

## Breast Cancer and Fertility

Working for better  
breast cancer  
services nationwide





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## **Understanding Breast Cancer and Fertility**

This booklet has been written to help you cope with the effect of breast cancer on your fertility. It has been prepared by health care professionals with specialist knowledge in the area of breast cancer and fertility. It is intended that you will use the information in this book to enable you to improve your knowledge on breast cancer and fertility and to seek further information from the doctor and/or nurse caring for you.

I have worked for two decades as a Breast Care Nurse both as a Clinical Nurse Specialist and Advanced Nurse Practitioner. I am delighted to see this booklet as I am very aware that concerns about sexuality and fertility are often very worrisome to women with breast cancer. It is important for nurses to remember that the treatments for breast cancer can change women's hormone levels and may negatively impact on their sexual interest or fertility.

For women of a child bearing age the issue of how their fertility may be affected by cancer treatment is a crucial one. I think it is important that we encourage women to ask as many questions as possible about their fertility. They need to understand that the Specialist Nurse and their attending Physician would be more than happy to address these issues with them

I think this current booklet is most helpful in answering some of the treatment effects of fertility and pregnancy.

I look forward to using it in my practice.

Mary Murray RGN Onc Cert M.S.c  
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## Introduction

Being diagnosed as a young woman with breast cancer brings its own unique challenges. Today more women than ever survive breast cancer, only to confront the long-term effects of treatment on their fertility. While at the time of diagnosis, the focus understandably is on having your life saved, this can sometimes mean that issues such as fertility get overlooked. At the time of my diagnosis three years ago, I found that the difficulty in making the emotional decisions regarding fertility and cancer treatment was compounded by a lack of readily available information. It was not always easy to find up-to-date information on issues such as fertility and pregnancy after cancer treatment. There is a short period of time between diagnosis and treatment begins within which decisions can be made regarding fertility. This is why it is critical for women to have timely, accurate information to hand to help them make their decisions.

This booklet has been written to help you understand firstly, how various treatments affect the reproductive system, understand your personal fertility risks and thereby make more informed decisions regarding your treatment. Secondly, it is intended to outline the parenthood options available to you both before and after your treatment.

Dealing with fertility issues on top of a diagnosis of breast cancer can feel overwhelming. Sometimes just the fact of knowing that you investigated all of your options and you did what you could at the time is very helpful to your recovery emotionally and psychologically. I hope this booklet helps you to understand and explore these options and empowers you when it comes time to make the decisions that are right for you.

**Marie Ennis, EDI**

## How Do Breast Cancer Treatments Affect Fertility?

The type of breast cancer treatment you get depends on many factors and your specialist team will have taken all these in to account before deciding on a treatment plan for you.

These factors include:

- Tumour size
- Involvement of lymph nodes by the cancer
- Cancer grade (i.e. how different it looks compared to normal breast tissue).
- Oestrogen receptor positive or negative (is the tumor sensitive to oestrogen or not?)
- HER2 status (does the tumour overexpress a protein called HER2?).

Unfortunately, some of the treatments selected to help fight your breast cancer can also affect your ability to have children. i.e. cause infertility. The effects of these treatments may be temporary or permanent. It is, therefore, very important that you discuss any fertility issues with your specialist team before you begin your treatment.

The following is a list of breast cancer treatments and then a short discussion of the infertility risk associated with each. Depending on the type and stage of your breast cancer you may have one or all of the treatments below.

- Breast Surgery and Breast Irradiation.
- Chemotherapy
- Hormonal therapy (e.g. Tamoxifen, Ovarian ablation)
- Immune type therapy (e.g. Herceptin)

## Breast Surgery and Breast Irradiation

Surgery and radiation for breast cancer do not usually affect your reproductive system so they do not affect fertility.

## Chemotherapy

Chemotherapy is the treatment that is the most likely to have a direct impact upon fertility. Chemotherapy can cause changes in the ovaries that stop eggs from being released or reduce the number of eggs stored in the ovary. Therefore, chemotherapy can stop ovulation from occurring. Due to its effect on the ovary, it can disrupt hormonal levels and cause your periods to stop (amenorrhea). However, these effects may not be permanent.

The three most important factors in determining fertility risk with chemotherapy are age, type of chemotherapy and dose.

