



Preserving Fertility in Children with Cancer

Some cancer treatments can affect a child's future fertility. This means the ability to conceive a child or carry a child after cancer treatment (chemotherapy, radiotherapy or surgery). The effects can include a reduction in the number (or occasionally total loss) of eggs or sperm, or damage to the pelvic organs. These changes make conception or carrying a pregnancy difficult. Fortunately there are steps, which can be taken to help minimise fertility problems in boys and girls with cancer.

This fact sheet answers some common questions about this topic and suggests ways to try and preserve the fertility of children having cancer treatment. Most parents find this discussion upsetting. However, understanding the expected impact of cancer treatment, and knowing what options are available, will help parents make informed decisions. This will maximise your son/daughter's future ability to conceive a child.

This fact sheet does not replace talking to your doctors or nurses. It aims to act as a tool to help you prepare questions you can ask your healthcare team.

Thinking about your son's or daughter's fertility

Some cancer treatments won't have any effect on your child's early reproductive system. However, others can be harmful. For example, they can damage the male testes and the female ovaries. This means your child may suffer from temporary or permanent infertility (inability to have children).

If your child has been given a cancer diagnosis the whole family will naturally feel completely overwhelmed. You will be trying to absorb information about treatment and your child's future prognosis. Most



children (80%) treated for cancer can now expect to live long and healthy lives. They will expect to have their own children.

During this time of severe stress it may feel impossible to think ahead into your child's adult life. Your priorities will be to find out about the best treatment and how to best support your child through this difficult time.

However, most parents will also want to do everything possible to help preserve their child's fertility. Many say it is actually positive and helpful to think about choices for your child relating to his/her adult life.

Which treatments will affect my child's fertility?

The three main treatments that can potentially affect your child's fertility are chemotherapy, radiotherapy and surgery.

Chemotherapy

Chemotherapy (cytotoxics) uses drugs to kill or slow the growth of cancer cells. Some of these drugs can cause infertility. This is mostly true of a certain type of chemotherapy drug known as 'alkalators'. Other types may interrupt a girl's menstrual cycle for a short while but will not necessarily change their ability to have children later in life. Your doctor will explain the specific drugs your child is having and their side effects.

Radiotherapy

This treatment uses high - energy waves similar to X-rays which kills or slows the growth of cancer cells. Giving radiotherapy directly to or near a child's pelvic area, abdomen, spine, brain, and/or the whole body can damage:

- The testes which contain sperm cells and hormone producing cells
- The ovaries which contain eggs and hormone producing cells



Radiotherapy can also decrease the movement of sperm in boys. These effects can be permanent. For others, normal sperm production/movement can return after radiotherapy finishes but this is less common.

Surgery

Some children have a rare type of cancer that develops in their reproductive organs. To get rid of the cancer your child's doctor may suggest surgery to remove part or all of their ovaries or testes. This will mean girls won't be able to produce their own eggs and boys won't be able to make sperm, making them infertile.

Surgery to the brain for brain tumours can cause damage to the pituitary gland and the hormones involved in sperm and egg production.

Will cancer treatment definitely make my child infertile?

No, not all children who have cancer treatment will become infertile. The risks will depend on several factors including:

- underlying cancer
- type and amount (dose) of chemotherapy given
- dose and site where radiation is given
- age of the child
- puberty status (treatment given before puberty may lessen the risk of infertility)
- which part of the body surgery is performed on

Having a combination of treatments (e.g. chemotherapy and radiation together) will increase your child's risk of fertility issues. However, the risk is different for each child. It is important for parents to talk to their child's doctor about each individual situation.



When should I talk to my child's doctor about infertility?

It is important you raise the question about possible infertility with your child's doctor **before** his/her treatment begins. After treatment begins you may not have as many options. If necessary you can get a referral to a fertility specialist. These are doctors who have expert knowledge about how to preserve fertility. Ask for information about the effects of treatment on fertility and what options are available to help maximise fertility choices for the future. See Questions to ask your doctor at the end of this fact sheet.

What options are available to help preserve my child's fertility?

There are several ways to help preserve fertility for boys and girls during cancer treatment. Methods vary depending on whether or not your child has gone through puberty. Puberty usually happens in children between the age of 9 and 15. It is when their reproductive organs begin to fully function and they can potentially conceive a child.

There are options to help preserve fertility in children of all ages, although after puberty there are more options. But even with the current methods there is still no guarantee of preserving fertility. Certain methods are still in their experimental stages and not yet fully proven to help everyone. This is why it is important that you speak with your child's doctor before their treatment starts.

