

IVF: The Way We Do It

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Efficient approach

IVF: The Way We Do It. We believe you should consistently be able to get an advice / recommendation for a fertility treatment, handcrafted to your special reproductive potential and egg reserve. *Your ovarian stimulation protocol will most certainly not be suited for the next woman.* We think carefully and for quite sometime about the best adjuvant and stimulation medication protocol, after obtaining adequate information about you and your partner. Moreover, attention to details during stimulation avoids pitfalls and optimize the quality of oocytes through selecting the most appropriate size to trigger final egg maturation. We then present the regimen to you in a simplified and chronological presentation that is easy to follow.

We believe that you should be able to understand all the intricate details of treatment and train on medications within one to two visits (supplemented with phone calls and e mails). You and your reproductive endocrinologist can reach a treatment decision and even train you on execution parts of that decision in the second visit even if you did not do any fertility tests before. This is how we efficiently do it.

IVF : The Way We Do It

I. Initial visit ultrasound, labs and prior records

Basic information about you and your partner are collected through detailed history, exam and vaginal ultrasound. The main aim is to identify any specific fertility factor as well as

estimate ovarian reserve. In addition we order fertility labs and preconception tests. We then discuss in details treatment options, including expected pregnancy rates, multiple pregnancy rates and potential complications.

We obtain and interpret lab results in few days and are discuss them with you especially genetic risk assessment, in person, via secure e mail or phone.

*Reproductive endocrinologists should want to care for their patients to help them acheive a healthy baby, not just go through the motions and dynamics of treatment, that has minimal or no chance of working. This is an absolute guiding and ethical principal. Its related to the biological possibilities detected on initial fertility testing and its also related to their physician skills and expertise. At the end of the day infertility specialists need to be **clearly convinced** that a particular woman has a reasonable chance of get pregnant before initiating a proposed fertility treatment. Fertility specialists then should take that woman to her maximum potential.*

II. Second Visit: Saline sonography, trial transfer, medication teach, stimulation protocol.

Checking the cavity of the uterus is essential to exclude factors that prevent implantation. Passing a catheter into the uterus helps anticipating difficulty in embryo transfer. Both are simple office procedures.

Ovarian stimulation Protocol Selection: we think deeply when assigning stimulation protocols in relation to dose and type of protocol (agonist or antagonist) and adjuvant use of medications before and during stimulation. Reviewing prior stimulation can help in improving the current protocol in terms of egg yield and quality. The physician that saw you first will conduct all day to day monitoring as well as all procedures. Attention to details during monitoring is

paramount in determining the dose and length of stimulation and time for egg retrieval.

Additional procedures that we perform during an IVF cycle include sex selection, PGD, number of embryos for transfer, egg and embryo freezing are all available to you. I explain those in details.

Medication teach: a hands on exercise on using the medicine. Now You are ready to start.

III. IVF: monitoring, retrieval, embryology lab procedures.

We always strive to deliver compassionate day to day Guidance, tailored around you comfort and convenience. We want you to waste minimal time waiting because you have the rest of your life and work to attend to.

Cycle conduct: we meticulously interpret the response to stimulation through ultrasound and blood work, with each visit and modify the dose of medications to improve response in the ovaries and minimize complications. The same physician perform monitoring and daily instructions as well as all other procedures. He or she knows your story and you never have to repeat yourself to a new person each time.

Embryology procedures: egg retrieval and embryo transfer done by the same reproductive endocrinologist. Excellent embryologists attend to your reproductive tissue.

Embryo selection for transfer: aiming at transfer of the smallest number of embryos that do the job. Up to age 39 we champion single embryo transfer to minimize twin pregnancy. Sometimes, when appropriate, we employ PGS / PGD to select the best embryo for transfer

IV. Pregnancy Follow up

10-12 days later you will get a blood pregnancy test, then early pregnancy ultrasounds. The aim is to confirm viability, position and health of the embryo. I then discuss nutrition in early pregnancy. I also explain different options in prenatal screening of chromosomal abnormalities in details. These include quad screen, nuchal translucency, Non Invasive Prenatal Test. Amniocentesis and CVS.

