



Information for Female Patients Receiving Radiation Therapy to the Pelvis

This information sheet has been written to provide answers to some questions you may have about radiation therapy treatment to the pelvis at Auckland Radiation Oncology (ARO).

The following topics will be covered:

- What is Radiation Therapy?
- Auckland Radiation Oncology Team
- Treatment Planning Appointment & CT
- Treatment Delivery and Doctor Clinics
- Potential Side Effects
- Follow-up Arrangements

WHAT IS RADIATION THERAPY?

Radiation therapy is a treatment in which an x-ray beam, coming out of a machine called a linear accelerator, is aimed specifically at the site of the cancer. The x-rays damage the DNA of the cancer cells, this damage ultimately results in the death of these cells. Radiation therapy is planned to treat as little of your normal cells as possible. You do not feel the radiation as it is being delivered.

YOUR ARO TREATMENT TEAM

Your radiation treatment will be given at Auckland Radiation Oncology located on the Mercy Hospital campus in Epsom. You will meet various employees of ARO during your visits. The following is a brief description of who we are and what we do:

Radiation Oncologists: A specialist doctor who is qualified in cancer treatment with radiation.

Radiation Therapists: Qualified technical professionals involved in the planning and delivery of your radiation treatment as well as day to day care.

Student Radiation Therapists: As this is a training facility, there may be students involved in your treatment. You have the right to ask that students not be present during your procedures.

Registered Nurses: These are nurses who have advanced knowledge of caring for cancer patients. The nurses, along with the radiation therapists, will advise you on how to look after yourself while you are on treatment.

Receptionist/Scheduler: These people will help you with scheduling your appointments, and will be able to discuss your account details.

Medical Physicists: A scientific officer who performs regular checks to ensure the safety of radiation equipment and treatment plans.

Engineer: This is a person is responsible for maintenance of the equipment.



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TREATMENT PLANNING AND CT

In order to deliver your radiation treatment accurately we need to locate the exact area that requires treatment and its position relative to the surrounding normal tissues. Therefore at your first appointment at ARO we will take a CT scan of your pelvis. Using the information obtained during this scan we calculate the best way to deliver a dose of radiation to the target area, whilst minimising dose to normal tissues. This process is called treatment planning. Within the first two weeks of treatment you will have the opportunity to view your treatment plan with a specialist radiation therapist.

For the planning CT and for each of your radiation therapy treatments we ask that you have a moderately full bladder and an empty rectum. This is necessary to maintain the relative positions of the area being treated and nearby organs to ensure that the treatment is delivered accurately and with minimal side effects. **You will find specific instructions on how to achieve this on page 8 in this information packet.**

TREATMENT DELIVERY

After the treatment planning appointment, time is required to complete the planning and verification of your treatment. Treatment is started as soon as possible following the completion of this process.

Treatment is usually given once a day, five days per week, with the exception of public holidays. For each treatment you will spend around 15 minutes in the treatment room where the machine is housed. Every effort is made to treat you within 20min of your scheduled time, but some delays may be unavoidable.

For treatment you will be required to lie in the same position as you were in for your planning CT scan. The radiation therapists will spend a few minutes positioning you for your treatment. During this time it is best if you relax and allow the radiation therapists to move you as necessary.

Once everything is positioned correctly treatment can be delivered. On average treatment delivery time is 15 minutes however this may vary dependent on the technique that has been deemed optimal for you. You do not see or feel the radiation while it is being delivered. The radiation therapists must leave the room during the CT scan and treatment delivery; however, they monitor you on cameras from outside the room. There is also an intercom system, so call out or give an indication, if you need assistance.

You are welcome to bring support people with you when you come for appointments. At a convenient time your support person may accompany you into the room to see the machine, but will be asked to return to the waiting room before the therapists begin positioning you for your treatment.

When scheduling appointment times, every effort is made to accommodate you in regards to work, travel times and your other commitments, but unfortunately this is not always possible. You will receive a copy of your complete schedule on the first day of treatment. We advise you to check these times against your calendar and let us know where there are areas of conflict. We will do our best to change your scheduled times to meet your needs. The more notice you can give us, the more likely we are to be able to assist you with this.



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DOCTOR CLINICS

You will see your Oncologist in a review clinic while you are on treatment. Clinic days and times are specific to each doctor. Every effort will be made for these times to coincide with your treatment times.

Please speak to the Radiation therapists about any questions, concerns or problems you may have; it is not necessary to wait for your visit with the doctor. If the Radiation therapists feel you need further, immediate management, they will have you seen by a nurse and/or doctor.