Before puberty

Boys

Testicular tissue freezing

This involves an operative procedure in which a small amount of testicular tissue is removed either with needle aspiration or with small incisions in the testes. This process aims to obtain testicular tissue, which contains



immature sperm (spermatogonia). The tissue and/or the immature sperm cells can be frozen. The development of mature sperm (which can fertilize eggs) from immature spermatogonia is still experimental. There is no data reporting its success. So there is no guarantee the procedure will work and it is not available in all treatment centres. Men may have to travel long distances to another treatment centre for this option. Your doctor is the best person to discuss this with.

Girls

Ovarian tissue freezing

It has been proven that grafting ovarian tissue that was frozen before having chemotherapy can result in a woman being able to have a child.

There is now good evidence to show that mature eggs can be grown in ovarian tissue after freezing tissue from adolescent girls and young women and grafting back later on. Research into grafting tissue from very young, prepubertal girls is very promising, but still experimental.

During treatment certain things can be done in hope of decreasing the risk of damaging your child's fertility. These include:

- trying to reduce the impact of chemotherapy on fertility
- protecting/shielding reproductive organs during radiotherapy
- ovarian transposition – this means surgically moving the ovaries to outside the radiation treatment area and returning them back after treatment is over.

After Puberty

If your child is having cancer treatment and has already gone through puberty then the following may be options to help preserve their fertility:



- sperm banking (sperm cryopreservation) – this involves collecting sperm and freezing them for future use
- egg banking/freezing - this means freezing eggs on their own – they are not fertilised with sperm before freezing happens
- ovarian tissue freezing
- protecting the ovaries with medicines to reduce impact of chemotherapy
- trying to reduce the impact of chemotherapy on fertility
- testicular tissue banking - trying to preserve testicular tissue for use in the future
- protecting/shielding reproductive organs during radiotherapy
- ovarian transposition

For more detailed information on each preservation method please refer to our help and support section at the end of this fact sheet.

Should I talk to my child about their possible infertility?

It is often difficult to talk about the idea of fertility and having babies with young children and adolescents. The age of your child will play a big part in how and what you tell them. The important thing is to include them in the discussion. Allow them to take the information on board, as they feel emotionally ready to. Use language appropriate to their age and answer their questions with care and honesty. Your child's medical team and/or fertility specialist can help support you through these sometimes uncomfortable and difficult discussions.

Does my child have to consent to preserving their fertility?

Parents will need to sign a consent form agreeing to any procedure related to preserving a child's fertility. Children old enough to understand what is happening should be involved in the discussion but the final decision and signature will lie with the parents.



Questions for your child's doctor

Raising the topic about infertility and preservation of your child's fertility can be difficult but it is important you do. These questions may help you begin the conversation:

- How will my child's cancer treatment affect his/her chances of having a child in the future?
- What is the chance of my child becoming infertile because of his/her cancer treatment?
- Do all chemotherapy drugs affect fertility?
- Who can I talk to about my child's treatment and the possible fertility side effects of treatment?
- Can you recommend a fertility specialist we can talk to?
- What can be done to help preserve my child's fertility during and after his/her treatment?
- Do the methods used to preserve fertility guarantee my child will be able to have children in the future?
- How do I tell my child about their treatment affecting their fertility?
- What options are available later on, after all the cancer treatment is over?
- Are there options available if my child's fertility is permanently damaged
- Should there be fertility follow up during adolescence and young adulthood?

Where to get further help and information

This fact sheet only provides an overview of fertility issues for children and adolescents with cancer. It is important you find out as much as you can before making any decisions. For more detailed information please refer to our other fact sheets and the following excellent resources:

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- Other fact sheets from the Future Fertility website www.futurefertility.com.au or www.futurefertility.com.nz
- Canteen's *Maybe Later Baby* <http://www.canteen.org.au/how-we-help/information/now-what-books-dvds-and-online-service/maybe-later-baby-a-guide-to-fertility-for-young-people-with-cancer/>
- The COSA wiki guidelines online at http://wiki.cancer.org.au/australia/COSA:AYA_cancer_fertility_preservation
- Fertility Society of Australia (<http://www.fertilitysociety.com.au/>)

You may also like to call a Cancer Helpline service:

- Australia 13 11 20
- New Zealand call 0800 226 237

Both these help lines will allow you to speak with an experienced cancer nurse.