

Grading Male Fertility, ART, and Goals of Treatment

This handout explains how male fertility is graded, the concept of assisted reproductive technology (ART) and the goals of male fertility treatment. **For an electronic copy of this brochure and more information on Male Fertility, we encourage you to visit our website at www.MensHealthIN.com/services/male-infertility.** There we have several educational resources including video content and other handouts. If you ever have any questions or concerns, please feel free to call the Men's Health Center at (317) 564-5104.

How is a man's fertility graded?

In our previous handout 'Male Fertility: An Explanation' we discussed how the semen analysis is one of 3 key tests that's performed when evaluating a man's fertility potential. When a semen analysis is performed, multiple values are reported including volume, concentration, motility, and morphology. The three most important of these are volume, concentration, and motility.

Although a man's fertility potential is based on more than just the results of his semen analysis, those results are arguably the most important. And despite each value that's listed in the semen analysis report having its own significance, what's even more important is how they relate to each other to create the total motile count (aka TMC).

What is a man's total motile count (aka TMC)?

A man's TMC is the total number of healthy, swimming sperm per ejaculate and it is typically reported in the millions. The TMC is calculated by multiplying semen volume times sperm concentration times motility.

How To Calculate The Total Motile Count

Volume (mL)	Milliliters (mL) of semen produced
X	
Concentration (millions/mL)	Sperm present per mL
X	
Motility (%)	Percentage of sperm that are swimming
=	
Total Motile Count (TMC)	Number of sperm able to swim forward per ejaculation

For many men, their TMC can serve as a signal as to what their general fertility potential is and what would most likely be required to achieve conception provided there are no female fertility factors at play.

How many sperm are required to achieve pregnancy?

The phrase 'it only takes one' is often quoted in regards to male fertility, but the truth is a little more complex than that. In reality, millions of sperm are required to reliably achieve conception at home.

Generally speaking, men with TMCs of 20 million or more are thought to have 'normal fertility' with a reasonable chance for spontaneous conception at home with timed intercourse provided that there are no significant female fertility factors at play. For more information on how to track a female partner's cycles to best identify a couple's 'fertile window', please see our 'Male Fertility: An Explanation' handout.

Men with a TMC below 20 million typically have a diminished fertility potential with a significantly lower chance for spontaneous conception at home. If their TMC is unable to be increased through male fertility treatment, they may require extra assistance to achieve pregnancy via assisted reproductive technology (ART).

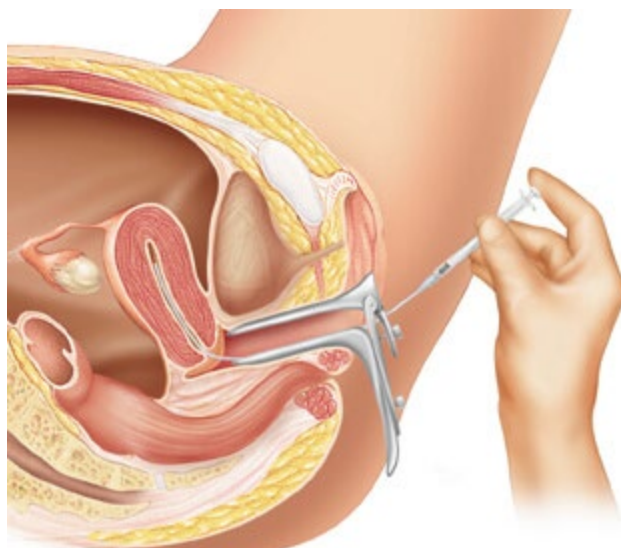
What is assisted reproductive technology (ART)?

Assisted reproductive technology (ART) is a category of medical treatments that are used to help couples with diminished fertility conceive. The two most common options are intrauterine insemination (IUI) and in-vitro fertilization (IVF). In the context of male fertility, IUI and IVF should be thought of as tools that help couples work around low sperm counts. Although they may not be male fertility treatments in of themselves, they are often used for couples where the male partner has diminished fertility and are worth learning about

What is intrauterine insemination (IUI)?

Men with a TMC between 10 and 20 million may not be able to reliably conceive at home, but they are often candidates for a form of assisted reproductive technology (ART) known as intrauterine insemination (IUI).

The IUI process starts by first preparing a man's ejaculate with what's known as a 'sperm wash'. The sperm wash is a process that separates that healthy, swimming sperm from the rest of the semen specimen. This healthy sperm is then

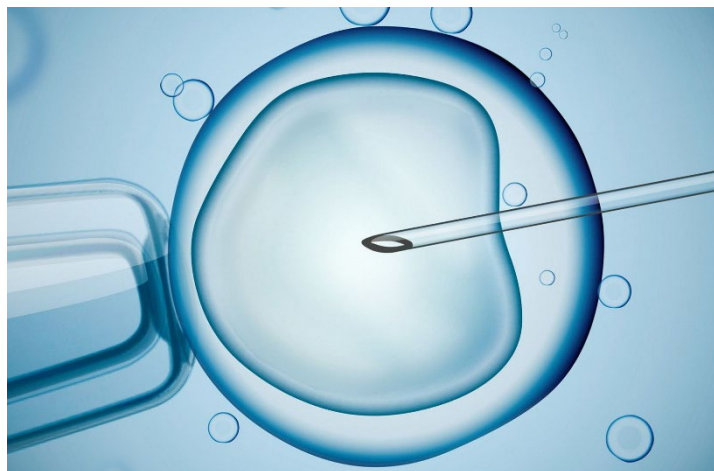


inserted though cervix directly into the uterus at the time of ovulation.

