Breast neoadjuvant TCHP (DOCEtaxel, cARBOplatin, trastuzumab and pERTUZumab)

ID: 3736 v.2 **Endorsed**

⚠ ADDIKD Carboplatin dosing:

For dosing carboplatin, ADDIKD recommends that:

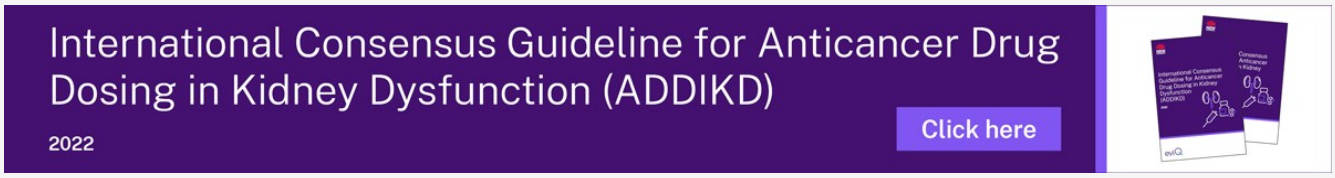
- Directly measured glomerular filtration rate (mGFR) is the preferred kidney function value in the Calvert formula, especially where estimated kidney function may be unreliable for accurate therapeutic dosing.
- Where mGFR is unavailable, eGFR adjusted to an individual's body surface area (BSA-adjusted eGFR) is a suitable alternative for use in the Calvert formula.
- Kidney function should not be capped at 125 mL/min for use in the Calvert formula.
- Recalculation of carboplatin doses at each cycle is unnecessary, except when baseline kidney function (e.g., eGFR) alters by > 20% or when there is a change in the clinical status of the patient.

For further information refer the eviQ Factsheet around carboplatin dosing and the carboplatin drug monograph within the ADDIKD guideline. To assist with calculations, use the eviQ Estimated Glomerular Filtration Rate (eGFR) and carboplatin dose calculators.

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

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

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



Related pages:

- Breast neoadjuvant PACLitaxel weekly, pERTUZumab and trastuzumab three weekly
- Breast neoadjuvant DOCEtaxel, pERTUZumab and trastuzumab
- Breast trastuzumab subcutaneous
- Breast adjuvant/neoadjuvant trastuzumab three weekly
- Anti-cancer therapy before breast cancer surgery (neoadjuvant therapy)

Treatment schedule - Overview

Cycle 1

Drug	Dose	Route	Day
pERTUZumab	840 mg (loading dose only)	IV infusion	1
Trastuzumab	8 mg/kg (loading dose only)	IV infusion *	1
DOCEtaxel	75 mg/m^2	IV infusion	1
cARBOplatin	6 AUC **	IV infusion	1
Pegfilgrastim	6 mg	Subcut	2

Cycle 2 to 6

Drug	Dose	Route	Day
pERTUZumab	420 mg (subsequent doses)	IV infusion	1
Trastuzumab	6 mg/kg (subsequent doses)	IV infusion *	1
DOCEtaxel	75 mg/m^2	IV infusion	1
cARBOplatin	6 AUC **	IV infusion	1
Pegfilgrastim	6 mg	Subcut	2

*Trastuzumab is available as a subcutaneous formulation administered at a dose of 600 mg every three weeks. Subcutaneous trastuzumab has a similar safety profile to intravenous trastuzumab and is non-inferior in terms of pharmacokinetic profile and efficacy and therefore is a valid alternative route of administration compared to standard intravenous trastuzumab. Link to Breast trastuzumab subcutaneous protocol.

**If estimated GFR is greater than 125 mL/min (i.e. 6 AUC dose greater than 900 mg), obtaining direct measurement rather than an estimated renal function and/or dose capping is strongly recommended.

Frequency: 21 days

Cycles: 6 cycles prior to surgery

Notes:
Depending on response to neoadjuvant therapy, the following treatments should be continued post surgery:

- trastuzumab +/- pertuzumab (until total trastuzumab equal to 17 cycles) OR
- trastuzumab emtansine for 14 cycles

Drug status: Carboplatin and docetaxel are on the PBS general schedule

Trastuzumab is PBS authority

Pertuzumab is TGA registered but not PBS listed for this indication

Cost: ~ $3,560 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

Day before chemotherapy		
Dexamethasone	8 mg (PO)	TWICE a day with or after food

Day 1		
Netupitant	300 mg (PO)	60 minutes before chemotherapy (fixed dose preparation with palonosetron)
Palonosetron	0.5 mg (PO)	60 minutes before chemotherapy (fixed dose preparation with netupitant)
Dexamethasone	8 mg (PO)	60 minutes before chemotherapy
pERTUZumab	840 mg (IV infusion)	in 250 mL sodium chloride 0.9% over 60 minutes (loading dose; cycle 1 only)
Trastuzumab	8 mg/kg (IV infusion)	in 250 mL sodium chloride 0.9% over 90 minutes

Day 1		
		(loading dose; cycle 1 only)*
DOCEtaxel	75 mg/m^2 (IV infusion)	in 250 mL to 500 mL sodium chloride 0.9% over 60 minutes
cARBOplatin	6 AUC (IV infusion)	in 500 mL glucose 5% over 30 to 60 minutes (note: if estimated GFR is greater than 125 mL/min (i.e. 6 AUC dose greater than 900 mg), obtaining direct measurement rather than an estimated renal function and/or dose capping is strongly recommended)

Day 2		
Dexamethasone	8 mg (PO)	ONCE a day (or in divided doses) with or after food
Pegfilgrastim	6 mg (Subcut)	inject subcutaneously on day 2 at least 24 hours after chemotherapy

Day 3		
Dexamethasone	8 mg (PO)	ONCE a day (or in divided doses) with or after food. Note: dexamethasone dose on day 3 may not be required and may be reduced or omitted at the clinicians discretion**

