

# Pancreas adjuvant capecitabine and gemcitabine

ID: 1945 v.5    **Endorsed**    Essential Medicine List

## ⚠ Fluoropyrimidine overdose or overexposure:

Fluoropyrimidine overdose or overexposure may result in severe or life-threatening toxicity. An antidote is available and is highly effective if given within 96 hours. Read more about [fluoropyrimidine overdose or overexposure](#).

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](#).

## International Consensus Guideline for Anticancer Drug Dosing in Kidney Dysfunction (ADDIKD)

2022

[Click here](#)



### Related pages:

- [Pancreas adjuvant gemcitabine](#)
- [Pancreas adjuvant FOLFIRINOX \(modified\) \(fluorouracil leucovorin irinotecan oxaliplatin\)](#)

## Treatment schedule - Overview

### Cycle 1 to 6

Drug	Dose	Route	Day
Gemcitabine	1,000 mg/m <sup>2</sup>	IV infusion	1, 8, 15
Capecitabine	830 mg/m <sup>2</sup> TWICE a day	PO	1 to 21 *

\* Capecitabine is administered on day 1 to day 21 followed by rest days on day 22 to day 28

**Frequency:** 28 days

**Cycles:** 6

**Drug status:** Capecitabine and gemcitabine is on the [PBS general schedule](#)

Capecitabine is available in two tablet strengths, **150 mg and 500 mg**. When prescribing, the calculated dose should be rounded to the nearest whole tablet strength and where possible, to minimise dosing errors, to use only one tablet strength.

**Cost:** ~ \$380 per cycle

## 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 to 6

Day 1		
Metoclopramide	10 mg (PO)	one tablet when necessary (maximum of 30 mg/24 hours, up to 5 days)
Gemcitabine	1,000 mg/m <sup>2</sup> (IV infusion)	in 100 mL to 500 mL sodium chloride 0.9% over 30 minutes
Capecitabine	830 mg/m <sup>2</sup> (PO)	TWICE a day within 30 minutes after the end of a meal. The calculated dose should be rounded to the nearest whole tablet strength and where possible, to use only one tablet strength.
Day 2 to 7		
Capecitabine	830 mg/m <sup>2</sup> (PO)	TWICE a day within 30 minutes after the end of a meal. The calculated dose should be rounded to the nearest whole tablet strength and where possible, to use only one tablet strength.
Day 8		
Metoclopramide	10 mg (PO)	one tablet when necessary (maximum of 30 mg/24 hours, up to 5 days)
Gemcitabine	1,000 mg/m <sup>2</sup> (IV infusion)	in 100 mL to 500 mL sodium chloride 0.9% over 30 minutes
Capecitabine	830 mg/m <sup>2</sup> (PO)	TWICE a day within 30 minutes after the end of a meal. The calculated dose should be rounded to the nearest whole tablet strength and where possible, to use only one tablet strength.
Day 9 to 14		
Capecitabine	830 mg/m <sup>2</sup> (PO)	TWICE a day within 30 minutes after the end of a meal. The calculated dose should be rounded to the nearest whole tablet strength and where possible, to use only one tablet strength.
Day 15		
Metoclopramide	10 mg (PO)	one tablet when necessary (maximum of 30 mg/24 hours, up to 5 days)
Gemcitabine	1,000 mg/m <sup>2</sup> (IV infusion)	in 100 mL to 500 mL sodium chloride 0.9% over 30 minutes
Capecitabine	830 mg/m <sup>2</sup> (PO)	TWICE a day within 30 minutes after the end of a meal. The calculated dose should be rounded to the nearest whole tablet strength and where possible, to use only one tablet strength.
Day 16 to 21		
Capecitabine	830 mg/m <sup>2</sup> (PO)	TWICE a day within 30 minutes after the end of a meal. The calculated dose should be rounded to the nearest whole tablet strength and where possible, to use only one tablet strength.

Capecitabine is administered on day 1 to day 21 followed by rest days on day 22 to day 28

**Frequency:** 28 days

## Indications and patient population

- Adjuvant pancreatic ductal adenocarcinoma, within 12 weeks of surgery (complete macroscopic resection; R0/R1 resection)
  - WHO performance status of less than or equal to 1.

## Clinical information

<b>Safety alert fluoropyrimidines</b>	<p>Fluoropyrimidines can be administered by different routes and schedules with each method having associated increased risk of certain side effects. Fluoropyrimidine overdose or overexposure is a rare but potentially life threatening side effect of this drug class and can occur by any route of administration. An antidote is available and highly effective if given within 96 hours.</p> <p>Read more about the <a href="#">medication safety alert for infusional fluorouracil and fluoropyrimidine overdose or overexposure</a></p>
<b>Caution with oral anti-cancer drugs</b>	<p>Select links for information on the safe prescribing, dispensing and administration of orally administered anti-cancer drugs.</p> <p>Read more about the <a href="#">COSA guidelines</a> and <a href="#">oral anti-cancer therapy</a></p>
<b>Venous access required</b>	<p>IV cannula (IVC) or central venous access device (CVAD) is required to administer this treatment.</p> <p>Read more about <a href="#">central venous access device line selection</a></p>
<b>Emetogenicity LOW</b>	<p>Suggested default antiemetics have been added to the treatment schedule, and may be substituted to reflect institutional policy.</p> <p>Ensure that patients also have sufficient antiemetics for breakthrough emesis:</p> <p>Metoclopramide 10 mg three times a day when necessary (maximum of 30 mg/24 hours, up to 5 days) OR</p> <p>Prochlorperazine 10 mg PO every 6 hours when necessary.</p> <p>Read more about <a href="#">preventing anti-cancer therapy induced nausea and vomiting</a></p>
<b>Cardiac toxicity</b>	<p>Angina-like chest pain, tachycardia, arrhythmias, heart failure, myocardial infarction and cardiac arrest may occur with capecitabine especially in patients with a prior history of coronary artery disease.</p> <p>Cardiac symptoms may require cessation of capecitabine and referral to a cardiologist for symptomatic treatment. Re-challenge is controversial and generally not recommended.</p> <p>Read more about <a href="#">cardiac toxicity associated with anti-cancer drugs</a></p>
<b>Dihydropyrimidine dehydrogenase (DPD) enzyme deficiency</b>	<p>Rare, life-threatening toxicities such as mucositis, neutropenia, neurotoxicity and diarrhoea have been reported following administration of fluoropyrimidines (e.g. fluorouracil and capecitabine). Severe unexplained toxicities require investigation prior to continuing with treatment. Testing for DPD enzyme deficiency is available in Australia but not currently reimbursed.</p> <p>Read more about <a href="#">dihydropyrimidine dehydrogenase (DPD) enzyme deficiency</a></p>
<b>Pulmonary toxicity</b>	<p>Dyspnoea developing within hours of the infusion has been reported in about 10% of patients treated with gemcitabine.</p> <p>Read more about <a href="#">pulmonary toxicity associated with anti-cancer drugs</a>.</p>
<b>Diarrhoea</b>	<p>Antidiarrhoeals (e.g. loperamide) are usually prescribed with this treatment.</p> <p>Read more about <a href="#">treatment induced diarrhoea</a></p>
<b>Hyperbilirubinaemia</b>	<p>Capecitabine can induce hyperbilirubinaemia which may require an interruption in treatment (see dose modifications).</p>