In addition, I describe options on multiple pregnancy and fetal reduction in details. We generally transfer a single blastocyst up to age 39 to the majority of women, minimizing the risk for twins.

The years of discomfort, time wasted, untoward effects and long waiting should all be behind us. You should be able to get pregnant in few weeks, safely without loosing any work time. Fertility treatment can be successful while attending to all other aspects of your life. We want to make sure that you are not dealt a false hope but if there a small hope will go fight for it together till we realize it together.

Endometriosis will not Lower IVF Success

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Effects of [endometriosis](#) on fertility treatment success has always been a controversy. When a woman is diagnosed with

endometriosis, she receives multiple contradicting advises from multiple sources. It is very difficult for women to sort through these recommendations and pick the ***one that are suitable for her symptoms and reproductive plans***. Indeed reproductive plans and symptoms are by far more important than the nature of the problem, anatomically, as well as what one reproductive surgeon or a fertility specialist think you should do.

Reproductive Plans in women diagnosed with endometriosis

Simply do you want to have a baby or did you complete your family?. If you want to have a baby, then an initial infertility evaluation is required: testing for ovulation, [ovarian reserve](#), male factor and Fallopian tube patency is required. Sometimes other forms of pelvic imaging e.g MRI is needed to test for [ovarian cysts or endometriomas](#)...Endometriosis itself may require laparoscopy and biopsy for accurate diagnosis.

Women are then categorized according to findings: endometriosis only, endometriosis with other factor or endometriosis with low egg reserve. That will facilitate further advice.

One very important indicator that you are not talking to the right person if he or she did not complete the evaluation for male factor and egg reserve. These are essential tenets of fertility and failure to test them will have impact on success. It would be absurd to do surgery for endometriosis for example to discover later that you have a severe male factor that require IVF -ICSI.

If you desire future fertility, reproductive endocrinologists should tailor their advice to preserve reproductive tissues and minimize surgery. There is a strong evidence that surgery in the ovary reduces ovarian reserve, irrespective of

technique used.

Pain in women diagnosed with endometriosis

If the main symptom is pain, in different forms, then medical or surgical treatment can be employed. in women who completed their families. Medical treatment e.g non cyclic oral contraceptive pills or GnRH agonists (depot lupron) prevent pregnancy. From a practical stand point, surgery in many cases may not promote pregnancy in women with mild and severe endometriosis.

Women diagnosed with endometriosis and report pelvic pain should focus on getting pregnant. Pregnancy can suppress endometriosis for a long time after delivery

Fertility Treatment in Women Diagnosed with Endometriosis

Absolutely avoid doing surgery in the ovaries in women interested in pregnancy. This is crucial. Opening endometriomas and tripping their walls leads to significant loss of egg reserve. The only indication to remove endometriomas if they are complicated e.g rupture or suspicion of malignancy. There are many reports of finding eggs in the wall of endometriomas after removal and reduction in egg reserve markers after surgery. Bilateral surgery for endometrioma can lead to menopause, irrespective of the skill of the surgeon.

In minimal and mild endometriosis with reasonable egg reserve, normal sperm analysis and open fallopian tubes, ovarian stimulation and IUI can be entertained in young women (38 years).

In women with moderate or severe endometriosis e.g

endometriomas, blocked tubes.. or those with associated male factor infertility or low egg reserve, IVF yields a much higher pregnancy rate.

IVF Success in Women with Endometriosis

Recent analysis of IVF cycles performed in women with endometriosis with or without other factors (tubal, male, unexplained infertility) indicates that

Isolated endometriosis is associated with similar IVF success and live birth to other infertility factors, though the number of eggs retrieved may be smaller.

Endometriosis when associated with other factors e.g male or tubal factor may have lower success rates. The live birth rate is still excellent 35 to 45% per cycle.

