

Money-Back Fertility Treatment Payment Plans

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Money-back fertility treatment payment plans or shared risk plans are payment plans that offer unsuccessful patients a portion of their money back. They usually include two or three fresh IVF cycles followed by the transfer of resulting frozen embryos. Money – back fertility plans commonly include fertility financing programs, fertility medication program and some re-arrange or restrict benefits through employer (sponsor) or insurance plan. All together called the bundle.

Who Qualifies for Money-Back Fertility Treatment Payment Plans?

IVF programs that offer money back plans usually require certain age limits and normal to excellent ovarian reserve markers. Older women and those with low egg reserve usually do not qualify for such plans. Programs also place contingencies on ovarian reserve and transferring more embryos. Hence they exclude women interested in a single embryo transfer.

Some of the money – back fertility enterprise do not operate clinical IVF programs. They offer the financial scheme for payment and in some instances fertility drugs. They refer patients to clinics but do not conduct the treatment. The specifics of the couple may not coincide with the contingencies for money – back arrangement. The result is either you are alert to dismiss the plan or follow the plan and take your chances with the success rate. This is the most disturbing aspect of money-back fertility plans.

The delivery rates after fresh IVF in women commonly included in money back plans is close to 40% with single embryo

transfer, 50% with two embryo transfer. Use of frozen embryos add approximately 30% chance for delivery after transfer of frozen embryos from the first fresh IVF cycle. In other words they are the least likely to require multiple cycles in the IVF population. Moreover, they are the most likely to get pregnant with multiple babies. The cost for money back fertility treatment plan is maybe higher than a single fresh IVF cycle and a transfer of frozen embryos. Interest is associated with monthly payment plans. Medicine and multiple treatment cycles are also sometimes bundled. In addition cost can escalate due to obstetric care for multiple pregnancy.

At New York City IVF we educate women and recommend single embryo transfer up to age 38.

One opinion about money back fertility treatment plans is [New York State Department of Health Task Force Report: Executive Summary on ART](#)

Payment plans that offer unsuccessful patients a portion of their money back create significant ethical concerns.

Physicians whose payment depends on the success of treatment have an incentive to accept only those patients with a strong chance of success (perhaps patients who do not qualify as infertile under generally accepted standards) and to turn away needy patients whose outcome may be less certain. In addition, when payment is linked to outcome, physicians may encourage patients to accept aggressive treatments that increase the chance of success without due regard for the risk those treatments may entail.

Nonetheless, while the Task Force members are deeply troubled by the risks created by money-back payment plans, they do not believe that these plans are inherently unethical in all cases. Programs that offer money-back payment plans should clearly inform patients of all essential terms of the plan. No plan should require patients to provide a blanket consent

to all treatments and procedures recommended by their physician.

Patients enrolled in money-back payment plans should receive a prorated refund if they withdraw from treatment before they have completed all of the cycles covered under the plan. The most appropriate definition of "success" in the context of money-back payment plans is a live birth. The condition of the child should never be a factor in the definition of success

IVF programs can address this ethical question using different arrangement. Reducing fees for the second cycle as opposed to selling multiple cycles together would be one suggestion.

Male Factor Infertility: Azospermia

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Male Factor Infertility: Azospermia means no sperm are found in the ejaculate. Azospermia requires careful evaluation and treatment so that the couple has the best chance to conceive with IVF. The evaluation should be methodical and compassionate to guide the couple through such a multifaceted process to pregnancy and delivery of a healthy child.

Four Things Have to Happen at Initial

Evaluation for Azospermia

a. Is it truly azospermia? sometimes repeat sperm analysis together with spinning of the ejaculate multiple times may yield few sperm. This has to be performed by a diligent andrologist and in a facility that can freeze sperm immediately if found. In some azospermic men, repeat analysis and freezing can avoid a surgical procedure to retrieve sperm.

b. A genetic cause for azospermia should be excluded. Specifically three known genetic problems should be excluded because they can be passed to offspring and because they can predict the success of surgical sperm retrieval. A chromosome analysis should be done to exclude sex chromosome abnormalities e.g klinefelter Syndrome (47XXY). Y chromosome microdeletion study should be conducted to exclude a deletion of the part of Y chromosome related to sperm production. Cystic fibrosis carrier screening should also be run to detect defect in the CF gene that may be associated with absence of the ducts conducting the sperm outside of the testes.