Cycle 2 to 6

Day before chemotherapy		
Dexamethasone	8 mg (PO)	TWICE a day with or after food

Day 1		
Netupitant	300 mg (PO)	60 minutes before chemotherapy (fixed dose preparation with palonosetron)
Palonosetron	0.5 mg (PO)	60 minutes before chemotherapy (fixed dose preparation with netupitant)
Dexamethasone	8 mg (PO)	60 minutes before chemotherapy
pERTUZumab	420 mg (IV infusion)	in 250 mL sodium chloride 0.9% over 30 to 60 minutes (if the initial loading dose was well tolerated)
Trastuzumab	6 mg/kg (IV infusion)	in 250 mL sodium chloride 0.9% over 30 minutes (if the initial loading dose was well tolerated)*
DOCEtaxel	75 mg/m^2 (IV infusion)	in 250 mL to 500 mL sodium chloride 0.9% over 60 minutes
cARBOplatin	6 AUC (IV infusion)	in 500 mL glucose 5% over 30 to 60 minutes (note: if estimated GFR is greater than 125 mL/min (i.e. 6 AUC dose greater than 900 mg), obtaining direct measurement rather than an estimated renal function and/or dose capping is strongly recommended)

Day 2		
Dexamethasone	8 mg (PO)	ONCE a day (or in divided doses) with or after food
Pegfilgrastim	6 mg (Subcut)	inject subcutaneously on day 2 at least 24 hours after chemotherapy

Day 3		
Dexamethasone	8 mg (PO)	ONCE a day (or in divided doses) with or after food. Note: dexamethasone dose on day 3 may not be required and may be reduced or omitted at the

Day 3		
		clinicians discretion**

Depending on response to neoadjuvant therapy, the following treatments should be continued post surgery:

- trastuzumab +/- pertuzumab (until total trastuzumab equal to 17 cycles) OR
- trastuzumab emtansine for 14 cycles

*Trastuzumab is available as a subcutaneous formulation administered at a dose of 600 mg every three weeks. Subcutaneous trastuzumab has a similar safety profile to intravenous trastuzumab and is non-inferior in terms of pharmacokinetic profile and efficacy and therefore is a valid alternative route of administration compared to standard intravenous trastuzumab. Link to Breast trastuzumab subcutaneous protocol.

**Link to ID 7 Prevention of antineoplastic induced nausea and vomiting

Frequency: 21 days

Cycles: 6 cycles prior to surgery

Indications and patient population

Indications:

- neoadjuvant treatment of operable HER-2 positive early breast cancer
  - HER-2 positive as demonstrated by in situ hybridisation (ISH).

Caution:

- ECOG performance status 2 or greater.

Exclusion:

- left ventricular ejection fraction (LVEF) of 45% or less.

Clinical information

Venous access required	IV cannula (IVC) or central venous access device (CVAD) is required to administer this treatment. Read more about central venous access device line selection
Hypersensitivity/infusion related reaction	High risk with docetaxel and pertuzumab. High risk with carboplatin. Hypersensitivity risk increases with number of cycles of carboplatin. Although hypersensitivity with trastuzumab is common, severe hypersensitivity reactions are uncommon. Use with caution in patients with dyspnoea at rest from pulmonary/cardiac conditions as increased risk of infusion related symptoms.
Premedication	The product information states that premedication is required for this treatment. Please refer to the treatment schedule for the suggested premedication regimen. This may be substituted to reflect institutional policy. Read more about premedication for prophylaxis of taxane hypersensitivity reactions

Emetogenicity MODERATE	Suggested default antiemetics have been added to the treatment schedule, and may be substituted to reflect institutional policy. Carboplatin AUC ≥ 4 is classified by MASCC/ESMO Antiemetic Guidelines 2016 and ASCO Antiemetic Guidelines 2017 as having moderate emetogenicity. However, a NK1 receptor antagonist and a $5HT_3$ receptor antagonist in combination with dexamethasone are available on the PBS for primary prophylaxis of carboplatin induced nausea and vomiting. Note: a steroid has been included both as an antiemetic and premedication for hypersensitivity in this protocol. Ensure that patients also have sufficient antiemetics for breakthrough emesis: Metoclopramide 10 mg three times a day when necessary (maximum of 30 mg/24 hours, up to 5 days) OR Prochlorperazine 10 mg PO every 6 hours when necessary. Read more about preventing anti-cancer therapy induced nausea and vomiting
Cardiac toxicity associated with HER-2 directed agents	Patients receiving HER-2 directed agents are at an increased risk of cardiotoxicity e.g. asymptomatic decrease in the left ventricular ejection fraction (LVEF) and congestive heart failure (CHF). In patients with a LVEF less than 45% and/or symptomatic heart failure HER-2 directed therapy should be avoided, except in the metastatic setting when breast cancer is life-threatening and where a cardiologist is also involved. Concurrent anthracycline and HER-2 directed therapy is not recommended for extended periods of time. Baseline and 3 monthly cardiac function tests are required during treatment. In the metastatic setting, after the first 12 months of therapy, if there are no cardiac complications, the frequency of cardiac assessments may be reduced at the discretion of the treating clinician unless there has been recent exposure to anthracyclines. Read more about cardiac toxicity associated with HER-2 targeted agents
Peripheral neuropathy	Assess prior to each treatment. If a patient experiences grade 2 or greater peripheral neuropathy, a dose reduction, delay, or omission of treatment may be required; review by medical officer before commencing treatment. Read more about peripheral neuropathy Link to chemotherapy-induced peripheral neuropathy screening tool
Biosimilar drug	Read more about biosimilar drugs on the Biosimilar Awareness Initiative page
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 and prior to each cycle. Calcium and magnesium at baseline and as clinically indicated. Recalculate carboplatin dose if significant change in weight and/or creatinine.
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).

For dosing carboplatin, ADDIKD recommends that:

- Directly measured glomerular filtration rate (mGFR) is the preferred kidney function value in the Calvert formula, especially where estimated kidney function may be unreliable for accurate therapeutic dosing.
- Where mGFR is unavailable, eGFR adjusted to an individual's body surface area (BSA-adjusted eGFR) is a suitable alternative for use in the Calvert formula.
- Kidney function should not be capped at 125 mL/min for use in the Calvert formula.
- Recalculation of carboplatin doses at each cycle is unnecessary, except when baseline kidney function (e.g., eGFR) alters by > 20% or when there is a change in the clinical status of the patient.

*For further information refer the **eviQ Factsheet** around carboplatin dosing and the carboplatin drug monograph within the ADDIKD guideline. To assist with calculations, use the eviQ **Estimated Glomerular Filtration Rate (eGFR)** and **carboplatin** dose calculators.*

Note:

- The following dose modification recommendations have been adapted from the product information and reference committee consensus.
- All dose reductions are calculated as a percentage of the starting dose.
- Dose reductions are not recommended for pertuzumab and trastuzumab.
- Pertuzumab should be discontinued if trastuzumab is discontinued.

