

Pancreas advanced capecitabine chemoradiation

ID: 1757 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

This protocol is based on limited evidence; refer to the evidence section of this protocol for more information.

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 advanced fluorouracil chemoradiation](#)
- [Pancreas definitive/neoadjuvant EBRT chemoradiation](#)

Treatment schedule - Overview

Cycle 1 and further cycles

Drug	Dose	Route	Day
Capecitabine	830 mg/m ² TWICE a day	PO	1 to 5

Frequency: 7 days

Cycles: with concurrent radiation therapy (usually 5 to 6 weeks)

Notes:

Radiation therapy is given as 50.4 Gy given as 28 fractions (1.8 Gy/fraction) on Mondays to Fridays for 5 to 6 weeks.

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

Capecitabine comes in two tablet strengths, **500 mg** and **150 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. For example, if the total daily dose is 2500 mg, consider a split dose of 1000 mg (2x 500 mg) in the morning and 1500 mg (3x 500 mg) in the evening.

Cost: ~ \$30 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 and further cycles

Day 1 to 5		
Capecitabine	830 mg/m ² (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.

Radiation therapy is given as 50.4 Gy given as 28 fractions (1.8 Gy/fraction) on Mondays to Fridays for 5 to 6 weeks.

Frequency: 7 days

Cycles: with concurrent radiation therapy (usually 5 to 6 weeks)

Indications and patient population

Indications:

- Locally advanced non-metastatic cancer of the pancreas in patients with good performance status and who have not progressed on first-line chemotherapy.

Cautions:

- patients older than 80 years of age may experience a higher incidence of gastrointestinal Grade 3/4 events.

Clinical information

Safety alert fluoropyrimidines	<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 medication safety alert for infusional fluorouracil and fluoropyrimidine overdose or overexposure</p>
Caution with oral anti-cancer drugs	<p>Select links for information on the safe prescribing, dispensing and administration of orally administered anti-cancer drugs.</p> <p>Read more about the COSA guidelines and oral anti-cancer therapy</p>
Emetogenicity minimal or low	<p>No routine prophylaxis required. If patients experience nausea and/or vomiting, consider using the low emetogenic risk regimen.</p> <p>Read more about preventing anti-cancer therapy induced nausea and vomiting</p>
Cardiac toxicity	<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 cardiac toxicity associated with anti-cancer drugs</p>

Dihydropyrimidine dehydrogenase (DPD) enzyme deficiency	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. Read more about dihydropyrimidine dehydrogenase (DPD) enzyme deficiency
Hyperbilirubinaemia	Capecitabine can induce hyperbilirubinaemia which may require an interruption in treatment (see dose modifications).
Diarrhoea	Antidiarrhoeals (e.g. loperamide) are usually prescribed with this treatment. Read more about treatment induced diarrhoea
Growth factor support	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 PBS website
Blood tests	FBC, EUC and LFTs at baseline, then repeat weekly for 2 weeks, then every 2 weeks if stable. INR 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.

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.

Haematological toxicity	
ANC x 10⁹/L (pre-treatment blood test)	
1.0 to less than 1.5	Refer to local institutional guidelines; it is the view of the expert clinicians that treatment should continue if patient is clinically well.
0.5 to less than 1.0	Delay treatment until recovery
less than 0.5	Delay treatment until recovery and consider reducing capecitabine by 25%
Febrile neutropenia	Delay treatment until recovery and consider reducing capecitabine by 25%
Platelets x 10⁹/L (pre-treatment blood test)	
75 to less than 100	The general recommendation is to delay, however if the patient is clinically well it may be appropriate to continue treatment; refer to treating team and/or local institutional guidelines.
50 to less than 75	Delay treatment until recovery
less than 50	Delay treatment until recovery and consider reducing capecitabine by 25%
Renal impairment	
Creatinine clearance (mL/min)	
30 to 50	Reduce capecitabine by 25%
less than 30	Omit capecitabine
Hepatic impairment	
Hepatic dysfunction	
Mild	No dose modification necessary
Moderate	Reduce capecitabine by 25%
Severe	Reduce capecitabine by 50%
Treatment related Grade 3 or 4 hyperbilirubinaemia	Delay treatment until toxicity resolves to Grade 2 or less and reduce the dose of capecitabine for subsequent cycles as recommended above
Mucositis and stomatitis	
Grade 2	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 st occurrence: No dose reduction 2 nd occurrence: Reduce capecitabine by 25% 3 rd occurrence: Reduce capecitabine by 50% 4 th occurrence: Omit capecitabine
Grade 3 or Grade 4	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 st occurrence: Reduce capecitabine by 50% 2 nd occurrence: Omit capecitabine
Diarrhoea	
Grade 2	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 st occurrence: No dose reduction 2 nd occurrence: Reduce capecitabine 25% 3 rd occurrence: Reduce capecitabine by 50% 4 th occurrence: Omit capecitabine