<b>Growth factor support</b>	G-CSF (short or long-acting) is available on the PBS for chemotherapy induced neutropenia depending on clinical indication and/or febrile neutropenia risk. Access the <a href="#">PBS website</a>
<b>Blood tests</b>	FBC, EUC and LFTs at baseline. Repeat FBC prior to each treatment, EUC and LFTs prior to each cycle or as clinically indicated.
<b>Hepatitis B screening and prophylaxis</b>	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 <a href="#">hepatitis B screening and prophylaxis in cancer patients requiring cytotoxic and/or immunosuppressive therapy</a>
<b>Vaccinations</b>	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 <a href="#">Australian Immunisation Handbook</a> . Read more about <a href="#">COVID-19 vaccines and cancer</a> .
<b>Fertility, pregnancy and lactation</b>	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 <a href="#">effect of cancer treatment on fertility</a>

## 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 \(ADDIKD\).](#)

### Note:

- All dose reductions are calculated as a percentage of the starting dose.
- Dose modifications adapted from ESPAC-4 trial<sup>1</sup>

Haematological toxicity	
ANC x 10 <sup>9</sup> /L (pre-treatment blood test)	
Equal to or greater than 1.0	No dose reductions necessary
0.5 to less than 1.0	Reduce gemcitabine by 25%

Haematological toxicity	
less than 0.5	Omit gemcitabine for one week
Febrile neutropenia or previous delay for myelosuppression	Delay treatment until recovery and reduce capecitabine and gemcitabine by 25% and no re-escalation of dose  If occurs in a patient whose dose has been reduced by 25%, reduce dose by a further 25%
Platelets x 10 <sup>9</sup> /L (pre-treatment blood test)	
Equal to or greater than 75	No dose reductions necessary
50 to less than 75	Reduce gemcitabine by 25%
less than 50	Omit gemcitabine for one week
Guidance for dose reductions or omissions	
If dose <u>reduced</u> for one week	Dose according to neutrophil and platelet count on that day
If dose <u>reduced</u> for two consecutive weeks	Gemcitabine 75% of full dose with no re-escalation
If dose <u>omitted</u> for one week	Gemcitabine 75% of full dose with no re-escalation
If recurrent dose omitted or delayed for two weeks or more	Gemcitabine and capecitabine 75% of full dose with no re-escalation
Renal impairment	
Creatinine clearance (mL/min)	
30 to 50	Reduce capecitabine and gemcitabine by 25%
less than 30	Reduce gemcitabine by 50% and discontinue capecitabine
Hepatic impairment	
Hepatic dysfunction	
Capecitabine has not been studied in patients with severe hepatic impairment. Patients with mild to moderate hepatic dysfunction should be carefully monitored.  Gemcitabine should be used in caution with impaired liver function. Impaired liver function may require further investigation	
ALT or AST > 2.5 x ULN	Withhold capecitabine and resume when ALT or AST ≤ 2.5 ULN
Total bilirubin >3.0 ULN	Withhold capecitabine and resume when total bilirubin ≤ 3.0 ULN
Mucositis and stomatitis	
Grade 2	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose for subsequent cycles as follows: 1 <sup>st</sup> occurrence: No dose reduction 2 <sup>nd</sup> occurrence: Reduce capecitabine and gemcitabine by 25% 3 <sup>rd</sup> occurrence: Discontinue capecitabine and reduce gemcitabine by 50% 4 <sup>th</sup> occurrence: Omit gemcitabine
Grade 3	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose for subsequent cycles as follows: 1 <sup>st</sup> occurrence: Reduce capecitabine by 25% and gemcitabine by 50% 2 <sup>nd</sup> occurrence: Reduce capecitabine by 50% and omit gemcitabine  3 <sup>rd</sup> occurrence: Discontinue capecitabine
Grade 4	1 <sup>st</sup> occurrence: Discontinue capecitabine and reduce gemcitabine by 50%  2 <sup>nd</sup> occurrence: Omit gemcitabine

<b>Diarrhoea</b>	
Grade 2	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose for subsequent cycles as follows: 1 <sup>st</sup> occurrence: No dose reduction 2 <sup>nd</sup> occurrence: Reduce capecitabine 25% 3 <sup>rd</sup> occurrence: Discontinue capecitabine
Grade 3	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose for subsequent cycles as follows: 1 <sup>st</sup> occurrence: Reduce capecitabine by 25% 2 <sup>nd</sup> occurrence: Reduce capecitabine by 50%  3 <sup>rd</sup> occurrence: Discontinue capecitabine
Grade 4	1 <sup>st</sup> occurrence: Discontinue capecitabine

<b>Hand foot syndrome (link to <a href="#">Hand foot syndrome (Palmar-plantar erythrodysaesthesia)</a>)</b>	
Grade delay	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 <sup>st</sup> occurrence: No dose reduction 2 <sup>nd</sup> occurrence: Reduce capecitabine by 25% 3 <sup>rd</sup> occurrence: Discontinue capecitabine
Grade 3	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 <sup>st</sup> occurrence: Reduce capecitabine by 25% 2 <sup>nd</sup> occurrence: Reduce capecitabine by 50%  3 <sup>rd</sup> occurrence: Omit capecitabine
Grade 4	1 <sup>st</sup> occurrence: Discontinue capecitabine