[Endometriosis-and-IVF](#)

Treatment of Endometriosis related pain

Both medical treatment and surgery are effective for treatment of pain. Endometriomas do not respond to medical treatment. Endometriosis on the peitoneum and and other organs respond to medical and surgical treatment. Adenomyosis (endometriosis of the uterus) is a surgical disease and respond only to surgery.

In general medical treatment is successful but requires patience and can be used for a longer period of time with add back therapy.

If you are diagnosed with endometriosis there is wide range of treatment options. Treatment should be personalized to your reproductive goals and symptoms not to physician expertise and bias. There is really little controversy about what need to be done in each situation. Women just need to be specific about what they want: get rid of pain or have another baby. IVF

success is not impaired in women with endometriosis.

Medically + Economically You Should Avoid IUI at Age 38

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Medically and Economically you should void IUI at age 38 or older. Couples facing difficulty conceiving and after completing a fertility workup, they have three general fertility treatment options. Regular intercourse, ovarian stimulation with oral medications ([clomid](#) or [letrozole](#)) or [injection medications](#) followed by IUI (COH-IUI) or [IVF](#).

The chance for pregnancy is very low with COH-IUI that you may as well just try with intercourse. The likely cause is production of a small number of eggs with these stimulation protocols, lowering the chance of encountering a chromosomally normal eggs. IUI in itself slightly increases the pregnancy rate but the main benefit in fertility treatment is produced through ovarian stimulation and recruitment of multiple eggs.

On the other hand, IVF carries a very good chance for getting pregnant. If not ready for fertility treatment just have regular intercourse. If ready, proceed directly to IVF as you will realize much higher success rate and save also on treatment with minimal yield (IUI). Here is a synopsis of published studies ([asrm.org](#)).

Traditional egg reserve tests

Women who initiated infertility treatment with FSH of 10 to 15 mIU/mL and E >40 pg/mL on day 3 testing were unlikely to achieve live birth after COH-IUI treatment. In two well designed studies on 603 patients contributing 2,717 total cycles, no live births occurred during COH-IUI. IVF still afforded these patients a reasonable chance of success (6/18 couples, 6/40 cycles, 33.3% live-birth rate per couple).

Female Age

Age \geq 38 to 42y:

The cumulative clinical pregnancy rates per couple after the first two cycles of CC/IUI, FSH/IUI, or immediate IVF were 21.6%, 17.3%, and 49.0%, respectively. After all treatments, 110 (71.4%) of 154 couples had conceived a clinically recognized pregnancy, and 46.1% had delivered at least one live-born baby; 84.2% of all live-born infants resulting from treatment were achieved via IVF. There were 36% fewer treatment cycles in the IVF arm compared with either COH/IUI arm. Also couples conceived a pregnancy leading to a live birth after fewer treatment cycles.

Age 21-39:

Per cycle pregnancy rates for CC/IUI, FSH/IUI, and IVF were 7.6%, 9.8%, and 30.7%, respectively. Average charges per delivery were \$9,800 lower (\$25,100 lower to \$3,900 higher) in the accelerated arm (IVF) compared to conventional treatment (IUI).

Other Fertility and Social Factors to consider

There are other factors to consider: moderate to severe male factor and blocked tubes makes IUI and intercourse not an option. Absolute cost and insurance coverage are maybe important (although its by far more cost effective). Risk of

multiple pregnancy should always be considered especially with Injection +IUI cycles. Some couples have personal "resistance" to adopting IVF as difficult, uncomfortable, risky or unnatural, and that autonomy has to be both respected and embraced but also discussed. Their sentiment has to be balanced against a 7% per cycle pregnancy rate if you do Clomid-IUI, 9% per cycle injection -IUI (both become zero if egg reserve tests are abnormal) *versus* 35%pregnancy rate with IVF.

Knowing the expected rate of success is an integral part of fertility counseling.

