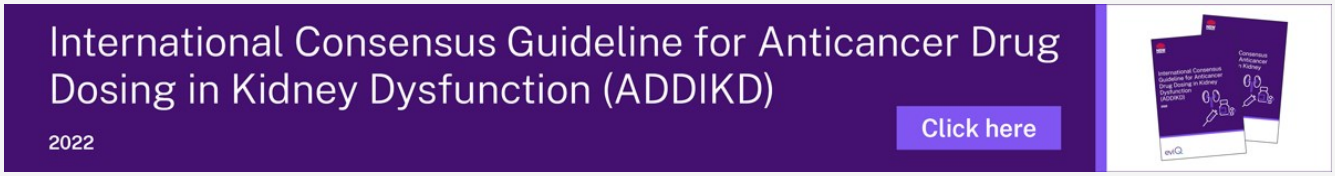
Acute lymphoblastic leukaemia CALGB course III CNS prophylaxis and interim maintenance SUPERSEDED

ID: 792 v.4 **Superseded** Essential Medicine List

The Haematology Reference Committee decided to supersede this protocol at the 2022 meeting as superior alternatives are available.

Patients with leukaemia should be considered for inclusion into clinical trials. Link to ALLG website and ANZCTR 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:

- Acute lymphoblastic leukaemia CALGB overview SUPERSEDED

- Overall CALGB treatment schema

Treatment schedule - Overview

Drug	Dose	Route	Day
Dexamethasone	2 mg ONCE a day	PO	1 to 12 starting 24 hours prior to radiation
Cranial irradiation	2 Gy per fraction ONCE a day	Radiation therapy	1 to 12
mercaptOPURine	60 mg/m^2 ONCE a day	PO	1 to 70
Methotrexate	15 mg	Intrathecal	1, 8, 15, 22, 29
Methotrexate	20 mg/m^2 ONCE a week	PO	36, 43, 50, 57, 64

Duration: 12 weeks
Commence on count recovery.

Cycles: 1
Course III is administered once only.

Notes:
Consider thiopurine methyltransferase (TPMT) testing prior to administration of mercaptopurine.

Drug status: All drugs in this protocol are on the PBS general schedule

Mercaptopurine is available as **50 mg** tablets
Methotrexate is available as **2.5 mg** and **10 mg** tablets

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.*

Day 1		
Dexamethasone	2 mg (PO)	ONCE a day. Take in the morning with food. Commence 24 hours prior to first fraction of cranial irradiation.
Cranial irradiation	2 Gy (Radiation therapy)	per fraction ONCE a day (24 Gy total dose delivered in TWELVE fractions over TWELVE days)
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	15 mg (Intrathecal)	adhere to local institution intrathecal policy

Day 2 to 7		
Dexamethasone	2 mg (PO)	ONCE a day. Take in the morning with food. Commence 24 hours prior to first fraction of cranial irradiation.
Cranial irradiation	2 Gy (Radiation therapy)	per fraction ONCE a day (24 Gy total dose delivered in TWELVE fractions over TWELVE days)
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.

Day 8		
Dexamethasone	2 mg (PO)	ONCE a day. Take in the morning with food. Commence 24 hours prior to first fraction of cranial irradiation.
Cranial irradiation	2 Gy (Radiation therapy)	per fraction ONCE a day (24 Gy total dose delivered in TWELVE fractions over TWELVE days)
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	15 mg (Intrathecal)	adhere to local institution intrathecal policy

Day 9 to 12		
Dexamethasone	2 mg (PO)	ONCE a day. Take in the morning with food. Commence 24 hours prior to first fraction of cranial irradiation.
Cranial irradiation	2 Gy (Radiation therapy)	per fraction ONCE a day (24 Gy total dose delivered in TWELVE fractions over TWELVE days)
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.

Day 13 and 14		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.

Day 15		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	15 mg (Intrathecal)	adhere to local institution intrathecal policy

Day 16 to 21

mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Day 22		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	15 mg (Intrathecal)	adhere to local institution intrathecal policy
Day 23 to 28		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Day 29		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	15 mg (Intrathecal)	adhere to local institution intrathecal policy
Day 30 to 35		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Day 36		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	20 mg/m^2 (PO)	ONCE a week starting on Day 36. Take on an empty stomach at least one hour before or two hours after food.
Day 37 to 42		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Day 43		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	20 mg/m^2 (PO)	ONCE a week starting on Day 36. Take on an empty stomach at least one hour before or two hours after food.
Day 44 to 49		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Day 50		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	20 mg/m^2 (PO)	ONCE a week starting on Day 36. Take on an empty stomach at least one hour before or two hours after food.
Day 51 to 56		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.

Day 57		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	20 mg/m^2 (PO)	ONCE a week starting on Day 36. Take on an empty stomach at least one hour before or two hours after food.

Day 58 to 63		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.

Day 64		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.
Methotrexate	20 mg/m^2 (PO)	ONCE a week starting on Day 36. Take on an empty stomach at least one hour before or two hours after food.

Day 65 to 70		
mercaptOPURine	60 mg/m^2 (PO)	ONCE a day. Take on an empty stomach at least one hour before or two hours after food.

Duration: 12 weeks
Commence on count recovery.

Cycles: 1
Course III is administered once only.

Indications and patient population

- Acute lymphoblastic leukaemia in older adult patients

Clinical information

Caution with oral anti-cancer drugs	Select links for information on the safe prescribing, dispensing and administration of orally administered anti-cancer drugs. Read more about the COSA guidelines and oral anti-cancer therapy
Emetogenicity minimal or low	No routine prophylaxis required. If patients experience nausea and/or vomiting, consider using the low emetogenic risk regimen. Read more about preventing anti-cancer therapy induced nausea and vomiting
Thiopurine-S-methyltransferase (TPMT) enzyme deficiency	Patients with an inherited deficiency of the TPMT enzyme are at an increased risk of, and prone to developing, rapid bone marrow depression which may lead to severe, life-threatening myelosuppression when undergoing treatment with thiopurines (azathioprine, mercaptopurine, tioguanine). This may be exacerbated by coadministration with drugs that inhibit TPMT, such as olsalazine, mesalazine or sulfasalazine. Consider assessing thiopurine-S-methyltransferase (TPMT) activity prior to administration of thiopurines.
Cranial irradiation	Dexamethasone should commence 24 hours prior to the first dose of cranial irradiation with a minimum of 2 mg daily, and then tapered off after completion of treatment.