IUI can be coordinated with a female partner's normal cycle or it can be enhanced with certain female fertility medications. When performed in the context of male fertility problems, IUI is usually performed for men with TMCs between 10 and 20, but there are exceptions. Also, it should be noted that there are multiple female factors that may also influence a couple to choose IUI. Lastly, couples should remember that the sperm wash process usually decreases a man's TMC compared to a regular semen analysis. As a result, most fertility specialists prefer male partners to have a TMC above the commonly quoted minimum value of 10.

What is in-vitro fertilization (IVF)?

Men with a TMC less than 10 will often require a more targeted form of ART known as in-vitro fertilization (IVF). IVF is actually a complex series of procedures that are used to help facilitate conception. IVF starts by giving the female partner fertility medications to stimulate her ovaries to produce multiple eggs. This is in sharp contrast to a normal cycle, where typically only one mature egg is produced per month. When the eggs are mature, they are collected via a minimally invasive, ultrasound-guided procedure known as an egg retrieval.



Once the eggs are retrieved, sperm must be obtained from the male partner. Sperm can be collected as an ejaculated specimen or directly from the testicle using a variety of sperm retrieval procedures. To learn more about the different kinds of sperm retrieval procedures and why they're performed, please see our 'Sperm Retrieval Procedures' handout or watch our video on the topic.

With the eggs and sperm retrieved, they must then be combined to achieve fertilization. In the modern era, this is most commonly done in the embryology lab with a procedure known as intracytoplasmic sperm injection (ICSI). Although ICSI does not guarantee fertilization, it does allow the greatest control regarding sperm selection. This precision is often important when dealing with male factor fertility issues.

Once fertilization is achieved, the combined eggs and sperm are now known as embryos. These are allowed to mature in the embryology lab until reaching a stage of development

known as the blastocyst stage. The blastocysts can then undergo genetic screening to rule out certain genetic conditions if the couple desires.

Finally, once any desired screening is complete, the blastocysts are now ready for either cryopreservation for future use or for embryo transfer to achieve pregnancy. Cryopreservation is also known as embryo freezing and it allows couples to preserve their embryos until they are ready to pursue pregnancy. An embryo transfer is when a mature, healthy blastocyst is inserted into the lining of the uterus. Approximately 2 weeks following the transfer, the female partner is administered a pregnancy test to confirm a clinical pregnancy.

The term IVF encompasses all of these procedures. Although complex, IVF is a fantastic tool that can allow even men with extremely low sperm counts to achieve fatherhood!

Note: The explanation above is meant to be a brief introduction to the topic of ART. There is much more complexity that is beyond the scope of this handout including sperm cryopreservation, embryo donation/adoption, and donor sperm. Please ask your provider if you have any questions about these topics. Also, it is worth noting that the TMC thresholds of <10 for IVF and 10-20 for IUI are general guidelines and may vary significantly between practices.

Who performs IUI and IVF?

Although IUI and IVF can be indicated for certain male factor fertility problems, they are not performed by male fertility specialists. Instead, they are performed by female fertility specialists known as Reproductive Endocrinologists (REIs). Reproductive Endocrinologists are OB/GYN physicians who have completed specialty fellowship training in female fertility. For more information on the different REI practices in our area, please see our handout on the topic.

What is the goal of male fertility treatment?

At its core, the goal of male fertility treatment is to help couples conceive by improving the male partner's fertility potential. IUI and IVF are incredible tools to help work around low sperm counts and female fertility issues, but they don't improve a man's sperm counts or his baseline fertility potential.

For many men, successful male fertility treatment means results in an increase in their sperm quantity and quality. In practical terms, that means that many men who would have needed IVF or IUI previously due to low sperm counts are often candidates for IUI alone (opposed to IVF) or conception at home following successful treatment.

For men who don't have any sperm in their ejaculate (a condition known as azoospermia), successful fertility treatment may mean finding sperm that can be used for IVF. Because of the immense complexity of fertility, its treatment can look very different for different couples.

Because fertility is often an indicator of global health, the male fertility evaluation can also serve as an opportunity to identify lifestyle factors that, if modified, can improve a man's overall well-being. Finally, for some men, the fertility evaluation can also uncover underlying genetic conditions that may have long term health implications.

Who should I call if I have any questions or concerns?

If you ever have any questions or concerns, please don't hesitate to call the Men's Health Center at (317) 564-5104. If you want to learn more about male fertility, please visit our website at www.MensHealthIN.com/services/male-infertility. There we have several educational resources including video content and other handouts. If you still need to schedule your consultation, call our scheduling office at (877) 362-2778 to make your appointment today!