Age Related Fertility Preservation: Should you Consider Multiple Egg Freezing Cycles?

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All what we really know for sure about reproductive competence (ability of eggs and sperm to produce a baby) is thatembryos that has the correct number of chromosomes has a very high chance of implanting and produce healthy babies. In the majority of cases, the egg is the source of abnormal chromosome material: extra or missing chromosomes.

Female age is the most important fertility factor. As age advances, the number of eggs in the ovary decline and the proportion of abnormal eggs increase. This fact underline the need for modern women think about ***reproductive planning*** as early as possible, say age 25 to 30. When do you want to get pregnant for the first time? Is it socially feasible to start now? Do you have enough support around you to have a baby now? how large of a family do you want? do you care about the sex of the baby?

In general the following are available options

Try to get pregnant on your own as early as possibly can

Consider Embryo freezing with partner for later use

Consider using donor sperm to create embryos for storage

Egg freezing is a viable option for fertility extension

Egg Freezing

The ovaries are stimulated to produce multiple eggs. Eggs are retrieved using a simple procedure. Mature eggs are frozen using flash freezing (vitrification). The eggs are stored in a special device in liquid nitrogen, indefinitely. The main aim here is to freeze multiple mature eggs at a younger age that can be used at a later female age when eggs are fewer and less healthy.

The most critical part of counseling women here about ultimate chance of conception using egg freezing is accurate estimation of egg reserve via history, antral follicle count and AMH level.

In general women <38years that produce >8 eggs has a very good chance of conceiving and delivering at least one baby from an egg freezing cycle.

Egg-freezing-study

Women who are older or produce less eggs then would ask do I need more eggs?

Multiple Egg Freezing Cycles

Should you Consider Multiple Egg Freezing Cycles? If you do not produce enough eggs in the first round of egg freezing you can consider another egg freezing cycle. But you now have the advantage of knowing how did you respond the first round. You know a bit more about the quality and maturity of the eggs. You know if the stimulation protocol worked for you and you can discuss with your reproductive endocrinologist methods of improving response. If increasing the number of frozen mature eggs is possible with another cycle of egg freezing, then another cycle should be considered.

On the other hand if the prior response is low, egg quality is low and age is 40 or more, women should consider conceiving as soon as possible.

Testosterone Therapy-Male Infertility

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Many men are prescribed testosterone for a variety of reasons. Low testosterone levels (Low T) with no symptoms, general symptoms of low energy and feeling tiered and sexual symptoms, among others. Approximately 2.5 million men are prescribed testosterone each year in The US, mostly with no proper testing. Testosterone is only approved by FDA for low testosterone associated with specific diseases affecting testicular function. The FDA recently issued a safety communication cautioning the use of testosterone replacement for low testosterone levels and requiring labeling change to inform men of a possible increase in side effects.

From the fertility standpoint, there is no role for testosterone treatment, that could be detrimental. There is also no *proven* role for other medical treatment as clomid, letrozole, nolvadex, hCG and others in enhancing fertility in the vast majority of men

Effects of testosterone on male fertility

When men are prescribed testosterone, sperm production slows down significantly and may completely stop. Many of them, no sperm can be found in the ejaculate (azospermia). Testosterone

therapy can markedly lower the ability of men to father children. Testosterone inhibits a key master gland hormone (FSH) that is required to stimulate spermatogenesis (making sperm). The specific effects of testosterone on sperm count are unpredictable. In some men sperm count drops to zero even after a short use of testosterone.

Interestingly, when testosterone is stopped some men but definitely not all of them recover sperm production, commonly in one to six months. The extent of the recovery of sperm count is also unpredictable. The recovery of sperm count maybe limited requiring fertility treatment for conception to take place. A short course of testosterone can lead to a low sperm count for a very long time.

What can be done about low sperm count related to testosterone treatment

In addition to evaluation of female factors especially ovarian reserve, always a priority, men on testosterone and showing low sperm count should be advised to

1. Stop testosterone administration immediately

2. Repeat sperm analysis in 2 months. Sperm analysis should be performed in a facility that can perform diligent search for even very few sperm and can freeze sperm. If sperm is found in the ejaculate it should be cryopreserved immediately. If no sperm is found then sperm analysis should be repeated in another 2 months. The wait for recovery cannot be indefinite because of further deterioration of ovarian reserve in female partner with time.

3. Depending on the extent of recovery sperm can be utilized to promote conception. If sperm count recover close to 10 million moving sperm, natural conception can take place. Also sperm can be used for IUI, if needed. If the number of motile sperm is significantly lower, IVF is required, sometimes with intracytoplasmic sperm injection (ICSI).

4. If still no sperm were found after repeat analysis, TESE (testicular sperm extraction) can be attempted. A male reproductive urologist can perform diligent search for areas of spermatogenesis in the testes through repeat minute biopsy and searching under the microscope.