<b>Cease gemcitabine if either of the following develop:</b>	
<ul style="list-style-type: none"> <li>• pulmonary toxicity</li> <li>• haemolytic uraemic syndrome (HUS).</li> </ul>	

## 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](#)

Capecitabine		
	Interaction	Clinical management
<b>Sorivudine* and analogues (e.g. brivudine*)</b>	Potentially fatal increased toxicity of fluorouracil, the active metabolite of capecitabine, due to reduced clearance	Combination contraindicated and at least 4 weeks must elapse between the end of treatment with sorivudine (or analogues, such as brivudine) and the start of capecitabine therapy
<b>Warfarin and other drugs metabolised by CYP2C9 (e.g. phenytoin etc.)</b>	Increased effects/toxicity of these drugs possible due to inhibition of CYP2C9 by capecitabine and/or its metabolites resulting in reduced clearance	Avoid combination or monitor for increased effect/toxicity (e.g. INR can be increased by 91% in patients on warfarin)
<b>Allopurinol</b>	Reduced efficacy of capecitabine possible due to reduced conversion to the active metabolites	Avoid combination or monitor for reduced capecitabine efficacy

\* currently not marketed in Australia

Gemcitabine		
	Interaction	Clinical management
<b>Warfarin</b>	Increased anticoagulant effect/increased bleeding risk due to decreased hepatic metabolism of warfarin and decreased synthesis of clotting factors	Monitor INR regularly and adjust warfarin dosage as appropriate

General		
	Interaction	Clinical management
<b>Digoxin</b>	Anti-cancer drugs can damage the lining of the intestine; affecting the absorption of digoxin.	Monitor digoxin serum levels; adjust digoxin dosage as appropriate.
<b>Antiepileptics</b>	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.
<b>Antiplatelet agents and NSAIDs</b>	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.
<b>Serotonergic drugs, including selective serotonin reuptake inhibitors (SSRIs e.g. paroxetine) and serotonin noradrenaline reuptake inhibitors (SNRIs e.g. venlafaxine)</b>	Increased risk of serotonin syndrome with concurrent use of 5-HT <sub>3</sub> 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 <a href="#">TGA Medicines Safety Update</a> .
<b>Vaccines</b>	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 <a href="#">Australian Immunisation Handbook</a>

## 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, 8 and 15 (IV)

**Approximate treatment time: 60 minutes**

[Safe handling and waste management](#)

[Safe administration](#)

[General patient assessment](#) prior to each day of treatment.

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

Prime IV line(s).

Insert IV cannula or access [TIVAD](#) or [CVAD](#).



## Pre treatment medication

Administer antiemetics if required

## 🕒 Chemotherapy - Time out

### Gemcitabine

#### Administer gemcitabine (irritant):

- via IV infusion over 30 minutes
  - if pain develops along the vein, verify the drug has not extravasated
  - further dilution (using a second saline line), warmth or temporarily slowing the infusion may help
- flush with ~ 100 mL of sodium chloride 0.9%
- prolonged infusion times have been shown to increase toxicity.

Remove IV cannula and/or deaccess [TIVAD](#) or [CVAD](#).

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

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## Days 1 to 21 (PO)

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.

## 🕒 Chemotherapy - Time out

### Capecitabine

- administer orally TWICE a day on **days 1 to 21**
- to be swallowed whole with a glass of water; do not break, crush or chew
- to be taken morning and night (approximately 12 hours apart) within thirty minutes after the end of a meal
- tablets may also be dispersed in water if patient has swallowing difficulties:
  - place the required number of tablets in a disposable cup and fill with approximately 200 mL of water, leave the tablets to dissolve (approximately 15 minutes) and swallow immediately
  - mix any residues in the cup with water and swallow
  - avoid direct contact of the tablets or solution with the skin or mucous membrane. If such contact occurs, wash thoroughly.

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

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

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## Discharge information

### Capecitabine tablets

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

### Antiemetics

- Antiemetics as prescribed.

### Antidiarrhoeals

- Antidiarrhoeals as prescribed.

### 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)

<b>Nausea and vomiting</b>	Read more about <a href="#">prevention of treatment induced nausea and vomiting</a>
<b>Cardiotoxicity</b>	Coronary artery spasm is a temporary, sudden narrowing of one of the coronary arteries that may present at any time during treatment with fluoropyrimidines. It most commonly manifests as angina.
<b>Flu-like symptoms</b>	
<b>Taste and smell alteration</b>	Read more about <a href="#">taste and smell changes</a>

### Early (onset days to weeks)

<b>Diarrhoea</b>	Read more about <a href="#">treatment induced diarrhoea</a>
<b>Oral mucositis</b>	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 <a href="#">oral mucositis</a>
<b>Anorexia</b>	Loss of appetite accompanied by decreased food intake. Read more about <a href="#">anorexia</a>
<b>Neutropenia</b>	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 <a href="#">immediate management of neutropenic fever</a>
<b>Thrombocytopenia</b>	A reduction in the normal levels of functional platelets, increasing the risk of abnormal bleeding.  Read more about <a href="#">thrombocytopenia</a>
<b>Skin rash</b>	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 <a href="#">skin rash</a>
<b>Fatigue</b>	Read more about <a href="#">fatigue</a>
<b>Actinic keratoses flare</b>	Pre-existing actinic keratoses (AKs) can become more inflamed and scaly as a result of immunosuppression. Read more about <a href="#">actinic keratoses flare</a>
<b>Fluid retention and oedema</b>	An excess amount of fluid around the cells, tissues or serous cavities of the body, leading to swelling.
<b>Palmar-plantar erythrodysesthesia (PPE) - hand-foot syndrome (HFS)</b>	Bilateral erythema, tenderness, pain, swelling, tingling, numbness, pruritus, dry rash, or moist desquamation and ulceration of the palms and soles. It is also known as hand-foot syndrome (HFS). Symptoms appear to be dose dependent and palms are affected more than soles. Read more about <a href="#">hand-foot syndrome associated with chemotherapy</a>
<b>Abdominal pain</b>	Dull ache, cramping or sharp pains are common with some anti-cancer drugs. These are caused by either increased or decreased gastrointestinal motility and can be associated with diarrhoea or constipation.
<b>Ocular changes</b>	Symptoms may include eye pain, blurred vision, blepharitis, uveitis, optic neuritis, tear duct stenosis, conjunctivitis, hyperlacrimation, watery or dry eyes and photophobia.
<b>Photosensitivity</b>	Increased sensitivity to ultraviolet (UV) light resulting in an exaggerated sunburn-like reaction accompanied by stinging sensations and urticaria.