Corticosteroids	Diabetic patients should monitor their blood glucose levels closely. To minimise gastric irritation, advise patient to take immediately after food. Consider the use of a H2 antagonist or proton pump inhibitor if appropriate. Read more about acute short term effects from corticosteroids
Pneumocystis jirovecii pneumonia (PJP) prophylaxis	PJP prophylaxis is recommended e.g. trimethoprim/sulfamethoxazole 160/800 mg PO one tablet twice daily, twice weekly (e.g. on Mondays and Thursdays) OR one tablet three times weekly (e.g. on Mondays, Wednesdays and Fridays) **Note**: do not administer on day of oral methotrexate. Read about prophylaxis of pneumocystis jiroveci (carinii) in cancer patients
Antiviral prophylaxis	Antiviral prophylaxis is recommended. Read more about antiviral prophylaxis drugs and doses
Antifungal prophylaxis	Antifungal prophylaxis is recommended. e.g. posaconazole 300 mg PO twice daily for one day then 300 mg PO daily. Read more about antifungal prophylaxis drugs and doses.
Blood tests	FBC, EUC, LFTs, LDH and BSL at baseline, prior to each treatment, and as clinically indicated.
Hepatitis B screening and prophylaxis	Routine screening for HBsAg and anti-HBc is recommended prior to initiation of treatment. Prophylaxis should be determined according to individual institutional policy. Read more about hepatitis B screening and prophylaxis in cancer patients requiring cytotoxic and/or immunosuppressive therapy
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.
Fertility, pregnancy and lactation	Cancer treatment can have harmful effects on fertility and this should be discussed with all patients of reproductive potential prior to commencing treatment. There is a risk of foetal harm in pregnant women. A pregnancy test should be considered prior to initiating treatment in females of reproductive potential if sexually active. It is important that all patients of reproductive potential use effective contraception whilst on therapy and after treatment finishes. Effective contraception methods and adequate contraception timeframe should be discussed with all patients of reproductive potential. Possibility of infant risk should be discussed with breastfeeding patients. Read more about the effect of cancer treatment on fertility

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 .

Doses are rarely modified in acute lymphoblastic leukaemia chemotherapy protocols, except in instances of severe hepatic or renal impairment or toxicity. Consult with treating team and pharmacis

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*

Dexamethasone		
	Interaction	**Clinical management**
CYP3A4 interactions	Dexamethasone is a substrate of CYP3A4 and a weak to moderate inducer of CYP3A4. The clinical relevance of CYP3A4 induction by dexamethasone is unknown as the mechanism has yet to be established	The effects of the concomitant use of dexamethasone with other CYP3A4 inducers, inhibitors or substrates is variable. If used concomitantly, monitor patients closely for adverse drug reactions
Warfarin	Concurrent use may result in increased risk of bleeding or diminished effects of warfarin	Monitor prothrombin time / INR (especially during initiation or discontinuation) and for signs of drug toxicity during concomitant use; adjust warfarin dose as required
Oral hypoglycaemics	Corticosteroids may cause hyperglycaemia and worsen diabetes control	Monitor blood glucose levels and adjust oral hypoglycaemic dose as required

Mercaptopurine		
	Interaction	**Clinical management**
Allopurinol	Increased toxicity of mercaptopurine due to reduced clearance as a result of inhibition of xanthine oxidase	If the combination is used the dose of mercaptopurine must be reduced by 75 % (i.e. only one quarter of the usual mercaptopurine dose is used)
Methotrexate, aminosalicylate derivatives (e.g. balsalazide, olsalazine, mesalazine, sulfasalazine)	Increased toxicity of mercaptopurine possible due to reduced clearance	Avoid combination or monitor closely for mercaptopurine toxicity
Ribavirin	Increased toxicity and reduced efficacy of mercaptopurine possible due to metabolic enzyme inhibition by ribavirin	Avoid combination or monitor closely for toxicity of and decreased clinical response to mercaptopurine

Methotrexate		
	Interaction	**Clinical management**
Ciprofloxacin **NSAIDS** **Probenecid** **Proton pump inhibitors (e.g. esomeprazole, omeprazole, pantoprazole)**	Increased toxicity of methotrexate possible due to reduced clearance	Avoid combination or monitor for methotrexate toxicity Important note: with high-dose methotrexate therapy, many of these drug combinations are *contraindicated*
Sulphonamides and penicillins (e.g. sulfamethoxazole (in Bactrim®, Septrin®), piperacillin (in Tazocin®) etc.)	Increased toxicity of methotrexate possible due to displacement from serum protein binding	Avoid combination or monitor for methotrexate toxicity
Trimethoprim	Increased toxicity of methotrexate possible due to additive antifolate activity	Avoid combination or monitor for methotrexate toxicity
Mercaptopurine	Increased toxicity of mercaptopurine possible due to reduced clearance	Avoid combination or monitor for mercaptopurine toxicity
Nephrotoxic drugs (e.g. aminoglycosides, amphotericin, contrast dye, frusemide, NSAIDs)	Additive nephrotoxicity	Avoid combination or monitor kidney function closely
Hepatotoxic drugs (e.g. azathioprine, leflunomide, retinoids, sulfasalazine)	Additive hepatotoxicity	Avoid combination or monitor liver function closely
Folic acid (e.g. as in multivitamins) **Asparaginase (administered immediately prior or concurrently)**	Reduced efficacy of methotrexate possible due antagonism of its action	Avoid combination or monitor for decreased clinical response to methotrexate Note: asparaginase administered shortly after methotrexate can enhance its efficacy and reduce its toxicity