POTENTIAL SIDE EFFECTS

As stated previously, the x-rays used in radiation therapy damage the DNA (genetic code) of cells. The radiation also affects the normal tissues of the body, and this can cause side effects. However, normal tissues are better able than cancer cells to heal the radiation damage, and most of the normal tissues will recover partially and usually continues to function normally.

Due to improvements in treatment planning and targeted treatment delivery, the side effects of radiation therapy have been reduced remarkably. However, some side effects still occur and can be categorised as acute (short term) or chronic (long term) side effects. Many side effects can also be minimised with dietary adjustments, lifestyle and medication.

Side effects depend on:

- the amount of radiation given
- the area of the body treated
- individual response

Acute Side Effects

These are side effects that occur during the treatment course and usually take a few weeks to several months to resolve after completion of treatment. At the beginning of the course you may notice little change, except perhaps, some tiredness. At about halfway through and then increasing toward the end, other acute side effects may appear.

Please speak to your treatment team if any of the following reactions occur so that these can be minimised with dietary adjustments, creams and medications.

Fatigue

General tiredness may occur during and after the treatment course. Some people may still be able to work and only take time off for the daily appointment, but others may find it too tiring and prefer to stay at home.

Advice to help combat fatigue includes:

- Keep well hydrated - The recommended consumption is 1.5-2lt of fluid per day. Limit those with caffeine (e.g. coffee, tea and cola) as this is a diuretic and will actually make you lose fluid you have drunk throughout the day. This may need to be increased should you still be performing exercise.
- Perform some mild exercise, such as a 30 minute walk several times a week. However, it is important that you listen to your body and do not over exert yourself.



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- Getting plenty of rest each day helps the normal body tissues to recover on a daily basis from the effects of the radiation therapy.

Skin Reddening and Irritation

Your skin, in the treatment area may become red, dry, or itchy throughout the treatment course. The timing of skin changes depends on the type of treatment you are having and does not usually happen for the first few weeks.

The skin in folds such as the buttock fold and in the groin may be especially affected; as well as the area around the anus.

- Use aqueous cream around your whole pelvic area
- Use very mild soap such as Dove Extra Sensitive or Simple Soap
- Pat your skin dry, do not rub at all
- Use salt water bathing to help sooth and clean skin once or twice a day (1 cup of salt to a bath, at least once a day)
- Use non alcoholic and non scented baby wipes instead of toilet paper
- Wear loose cotton underwear and if you can, lie with no underwear in a private place to let air circulate around the pelvic area.

If your skin becomes sore, let a member of the treatment team know as there are different creams/gels that may be recommended to sooth this.

Vaginal Reactions

During radiation, tissues in the vagina become pink and inflamed, somewhat like sunburn. A woman's vagina may feel tender, dry or bleed easily during the course of radiation treatment and these side effects may continue for a few months after the completion of treatment.

If you are sexually active and want to continue during your treatment, generous amounts of lubrication and gentle sexual activity should be used to help prevent pain or irritation. If you are able to get pregnant, remember to be conscientious with protection during this time as pregnancy is not recommended.

The fragile skin has a slightly increased risk of infection, so please let the treatment team know of any unusual discharge or odour. To aid healing, wash the external vaginal area generously in a warm salt bath (1 cup of salt to a bath, at least once a day). As the irritation heals, scarring occurs and the thick walls of the vagina become "fibrous" and "sticky" and may join together. These are called adhesions and should be minimised and separated by using a dilator during the tissue healing stage. By minimising adhesions future examinations are less painful and less complex. Information and a dilator will be provided for you near the end of your treatment.

Nausea

Nausea is a common side effect especially if chemotherapy is combined with radiation. Inform the radiation therapist, nurse or doctor and they can arrange appropriate medication for you.

Try to have small and frequent meals and ensure your fluid intake is adequate 1.5-2lt of water per day. Remember you need to maintain your energy levels during treatment.



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Diarrhoea and Flatulence

This is a common side effect during pelvic irradiation. If you notice that your bowels are becoming looser and moving towards diarrhoea over the course of your treatment let the radiation therapists or nurses know and they can give you advice to help manage this. Usually slowly cutting down the amount of fibre in your diet will help. If dietary changes are not sufficient to manage your bowels and you develop diarrhoea, medication may be recommended.

At times blood can be passed with loose bowel motions. It may be painful to pass a motion if constipated and an effort should be made to keep the stools soft and regular.