Late (onset weeks to months)	
<b>Anaemia</b>	Abnormally low levels of red blood cells (RBCs) or haemoglobin in the blood. Read more about <a href="#">anaemia</a>
<b>Alopecia - partial</b>	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 <a href="#">alopecia</a> and <a href="#">scalp cooling</a>
<b>Hyperbilirubinaemia</b>	An abnormal increase in the amount of bilirubin circulating in the blood which may result in jaundice.
<b>Pulmonary toxicity</b>	Pulmonary toxicity may include damage to the lungs, airways, pleura and pulmonary circulation. Read more about <a href="#">pulmonary toxicity associated with anti-cancer drugs</a>
<b>Haemolytic uraemic syndrome (HUS)</b>	A rare but serious acute syndrome characterised by haemolysis of red blood cells and renal failure. Read more about <a href="#">haemolytic uraemic syndrome (HUS)</a>

## Evidence

The evidence supporting this protocol is supported by ESPAC-4, a phase III, multi-centre, international, open-label randomised controlled trial comparing gemcitabine and capecitabine (GEM-CAP) versus gemcitabine alone (GEM), in patients with resected pancreatic ductal adenocarcinoma.<sup>1</sup>

Between November 2008 and September 2014, 732 patients were enrolled into the study. The median age was 65 years and 57% of patients were male. 97% of patients had a WHO performance status of 0 or 1. Median maximum tumour size was 30 mm, 60% were R1 resections, 80% were node positive, and 39% were poorly differentiated. 730 evaluable patients were randomised within 12 weeks of surgery to receive either adjuvant chemotherapy with IV gemcitabine (1000 mg/m<sup>2</sup>) as monotherapy on days 1, 8, and 15 every 28 days for 6 cycles (n = 366), or adjuvant chemotherapy with IV gemcitabine (1000 mg/m<sup>2</sup>) on days 1, 8, and 15 in combination with capecitabine 1660 mg/m<sup>2</sup>/day (in two divided doses) administered orally for 21 days followed by 7 days rest, repeated every 28 days for a total of 6 cycles (n = 364).<sup>1</sup>

The primary end point was overall survival. Secondary end points were relapse free survival, 2 and 5 year survival rates, lymph node spread, distant metastases or death from any cause. Toxicity and quality of life was also assessed.

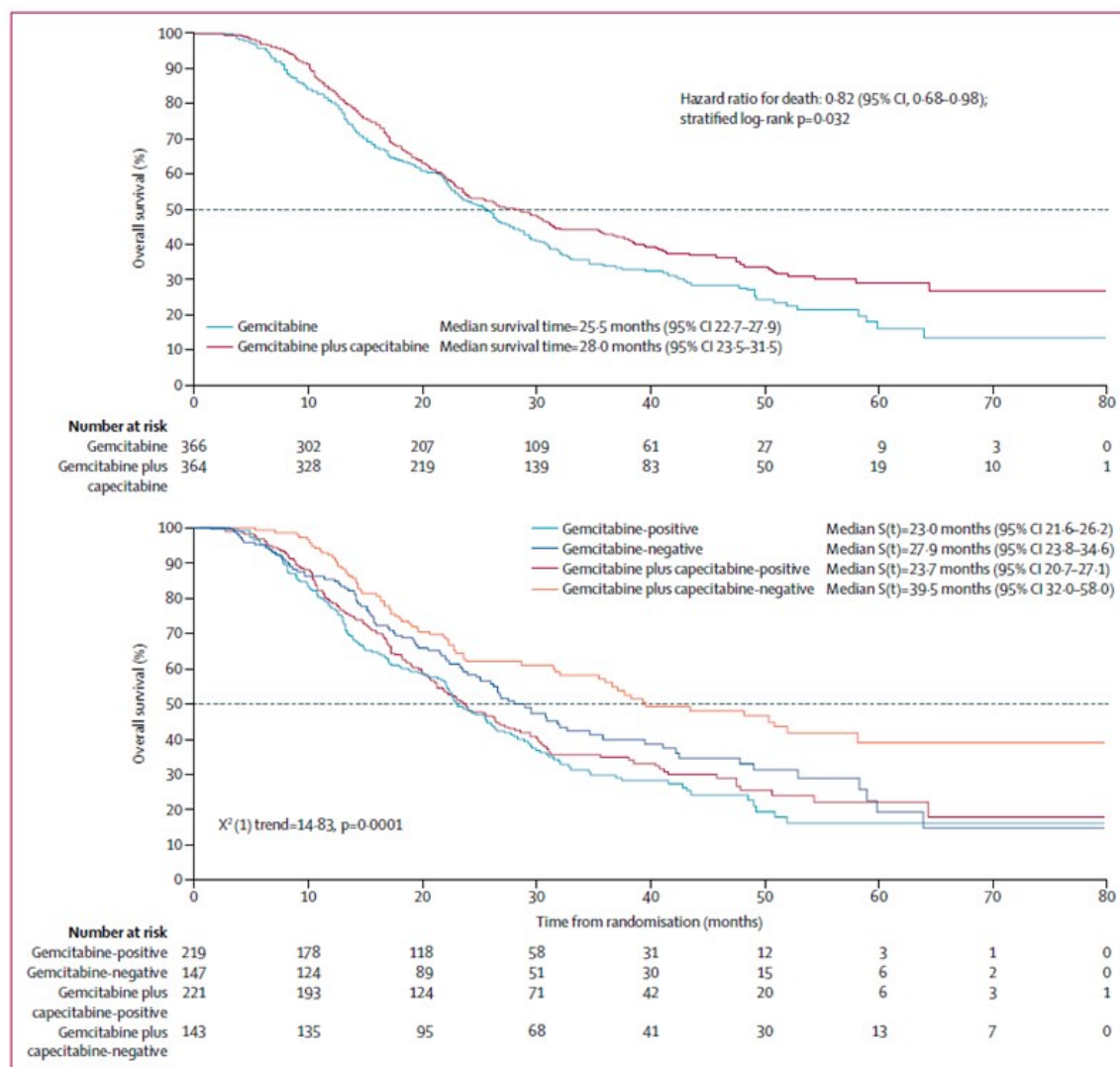
In December 2015, the Independent Trial Steering committee requested that the trial proceed to full analysis.