General		
	Interaction	**Clinical management**
Warfarin	Anti-cancer drugs may alter the anticoagulant effect of warfarin.	Monitor INR regularly and adjust warfarin dosage as appropriate; consider alternative anticoagulant.
Direct oral anticoagulants (DOACs) e.g. apixaban, rivaroxaban, dabigatran	Interaction with both CYP3A4 and P-gp inhibitors /inducers. DOAC and anti-cancer drug levels may both be altered, possibly leading to loss of efficacy or toxicity (i.e. increased bleeding).	Apixaban: avoid concurrent use with strong CYP3A4 and P-gp inhibitors. If treating VTE, avoid use with strong CYP3A4 and P-gp inducers. Rivaroxaban: avoid concurrent use with strong CYP3A4 and P-gp inhibitors. Dabigatran: avoid combination with strong P-gp inducers and inhibitors. If concurrent use is unavoidable, monitor closely for efficacy/toxicity of both drugs.
Digoxin	Anti-cancer drugs can damage the lining of the intestine; affecting the absorption of digoxin.	Monitor digoxin serum levels; adjust digoxin dosage as appropriate.
Antiepileptics	Both altered antiepileptic and anti-cancer drug levels may occur, possibly leading to loss of efficacy or toxicity.	Where concurrent use of an enzyme-inducing antiepileptic cannot be avoided, monitor antiepileptic serum levels for toxicity, as well as seizure frequency for efficacy; adjust dosage as appropriate. Also monitor closely for efficacy of the anti-cancer therapy.
Antiplatelet agents and NSAIDs	Increased risk of bleeding due to treatment related thrombocytopenia.	Avoid or minimise combination. If combination deemed essential, (e.g. low dose aspirin for ischaemic heart disease) monitor for signs of bleeding.
Serotonergic drugs, including selective serotonin reuptake inhibitors (SSRIs e.g. paroxetine) and serotonin noradrenaline reuptake inhibitors (SNRIs e.g. venlafaxine)	Increased risk of serotonin syndrome with concurrent use of 5-HT3 receptor antagonists (e.g. palonosetron, ondansetron, granisetron, tropisetron, dolasetron, etc.)	Avoid combination. If combination is clinically warranted, monitor for signs and symptoms of serotonin syndrome (e.g. confusion, agitation, tachycardia, hyperreflexia). For more information link to TGA Medicines Safety Update
Vaccines	Diminished response to vaccines and increased risk of infection with live vaccines.	Live vaccines (e.g. BCG, MMR, zoster and varicella) are contraindicated in patients on immunosuppressive therapy. Use with caution in patients on non-immunosuppressive therapy. For more information; refer to the recommended schedule of vaccination for cancer patients, as outlined in the Australian Immunisation Handbook

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.

Days 1 and 8

Approximate treatment time: 5 hours

Safe handling and waste management

Safe administration

General patient assessment prior to each treatment.

Any toxicity grade 2 or greater may require dose reduction, delay or omission of treatment and review by medical officer before recommencing treatment.

- weigh patient on each visit
- urinalysis each visit

Pre treatment medication

Verify antiemetics taken or administer as prescribed.

Dexamethasone

- commence 24 hours prior to the first fraction of cranial irradiation
- administer orally ONCE a day in the morning on the **day before cranial irradiation** and **days 1 to 12**
- to be taken with or immediately after food.

Note: if a dose is forgotten or vomited, contact treating team.

Cranial irradiation

- given daily on **days 1 to 12**

Chemotherapy - Time out

Mercaptopurine

- administer orally ONCE a day on **days 1 to 70**
- to be swallowed whole with a glass of water; do not break, crush or chew
- to be taken preferably on an empty stomach, one hour before or at least two hours after food
- avoid concomitant consumption of milk or dairy products

Note: missed doses should not be replaced; if a dose is forgotten or vomited, normal dosing should be resumed at the next scheduled dose.

Intrathecal methotrexate

⚠ Intrathecal methotrexate is to be administered today. The intrathecal procedure is to be done separately to the IV administration of all other cytotoxic drugs

Read more about the procedure for intrathecal methotrexate administration.

Post intrathecal care:

Local policies and guidelines regarding bed rest post dural puncture should be adhered to. At a minimum:

- the patient should have at least 1 set of observations including:
  - vital signs and GCS
  - any abnormal neurological signs such as nausea, vomiting, chills, fever, confusion, headache or other changes in neurological status
- educate the patient to recognise and immediately report any adverse reactions including blurred vision, dizziness, pain and or headache
- observe the lumbar puncture site for any leakage or bleeding post procedure
- document the procedure including outcomes in the patients notes

Continue safe handling precautions until 7 days after completion of drug(s)

Days 15, 22 and 29

Approximate treatment time: 4.5 hours

Safe handling and waste management

Safe administration

General patient assessment prior to each treatment.

Any toxicity grade 2 or greater may require dose reduction, delay or omission of treatment and review by medical officer before recommencing treatment.

- weigh patient on each visit
- urinalysis each visit

Pre treatment medication

Verify antiemetics taken or administer as prescribed.

Chemotherapy - Time out

Mercaptopurine

- administer orally ONCE a day on **days 1 to 70**
- to be swallowed whole with a glass of water; do not break, crush or chew
- to be taken preferably on an empty stomach, one hour before or at least two hours after food
- avoid concomitant consumption of milk or dairy products

Note: missed doses should not be replaced; if a dose is forgotten or vomited, normal dosing should be resumed at the next scheduled dose.

