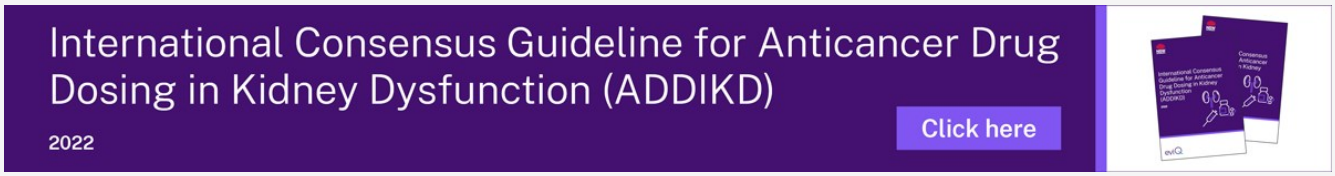
Prostate metastatic goserelin

ID: 308 v.3 **Endorsed** Essential Medicine List

Check for clinical trials in this patient group. Link to Australian Clinical Trials website

The anticancer drug(s) in this protocol may have been included in the ADDIKD guideline. Dose recommendations in kidney dysfunction have yet to be updated to align with the ADDIKD guideline. Recommendations will be updated once the individual protocol has been evaluated by the reference committee. For further information refer to the ADDIKD guideline. To assist with calculations, use the eviQ Estimated Glomerular Filtration Rate (eGFR) calculator.



Related pages:

- Androgen deprivation therapy (ADT) for prostate cancer

Treatment schedule - Overview

Cycle 1 and further cycles

Drug	Dose	Route	Day
Goserelin	10.8 mg	Subcut	1

Frequency: 12 weeks

Cycles: Continuous until disease progression or unacceptable toxicity

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Drug status: **Goserelin** is PBS restricted benefit

Cost: ~ $670 per 3 month

Treatment schedule - Detail

The supportive therapies (e.g. antiemetics, premedications, etc.), infusion times, diluents, volumes and routes of administration, if included, are listed as defaults. They may vary between institutions and can be substituted to reflect individual institutional policy.

*Antiemetics if included in the treatment schedule are based upon recommendations from national and international guidelines. These are **defaults only** and may be substituted to reflect individual institutional policy. Select here for recommended doses of alternative antiemetics.*

Cycle 1 and further cycles

Day 1		
Goserelin	10.8 mg (Subcut)	inject subcutaneously into the upper anterior abdominal wall every 12 weeks (or 3 months)

Frequency: 12 weeks

Cycles: Continuous until disease progression or unacceptable toxicity

Indications and patient population

Indications:

- locally advanced or metastatic hormone sensitive prostate cancer

Caution:

- GnRH (or LHRH) agonists (e.g. goserelin, leuprorelin, triptorelin) are contraindicated as a **single** agent in patients who have impending spinal cord compression, urinary obstruction or pain, due to the potential to exacerbate symptoms (see tumour flare below).

Clinical information

Tumour flare	Gonadotrophin-releasing hormone agonists (e.g. goserelin, leuprorelin and triptorelin) can cause short-term (2 to 3 weeks) stimulation of testosterone before suppression of androgen production, which may cause new or worsening signs and symptoms e.g. increased bone pain. This syndrome can be prevented by administrating an antiandrogen (e.g. flutamide, bicalutamide or nilutamide) 1 to 2 weeks before first dose of gonadotrophin releasing hormone agonists and continuing for approximately 1 month in total.
Bone mineral density (BMD)	Baseline BMD and repeat as clinically indicated. Lifestyle modification including regular exercise, particularly weight bearing exercises should be encouraged.
Glucose tolerance	A reduction in glucose tolerance has been observed in males receiving GnRH (LHRH) agonists. This may manifest as diabetes or loss of glycaemic control in those with pre-existing diabetes mellitus. Consideration should therefore be given to monitoring of blood glucose and/or glycosylated haemoglobin (HbA1c) in patients receiving a GnRH agonist.
Supplements	Consider daily oral supplements of at least calcium 500 mg and vitamin D 400 International Units for the duration of the therapy.
Blood tests	Lipid studies, calcium and vitamin D at baseline and repeat as clinically indicated.
Vaccinations	Live vaccines are contraindicated in cancer patients receiving immunosuppressive therapy and/or who have poorly controlled malignant disease. Refer to the recommended schedule of vaccination for immunocompromised patients, as outlined in the Australian Immunisation Handbook. Read more about COVID-19 vaccines and cancer.