Haematological toxicity	
ANC x 10^9/L (pre-treatment blood test)	
0.5 to less than 1.0	Delay treatment until recovery
less than 0.5	Delay treatment until recovery, consider reducing docetaxel and carboplatin by 25% for subsequent cycles
Febrile neutropenia	Delay treatment until recovery, consider reducing docetaxel and carboplatin by 25% for subsequent cycles

Haematological toxicity	
Platelets x 10^9/L (pre-treatment blood test)	
75 to less than 100	Refer to local institutional guidelines; it is the view of the expert clinicians that treatment should continue if patient is clinically well
50 to less than 75	Delay treatment until recovery
less than 50	Delay treatment until recovery, consider reducing carboplatin and docetaxel by 25% for subsequent cycles

Renal impairment
Recalculate carboplatin dose using Calvert formula

Hepatic impairment	
Hepatic dysfunction	
Minimal	Reduce docetaxel by 25%
Mild	Reduce docetaxel by 50%
Moderate/Severe	Omit docetaxel

Peripheral neuropathy	
Grade 2 which is present at the start of the next cycle	Reduce docetaxel by 25%, if persistent, reduce docetaxel by 50%
Grade 3 or Grade 4	Omit docetaxel

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

Diarrhoea	
Grade 2	Delay treatment until toxicity has resolved to Grade 1 or less and consider reducing the dose for subsequent cycles as follows: 1st occurrence: No dose reduction 2nd occurrence: Reduce docetaxel and carboplatin by 25% 3rd occurrence: Reduce docetaxel and carboplatin by 50% 4th occurrence: Omit docetaxel and carboplatin
Grade 3 or Grade 4	Delay treatment until toxicity has resolved to Grade 1 or less and consider reducing the dose for subsequent cycles as follows: 1st occurrence: Reduce docetaxel and carboplatin by 50% 2nd occurrence: Omit docetaxel and carboplatin

Cardiac toxicity	
Consider referral to a cardiologist if any of the following occur	
LVEF 40% to 45% AND/OR 10% point *or greater* decline from baseline	Delay pertuzumab and trastuzumab. Repeat LVEF assessment within 3 weeks. Consider discontinuing treatment if LVEF has not recovered to within 10% points

Cardiac toxicity	
	of baseline
LVEF less than 40%	Delay pertuzumab and trastuzumab. Repeat LVEF assessment within 3 weeks. Discontinue treatment if LVEF less than 40% is confirmed
Symptomatic Congestive Heart Failure (CHF)	Discontinue pertuzumab and trastuzumab

Missed doses of trastuzumab	
By 6 weeks or less	No dose modification necessary. Give trastuzumab as soon as possible, i.e. do not wait until the next planned cycle.
By more than 6 weeks	Reload trastuzumab with a dose of 8 mg/kg. Subsequent doses of 6 mg/kg should then be given every 3 weeks, according to the previous cycle.

Missed doses of pertuzumab	
By 6 weeks or less	No dose modification necessary. Give pertuzumab at a dose of 420 mg as soon as possible, i.e. do not wait until the next planned cycle.
By more than 6 weeks	Reload pertuzumab with a dose of 840 mg. Subsequent doses of 420 mg should then be given every 3 weeks, according to the previous cycle.

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*

Carboplatin		
	Interaction	**Clinical management**
Nephrotoxic drugs (e.g. aminoglycosides, amphotericin, cisplatin, contrast dye, frusemide, NSAIDs)	Additive nephrotoxicity	Avoid combination or monitor renal function closely
Ototoxic drugs (e.g. aminoglycosides, frusemide, NSAIDs)	Additive ototoxicity	Avoid combination or perform regular audiometric testing
Paclitaxel	Administration schedule may influence the development of myelosuppression	Minimise toxicity by administering paclitaxel first in regimens using the combination

Docetaxel		
	Interaction	**Clinical management**
CYP3A4 and P-gp inhibitors (e.g. amiodarone, aprepitant, azole-antifungals, ritonavir, lapatinib, nilotinib, sorafenib, macrolides, ciclosporin, grapefruit juice etc.)	Increased toxicity of docetaxel possible due to reduced clearance	Avoid combination or monitor for docetaxel toxicity
CYP3A4 inducers (e.g. carbamazepine, phenytoin, phenobarbitone, rifampicin, St John's wort etc.)	Reduced efficacy of docetaxel possible due to increased clearance	Avoid combination or monitor for decreased clinical response to docetaxel

Pertuzumab
No specific clinically significant drug-drug interactions

Trastuzumab		
	Interaction	**Clinical management**
Cardiotoxic drugs (e.g. anthracyclines cyclophosphamide)	Additive cardiotoxicity	Monitor cardiac function closely in patients who have previously been treated with cumulatively cardiotoxic drugs
Paclitaxel	Increased toxicity of trastuzumab possible due to reduced clearance	Monitor for trastuzumab toxicity (esp. cardiotoxicity)

NK-1 antagonist e.g. aprepitant, fosaprepitant, netupitant		
	Interaction	**Clinical management**
Dexamethasone	Increased effects/toxicity of dexamethasone due to inhibition of its metabolism via CYP3A4	Reduce dose of **antiemetic dexamethasone** by approximately 50% when adding a NK-1 antagonist. For protocols that already recommend a NK-1 antagonist, the dose reduction of **antiemetic dexamethasone** has already been taken into account. If **dexamethasone is part of the chemotherapy protocol**, dose reduction as per the product information is not routinely recommended in clinical practice and no additional dexamethasone is required for antiemetic cover.
Warfarin	Reduced anticoagulant efficacy of warfarin due to increased clearance (aprepitant induces CYP2C9). *Note interaction only applicable to aprepitant/ fosaprepitant	INR should be monitored in the 2 week period, particularly at 7 to 10 days following the administration of aprepitant/ fosaprepitant
Combined oral contraceptive	Reduced contraceptive efficacy due to increased clearance. *Note interaction only applicable to aprepitant/ fosaprepitant	Alternative non-hormonal methods should be used during and for 1 month after stopping aprepitant/ fosaprepitant
CYP3A4 inducers (e.g. carbamazepine, phenytoin, phenobarbitone, rifampicin, St John's wort etc.)	Reduced efficacy of NK-1 antagonist possible due to increased clearance	Avoid combination or monitor for decreased antiemetic effect. Consider using an alternative antiemetic regimen
CYP3A4 inhibitors (e.g. azole antifungals, clarithromycin, erythromycin, grapefruit juice, ritonavir etc.)	Increased toxicity of NK-1 antagonist possible due to reduced clearance	Avoid combination or monitor for increased adverse effects of NK-1 antagonist (e.g. headache, hiccups, constipation)
Drugs metabolised by CYP3A4 (e.g. etoposide, imatinib, irinotecan, midazolam, paclitaxel, vinblastine, vincristine etc.)	Increased effects/toxicity of these drugs possible due to inhibition of CYP3A4 by NK-1 antagonist	Avoid combination or monitor for increased toxicity especially with orally administered drugs