From the preventive aspect, avoid testosterone treatment if you intend to father children in the future. Know that there are very few solid indications for testosterone. If testosterone treatment is inevitable, consider pretreatment sperm freezing. Use gel preparation preferential to injection as they are not stored for a long time in the body.

Testosterone treatment is a preventable cause for infertility in males and could be detrimental to future fertility.

Why are You Afraid of Infertility Treatment (and generally should not)

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When have been trying to conceive for a while, women and men often are reluctant to seek help from a fertility specialist. What if they told me you cannot conceive? what if they find a major problem with my fertility? what if I need extensive treatment? All are viable questions. One deviation at that point is to consult with a specialist in your immediate circle but in another discipline: gynecologist or internist. This deprives you from valuable resources and tend to underestimate

any issues you may have. This is a very common reaction in general use of supplements instead of medicine, go to a holistic specialist instead of a physician..

Why are you afraid of Fertility Consultation

When you consult with a reproductive endocrinologist you may anxious about a discovery of one or more fertility issues, that may require treatment. Fertility problems are very private, maybe more than any other medical problems. They are certainly more private, though less risky, than heart disease or intestinal problems. You are also worried about the treatment of such factors and the required time and financial resources. One evidence of evidence of such fear is reluctance to seek consultation for years sometimes.

Why are you afraid of fertility treatment

Once you start a consultation with a fertility specialist and treatment is recommended, couples are worried about the treatment process: complications and results.

Possible Complications of Fertility Treatment

All the complications of fertility can be classified into proven complications and unproven complications

Proven Complications

i. Multiple Pregnancy

Multiple pregnancy

Twins and higher order multiple pregnancy is an established complication of fertility treatment. It is directly related to the type of treatment (IUI or IVF), age and the number of embryos (IVF) transferred or follicles observed (IUI). The general incidence of twins is 1% after natural conception, 30% after IUI or two or more embryo transfer and 1% after single embryo transfer. The general incidence of triplets or higher is less than 0.1% after natural conception and 3% following fertility treatment.

ii. Ovarian Hyperstimulation Syndrome

Also an established complication of ovarian stimulation. It is more common in younger patients with large number of antral follicles seen in the ovary and high AMH levels. Women with PCOS are particularly at risk. The incidence of sever forms is 0.5 to 1%. In its severe forms it may lead to accumulation of fluid in the abdomen, blood clotting and may require hospital admission.

iii. Complications from egg retrieval

Egg retrieval is associated with very low level of comlications <1/1000, including bleeding, infection and anesthetic complication.

iv. Pregnancy Complications

Like any pregnancy there is a risk for miscarriage (15%) and ectopic pregnancy (3%) (e.g pregnancy in the fallopian tubes).

Unproven Complications

Cancer

There is no conclusive evidence that ovarian stimulation or any fertility treatment, in itself, increases the risk of cancer (any type). It is true that women who delay conceiving are at an increased risk for some types of cancer e.g breast cancer, ovarian cancer…There is however no proof that there is an increased risk of cancer *due to treatment*. For example, the risk for breast cancer in women living in the US is 1 in 8. This risk is slightly increased for women who deliver their first child after age 30. If a woman decided to undergo fertility treatment, her risk for breast cancer is not increased say to 1 in 6 because of that above her baseline risk

Congenital abnormalities

There is also no conclusive evidence that congenital abnormalities in babies conceived after fertility treatment is significantly increased after fertility treatment, for the vast majority of couples. In any population in the world, the incidence of birth defects after natural conception is 3-4% (not zero). This is the baseline risk. If a couple undergo fertility treatment, there no proof that that incidence is increased, say to 5%, compared to couples that declined fertility treatment. Many women seeking fertility treatment are older and are at increased risk for chromosomal abnormalities. Also infertility itself appear to be a risk for factor for slight increase in birth defects. But there is no evidence that medical procedures themselves increases the risk for congenital abnormalities. There are some special situations e.g severe male factor that even associated with further increase in risk of abnormalites, so a couple specific

risk should be discussed with your reproductive endocrinologist. Note also that becoming pregnant at a younger age (with or without fertility treatment) reduces your risk for chromosomal abnormalities.

Results

You are certainly worried about the result of fertility treatment. That may make some women fearful of proceeding with treatment. Do confront this heads on. Ask your reproductive endocrinologist to give you a customized chance for pregnancy and delivery. Generally, fertility treatment is ultimately very successful. Over 60% of women seeking treatment ultimately deliver a baby or more after fertility intervention. There are many factors that indicate high chance for success, prior to starting treatment: age, ovarian reserve markers, the order of the cycle (first and second cycles are more successful)..

Long Term Effects

Outcomes of babies and young adults conceived after ovarian stimulation and IVF are definitely a long term concern. The first baby conceived at delivered following IVF was in 1978. Since then, approximately 1% of the world population are born after IVF. The scientific community have long term follow up data on babies born after fresh and frozen embryo transfer. There is even data on the third generation of babies (children of women who were conceived after IVF).