Dose modifications

Evidence for dose modifications is limited, and the recommendations made on eviQ are intended as a guide only. They are generally conservative with an emphasis on safety. Any dose modification should be based on clinical judgement, and the individual patient's situation including but not limited to treatment intent (curative vs palliative), the anti-cancer regimen (single versus combination therapy versus chemotherapy versus immunotherapy), biology of the cancer (site, size, mutations, metastases), other treatment related side effects, additional co-morbidities, performance status and patient preferences.Suggested dose modifications are based on clinical trial findings, product information, published guidelines and reference committee consensus . The dose reduction applies to each individual dose and not to the total number of days or duration of treatment cycle unless stated otherwise. Non-haematological gradings are based on Common Terminology Criteria for Adverse Events (CTCAE) unless otherwise specified. Renal and hepatic dose modifications have been standardised where possible. For more information see dosing considerations & disclaimer .

The dose recommendations in kidney dysfunction (i.e.renal impairment) displayed may not reflect those in the ADDIKD guideline and have been included for historical reference only. Recommendations will be updated once the individual protocol has been evaluated by the reference committee, with this version of the protocol then being archived. Clinicians are expected to refer to the ADDIKD guideline prior to prescribing in kidney dysfunction.
International Consensus Guideline for Anticancer Drug Dosing in Kidney Dysfunction (ADDIKD).

Renal impairment
No dose modification necessary

Hepatic impairment
No dose modification necessary

Interactions

Drug interactions in eviQ protocols are under review and being updated to align with current literature. Further site-wide updates and changes will occur in due course. References & Disclaimer

The drug interactions shown below are not an exhaustive list. For a more comprehensive list and for detailed information on specific drug interactions and clinical management, please refer to the specific drug product information and the following key resources:

- *MIMS - interactions tab (includes link to a CYP-450 table) (login required)*
- *Australian Medicines Handbook (AMH) – interactions tab (login required)*
- *Micromedex Drug Interactions (login required)*
- *Cancer Drug Interactions*
- *Cytochrome P450 Drug Interactions*

Goserelin		
	Interaction	**Clinical management**
Drugs that may prolong the QTc interval (e.g. azole antifungals, tricyclic antidepressants, antiarrhythmics etc.)	Additive effect with goserelin; may lead to torsades de pointes and cardiac arrest	Avoid combination or minimise additional risk factors (e.g. correct electrolyte imbalances) and monitor ECG for signs of cardiac arrhythmia

Administration

eviQ provides safe and effective instructions on how to administer cancer treatments. However, eviQ does not provide every treatment delivery option, and is unable to provide a comprehensive list of cancer treatment agents and their required IV line giving set/filter. There may be alternative methods of treatment administration, and alternative supportive treatments that are also appropriate. Please refer to the individual product information monographs via the TGA website for further information.

Day 1

Subcutaneous injection

Safe handling and waste management (reproductive risk only)

Safe administration

Treatment - Time out

Goserelin SafeSystem™ implant

- administer goserelin as a subcutaneous injection into the anterior abdominal wall (below the umbilicus):
  - apply local anaesthetic (e.g. EMLA®, LMX4®, lignocaine 1%) to the injection site (if indicated) and wait for it to take effect. An ice pack with no local anaesthetic may also be used
  - wipe residual topical anaesthetic cream from chosen injection site (if used).

For correct administration of Zoladex®, refer to the instructions supplied with the product:

- put patient in a comfortable position with upper body slightly raised
- swab abdominal injection site below the navel line
- open pouch at the arrows and remove syringe
- hold the syringe at a slight angle to the light

- check that at least part of the goserelin implant is visible
- grasp the plastic safety tab and pull away from the syringe and discard
- remove the needle cover. Unlike liquid injections, there is no need to remove air bubbles and attempts to do so may displace the implant
- hold the syringe around the protective sleeve
- pinch the patient's skin and insert the needle at a slight angle 30 to 45 degrees to the skin, with the opening of the needle facing up, until the protective sleeve touches the patient's skin
- do not penetrate into muscle or peritoneum
- to discharge goserelin implant and to activate the protective sleeve, depress the plunger until you cannot depress it any further. If the plunger is not depressed fully the protective sleeve will NOT activate. You may hear a click and will feel the protective sleeve automatically begin to slide to cover the needle.
- withdraw the needle and allow the protective sleeve to continue to slide and cover the needle
- rotate the injection site each time to avoid soreness at any one site.

