



Information for Patients Receiving Radiation Therapy to the Head and Neck

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

The following topics will be discussed:

- 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 (genetic code) in the cancer cells, and this damage then results in the death of the cancer cells. Radiation therapy is planned to treat as little of the normal body as possible. You do not feel the radiation as it is being delivered.

Treatments are usually delivered over a period of weeks, which allows the normal cells to recover between successive treatments. Treatment prescriptions can differ depending on the needs of the individual and can last up to 30 treatments over six weeks.

ARO TREATMENT TEAM

Your radiation treatment will be given at Auckland Radiation Oncology located on the Mercy Hospital campus in Epsom. ARO is a partnership between MercyAscot and Southern Cross Hospitals. 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 Oncologist: A specialist doctor who is qualified in the treatment of cancer with radiation.

Radiation Therapists: Qualified technical professionals involved in the planning and operation of the radiation equipment during your treatment.

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

Registered Nurse: A nurse whom has 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.

Engineer: This is a person that has been trained on the operation and maintenance of the equipment.

As this is also 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.

We aim to give you the best possible care during your treatment, so if there is anything else you need to know, please ask any one of us at ARO.

PREGNANCY

If you are able to get pregnant, remember to be conscientious with protection during this time as pregnancy is not recommended. If you are concerned or suspect you are pregnant when you come in for your initial appointment at ARO, please talk to a member of the team.

TREATMENT PLANNING & CT

In order to deliver the treatment accurately and at the correct dose, we need to be able to locate the exact area to be treated in relation to the surrounding normal tissues. This process is called treatment planning.



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It is likely that you will have “mask” made. This device will help to hold your head in the correct position during the treatment and will prevent the need for permanent marks in the facial region. This mask is sometimes also called a “shell”. Please inform the team if you are claustrophobic at all as they can use special techniques to help you cope.

The planning process will require you to have a CT scan. The mask will be used during the CT process but small permanent tattoo marks may need to be made on your chest to assist in the daily set-up for treatment. Using the information obtained during planning we calculate the best method of giving a dose of radiation to the treatment area, whilst avoiding as much normal tissue as possible. The treatment beam can be delivered from several different directions in relation to the area to be treated.

You will have the opportunity to view your treatment plan with a radiation therapist

TREATMENT DELIVERY

After the treatment planning appointment, time is required to complete the planning and checking calculations. 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. Depending on the complexity of your 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.

You will be required to lie in the same position as during the CT scanning, and we ask that you try to keep as still as possible during the procedure. During your treatment it is best if you relax, breathe normally, and allow the therapists to move you as necessary.

The therapists must leave the room during the treatment; however they monitor you on a camera 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, 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 attendance. 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.

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 and every effort will be made for these times to coincide with your treatment times.

Please feel free to speak to the therapists about any questions, concerns or problems you may have; it is not necessary to wait for your visit with the doctor. If the 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 can damage the DNA (genetic code) of cells. The radiation also affects the normal tissues of the body, and this can cause side effects. However, we know that normal tissues are better able than cancer cells to heal the radiation damage, and most of the normal tissues will recover.

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Side effects depend on:

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

Due to improvements in treatment planning systems and 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. Any concerns about developing side effects should be discussed with your oncologist, ideally before treatment commences.

Acute Side Effects (Short Term)

These are side effects that occur *during* the treatment course and usually take a few weeks to resolve after completion of treatment. At the beginning of the course you may notice little change. The acute side effects may appear at about half way through your treatment course and then become increasingly apparent toward the end.

Mucositis (inflammation of the lining of the mouth or throat)

This is a common and troublesome side effect that affects the majority of patients receiving radiation near the mouth or throat.

Symptoms of tenderness and discomfort will usually start in the treated area approximately two weeks into therapy. This will progressively worsen to a peak reaction experienced between weeks 5 – 8 (after the start of treatment). At its worst, patients will have mouth ulcers and often need strong pain killers and mouth washes to control symptoms. Dietary modification is often required (you will see a dietician early in treatment) and in some cases patients will need supplemental feeding through a tube placed directly into the stomach. This is called a PEG or PUG tube. Your doctor will explain this in greater detail should you need one.