Urinary

Due to the position of the bladder within the pelvis, some of the bladder may become inflamed or irritated with the treatment. This means you may experience:

- More urgent and frequent urination (including at night)
- Slowing of the stream
- A sensation of burning discomfort during or at the end of the stream.

If you are noticing changes to your bladder habits, please inform a member of the treatment team.

Hair Loss

Radiation treatments cause hair loss in the treatment area only. You may therefore experience some loss of pubic hair. In most cases this hair should grow back after completion of your course of treatments.

The peak of any reactions/side effects you may experience will occur approximately 7-14 days after the completion of your radiation treatment. This is due to the cumulative nature of the treatment.

Chronic Side Effects (Long Term/Late)

Most people return to 'normal' after completion of their treatment, but a few may experience some long-term side effects. Chronic side effects may arise many months or even years after the completion of radiation therapy. These side effects relate to the 'scarring' effects of the radiation therapy on normal tissues within the area of treatment.

Disturbances to Bowel Habits

This is the most common chronic side effect.

- 25% of individuals may notice that their bowel habits changes permanently
- An increase in the urgency and the number of bowel movements associated with increased passage of wind and/or mucus
- There may be blood with the bowel motion

These symptoms are very much like the symptoms that were experienced during the course of radiation therapy. For most individuals, the condition is mild and no active treatment is required. In some patients, dietary advice and the use of medications may be required.

In less than 5% of patients, bowel symptoms may be more persistent and more severe, including bleeding and diarrhoea. If so, specific treatment, such as anti-diarrhoea medication and laser coagulation or other surgical intervention may be required. If you notice persistent blood from the bowel, whether on the toilet paper or in the toilet, at any stage after your treatment, you should



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notify your radiation oncologist without delay. It is important to rule out other causes of bleeding and at least consideration should be given to having a colonoscopy.

In very rare cases (less than 1%), the bowel may become so dysfunctional or the bleeding is so severe that some of the damaged bowel needs to be surgically removed, resulting in permanent colostomy.

Long Term Bladder Problems

Serious problems occur in less than 1% of patients. This may be due to scar tissue leading to a smaller bladder capacity. It may also be due to small new blood vessels forming (telangiectasia) and leading to recurrent bleeding. There may also be a loss of bladder control (incontinence).

Premature Menopause

If your ovaries are surgically removed or damaged by radiation therapy, you will no longer have periods and it will not be possible to become pregnant. If you have not been through menopause already, you may experience premature menopause. Menopausal symptoms such as hot flushes and vaginal dryness could be more sudden than they would be with a natural menopause.

Hormone replacement therapy (HRT) may be taken to control the symptoms of menopause. HRT is a combination of oestrogen and progesterone, which are hormones that, before menopause, are mainly made by the ovaries. Using HRT for more than five years increases the risk of some diseases including cancers. However it also decreases the risk of some other diseases and cancers.

You will need to discuss these issues with your doctor and evaluate for yourself the benefits and possible risks of taking HRT. There are also many useful books about menopause which may help you with your decisions.

Lymphoedema

Permanent swelling and fluid retention of the legs/genital area because of scarring/obstruction of the fluid channels.

Pelvic Nerve Damage (Sacral plexopathy)

Scarring of the nerves may lead to permanent tingling and altered sensation of the lower limbs due to effects by the cancer and surgery and radiation. This is very rare

Other chronic side effects that may arise in the long term include:

- pelvis or hip bone weakness (less than 1%)
- occurrence of a second cancer (less than 1%)

Sexual Activity after Radiation Treatment

It is important to realise that radiation therapy to the pelvic area may impact on a woman's sex life. The vagina may feel dry, itchy or burning and sexual intercourse may be uncomfortable or undesirable.

The internal radiation reactions may cause you to experience the following:

- Vaginal walls can become thin and fragile and there may be a light bleeding after intercourse
- Slight discomfort during and after intercourse due to the vaginal walls not stretching to the same extent as prior to treatment



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- Vaginal dryness due to hormone depletion. You may benefit from oestrogen replacement tablets/patches. Discuss this with your oncologist if you have concerns.

Therefore sexual intercourse should initially be very gentle, and you may find that using generous amounts of lubrication is helpful.

It is important that you control the angle and depth of penetration, as surgery may have shortened the vagina. It is beneficial if you are aroused before penetration. The recommended positions for intercourse are with you either astride your partner or on your side.

Using a Vaginal Dilator

A vaginal dilator helps to minimise vaginal shrinkage which can occur as a result of radiation treatment. Vaginal shrinkage may be an issue when continued sexual activity is planned or for future gynaecological investigations.