Continue safe handling precautions (reproductive risk only) for 7 days after completion of drug(s).

Discharge information

Supplements

- Daily oral supplements of calcium 500 mg and vitamin D 400 International Units are recommended.

Patient information

- Ensure patient receives patient information sheet.

Side effects

The side effects listed below are not a complete list of all possible side effects for this treatment. Side effects are categorised into the approximate onset of presentation and should only be used as a guide.

Immediate (onset hours to days)	
Headache	

Early (onset days to weeks)	
Hot flushes	
Tumour flare reaction	An increase in bone and/or tumour pain, associated with a transient increase in tumour size. This may occur after initiation with hormonal treatment.
Hyperglycaemia	High blood sugar, an excess of glucose in the blood stream.
Hyperlipidaemia and hypercholesterolaemia	Abnormally elevated levels of lipids and cholesterol in the blood.

Late (onset weeks to months)	
Reduced libido and sexual dysfunction	Lowered sexual desire as well as any physical or psychological problem that interferes with the ability to have and/or enjoy sex.

Delayed (onset months to years)	
Osteoporosis	

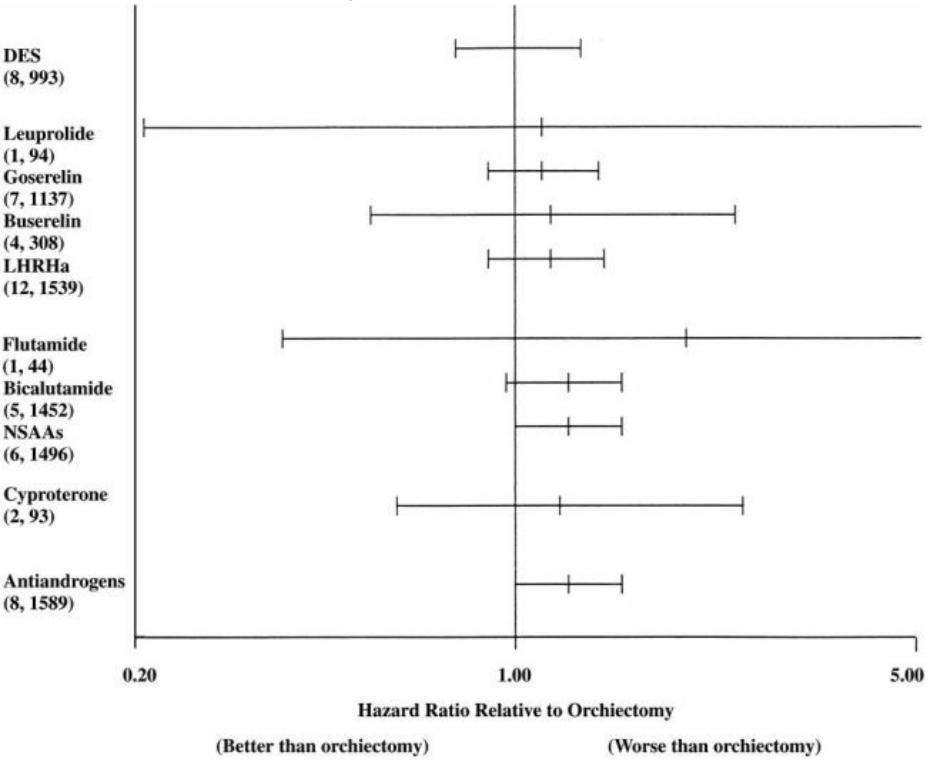
Evidence

The evidence supporting this regimen comes from a review by Loblaw et al. The initial review consisted of 10 randomised controlled trials, six systemic reviews and one Marko model to formulate the guidelines. Bilateral orchidectomy or luteinising hormone releasing hormone agonists (LHRH) are the recommended initial treatments.[1] An update of these guidelines were published in 2007 with no change in the above standard first-line treatments.[2]

A meta-analysis of the literature (10 RCTs, 1,908 patients) addressed the relative benefit of LHRH agonists with orchidectomy, diethylstilbestrol (DES), or the choice of DES or orchidectomy. No improvement in survival rate, time to progression of disease, or time to treatment failure was observed (which included drug discontinuations indicative of adverse events in the medically managed patients). Two-year hazard ratio for OS was 1.26 (95% CI, 0.91 to 1.39) compared to orchidectomy.[3]

Efficacy

Meta-analysis of the literature reporting survival at 2 years for different androgen deprivation therapies[3]