Medically + Economically you should avoid IUI at age 38

All being equal, for modern couples, the most humane approach is to get them pregnant before the short favorable window of reasonable number and quality of eggs wane. No to do so means letting them enter the into the more difficult phase of final reproductive years. Treatment success drops in late reproductive years to a single digit and they jeopardize their chance of having a baby.

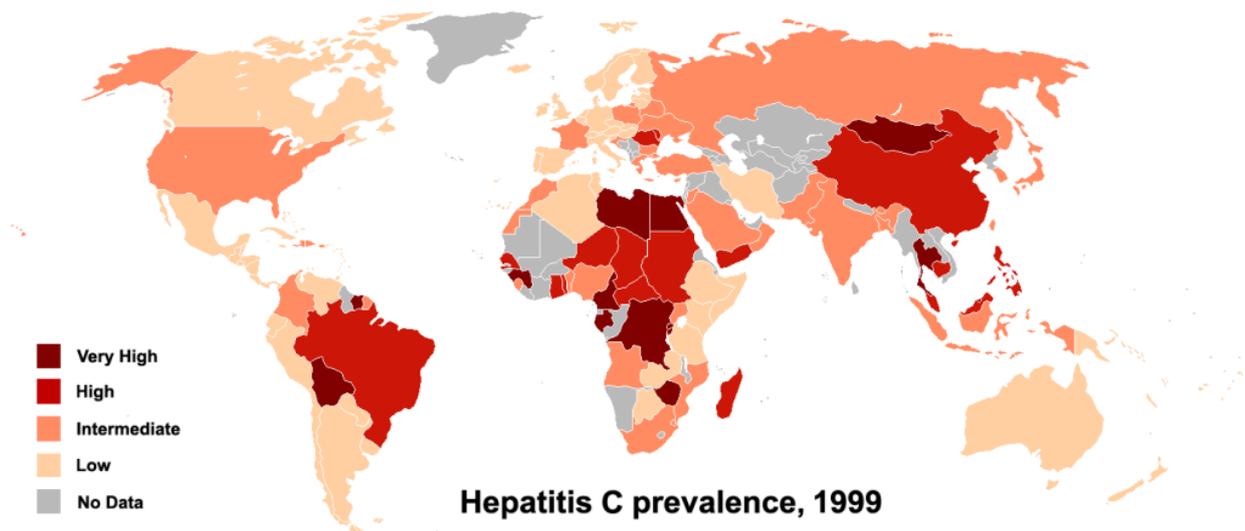
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Hepatitis C: what do you need to know if trying to conceive

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Hepatitis C Infection

Hepatitis C Virus (HCV) infects 3% of the world's population. Over 170 million chronic carriers. Approximately 2.7 million Americans (1.8%) are infected with HCV in addition to 30,000 new cases reported yearly. In the United States, 65% of persons with HCV infection are aged 30-49 years. There are several types of the virus that vary in geographical distribution and response to medications.



Genotype 1a occurs in 50-60% of patients in the United States. Genotype 1b occurs in 15-20% of patients in the United States; this type is most prevalent in Europe, Turkey, and Japan. Genotype 1c occurs in less than 1% of patients in the United States

Genotypes 2a, 2b, and 2c occur in 10-15% of patients in the United States; are widely distributed and are most responsive to medication

Genotypes 3a and 3b occur in 4-6% of patients in the United States; most prevalent in India, Pakistan, Thailand, Australia, and Scotland

Genotype 4 occurs in less than 5% of patients in the United States; it is most prevalent in the Middle East and Africa

Genotype 5 occurs in less than 5% of patients in the United

States; it is most prevalent in South Africa

Genotype 6 occurs in less than 5% of patients in the United States; it is most prevalent in Southeast Asia, particularly Hong Kong and Macao

Transfusion of blood contaminated with HCV was once an important source of transmission. Since 1990. Persons who inject illegal drugs with non-sterile needles or who snort cocaine with shared straws are at now at the highest risk for HCV infection.