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

Administration

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

product information monographs via the TGA website for further information.

Day 1

Approximate treatment time: 5 hours (initial); 4 hours (subsequent)

Safe handling and waste management

Safe administration

General patient assessment prior to each day of treatment.

Peripheral neuropathy assessment tool

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) with sodium chloride 0.9%.

Insert IV cannula or access TIVAD or CVAD.

Pre treatment medication

Verify taxane premedication taken or administer as prescribed.

Verify antiemetics taken or administer as prescribed.

Treatment - Time out

Pertuzumab

- Pertuzumab is incompatible with glucose solutions. Ensure IV administration sets are flushed with 0.9% sodium chloride pre and post administration
- Administer before chemotherapy.

Initial infusion - administer pertuzumab:

- via IV infusion over 60 minutes
- flush with ~50 mL of sodium chloride 0.9%
- observe patient for hypersensitivity reaction throughout administration
- if a person develops an infusion reaction, interrupt or slow down the rate of infusion and administer appropriate treatment. Patients should be evaluated and carefully monitored until complete resolution of signs and symptoms
- following completion of infusion and before commencement of any subsequent drug infusion observe the patient and wait for 30 to 60 minutes.

Subsequent infusions - administer pertuzumab:

- if no previous hypersensitivity reaction administer via IV infusion over 30 to 60 minutes
- flush with ~50 mL of sodium chloride 0.9%
- following completion of infusion and before commencement of any subsequent drug infusion observe the patient and wait for 30 to 60 minutes.

Trastuzumab

- Trastuzumab is incompatible with glucose solutions, ensure IV administration sets are flushed with sodium chloride 0.9% pre and post administration
- Administer before chemotherapy.

Initial infusion - administer trastuzumab:

- via IV infusion over 90 minutes
- flush with ~50 mL of sodium chloride 0.9%
- observe patient for fever and chills or other infusion-related symptoms
- educate the patient about the possibility of delayed infusion-related symptoms.

Subsequent infusions - administer trastuzumab:

- if no previous hypersensitivity reaction administer via infusion over 30 minutes

- flush with ~50 mL of sodium chloride 0.9%
- observe patient for fever and chills or other infusion-related symptoms
- educate the patient about the possibility of delayed infusion-related symptoms.

Chemotherapy - Time out

Docetaxel

Prior to administration:

- assess patient for fluid retention or weight gain prior to each cycle
  - notify medical officer of any signs of fluid retention or unexplained weight gain.

The medicines information reference publications stipulate the use of non-PVC containing bags and administration sets. However, this is not consistently recommended in the product information, therefore the decision should be at the discretion of the administering unit.

Administer docetaxel (irritant with vesicant properties):

- via IV infusion over 60 minutes
- observe for hypersensitivity reactions
- flush with ~ 100 mL of sodium chloride 0.9%.

Stop infusion at first sign of reaction:

- if symptoms are mild and resolve when infusion is stopped, consider recommencing infusion after review by medical officer at a slower rate.
- for severe reactions seek medical assistance immediately and do not restart infusion.

Carboplatin

Administer carboplatin (irritant):

- via IV infusion over 30 to 60 minutes
- observe for hypersensitivity reactions
- flush with ~100 mL of sodium chloride 0.9%
- hypersensitivity risk increases with number of cycles administered.

Stop infusion at first sign of reaction:

- if symptoms are mild and resolve when infusion is stopped, consider recommencing infusion after review by medical officer at a slower rate
- for severe reactions seek medical assistance immediately and do not restart infusion.

Remove IV cannula and/or deaccess TIVAD or CVAD.

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

Discharge information

Antiemetics

- Antiemetics as prescribed.

Dexamethasone tablets

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

Antidiarrhoeals

- Antidiarrhoeals as prescribed.

Growth factor support

- Arrangements for administration if 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)	
Hypersensitivity reaction	Anaphylaxis and infusion related reactions can occur with this treatment. Read more about hypersensitivity reaction Read more about premedication for prophylaxis of taxane hypersensitivity reactions
Nausea and vomiting	Read more about prevention of treatment induced nausea and vomiting
Headache	
Flu-like symptoms	
Taste and smell alteration	Read more about taste and smell changes
Bone pain	Bone pain, usually in the lower back or pelvis, associated with G-CSF.

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
Oral mucositis	Erythematous and ulcerative lesions of the gastrointestinal tract (GIT). It commonly develops following chemotherapy, radiation therapy to the head, neck or oesophagus, and high dose chemotherapy followed by a blood and marrow transplant (BMT). Read more about oral mucositis
Fatigue	Read more about fatigue
Skin rash	Anti-cancer drugs can cause a number of changes in the skin with maculo-papular rash the most common type of drug-induced skin reaction. Read more about skin rash
Peripheral neuropathy	Typically symmetrical sensory neuropathy, affecting the fingers and toes, sometimes progressing to the hands and feet. It is associated with several classes of anti-cancer drugs. These include taxanes, platinum-based compounds, vinca alkaloids and some drugs used to treat multiple myeloma. Read more about peripheral neuropathy
Ocular changes	Symptoms may include eye pain, blurred vision, blepharitis, uveitis, optic neuritis, tear duct stenosis, conjunctivitis, hyperlacrimation, watery or dry eyes and photophobia.
Palmar-plantar erythrodysaesthesia (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
Fluid retention syndrome	Fluid retention, including peripheral oedema and weight gain, may occur with docetaxel treatment. The main risk factor for development is cumulative docetaxel dose. Pre-medication with dexamethasone may be used. Fluid retention will slowly resolve after cessation of treatment. Read more about fluid retention syndrome associated with docetaxel