Egg freezing recently gained ground into as a procedure that broadens reproductive options for women. There are no long term data, nor a large number of babies (millions) conceived after egg thawing.

Why you should not be afraid of fertility consultation and fertility treatment

Fertility Consultation

The majority of women undergoing a fertility consultation turns out to have no specific fertility factors and simply regular intercourse is advised. A fertility consultation is crucial in identifying risk factors (e.g genetic, multiple pregnancy) and to estimate odds for a healthy baby without or with treatment. Here is an example. A Caucasian couple are seeking fertility treatment. No fertility factors found, female partner is young. The only abnormality found is that they are both carrier for cystic fibrosis gene mutation (risk of transmission to baby is 25%). Same example apply to an African American couple in the case of sickle cell anemia. Would you want to know this? Another example, you are young but on fertility testing it was found that both of your fallopian tubes are blocked and you may need help conceiving. Is this an important information for you to know? Knowledge is very important, even if you decide not act upon.

Fertility Treatment Complications

Multiple pregnancy: is definitely the most dreaded complication of fertility treatment. There are many steps in evaluation and treatment that can minimize the risk of multiple pregnancy to a rate close to natural conception. Avoiding ovarian stimulation and IUI in favour of IVF with single embryo transfer appears to be the most important treatment decision that can minimize multiple pregnancy. IUI appears more conservative but actually that is not true. IVF with a single embryo transfer is more conservative due to lower risk for multiple pregnancy. Acceptability of fetal reduction is also another issue that should be discussed before starting treatment. The indiscriminate use of clomid appears to contribute the largest magnitude of risk for multiple pregnancy due to its widespread use without monitoring.

Ovarian Hyperstimulation Syndrome: is largely preventable complication through judicious use of fertility medication and avoiding the use of hCG as a trigger shot in favor of using

lupron. An astute reproductive endocrinologist is able to keep this complication to a bear minimum.

Fertility Treatment Results

From one aspect the success rate of fertility treatment (per treatment cycle) is a factor of female medical factors and quality of fertility treatment she receives, if needed. On the other hand, the majority of courageous women who persevere, do get pregnant with fertility treatment. Those who are very unlikely to conceive are identified early on during evaluation and are should counseled accordingly. Women who do get pregnant do not write about it in lay media. Because the chance for conception is personal, you should seek to know your own chance for conceiving fertility treatment success, paying no attention to what your peers say or what you read. They cannot in any way reflect your own odds for success.

Long term effects of fertility treatment

Data on long term outcomes of young adult conceived with fertility treatment are reassuring of normal development and no significant abnormalities. In relation to egg freezing, there are reports of about a 1000 babies followed for short interval. They appear to show no increase in abnormalities. There are no long term follow up studies of babies conceived from thawed eggs.

The anxiousness about fertility treatment is natural, considering its intimate relationship to our life. Input from lay media and peer anecdotal stories is skewed and not readily applicable to anyone else. Irrespective of the decisions you make, knowing the facts about fertility treatment, personalized to your own personal medical reality is probably empowering and can prevent harm even if you decide not to pursue fertility treatment.

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.

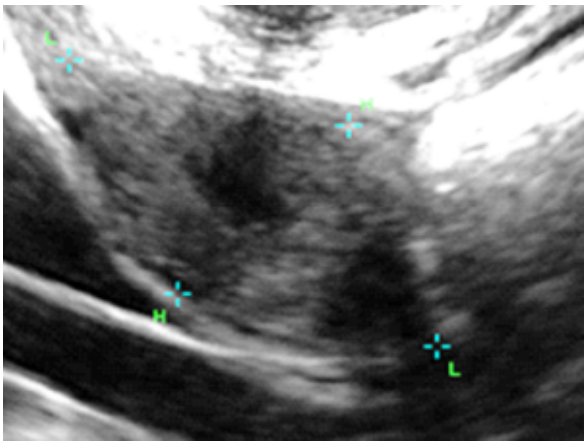
Diminished Ovarian Reserve: How it is Diagnosed

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 aindirect marker for ovarian reserve. It is produced by the master gland in the brain. levels> 12mIU/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 <1.5ng/mL indicates lowe 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 <10mm 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 clears 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.

Practical Approach to Male Infertility

Practical Approach to Male Infertility

Male factor infertility is present in approximately 40% of couples having difficulty to conceive. In most cases, however, it is seldom one factor. A basic element that is encountered in every case is the number and quality of eggs. Other factors in also include sexual factor and other female factors (e.g blocked fallopian tubes). Hence, evaluation of female factors is integral to evaluation and successful treatment of male factor.

Evaluation of female factors includes testing for ovarian reserve and testing of the fallopian tubes for patency. In addition to evaluation of medical, obstetric and genetic risks of getting pregnant.