Transmission of HCV to health care workers may occur via needle-stick injuries or other occupational exposures. Nosocomial patient-to-patient transmission may occur by means of a contaminated colonoscope, via dialysis, or during surgery, including organ transplantation before 1992.

HCV may also be transmitted via tattooing, sharing razors, and acupuncture. The use of disposable needles for acupuncture, which has become standard practice in the United States, eliminates this transmission route. Other uncommon routes of transmission of HCV, which affect less than 5% of the individuals at risk, include high-risk sexual activity and maternal-fetal transmission. 10% unknown.

Tests for detecting hepatitis C virus (HCV) infection include:

- Hepatitis C antibody testing
- Recombinant immunoblot assay
- Qualitative and quantitative assays for HCV RNA
- HCV genotyping

Hepatitis C Treatment

Significant progress in the treatment of hepatitis C infection took place in the past year. Several medications or combinations can lead to cure in about 10 weeks in the majority of hepatitis C infected patients. Medications include

Sovaldi (sofosbuvir 400 mg), Harvoni (ledipasvir (90 mg)/sofosbuvir 400 mg) or Vikerapack, with or without ribavirin.

One treatment regimen is a single daily tablet of ledipasvir 90mg / sofosbuvir 400mg for 8 to 24 weeks (according to genotype, viral load and functional status of the liver).

Hepatitis C and Reproduction

[Significant effort is exerted by reproductive endocrinologist to detect hepatitis C and other viral infections and to prevent the transmission of hepatitis C to women and babies during reproduction.](#)

Intimate partners: both partners are screened for HCV antibodies. If one partner is infected, he or she is referred for treatment with one of the modern drug regimens for 8 to 12 weeks before fertility treatment. If viral load does not drop to an undetectable level then a protocol exists for infected men to test semen for the virus and use the frozen sperm for IVF and ICSI to minimize transmission to mother and baby.

Egg and sperm donors: extensive history, exam and screening for donors is performed. Those with high risk factors are excluded. Donors with no risk factors are further tested using hepatitis C antibody and hepatitis C RNA performed in an FDA approved lab. Sperm donors are tested before sperm donation, sperm are quarantined for 6 months and the donor is retested again before releasing sperm. Egg donors are tested in an FDA approved lab within one month of egg retrieval. So far, there is no reported case of hepatitis C transmission after sperm or egg donation.

Gestational carriers: Intended parents are screened in an FDA lab for viral infections to minimize transmission to surrogates. Gestational carriers are also screened to prevent transmission to the baby.

Frozen sperm, eggs and embryos: liquid nitrogen in storage tanks can very rarely transmit infection. All patients are screened before storage. Tissues and cells can be stored in nitrogen vapor and sealed devices. Liquid nitrogen can also be filtered and sterilized using ultraviolet rays.

How to Select an Egg Donor

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Egg donation entails the fertilization of eggs of a young woman and transfer of the resulting embryo or embryos into the intended mother uterus. In the majority of cases, women are interested in egg donation when their ovarian reserve is diminished in quantity and quality, commonly after multiple unsuccessful IVF cycles. The eggs of young women are usually high in quality making the chance for pregnancy and delivery very high. Women can select an egg donor from one of two pools



Egg Donors

Eggs from a Live Donor

An young woman is selected for donation, her ovaries are stimulated then eggs are retrieved. Two types of egg donors exist:

i. Known Egg donor

The egg donor is known to the intended mother. The donor could be a related e.g. sister or not a relative but agreed to open identity egg donation.

ii. Anonymous Egg donor

The egg donor is not known to the recipient. The majority of eggs donated are contributed by anonymous donors. If you select a closed identity donor you will still be able to know a great deal about her as age, ethnicity, religion, education, medical and family history, prior donations, physical features, childhood or even adult photo. Anonymous egg donors are usually recruited by a third party: IVF clinic or an egg donation agency.

Shared Donor cycle: Sometimes the eggs from one donor are shared between two recipients to reduce cost. Sharing however may yield lower chance for pregnancy per couple.