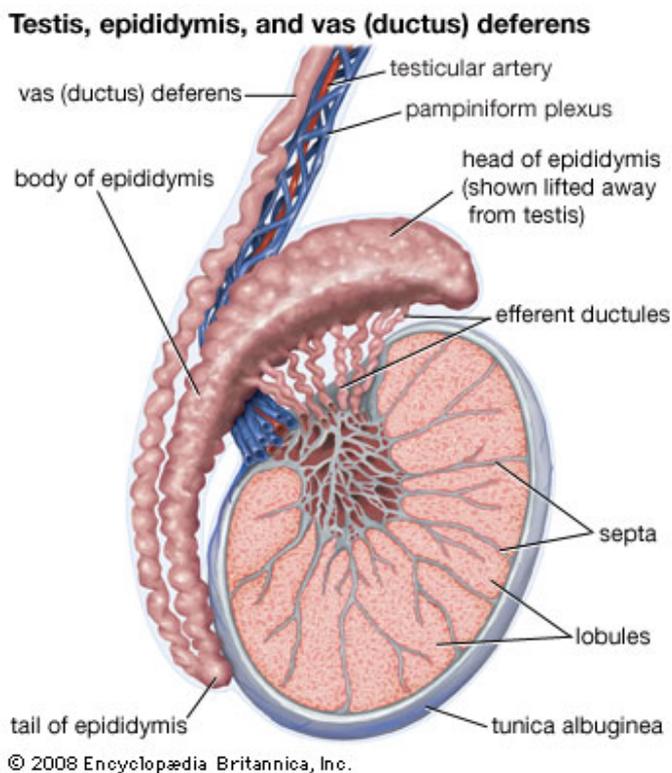
c. Evaluation of Ovarian Reserve for Female Partner. If ovarian reserve evident by day 3 FSH, AMH levels and antral follicle count seen on vaginal ultrasound is not diminished, this predicts reasonable chance for success with IVF-ICSI if sperm are found. Extremely low ovarian reserve or advanced female age may preclude surgical sperm retrieval, unless an donor eggs are acceptable.

d. Urological evaluation. This has to be the last step in evaluation. Male urologists are the physicians specializing in evaluating the chance for successful sperm retrieval (TESE) as well perform these procedures. Before referral by a reproductive endocrinologist and infertility specialist, there should be every reason to think that if sperm were obtained there is a reasonable chance for conception after IVF-ICSI. The urologist should be a specialist in male reproduction and well versed in the techniques of sperm retrieval. You actually

need to ask your urologist two questions: what are my personalized chance for finding sperm when surgery (TESE) is performed? What the technique used to obtain sperm? Authorities generally agree that the technique for TESE markedly affect the chance for finding sperm.

Moreover, every workup should end with an important question; would you accept donor sperm if no sperm were obtained after surgery?

How is TESE Performed?



Testes and ducts

Testicular sperm extraction is a surgical procedure that entails sampling of multiple areas of the testes aiming at finding sperm to be used for IVF-ICSI. The testis is delivered outside the scrotum, bisected and multiple biopsies obtained from several areas of the testes. The tissue is examined for the presence of sperm. If no sperm were found, more biopsies are obtained till sperm are found. There are generally two types of azospermia: obstructive azospermia (due to

obstruction of the ducts of the testes while sperm production is intact). Sperm is obtained in close to 100% of these cases. Non-obstructive azospermia (NOA) where there is a defect in sperm production, approximately 60 to 70% of the procedures yield sperm.

Blind biopsy from one area of the testes has no place in modern treatment of azospermia. Asking your urologist about the technique of TESE is of paramount importance. The first surgical attempt carries the highest chance for success.