Evaluation of Male Factor

Reproductive ability in males is initially evaluated through i. Detailed history of male partner and ii. sperm analysis. History can indicate many factors that may reduce the ability to conceive: social habits, erectile dysfunction, childhood infections (mumps), medical disorders, genetic diseases (chromosomal abnormalities, specific genetic diseases as cystic fibrosis), occupational exposure..etc. Unfortunately in the majority of cases history may not predict abnormalities in male factor

Sperm Analysis

Accurate interpretation of sperm analysis (volume,

concentration, movement and shape) is the most important step in evaluation. It is important to take in consideration each factor separately and then in combination. Normal parameters are volume >2mL, concentration 15million/mL, motility 40% and normal shape 4% using strict morphological criteria (Kruger).

Repeat sperm analysis is commonly recommended when abnormalities are detected. There is no strong evidence to repeating the sperm analysis. If the sperm analysis is to be repeated this should be done at least 2 months later as it would take that long for new sperm to be 'manufactured'.

Generally 10 million moving sperm sperm per ejaculate (volume x concentration x % motility) is required for successful reproduction with intercourse and IUI. Approximately 2 million motile sperm are adequate for IVF. Lower parameters especially if low morphology <2% require IVF with intracytoplasmic sperm morphology (ICSI).

Other Tests

Genetic screening for chromosome analysis and Y chromosome micro-deletion is required in low sperm concentration (<10 million /mL) and azospermia is required. Abnormalities are found in 5-10% of men and can be transmitted to children. Genetic screening for cystic fibrosis and its congenital absence of the vas deferens is also required if azosprmia (obstructive) is present.

Other sperm tests as pH, fructose and sometimes hormone analysis are sometimes helpful.

Tests for sperm DNA fragmentation is still being evaluated but are not part of routine fertility workup.

Treatment of Male factor Infertility

Improvement in sperm analysis is not the main aim of treatment. The main aim is conception and delivery of a

healthy child. Sperm analysis improvement is a surrogate outcome not a final goal. In most cases, the improvement in sperm parameters (count, movement and shape) does not translate into a higher chance for conception. In addition, in the majority of cases there is no specific cause identified for male factor abnormalities. The two practical strategies left are to wait (within what is allowed by female ovarian reserve) for sperm analysis to improve and conception to occur or to use the small / abnormal sperm available for assisted reproduction (ICSI) which is a very efficient strategy.

Four Important Considerations before Treating Male Infertility

a. Female age and ovarian reserve: any treatment for male factor should be guided with the number of eggs in the ovary and their quality (age related). In women with women with low egg reserve and 35 or older consideration to ovarian stimulation (to increase mature egg production) followed by IUI or ICSI should be exercised.

b. Sperm Freezing: In men with moderate to severe male factor one should consider freezing one or more sperm samples. The future sperm parameters cannot be predicted and can deteriorate even to a complete absence of sperm in ejaculates. Sperm freezing is cheep, non invasive and can save men from the need for surgical retrieval of sperm. Men undergoing vasectomy can also consider sperm freezing, prior to procedure, in case they decide to father children in the future

c. Genetic screening: there are two main values to screening males with moderate to severe sperm abnormalities to chromosomes, Y micro-deletion and cystic fibrosis. To avoid transmission to children and to counsel the couple about the chance of successful surgical sperm retrieval (TESE). In some cases the chance for finding sperm is extremely low that TESE is not indicated.

b. Urological consultation: After female and initial male evaluation is complete, evaluation by a male urologist is very useful. A urologist well versed in male infertility can counsel the couple about the chance for success of surgical sperm retrieval and following correct of obstruction.

Four Treatment Options to Consider

Surgical sperm retrieval: in obstructive and non-obstructive azospermia sperm can be retrieved directly from the testes by a male urologist. Micro-TESE involves dissecting one or both testes and obtaining multiple tiny biopsies from many areas. In real time each biopsy is examined under a microscope. The process is repeated till sperm are obtained. The best chance

Surgical treatment for obstructive azospermia: in men that underwent vasectomy before vasectomy reversal can, if successful, restore fertility. Other areas of obstruction can also be restored by urological surgery.

IUI: in few cases of mild male infertility (producing close to 10 million motile sperm) or mild shape abnormalities, ovarian stimulation and IUI is an aoption for 3 cycles. IUI using donor sperm is also an option.

IVF-ICSI: assisted reproductive technology is very robust and can address the majority of male infertility: low sperm count, low motility, abnormal sperm shape, prior fertilization failure. Its is very efficient that it can achieve a conception with very few available fresh or frozen sperm. It can be synchronized with surgical sperm retrieval so that fresh sperm are used for ICSI. Once sperm are available, the success of IVF is dependent on female age and ovarian reserve.

Interventions to Avoid or Consider Cautiously

Surgical treatment of varicocele: Varicocele is a common finding in infertile males and can be associated with low concentration and motility and higher abnormal shape of sperm.