Donor Egg Bank

An egg bank will recruit the donors, stimulate their ovaries and freeze them. Recipient select from an already frozen inventory. The advantage is that they do not need to wait for a donor to be found, tested and her eggs harvested. In addition it is cheaper because only some of the eggs resulting from stimulation are obtained and no expenses incurred for donor travel and accommodation. On the other hand, it may yield lower chance for pregnancy (eggs are frozen and fewer of them are available). Donor selection is also restricted to available inventory of eggs that were already donated at an earlier time.

Results of Donor Egg Cycles Based on Donor Selection

Based on hundreds of thousands of donor egg cycles some general expectations of pregnancy and live birth rates can be made:

a. Anonymous cycles usually yields a higher pregnancy rates than known donors. Anonymous donors are selected on pure medical grounds first. They tend to have better ovarian reserve and are commonly younger than known donors. Many times known donors are based on other grounds e.g sister donor or a friend that will donate without compensation

b. Donor egg cycles distributed to one recipient are more successful than those shared between two recipients due to more eggs and embryos being available for selection and transfer.

c. Fresh eggs from live donors produce more babies than frozen donor eggs. A study of 11,148 egg donation cycles performed in 380 U.S. clinics in 2013, including 2,227 that used frozen eggs indicated that

for each IVF cycle the live birth rates were 50% with fresh eggs, and 43% with frozen eggs and

for each embryo transfer, 56% of embryos created with fresh eggs resulted in a live birth, compared to 47% of embryos created with frozen eggs.

The Process of Selecting an Egg Donor

The process of selecting an egg donor is complex that involves you, your partner, your reproductive endocrinologist and sometimes other parties. The guiding principals for selecting a donor are

a. Selecting a donor with good ovarian reserve b. Protecting the mother from the transmission of infectious

diseases c. Protecting the babies from the transmission of genetic diseases d. Protection of the egg donor from potential complications of IVF e. Partners preferences.

Ovarian reserve: an egg donor should have an excellent ovarian reserve. This predicts excellent response to treatment with fertility medications and the collection of large number of mature good quality eggs. Egg reserve is assessed through history taking, vaginal ultrasound estimation of antral follicle count, day 3 FSH and estradiol assay and AMH levels. Donors should be younger than 32 years and preferably younger than 30.

Infectious disease screening: donors are screened using first a thorough history and examination. Donors practicing in high risk behavior and those that lived in certain geographical areas are excluded. Lab tests are obtained for hepatitis B, hepatitis C, HIV I/II, Syphilis, gonorrhea and chlamydia. Other tests for infectious diseases could include testing for human T lymphocyte virus I/II, West Nile virus and South American trypanosomiasis. Tests are run at initial encounter then repeated in specialized labs within 30 days of retrieval to minimize the possibility of acquiring any of these infections at a later time.

Genetic screening: Extensive genetic and family history is first obtained from the donor. This is followed by screening for at minimal cystic fibrosis and any genetic disease related to donor ethnicity e.g hemoglobin abnormalities in African, Asian and Mediterranean donors-Ashkenazi panel in Jewish donors. Spinal muscular atrophy and fragile X syndromes are commonly also screened. More recently a universal genetic test that include 100 most common genetic diseases is routinely used. If an abnormality is found, a genetic counselor is consulted.

Donor related precautions: Egg donors should have the ability and intelligence to understand the process. This is evaluated

by a trained psychologist. egg donors are counseled that the process does not impair their ability to conceive children of her own. Stimulation is tailored to avoid excessive stimulation and ovarian hyperstimulation syndrome. Donor are followed up after the procedure to monitor for any complications form retrieval and that the ovaries regained their normal size after stimulation.

Partners preference: Partners are offered a session with a psychologist to express their feelings about the process and to discuss some of the early and long term aspects of the process inducing legal issues an disclosure to children when they reach maturity. Partners may prefer certain race or ethnicity e.g Asian, Jewish...Some agencies specialize in recruiting donors of specific demographics. Physical features are also strongly considered and discussed with couples. Academic achievements are also desired by many couples.