Diarrhoea

Grade 3 or Grade 4	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 st occurrence: Reduce capecitabine by 50% 2 nd occurrence: Omit capecitabine
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Hand foot syndrome (link to [Hand foot syndrome \(Palmar-plantar erythrodysesthesia\)](#))

Grade 2	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 st occurrence: No dose reduction 2 nd occurrence: Reduce capecitabine 25% 3 rd occurrence: Reduce capecitabine by 50% 4 th occurrence: Omit capecitabine
Grade 3	Delay treatment until toxicity has resolved to Grade 1 or less and reduce the dose as follows: 1 st occurrence: Reduce capecitabine by 50% 2 nd occurrence: Omit capecitabine

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
Sorivudine* and analogues (e.g. brivudine*)	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
Warfarin and other drugs metabolised by CYP2C9 (e.g. phenytoin etc.)	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)
Allopurinol	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

General		
	Interaction	Clinical management
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 to 5

Administer concurrently during radiation therapy

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.

Pre treatment medication

Verify antiemetics taken or administer as prescribed.

🕒 Chemotherapy - Time out

Capecitabine

- administer orally TWICE a day concurrently with the radiation therapy treatment
- 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 30 minutes after the end of a meal
- the first dose of capecitabine should ideally be taken at least 1 to 2 hours before the first fraction of radiation therapy with subsequent doses taken in the morning after breakfast and in the evening after the evening meal including on the last day of treatment
- 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)

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)

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

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
Thrombocytopenia	A reduction in the normal levels of functional platelets, increasing the risk of abnormal bleeding. Read more about thrombocytopenia
Diarrhoea	Read more about treatment induced diarrhoea
Ocular changes	Symptoms may include eye pain, blurred vision, blepharitis, uveitis, optic neuritis, tear duct stenosis, conjunctivitis, hyperlacrimation, watery or dry eyes and photophobia.
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
Actinic keratoses flare	Pre-existing actinic keratoses (AKs) can become more inflamed and scaly as a result of immunosuppression. Read more about actinic keratoses flare
Fatigue	Read more about fatigue
Palmar-plantar erythrodysesthesia (PPE) - hand-foot syndrome (HFS)	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 hand-foot syndrome associated with chemotherapy
Photosensitivity	Increased sensitivity to ultraviolet (UV) light resulting in an exaggerated sunburn-like reaction accompanied by stinging sensations and urticaria.
Abdominal pain	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.

Late (onset weeks to months)	
Anaemia	Abnormally low levels of red blood cells (RBCs) or haemoglobin in the blood. Read more about anaemia
Hyperbilirubinaemia	An abnormal increase in the amount of bilirubin circulating in the blood which may result in jaundice.

Evidence

There is conflicting evidence for the role of chemoradiation therapy in unresectable locally advanced pancreatic cancer. Chemoradiation therapy increases overall survival when compared with best supportive care or compared with radiation therapy alone. Chemoradiation therapy is not superior to chemotherapy in terms of survival.^{1,2}

The concept of sequential chemotherapy followed by chemo-radiation is founded on the hypothesis that a period of initial disease control with chemotherapy alone might allow the selection of patients without occult micro-metastatic disease, who might benefit from radiation therapy in terms of local control and survival.

A search of the literature did not find strong evidence to support the use of capecitabine as the chemotherapy backbone with radiation therapy, however, it is commonly used in other cancers. The expert reference panel supported publication of the protocol on the basis of the information summarised below.

The evidence for chemoradiation therapy after initial chemotherapy is largely based on retrospective data^{3,4} and the small exploratory randomised phase II SCALOP study.⁵ The combination of radiation therapy with capecitabine was less toxic than the combination with gemcitabine, despite gemcitabine being given at a fairly low dose. This benefit was achieved with no compromise

in progression-free survival and local control, and an apparent improvement in overall survival. The good efficacy and toxicity profile seems to favour capecitabine for combination with radiation therapy in this setting, which suggests that capecitabine could be favoured as a template regimen in trials to assess new radiosensitisers or radiation therapy dose escalation.

