. MRT originated as a special form of IVF in which some or all of the mitochondrial DNA of an unborn baby comes from a third party. This method is used when mothers carry genes for mitochondrial diseases. The therapy is approved for use in the United Kingdom. In intraphalopian gamete (GIFT) a mixture of sperm and eggs is placed directly in the women's fallopian tubes using laparoscopy after searching for a transvaginal egg. Reproductive surgery, treatment, such as fallopian tube obstruction and vas deferens obstruction, or reversing vasectomy of reverse vasectomy. In the surgical extraction of sperm (SSR), a reproductive urologist receives sperm from the vessels of deferens, epididymis or directly from the testicle in a short outpatient procedure. With cryopreservation, eggs, sperm and reproductive tissue can be preserved for later IVF. Risks Most children conceived by IVF have no birth defects. However, some studies have shown that assisted reproductive technologies are associated with an increased risk of birth defects. Artificial reproductive technologies are becoming more accessible. Early studies show that there is an increased risk of medical complications with both the mother and the child. Some of these include low birth weight, placental insufficiency, chromosomal disorders, preterm birth, gestational diabetes and pre-eclampsia (Aiken and Brockelsby). In the largest U.S. study, which used data from the general registry of birth defects, 6.2% of children conceived by eco had serious defects, compared to 4.4% of naturally conceived children with maternal age and other factors (coefficient factor ratio, 1.3. 95% confidence interval, 1.00 to 1.67). ART carries with it the risk of heterotopic pregnancy (simultaneous intrauterine and ectopic pregnancy). The main risks: Genetic disorders Low birth weight. In IVF and ICSI, the risk factor is reduced protein expression in energy metabolism; Ferritin and ATP5A1. Premature birth. Low birth weight and premature birth are closely related to many health problems such as visual impairment and cerebral palsy. Children born after about twice as often as cerebral palsy. Sperm donation is an exception, with the birth defect rate up by almost a fifth compared to the general population. This can be explained by the fact that sperm banks only accept with a high sperm count. Current evidence suggests little or no increased risk of postpartum depression among women who use ART. However, in an iconic paper published by Jack Balaia et al, it was found that babies born after ART have similar neurodevelopment than babies born after natural conception. Using as a result of the 1992 Fertility Clinic's Success and Certification Act, the CDC is required to publish annual rates of ART success at U.S. fertility clinics. Reproductive assistive procedures performed in the United States have more than doubled in the past 10 years, with 140,000 procedures performed in 2006, resulting in 55,000 babies being born. In Australia, 3.1 per cent of births are the result of ART. 26% The most common causes of termination of infertility treatment are estimated to be: transfer of treatment (39%), physical and psychological burden (19%), psychological burden 14%, physical burden 6.32%), relational and personal problems (17%, personal causes 9%, relational problems 9%), refusal of treatment (13%) and organizational (12%) and the clinic (8%) Problems. In the U.S., many Americans do not have insurance coverage for infertility research and treatment. Many states are starting mandate coverage, and the rate of use is 278% higher in states with full coverage. There are some health insurance companies that cover the diagnosis of infertility, but often after diagnosis do not cover any costs of treatment. Estimated costs of treatment/diagnosis in the U.S. with inflation through 2019 (US\$): Initial work: hysteroscopy, Hysterosalpingogram, blood tests 2600 euros Sonohisterogram (SHG) 0 Clomifen citrate cycle \$260 - \$650 IVF cycle - \$13,100 - \$39,300 Using a surrogate mother to transport a child - depending on arrangements Another way to look at costs is to determine the expected cost of establishing a pregnancy. Thus, if clomiphene treatment has a chance to establish pregnancy in 8% cycles and costs \$650, the expected cost is \$7,900 to establish pregnancy, compared to the IVF cycle (fertility cycle 40%) For society as a whole, the cost of IVF on average pays off by 700% due to the tax on future employment. According to the European Society for Human Reproduction, 157,500 children were born in Europe in 2015 using assisted reproductive technologies. Embryology (ESHRE). But there are serious differences in legislation across the Old Continent. The European Directive establishes standards relating to the use of human