Other considerations: Male partner sperm analysis and labs are obtained. The mother is assessed for any medical disorder and the ability to carry a pregnancy safely. The uterine cavity is evaluated using hysteroscopy or saline sonography. The endometrium is evaluated for its response to hormones. The cervix is mapped to avoid difficult embryo transfer.

The process of egg donation is commonly satisfying to recipients, donors and physicians and is flexible to allow for safe selection of an egg donor and still consider your preferences and aspirations.

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 severe 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 complications <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.

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

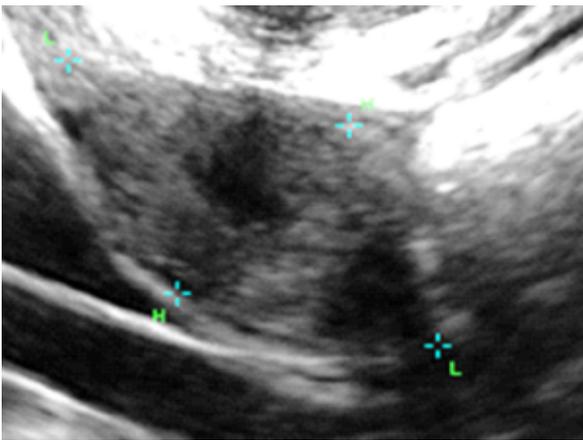
The number of eggs and their quality are reduced at a given age. Women with diminished ovarian reserve have less eggs and more chromosomally abnormal eggs than women in the same age group. It reflects low response to fertility medications and more difficulty achieving a pregnancy. Women with diminished 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 > 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 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 <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 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.

Ten Reasons why You Should not Use Clomid for Fertility Treatment

Ten Reasons why You Should not Use Clomid for Fertility Treatment,

Not the Way your Using it Anyway

Ten Reasons why You Should not Use Clomid for Fertility Treatment, Not the Way your Using it Anyway. Clomiphene citrate (clomid) was the first medication introduced for fertility treatment (1960s). It works through masking of estrogen receptors in the brain. The brain, blind to estrogen in the blood, starts pouring FSH, the protein that drives development of dormant follicles in the ovary.

When one considers a fertility treatment: not only the pregnancy and delivery rates per cycle is considered, but also the time to conceive (TTC) and the complication rate especially multiple pregnancy. Clomid is a very attractive medicine to women and gynecologists, alike. It is an oral medication, easy to use for both general gynecologists and women seeking fertility treatment. It is also cheap. It is successful in inducing ovulation in 90% women that do not regularly ovulate e.g. polycystic ovary syndrome. Response to clomid is modest in most cases (1-2 follicles).

In spite of all these advantages, there are many other disadvantages. It, most likely, will not improve the odds of conception in regularly ovulating women. Its indiscriminate use, in The US and worldwide (without ultrasound monitoring of ovarian response), probably makes clomid the drug responsible for multiple pregnancies over all other forms of fertility treatment. Although clomid is successful in inducing ovulation

in 80-90% of well selected patients, only 20% become pregnant. This discrepancy happens because of undesirable effects of clomid on the lining of the uterus (thin) and cervical mucus (thick). In my opinion though, many clomid cycles fail due to its in women that are not destined to benefit from it. Those are older and regularly ovulating women with unexplained infertility as opposed to suitable candidates: younger non-ovulating women. Clomid offers little help to women with unexplained infertility (ovulating) because in these women, the majority do not conceive because of chromosomal abnormalities in the eggs. Clomid commonly does not induce superovulation (many follicles) to partially compensate for abnormalities in the eggs.

Do Not Use Clomid Unless

1. Preconception labs are normal. Many patients are prescribed clomid without a complete fertility workup, including genetic screening. If you and your partner are carriers of cystic fibrosis or sickle cell anemia gene abnormalities, for example, you are at risk of transmitting these diseases to your future children (1:4). Genetic screening should be performed BEFORE starting fertility treatment. It does not help you to detect these abnormalities after pregnancy ensues. Decline clomid or any other fertility treatment without proper preconception history and lab tests.