DES: diethylstilbestrol

Toxicity

Event/Reaction[2]	Maximum androgen blockade** (n=102)		LHRH agonist monotherapy*** (n=101)	
	Adverse event (%)	Adverse drug reactions (%)	Adverse event (%)	Adverse drug reactions (%)
Any*	88.2	59.8	83.2	58.4
Any serious*	14.7	2.9	14.9	6.9
Any grade 3/4	13.7	5.9	17.8	9.9
Hot flushes	19.6	18.6	31.7	31.7
Nasopharyngitis*	18.6	1.0	12.9	1.0
Any abnormal hepatic function test	N/A	13.7	N/A	17.8
Back pain	10.8	1.0	5.9	2.0
Anaemia	8.8	7.8	5.0	4.0
Increased blood alkaline phosphatase	8.8	8.8	5.0	4.0
Increased alanine aminotransferase	7.8	2.9	10.9	7.9
Increased blood	7.8	3.9	6.9	3.0

Event/Reaction[2]	Maximum androgen blockade** (n=102)		LHRH agonist monotherapy*** (n=101)	
	Adverse event (%)	Adverse drug reactions (%)	Adverse event (%)	Adverse drug reactions (%)
lactate dehydrogenase				
Pruritus*	7.8	0.0	2.0	0.0
Increased aspartate aminotransferase	6.9	2.9	8.9	6.9
Arthralgia	6.9	0.0	3.0	0.0
Ezcema	6.9	3.9	2.0	1.0
Increased y-glutamyltransferase	5.9	3.9	5.0	3.0
Constipation*	2.9	0.0	7.9	1.0
Abnormal hepatic function	2.0	1.0	6.9	5.9

*adverse events with a frequency greater than 5% between the arms

** maximum androgen blockade (goserelin/leuprorelin + bicalutamide 80 mg)

*** LHRH (luteinizing hormone-releasing hormone): goserelin or leuprorelin

References

1 Loblaw, D. A., D. S. Mendelson, J. A. Talcott, et al. 2004. "American Society of Clinical Oncology recommendations for the initial hormonal management of androgen-sensitive metastatic, recurrent, or progressive prostate cancer." J Clin Oncol. 22(14):2927-2941.

2 Loblaw, D. A., K. S. Virgo, R. Nam, et al. 2007. "Initial hormonal management of androgen-sensitive metastatic, recurrent, or progressive prostate cancer: 2006 update of an American Society of Clinical Oncology practice guideline." J Clin Oncol 25(12):1596-1605.

3 Seidenfeld, J., D. J. Samson, V. Hasselblad, et al. 2000. "Single-therapy androgen suppression in men with advanced prostate cancer: a systematic review and meta-analysis." Ann Intern Med 132(7):566-577.

Bibliography

Australian Medicines Handbook Pty Ltd. January 2011 Edition

History

Version 3

Date	Summary of changes
11/01/2010	Review, new dose modifications and transferred to eviQ.
21/02/2011	New format to allow for export of protocol information. Protocol version number changed to *V.2.* Additional Clinical Information, Key Prescribing table and Key Administration table combined into new section titled Clinical Considerations.
06/01/2012	PHC view updated.
12/04/2013	Protocol reviewed by Medical Oncology Reference Committee via email.

Date	Summary of changes
	Option to use monthly administration removed. Toxicity table added. Next review in 2 years.
09/05/2014	Protocol reviewed electronically by Medical Oncology Reference Committee; no change. PHC view removed. Next review 2 years.
31/03/2017	Protocol discussed and decided to have a 5 year review period. Next due for review in 2019.
31/05/2017	Transferred to new eviQ website. Protocol version number changed to V.3.
30/11/2017	Link to Androgen Deprivation Therapy (ADT) patient information sheet added to protocol and patient information.
25/03/2019	Protocol reviewed at Medical Oncology Reference Committee meeting on 15/03/2019. No changes. Next review in 5 years.

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Last reviewed: 15 March 2019
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The currency of this information is guaranteed only up until the date of printing, for any updates please check:
https://www.eviq.org.au/p/308
19 Jun 2023

Patient information - Prostate cancer metastatic - Goserelin

Patient's name:

Your treatment

The treatment schedule below explains how the drug for this treatment is given.