Late (onset weeks to months)	
Anaemia	Abnormally low levels of red blood cells (RBCs) or haemoglobin in the blood. Read more about anaemia
Alopecia	Hair loss may occur from all parts of the body. Patients can also experience mild to moderate discomfort of the hair follicles, and rarely pain as the hair is falling out. Read more about alopecia
Nail changes	Hyperpigmentation, paronychia, onycholysis, splinter haemorrhage, pyogenic granuloma formation, subungal haematoma and subungal hyperkeratosis are some of the nail changes associated with anti-cancer drugs. Read more about nail toxicities
Pulmonary toxicity	Pulmonary toxicity may include damage to the lungs, airways, pleura and pulmonary circulation. Read more about pulmonary toxicity associated with anti-cancer drugs

Delayed (onset months to years)	
Menopausal symptoms	Irregular or absent periods, hot flushes, mood swings, sleep disturbance, night sweats, vaginal dryness, decreased libido and dyspareunia. This is caused by ovarian failure and may be temporary or permanent.
Cardiotoxicity	Cardiotoxicity is a well recognised complication of HER-2 directed agents (e.g. trastuzumab, trastuzumab emtansine, pertuzumab). Mechanistically distinct from anthracycline-induced cardiotoxicity, it typically manifests as an asymptomatic decrease in the left ventricular ejection fraction (LVEF) and less commonly as congestive heart failure (CHF). Read more about cardiac toxicity associated with HER-2 targeted agents

Evidence

A search of the literature did not find strong evidence to support the use of docetaxel, carboplatin, trastuzumab and pertuzumab (TCHP) in the neoadjuvant treatment of breast cancer. The expert reference panel supported publication of the protocol on the basis of the information summarised below. The committee was most strongly influenced by the randomised open label phase II TRYPHAENA trial by Schneeweiss et al.[1]

Source	Study & Year Published	Supports Use	Is the dose and regimen consistent with the protocol?	Comments
Phase III trials	Hurvitz et al 2018[2]	**Yes**	Yes	Trastuzumab emtansine + pertuzumab versus TCHP (comparator arm)
Phase II trials	Schneeweiss et al 2013[1]	**Yes**	Yes	Cardiac toxicity evaluation of 3 regimens: Arm A: FEC, trastuzumab plus pertuzumab x3 cycles, followed by docetaxel, trastuzumab plus pertuzumab x3 cycles Arm B: FEC x3 cycles, followed by docetaxel, trastuzumab plus pertuzumab x3 cycles Arm C: TCHP x6 cycles All arms then received surgery and

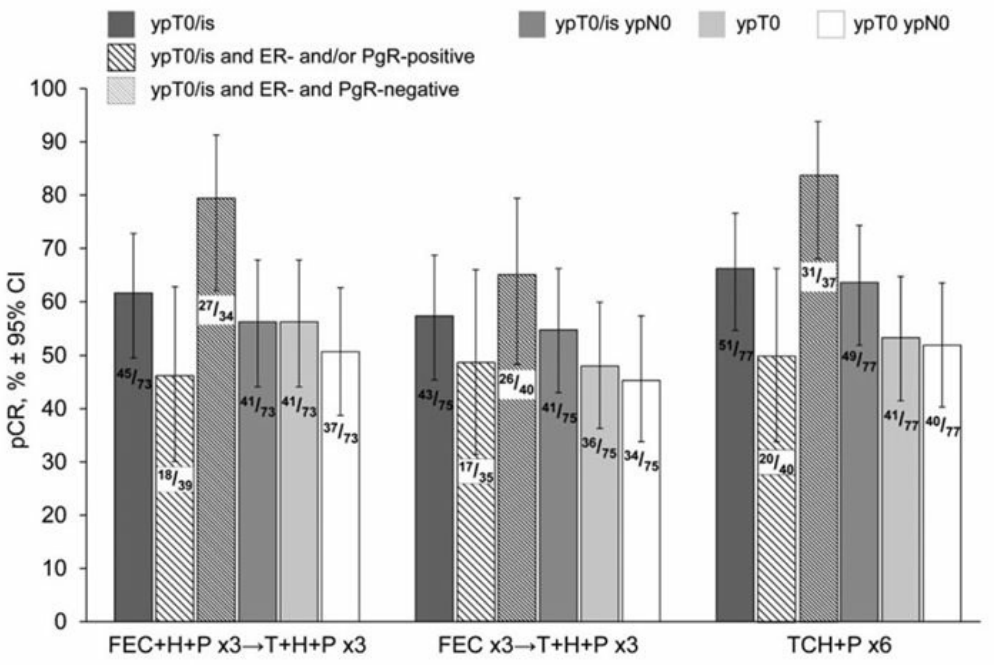
Source	Study & Year Published	Supports Use	Is the dose and regimen consistent with the protocol?	Comments
				continued trastuzumab (total 1 year treatment)

Guidelines	Date published/revised	Supports Use	Is the dose and regimen consistent with the protocol?	Comments
NCCN	V.1.2020	**Yes**	No	Pertuzumab total duration 52 weeks
BCCA	N/A	**N/A**	N/A	-
CCO	N/A	**N/A**	N/A	-
ESMO	2019	**Yes**	No doses stated	Supports use in selected higher-risk cases
NICE	2018	**Yes**	No doses stated	-

Efficacy

The combination of docetaxel, carboplatin, trastuzumab plus pertuzumab demonstrated a pathological complete response (pCR) rate of 66.2%, compared with 61.6% for Arm A and 57.3% for Arm B. The combination of trastuzumab and pertuzumab given concurrently or sequentially with an anthracycline-based, or concurrently with a carboplatin-based chemotherapy regimen, resulted in a low incidence of symptomatic left ventricular systolic dysfunction.[1]

Pathological complete response in the intention-to-treat population[1]