2. Evidence of patent tubes. After ovulation induction, using clomid, the eggs has to be picked up by the fallopian tubes. Sperm also has to enter the fallopian tube to allow fertilization. Completely blocked fallopian tube may prevent the egg and sperm to meet. Partially blocked fallopian tube may allow fertilization but the the embryo may become stuck in the tube leading to ectopic pregnancy.

3. Near normal sperm analysis. A sperm concentration of < 15 million per mL and movement < 50% may reduce the odds for fertilization and reduce the chance of pregnancy after clomid

treatment.

4. If you ovulate regularly. Together with normal sperm analysis and open tubes, that indicates you have unexplained infertility. The most likely cause for not conceiving is chromosomal abnormalities in the eggs. We cannot fix chromosomal abnormalities in the egg but we can induce the ovaries to produce more eggs. More mature eggs means more chance of producing a normal egg. Clomid induces the ovary to produce 1-2 eggs in most cycles, thus does not address effectively egg abnormalities. On the other hand, if you are young and do not regularly ovulate, clomid is able to induce ovulation and potentially solve your problem.

5. Without monitoring. Some women are more sensitive to the effects of clomid. They respond by producing a large number of follicles. The safest approach here is to cancel the cycle and restart another treatment with a lower dose. Although the risk of multiple pregnancy with clomid is about 10%, women that respond with producing a large number of follicles are at a much higher risk. Careful monitoring of response, using vaginal ultrasound, is required in all clomid cycles.

6. Use the lowest dose that leads to ovulation (start with one tablet per day). Do not increase the dose if ovulation took place at a lower dose. Most patients get pregnant at doses of 50 to 150 mg (1-3 tablets) per day. Increasing the dose does not increase the chance for pregnancy and increases the side effects of clomid e.g thin endometrium, thick cervical mucus..

7. Do not use clomid more than 3 months (6 months life time max). The majority of women get pregnant in the first three months of treatment. If you are younger and ovulate on clomid and would like to try few more months, then 6 months is the maximum amount of time you should use clomid in your life time.

8. Clomid less likely to lead to pregnancy delivery in women

>38y. In women 38 or older with unexplained infertility, there is good evidence that clomid-IUI is inferior to IVF. The vast majority of women in that age group that start on clomid end up switching to IVF to achieve pregnancy.

9. Expertise with optimizing clomid cycles: clomid cycles should be supervised by a physician with expertise in clomid dosing, use of repeat courses, use of adjuvant treatments as estradiol and IUI. This enables maximizing the benefits of fertility treatment and tailoring treatment to individual woman.

10. Use letrozole before using clomid. Accumulating evidence from many studies, including randomized clinical trials, indicates that letrozole is superior to clomid in terms of achieving pregnancy. Applying the same principals above, letrozole should be considered as the initial treatment for anovulatory infertility.

On tailoring Fertility Treatment to Specific Patient's Needs

In too many times, the use of clomid for fertility treatment is a stark example of tailoring patients to treatments familiar to general gynecologists, rather than individualizing fertility treatment to women biology and fertility needs, citing ease of use, perceived safety and familiarity. Cheap treatments that appear safe can quickly become aggressive and unsafe if they lead to low pregnancy rate and high multiple pregnancy. The time lost treating older patients with clomid for a prolonged periods can be detrimental to their ovarian reserve and can minimize the chance for eventually achieving pregnancy and delivery.

On men and clomid

There is no proof that men benefits from the use of clomid and similar treatment to improve sperm parameters. Specifically, there is no evidence that female partners of men that were

prescribed clomid conceive at higher rates. With very few exceptions, clomid should not be used to treat male factor infertility.

Fertility Treatment for Busy Professionals

Fertility Treatment for Busy Professionals

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%

	2002	2006-2010
15-29 years	17.3%	11.0%
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.