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  - vital signs and GCS
  - any abnormal neurological signs such as nausea, vomiting, chills, fever, confusion, headache or other changes in neurological status
- educate the patient to recognise and immediately report any adverse reactions including blurred vision, dizziness, pain and or headache
- observe the lumbar puncture site for any leakage or bleeding post procedure
- document the procedure including outcomes in the patients notes

Continue safe handling precautions until 7 days after completion of drug(s)

Days 36, 43, 50, 57 and 64

This is an oral treatment

Safe handling and waste management

Safe administration

General patient assessment prior to each treatment.

Any toxicity grade 2 or greater may require dose reduction, delay or omission of treatment and review by medical officer before recommencing treatment.

- weigh patient on each visit

- urinalysis each visit

Pre treatment medication

Verify antiemetics taken or administer as prescribed.

Chemotherapy - Time out

Mercaptopurine

- administer orally ONCE a day on **days 1 to 70**
- to be swallowed whole with a glass of water; do not break, crush or chew
- to be taken preferably on an empty stomach, one hour before or at least two hours after food
- avoid concomitant consumption of milk or dairy products

Note: missed doses should not be replaced; if a dose is forgotten or vomited, normal dosing should be resumed at the next scheduled dose.

Methotrexate

- administer orally ONCE a week on **days 36, 43, 50, 57 and 64 only**
- to be swallowed whole with a glass of water; do not break, crush or chew
- to be taken on an empty stomach, one hour before or two hours after food
- if PJP prophylaxis with trimethoprim/sulfamethoxazole e.g. Bactrim® is prescribed, ensure this is not administered on the same day as oral methotrexate.

Note: if a dose is forgotten or vomited, contact treating team.

Continue safe handling precautions until 7 days after completion of drug(s)

Discharge information

Dexamethasone tablets

- Dexamethasone tablets with written instructions on how to take them.

Mercaptopurine tablets

- Mercaptopurine tablets with written instructions on how to take.

Methotrexate tablets

- Methotrexate tablets with written instructions on how to take them.

Antiemetics

- Antiemetics as prescribed.

Prophylaxis medications

- Prophylaxis medications (if prescribed) e.g. PJP prophylaxis, antifungals, antivirals.

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)	
Nausea and vomiting	Read more about prevention of treatment induced nausea and vomiting
Taste and smell alteration	Read more about taste and smell changes
Headache	

Early (onset days to weeks)	
Neutropenia	Abnormally low levels of neutrophils in the blood. This increases the risk of infection. Any fever or suspicion of infection should be investigated immediately and managed aggressively. Read more about immediate management of neutropenic fever
Hepatotoxicity	Anti-cancer drugs administered either alone or in combination with other drugs and/or radiation may cause direct or indirect hepatotoxicity. Hepatic dysfunction can alter the metabolism of some drugs resulting in systemic toxicity.
Side effects of corticosteroids	Insomnia, oedema, increased risk of infection e.g. oral thrush, gastric irritation, worsening of peptic ulcer disease, increased blood sugar levels, loss of diabetic control, mood and behavioural changes - including anxiety, euphoria, depression, mood swings, increased appetite and weight gain, osteoporosis and fractures (long term use), bruising and skin fragility are associated with corticosteroid use.
Skin rash	Anti-cancer drugs can cause a number of changes in the skin with maculo-papular rash the most common type of drug-induced skin reaction. Read more about skin rash
Thrombocytopenia	A reduction in the normal levels of functional platelets, increasing the risk of abnormal bleeding. Read more about thrombocytopenia
Oral mucositis	Erythematous and ulcerative lesions of the gastrointestinal tract (GIT). It commonly develops following chemotherapy, radiation therapy to the head, neck or oesophagus, and high dose chemotherapy followed by a blood and marrow transplant (BMT). Read more about oral mucositis
Fatigue	Read more about fatigue

Late (onset weeks to months)	
Anaemia	Abnormally low levels of red blood cells (RBCs) or haemoglobin in the blood. Read more about anaemia
Pulmonary toxicity	Pulmonary toxicity may include damage to the lungs, airways, pleura and pulmonary circulation. Read more about pulmonary toxicity associated with anti-cancer drugs
Alopecia - partial	Hair thinning and/or patchy hair loss. Patients can also experience mild to moderate discomfort of the hair follicles, and rarely pain as the hair is falling out. Read more about alopecia and scalp cooling
Hyperpigmentation	Darkening of an area of skin caused by the overproduction of melanin.

Evidence

The Haematology Reference Committee decided to supersede this protocol at the 2022 meeting as superior alternatives are available.

The key evidence for this protocol comes from two consecutive studies, CALGB 8811 and CALGB 9111.[1, 2] CALGB 8811 studied the efficacy of a 5 drug combination regimen for the induction, of adult patients with de novo acute lymphoblastic leukaemia followed by intensive consolidation. CALGB 9111 studied the addition of G-CSF to the 8811 regimen.

In CALGB 8811, 197 patients aged 16 to 80 years, were enrolled. All received induction chemotherapy comprising of cyclophosphamide, daunorubicin, vincristine, prednisolone and L-asparaginase. 85% (167) achieved complete remission (CR), 7% (13) had persistent disease and 9% (17) died during induction. Patients who achieved CR received consolidation with a multi-agent regimen, CNS prophylaxis, late intensification and maintenance therapy for a total of 2 years. The study concluded that this intensive regimen confers a high remission rate with a high proportion of long-term remissions in adult patients with ALL. After the first 76 patient were treated it was noted that patients older than 60 years had very high rates of death during induction (6 of 10). Subsequently, patients greater than 60 received reduced doses of cyclophosphamide, daunorubicin and prednisone during induction with a resultant reduction in early death rate.[1]

In CALGB 9111, G-CSF was added to the 8811 protocol. 198 adult patients (aged 16 to 83) with de novo ALL were randomised to receive placebo or G-CSF 5 micrograms/kg/day subcutaneously from day +5 until the ANC was > 1 x 10^9/L for 2 consecutive days. The study concluded that although patients who received G-CSF had higher remission rates and lower mortality, its use did not impact on the disease free survival. All CALGB ALL protocols now include the use of G-CSF in the induction phase only.