## Efficacy

After a median follow up time of 43.2 months (range 39.7 - 45.5 months), the median overall survival for patients in the gemcitabine plus capecitabine group was 28.0 months (95% CI 23.5 - 31.5) compared with 25.5 months (22.7 - 27.9) in the gemcitabine group (HR 0.82, 95% 0.68 - 0.98, p=0.032). The median relapse-free survival was 13.9 months (12.1 - 16.6) in the gemcitabine and capecitabine group and 13.1 months (11.6 - 15.3) in the gemcitabine group (HR 0.86, 95% CI 0.73-1.02, p=0.082). The estimated 5 year survival was 28.8% (22.9 - 35.2) for the gemcitabine plus capecitabine group and 16.3% (10.2 - 23.7) for the gemcitabine group. Gemcitabine plus capecitabine favoured survival in most clinical subgroups.<sup>1</sup>

There was no significant effect in the longitudinal estimate of quality of life between the treatment groups.

**Kaplan Meier plots for overall survival (A) and for overall survival by resection margin status and treatment group (B)<sup>1</sup>**



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## Toxicity

All six cycles of treatment were completed by 54% of patients in the gemcitabine plus capecitabine group and 65% of patients in the gemcitabine group.<sup>1</sup> There were 608 grade 3–4 events reported by 226 of 359 patients in the gemcitabine plus capecitabine group and 481 grade 3-4 events reported by 196 of 366 patients in the gemcitabine group. Grade 3-4 neutropenia, diarrhoea and hand-foot syndrome was more common in the gemcitabine plus capecitabine group.<sup>1</sup>

	Gemcitabine (n=366)			Gemcitabine plus capecitabine (n=359)			p value grade 1-2	p value grade 3-4
	Grade 1-2	Grade 3-4	Grade 5	Grade 1-2	Grade 3-4	Grade 5		
Anaemia	213 (58%)	14 (4%)	0	201 (56%)	8 (2%)	0	0.549	0.279
Diarrhoea	151 (41%)	6 (2%)	0	161 (45%)	19 (5%)	0	0.331	0.008
Fatigue	241 (66%)	19 (5%)	0	230 (64%)	20 (6%)	0	0.641	0.870
Fever	74 (20%)	6 (2%)	0	62 (17%)	6 (2%)	0	0.342	1.000
Infection and infestations, other	56 (15%)	24 (7%)	0	37 (10%)	9 (3%)	1 (<1%)	0.046	0.012
Lymphocyte count decreased	100 (27%)	11 (3%)	0	78 (22%)	9 (3%)	0	0.085	0.821
Neutropenia	147 (40%)	89 (24%)	0	175 (49%)	137 (38%)	0	0.021	0.0001
Hand-foot syndrome	8 (2%)	0	0	111 (31%)	26 (7%)	0	<0.0001	<0.0001
Platelets	87 (24%)	7 (2%)	0	104 (29%)	8 (2%)	0	0.129	0.800
Thromboembolic events	7 (2%)	9 (2%)	0	16 (4%)	8 (2%)	0	0.058	1.000
White blood cell count decreased	136 (37%)	28 (8%)	0	141 (39%)	37 (10%)	0	0.593	0.242
Acute kidney injury	4 (1%)	2 (1%)	0	1 (<1%)	0	0	0.373	0.499
Multi-organ failure	0	0	1 (<1%)	0	0	0	NA	NA
Cardiac disorders	4 (1%)	1 (<1%)	1 (<1%)	3 (1%)	0	0	1.000	1.000
Benign, malignant, and unspecified neoplasms (including cysts and polyps), other	1 (<1%)	0	3 (1%)	0	1 (<1%)	0	1.000	0.495

Fisher's exact test was used to show statistically significant differences between the two groups. NA=not applicable.

**Table 5: Grade 1-5 adverse events with gemcitabine alone and gemcitabine plus capecitabine**

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## References

- 1 Neoptolemos, J. P., D. H. Palmer, P. Ghaneh, et al. 2017. "Comparison of adjuvant gemcitabine and capecitabine with gemcitabine monotherapy in patients with resected pancreatic cancer (ESPAC-4): a multicentre, open-label, randomised, phase 3 trial." *Lancet* 389(10073):1011-1024.

## History

### Version 5

Date	Summary of changes
08/10/2019	Clinical information updated with PBS expanded indications for GCSF.

### Version 4

Date	Summary of changes
13/01/2017	New protocol taken to Medical Oncology Reference Committee meeting on 21 October 2016. Consensus of reference committee to publish protocol with a caution that the protocol is based on an abstract with early data and is awaiting publication in a peer-reviewed journal. Protocol to be published as an interim protocol with limited sections (indications and patient population, pre-clinical information, treatment schedule, administration, side effects, evidence and patient information). Protocol may proceed to full development once the full data has been published. For review in 6 months.
31/05/2017	Transferred to new eviQ website. Version number changed to V.2.
21/12/2017	Protocol reviewed electronically by Medical Oncology Reference Committee after evidence published. Dose modifications and interactions added. Evidence updated to reflect peer review publication. Status changed to endorsed. Version number increased to V.3. Review 2 years.
16/02/2018	Fluoropyrimidine overdose or overexposure warning added.
10/05/2018	DPD enzyme deficiency wording in clinical information updated. Fluoropyrimidine safety alert in clinical information added. Version number changed to V.4.
20/05/2019	Protocol reviewed electronically by the Medical Oncology Reference Committee. No changes. Review 5 years.