Goserelin			
This treatment cycle is repeated every 3 months. Your doctor will advise you of the number of treatments you will have.			
Day	**Treatment**	**How it is given**	**How long it takes**
1	**Goserelin** (*GOE-se-REL-in*)	By injection under the skin of your stomach. You may develop bruising around the site of the injection, this will fade over time.	About 5 minutes

- You may develop bruising around the site of the injection, this will fade over time
- It is common that you may have pain and difficulty passing urine after starting treatment. These symptoms should settle after 2 to 3 weeks. Let your doctor or nurse know if you develop these symptoms.

When to get help

Emergency contact details

Ask your doctor or nurse from your treating team when you should get help and who to contact if you have a problem

Daytime: .....

Night/weekend: .....

Other instructions: .....

.....

.....

Other information about your treatment

Treatment delays

There may be times when your treatment is delayed. This can happen if your doctor thinks you are likely to have severe side effects, if you get severe side effects, if your blood counts are affected and causing delays in treatment, or if you are finding it hard to cope with the treatment. Your doctor will explain if you need any delays to your treatment and the reason why.

Blood tests and monitoring

You may need to have blood tests while you are receiving this treatment. Your doctor or nurse will tell you when to have these blood tests.

Other medications given during this treatment

- **Calcium and vitamin D supplements:** you may be given some calcium and vitamin D tablets. Your doctor or nurse will tell you how and when to take these.

Androgen deprivation therapy (ADT)

For more information see the eviQ patient information sheet on Androgen deprivation therapy (ADT) for prostate cancer.

Side effects

Cancer treatments can cause damage to normal cells in your body, which can cause side effects. Everyone gets different side effects, and some people will have more problems than others.

The table below shows some of the side effects you may get with this treatment. You are unlikely to get all of those listed and you may also get some side effects that have not been listed.

Tell your doctor or nurse about any side effects that worry you. Follow the instructions below and those given to you by your doctor or nurse.

Immediate (onset hours to days)	
Headache	• You can take paracetamol if you have a headache. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get a very bad headache that is not helped by pain medication.**

Early (onset days to weeks)	
Hot flushes	• You may get flushing of your face, sweating and sensations of heat. • Avoid alcohol, coffee, tea and spicy foods, as they can make hot flushes worse. • Wear lightweight clothes made from natural fibres; dress in layers. • Put a cold, wet towel against your neck during hot flushes. • Talk to your doctor or nurse about other ways to manage these symptoms.
Tumour flare reaction	• At the beginning of your treatment you may get: ◦ pain coming from the tumour ◦ bone and joint pain ◦ difficulty passing urine (patients with prostate cancer). • These symptoms are temporary and will go away after a few weeks. • Tell your doctor or nurse if you get any of the symptoms listed above.
High blood sugar level (hyperglycaemia)	• You may feel thirsty and need to urinate more often than normal. • You may get repeated infections, especially thrush. • If you are a diabetic you will need to have your blood sugar levels checked more often. You may also need to have your diabetes medication increased. • **Tell your doctor or nurse if you get any of the signs or symptoms listed above.**
High blood cholesterol levels	• This treatment may increase your blood cholesterol levels. This is not a side effect you will notice. • Your cholesterol levels will be checked during your treatment.

Late (onset weeks to months)	
Low sex drive	• This treatment lowers the amount of sex hormone in your body. • You may lose interest in sex, or have trouble having sex. • Talk to your doctor or nurse about ways to manage these symptoms.

Delayed (onset months to years)	
Weak and brittle bones (osteoporosis)	• Your bones may fracture easily and may become painful. • You may have trouble moving around. • You may find it hard to perform daily chores. • Try to do some weight-bearing exercise for 30 minutes at least three times a week. • Watch out for slippery floors and make sure walkways are well lit. • Take calcium and vitamin D supplements if prescribed by your doctor. • You may have regular tests to check your bones both before and during treatment. • Tell your doctor or nurse if you get any of the signs or symptoms listed above.

General advice for people having cancer treatment

Blood clot risk

- Cancer and anticancer drugs can increase the risk of a blood clot (thrombosis).
- Tell your doctor if you have a family history of blood clots.
- A blood clot can cause pain, redness, swelling in your arms or legs, shortness of breath or chest pain.
- If you have any of these symptoms go to your nearest hospital Emergency Department.

Medications and vaccinations

- Before you start treatment, tell your doctor about any medications you are taking, including vitamins or herbal supplements.
- Don’t stop or start any medications during treatment without talking to your doctor and pharmacist first.
- Vaccinations such as flu and tetanus vaccines are safe to receive while you are having treatment. If you are unsure, check with your doctor before you have any vaccinations.