Varicocele surgery does improve sperm parameters. The problem with varicocele surgery is that it is not proven to increase the odds of delivering a child by female partner. Varicocele surgery should be cautiously considered due to lack of solid evidence of its benefits.

Medical treatment: The use of medications (e.g clomid, nolvadex, anastrozole) should be avoided as there is no evidence that they will improve the chance of pregnancy and improvement in sperm parameters. The use of injection medications should only be employed in men with a specific indications related to deficiency of such hormones

Supplements: so far there is NO supplement or 'vitamin' proven to increase the chance for successful reproduction in male with sperm abnormalities.

A practical approach to male infertility requires initial evaluation of sperm analysis, ovarian reserve and genetic risk factors followed by a treatment plan oriented with the ultimate goal: conceiving healthy child not intermediate issues as cause of male infertility and improving sperm analysis.

What is my Chance of Delivering a Baby without Fertility Treatment?

What is my Chance of Delivering a Baby without Fertility Treatment?

Women may ask what are my odds of delivering a baby in the next 12 months without any fertility investigation or treatment?

Let me start by saying that a consultation with a reproductive endocrinologist can help you identify any fertility factors unknown to you Moreover, evaluation of your ovarian reserve can give you an estimate how long can you continue to try. Safety is another aspect of consultation as it can identify medical, obstetric and genetic risk factors to having a baby.

Chance of Spontaneously Pregnancy in One Year (treatment independent)

Ignoring all these aspects, the chance of getting pregnant with intercourse alone, within one year, is strongly related to age. Data from The American Community Survey (ACS) and National Center for Health Statistics (NSHS) based on study of millions of American women can provide an approximate answer.

If one 100 women living in The US tried to conceive, the odds of giving birth in the coming 12 months based on their age group would be

Age(y)	**ACS (%)**	**NCHS (%)**
20–24	21.5	23.2
25–29	26.9	28.4
30–34	26.6	25.6

35–39 14.5

11.9

40–44 5.0

2.8

45–50 2.3

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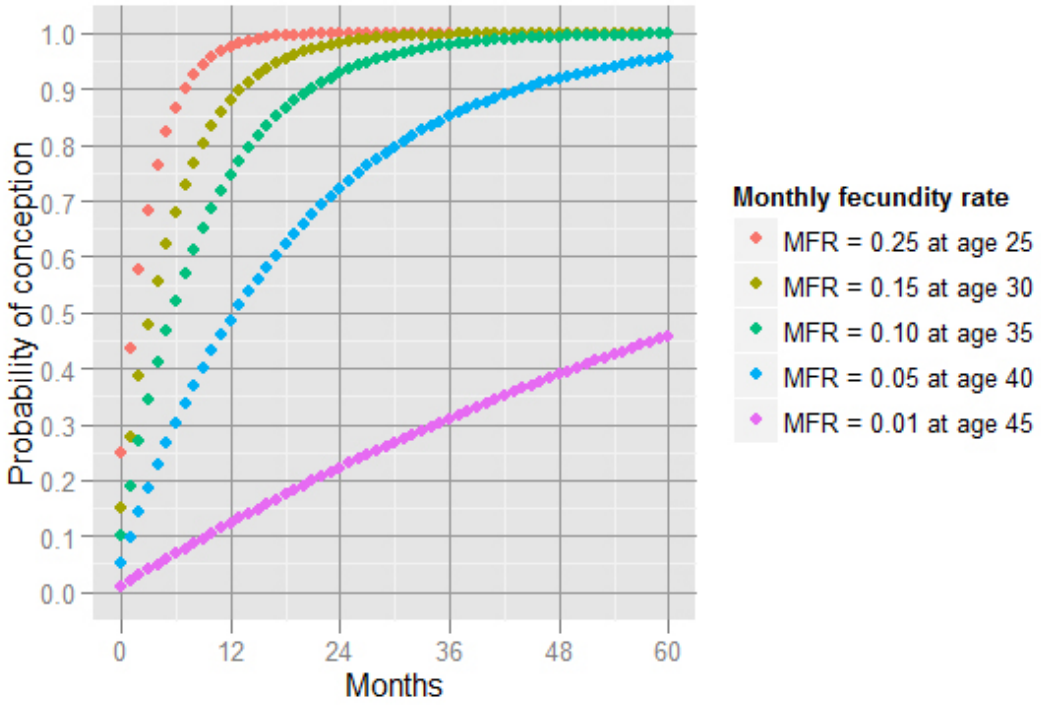
[ACS American Community Survey 2012.]
[NCHS National Center for Health Statistics 2013].

Monthly Fecundity Rate

The odds of getting pregnant and delivering a child each month is a also a function of age.



The Monthly Chance for Conceiving and Delivering a Live Born is Related to Maternal Age

One other aspect to consider is how long have you been trying = how long have been having intercourse with no birth control methods (irrespective of timing of intercourse or any other arrangements). The longer you have been trying with no success, the lower the chance for spontaneous conception.