Efficacy

In CALGB 8811, CR rates were age dependent - 94% in those patients less than 30 years old, 85% in those aged 30 to 59 and 39% for those patients equal to or greater than 60 years (p-<0.001). Patients who had a mediastinal mass (100%) or blasts of T-cell origin (97% vs 80% for those with B-cell lineage) demonstrated a higher CR rate than other patients. After a median follow-up of 43 months the median survival was 36 months. For those patients who achieved CR, median remission duration was 29 months.

In CALGB 9111, there were 41 patients over 60 years old. The CR rate was 87% for patients less than 60 years and 77% for patients 60 years and older.[2] There was no statistically significant differences in CR rates with the addition of G-CSF however the older patients who received G-CSF had more rapid platelet recovery (median 17 vs 26 days, p=0.04).

With a median follow up of 4.7 years after CALGB 9111, there was a median overall survival (OS) of 2.3 years and disease free survival (DFS) of 2.4 years in those patients who received G-CSF. In the placebo arm, median OS was 1.7 years and median DFS was 1.8 years, but these differences were not statistically significant.

Toxicity

In the CALGB 8811 study[1] myelosuppression and infection were the most frequent major toxicities. 9% (17) patients died during induction mostly from infection (gram-negative, Streptococcus pnemonia, Candida); 9 were over 60 years old. One patient died from tumour lysis syndrome-induced renal failure during induction.

During the consolidation or maintenance phases a further 11 patients died, including 3 who died of haemorrhagic events. The major toxicities for this study are summarised in the table below. It was found that the addition of G-CSF from day 5 of chemotherapy (CALGB 9111), did not significantly reduce the non-haematological toxicities and also, because of the incidence of infections, did not enable patients to complete the first 3 months of chemotherapy any more rapidly than those who received the placebo.[2]

Toxicity from Larson et al:[1]

	Induction	Intensification	Maintenance
Leukopenia (<2,000 μL)	98%	97%	75%
Thrombocytopenia (<50,000/μL)	94	84	32
Anemia (Hgb <8 g/dL)	65	84	26
Hemorrhage	5 (1)	4 (2)	0
Infection	54 (7)	49 (4)	25
Fever without infection	4	8	2
Nausea/vomiting	8	17	8
Stomatitis	7	9	7
Diarrhea	4	3	1
Hepatic	25	28	30
Pulmonary	8	5 (1)	4
Cardiac	5 (1)	1	6
Genitourinary	8 (1)	2	1
CNS	6	13	6
Peripheral nervous system	7	12	7
Skin	4	1	2
Allergy	0	1	1

The table lists the frequencies (%) of grade 3 and 4 toxicities during each phase of treatment using the CALGB Expanded Common Toxicity Criteria. The percentage of patients with lethal toxicity is shown in parentheses.

References

1 Larson, R. A., R. K. Dodge, C. P. Burns, et al. 1995. "A five-drug remission induction regimen with intensive consolidation for adults with acute lymphoblastic leukemia: cancer and leukemia group B study 8811." Blood 85(8):2025-2037.

2 Larson, R. A., R. K. Dodge, C. A. Linker, et al. 1998. "A randomized controlled trial of filgrastim during remission induction and consolidation chemotherapy for adults with acute lymphoblastic leukemia: CALGB study 9111." Blood 92(5):1556-1564.

History

Version 4

Date	Summary of changes
11/03/2022	Reviewed by Haematology Reference Committee. Protocol to be superseded as superior alternatives are available.
22/05/2023	Protocol superseded. Review in 4 years.

Version 3

Date	Summary of changes
04/05/2012	New protocol taken to Haematology Reference Committee meeting.
11/02/2013	Approved and published on eviQ.
27/06/2014	Protocol reviewed by email survey. Added link to ALLG and ANZCTR with statement 'Patients with ALL should be considered for inclusion into clinical trials'. Next review in 2 years.
20/05/2016	Protocol reviewed at the Haematology Reference Committee meeting. The Haematology Reference Committee decided to supersede this protocol at the May 2016 meeting due to its low priority in clinical practice. It remains available for viewing on eviQ however it will no longer be maintained with ongoing literature review or other revisions.
31/05/2017	Transferred to new eviQ website. Version number change to v.3 • Added in patient information: 'Information for patients on allopurinol'.
24/11/2017	Discussed at RCM, decision to reinstate protocol due to feedback that the protocol is still used in clinical practice.
29/08/2019	Clinical information for consideration of thiopurine methyltransferase (TPMT) testing prior to administration of mercaptopurine added.
23/10/2020	Protocol reviewed electronically by Haematology Reference Committee. No changes. Review in 2 years.
21/12/2021	Changed antiemetic clinical information block to minimal or low, to align with new categories. See ID 7 Prevention of anti-cancer therapy induced nausea and vomiting (AINV) v5.
20/01/2022	Interactions updated.
29/07/2022	Clinical information block updated: Thiopurine-S-methyltransferase (TPMT) enzyme deficiency.

First approved: 11 February 2013
Last reviewed: 22 May 2023
Review due: 30 June 2027

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/792
26 Jun 2023

Patient information - CALGB course III - CNS prophylaxis and interim maintenance

Patient's name:

Your treatment

The treatment schedule below explains how the drugs for this treatment are given.