Other medical and dental treatment

- If you go to hospital or any other medical appointment (including dental appointments), always tell the person treating you that you are receiving anticancer drugs.
- Before you have any dental treatment, talk to your doctor.

Diet

- While you are receiving this treatment it is important that you try to maintain a healthy diet.
- Speak to your doctor or nurse about whether drinking alcohol is safe with your treatment.
- If you have any concerns about recent weight loss or weight gain or questions about your diet, ask to speak to a dietitian.

Fertility

- Some cancer treatments can reduce your fertility. This can make it difficult or impossible to father a child.
- Talk to your doctor or nurse before you start any treatment. Depending on your situation there may be fertility sparing options available to you and/or your partner, discuss these with your doctor or nurse.

Fathering a child

- Some cancer treatments can be dangerous to unborn babies. Talk to your doctor or nurse if you think there is any chance that your partner could be pregnant.
- Do not try to father a child during this treatment. Contraception should be used during treatment and after stopping treatment. Ask your doctor or nurse about what type of contraception you should use.
- If you are planning fatherhood after completing this treatment, talk to your doctor. Some doctors advise waiting between 6 months and 2 years after treatment.

Sex life and sexuality

- The desire to have sex may decrease as a result of this treatment or its side effects.
- Your emotions and the way you feel about yourself may also be affected by this treatment.
- It may help to discuss your concerns with your partner and doctor or nurse.

Quitting smoking

- It is never too late to quit smoking. Quitting smoking is one of the best things you can do to help your treatment work better.

- There are many effective tools to improve your chances of quitting.
- Talk to your treating team for more information and referral to a smoking cessation support service.

Staying active

- Research shows that exercise, no matter how small, has many benefits for people during and after cancer treatment.
- Talk to your doctor before starting an exercise program. Your doctor can advise whether you need a modified exercise program.

For more information about cancer treatment, side effects and side effect management see our Patient and carers section.

Where to get more information

Telephone support

- Call Cancer Council on 13 11 20 for cancer information and support

Prostate cancer information

- Continence Foundation of Australia – continence.org.au
- Healthy Male Andrology Australia – healthymale.org.au
- National Continence Management Strategy – bladderbowel.gov.au/ncp/ncms
- National Public Toilet Map – toiletmap.gov.au
- Prostate Cancer Foundation of Australia – prostate.org.au
- South Australian Prostate Cancer Clinical Outcome Collaborative – prostatehealth.org.au

General cancer information and support

- Australian Rare Cancer (ARC) Portal – arcportal.org.au/
- Beyondblue – beyondblue.org.au
- Cancer Australia – canceraustralia.gov.au
- Cancer Council Australia – cancer.org.au
- Cancer Voices Australia – cancervoicesaustralia.org
- CanTeen – canteen.org.au
- Carers Australia – carersaustralia.com.au
- CHILL Cancer related hair loss - scalpcooling.org
- eviQ Cancer Treatments Online – eviQ.org.au
- LGBTQI+ People and Cancer - cancercouncil.com.au/cancer-information/lgbtqi
- Look Good Feel Better – lgfb.org.au
- Patient Information – patients.cancer.nsw.gov.au
- Radiation Oncology Targeting Cancer – targetingcancer.com.au
- Redkite – redkite.org.au
- Return Unwanted Medicines – returnmed.com.au
- Staying active during cancer treatment – patients.cancer.nsw.gov.au/coping-with-cancer/physical-wellbeing/staying-active

Quit smoking information and support

Quitting smoking is helpful even after you have been diagnosed with cancer. The following resources provide useful information and support to help you quit smoking. Talk to your treating team about any other questions you may have.

- Call Quitline on 13 QUIT (13 78 48)
- iCanQuit – iCanQuit.com.au
- Patient Information – patients.cancer.nsw.gov.au/coping-with-cancer/physical-wellbeing/quitting-smoking
- Quitnow – quitnow.gov.au

Additional notes:

This document is a guide only and cannot cover every possible situation. The health professionals caring for you should always consider your individual situation when making decisions about your care. Contact your cancer clinic staff or doctor if you have any questions or concerns about your treatment, or you are having problems coping with side effects. While eviQ endeavours to link to reliable sources that provide accurate information, eviQ and the Cancer Institute NSW do not endorse or accept responsibility for the accuracy, currency, reliability or correctness of the content of linked external information sources. Use of this document is subject to eviQ's disclaimer available at www.eviQ.org.au

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