The information contained in this protocol is based on the highest level of available evidence and consensus of the eviQ reference committee regarding their views of currently accepted approaches to treatment. Any clinician (medical oncologist, haematologist, radiation oncologist, medical physicist, radiation therapist, pharmacist or nurse) seeking to apply or consult this protocol is expected to use independent clinical judgement in the context of individual clinical circumstances to determine any patient's care or treatment. 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 is subject to eviQ's disclaimer available at [www.eviQ.org.au](http://www.eviQ.org.au)

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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/1945>

14 Jul 2023

# Patient information - Pancreas cancer adjuvant - Capecitabine and gemcitabine

Patient's name:

## Your treatment

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

Gemcitabine			
This treatment cycle is repeated every 28 days. You will have 6 cycles.			
Day	Treatment	How it is given	How long it takes
1, 8 and 15	<b>Gemcitabine</b> (jem-sie-ta-been)	By a drip into a vein	About 1 hour
1 to 21	<b>Capecitabine</b> (KAP-e-SYE-ta-been)	Take orally TWICE a day on days 1 to 21 only, with a glass of water within 30 minutes of finishing a meal (just after breakfast and then again after evening meal).  Do not break, crush or chew tablets. If you are unable to swallow the tablets whole they may be dissolved in water and the solution swallowed (see directions in <i>Other information about your treatment</i> ).  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.	
21 to 28	<b>Do not</b> take capecitabine tablets from day 21 to 28		

Capecitabine tablets are available in two tablet strengths, 150 mg and 500 mg. It is important that you take the correct tablets and understand how to take them. Ask your doctor, nurse or pharmacist to complete the table below with the correct number of tablets for you.

Capecitabine	Morning	Evening
Number of 150 mg tablets		
Number of 500 mg tablets		


## 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.

**Stop** taking capecitabine and contact your doctor if you have any of the following side effects:

- diarrhoea - passing an extra 4 to 6 bowel motions per day, or passing bowel motions through the night
- vomiting - 2 to 5 episodes of vomiting in a 24 hour period

- a sore mouth which is making it difficult to eat
- pain and redness on the palms of your hands and the soles of your feet.

 <p><b>IMMEDIATELY go to your nearest hospital Emergency Department, or contact your doctor or nurse if you have any of the following at any time:</b></p>	<p><b>Emergency contact details</b></p> <p>Ask your doctor or nurse from your treating team who to contact if you have a problem</p>
<ul style="list-style-type: none"> <li>• a temperature of 38°C or higher</li> <li>• chills, sweats, shivers or shakes</li> <li>• shortness of breath</li> <li>• uncontrolled vomiting or diarrhoea</li> <li>• pain, tingling or discomfort in your chest or arms</li> <li>• you become unwell.</li> </ul>	<p>Daytime:.....</p> <p>Night/weekend:.....</p> <p>Other instructions:.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

**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

### 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. Tell your doctor if you are on an anticoagulant (medication used to treat or prevent blood clots) e.g. warfarin. You may need to have additional blood tests.

### 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.
- **Antidiarrhoeals:** you may be given some medication to treat diarrhoea. Your doctor or nurse will tell you how and when to take your antidiarrhoeal medication.

### Instructions for dissolving capecitabine tablets:

- Capecitabine tablets should never be crushed, cut or broken.
- You (or whoever is dissolving the tablets) should wear disposable gloves and try to minimise touching the tablets.
- Put the tablet(s) needed for the dose into a disposable cup with a lid, if possible. If using a non-disposable cup, ensure the cup is kept only for this purpose.
- Fill the cup with approximately 200 mL of water and cover with lid if available.
- Leave the tablets in the water to dissolve, this may take up to 15 minutes. Gentle agitation of the solution may assist in the dissolving process, being careful not to spill the solution.
- Once the tablets have fully dissolved, swallow the solution immediately.
- In case of any spillages to skin, immediately wash the affected area thoroughly with warm soapy water. If spillage occurs to work surface or floor, wash area with warm soapy water and dry with absorbent paper towel or cloth. Dispose of cloth in a



- cytotoxic bag.
- The tablets have a bitter taste. The solution may be made more palatable by dissolving the tablets in fruit juice (not citrus juice) or by adding cordial or flavouring.
  - To ensure that the whole dose is taken, swirl the cup with water and swallow. Repeat if necessary.
  - The disposable cup and gloves should be disposed of in a cytotoxic waste bag. Non-disposable cups should be washed thoroughly with warm soapy water.

## 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	<ul style="list-style-type: none"> <li>You may feel sick (nausea) or be sick (vomit).</li> <li>Take your anti-sickness medication as directed even if you don't feel sick.</li> <li>Drink plenty of fluids (unless you are fluid restricted).</li> <li>Eat small meals more frequently.</li> <li>Try food that does not require much preparation.</li> <li>Try bland foods like dry biscuits or toast.</li> <li>Gentle exercise may help with nausea.</li> <li>Ask your doctor or nurse for eviQ patient information - <a href="#">Nausea and vomiting during cancer treatment</a>.</li> <li><b>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.</b></li> </ul>
Heart problems	<ul style="list-style-type: none"> <li>You may get: <ul style="list-style-type: none"> <li>chest pain or tightness</li> <li>shortness of breath</li> <li>an abnormal heartbeat</li> </ul> </li> <li>Tell your doctor if you have a history of heart problems or high blood pressure.</li> <li><b>Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get any of the symptoms listed above.</b></li> </ul>
Flu-like symptoms	<ul style="list-style-type: none"> <li>You may get: <ul style="list-style-type: none"> <li>a fever</li> <li>chills or sweats</li> <li>muscle and joint pain</li> <li>a cough</li> <li>headaches.</li> </ul> </li> <li>The drug gemcitabine can cause a fever or flu-like illness within the first day or two of having the treatment.</li> <li>You can take paracetamol to help settle these symptoms.</li> <li><b>Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if the symptoms do not settle or you become unwell.</b></li> </ul>
Taste and smell changes	<ul style="list-style-type: none"> <li>You may find that food loses its taste or tastes different.</li> <li>These changes are likely to go away with time.</li> <li>Do your mouth care regularly.</li> <li>Chew on sugar-free gum or eat sugar-free mints.</li> <li>Add flavour to your food with sauces and herbs.</li> <li>Ask your doctor or nurse for eviQ patient information - <a href="#">Taste and smell changes during cancer treatment</a>.</li> </ul>
Early (onset days to weeks)	
Diarrhoea	<ul style="list-style-type: none"> <li>You may get bowel motions (stools, poo) that are more frequent or more liquid.</li> <li>You may also get bloating, cramping or pain.</li> <li>Take your antidiarrhoeal medication as directed by your doctor.</li> <li>Drink plenty of fluids (unless you are fluid restricted).</li> <li>Eat and drink small amounts more often.</li> <li>Avoid spicy foods, dairy products, high fibre foods, and coffee.</li> <li>Ask your doctor or nurse for eviQ patient information - <a href="#">Diarrhoea during cancer treatment</a>.</li> <li><b>Tell your doctor or nurse immediately, or go to your nearest hospital Emergency Department if your diarrhoea is not controlled, you have 4 or more loose bowel motions per day, and if you feel dizzy or light-headed.</b></li> </ul>