Dilators work best to prevent adhesions forming when used at least three times a week for a minimum of 15 minutes.

This dilation routine (or alternatively gentle intercourse) should start no more than 3 weeks after the last treatment and continue for at least 6 months to 1 year after treatment. This time frame is dependant on individual healing time. By helping the tissues to heal properly, future gynaecological examinations and sexual intercourse will be more comfortable.

Use Instructions:

- Lubricate the dilator with water-based gel (e.g. KY Jelly, Glyde)
- Lie down on a bed at a time when you know you will have at least 15 minutes of privacy. Gently and slowly slide the dilator into your vagina. If your vagina feels tight, hold the dilator still, while you tense and relax your vaginal muscles.
- When your vagina feels looser, push the dilator further in. You may need to repeat the squeezing and relaxing a few times before the dilator is fully inserted. Some women also find it helpful to bear down, pushing the vaginal muscles outward as if having a bowel motion.
- When the dilator is in as far as possible, leave it in your vagina for about ten minutes. If the dilator slips out, gently push it more deeply into your vagina.
- When you remove the dilator, wash it with a mild soap and water. Be sure to rinse off all of the soap so no film is left, as this may cause irritation to your vagina the next time you use the dilator.

It is possible that when using the dilator it may cause a small amount of bleeding or pain, but this should not be severe. If you are concerned about pain or discomfort that you may be experiencing, please contact your doctor.

Toward the end of treatment all female patients will have a private session with a nurse to discuss after care of the vagina, including dilator use and sexual activity. A dilator and lubricant will be given out at this time, as well as additional reading material if desired.



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FOLLOW-UP ARRANGEMENTS

At the completion of treatment, you will be instructed how to arrange an appointment, or one will be made for you, to have a follow-up visit with your oncologist. The interval between finishing treatment and this appointment varies depending on the area you are having treated.



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BOWEL & BLADDER PREPARATION for RADIATION THERAPY

WHY HAVE A MODERATELY FULL BLADDER AND AN EMPTY RECTUM?

It is recommended that you have a moderately full bladder and an empty rectum for the planning CT scan and for each day you have radiation therapy treatment. This is necessary to maintain the relative positions of the area being treated and the nearby organs to ensure that the treatment is delivered accurately and with minimal side effects.

Bowel Preparation

This information is designed to help ensure that your bowel habits are regular and consistent on the day of your planning CT scan and throughout radiation treatment. If your bowel habits are currently not normal for you, please contact the department to discuss this.

Most days of your treatment, you will be asked questions by the treatment staff concerning your bowel habits. It is important that you inform them of any changes, problems or irregularities (e.g. constipation, diarrhoea) and they will be able to give you advice as to how to manage these or refer you to the nurse on duty.

Bladder Preparation

Another organ which can affect the area being treated is the bladder. It is recommended that you have a moderately full bladder for your planning CT scan and for each day of your radiation treatment. A 'moderately full bladder' will vary from person to person, and you are the best judge as to what is moderately full for you (**400mL – 2 small glasses of fluid is a recommended starting point**).

In order to achieve a moderately full bladder keep the following points in mind:

- Keep well hydrated throughout the day. This ensures that when you are filling your bladder for treatment the fluid will go to your bladder rather than being absorbed by your body.
- Try to drink at least 1.5 – 2L of fluid per day (this can include water, juices and soups). In hot weather or if you are exercising you may need to drink more than 2L of fluid per day.
- It takes time for fluid to reach your bladder. Start filling your bladder 1 hour before treatment. Slowly sip on water aiming to finish drinking at least 30 minutes before your treatment.

If you are worried about being able to hold 400mL of fluid in your bladder, practice a few days before the CT scan and ensure that you can comfortably hold this for approximately half an hour. Over the course of treatment you may be advised by staff how to alter your bladder preparation to achieve the desired amount of fluid in your bladder for treatment.



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WHAT DO WE REQUIRE OF YOU?

Prior to your planning CT scan appointment:

- As soon as you are able to, please follow the flowchart (**page 11**) to find a diet that achieves one to three bowel motions per day. If you have any questions regarding the advice sheet, please do not hesitate to contact the department on (09) 623 6046.
- We recommend that you practice achieving a 'comfortably' full bladder. Try drinking 400mL of fluid and time how long it takes before you feel that your bladder is 'comfortably' full and how long you can hold this amount of fluid for.