tissues and cells, but all ethical and legal issues on ART remain the prerogative of EU member states. Conditions of assisted reproductive technologies in various European countries. ART, sanctioned for lesbian ART couples, permitted for single ART women, permitted for single women and lesbian ART couples, prohibited for single women and lesbian couples across Europe, legal criteria depending on the availability of slightly different. In 11 countries, all women can benefit; in 8 others concerned only heterosexual couples; 7 only single women; and in 2 (Austria and Germany) only lesbian couples. Spain became the first European country to open ART to all women, in 1977, when the first sperm bank was opened there. In France, the right to ART is granted to all women from 2019. Legislation has evolved rapidly over the past 15 years. For example, Portugal made ART available in 2006 with conditions very similar to those in France before amending the law in 2016 to allow lesbian couples and single women to benefit. Italy clarified its uncertain legal position in 2004 by adopting The Strictest Laws in Europe: ART is only available to heterosexual couples married or otherwise, and sperm donation is prohibited. Today, 21 countries provide partial government funding for ART treatment. The other seven who do not, are Ireland, Cyprus, Estonia, Latvia, Luxembourg, Malta and Romania. However, such subsidies are subject to conditions. In Belgium, a fixed payment of 1,073 euros is made for each full cycle of the IVF process. This woman must be under the age of 43 and cannot perform more than six CYCLES of ART. There is also a limit on the number of portable embryos, which varies depending on the age and number of cycles completed. In France, ART is fully subsidized by national health insurance for women under the age of 43 with a limit of 4 IVF attempts and 6 for in vitro fertilization. Germany tightened its terms for public funding in 2004, cutting the number of ART cycles conducted from more than 102,000 in 2003 to less than 57,000 the following year. Since then, this figure has remained stable. Seventeen countries restrict access to ART based on a woman's age. Ten countries have an upper age limit ranging from 40 years (Finland, Netherlands) to 50 years (including Spain, Greece and Estonia). Since 1994, France is one of a number of countries (including Germany, Spain and the UK) that use the somewhat vague concept of natural age of procreation. In 2017 The Board of the Biomedicine Agency of France has set an age limit of 43 years for women using ART. Ten countries do not have age restrictions on ART. These include Austria, Hungary, Italy and Poland. Poland. European countries allow donations to goth by third parties. But situations vary depending on whether sperm or eggs are concerned. Sperm donations are allowed in 20 EU member states; 11 of them allowed anonymity. Egg donation is possible in 17 states, including 8 under anonymous conditions. On 12 April, the Council of Europe adopted a recommendation calling for an end to anonymity. In the UK, anonymous sperm donations ended in 2005 and children have access to the donor's identity when they reach adulthood. In France, the principle of anonymous donations of sperm or embryos is preserved in the Bioethics Act 2011, but the new bill could make a difference. United Kingdom in the United Kingdom, all patients are entitled to pre-testing free of charge by the National Health Service (NHS). However, treatment is not widely available on the NHS and there can be long queues. So many patients pay for immediate treatment within the NHS or seek help from private clinics. In 2013, the National Institute for Health and Care Excellence (NICE) published new guidelines on who should have access to IVF treatment on the NHS in England and Wales. The guidelines say that women aged 40 to 42 should be offered one cycle of IVF on the NHS if they have never had IVF treatment before, have no evidence of a low ovarian reserve (this is when ovarian eggs are low in quantity, or poor quality), and have been informed of the additional effects of IVF and pregnancy at that age. However, if tests show IVF is the only treatment likely to help them get pregnant, women should be co-examined for IVF directly. This policy is often changed by local clinical commissioning groups, in a rather blatant breach of the NHS Constitution for England, which stipulates that patients are entitled to drugs and treatments that have been recommended by NICE for use in the NHS. For example, the Cheshire, Merseyside and West Lancashire Clinical Commissioning Group insists on additional conditions: a person undergoing treatment should have started treatment before his 40th birthday; A person undergoing treatment must have a BMI between