Recently, Doppler ultrasound mapping of the testes can help localize the areas of that should be biopsied because they yield a higher chance for finding sperm.

Why is IVF-ICSI Required after Sperm Retrieval?

The number of sperm obtained after TESE is small in the magnitude of tens to hundreds of sperm, too small to use the sperm for IUI. ICSI is absolutely required for all cases of surgical retrieval of sperm. The sperm can be used in one of two ways

a. Frozen TESE sperm: The sperm are frozen to be thawed at a later date, on the day of egg retrieval for the female partner. This method saves the cost of IVF if no sperm were retrieved and donor sperm use is unacceptable.

b. Fresh TESE sperm: Ovarian stimulation is started and TESE is performed on the day of egg retrieval or the day before. Fresh sperm are used for ICSI. Donor sperm (if acceptable) is obtained as a backup. Though suggested, there is no concrete evidence that fresh TESE sperm is superior to frozen TESE sperm.

In addition in some cases with associated genetic problems, preimplantation genetic diagnosis (PGD) can be performed

followed by the transfer of normal embryos.

Can the Chance for Pregnancy be predicted in Male Factor Infertility: Azospermia ?

There are several predictive factors for pregnancy in female partners of men with azospermia. These can be categorized into:

i. Successful sperm retrieval is related to whether the procedure is the first one or a repeat procedure, the volume of the testes, medical treatment before surgery, the technique used and the cause for azospermia. Some causes are associated to minimal chance for obtaining sperm.

ii. Pregnancy after sperm retrieval is related to the female partner age and her ovarian reserve. Younger women have a very good chance of conceiving if sperm are obtained. This is the most important factor once sperm are retrieved.

iii. Obstructive azospermia has a higher chance for sperm retrieval than non-obstructive azospermia.

iv. Moving sperm at the time of ICSI has a higher chance to yield a pregnancy than non moving sperm

v. Men with higher testosterone levels and lower LH levels has higher chance of sperm retrieval

vi. The effect of using of frozen TESE sperm is controversial. Some authorities think that using a fresh TESE sperm is better than frozen sperm.

vii. Use of Doppler: recent work indicates that the use of Doppler study of the testes before the procedure may help localize the areas that should be biopsies and yield a higher chance for sperm harvest.

Male Factor Infertility: Azospermia requires a

multidisciplinary approach; first consultation with a reproductive endocrinologist (female age is still the most important factor) followed by a consultation with a reproductive urologist for the TESE procedure for successful sperm harvest and pregnancy

Endometriosis: Fertility Options are Clear

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Endometriosis means tissue of the lining of the uterus is present outside the its normal boundaries. It can involve the pelvic lining, the ovaries (endometrioma), the fallopian tubes, the intestine and the muscle of the uterus (adenomyosis). As menstruation takes place in the uterus, these deposits menstruate into itself, become distended and causes pain (pain with menstruation, chronic pelvic pain, pain with intercourse, urination or defecation). Moreover, because of its chemical effects or associated pelvic scarring endometriosis may cause infertility.

Accurate diagnosis of endometriosis requires laparoscopy and biopsy of the areas suspicious because of its appearance. If you are suspect you have endometriosis (usually because of pelvic pain) and want to get pregnant or having difficulty becoming pregnant you face a small dilemma. You are usually given different recommendations from different headquarters, depending on their expertise and biases. Examples of such

recommendations:

'Lets do laparoscopy to diagnose endometriosis, remove any endometriosis we find as well as remove any scarring'

'Lets give you medications for endometriosis'

The question is which recommendation is "good for your specific case".

Few basic principals about endometriosis treatment

These are not disputed principals, just facts related to the treatment of endometriosis in general.

1. Accurate diagnosis of endometriosis requires a laparoscopy and pathological examination of tissue biopsies obtained.
2. Medical treatment of endometriosis does not allow you to get pregnant while you are using it: oral contraceptive pills, synthetic progesteron, danazol and GnRH agonists (lupron) prevent ovulation. While you are taking these medications you will mostly not ovulate so you will not get pregnant.
3. Endometriomas (endometriotic cysts of the ovary) do not respond to medical treatment. Moreover their removal mostly require removal of a part of the ovary, because they are firmly attached. Thus their removal can lower the number of eggs remaining in the ovaries (ovarian reserve).