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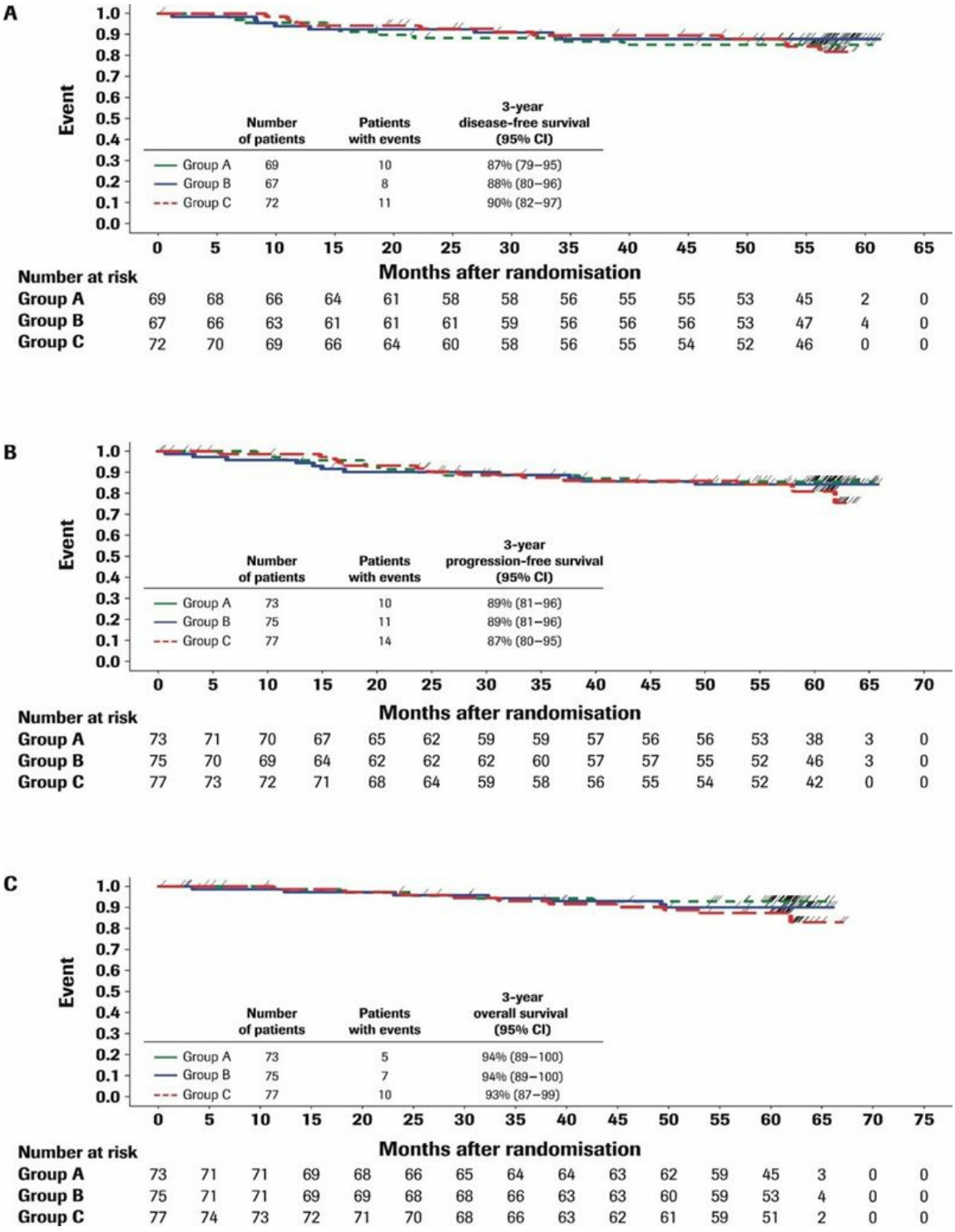
A summary of the evidence supporting the effect of this protocol is below:

Outcome	TRYPHAENA 2013[1]	KRISTINE TRIO-021 2018[2]
pCR (ypT0/is, ypN0) (%)	66.2	55.7
Rate of breast conserving surgery for those whom mastectomy was planned (%)	27	70

3-year disease-free survival results were 87% for group A, 88% for group B and 90% for group C. 3-year progression-free survival rates were 89% for group A, 89% for group B and 87% for group C. 3-year overall survival results were 94% for group A, 94% for group B and 93% for group C.[3]

Patients achieving a pCR were more likely to be disease free at 3 years (HR=0.27, 95% CI, 0.11 to 0.64).

Disease free survival (A), progression free survival (B) and overall survival (C)[3]



Toxicity

A summary of the toxicities associated with this protocol are included in the table below. The most clinically significant toxicities for this treatment are neutropenia and diarrhoea.[1]

Most common adverse events (all grades), n (%)	Arm A n = 72	Arm B n = 75	Arm C n = 76
Diarrhoea	44 (61.1)	46 (61.3)	55 (72.4)
Alopecia	35 (48.6)	39 (52.0)	41 (53.9)

Most common adverse events (all grades), n (%)	Arm A n = 72	Arm B n = 75	Arm C n = 76
Nausea	38 (52.8)	40 (53.3)	34 (44.7)
Neutropenia	37 (51.4)	35 (46.7)	37 (48.7)
Vomiting	29 (40.3)	27 (36.0)	32 (42.1)
Fatigue	26 (36.1)	27 (36.0)	32 (42.1)
Anaemia	14 (19.4)	6 (8.0)	28 (36.8)
Mucosal inflammation	17 (23.6)	15 (20.0)	13 (17.1)
Constipation	13 (18.1)	17 (22.7)	12 (15.8)
Dyspepsia	18 (25.0)	6 (8.0)	17 (22.4)
Most common adverse events (grade ≥ 3), n (%)			
Neutropenia	34 (47.2)	32 (42.7)	35 (46.1)
Febrile neutropenia	13 (18.1)	7 (9.3)	13 (17.1)
Leukopenia	14 (19.4)	9 (12.0)	9 (11.8)
Diarrhoea	3 (4.2)	4 (5.3)	9 (11.8)
Anaemia	1 (1.4)	2 (2.7)	13 (17.1)
Thrombocytopenia	0 (0.0)	0 (0.0)	9 (11.8)
Vomiting	0 (0.0)	2 (2.7)	4 (5.3)
Drug hypersensitivity	2 (2.8)	0 (0.0)	2 (2.6)
Fatigue	0 (0.0)	0 (0.0)	3 (3.9)
Alanine aminotransferase increase	0 (0.0)	0 (0.0)	3 (3.9)

References

1 Schneeweiss, A., S. Chia, T. Hickish, et al. 2013. "Pertuzumab plus trastuzumab in combination with standard neoadjuvant anthracycline-containing and anthracycline-free chemotherapy regimens in patients with HER2-positive early breast cancer: a randomized phase II cardiac safety study (TRYPHAENA)." Ann Oncol 24(9):2278-2284.