- **Age** Older women (40 years and greater) are more prone to permanent infertility from chemotherapy than younger women. The closer in age to the natural menopause (average age 51) you are, prior to starting chemotherapy, the more likely you are to be menopausal following treatment. Younger women (less than 40 years) have a greater chance of regaining ovarian function (temporary infertility) after chemotherapy. However, women who do not achieve menopause with chemotherapy may become menopausal earlier than the average age due to sustained effects on the ovaries.
- **Type of chemotherapy drugs** Many of the chemotherapy drugs used in modern practice cause infertility. The chemotherapy drugs most likely to cause infertility are a group called the 'alkylating agents'. Cyclophosphamide is an alkylating agent commonly used in combination with other chemotherapy drugs to treat breast cancer. Adriamycin is another commonly used agent and is considered medium risk. There is some evidence to suggest that other commonly used agents such as the Taxanes do affect fertility but there are a number of studies in progress to assess this. It is very important to discuss the infertility risk of your particular regimen with your Oncologist.
- **Dose** The higher the dose of chemotherapy the greater the risk of infertility.

## Hormonal Treatments

These are tablets that you may be given if your breast cancer is oestrogen sensitive. This means that the growth of your breast cancer was stimulated by oestrogen produced by your body. Hormonal treatments work by blocking the effects of oestrogen on breast cancer cells so they cannot multiple.

In pre-menopausal women the main agent used is tamoxifen.

**Tamoxifen** is a drug taken as a tablet and can be prescribed for up to five years as part of breast cancer treatment. It lowers the risk of recurrence in women with oestrogen receptor positive breast cancer. It blocks the effect of oestrogen in the breast tissue but can "encourage" the oestrogen effect elsewhere in the body which helps to explain its other actions/effects on the body.

The following are important points about tamoxifen with regard to fertility:

- There is no conclusive evidence that Tamoxifen makes you menopausal although this is currently being studied. It does however cause hot flushes. About 20% of women will have irregular periods on tamoxifen but only a few stop their cycles entirely. In general your periods should return once you

stop taking tamoxifen. However, tamoxifen may mask the onset of natural menopause. It may be only when you finish taking it that you realize you have started your menopause.

- Tamoxifen is sometimes used as a fertility treatment. At high doses, tamoxifen stimulates ovulation. Even at the doses given for breast cancer treatment, tamoxifen can initially increase ovulation. As a result, your oncologist will discuss with you the importance of using barrier contraceptives while on treatment if you are a premenopausal woman.
- As a general rule, tamoxifen should not be used if you are pregnant. Studies have suggested that it may be harmful for the developing foetus. It may be confusing to hear that tamoxifen can be used as a fertility drug but that it's harmful to developing embryos. As a fertility treatment, tamoxifen is used to stimulate the ovaries to obtain more eggs for ovulation. At this point, the eggs have not been fertilized yet. Tamoxifen does not damage fertilized eggs. AFTER the eggs are fertilized and become embryos, tamoxifen may have a harmful effect. So before you're pregnant, tamoxifen is considered safe, but once you're pregnant it is not.

## Ovarian Ablation

This is included in the category of "hormone treatments" as it can be a treatment for oestrogen receptor positive breast cancer. It involves "shutting down" the ovaries to stop them producing oestrogen. This can be done in three different ways; by surgery (removing the ovaries), by radiotherapy (destroys the eggs making them inactive), or by using an injection such as goserelin (also known as Zoladex). Zoladex is an injection that is given initially monthly and then three monthly. It temporarily "shuts down" ovarian function. Once Zoladex is stopped your periods should return about six months later.

## Immune Type Therapy

Herceptin is an antibody type treatment that is given to women whose tumors overexpress a protein called HER-2. Relative to a drug like tamoxifen that has been around a very long time, Herceptin is quite a new drug. Therefore, there is less information available to us about its effects on the reproductive system and the developing foetus. Currently, there is no evidence to suggest that herceptin causes infertility. Although there is no data to suggest Herceptin causes damage to the foetus, you should not get pregnant while taking Herceptin. Your cancer specialist will discuss with you the benefits and risks of remaining on Herceptin if you become pregnant.