Treatment of infertility associated with endometriosis

Though each specific situation may require a different course of action as recommended by your physician, there are general guiding principals for treatment of infertility when endometriosis is suspected.

1. **Infertility investigation:** do not make any treatment decisions without a full fertility workup. Do not proceed

unless you know your partner [sperm analysis](#), obtained the results of [ovarian reserve tests](#), tested if your fallopian tubes are open or not via an HSG as well as general [preconception lab tests](#). Why? if you undergo surgical treatment for endometriosis and later discovered that your partner has very low sperm count requiring IVF and ICSI, then surgery had no potential to help you get pregnant.

2. **What is your priority treating infertility or treating pain?** This is important because medical treatment, although effective in treating pain cannot help you with infertility because it mostly prevents ovulation. Please note that the best treatment for pain associated with infertility is pregnancy. The large amounts of progesterone produced during pregnancy suppresses endometriosis, sometimes for years after delivery.

3. **Resection of endometrioma;** If a [cyst consistent with endometriosis](#) is seen on ultrasound be very careful with a recommendation to resect that cyst. Resection requires surgery. it reduces ovarian reserve because of removal of ovarian tissue. Unless the cyst is suspicious of malignancy or complication they are better left alone with observation while proceeding directly to fertility treatment e.g IVF. There is no evidence that removal of the cyst improves IVF success. On the contrary, removal of the cyst is associated with low response in that ovary.

4. **Laparoscopic surgery for mild and minimal endometriosis:** There are two studies that showed an improvement in pregnancy rate after laparoscopy for mild endometriosis. To put this in perspective, yes laparoscopy for infertility and mild endometriosis and infertility is an option but the magnitude of benefit in this case is limited at best. You first have to undergo surgery (with its possible complications). If endometriosis is found and ablated you would get a small bump in pregnancy rate in the year following surgery. The surgery may also help you with pain. On the contrary, endometriosis

may not be found and you still have to try after surgery. Considering all the risks and benefits, the odds for pregnancy is not dramatically improved.

5. **An alternative approach to mild and minimal endometriosis:**

The general thinking about infertility associated with minimal and mild endometriosis is that it is unexplained infertility. In these cases there is no mechanical distortion of pelvic organs and fallopian tubes are open. If sperm analysis is within normal enhancing fertility could be achieved through stimulation of the ovary to produce multiple eggs followed by IUI or IVF. This approach avoids surgery with its potential complication. IVF carries approximately three times the odds of pregnancy and can control the risk for multiple pregnancy, compared to IUI.

6. **Moderate to severe endometriosis:**

These cause distortion or blocking of the fallopian tubes. Surgery is an option but its much more complicated than mild cases and has the risk of injury to the intestine, ureter, fallopian tubes, ovaries..Scarring also may recur after surgery. An alternative approach is to proceed to IVF. It avoids major surgery and can address tubal, male and ovulatory factors. IVF success is not reduced in women with endometriosis.

7. **Adenomyosis (endometriosis of the uterus):**

MRI is sometimes needed for accurate diagnosis of adenomyosis. Adenomyosis is a surgical disease and its cure require removal of the whole uterus. This is because it cannot be shelled out of the uterus like a fibroid. Better ignored and proceed with fertility treatment.

Do not make any decisions related to infertility before a complete workup; sperm analysis, ovarian reserve tests and fallopian tube patency test. Avoid surgery in the ovary as it may reduce ovarian reserve. There is no established evidence that the chance for successful fertility treatment is reduced in women with endometriosis. Laparoscopic surgery is an option

but is associated with surgical complications.

