



Cleveland Clinic

Therapeutic Sperm Banking

An Option for Preserving Male Fertility



Andrology Laboratory and Reproductive Tissue Bank



Information For Patients

Men undergoing cancer treatment, including certain types of chemotherapy, radiation therapy or surgery, face the possibility of temporary or permanent damage to their fertility. Physicians know which treatments are likely to cause a problem, but often cannot predict how severely a man's fertility may be affected by his cancer treatment, or for how long.

One option to preserve a man's potential to father his own children at some future time is to freeze, or *cryopreserve*, samples of sperm before cancer treatment begins. This process is called *therapeutic sperm banking*.

Therapeutic sperm banking also is available to men who are going to have a vasectomy, allowing them the chance to conceive a child in the future. Occasionally, therapeutic sperm banking is recommended in other situations when a man's fertility could be damaged by surgery, medical treatments or exposure to a toxic environment. If you are not sure whether a medical treatment could damage your fertility, please discuss the issue with your physician.

Making the Decision

Making the choice to bank sperm is intensely personal. If you are married or in a committed relationship, it is best if your partner is involved in your decision. If you are under the age of 18, your parents should be included in the discussion. Unfortunately, a man often has to make up his mind quickly, at a time when he may be facing a serious illness. We hope this brochure will help you make an informed choice.

When should therapeutic sperm banking be started?

The option to bank sperm should be discussed as early as possible after the diagnosis of cancer because it is best to collect semen before treatment begins. Usually, it is considered safe to collect sperm samples during the first week of chemotherapy or radiation treatments. Although chemotherapy or radiation can damage the genetic material in developing sperm, the mature sperm found in a man's semen are resistant to damage.

Will banking sperm delay my medical treatment?

Fortunately, storing semen samples does not have to delay the start of medical treatment. It is best to collect a specimen after 48 hours of abstinence from sexual activity. Although sperm are constantly being produced in the testes, it takes some time to replenish sperm levels after each ejaculation. To allow recovery of maximum semen volume, the second sample should be collected after another 48 hours of abstinence. If scheduling of a medical treatment does not allow that much time, waiting 24 hours between collections usually is enough. While you're likely to be advised to store several samples, preserving even one may be worthwhile.

What influences semen quality?

Semen quality is measured in several ways: by the sperm count (the number of sperm cells present in one milliliter of seminal fluid), the sperm motility (the activity of the sperm cells), and the morphology (the percentage of the sperm cells that have a normal shape). Semen quality can be damaged temporarily or permanently. Men who recently have been diagnosed with cancer often have poorer semen quality than usual. Part of the problem may be related to the illness itself, and some to recent medical procedures, such as biopsies or surgeries that involve general anesthesia. A high fever or recent exposure to toxic chemicals may affect semen quality, as can chemotherapy for cancer or radiation therapy aimed near the testes. A man's age usually does not have a major affect on semen quality, but heavy use of tobacco and alcohol can damage sperm.

Semen quality also varies with each ejaculated specimen. If you have poor semen quality, the laboratory director will discuss the issue with you before your specimens are stored.

Is it worth banking semen if the quality is not optimal?

With modern infertility treatments, it makes sense to bank sperm even if you have a low sperm count or poor motility. Pregnancy can be achieved with intracytoplasmic sperm injection (ICSI) techniques that require the use of only one live sperm cell, which is injected into an egg. The embryos that develop can be placed into the woman's uterus. Men with better semen quality may be able to use their samples to create a pregnancy via artificial intrauterine insemination – a procedure that is less expensive and complicated than in vitro fertilization.

How many samples should be preserved?

If semen quality is high enough to permit artificial insemination as your eventual choice of fertility treatment, the chance of a successful pregnancy will increase with the number of samples you bank. More samples allow more tries at insemination. If the treatment will be in vitro fertilization/ICSI one sample may be enough, but it is still a good idea to store several samples. For each pregnancy that you desire, you should bank between three and six specimens, depending on their quality.

How long can sperm be safely stored?

Samples of semen do not deteriorate even over many years of deep freezing. Banking sperm before cancer treatment may allow a teenager or young adult to become a father years later, when he is ready to start a family. For a man who is about to have a vasectomy, therapeutic sperm banking provides an option to father a child if his life circumstances change.

Does using cryopreserved sperm increase the risk of birth defects?

No. Among thousands of children who have been conceived with frozen sperm, the incidence of birth defects has been no different than that among children conceived through sexual intercourse.

Will my children be healthy?

Men diagnosed with cancer may have special concerns about the health of their children. Most types of cancer are not inherited from father to child. Studies of the children conceived after a parent's cancer treatment do not find any unusual rates of birth defects or cancer. There are a few types of cancer that can run in families, however. Your doctors can tell you whether your cancer falls in this group. If so, you may want to talk to a genetic counselor (a professional with special training in educating people about inherited health problems) and discuss possible health risks for your future children.

If I am sexually active, should I use birth control during cancer treatment?