CALGB course III			
This treatment cycle is given once only.			
Day	**Treatment**	**How it is given**	**How long it takes**
1 to 12	**Dexamethasone** (*dex-a-METH-a-sone*)	Take orally ONCE a day in the morning on days 1 to 12. To be taken with or immediately after food. The first dose should be taken 24 hours before you receive radiation therapy.	
1 to 70	**Mercaptopurine** (*mer-KAP-toe-PURE-een*)	Take orally ONCE a day on days 1 to 70 on an empty stomach, at least one hour before or two hours after food. Swallow whole with a glass of water, do not break, crush or chew. Avoid taking with dairy products as they may decrease its absorption.	
1, 8, 15, 22, 29	**Methotrexate (intrathecal)** (*Meth-o-TREX-ate*)	By injection into your spine	About 4 hours
36, 43, 50, 52, 64	**Methotrexate**	Take orally ONCE a week on day 36, 43, 50, 52 and 64. Swallow whole with a glass of water on an empty stomach at least one hour before or two hours after food.	
1 to 12	**Radiation therapy to your brain**	Radiation therapy treatment machine	

Missed doses:

- **Mercaptopurine**: if you forget to take a tablet or vomit a tablet, take your normal dose the next time it is due. Do not take an extra dose.
- **Dexamethasone**: if you forget to take your tablets or vomit your tablets, contact your treating team.
- **Methotrexate**: as this is only to be taken ONCE a week, if you forget to take a tablet or vomit a tablet, let your treating team know immediately.

When to get help

Anticancer drugs (drugs used to treat cancer) can sometimes cause serious problems. It is important to get medical help immediately if you become unwell.

IMMEDIATELY go to your nearest hospital	Emergency contact details

Emergency Department, or contact your doctor or nurse if you have any of the following at any time:	Ask your doctor or nurse from your treating team who to contact if you have a problem
• a temperature of 38ºC or higher • chills, sweats, shivers or shakes • shortness of breath • uncontrolled vomiting or diarrhoea • pain, tingling or discomfort in your chest or arms • you become unwell.	Daytime: Night/weekend: Other instructions:

During your treatment immediately tell the doctor or nurse looking after you if you get any of the following problems:

- leaking from the area where the drugs are being given
- pain, stinging, swelling or redness in the area where the drugs are being given or at any injection sites
- a skin rash, itching, feeling short of breath, wheezing, fever, shivers, or feeling dizzy or unwell in any way (allergic reaction).

Other information about your treatment

Information for patients on allopurinol

Tell your doctor, nurse or pharmacist if you are taking allopurinol tablets (including Progout®, Zyloprim® and Allosig®). This treatment contains mercaptopurine, and allopurinol can increase the levels of this drug in the body. This can cause low white blood cells and increase your risk of infection. If you need to take both medicines, your doctor will reduce your dose of mercaptopurine and monitor your blood counts more regularly.

Changes to your dose or treatment delays

Sometimes a treatment may be started at a lower dose or the dose needs to be changed during treatment. There may also 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. This is called a dose reduction, dose change or treatment delay. Your doctor will explain if you need any changes or delays to your treatment and the reason why.

Blood tests and monitoring

Anti-cancer drugs can reduce the number of blood cells in your body. You will need to have regular blood tests to check that your blood cell count has returned to normal. If your blood count is low, your treatment may be delayed until it has returned to normal. Your doctor or nurse will tell you when to have these blood tests.

Central venous access devices (CVADs)

This treatment involves having chemotherapy through a central venous access device (CVAD). Your doctor or nurse will explain this to you. For more information see the eviQ patient information sheets on CVADs.

Other medications given during this treatment

- **Anti-sickness (anti-nausea) medication:** you may be given some anti-sickness medication. Make sure you take this medication as your doctor or nurse tells you, even if you don't feel sick. This can help to prevent the sickness starting.
- **Prophylaxis medication:** you may need to take some medications to prevent infection and to help prevent or reduce some of the side effects of the chemotherapy. Your doctor or nurse will tell you how and when to take these medications.

Radiotherapy

What is Radiation Therapy (Radiotherapy)?

Radiotherapy is the use of high energy x-rays to treat cancer. Radiotherapy is sometimes called external beam radiotherapy (EBRT) and is delivered by a linear accelerator (radiotherapy treatment machine). Your treatment is individualised and carefully planned by your doctor and radiation therapists.

What happens during radiation therapy?

When you are having radiotherapy, you will be on your own in the treatment room. The radiation therapists can see and hear you at all times via cameras in the treatment room.

If you become concerned or feel unwell in any way, raise your hand or call out. The radiation therapists will interrupt the treatment and attend to you.

The machine will not touch you during treatment and you won't feel anything. The machine will move around you and make a buzzing sound.

What is the aim of treatment?

Radiotherapy is given to destroy cancer cells, relieve the symptoms caused by the cancer and improve your quality of life.

How long will this treatment take?

The treatment is usually given Monday to Friday as an outpatient in the radiotherapy department. It takes about 20 minutes each time.

Before radiotherapy begins and ***during treatment,*** if you are pregnant or feel that there is any chance that you may be pregnant it is important to discuss this with your doctor.
Both men and women should use contraception during and after radiotherapy. **Do not try to get pregnant or father a child.** Ask your doctor or nurse about what type of contraception you should use and for how long.

Tell your doctor, nurse or radiation therapist if you:

- develop headaches
- have dizziness or vertigo
- develop any changes to your skin
- feel unwell in any way.

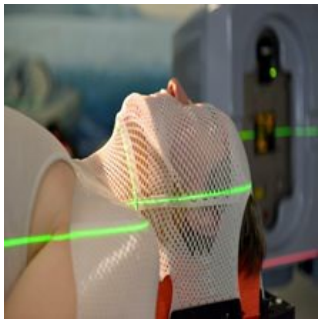
At home it is important to:

- care for your skin during and for at least 4 weeks after your treatment has finished
- read the patient information sheet about Skin changes and skin care during radiotherapy
- take your medications as prescribed by your doctor.

If you are claustrophobic (get scared in small spaces), tell your doctor before your treatment begins. They may be able to give you medication to help you. .