the ages of 19 and 29; Neither partner should have living children, both from current and previous relationships. This includes both adopted and biological children; and sub-fertility should not be a direct result of the sterilization procedure in any partner (this does not include the conditions under which sterilization occurs as a result of another medical problem). Couples who have cancelled the sterilization procedure are not eligible for treatment. Canada See Also: Human Reproduction Assistance Law Some Treatments OHIP (public health insurance) in Ontario, while others are not. women with bilateral blocked fallopian tubes and Under-40s have treatment covered but are still required to pay for test fees (about CAS\$3,000 - 4,000). Coverage varies in other provinces. Most other patients are required to pay for the treatment themselves. Israel's National Health Insurance, which is compulsory for all Israeli citizens, covers almost all fertility treatments. IVF costs are fully subsidized before the birth of two children for all Israeli women, including single women and lesbian couples. Embryo transfers for gestational surrogacy are also covered. Germany January 27, 2009 Federal Constitutional Court ruled that it is unconstitutional that health insurance companies must bear only 50% of the cost of IVF. On March 2, 2012, the Federal Council approved a bill from some federal states that provides a 25% subsidy to the federal government. Thus, the share of expenses incurred for the couple will decrease to 25%. From July 2017, assisted reproductive technology is also allowed for married Leby couples, as the German parliament has allowed same-sex marriage in Germany. In July 2020, the French Parliament allowed assisted reproductive technologies also for lesbian couples and single women.

Society and Culture Ethics For the treatment of specific ethical considerations, see [In vitro fertilization - ethics, surrogacy and ethical issues](#), and [sperm donation - Ethical_and_legal_issues](#). Some couples may find it difficult to stop treatment despite a very poor prognosis, resulting in useless treatments. This may give ART suppliers a difficult decision to continue or refuse treatment. Some assisted reproductive technologies may be harmful to both the mother and the child, posing a psychological and/or physical health risk that may affect the continued use of these treatments. Fictional representations of films and other fiction depicting the emotional struggle of assisted reproductive technologies were uplifted in the second half of the 2000s decade, although techniques have been available for decades. As ART becomes more common, there is a growing number of people who can relate to it in one way or another from personal experience. For specific examples, refer to the fiction sections in individual subarticles, such as surrogacy, sperm donation and fertility clinic. In addition, reproduction and pregnancy in speculative fiction has been present for many decades. Historical Facts July 25, 1978, Louise Brown was born; it was the first successful birth of a child after IVF treatment. The procedure took place at Dr Kershaw's Cottage Hospital (now Dr Kershaw's Hospice) in Royton, Oldham, England. Patrick (gynecologist) and Robert Edwards (physiologist) worked together to develop an IVF technique. Stepto described a new method of extracting eggs and Edwards Edwards conducting a method of fertilization of eggs in the laboratory. Robert G. Edwards was awarded the Nobel Prize in Physiology or Medicine in 2010, but not Stepto because the Nobel Prize is not awarded posthumously. The first successful birth of ICSI (Intracytoplasmic sperm injection) took place on January 14, 1992. The technique was developed by Gianpiero D. Palermo at the University of Vrie in Brussels, at the Centre for Reproductive Medicine in Brussels. In fact, the discovery was made by mistake when the sperm was injected into the cytoplasm. See also that there is a media in the Commons related to assisted reproductive technologies. Artificial uterus Diethylstilbestrol human cloning Religious response to ART Sperm Bank Sperm Donation Spontaneous Conception, unaided concept of the subsequent child after the prior use of assisted reproductive technology egg donation Links This article includes text from the free content of the work. License cc BY 4.0. The text is taken from How Assisted Reproductive Technologies Work in Europe?. Orlein Yazikulu/Alternative Economics, EDJNet. To learn how to add an open license text to Wikipedia articles, please see it as on the page. For information about reusing text from Wikipedia, please see the terms of use. What are assisted reproductive technologies? Cdc Reproductive Health. CDC. 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