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# *Carolinas Fertility Institute*

## *Egg Cryopreservation*

### *Information & Consent*

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While embryos and sperm have been frozen and thawed with good results for many years, eggs have proved much more difficult to manage. Newer egg freezing methods have been more successful, at least in younger women, the main population in which the techniques have been studied. Egg freezing takes place by one of two methods: a slow freeze protocol, or a different “flash freeze” method known as vitrification. Both methods remove the surrounding support cells, the cumulus, from the eggs prior to freezing. Once the cumulus cells are removed, eggs may not fertilize readily. In addition, the zona pellucida “shell” around the egg hardens with freezing. For these two reasons, injection of sperm directly into the egg (ICSI) is currently recommended after eggs have been frozen.

When eggs are vitrified, they may come in direct contact with liquid nitrogen. This could carry a risk of transmitting infection if the liquid nitrogen should be contaminated, although there has never been a case of infection reported by this means.

#### Is pregnancy achieved as successfully with frozen eggs as with fresh eggs?

As mentioned, most studies have looked at success rates using either donor eggs or women who produced larger numbers of eggs. The best studies randomly assign patients into two groups (fresh eggs versus frozen eggs) and compare the outcomes. There are four strong studies of this design currently published. In these studies, fertilization rates, implantation rates, and pregnancy rates using frozen eggs appear similar to rates using fresh eggs in these studies. One caution is that there are still only small numbers of studies available, and these results may not be the same at all centers or in older women.

Other information on egg freezing comes from Italy, where the law limits the number of eggs that may be fertilized in a cycle. Italian patients with extra eggs available have been offered egg freezing for many years now, and at many different centers. These types of studies show higher fertilization rates, implantation rates, and pregnancy rates when using fresh eggs instead of frozen eggs. The rates were also higher with the use of frozen embryos rather than frozen eggs.

Other non-randomized studies in the US show fertilization, implantation, and pregnancy rates that are similar with frozen eggs and fresh eggs when the woman providing the eggs was under 35 years old.

#### What are the reasons a woman would elect to freeze her eggs?

- Chemotherapy for cancer or other medical conditions can be toxic to the ovaries. Women undergoing treatment may not have a male partner, or they may have ethical concerns about

freezing embryos. Pregnancy and success rates from this group of women are limited, but egg freezing is recommended in this group after appropriate discussion of the procedure and its risks and limitations.

- Some genetic disorders like the BRCA mutations carry a high risk for ovarian cancer, and removal of the ovaries may be suggested in this group. Other genetic conditions can lead to premature menopause. Egg freezing could be considered in these groups, although data on success, safety of pregnancy, and risks of genetic problems in children born in these groups are not known.
- In some cases, there may not be enough sperm to fertilize the eggs on the day of egg retrieval in couples undergoing IVF. In this case, surplus eggs can be frozen and used in the future when more sperm are available.
- Some patients undergoing IVF do not want to freeze embryos for ethical or other reasons. In these cases, even though pregnancy rates using frozen eggs may be lower than pregnancy rates using frozen embryos, any eggs not inseminated may be frozen for future use.
- Some women may choose to freeze eggs in order to delay childbearing. Unfortunately, the success rates with egg freezing appear to decline significantly for older women (38 years or older). There are no data available that look at success rates for women choosing to freeze eggs in order to delay childbearing. Therefore, it is impossible to determine the success rates and cost-effectiveness of freezing eggs in this population of women. Freezing eggs is not a guarantee of the ability to conceive a biologically-related child in the future. Women wishing to freeze eggs for this purpose should carefully consider the success rates available at their clinics, and the available alternatives.

## Is there any risk to children conceived from the use of frozen eggs?

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One concern with the use of egg freezing is that the cellular machinery that helps to separate the chromosomes of the eggs could be damaged, leading to chromosomal abnormalities such as Down Syndrome. However, a large study looking at 900 live births after egg freezing, most done via the slow freeze method, showed no increased risk of birth defects compared to the general US population. Another study of 200 live births from eggs that had been vitrified showed no difference in birth defects or birth weight in those children and the children who had been born after IVF cycles using fresh eggs. There is no information about children born after egg freezing in older women, or from follow-up years after birth.

## Summary

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The techniques for freezing eggs, both with the slow freeze method and with vitrification, have become successful enough that they are no longer considered experimental. Implantation and pregnancy rates may be lower with frozen eggs than with fresh eggs. Most reports have focused on young women who have responded well to the medications used for egg retrieval, so success rates in older women or poor responders may not be as good. Success rates can be expected to vary among clinics. Many good reasons exist for freezing eggs rather than embryos, such as ethical concerns or medical problems that can affect fertility in women without male partners. In women who wish to freeze their eggs solely to delay childbearing, extreme caution should be exercised due to limited data on success and safety.

We (I), the undersigned, request, authorize and consent to cryopreservation of eggs by the Carolinas Fertility Institute, and as appropriate, its employees, contractors, and consultants and authorized agents for the purpose of achieving a pregnancy.

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Patient Signature

\_\_\_\_\_

Date

\_\_\_\_\_

Patient Name

\_\_\_\_\_

Date of Birth

### Notary Public

Sworn and subscribed before me on this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

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X

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Spouse / Partner Signature (if applicable)

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Date

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Spouse / Partner Name

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Date of Birth

### Notary Public

Sworn and subscribed before me on this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

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