Even with Diminished Ovarian Reserve You Can Achieve Pregnancy

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Diminished Ovarian Reserve: What Does it Means

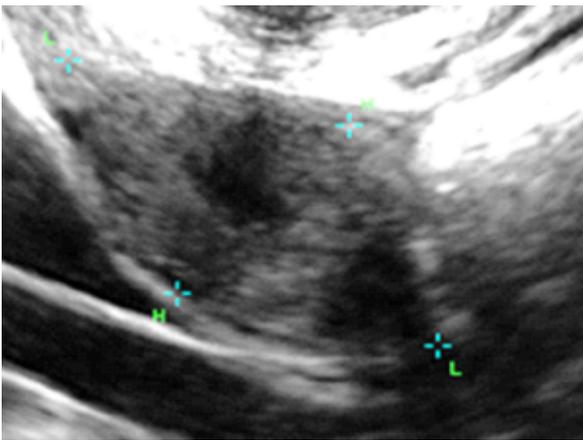
The number of eggs and their quality are reduced at a given age. Women with diminished ovarian reserve have less eggs and more chromosomally abnormal eggs than women in the same age group. It reflects low response to fertility medications and more difficulty achieving a pregnancy. Women with diminished ovarian reserve may reach menopause one or more years earlier. As few eggs remain, still some of the eggs are chromosomally normal and pregnancy is very possible in women with diminished reserve.

Diminished Ovarian Reserve: How it is Diagnosed

History: Some historical factors may indicate low reserve including cigarette smoking, prior surgery of the ovary (removal of a cyst or an ovary), prior exposure to chemotherapy (particularly cyclophosphamide) or pelvic irradiation, early menopause in other family members (mother, sister), recurrent early first trimester pregnancy loss (indicating low egg quality) and others.

Day 3 FSH: It is an indirect marker for ovarian reserve. It is produced by the master gland in the brain. levels $> 12\text{mIU/mL}$ indicates low reserve. It is less accurate than AMH or ultrasound.

AMH: is a protein produced by the cells surrounding the egg in small size follicles. It is more accurate than day 3 FSH. Levels $< 1.5\text{ng/mL}$ indicates low reserve



Low antral follicle count
(Ovarian Reserve)



Good antral follicle
count (Ovarian
Reserve)

Vaginal Ultrasound: in expert hands (a reproductive endocrinologist), it is an accurate measure for ovarian reserve. The number of small follicles $< 10\text{mm}$ especially on day 2-5 of menstrual cycle is an accurate indicator for ovarian reserve and response to fertility medication. The presence of

an advanced follicle >13mm on day 2 or 3 is also an indicator for low reserve as it indicates that the ovary is under increased stimulation from FSH produced the master gland.

More details on ovarian reserve tests can be found [here](#).

Diminished Ovarian Reserve: What Should you Do

If all other fertility factors (male factor, tubal factor..) are normal *you should attempt to conceive irrespective of ovarian reserve*. Ovarian reserve tests are not absolutely accurate. They do predict response to ovarian stimulation but are not very good in predicting pregnancy. Two general options exist: i. regular intercourse or ii. ovarian stimulation to produce more than one egg followed by IUI or IVF.

Diminished Ovarian Reserve: What Should your Reproductive Endocrinologist Do

Your reproductive endocrinologist should ascertain ovarian reserve with multiple modalities: ultrasound and blood work. The infertility workup should be completed first: sperm analysis, hysterosalpingogram test for patency of fallopian tubes as well as preconception labs. Your infertility specialist should be able to advice you on the treatment protocol that is more likely to achieve a pregnancy. *Fertility specialist should not deny treatment to women based on diminished ovarian reserve*. Every woman with diminished reserve should be offered treatment at least once.

If the treatment plan involves ovarian stimulation, a special stimulation protocol or adjuvant treatment should be considered hopping at increasing the ovarian response (number eggs produced during the cycle). Some of the modifications commonly used are increasing the dose of gonadotropins, use of antagonist or flare antagonist, addition of clomid or letrozole, pretreatment with testosterone and use of growth hormone.

