

### What is the risk that the cancer is re-introduced when tissue is re-implanted?

If you have been treated for cancer, then we cannot guarantee that there are no cancer cells within the ovarian tissue that has been frozen and stored (cryopreserved). The risk that cancer cells may be contained in the stored tissue may be higher in certain cancers, for example, leukaemia. You will get an opportunity to discuss these risks in more detail with your fertility doctor.

Research focusing on ensuring that the tissue that is put back is free of cancer cells is taking place right now.

Researchers also hope that one day it will be possible to take eggs from cryopreserved tissue and bring them to maturity outside the body. The eggs could then be fertilised outside the body before being put back into the woman's uterus. Taking this approach could avoid the risk of re-introducing cancer cells to the patient, but it will probably take many years before this is possible.

### Other risks

Your oncologist and gynaecologist can discuss the risks connected with having the procedure. They will be able to answer any questions you might have about what is involved with OTC and whether it is an option for you.

### Are there any costs involved?

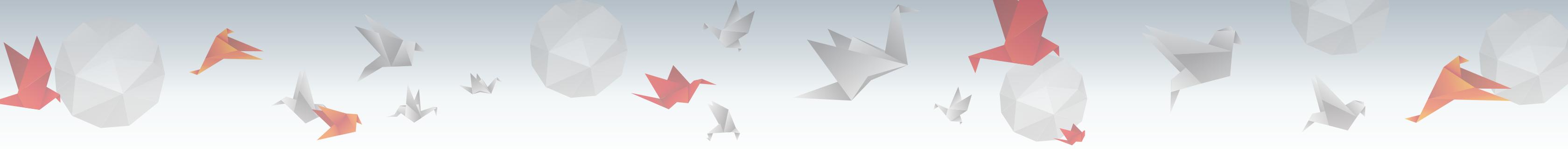
At the moment there is funding for the treatment that is available on a case-by-case basis. This involves your doctor making an application to the NHS for funding to cover the cost of collection and preparation of ovarian tissue and for storage of frozen tissue for the first two years. After that there will be a cost to keep the tissue in frozen storage and then to re-implant it into you in the future. Your fertility doctor will be able to discuss this in detail with you or your carer and answer any other questions that you might have.

# Ovarian tissue cryopreservation

Information for patients

Working in partnership with:

**University Hospital Southampton  
NHS Foundation Trust and  
Complete Fertility Centre, Southampton**



## Who is this leaflet for?

This leaflet provides information for:

- women of child-bearing age who are about to undergo treatment for cancer
- parents and carers of girls who are about to undergo cancer treatment

## What is ovarian tissue cryopreservation?

Cryopreservation is a process where cells or tissues are cooled to very low temperatures to preserve their structure and function, or how they work. Ovarian tissue is an example of tissue that can be preserved by storing it at a temperature well below freezing.

Ovarian tissue cryopreservation (OTC) begins with the collection of one of your ovaries via a surgical procedure. The ovary will be prepared by specially trained scientists from NHS Blood and Transplant (NHSBT) and then frozen and stored at below -150°C in the stem cell laboratory at NHSBT Southampton. At such a low temperature, the ovary can be kept in good condition for many years.

We don't freeze the whole ovary but only need to freeze a small part called the cortex, which is where the eggs are kept. We will also keep one or two small pieces of the cortex for tests, such as counting the number of eggs and looking at possible signs of disease.

## Why is ovarian tissue cryopreservation needed?

Women and girls are born with a fixed number of eggs in both ovaries and each of these eggs could eventually be fertilised to become a baby. If you have been diagnosed with cancer your doctor might decide you must have chemotherapy or radiotherapy, but this can result in the destruction of your eggs. This means that, once your cancer has been treated successfully, you may not be able to become pregnant naturally.

It is possible to collect an ovary before damage is caused by cancer treatment and to preserve the ovary by freezing it. Some of your eggs may then be protected from damage and it might be possible to return them to you after your cancer treatment has finished.

## Why can't in vitro fertilisation and egg storage be considered?

In vitro fertilisation (IVF) is one of several techniques available to help people with fertility problems have a baby. During IVF, a few eggs are removed from a woman's ovaries. These eggs can either be frozen immediately or fertilised with sperm. The fertilised eggs, called embryos, can then either be frozen or placed back in the uterus.

IVF is only suitable for women and girls after puberty (when they have started having regular periods). The treatment requires at least two to three weeks and involves taking hormone injections for that time. For some patients, where the cancer treatment cannot be delayed for this long or where the IVF drugs may worsen their cancer, OTC is the preferred option. For younger girls where their periods have not started and become established, IVF is not a feasible option at all. OTC would be the preferred option for these patients.

## What are the next steps once the decision is made for OTC?

If you and your doctor decide to take the option of OTC then you will be assessed by our fertility team to check that this is suitable for you. If it's agreed this is the right decision for you then the following steps will be followed:

- 1. Consent:** Your fertility specialist will go through several consents, or agreements, including consent for the surgical procedure and for your ovarian tissue to be frozen and stored. The team will also discuss any costs that might be linked to storage of ovarian tissue in the future.
- 2. Investigations:** Some additional tests will be carried out, including blood tests which will help to ensure your ovarian tissue is kept in good condition.
- 3. Ovarian tissue collection:** One of your ovaries will be removed while you are under general anaesthetic in an operating theatre using keyhole surgery. This is carried out by a specialist doctor (called a gynaecologist), who will discuss the procedure with you, or your carer, before it takes place.

The ovary will then be specially prepared and frozen (cryopreserved).

## When and how is the tissue re-implanted?

Once your treatment has finished you may find that your periods have stopped. This will happen if the ovary that you still have inside you stops working. If this does happen you will be able to ask to have the ovarian tissue that has been frozen and stored returned and re-implanted into you. The hope is that the ovarian tissue re-implanted will start working as it used to do before you started your treatment.

Re-implantation of ovarian tissue may happen once you are ready to start a family and is done when you have been clear of cancer for several years. Your cancer specialist (oncologist) will tell you when they think it is safe to re-implant your ovarian tissue.

The details of the process to re-implant thawed ovarian tissue will be explained to you by a gynaecologist. It begins with removing some of the stored tissue that has been frozen and thawing it. Usually between five or ten pieces of thawed ovarian tissue will be

transplanted to your remaining ovary, or to another place in your body. This procedure is usually done using the keyhole surgical technique.

It may take up to four or five months after the tissue is re-implanted for it to start working again. A woman may need IVF at this stage in order to become pregnant, however half of the children born so far following re-implantation of cryopreserved ovarian tissue have been conceived naturally without the need for IVF.

## What is the success rate?

OTC was first introduced in 1996. Since then hundreds of patients have had their tissue stored. Most of these patients have yet to have their tissue re-implanted as they are either awaiting complete cure from cancer, or they are not yet ready to start a family. For these reasons there is only a small number of patients where the ovarian tissue has been replaced. Worldwide we know that more than 70 babies have been born after the women have had OTC.

This technology is still relatively new but doctors agree that it can be an option for some young cancer patients.