2 Hurvitz, S. A., M. Martin, W. F. Symmans, et al. 2018. "Neoadjuvant trastuzumab, pertuzumab, and chemotherapy versus trastuzumab emtansine plus pertuzumab in patients with HER2-positive breast cancer (KRISTINE): a randomised, open-label, multicentre, phase 3 trial." The Lancet Oncology 19(1):115-126.

3 Schneeweiss, A., S. Chia, T. Hickish, et al. 2018. "Long-term efficacy analysis of the randomised, phase II TRYPHAENA cardiac safety study: Evaluating pertuzumab and trastuzumab plus standard neoadjuvant anthracycline-containing and anthracycline-free chemotherapy regimens in patients with HER2-positive early breast cancer." Eur J Cancer 89:27-35.

History

Version 2

Date	Summary of changes
16/11/2021	Pulmonary toxicity added to side effects. Version number changed to V.2.
11/11/2022	Pertuzumab administration updated: • changed from "observe" to "observe and wait" • sentences reformatted to provide more clarity

Date	Summary of changes
	• observe and wait timing changed to "30 to 60 minutes" to align with product information.

Version 1

Date	Summary of changes
20/10/2020	New protocol reviewed and approved electronically by Medical Oncology Reference Committee.
02/11/2020	Protocol published on eviQ. Next review in 1 year.
13/08/2021	Protocol reviewed electronically by Medical Oncology Reference Committee. Nil changes. Review in 2 years.

First approved: 20 October 2020
Last reviewed: 13 August 2021
Review due: 31 December 2023

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/3736
08 Jun 2023

Patient information - Breast cancer neoadjuvant - TCHP (docetaxel, carboplatin, trastuzumab and pertuzumab)

Patient's name:

Your treatment

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

TCHP (docetaxel, carboplatin, trastuzumab and pertuzumab)

This treatment cycle is repeated every 21 days. You will have 6 cycles. Your doctor will discuss further treatment after this with you.

Day	Treatment	How it is given	How long it takes
1	**Docetaxel** (*dox-e-tax-elle*) **Carboplatin** *(carb-o-PLAT-in)* **Pertuzumab** *(per-TOOZ-ue-mab)* **Trastuzumab** (*tras-TOOZ-ue-mab*)	By a drip into a vein	About 5 hours for the first treatment. If no reactions, subsequent treatment may be given over a shorter amount of time e.g. 4 hours

When to get help

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

IMMEDIATELY go to your nearest hospital Emergency 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 • a combination of diarrhoea, fever and abdominal pain • uncontrolled vomiting • shortness of breath • pain, tingling or discomfort in your chest or arms • you become unwell.	Daytime: Night/weekend: Other instructions:

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

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

Other information about your treatment

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.

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.
- **G-CSF:** you will be given injection(s) of a drug called G-CSF (also called filgrastim, lipegfilgrastim or pegfilgrastim) under your skin. This helps to boost your white blood cell count. Your white blood cells help to fight infection. Lipegfilgrastim and pegfilgrastim are given once. Filgrastim is given for several days until your white blood cells recover.
- **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.
- **Docetaxel premedication:** before your treatment with docetaxel you may need to take a tablet called a premedication to help prevent you from having a reaction to docetaxel. A steroid tablet called dexamethasone may be used and should be taken with or after food as directed. The following table may be used to remind you when to take your premedication. Ask your doctor, nurse or pharmacist to fill it out for you.

Tablet	Dose	When to take

Tell your doctor or nurse if you have not taken your premedications before you have your treatment.

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)	

Allergic reaction	• Allergic reactions are uncommon but can be life threatening.
	• **If you feel unwell during the infusion or shortly after it, or:**
	  ◦ **get a fever, shivers or shakes**
	  ◦ **feel dizzy, faint, confused or anxious**
	  ◦ **start wheezing or have difficulty breathing**
	  ◦ **have a rash, itch or redness of the face**
	
	<u>While you are in hospital:</u> Tell your doctor or nurse immediately.
	<u>After you leave:</u> Contact your doctor or nurse immediately, or go to the nearest hospital Emergency Department.

Nausea and vomiting	• You may feel sick (nausea) or be sick (vomit). • Take your anti-sickness medication as directed even if you don't feel sick. • Drink plenty of fluids (unless you are fluid restricted). • Eat small meals more frequently. • Try food that does not require much preparation. • Try bland foods like dry biscuits or toast. • Gentle exercise may help with nausea. • Ask your doctor or nurse for eviQ patient information - Nausea and vomiting during cancer treatment. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have uncontrolled vomiting or feel dizzy or light-headed.**
Headache	• You can take paracetamol if you have a headache. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get a very bad headache that is not helped by pain medication.**

Flu-like symptoms	• You may get:
	  ◦ a fever
	  ◦ chills or sweats
	  ◦ muscle and joint pain
	  ◦ a cough
	  ◦ headaches.
	• Tell your doctor or nurse if you get any of the symptoms listed above.
	• **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have a temperature of 38°C or higher.**

Taste and smell changes	• You may find that food loses its taste or tastes different. • These changes are likely to go away with time. • Do your mouth care regularly. • Chew on sugar-free gum or eat sugar-free mints. • Add flavour to your food with sauces and herbs. • Ask your doctor or nurse for eviQ patient information - Taste and smell changes during cancer treatment.
Bone pain after G-CSF injection	• You may have discomfort or a dull ache in your pelvis, back, arms or legs. • To reduce the pain, take paracetamol before each injection. • **Tell your doctor or nurse as soon as possible if your pain is not controlled.**
Early (onset days to weeks)	