<b>Mouth pain and soreness (mucositis)</b>	<ul style="list-style-type: none"> <li>You may have: <ul style="list-style-type: none"> <li>bleeding gums</li> <li>mouth ulcers</li> <li>a white coating on your tongue</li> <li>pain in the mouth or throat</li> <li>difficulty eating or swallowing.</li> </ul> </li> <li>Avoid spicy, acidic or crunchy foods and very hot or cold food and drinks.</li> <li>Try bland and soft foods.</li> <li>Brush your teeth gently with a soft toothbrush after each meal and at bedtime. If you normally floss continue to do so.</li> <li>Rinse your mouth after you eat and brush your teeth, using either: <ul style="list-style-type: none"> <li>1/4 teaspoon of salt in 1 cup of warm water, or</li> <li>1/4 teaspoon of bicarbonate of soda in 1 cup of warm water</li> </ul> </li> <li>Ask your doctor or nurse for eviQ patient information - <a href="#">Mouth problems during cancer treatment</a>.</li> <li><b>Tell your doctor or nurse if you get any of the symptoms listed above.</b></li> </ul>
<b>Appetite loss (anorexia)</b>	<ul style="list-style-type: none"> <li>You may not feel like eating.</li> <li>Try to avoid drinking fluids at meal times.</li> <li>Try to eat small meals or snacks regularly throughout the day.</li> <li>Try to eat food that is high in protein and calories.</li> <li>If you are worried about how much food you can eat, or if you are losing weight, ask to speak to a dietitian.</li> </ul>
<b>Infection risk (neutropenia)</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Wash your hands often.</li> <li>Keep a thermometer at home and take your temperature regularly, and if you feel unwell.</li> <li>Do your mouth care regularly.</li> <li>Inspect your central line site (if you have one) daily for any redness, pus or swelling.</li> <li>Limit contact with people who are sick.</li> <li>Learn how to recognise the signs of infection.</li> <li>Ask your doctor or nurse for eviQ patient information - <a href="#">Infection during cancer treatment</a>.</li> <li><b>Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get any of the following signs or symptoms:</b> <ul style="list-style-type: none"> <li>a temperature of 38°C or higher</li> <li>chills, shivers, sweats or shakes</li> <li>a sore throat or cough</li> <li>uncontrolled diarrhoea</li> <li>shortness of breath</li> <li>a fast heartbeat</li> <li>become unwell even without a temperature.</li> </ul> </li> </ul>
<b>Low platelets (thrombocytopenia)</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Try not to bruise or cut yourself.</li> <li>Avoid contact sport or vigorous exercise.</li> <li>Clear your nose by blowing gently.</li> <li>Avoid constipation.</li> <li>Brush your teeth with a soft toothbrush.</li> <li>Don't take aspirin, ibuprofen or other similar anti-inflammatory medications unless your doctor tells you to.</li> <li>Tell your doctor or nurse if you have any bruising or bleeding.</li> <li><b>Tell your doctor or nurse immediately, or go to your nearest hospital Emergency Department if you have any uncontrolled bleeding.</b></li> </ul>

<b>Skin rash</b>	<ul style="list-style-type: none"> <li>• You may get a red, bumpy rash and dry, itchy skin.</li> <li>• Moisturise your skin with a gentle non-perfumed moisturising cream like sorbolene or aqueous cream.</li> <li>• Do not scratch your skin.</li> <li>• Protect your skin from the sun by wearing sun-protective clothing, a wide-brimmed hat, sunglasses and sunscreen of SPF 50 or higher.</li> <li>• <b>Talk to your doctor or nurse about other ways to manage your skin rash.</b></li> </ul>
<b>Tiredness and lack of energy (fatigue)</b>	<ul style="list-style-type: none"> <li>• You may feel very tired, have no energy, sleep a lot, and not be able to do normal activities or things you enjoy.</li> <li>• Do not drive or operate machinery if you are feeling tired.</li> <li>• Nap for short periods (only 1 hour at a time)</li> <li>• Prioritise your tasks to ensure the best use of your energy.</li> <li>• Eat a well balanced diet and drink plenty of fluids (unless you are fluid restricted).</li> <li>• Try some gentle exercise daily.</li> <li>• Allow your friends and family to help.</li> <li>• <b>Tell your doctor or nurse if you get any of the symptoms listed above.</b></li> </ul>
<b>Skin changes</b>	<ul style="list-style-type: none"> <li>• Your skin may become dry, and you may notice changes to areas of your skin that have been exposed to the sun.</li> <li>• Keep your skin moisturised with a cream such as sorbolene or aqueous cream.</li> <li>• Avoid direct sunlight.</li> <li>• Protect your skin from the sun by wearing a wide-brimmed hat, sun-protective clothing, sunglasses and sunscreen of SPF 50 or higher.</li> <li>• <b>Tell your doctor or nurse if you notice any skin changes.</b></li> </ul>
<b>Extra fluid in the body (fluid retention)</b>	<ul style="list-style-type: none"> <li>• You may gain weight over a short amount of time.</li> <li>• Your hands and feet may become swollen, appear red or feel hot and uncomfortable.</li> <li>• Wear loose clothing and shoes that are not too tight.</li> <li>• Try not to stand up or walk around too much at one time.</li> <li>• If your ankles or legs get swollen, try raising them.</li> <li>• Make sure that any cuts or areas of broken skin are treated as soon as possible.</li> <li>• <b>Tell your doctor or nurse as soon as possible if you get any of the symptoms listed above or gain 1 to 2 kg in a week.</b></li> <li>• <b>Tell your doctor or nurse immediately or go to the nearest hospital Emergency Department if you become short of breath.</b></li> </ul>
<b>Hand-foot syndrome (palmar-plantar erythrodysesthesia)</b>	<ul style="list-style-type: none"> <li>• The palms of your hands and soles of your feet may become: <ul style="list-style-type: none"> <li>◦ red and hot</li> <li>◦ swollen</li> <li>◦ painful and tender</li> <li>◦ blistered.</li> </ul> </li> <li>• The skin in the area may also peel.</li> <li>• Moisturise your hands and feet daily with sorbolene or aqueous cream.</li> <li>• Keep your hands and feet clean and dry.</li> <li>• Avoid hot water, instead use lukewarm water to bathe.</li> <li>• Avoid direct sunlight.</li> <li>• Avoid unnecessary walking, jogging or exercise.</li> <li>• Wear cotton socks and avoid tight-fitting shoes.</li> <li>• <b>Tell your doctor or nurse as soon as possible if you notice any skin changes on your hands or feet.</b></li> </ul>
<b>Stomach pain</b>	<ul style="list-style-type: none"> <li>• You may get: <ul style="list-style-type: none"> <li>◦ dull aches</li> <li>◦ cramping or pain</li> <li>◦ bloating or flatulence (gas).</li> </ul> </li> <li>• <b>Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have stomach pain that you are unable to control.</b></li> </ul>