The chance for spontaneous conception can give women realistic guidance of their odds for spontaneous pregnancy with time and minimize delay in seeking fertility consultation that can be detrimental to future fertility.

Ovarian Reserve Revisited-Do You Have Enough Good Eggs?

Ovarian Reserve Revisited-Do You Have Enough Good Eggs?

Trying to conceive over age 35 is generally not easy

I know because I tried for years to have a baby without success. While there are many factors which impact conception, one of the first concerns for women over 35 is if they have enough healthy eggs to get pregnant. Research has shown that women carry a reserve of eggs throughout their lives and that reserve diminishes over time. There are several tests which help to determine ovarian reserve including antral follicle testing, the clomid challenge and the AMH test which is relatively new.

The antral follicle test

Uses vaginal ultrasound to count and measure the small follicles, antral follicles, on the ovary. The higher the number of antral follicles, the better ovarian reserve and better odds for conception.

The AMH Test

Anti-mullerian hormone test, measures the levels of AMH in a woman’s blood. Since this hormone remains relatively constant over the menstrual cycle, it can be tested at any point in the month. Women with higher AMH levels tend to have a better ovarian reserve and a better chance at conception.

When I decided to try to conceive

one last time at age 44

My reproductive endocrinologist began by ordering the *Clomid Challenge Test*. For the test, I took clomid, a fertility drug used to induce ovulation, for 5 days. Generally speaking, the procedure works like this:

- On Day 3 of your menstrual cycle, a blood test is given to measure your FSH, LH, and estradiol levels.
- On Day 5 of your cycle, you begin to take a 5-day supply of clomiphene citrate, 100 mg of clomiphene each day for five days.
- On Day 10, you will have another blood draw to check FSH, LH, and estradiol levels again.

Normal results include low FSH values on both Day 3 and Day 10, and low estradiol values on Day 3. Results are abnormal if your FSH values are elevated. Your doctor may decide to re-test if your results are abnormal.

My results were normal but that is a fraction of the total conception story and half of the ovarian reserve story. Ovarian reserve consists not only of the quantity of eggs but also the quality of eggs. Research tells us that while tests like the clomid challenge check for the quantity of eggs, the quality of eggs is generally determined better by age. This is an unfortunate fact for those of us over 35.

According to Dr. James Toner in his paper "Ovarian Reserve, Female Age and the Chance for Successful Pregnancy", once women reach their mid thirties, specifically 37, their egg quantity begins to diminish at a faster rate. Tonor also reports that even if egg quantity is good, chances of a viable pregnancy drop due to the diminishing quality of eggs as women age.

Based on the research, it is clear that the averages do not look promising for women over age 35 trying to have a baby.

There is, however, other information to consider. Let's take a look at the bell curve. Basically, about 2/3 of the cases for a given situation fall in the fat part of the curve meaning that averages generally apply to most people. However, there are still one third of the people who fall outside of the fat part of the bell curve and averages do not generally apply to them. As you look at your individual situation, it is your lab work, anatomy and physiology that matter. I am a classic example of defying the odds. My ovarian reserve quantity was good but that wasn't what was preventing me from conceiving a child. It took many more tests to determine that a badly placed uterine tumor was most likely preventing implantation. At age 44, the research showed that an average woman in my situation had only a 3% chance of having a healthy baby. Yet, I was able to conceive in two of 4 IUI treatments and gave birth to a healthy little girl 9 months ago at the age of 45.

There are many components to conceiving a child

Ovarian reserve is one of them. There are also many medical interventions to boost the odds of conception. Medical research provides us with excellent information about infertility and age including work on ovarian reserve. While the research tells us that the odds of getting pregnant in late 30's and 40's diminishes, one needs to remember that each woman is unique and she needs to work with her doctor to explore all options in her quest for pregnancy.

About the Author: Deborah Lynn is the creator/owner of Over 35 New Moms and a former corporate vice president. She holds degrees in Education, Kinesiology and pursued doctoral study in Physiology. She spent over 17 years working in the corporate environment and now focuses her time on raising her daughter and helping other women over 35 in their journey to have a baby. For more information, visit The

Fertility Treatment for Busy Professionals

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From TTC to a Viable Pregnancy

If you and your partner has been trying to conceive (TTC) and your busy with work commitments, here are few tips that help you save time and shorten the time to conceive. Understanding few basic fertility concepts are helpful. What is fertility? It is the ability to conceive with regular unprotected intercourse. If you are having adequate frequency of intercourse, *then you have been trying, irrespective of timing of intercourse.* If this goes on for one year, if less than 35 or 6 months if 35 or more, then you are having difficulty getting pregnant.Female age is the most important fertility factor

Percent of currently married, childless women 15-44 years of age who have impaired fecundity by current age (from CDC: The National Survey for Family Growth):

	2002	2006-2010
Total 15-44 years	25.3%	21.2%
15-29 years	17.3%	11.0%

	2002	2006-2010
30-34 years	24.5%	14.2%
35-39 years	33.9%	39.3%
40-44 years	42.8%	47.1%

The longer you try, without conceiving, the stronger the indication that you have a significant problem with fertility.