## Contraception

It can be very confusing for women when they are told that the treatment they will receive may cause infertility but yet they are warned not to become pregnant during treatment. The majority of chemotherapeutic agents have the potential to cause harm to the developing foetus. Therefore, it is vital that patients use a reliable form of contraception during treatment. It is generally recommended that women having treatment for breast cancer use non-hormonal methods of contraception such as condoms or a diaphragm.

It may be possible to use an intrauterine contraceptive device (IUCD) but this would need to be discussed with your specialist as it is not always suitable for women with breast cancer. The Oral Contraceptive Pill (OCP) is not suitable for women following a diagnosis of breast cancer as there is a possibility that the hormones in the contraceptive pill may stimulate any remaining breast cancer cells.

You should use reliable contraception before, during and after treatment. Generally speaking, you should assume that you could get pregnant unless you have not had a period for at least a year (if you are aged 40 or over) or two years (if you are under the age of 40) after completing treatment. If your periods have not resumed you may still be producing eggs and therefore could become pregnant.

The presence or absence of periods during the first months after chemotherapy is not the best indicator of fertility. The return of periods does not mean that the ovaries are producing normal eggs that will result in a healthy pregnancy and the absence of periods after chemotherapy does not necessarily mean that fertility has been permanently lost. However, there are blood tests that can be done by your specialist to evaluate potential fertility.

## Pregnancy

If you are fertile after your treatment finishes, there is no evidence to suggest that getting pregnant increases your risk of your cancer returning. However, it is advisable to wait two years after your treatment finishes before becoming pregnant. This is because the possibility of the cancer returning lessens over time so that the first two years after treatment is when your risk is greatest.

If you are on hormone therapy, you will be recommended to remain on this treatment for five years. If you do not wish to wait five years to become pregnant, it is advisable to speak to your specialist about this.



## Questions to Ask Before Treatment Begins

**With all the decisions you must make regarding treatment, sometimes discussing fertility with your doctor may not be uppermost in your mind.**

**However, it is important to talk to your medical team about the possible effects your treatment may have on your fertility. This will help you plan your treatment and know what to expect.**

Some of the questions you might like to ask are outlined below:

- Will my cancer treatments affect my fertility?
- Can anything be done to preserve my fertility before my treatment begins?
- Is my cancer hormone dependent? If so, will any of the options to preserve my fertility compromise my cancer treatment?
- Is my infertility likely to be temporary or permanent?
- How will I know if I am fertile after treatment? Are there tests that I can have?
- Does age affect fertility after cancer?

And after treatment:

- How long will it take for my periods to return?
- If I am not having periods, should I still use contraceptives?
- Does pregnancy after treatment increase the risk of recurrence?
- How long should I wait after treatment to become pregnant?
- Can I breastfeed?
- Can I be referred to a fertility specialist?
- If I become infertile, what are my parenthood options?

## Parenthood Options

In Ireland, the options for Assisted Reproductive Therapies are limited for cancer patients. These options endeavour to freeze your eggs before you undergo your cancer treatment. There is still a possibility to have your eggs frozen but success rates with the technology are still relatively low (approximately 500 babies live born worldwide, by the end of 2006). In some cases clinics may preserve embryos for you if you have a long-term partner. Some countries offer ovarian tissue freezing whereby your ovary has some tissue surgically removed and frozen for future use with Assisted Reproduction. The success rate of this technique is extremely low (less than 10 babies born from ovarian tissue worldwide). In some European countries fertility clinics try to harvest eggs from your ovaries and mature these eggs in the laboratory for your future use after cancer therapy. This option is still evolving and is unavailable in Ireland at present.

## IVF-In Vitro Fertilisation

This procedure involves taking drugs to stimulate the ovaries to produce eggs which are then harvested, fertilised and stored. Unfortunately, the drugs that are used for this procedure have the potential risk of stimulating the breast cancer cells. In addition, as this process can take several weeks, there would be a delay in commencing treatment for breast cancer.

## Freezing eggs

This procedure is similar to IVF in that the ovaries are stimulated to produce eggs which can then be frozen. Therefore, this has the same potential risks as above.

