

Fertility Preservation for Men at the Male Fertility Lab University of Washington

Thank you for choosing the Male Fertility Lab at UW Medicine for your fertility preservation. We understand how important this is to you, and will take every step to give you the best and most reliable service now and in the future. Our Lab may be contacted at 206-598-1001 to make appointments and discuss results. Also see our website at www.malefertilitylab.com.

Here is detailed information about the sperm cryopreservation (freezing) process.

Future use of frozen sperm is generally for **Intra-Uterine Insemination (IUI)** by a clinician trained in this process, or for **In Vitro Fertilization (IVF)** at a fertility clinic.

Visits

We recommend that you make 2 or 3 appointments, if possible, for sperm freezing if this is being done prior to chemotherapy, radiation therapy or surgery. If the first sample we receive is adequate for your anticipated needs, we can cancel the additional appointments. We will perform a test thaw with a small portion of the first sample to determine the anticipated quality of frozen vials. We will contact you to discuss your options after we perform the test thaw, usually before your second appointment.

If you are preserving sperm due to scheduling conflicts or reasons other than medical ones, usually only one visit is needed, and there may be no need for a test thaw. If you are a Directed Donor (i.e., the recipient woman is not your sexually intimate partner), there are special FDA-regulated requirements to meet and testing that must be done. Please discuss this with the Lab.

If your sperm are being collected from your testis or epididymis during a surgical procedure, only one cryopreservation will be done, although we will attempt to divide the collected sperm into at least 3 straws for future IVF.

Processing Methods

There are a number of factors that determine the method we use to process your sample. These include your future plans as well as the quality of each sample collected. Please be aware that the price of sperm cryopreservation will vary based on these factors. If the quality of the sample is very good, we will try to put enough motile sperm into one or more vials to create **IUI-quality vials**. If we can purify enough high-quality sperm we will make **IUI-Ready vials**. If there are not enough motile sperm for IUI-quality vials, or the quality of the sperm is too poor, we will make **IVF-quality vials** (see Table 1 below).

The lowest-cost method is to cryopreserve the semen directly without sperm purification ("straight freeze"). We will usually only preserve the sample by this method if there are a low number of round cells in the sample, as a high number of round cells may cause oxidative stress on the sperm and damage their DNA or function. It is possible to create IUI-quality or IVF-quality vials using the "straight freeze" method, however please be aware that the samples will need additional processing after thawing to be used by the fertility clinic in the future.

Another processing method is to separate (purify) the sperm prior to cryopreservation by Density Gradient or Swim-Out. These methods are generally used for patients who either have a high number of rounds cells in their sample or for patients who are planning to use IUI-Ready vials. It is possible to create IUI-quality or IVF-quality vials using this processing method. Separating the sperm prior to cryopreservation will cost more, however the benefit is that further processing is not necessary (and possibly less expensive) when they are used. Additionally, sperm processing before freezing is often less damaging to the sperm than the same processing after thawing.

Other variables in sperm processing for cryopreservation include disease-specific methods and motility enhancement. For example, caffeine-like compounds (phosphodiesterase inhibitors) sometimes can improve the motility (velocity or percentage) of sperm that otherwise are swimming poorly. To purify more sperm (which requires good motility) or to improve motility after thawing, we may use or recommend this type of treatment. If you have a lymphocytic or lymphoid cancer, we may purify your sperm, if possible, to try to eliminate cancer cells that are sometimes found in semen. For testicular cancer, we recently discovered that motility enhancers do not work. If you have already been exposed to chemotherapy, we may purify your sperm to try to eliminate this drug from the saved samples.

Future Use of Cryopreserved Sperm

After we have frozen your sperm, and know what type and how many vials or straws are available, it is wise to seek consultation with a fertility specialist to discuss your future plans. Our male fertility Urologist is Dr. Thomas Walsh (206-598-6358 appointments). Or, there are many fertility clinics in the Seattle area. For your convenience the phone number for University Reproductive Care (at the University of Washington) is 206-598-4225. Regardless of the type of vials frozen (IUI or IVF), assistance with a clinic is needed in the future for inseminations. Note that in most cases, we cannot recommend home insemination kits, as their effectiveness is low, and their use by non-sexually intimate partners (as for Directed Donors) carries legal liabilities for paternity responsibility in many states. Home insemination is done by intra-vaginal or cervical placement of a semen specimen.

Intra-Uterine Insemination (IUI)

IUI can either be done with hormone stimulation (to produce multiple eggs) or with monitoring of a female's natural cycle. The sample will need to be made free of seminal plasma by washing or gradient purification (either prior to freezing or after thawing) before insertion in the uterine cavity by a medical professional. An IUI-quality vial may have at least 20 million motile sperm expected after thawing (usable for vaginal insemination), and yielding at least 5 million motile sperm after purification for IUI or IVF; an IUI-Ready vial may have 5-10 million motile sperm upon thawing, and is ready for insemination without processing. Different clinics may have different recommended numbers of motile sperm per insemination. We recommend having at least 4 IUI-Ready vials per pregnancy, since statistically, 95% of women who become pregnant by this method do so by the 4th insemination cycle. If you plan to have more than one child, there should be 4 vials per pregnancy attempt. Each IUI cycle will cost approximately \$600-800. Note that it is impossible for any lab or clinic to guarantee any pregnancies or live births using these methods.

In Vitro Fertilization (IVF)

IVF is an invasive fertility procedure, which requires the female to go through hormone stimulation (to produce multiple eggs) and monitoring prior to the egg retrieval process (requiring local or general anesthesia). After the retrieval, lab embryologists will process the frozen sperm and fertilize the eggs in a controlled environment similar to the conditions in a women's body. Less than 5 million motile sperm (and sometimes many fewer) may be present in an IVF-quality vial. Other vial types may also be used for IVF. If the motile sperm number is too low for regular IVF, embryologists may select the best looking sperm and manually inject each egg to achieve fertilization; this process is called Intra-Cytoplasmic Injection (ICSI).

We recommended cryopreserving 3 or 4 IVF-quality vials. Most couples will only go through IVF a few times at most, as each cycle is expensive (roughly \$8,000-10,000), including the costs for monitoring and hormone stimulation medications. Usually, once a vial of sperm is thawed it cannot be frozen again. IVF has a higher success rate per attempt than IUI, and may generate embryos that can be frozen for an additional pregnancy.

If you have any questions or concerns about the cryopreservation process or your appointments, do not hesitate to contact us. We look forward to helping you!

Table 1. Types of Cryopreserved Sperm Vials Prepared by Male Fertility Lab

Type	Sample	Volume (mL) per vial or straw	Millions of Motile Sperm/Vial post-thaw*
IUI-Quality	Semen/diluted semen or purified sperm in any cryopreservative	0.5-2.0 Note: must be washed prior to IUI	≥ 20
IUI-Ready	Purified sperm in buffered glycerol cryopreservative (e.g., SMM)	0.4-0.6	≥ 5 - 10
IVF-Quality	Semen/diluted semen or purified sperm in any cryopreservative	0.2-0.5 (straw) 0.5-2.0 (vial)	<1 – 5 or more

* Numbers of sperm obtained under ideal circumstances.