<b>Eye problems</b>	<ul style="list-style-type: none"> <li>• You may get: <ul style="list-style-type: none"> <li>◦ eye pain</li> <li>◦ red, sore or swollen eyes</li> <li>◦ blurred vision</li> <li>◦ watery or gritty eyes</li> <li>◦ changes in your eyesight</li> <li>◦ sensitivity to sunlight.</li> </ul> </li> <li>• Protect your eyes from the weather (sun and wind) by wearing sunglasses, especially if you have lost your eyelashes.</li> <li>• <b>Tell your doctor or nurse if you get any of the symptoms listed above. Eye drops may help with your symptoms.</b></li> </ul>
<b>Skin that is more sensitive to the sun (photosensitivity)</b>	<ul style="list-style-type: none"> <li>• After being out in the sun you may develop a rash like a bad sunburn.</li> <li>• Your skin may become red, swollen and blistered.</li> <li>• Avoid direct sunlight.</li> <li>• Protect your skin from the sun by wearing sun-protective clothing, a wide-brimmed hat, sunglasses and a sunscreen of SPF 50 or higher.</li> <li>• <b>Tell your doctor or nurse if you get any of the symptoms listed above.</b></li> </ul>

Late (onset weeks to months)	
<b>Low red blood cells (anaemia)</b>	<ul style="list-style-type: none"> <li>You may feel dizzy, light-headed, tired and appear more pale than usual.</li> <li>Tell your doctor or nurse if you have any of these signs or symptoms. You might need a blood transfusion.</li> <li><b>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.</b></li> </ul>
<b>Hair thinning</b>	<ul style="list-style-type: none"> <li>Your hair may become dry and may break easily.</li> <li>You may lose some of your hair.</li> <li>Use a gentle shampoo and a soft hairbrush.</li> <li>Take care with hair products like hairspray, hair dye, bleaches and perms.</li> <li>Protect your scalp from the cold with a hat or scarf.</li> <li>Protect your scalp from the sun with a hat and sunscreen of SPF 50 or higher.</li> <li>Ask your doctor or nurse about the <a href="http://www.lgfb.org.au">Look Good Feel Better</a> program (www.lgfb.org.au)</li> </ul>
<b>High blood bilirubin levels (hyperbilirubinaemia)</b>	<ul style="list-style-type: none"> <li>You may get: <ul style="list-style-type: none"> <li>yellowing of your skin or eyes</li> <li>itchy skin</li> <li>pain or tenderness in your stomach</li> <li>nausea and vomiting</li> <li>loss of appetite.</li> </ul> </li> <li>You will have regular blood tests to check how well your liver is working.</li> <li><b>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.</b></li> </ul>
<b>Lung problems</b>	<ul style="list-style-type: none"> <li>Lung problems are rare, but can be serious. They may occur throughout treatment or after the completion of treatment.</li> <li>You may get: <ul style="list-style-type: none"> <li>shortness of breath</li> <li>fever</li> <li>dry cough</li> <li>wheezing</li> <li>fast heartbeat</li> <li>chest pain.</li> </ul> </li> <li>Your doctor will monitor how well your lungs are working during your treatment.</li> <li><b>Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have chest pain or become short of breath.</b></li> </ul>
<b>Red blood cell and kidney damage (haemolytic uraemic syndrome)</b>	<ul style="list-style-type: none"> <li>This side effect is rare, but can be very serious.</li> <li><b>Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if it has been longer than 12 hours since you have emptied your bladder or if you have any of the following signs or symptoms:</b> <ul style="list-style-type: none"> <li><b>black, tarry bowel motions (stools, poo)</b></li> <li><b>blood in your urine or are not urinating as often</b></li> <li><b>pinpoint red spots on your skin</b></li> <li><b>major bruising</b></li> <li><b>a fever</b></li> <li><b>shortness of breath</b></li> <li><b>a severe headache</b></li> <li><b>confusion.</b></li> </ul> </li> </ul>

## 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**

- 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 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.

### **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

### Pancreatic cancer information

- Australian Pancreatic Cancer Genome Initiative – [pancreaticcancer.net.au](http://pancreaticcancer.net.au)
- Pancare foundation – [pancare.org.au](http://pancare.org.au)

### General cancer information and support

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

### Additional notes:

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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](http://www.eviq.org.au)

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