On the day of your planning CT scan appointment:

- On the morning of your CT appointment, attempt to have a bowel motion. If you are unable to pass a motion, please discuss this with the radiation therapists at your appointment.
- Ensure that you drink fluid throughout the day before your CT scan so that you are well hydrated.
- Approximately one hour before the set-up appointment, empty your bladder.
- Drink 400ml of fluid approximately one hour before your CT scan appointment.

Each day of your radiation treatments:

- Each day, attempt to have a bowel motion before treatment. If you are unable to achieve this please inform one of the radiation therapists.
- Try to drink 1.5 – 2L of fluid per day to ensure that you are well hydrated.
- Approximately one hour before treatment, empty your bladder and then start the filling process. Try to finish drinking the required amount (400mL) approximately 30 minutes before your treatment.
- On arrival at ARO, if your bladder is feeling uncomfortably full and you do not think you will be able to hold it for treatment, empty your bladder and drink 400mL of water. If you do not feel like the water has reached your bladder when you are taken in for treatment. Please inform the radiation therapist and they will give you more time.
- You will be able to relieve yourself once the treatment for the day has been delivered.

NB: if you start to experience diarrhoea while on treatment, inform a staff member and decrease the fibre in your diet in small amounts, replacing it with low fibre foods (use the list of foods attached)

Report any concerns or problems with this programme to your radiation oncologist or to the nurses and radiation therapists who are looking after you. If you have any medical conditions that may affect your ability to follow these instructions, please inform us.

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FOOD LIST GUIDELINES

Gassy Food to Avoid	High Fibre Food	Low Fibre Food
<p><i>This list contains food that <u>may</u> make you feel gassy</i></p> <p><u>COOKED DRIED BEANS</u> Baked beans Kidney beans</p> <p><u>FRUIT</u> Apples Apricots Oranges Mandarins Grapefruit Pears Prunes Cranberries</p> <p><u>VEGETABLES</u> Broccoli Bok choy Mushrooms Beets, cooked Brussel sprouts Cabbage Cauliflower Green beans Peppers Onions</p> <p><u>OTHER</u> Barley Oats Linseed/Flaxseed Beer Soda (fizzy drinks) Pulpy fruit juices</p> <p>Other helpful hints to reduce gas: Eat slowly and chew food well Chew with your mouth closed Do not chew gum Sip beverages rather than gulping Do not drink through a straw Avoid hard candy Reduce foods with sorbitol (artificial sweetner)</p>	<p><i>Increase high fibre foods gradually if you are not having a daily bowel motion. Increase your fluid intake as you increase fibre.</i></p> <p><u>FRUIT</u> Blueberries Figs, dried Peaches Cherries Kiwifruit Raspberries Strawberries Fruit with edible seeds Raisins</p> <p><u>VEGETABLES</u> Avocado Celery Corn Peas (small quantities) Carrots (small quantities) Potato baked with skin on Spinach, cooked (small quantities) Kumara with skin on Tomato Pumpkin with skin on Zucchini, cooked (courgettes)</p> <p><u>WHOLEGRAIN BREADS & CEREALS</u> Bran cereal Wholemeal/grain bread Whole wheat pasta Brown rice</p> <p><u>NUTS & SEEDS</u> Almonds Cashews Peanuts or crunchy peanut butter Pistachio nuts Pumpkin seeds Soy beans, cooked Sunflower seeds Walnuts Lentils</p> <p>Other hints to promote regular bowel motions: Eat regularly & avoid skipping meals Increase physical activity Drink 1.5 – 2 litres of fluid per day</p>	<p><i>If you have diarrhoea eating a lower fibre diet may help</i></p> <p><u>FRUIT AND VEGETABLES</u> Clear fruit juice Canned fruit in fruit juice Unsweetened stewed apple Vegetable juice Potatoes without the skin Vegetables without skin Eggplant without skin Asparagus Lettuce Cucumbers Radishes</p> <p><u>BREADS AND CEREALS</u> White or wheatmeal bread, buns, bagels, English muffins Plain cereals – cornflakes, rice bubbles, Plain biscuits - arrowroot cookies, tea biscuits White rice, pasta and noodles</p> <p><u>OTHER</u> Well cooked, tender meat, chicken, fish and eggs Milk, cheese, yoghurt (unless intolerant) Soy sauce Herbs & spices Smooth peanut butter Marmite/vegemite Seedless jams Tomato sauces and pastes</p> <p>NB: If you are experiencing diarrhoea, please inform your treatment team and nurse and continue drinking plenty of fluid.</p>
<p>NB: Dairy products (unless intolerant); meat/chicken/fish; are all OK to eat</p>		

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BOWEL MOTION GUIDELINES