The factors that need to be tested at initial workup include:

i. Ovulation and ovarian reserve

ii. Fallopian tubes: open or not

iii. Male factor: sperm analysis and

iv. General factors related to safety: infectious diseases and genetic carrier screening.

But how do you get all that done, understand the results, decide with your reproductive endocrinologist on a **fertility treatment** plan and execute the plan promptly, while you hassle your daily work and life engagements? A coordinated effort between you, your fertility specialist and other personnel enables you to promptly understand your fertility potential. A flexible reproductive endocrinologist can grant you an appointment at a time that does not disturb your work schedule. At your initial visit, ultrasound is performed for evaluation of ovarian reserve and any abnormalities in the uterus. In the same day, blood is drawn from you and your partner and can be sent for testing. Also a sperm sample can be submitted in the same day or few days later for sperm analysis. Hysterosalpingogram (HSG) can be performed by your physician or a radiologist within 1-2 weeks. Then, Can you communicate electronically with your physicians? This enable efficient discussion of lab results and subsequent steps.

How Fast Can You Decide on a Fertility Treatment Plan? It depends on many factors related to the complexity of fertility

issues uncovered during the workup, need for surgery e.g to remove fibroids, polyps or dilated fallopian tubes, proposed fertility treatment, need for genetic testing of embryos (PGD) and need for third party reproduction (donor eggs, donor sperm, gestational carrier). If complex treatment is required usually a second visit is helpful for evaluation of the uterine cavity, trial transfer, training on fertility medication self administration. Handling of insurance and dispensing fertility pharmacies also help reduce the burden on women busy with work engagements.

Many women are advised to continue to try to conceive naturally (3 to 6 months). For those requiring fertility treatment usually a fertility treatment plan can be executed in 10 to 20 days and within 5 to 8 visits. Again the flexibility of the practice in scheduling and communication allow you to execute around your daily work and family commitment.

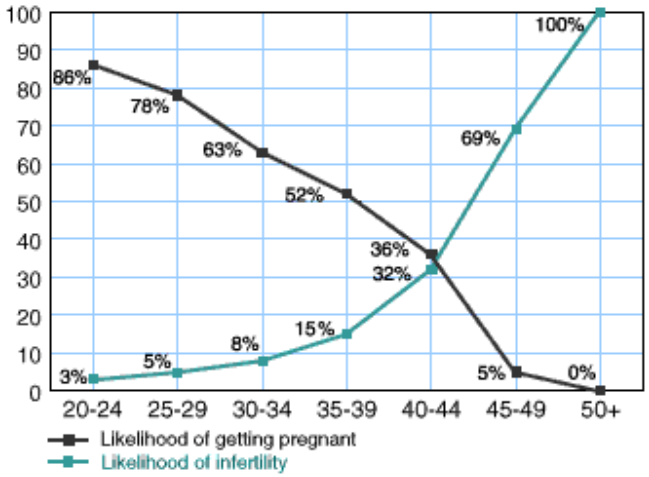
The flexibility of the fertility clinic, efficient planning of visits and use of secure electronic communication methods enables women to go through fertility treatment with minimal inconvenience and work interruption.

Fertility Options for Single Women

Fertility Options for Single Women

Single women may face some challenges regarding fertility options: understanding them then picking one or more options,

suitable for your reproductive plans. Clearly, a woman cannot delay pregnancy indefinitely, as the number of good quality eggs decline quickly in her 30s and older.



Decline in Fertility with age

Modern reproductive medicine enables single women to be mothers now and in the future. As with anything in reproduction, the younger you are, the more successful your efforts will ultimately be, irrespective of your choices. In addition, think of what would you accept: donor sperm? are you ready to get pregnant now or do you want do that in the future?

Are you ready to Start a Family without a Partner?

This could be a difficult question considering the time, financial and emotional commitment of raising children without a male partner. A psychologist with expertise in reproductive issues can help women tackle issues as readiness and commitment, disclosure to children when mature, capitalizing on family resources, legal issues and many more. Some anonymous donors accept open identity in the future.

Starting a family without a male partner requires a selection of sperm donor. The sperm donor could be anonymous (from a

sperm bank) or known (friend). In either cases, the donor is screened for infectious diseases (hepatitis B, hepatitis C, HIV, Syphilis, Gonorrhea and Chlamydia) and common genetic abnormalities. The sperm is quarantined then the donor is retested for infectious diseases. Tests are done in a specialized high accuracy labs.

How to use donor sperm to achieve a pregnancy?