Patients having higher doses of radiation (especially given together with chemotherapy) may find that the mucositis takes six weeks to two months to settle.

Saliva

Most patients having treatment near the mouth will have a reduction in saliva. For some there may be partial recovery. It is advisable to obtain a water bottle and sip fluids frequently.

Skin reddening and irritation

The timing of the skin changes depends on the course of treatment prescribed, but commonly slight reddening occurs by the second or third week of treatment. The skin becomes increasingly red towards the end of treatment, with the peak of the reaction occurring 7 – 14 days after the completion of treatment.

There may be patches of skin that blister and peel at the peak of the reaction (week 5 – 7). This is most likely to occur behind the ear (if treated) or in an area where the tumour lies close to the skin. You will be given advice and appropriate prescriptions to help manage these effects. You will also see the nurses who will guide you on appropriate use of dressings.

Taste

Most patients having radiation near the mouth will have temporary loss of taste. This usually takes a few months to recover.

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 2-2.5lt of fluid per day. Limit those with caffeine (eg coffee, tea and cola) as this is a diuretic and will actually make you lose fluid you have drunk throughout the day.

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- Perform some gentle 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.
- Getting plenty of rest each day helps the normal body tissues to recover on a daily basis from the effects of the radiation therapy.
- Eat a well balanced diet. If you are having trouble with your eating, dietary advice can be given.

If fatigue becomes severe, please inform a member of the treatment team.

Hair loss

This may occur but will depend on the specifics of: the area being treated and field arrangements (and chemotherapy if given.) You may receive a wig referral to visit a wig specialist if appropriate to the area being treated.

Eyes

Patients receiving radiation near the eye may notice an increase in tear production as well as conjunctivitis (inflammation of the eye). Eye drops or ointments will be prescribed to help relieve symptoms. The reaction should start to settle a few weeks after radiation.

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. Side effects in patients receiving BOTH chemotherapy and radiation are intensified, especially around times of chemotherapy. There is the added possibility of nausea, malaise and increased tiredness. Radiation side effects experienced later with radiation therapy may be intensified with the addition of chemotherapy.

Chronic Side Effects (Long Term)

Most people return to “normal” after completion of their treatment, but a few patients experience some long term side effects. These can develop gradually over several months or years. The changes that result may cause no clinical symptoms, or so rarely that they present minimal risk to the individual. Your doctor will not be able to tell you before you are treated whether any of the permanent side effects will happen to you, however with more advanced treatment techniques and individualised planning the risk of long term side effects are kept to a minimum. Your oncologist should discuss these with you before you start your treatment as part of the informed consent process.

Please speak to your radiation oncologist about these long term side effects if you are concerned.

Mucosa (lining of mouth and throat)

The early effects should settle. Rarely patients may develop a mucosal ulcer which requires additional interventions to help healing.

Saliva

Some patients may have a permanent dry mouth, particularly if both sides of the face or neck are included in the overall treatment.

Skin

The skin within the treatment field may appear darker (tanned) for a while. Telangiectasia may develop. These are tiny blood vessels under the skin that may become swollen. These can be unsightly but do not require treatment.

Skin may become atrophic (thinned and more easily injured) and the deeper tissues may become less pliable due to scarring.

Radionecrosis

This is a rare (<5% of patients) side effect where patients develop problems with healing in the bone or soft tissues. This is often precipitated by trauma (such as dental extraction) to the irradiated area and can occur



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many years after treatment. To minimise the risk of this happening many patients will have preventative dental extractions prior to treatment. This is arranged through maxillo-facial (dental) surgeons. There may also be a requirement for ongoing preventative dentistry.

Eyes

Long-term effects of radiation near the eye may result in cataracts (treated with lens replacements) or a condition called dry eye, due to damage of the tear gland. Very rarely treatment can result in decreased vision due to damage of the retina or optic nerves. Your Oncologist will discuss this with you if you are at risk.

Ears

Radiation near the ear can result in temporary or permanent hearing damage. Once again your Oncologist will discuss this if you are at risk.