Diminished Ovarian Reserve: What would you expect from fertility treatment

Well it depends on few factors: **Age and Relative Response to Fertility Medications**

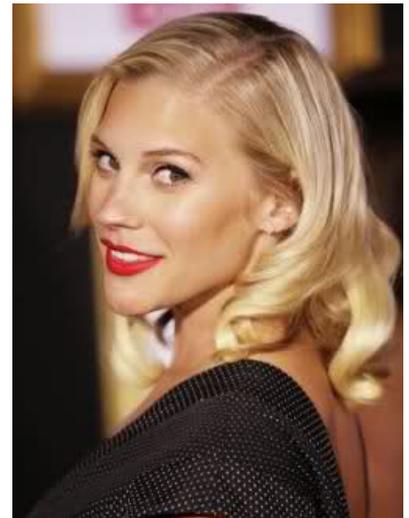
If a younger women e.g <37 years produce two or three good quality embryos at the end of stimulation, they have a reasonable potential to achieve a pregnancy after IVF. The chance of getting pregnant in women older than 40 with few embryos is much lower. When one compare effects of low ovarian reserve and age on reproduction it is clear that age has more negative effect on reproduction than age. Age is associated with low egg quality while ovarian reserve mainly speak for the number of eggs in the ovary. *Younger women with low egg production fairs much better than older women with good reserve.*

Response to ovarian stimulation is not created equal. Women that produce four or more large follicles >15mm are at much better chance for pregnancy after IVF. On the other hand those that have lesser response <3 follicles are a much lower chance for success and should consider converting their cycle to IUI or just cancel the cycle if they have male or tubal factors. They then can try again after considering a modification of the stimulation protocol. In women that produce > 3 -4 eggs IVF is substantially more successful (about three times) than IUI.

Because the response to fertility medication is difficult to judge just based on ovarian reserve markers, most women should be encouraged to try ovarian stimulation once at least and most women should not be denied treatment based on the notion of low ovarian reserve.

Thyroid Cancer and Future Fertility

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Thyroid cancer is diagnosed in 45,000 individuals each year in the US. Its treatment may affect future fertility in men and women. It is more common in women with female to male ratio of 3 to 1. It is the most rapidly rising cancer in women living in the US. Thyroid cancers are commonly diagnosed in young women in their reproductive years. Treatment of thyroid cancer generally yields excellent results, with the majority of women surviving 10 years or more after diagnosis. Some women develop thyroid cancer due to iodine deficiency in diet or prior neck radiation. Some types of thyroid cancers are related to inheriting an abnormal gene.

Several types of thyroid cancer are recognized 1. Papillary cancer 2. Follicular cancer 3. Medullary cancer 4. Anaplastic cancer 5. Thyroid lymphoma. Papillary and follicular cancers are less invasive tumors and are encountered in the majority

of women diagnosed with thyroid cancer. They also respond to estrogen as they carry estrogen receptors. Estrogen may promote growth of thyroid cancer cells. Thyroid cancers are usually suspected on neck examination followed by ultrasound or Iodine scan then biopsy. In general, treatment of thyroid cancer require total thyroidectomy-surgical removal of the thyroid gland followed by radioactive iodine to ablate any thyroid remnants. This is followed by long term thyroid hormone replacement. Long term follow up is required after treatment.

Effect of thyroid cancer treatment on the ovary

Thyroidectomy followed by thyroid hormone replacement is not known to affect future fertility in men and women. Radioactive iodine can affect the number and quality of eggs remaining in the ovary. The effect is dependent on the dose of radioactive iodine and the age at treatment. Twenty to 30% of women experience transient amenorrhea or irregular menses starting about 3 months after treatment. Normal menses resume about 6 months later. Permanent ovarian failure is rare but may occur in women at age 40 or older at the time of treatment. Increased incidence of miscarriage is reported in the first year after treatment. With the exception of miscarriages, there is no evidence that exposure to radioiodine affects the outcome of subsequent pregnancies and health of borne children.