## Ovarian Tissue Harvesting

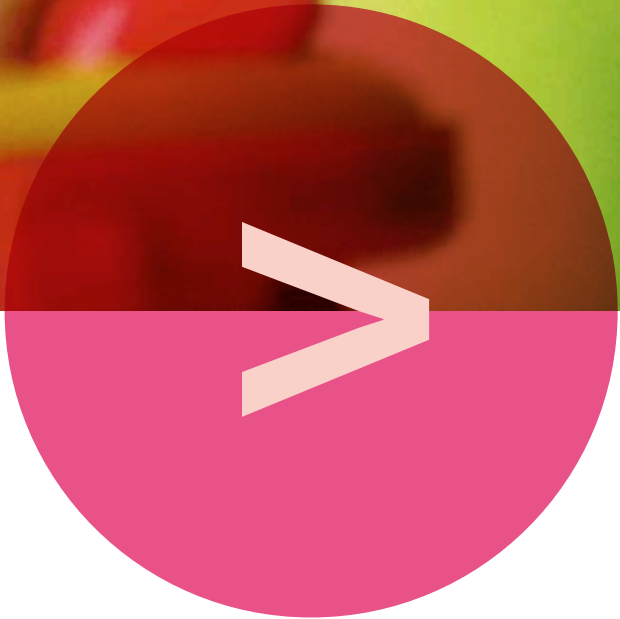
This procedure involves a small operation whereby a small section of ovarian tissue is removed and stored as frozen. When the woman has completed her treatment for breast cancer, it may be possible for eggs to be taken from the frozen ovarian tissue and matured in the lab for IVF. It may also be possible for the tissue itself to be re-implanted into the woman so that it can make its own eggs again. However, this procedure is not widely available and there have been very few confirmed live births from this procedure.

## In Vitro Maturation

The normal medical protocols implemented by fertility clinics involve the stimulation of ovaries using potent fertility drugs, which produce some mature eggs for use with Assisted Reproductive Therapies. Using In Vitro Maturation techniques, the fertility specialist manipulates a natural menstrual cycle to monitor ovarian follicular activity and to harvest immature eggs which could then be matured in the laboratory. These In vitro matured eggs can be used in fresh or frozen future IVF treatments. This is a technique that does not rely on fertility drugs being used in your body and therefore does not carry a risk to your cancer therapy or prognosis. This technology is in the early stages of development but pregnancies have been achieved in limited numbers by using this technique for infertility treatment.

## Adoption

It is important to understand that there are no guarantees of pregnancy with any of these treatments. If you are unable to store eggs or embryos or you have not become pregnant by any of the above methods, you may wish to consider the option of adoption. Adoption can be a wonderful parenthood option for those who cannot or do not wish to become a biological parent. The Adoption Board/Adoption Authority of Ireland are based in Shelbourne House, Shelbourne Road, Dublin 4 (tel: 01 2309 300; e-mail: [adoptioninfo@health.gov.ie](mailto:adoptioninfo@health.gov.ie); website: [www.adoptionboard.ie](http://www.adoptionboard.ie)).



The ***Irish Breast Cancer Charter***, developed by Europa Donna Ireland sets out 23 principles which specialist breast centres should meet and which women should be entitled to. To get a copy and more information on risk factors and facts and figures on Breast Cancer in Ireland, visit our website: [www.europadonnaireland.ie](http://www.europadonnaireland.ie)

## Any Queries?

We hope that this information is helpful, but if you have any queries please do not hesitate to contact us at:

Europa Donna Ireland // P.O. Box 6602, Dublin 8  
Tel/Fax: 01 4960198 // e-mail: [edi@iol.ie](mailto:edi@iol.ie)

For further information or support:

- Action Breast Cancer's booklet "You are not alone, younger women and breast cancer"
- Action Breast Cancer 43/45 Northumberland Road, Dublin 4. National Breast Cancer Freephone Helpline 1800 30 90 40
- [www.cancer.ie/action](http://www.cancer.ie/action)
- Breakthrough Breast Cancer // [www.breakthrough.org.uk](http://www.breakthrough.org.uk)
- [Breastcancer.org](http://Breastcancer.org) // [www.breastcancer.org](http://www.breastcancer.org)
- Breast Cancer Care // [www.breastcancercare.org.uk](http://www.breastcancercare.org.uk)
- Reach to Recovery (peer to peer support) 43/45 Northumberland Road, contact Action Breast Cancer 1800 30 90 40.
- Young Survival Coalition // [www.youngsurvival.org](http://www.youngsurvival.org)
- Fertile Hope // [www.fertilehope.org](http://www.fertilehope.org)



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