

# RADIO THERAPY

## HOW IT AFFECTS YOUR UTERUS AND FERTILITY

Cancer treatment can affect fertility. Treatments such as chemotherapy, radiation to the pelvis, total body irradiation (TBI) prior to bone marrow/stem cell transplant, and some surgery can damage the ovaries, reducing egg numbers, and also affect the uterus.

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You may want to find out more about the effects of radiation treatment (also known as radiotherapy) specifically if:

- You are going to have radiation treatment to your abdomen or pelvis to treat tumours of the cervix, rectum, bladder, as well as sarcomas and desmoid tumours\*.
- You are going to have total body irradiation (TBI) sometimes used prior to stem cell transplant for blood cancers such as leukaemia.
- You have had radiation treatment in the past and you are now wanting to have a baby.

\* Desmoid tumours are noncancerous growths that form in connective tissues in your body.

### What are the effects of radiotherapy?

Radiotherapy acts on the rapidly dividing cells of a tumour. It is used to slow the growth and eradicate tumour cells. Radiation can also act on healthy cells.

When radiotherapy is directed to the pelvis it may damage the ovaries and the uterus. This information sheet relates specifically to the uterus. For more general information about the effect on ovaries and your fertility see the information sheet *Preserving your fertility for the future*.

For women having pelvic radiation for cervical cancer there is unfortunately no possibility of the uterus being able to support a pregnancy after treatment. Thus, surrogacy is the only option available to women who wish to have a baby after treatment for cervical cancer.

For women who have radiation to other parts of their abdomen or pelvis, either in childhood or adulthood, although some successful births are reported, there is still a significant chance that the uterus has been permanently damaged making

pregnancy difficult or impossible. Importantly, the uterus is more vulnerable before puberty.

Published studies have found that the younger the age at which radiation treatment occurs, the more likely the uterus is to sustain damage.

Each woman's individual situation needs to be discussed with the treating radiation oncology team so that information about techniques and doses used in the cancer treatment can be collected and damage to the uterus assessed.

### How does radiation damage the uterus?

Radiation is thought to damage the uterus by affecting the:

- endometrium - lining which sheds during menstruation
- myometrium – the muscle layer around the uterus causing it lose its ability to stretch and expand during pregnancy
- vessels which provide blood to the uterus. In pregnancy, this may result in a placenta that does not work well.

Complications can occur in any pregnancy, but appear to be more common in women who fall pregnant after radiation treatment. Complications include:

- miscarriage
- premature birth
- babies born with low birth weight
- rupture of the uterus during birth
- problems getting pregnant.

While there are significantly increased risks seen for patients who have had TBI as well as pelvic radiation, there are uncomplicated pregnancies reported in the literature.

## Is there any way to protect the uterus before radiotherapy?

While options such as egg, embryo or ovarian tissue freezing exist for fertility preservation to protect against ovarian damage, there are no proven options for protecting the uterus.

For abdominopelvic radiation (APRT) there may be a possibility of reducing the extent of uterine (and/or ovarian) damage by using abdominal shielding, or avoiding a part of the uterus (partial uterine radiation). Your radiation oncologist will discuss this with you and assess if this is an option for you.

There have been occasional case reports of 'uterine transposition', which means performing surgery to try to move the uterus out of the field of radiation. This is purely experimental and is not an established technique. Nor is there proof that it will assist with future pregnancy.

## How can we find out if your uterus has been damaged?

Unfortunately to date, there are no proven tests which will accurately determine your chance of having a baby safely.

The following tests however may be carried out to try to assess the damage to your uterus:

- an **ultrasound** to measure the size of the uterus, thickness of the lining and blood flow.
- **MRI** can be used to look more closely at the myometrium (muscle layer).
- A **sample of uterine lining** collected to look at how well it responds to hormones such as oestrogen and progesterone.

Most women who have had radiation do not have functioning ovaries and therefore these tests can only be done after taking supplemental hormones for a period of time. It is important to note that to date there is no evidence demonstrating that the results of these tests will accurately predict your chance of fertility and safe pregnancy.

## Do I have any other options if I want to have a baby?

### Surrogacy

You may want to consider surrogacy. This means that an egg from you (which may have been frozen) or a donor, is fertilised with sperm and the embryo created is transferred into another woman. Surrogacy is legal in Australia. There are different laws governing practice in different states so it is important to check your states laws before considering this option.

### Adoption

Some families decide to go down the path of adoption.

### Uterine transplantation

This is an experimental organ transplant procedure which takes a uterus from a donor and transplants it into the woman who wishes to conceive. It is important to note that very few successful pregnancies have occurred to date and there are no reported births to a woman who has previously had pelvic radiation. It is unlikely that uterus transplantation will be possible for women after APRT due to radiation damage to the blood vessels and tissues around the uterus.

## For more information

### Fertility Preservation Clinic Royal Women's Hospital

[www.thewomens.org.au/patients-visitors/clinics-and-services/fertility-genetics/fertility-preservation](http://www.thewomens.org.au/patients-visitors/clinics-and-services/fertility-genetics/fertility-preservation)

### The Fertility Society of Australia

[www.fertilitysociety.com.au/patients-information](http://www.fertilitysociety.com.au/patients-information)

### Victorian Assisted Reproductive Treatment Authority (VARTA)

[www.varta.org.au](http://www.varta.org.au)

### Related information sheets from the Women's

- Preserving your fertility: Ovarian tissue freezing

[www.thewomens.org.au/health-information/fact-sheets](http://www.thewomens.org.au/health-information/fact-sheets)