Effects of radioactive iodine treatment on the testes

Effect of radioactive iodine treatment may be more severe in men. and is related to the total dose of radioactive iodine received. Transient reduction in testosterone and sperm count may occur but sometimes permanent reduction in sperm count and testosterone levels. Men who received large total dose

sometimes sustain permanent damage to the testes with absence of ejaculated sperm-azospermia. There is no evidence of effects of radioactive iodine on their newborn children, although its advised that men avoid fathering children for 6 months after treatment.

Options for fertility preservation

Men interested in future fertility should consider sperm freezing prior to radioiodine treatment. Women should also consider fertility preservation if they will be treated with radioactive iodine and are older than 35 years. Radioiodine treatment will reduce their ovarian reserve. In addition they will be required to avoid pregnancy for a year or so. Options available for preservation of fertility in women include ovarian stimulation and egg retrieval followed by egg or embryo freezing. Ovarian stimulation can be modified to avoid estrogen exposure during stimulation. Moreover, in familial thyroid cancers, embryos can be genetically tested to avoid transmission of the abnormal gene to children. Men and women diagnosed with thyroid cancer can benefit from consultation with a fertility preservation specialist prior to treatment to discuss effects on gonads and methods to preserve future fertility. Read more at <http://nycivf.org>

Embryo Selection after IVF

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Many of human embryos produced after in vitro fertilization carry abnormal chromosomes. Placing a chromosomally normal embryo (s) into a normal uterus has a very high chance of

achieving a pregnancy. Your eggs have been retrieved and the mature eggs were fertilized. Now You and your reproductive endocrinologist are faced with the critical task of how many and which embryo to transfer to the uterus or which ones to freeze.

Why do we Need Embryo Selection?

Selection of the most appropriate embryo(s) for transfer aim at i. Maximizing the chance for pregnancy and ii. Minimizing the risk of twins and other multiple pregnancies. Casual inspection of the embryo does not yield accurate information about its chromosome makeup. One can follow an indiscriminate approach where all embryos are transferred. The problem is this approach yields high unacceptable multiple pregnancy rates. On the other hand one can transfer one embryo at a time. This is a much safer approach in terms of markedly minimizing twin rates but may lower the chance for getting pregnant. In addition it also require a robust freezing program so that frozen embryos can survive thawing. Right now in The US the survival of frozen embryos exceed 95% and the chance for pregnancy with a thawed embryo is approximately equal to a fresh embryo.

Measure of Success: time to conceive or cumulative chance for pregnancy?

One major issue related to fertility treatment especially IVF is how to measure success? specifically consider this question: if you have three embryos and decided to transfer them one at a time and got pregnant after the third transfer with a singleton, how does that compare to transferring all embryos in the fresh cycle and getting pregnant in twins? before answering it is important to know that twin gestation is associated with higher risk for pre-term delivery, ICU admissions and long term consequences for the babies.

In other words should you consider success as pregnancy taking

place after one retrieval (cumulative chance from fresh and frozen embryos) or pregnancy taking place in the fresh cycle only (fresh embryos)? In other words would you like to shorten the time to conceive at the expense of higher risk for multiple pregnancy? Within [reason](#), this is a question for you and your reproductive endocrinologist to answer based on your preferences and his practice

You have a Voice: How should you use your embryos after IVF?

You need to have a voice in the number of embryos transferred to your uterus. Although your fertility specialist can discuss numbers and chances and other technical details as well as long term risks for multiple pregnancy, there are questions that cannot be answered by anyone but you.

- How do you feel about twins? triplets and quads?
- Would you accept fetal reduction (removal of one or more sacs from the uterus and leaving only one or two)?
- Do you have the social support system to take care of twins?

For these and many other reasons your input in the number of embryos to transfer is paramount.