This is a question related to female ovarian reserve and other fertility factors. If the fallopian tubes are open, as indicated by HSG (hysterosalpingogram, X-ray of the tubes) then IUI (intrauterine insemination) is possible. Age is also an important factor. Women 38 or older have much higher chance of conceiving with IVF than IUI using frozen sperm. This issue require thorough evaluation by a reproductive endocrinologist.

On Starting a Family with a Partner in the Future

If the use of donor sperm is not acceptable, egg freezing is a viable option for women with reasonable ovarian reserve and younger than 40. Evaluation of antral follicle count using vaginal ultrasound and antimullerian hormone levels (AMH) can predict response to fertility medications and ultimate egg yield from the cycle. Age reflects well how many of these eggs are chromosomally normal. The ovaries are stimulated using injection medications. Eggs are retrieved under vaginal ultrasound guidance which is a minor procedure. Mature eggs are frozen 4 hours later using vitrification. Immature eggs are cultured for <24 hours and frozen if mature. The eggs can be stored for years to come.

If the number of eggs retrieved is low another egg freezing cycle can be attempted to freeze more eggs.

When pregnancy is desired the eggs are thawed and fertilized via ICSI (direct injection of the sperm into the egg) and the resulting embryos are transferred into the uterus after preparation of its lining. The pregnancy rate after egg

freezing is close to fresh eggs and is age dependent.

These options allow single women achieve their reproductive goals while respecting their values and preferences.

Fertility Treatment Options

Fertility Treatment Options: What Are Infertility Treatments?

Following detailed fertility investigation of the male tubal and ovarian factors, patient and her reproductive endocrinologist decide together on the optimal **fertility treatment options**.

Factors to consider in selecting the best **fertility treatment options** include:

Sperm source

1. Is there a male partner: if so what is the ejaculate volume, sperm concentration, motility and shape? if >10 million moving sperm then pregnancy through intercourse or IUI is possible. Lower numbers indicates **IVF** or ICSI. If azospermia (no sperm in the ejaculate) then surgical sperm retrieval may be needed (TESE) or donor sperm can be used.
2. If there is no male partner: anonymous or known donor sperm is used

Tubal Factor

1. Open fallopian tubes allow for natural conception or IUI.
2. Blocked fallopian tubes require IVF. Sometimes tubes can be fixed using tubal surgery.
3. Blocked and dilated fallopian tubes (Hydrosalpinx) require surgical removal of the dilated tubes followed by IVF. Dilated tubes are very difficult to fix and can leak fluid into the uterine cavity and prevent implantation of the embryo.

Ovarian Factor

1. Women who do not ovulate due to polycystic ovary syndrome (PCOS): ovulation can be induced using oral medications (clomid or letrozole) or injection medications (gonadotropins). This is usually combined with IUI.
2. Women who do not ovulate due to defect in the master gland in the brain (Hypothalamic amenorrhea): ovulation can be induced using injection medications (gonadotropins). This is usually combined with IUI.
3. Women diminished ovarian reserve and unexplained (idiopathic) infertility commonly have lower quality eggs and may benefit from inducing multiple ovulation followed by IUI or IVF, to increase the chance that one of the eggs is healthy (chromosomally normal).

Donor Eggs

1. Donor eggs are needed in women with low egg reserve that fail multiple IVF cycles after menopause or those who carry some genetic abnormalities.
2. Donor eggs can enable same sex male couples parent a child (together with a gestational carrier).

Gestational carriers

1. Gestational carriers enable women to parent a child if the uterus is absent or was removed due to a disease e.g

endometrial cancer or if the lining of the uterus is damaged e.g intrauterine scarring due to prior scrapping.
2. Gestational carrier enable women who cannot get pregnant to parent a child e.g history of breast cancer
3. Gestational carriers enable same sex male couples to parent a child.

Genetic analysis of the eggs or embryos (PGD)

1. Women and men with risk of conceiving a child with a specific genetic disorder e.g cystic fibrosis, sickle cell anemia should consider testing their embryos before transfer into the uterus (PGD)
2. PGD can also be used for selecting the sex of the baby for family balancing.
3. PGD can be used to test the chromosomes of the embryo to increase the chance for pregnancy in women select women but its efficacy for that purpose is still being investigated.

Fertility Preservation

1. Women at risk for diminished fertility due to a medical problem or treatment e.g breast cancer can freeze their eggs or embryos to use later
2. Men at risk for azospermia due to genetic factors, cancer and cancer treatment can freeze sperm for use later
3. Many other techniques for fertility preservation can also be applied to adults and children to preserve reproductive organs and tissue.

Many **fertility treatment choices** exist to help women and men conceive a child. One or more of these methods can be tailored to each

i. individual circumstances:

singles women or men,

heterosexual couples or

same sex couples.

ii. reproductive aim:

wants to get pregnant now versus later,

wants one child only or accepts twins,

wants to conceive a child of certain sex,

will use own uterus or a gestational carrier,

will use own gametes- sperm or egg or donor gametes.

To learn more about fertility treatment options please visit nycivf.org