Yes. After the first few days of cancer treatment, doctors often suggest that you use some type of birth control to prevent starting a pregnancy with damaged sperm. In general, you should continue to use some type of contraceptive method to prevent pregnancy during your cancer treatment and for at least six months afterwards. You cannot assume you are infertile.

How are specimens collected?

Semen specimens are collected on-site at the Cleveland Clinic Andrology Laboratory in a private collection room. We recommend collecting the sample at the laboratory because the sample's freshness affects fertility. Within minutes after ejaculation, the number of living sperm cells and their activity begin to drop off rapidly. You will be given a sterile collection cup for your specimen. Manual stimulation to orgasm, either by you or with your wife or significant other, is the only recommended method in order to avoid contaminating the semen with bacteria.

What happens after the specimen is collected?

Every specimen is carefully labeled and coded to ensure accurate identification and confidentiality. Cleveland Clinic's Andrology Laboratory and Reproductive Tissue Bank has a system of checks and procedures to ensure that specimens are properly identified at the time of storage, during storage and at the time of release.

Each specimen is marked with your name, Cleveland Clinic number, an internal control number and the date. Each client depositor's complete record is kept in the Andrology Laboratory. As an additional safety measure, your photograph is taken at your first visit and becomes part of your permanent file for identification purposes.

A small part of the sample is drawn off for testing. The rest of the specimen is divided into small amounts and placed with a cryopreservative (a chemical that helps protect sperm during the freezing process) in containers called cryovials. The freezing process begins right away, with the cryovials being placed in a freezer for a few minutes at a temperature below freezing. This step avoids killing sperm from a too rapid drop in temperature. Specimens are then put into extremely cold liquid nitrogen vapor for two hours. Finally, they are lowered into a storage tank containing liquid nitrogen for permanent storage.

Semen may be stored indefinitely at the final temperature of -196°C. A man may store his sperm at the Cleveland Clinic Andrology Laboratory and Reproductive Tissue Bank for an open-ended period of years, with an annual storage fee.

What tests are done on the sperm?

Every time you store a semen sample, a small portion is separated out before freezing by a specially trained laboratory technologist for testing. A complete, computerized semen analysis is performed. This analysis will reveal:

- the total number of sperm present in the sample
- the total number of live sperm
- the percentage and number of sperm that are moving (motility)

Between 24- and 48- hours after the samples are frozen, one cryovial is thawed and the specimen is analyzed to measure the percentage of sperm that recover from freezing. The better the semen quality in general and the higher the recovery rate after thawing, the fewer specimens that need to be stored. Based on the results of these tests, the laboratory director can recommend the optimal number of samples you should consider freezing in order to have the best chance of successful fertility treatment in the future. You also may receive feedback on whether artificial insemination or in vitro fertilization would be your most viable treatment option.

What happens to stored samples after my death?

Whenever a man banks sperm, we advise him to obtain a court order that would authorize a spouse or family member to withdraw any samples remaining in storage in our sperm bank after his death. Some deceased men's wives, fiancées or significant others have wanted to use stored sperm to create offspring with fertility treatment. You may wish to have your samples destroyed in the event of your death, or you may give a specific person the legal right to make decisions about your samples. We will only release your samples to another sperm bank. Any further use of them would then be under the control of the person legally appointed by you.

How can I withdraw my sample?

When you are ready to use stored sperm for infertility treatment, you must notify our laboratory at least four weeks in advance. You or your legally appointed executor must also complete a release form. Specimens can be shipped to any physician or laboratory that can store them in liquid nitrogen until thawing is required. Cleveland Clinic will arrange shipping, but you are responsible for a withdrawal fee for each sample, as well as any shipping costs.

Cost of banking sperm

The charge for cryopreserving a single ejaculate is typically about \$690. The storage fee for each specimen is \$140 per year. Many private insurance carriers cover part or all of the costs of banking sperm, especially before cancer treatment.

What should I bring to my first visit?

At your first visit, you will be asked to complete a questionnaire about your diagnosis and planned treatment, as well as a contract and other legal forms related to sperm banking. You will be informed by the technologist making the appointment of any documents or records you need to bring in order to complete these forms.

Appointments

An appointment is required for all visits. We generally can schedule appointments within 24 to 48 hours. At the time you make an appointment, we will request the following information:

- name, address, phone number and date of birth
- your diagnosis
- the reason you are requesting sperm banking
- your Social Security number (for registration purposes)
- an order for sperm banking from your referring physician
- the name, address and phone number of your referring physician
- the start date for chemotherapy, radiation therapy or surgery

Cleveland Clinic's Andrology Lab offers appointments Monday through Friday, 7:30 a.m. to 3 p.m., and Saturday, 8 to 10:30 a.m.

To schedule an appointment, call 216.444.8182 or 800.223.2273, ext. 48182.

For more information, visit clevelandclinic.org/reproductiveresearchcenter





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Cleveland Clinic is a top-ranked nonprofit academic medical center founded in 1921. With more than 1,300 staffed beds, as well as research and education institutes, the organization is dedicated to providing expert inpatient and hospital care through innovation, quality, teamwork and service.

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