Blood vessels and nerves

There is a small risk that radiation will damage the blood vessels in the neck. In some patients this may require treatment with blood thinning tablets such as aspirin in the long term. This effect is usually only noticed years after therapy. There is an extremely small risk of damage to the nerves or the spinal cord in the long term.

Unfortunately head and neck cancer and its treatment often leave patients with short or long term effects. Despite this most patients are able to live full and active lives after treatment.

This section focuses on information and suggestions to help you with **personal care** during and after radiation therapy to the head and neck area.

Included is information on the following topics (some of which will not apply to all patients):

- Skin Care
- Dental and Mouth Care
- Diet
- Xerostomia
- Peg Tube Feeds
- Discharge and Follow-up



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SKIN CARE

- When washing in the treatment area, use warm water, avoid scrubbing, and pat dry. You may use any mild soap such as Dove Extra Sensitive or Simple Soap
- We ask that you do not apply anything to the skin in the treatment area unless instructed to do so by your oncologist or another member of the treatment team. This particularly applies to: plasters, deodorant, cosmetics, scented talcum powder, and any ointment or creams.
- Do not apply heating or cooling devices in the treatment area. This includes: heating pads, hot water bottles, ice packs, hairdryers, etc.
- It is recommended that you avoid shaving/waxing hair within the treatment area while on treatment, and until any skin reaction has completely settled.
- Avoid hot pools while on treatment and until any skin reaction has completely healed. Discuss swimming in salt or chlorinated water with your oncologist, as this may be determined on an individual basis.
- Be aware of the clothing you wear over the treatment area. Loose fitting, soft, cotton clothing is recommended.
- Try to keep the treatment area protected from the sun and wind. However, **do not** apply sun block to the treatment area while you are on treatment.
- Even after you have completed your treatments the irradiated skin will always be more sensitive to the sun, and therefore ongoing care is necessary. Anytime you are out in the sun, cover previously treated skin with clothing or apply a sunblock with a SPF of 15 or higher. Before applying sunscreen make sure skin is well healed from the radiation.
- Use a mild shampoo such as Simple.

DENTAL AND MOUTH CARE

Cleanliness of your mouth and teeth/dentures is important.

Brushing:

- Use a soft-small head toothbrush (eg. Biotene super-soft). This brush can be purchased at most chemists.
- Brush your teeth at least twice a day (after eating).
- Use small, circular strokes.
- Avoid vigorous and horizontal brushing at the gum line, as this may damage the gum and cause the root surfaces to be exposed. This would then cause rapid decay.

Toothpaste:

Most toothpaste contains the foaming agent *Sodium Lauryl Sulphate* or *SCS*, which can cause irritation to sensitive mouths.

Therefore, while your mouth is sensitive we recommend that you use Biotene or similar type toothpaste.



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Mouthwash:

Do not use mouthwashes, other than those recommended by your treatment team. If you have pain in your mouth, your doctor may recommend Difflam C mouthwash to ease this.

Rinse your mouth 2 hourly with a saline mouthwash:

¼ tsp of baking soda

¼ tsp salt

1 cup warm water.

Rinse and spit – do not swallow.

Floss your teeth gently; stop if your gums start to bleed

If you have dentures, clean daily. You may need to limit the time you wear them

DIETARY ADVICE

The benefits of treatment and the repair of damaged tissues will be greater if good nutritional status is maintained throughout treatment.

- Try to have small, but frequent meals and snacks.
- Select foods and drinks which are high in calories and protein.
- Incorporate a variety of foods.

Always clean your teeth immediately after eating.

It is very important that keep up your fluid intake while of treatment. We recommend 2-2.5lt of water per day.

The side effects of the treatment can make eating and swallowing difficult or painful. **Avoid the following** to help minimise these problems:

- alcohol
- smoking
- very hot or very cold foods
- sticky, sugary foods
- foods with a high acid level
(e.g. grapefruit, tomatoes, oranges)
- dry foods (e.g. toast, crackers)
- spicy foods

Alterations to the texture of your food may be required. For example, mince, chop, or blend. It may be useful to have a blender or food processor available during this time.