The use of CRT in LAPC has decreased given the uncertain benefit in the LAP-07 trial.⁶ In this study, at a median follow-up of 36 months, there was no statistically significant difference in overall survival between chemotherapy alone versus chemotherapy followed by chemo-radiation therapy (OS 16.5 vs 13.3 months, p=0.83), however, CRT did show an improvement in local control.⁷ This study has been criticised for having several radiation therapy deviations and that a subset of patients randomly assigned to receive chemoradiation therapy did not receive treatment. The formal publication of this trial is awaited.

Source	Study & year published	Supports use	Is the dose and regimen consistent with the protocol?	Comments
Phase III studies	Hammel et al. ⁶ (LAP-07) abstract 2013	No	No	CRT vs CT following induction CT. Capecitabine 800 mg/m ² twice a day during RT (54 Gy)
Phase II studies	Mukherjee et al. ⁵ (SCALOP), 2013	Yes	Yes	Cape CRT vs Gem CRT following induction CT. Capecitabine 830 mg/m ² twice a day during RT (50.4 Gy)
Observational studies	Krishnan et al. 2007 ⁴	Yes	No	CRT vs CRT following induction CT. Capecitabine 800-900 mg/m ² twice a day during RT (30 Gy)
	Kim et al 2013 ⁸	Yes	No	Cape CRT vs bolus 5FU CRT. Capecitabine 800 mg/m ² twice a day during RT (55.8 Gy)
Guidelines	Date published/revised	Supports Use	Is the dose and regimen consistent with the protocol?	Comments
NCCN	v.2 2015	Yes	-	-
BCCA	Feb 2014	Yes	No	Capecitabine 825 mg/m ² twice a day during RT
CCO	-	N/A	-	-

Efficacy

Outcome ⁵	Capecitabine (n=35)	Gemcitabine (n=36)	Hazard ratio
Median progression-free survival	12.0 months	10.4 months	0.60 (95% CI 0.32-1.12;p=0.11)
Median local progression-free survival	14.6 months	12.0 months	-
Distant progression-free survival	14.3 months	11.9 months	-
Median overall survival	15.2 months	13.4 months	0.39 (95% CI 0.18-0.81;p=0.012)

Outcome ⁵	Capecitabine (n=35)	Gemcitabine (n=36)	Hazard ratio
Objective disease response at 26 weeks from registration			
Complete response	6%	0	-
Partial response	17%	19%	-
Stable disease	63%	67%	-

Toxicity

In the SCALOP trial, compared to pre-CRT baseline (week 17), at the end of CRT (week 23), patients on Cape-CRT arm experienced significantly better HRQL outcomes in terms of cognitive functioning (p=0.04), fatigue (p=0.05), bloating (p=0.04) and dry mouth (p=0.03). The differences were no longer significant at week 26 or 39 apart from cognitive function scores (p=0.01) and dry mouth (p<0.01), which remained significant at week 39.⁹

The better HRQL in the Cape-CRT arm further supports the use of Capecitabine rather than Gemcitabine as concomitant chemotherapy with radiation in locally advanced pancreatic cancer.

Grade 3-4 toxic effects ⁵	Induction chemotherapy (all randomised patients, n=74) %	Chemoradiation therapy	
		Capecitabine (n=34) %	Gemcitabine (n=38) %
Any	55	12	37
Haematological	38	0	18
Haemoglobin	3	0	0
Leucocytes	14	0	13
Absolute neutrophil count	38	0	11
Non-haematological	32	12	26
Constitutional symptoms	3	6	13
Fatigue	3	6	11
Hand-foot syndrome	5	0	0
Gastrointestinal symptoms	9	0	16
Diarrhoea	4	0	8
Nausea/vomiting	1	0	8
Anorexia	0	0	8
Infection	11	0	5
Febrile neutropenia	3	0	3