Methods of Embryo Selection after IVF

Embryo Morphology and Female Age

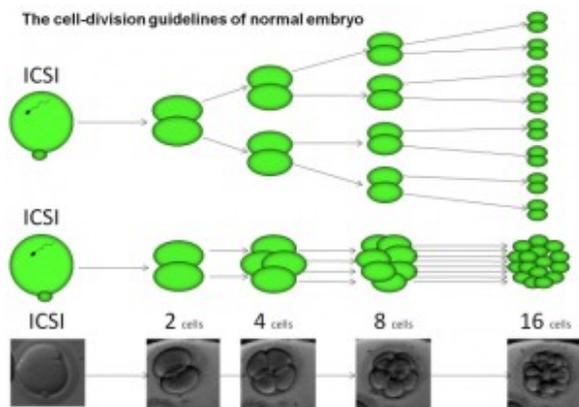
Age is, by far, the strongest predictor of the health of the embryos. Younger women produce more chromosomally normal embryos than older women. An embryo from a woman at age 30 commonly implants 40% of the time as opposed to 5% or less in a woman age 40. For any given cohort, embryos are graded based on specific morphological criteria from the best looking to the worst. These criteria are technical and followed by all embryologists. Embryos are prioritized for transfer based on their shape. Morphology, however is may be 50 to 60%

predictive of pregnancy, far from ideal. The combined use of morphology of embryos, stage of development (day 3 or blastocyst) and age is the standard selection method for which embryo is transferred first and how many. This method has the advantage of being cheap, quick and non-invasive. All other methods must prove superior to morphology + age before adoption.

Extended Culture to Blastocyst Stage (Day 5 Embryo)

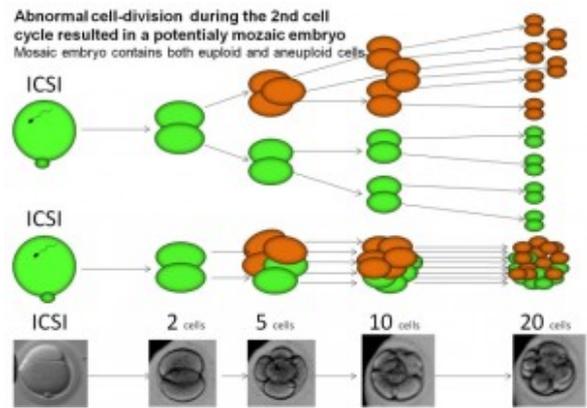
Keeping day 3 embryos in culture may give these embryos time to develop to blastocysts. Presumably, the better embryos progress to blastocysts or do so faster than less healthy embryos, thus they are preferentially selected for transfer.

Time Lapse Imaging of Embryos



time lapse embryo imaging-
normal embryo division

Embryos are placed in a specific incubator in a specific plate and is observed at predetermined time



time lapse embryo imaging-
abnormal embryo division

points using time lapse microscopy / photography. Photos are analyzed manually or through a computer and embryos are graded based on timely division of blastmeres (component cells). [There is no evidence so far that pregnancy rate is improved above using morphology.](#) There is extra cost associated with the use of the special plate and is also limited by the number of special incubators available.

PGS (Embryo Chromosome testing)

New forms of PGS (performing biopsy at the blastocyst stage) and more accurate platforms for analyzing the biopsied cells are available. However, the concept that better selection will lead to improved IVF results is far from certain.

It success of an IVF cycle is measured after transfer of fresh then frozen embryos till pregnancy ensues (cumulative success) ad patients are will to be patient for 1-2 more months, then any form of embryo selection, PGS or otherwise, will not improve the live birth rates. Moreover, PGS can be harmful as it may misdiagnose the health of the embryos ([see this article on PGS for details](#)). PGS increases the expense of treatment \$4000 to 6000

Embryo selection is maybe be able to improve the time to pregnancy, if embryos with the highest implantation potential are transferred first.

Based on the available evidence, judicious selection of embryos based on patient age, morphology and the use of extended culture to blastocysts are the standard of care in embryo selection after IVF. Two additional factors to consider is how robust is the freezing program of that specific lab (generally excellent all over the US) and the acceptability of fetal reduction by the couple. Liberal use of single embryo transfer when appropriate should be strongly considered. 'New' ideas should be subjected to rigorous scientific evaluations 'fertility clinical trials' before they are ready for routine use. Thus far, based on published evidence, embryo time lapse imaging and PGS should remain investigational.