Your mask

- A special mask or shell will be made that will keep you in the right position during treatment.
- During treatment, the mask is secured to the treatment couch to keep you still and in the right position.



Will I be radioactive?

You will **NOT** be radioactive during and after external beam radiotherapy treatment. You can safely mix with other people, including children and pregnant women, at any time during and after your treatment.

Can I drive during treatment?

You are advised **NOT** to drive as your condition and the treatment can interfere with your driving ability. Please discuss with your radiation oncologist prior to driving a motor vehicle.

Who can I talk to if I am not coping?

It is not uncommon for you to feel anxious or depressed during and after treatment. Let your treating team know and they will arrange for you to talk to some one. You can also call the Cancer Council on 13 11 20 for cancer information and support.

How do you know if the treatment is successful?

It may not be possible to know if your treatment has been successful immediately after treatment. Your doctor will see you after treatment is complete and will discuss your progress.

Superseded treatments

This treatment is superseded meaning that better treatments have taken its place. Uncommonly superseded treatments are still used. Your doctor will explain why this treatment has been selected for you.

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)	
Nausea and vomiting	• You may feel sick (nausea) or be sick (vomit). • Take your anti-sickness medication as directed even if you don't feel sick. • Drink plenty of fluids (unless you are fluid restricted). • Eat small meals more frequently. • Try food that does not require much preparation. • Try bland foods like dry biscuits or toast. • Gentle exercise may help with nausea. • Ask your doctor or nurse for eviQ patient information - Nausea and vomiting during cancer treatment. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have uncontrolled vomiting or feel dizzy or light-headed.**
Taste and smell changes	• You may find that food loses its taste or tastes different. • These changes are likely to go away with time. • Do your mouth care regularly. • Chew on sugar-free gum or eat sugar-free mints. • Add flavour to your food with sauces and herbs. • Ask your doctor or nurse for eviQ patient information - Taste and smell changes during cancer treatment.
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)	

Infection risk (neutropenia)	• This treatment lowers the amount of white blood cells in your body. The type of white blood cells that help to fight infection are called neutrophils. Having low level of neutrophils is called neutropenia. If you have neutropenia, you are at greater risk of getting an infection. It also means that your body can't fight infections as well as usual. This is a serious side effect, and can be life threatening. • Wash your hands often. • Keep a thermometer at home and take your temperature regularly, and if you feel unwell. • Do your mouth care regularly. • Inspect your central line site (if you have one) daily for any redness, pus or swelling. • Limit contact with people who are sick. • Learn how to recognise the signs of infection. • Ask your doctor or nurse for eviQ patient information - Infection during cancer treatment. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get any of the following signs or symptoms:** ◦ **a temperature of 38°C or higher** ◦ **chills, shivers, sweats or shakes** ◦ **a sore throat or cough** ◦ **uncontrolled diarrhoea** ◦ **shortness of breath** ◦ **a fast heartbeat** ◦ **become unwell even without a temperature.**
Liver problems	• You may get: ◦ yellowing of your skin or eyes ◦ itchy skin ◦ pain or tenderness in your stomach ◦ nausea and vomiting ◦ loss of appetite • You will have regular blood tests to check how well your liver is working. • **Tell your doctor or nurse as soon as possible if you notice that your urine is a dark colour, the whites of your eyes look yellow, or if you have stomach pain.**
Side effects from steroid medication	• Steroid medication may cause: ◦ mood swings and behaviour changes ◦ an increased appetite ◦ weight gain ◦ swelling in your hands and feet ◦ stomach upsets ◦ trouble sleeping ◦ fragile skin and bruising ◦ an increase in your blood sugar level ◦ weak and brittle bones (osteoporosis) • Take your steroid medication with food to reduce stomach upset • If you have diabetes, your blood sugar levels may be tested more often. • Tell your doctor or nurse if you get any of the symptoms listed above.
Skin rash	• You may get a red, bumpy rash and dry, itchy skin. • Moisturise your skin with a gentle non-perfumed moisturising cream like sorbolene or aqueous cream. • Do not scratch your skin. • Protect your skin from the sun by wearing sun-protective clothing, a wide-brimmed hat, sunglasses and sunscreen of SPF 50 or higher. • **Talk to your doctor or nurse about other ways to manage your skin rash.**

Low platelets (thrombocytopenia)	• This treatment lowers the amount of platelets in your blood. Platelets help your blood to clot. When they are low, you are at an increased risk of bleeding and bruising. • Try not to bruise or cut yourself. • Avoid contact sport or vigorous exercise. • Clear your nose by blowing gently. • Avoid constipation. • Brush your teeth with a soft toothbrush. • Don't take aspirin, ibuprofen or other similar anti-inflammatory medications unless your doctor tells you to. • Tell your doctor or nurse if you have any bruising or bleeding. • **Tell your doctor or nurse immediately, or go to your nearest hospital Emergency Department if you have any uncontrolled bleeding.**
Mouth pain and soreness (mucositis)	• You may have: ◦ bleeding gums ◦ mouth ulcers ◦ a white coating on your tongue ◦ pain in the mouth or throat ◦ difficulty eating or swallowing. • Avoid spicy, acidic or crunchy foods and very hot or cold food and drinks. • Try bland and soft foods. • Brush your teeth gently with a soft toothbrush after each meal and at bedtime. If you normally floss continue to do so. • Rinse your mouth after you eat and brush your teeth, using either: ◦ 1/4 teaspoon of salt in 1 cup of warm water, or ◦ 1/4 teaspoon of bicarbonate of soda in 1 cup of warm water • Ask your doctor or nurse for eviQ patient information - Mouth problems during cancer treatment. • **Tell your doctor or nurse if you get any of the symptoms listed above.**
Tiredness and lack of energy (fatigue)	• You may feel very tired, have no energy, sleep a lot, and not be able to do normal activities or things you enjoy. • Do not drive or operate machinery if you are feeling tired. • Nap for short periods (only 1 hour at a time) • Prioritise your tasks to ensure the best use of your energy. • Eat a well balanced diet and drink plenty of fluids (unless you are fluid restricted). • Try some gentle exercise daily. • Allow your friends and family to help. • **Tell your doctor or nurse if you get any of the symptoms listed above.**