References

- 1 Yip, D., C. Karapetis, A. Strickland, et al. 2006. "Chemotherapy and radiotherapy for inoperable advanced pancreatic cancer." *Cochrane Database Syst Rev*(3):CD002093.
- 2 Sultana, A., C. Tudur Smith, D. Cunningham, et al. 2007. "Systematic review, including meta-analyses, on the management of locally advanced pancreatic cancer using radiation/combined modality therapy." *Br J Cancer* 96(8):1183-1190.
- 3 Huguet, F., T. Andre, P. Hammel, et al. 2007. "Impact of chemoradiotherapy after disease control with chemotherapy in locally advanced pancreatic adenocarcinoma in GERCOR phase II and III studies." *J Clin Oncol* 25(3):326-331.
- 4 Krishnan, S., V. Rana, N. A. Janjan, et al. 2007. "Induction chemotherapy selects patients with locally advanced, unresectable pancreatic cancer for optimal benefit from consolidative chemoradiation therapy." *Cancer* 110(1):47-55.

- 5 Mukherjee, S., C. N. Hurt, J. Bridgewater, et al. 2013. "Gemcitabine-based or capecitabine-based chemoradiotherapy for locally advanced pancreatic cancer (SCALOP): a multicentre, randomised, phase 2 trial." *Lancet Oncol* 14(4):317-326.
- 6 Hammel, P., F. Huguet, J. Van Laethem, et al. 2013. "Comparison of chemoradiotherapy (CRT) and chemotherapy (CT) in patients with a locally advanced pancreatic cancer (LAPC) controlled after 4 months of gemcitabine with or without erlotinib: Final results of the international phase III LAP 07 study." In *ASCO Annual Meeting Proceedings*.
- 7 Huguet, F., P. Hammel, D. Vernerey, et al. 2014. "Impact of chemoradiotherapy (CRT) on local control and time without treatment in patients with locally advanced pancreatic cancer (LAPC) included in the international phase III LAP 07 study." *ASCO Meeting Abstracts* 32(15_suppl):4001.
- 8 Kim, Y. J., W. J. Lee, S. M. Woo, et al. 2013. "Comparison of capecitabine and 5-fluorouracil in chemoradiotherapy for locally advanced pancreatic cancer." *Radiat Oncol* 8:160.
- 9 Mukherjee, S., C. Hurt, P. Dutton, et al. 2014. "Impact of gemcitabine (Gem)- or capecitabine (Cape)-based chemoradiation (CRT) on health-related quality of life (HRQL) in patients with locally advanced pancreatic cancer (LAPC): Outcomes from the randomized phase II SCALOP trial." *ASCO Meeting Abstracts* 32(15_suppl):4126.

History

Version 5

Date	Summary of changes
10/09/2020	Protocol and patient information title updated- 'advanced' added. Version number changed to V.5.
25/09/2020	Protocol reviewed electronically by the Medical Oncology Reference committee. Nil changes. Next 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.
20/10/2022	Protocol reviewed electronically by Medical Oncology Reference Committee. No changes. Next review 2 years.

Version 4

Date	Summary of changes
08/10/2019	Clinical information updated with PBS expanded indications for GCSF.
18/12/2019	ID 3581 Pancreas adenocarcinoma definitive/neoadjuvant EBRT chemoradiation added as a related page.

Version 3

Date	Summary of changes
02/10/2015	New protocol reviewed by committee virtually.
23/10/2015	Approved and published on eviQ.
10/11/2016	The following change made post Medical Oncology Reference Committee meeting held on 21 October 2016: link to AGITG and ANZCTR added.
16/12/2016	Dissolving capecitabine information added to administration and patient information.
31/05/2017	Transferred to new eviQ website. Version number changed to V.2.
16/02/2018	Protocol reviewed at Medical Oncology Reference Committee Meeting. Fluoropyrimidine overdose or overexposure warning added. Review in 2 years.
10/05/2018	Haematological dose modifications updated as per consensus of the expert clinician group. DPD enzyme deficiency wording in clinical information updated. Fluoropyrimidine safety alert in clinical information added. Version changed to number V.3.

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

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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/1757>

14 Jul 2023

Patient information - Pancreas cancer advanced - Capecitabine with radiation therapy

Patient's name:

Your treatment

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

Capecitabine with radiation therapy		
Capecitabine is taken on the days you are having radiation therapy. Your doctor will advise you when to stop taking the tablets.		
Day	Treatment	How it is given
On the days you are having radiation therapy, usually Monday to Friday each week	Capecitabine <i>(KAP-e-SYE-ta-been)</i>	Take orally TWICE a day 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.

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.