Try moistening food by using sauces and gravies.

Tinned or commercial foods, such as rice pudding and tinned baby food may be convenient.

For more suggestions, refer to the “Eating Well” booklet.

An appointment will be made for you to see a dietician near the beginning of treatment.

If at any stage you are having difficulty eating or drinking, or you are suffering from a loss of appetite, please inform a member of the treatment team.



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MANAGEMENT OF XEROSTOMIA

The salivary glands produce saliva. Saliva is important because it moistens food (making it easier to swallow), aids digestion and protects the teeth from decay.

Xerostomia is the name given to the condition when your salivary glands do not produce saliva.

The following suggestions may help with the management of a dry mouth:

- frequent sips of water or water rinses (you might want to carry a sipper drink bottle)
- sugarless chewing gum
- citrus flavoured lollies (eg. sourbears)
- artificial saliva substitutes (Oralube saliva substitute can be bought from the chemist)
- regular dental checks and prompt treatment of dental decay
- avoid hot, spicy or acidic food
- lip-salve (eg. Chapstick, Vaseline) for dry lips

DISCHARGE INFORMATION

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.

Skin Care

Even after you have completed your treatments the irradiated skin will always be more sensitive to the sun, and therefore ongoing care is necessary.

- Once the skin has healed: Apply sun-block with a SPF of 30 or higher to any exposed, previously treated skin if you are going to be out in the sun.
- It is also a good idea to wear a wide brimmed hat or protective clothing in addition.
- Once any skin reaction has completely healed, you may resume shaving.

Dental and Mouth Care

You will likely continue to experience pain and inflammation of your mouth/throat even after the treatment has finished. For most people, this will peak 10-14 days after the last treatment and start to settle slowly after this.

- Do not brush or floss your teeth until the reaction has settled completely.
- Continue to use saline mouth wash and Difflam C mouthwash (if prescribed) regularly (up to once an hour).

If your mouth pain gets significantly worse or you notice white patches on the lining of your mouth, contact your oncologist as you may have developed a fungal infection. This is easily treated, and is a common reaction after radiation treatment to the mouth and throat areas.

Once the treatment reactions have subsided, add the following activities to your daily oral care program:

Flossing:

- Use dental floss or dental tape between teeth at least once daily.



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Dentures: (if you wear dentures)

- Ensure they are fitting well. If they are loose it can cause ulceration to your mouth and should be relined or replaced.
- Soak in Milton or Sterident overnight.
- Leave your dentures out if your mouth gets too sore.
- Have regular dental visits.

PEG TUBE FEEDS

(This section only applies to patients who have a PEG)

Please continue with PEG tube feeds until the next appointment with your Oncologist. However, gradually reduce PEG feeding as eating improves. When you come to attend your follow-up appointments with your oncologist they will assess your needs and if appropriate arrange for the PEG tube to be removed when appropriate.

Daily Stoma Site Care

- Wash hands with soap and water.
- Inspect surrounding skin for redness, tenderness, swelling, irritation or leakage. If the skin is red or inflamed apply an iodine solution such as Betadine.
- Cleanse skin with soap and water.
- Clean under the skin disc with a cotton bud.
- Dry thoroughly.
- Gently rotate the tube 360 degrees and check for some in and out movement. The skin disc should remain close but should not feel tight against the skin.

Gastrostomy Tube Care

- Flush tube with 20-30 ml of warm water using a large syringe 60ml before and after feeds.

Administering medications

Using side/medication port, flush the tube with 20-30 ml of warm water.

Give medications in liquid form where possible. If liquid is not available, tablets may be crushed and dissolved thoroughly in water.

Do not mix medications with formula and check with your Doctor or pharmacist that tablets can be crushed.

Tube Positioning

- Daily - check the graduation marks (numbering) on the tube nearest the skin disc to ensure the tube has not moved.
- If the tube appears longer or shorter please contact your health professional before feeding.

FOLLOW-UP ARRANGEMENTS

Your oncologist will see you at regular intervals for at least two to five years after your treatment.