Late (onset weeks to months)	
Low red blood cells (anaemia)	• You may feel dizzy, light-headed, tired and appear more pale than usual. • Tell your doctor or nurse if you have any of these signs or symptoms. You might need a blood transfusion. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have any chest pain, trouble breathing, or feel like your heart is racing.**
Lung problems	• Lung problems are rare, but can be serious. They may occur throughout treatment or after the completion of treatment. • You may get: ◦ shortness of breath ◦ fever ◦ dry cough ◦ wheezing ◦ fast heartbeat ◦ chest pain. • Your doctor will monitor how well your lungs are working during your treatment. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have chest pain or become short of breath.**
Hair thinning	• Your hair may become dry and may break easily. • You may lose some of your hair. • Use a gentle shampoo and a soft hairbrush. • Take care with hair products like hairspray, hair dye, bleaches and perms. • Protect your scalp from the cold with a hat or scarf. • Protect your scalp from the sun with a hat and sunscreen of SPF 50 or higher. • Ask your doctor or nurse about the Look Good Feel Better program (www.lgfb.org.au)
Skin colour changes	• You may have darkening of your skin, especially in areas that are exposed to the sun. • You may also notice darkening of your tongue, gums and over your finger joints. • These skin changes may fade over time. • Protect your skin from the sun by wearing sun-protective clothing, a wide-brimmed hat, sunglasses and a sunscreen of SPF 50 or higher.
Cognitive changes	• You may have difficulty concentrating, feel unusually disorganised or tired (lethargic) and have trouble with your memory. • Tell your doctor or nurse if you get any of the symptoms listed above.
Hearing changes	• You may get changes to your hearing. • Contact your doctor or nurse as soon as possible if you notice any changes in your hearing.
Tissue damage in your brain	• You may get temporary or permanent tissue damage in your brain from the treatment. • **Contact your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get any of the following symptoms:** ◦ **dizziness or headaches** ◦ **trouble with your speech or vision** ◦ **confusion** ◦ **fits (seizures)** ◦ **poor balance and coordination** ◦ **nausea and vomiting** ◦ **paralysis on one side of your face.**

General advice for people having cancer treatment

Chemotherapy safety

- Learn how to keep you and your family safe while you are having anticancer drugs.
- See our patient information sheet - Chemotherapy safety at home.

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.
- Paracetamol is safe to take if you have a headache or other mild aches and pains. It is recommended that you avoid taking aspirin, ibuprofen and other anti-inflammatory type medications for pain while you are having treatment. However, if these medications have been prescribed by your doctor, do not stop taking them without speaking with your doctor.
- Vaccinations such as flu and tetanus vaccines are safe to receive while having treatment. Do not have any live vaccines during your treatment or for 6 months after it finishes. If you are unsure, check with your doctor before you have any vaccinations.
- People you live with should be fully vaccinated, including having live vaccines according to the current vaccination schedule. Extra care needs to be taken with hand washing and careful disposal of soiled nappies for infants who have recently received the rotavirus vaccine.

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 and food safety

- 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.
- There are some foods that may cause infection in high risk individuals and should be avoided. For more information on foods to avoid and food hygiene please ask for a copy of the Listeria and food brochure.

Fertility

- Some cancer treatments can reduce your fertility. This can make it difficult or impossible to get pregnant or 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.

Pregnancy and breastfeeding

- Some cancer treatments can be dangerous to unborn babies. Talk to your doctor or nurse if you think there is any chance that you could be pregnant.
- Do not try to get pregnant or 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 pregnancy/fatherhood after completing this treatment, talk to your doctor. Some doctors advise waiting between 6 months and 2 years after treatment.
- Do not breastfeed if you are on this treatment, as anti-cancer medications can also pass into breast milk.

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.

Risk of developing a second cancer

- Some anticancer treatments can increase your chance of developing a second cancer, this is rare. Your doctor will discuss with you the specific risks of your treatment.

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
- Call the Leukaemia Foundation on 1800 620 420 (Mon to Fri 9am – 5pm)
- Call the Lymphoma Nurse Support Line on 1800 953 081 (Mon to Fri 9am - 5pm)

Haematology, transplant and cellular therapy information

- Arrow bone marrow transplant foundation – arrow.org.au
- Australasian Menopause Society – menopause.org.au
- Chris O'Brien Lifehouse - Total Body Irradiation - mylifehouse.org.au/departments/radiation-oncology/total-body-irradiation/
- Healthy Male Andrology Australia – healthymale.org.au/
- International Myeloma Foundation – myeloma.org
- Leukaemia Foundation – leukaemia.org.au
- Lymphoma Australia – lymphoma.org.au
- Myeloma Australia – myeloma.org.au
- NSW Agency for Clinical Innovation, Blood & Marrow Transplant Network – aci.health.nsw.gov.au/resources/blood-and-marrow-transplant
- NSW Agency for Clinical Innovation - aci.health.nsw.gov.au/projects/immune-effector-cell-service
- NCCN Guidelines for Patients Immunotherapy Side Effects: CAR T-Cell Therapy - nccn.org/patientresources/patient-resources/guidelines-for-patients
- Talk Blood Cancer – cmlsupport.org.uk/organisation-type/social-media-groups

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
- eviQ Cancer Treatments Online – eviQ.org.au
- Food Standards Australia New Zealand: Listeria & Food Safety – foodstandards.gov.au/publications/pages/listeriabrochuretext.aspx
- 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:

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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/pi/792
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