IMMEDIATELY go to your nearest hospital Emergency Department, or contact your doctor or nurse if you have any of the following at any time:

Emergency contact details

Ask your doctor or nurse from your treating team who to contact if you have a problem

- a temperature of 38°C 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:.....

.....

.....

.....

.....

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">• 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.
Heart problems	<ul style="list-style-type: none">• You may get:<ul style="list-style-type: none">◦ chest pain or tightness◦ shortness of breath◦ an abnormal heartbeat• Tell your doctor if you have a history of heart problems or high blood pressure.• Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get any of the symptoms listed above.
Taste and smell changes	<ul style="list-style-type: none">• 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.
Early (onset days to weeks)	
Infection risk (neutropenia)	<ul style="list-style-type: none">• 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:<ul style="list-style-type: none">◦ 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.

<p>Low platelets (thrombocytopenia)</p>	<ul style="list-style-type: none"> • 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.
<p>Diarrhoea</p>	<ul style="list-style-type: none"> • You may get bowel motions (stools, poo) that are more frequent or more liquid. • You may also get bloating, cramping or pain. • Take your antidiarrhoeal medication as directed by your doctor. • Drink plenty of fluids (unless you are fluid restricted). • Eat and drink small amounts more often. • Avoid spicy foods, dairy products, high fibre foods, and coffee. • Ask your doctor or nurse for eviQ patient information - Diarrhoea during cancer treatment. • 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.
<p>Eye problems</p>	<ul style="list-style-type: none"> • You may get: <ul style="list-style-type: none"> ◦ eye pain ◦ red, sore or swollen eyes ◦ blurred vision ◦ watery or gritty eyes ◦ changes in your eyesight ◦ sensitivity to sunlight. • Protect your eyes from the weather (sun and wind) by wearing sunglasses, especially if you have lost your eyelashes. • Tell your doctor or nurse if you get any of the symptoms listed above. Eye drops may help with your symptoms.
<p>Mouth pain and soreness (mucositis)</p>	<ul style="list-style-type: none"> • You may have: <ul style="list-style-type: none"> ◦ 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: <ul style="list-style-type: none"> ◦ 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.

Skin changes	<ul style="list-style-type: none"> • Your skin may become dry, and you may notice changes to areas of your skin that have been exposed to the sun. • Keep your skin moisturised with a cream such as sorbolene or aqueous cream. • Avoid direct sunlight. • Protect your skin from the sun by wearing a wide-brimmed hat, sun-protective clothing, sunglasses and sunscreen of SPF 50 or higher. • Tell your doctor or nurse if you notice any skin changes.
Tiredness and lack of energy (fatigue)	<ul style="list-style-type: none"> • 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.
Hand-foot syndrome (palmar-plantar erythrodysesthesia)	<ul style="list-style-type: none"> • The palms of your hands and soles of your feet may become: <ul style="list-style-type: none"> ◦ red and hot ◦ swollen ◦ painful and tender ◦ blistered. • The skin in the area may also peel. • Moisturise your hands and feet daily with sorbolene or aqueous cream. • Keep your hands and feet clean and dry. • Avoid hot water, instead use lukewarm water to bathe. • Avoid direct sunlight. • Avoid unnecessary walking, jogging or exercise. • Wear cotton socks and avoid tight-fitting shoes. • Tell your doctor or nurse as soon as possible if you notice any skin changes on your hands or feet.
Skin that is more sensitive to the sun (photosensitivity)	<ul style="list-style-type: none"> • After being out in the sun you may develop a rash like a bad sunburn. • Your skin may become red, swollen and blistered. • Avoid direct sunlight. • Protect your skin from the sun by wearing sun-protective clothing, a wide-brimmed hat, sunglasses and a sunscreen of SPF 50 or higher. • Tell your doctor or nurse if you get any of the symptoms listed above.
Stomach pain	<ul style="list-style-type: none"> • You may get: <ul style="list-style-type: none"> ◦ dull aches ◦ cramping or pain ◦ bloating or flatulence (gas). • 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.

Late (onset weeks to months)	
Low red blood cells (anaemia)	<ul style="list-style-type: none"> 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.
High blood bilirubin levels (hyperbilirubinaemia)	<ul style="list-style-type: none"> You may get: <ul style="list-style-type: none"> 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.

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.

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

Pancreatic cancer information

- Australian Pancreatic Cancer Genome Initiative – pancreaticcancer.net.au
- Pancare foundation – pancare.org.au

General cancer information and support

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