Infection risk (neutropenia)	• This treatment lowers the amount of white blood cells in your body. The type of white blood cells that help to fight infection are called neutrophils. Having low level of neutrophils is called neutropenia. If you have neutropenia, you are at greater risk of getting an infection. It also means that your body can't fight infections as well as usual. This is a serious side effect, and can be life threatening. • Wash your hands often. • Keep a thermometer at home and take your temperature regularly, and if you feel unwell. • Do your mouth care regularly. • Inspect your central line site (if you have one) daily for any redness, pus or swelling. • Limit contact with people who are sick. • Learn how to recognise the signs of infection. • Ask your doctor or nurse for eviQ patient information - Infection during cancer treatment. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get any of the following signs or symptoms:** ◦ **a temperature of 38°C or higher** ◦ **chills, shivers, sweats or shakes** ◦ **a sore throat or cough** ◦ **uncontrolled diarrhoea** ◦ **shortness of breath** ◦ **a fast heartbeat** ◦ **become unwell even without a temperature.**
Low platelets (thrombocytopenia)	• This treatment lowers the amount of platelets in your blood. Platelets help your blood to clot. When they are low, you are at an increased risk of bleeding and bruising. • Try not to bruise or cut yourself. • Avoid contact sport or vigorous exercise. • Clear your nose by blowing gently. • Avoid constipation. • Brush your teeth with a soft toothbrush. • Don't take aspirin, ibuprofen or other similar anti-inflammatory medications unless your doctor tells you to. • Tell your doctor or nurse if you have any bruising or bleeding. • **Tell your doctor or nurse immediately, or go to your nearest hospital Emergency Department if you have any uncontrolled bleeding.**
Diarrhoea	• 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.**

Mouth pain and soreness (mucositis)	• You may have:
	  ◦ bleeding gums
	  ◦ mouth ulcers
	  ◦ a white coating on your tongue
	  ◦ pain in the mouth or throat
	  ◦ difficulty eating or swallowing.
	• Avoid spicy, acidic or crunchy foods and very hot or cold food and drinks.
	• Try bland and soft foods.
	• Brush your teeth gently with a soft toothbrush after each meal and at bedtime. If you normally floss continue to do so.
	• Rinse your mouth after you eat and brush your teeth, using either:
	  ◦ 1/4 teaspoon of salt in 1 cup of warm water, or
	  ◦ 1/4 teaspoon of bicarbonate of soda in 1 cup of warm water
	• Ask your doctor or nurse for eviQ patient information - Mouth problems during cancer treatment.
	• **Tell your doctor or nurse if you get any of the symptoms listed above.**

Tiredness and lack of energy (fatigue)	• You may feel very tired, have no energy, sleep a lot, and not be able to do normal activities or things you enjoy. • Do not drive or operate machinery if you are feeling tired. • Nap for short periods (only 1 hour at a time) • Prioritise your tasks to ensure the best use of your energy. • Eat a well balanced diet and drink plenty of fluids (unless you are fluid restricted). • Try some gentle exercise daily. • Allow your friends and family to help. • **Tell your doctor or nurse if you get any of the symptoms listed above.**
Skin rash	• You may get a red, bumpy rash and dry, itchy skin. • Moisturise your skin with a gentle non-perfumed moisturising cream like sorbolene or aqueous cream. • Do not scratch your skin. • Protect your skin from the sun by wearing sun-protective clothing, a wide-brimmed hat, sunglasses and sunscreen of SPF 50 or higher. • **Talk to your doctor or nurse about other ways to manage your skin rash.**

Nerve damage (peripheral neuropathy)	• You may notice a change in the sensations in your hands and feet, including:
	  ◦ tingling or pins and needles
	  ◦ numbness or loss of feeling
	  ◦ pain.
	• You may find it difficult to do everyday activities, such as doing up buttons or picking up small objects.
	• Test water temperature with your elbow when bathing to avoid burns.
	• Use rubber gloves, pot holders and oven mitts in the kitchen.
	• Wear rubber shoes or boots when working in the garden or garage.
	• Keep rooms well lit and uncluttered.
	• Ask your doctor or nurse for eviQ patient information – Nerve problems during cancer treatment.
	• Tell your doctor or nurse if you get any of the symptoms listed above.

Eye problems	• You may get: ◦ 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.**
Hand-foot syndrome (palmar-plantar erythrodysaesthesia)	• The palms of your hands and soles of your feet may become: ◦ 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.**
Extra fluid in the body (fluid retention)	• You may gain weight over a short amount of time. • Your hands and feet may become swollen, appear red or feel hot and uncomfortable. • These symptoms are caused by the drug docetaxel. • Wear loose clothing and shoes that are not too tight. • Try not to stand up or walk around too much at one time. • If your ankles or legs get swollen, try raising them. • Make sure that any cuts or areas of broken skin are treated as soon as possible. • **Tell your doctor or nurse as soon as possible if you get any of the symptoms listed above.** • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you become short of breath.**

Late (onset weeks to months)	
Low red blood cells (anaemia)	• You may feel dizzy, light-headed, tired and appear more pale than usual. • Tell your doctor or nurse if you have any of these signs or symptoms. You might need a blood transfusion. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have any chest pain, trouble breathing, or feel like your heart is racing.**
Hair loss (alopecia)	• Your hair may start to fall out from your head and body. • Hair loss usually starts 2 to 3 weeks after your first treatment. • You may become completely bald and your scalp might feel tender. • Use a gentle shampoo and a soft brush. • Take care with hair products like hairspray, hair dye, bleaches and perms. • Protect your scalp from the cold with a hat, scarf or wig. • Protect your scalp from the sun with a hat or sunscreen of SPF 50 or higher. • Moisturise your scalp to prevent itching. • Ask your doctor or nurse about the Look Good Feel Better program
Nail changes	• Your nails may: ◦ grow more slowly ◦ become darker ◦ develop ridges or white lines ◦ become brittle and flaky • In some cases, you may lose your nails completely. • Keep your nails clean and short. • Avoid things like biting your fingernails, getting a manicure, pedicure or false nails. • Wear gloves when you wash the dishes, work in the garden, or clean the house.
Lung problems	• Lung problems are rare, but can be serious. They may occur throughout treatment or after the completion of treatment. • You may get: ◦ shortness of breath ◦ fever ◦ dry cough ◦ wheezing ◦ fast heartbeat ◦ chest pain. • Your doctor will monitor how well your lungs are working during your treatment. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you have chest pain or become short of breath.**

Delayed (onset months to years)	
Menopausal symptoms	• You may get: ◦ hot flushes or night sweats ◦ mood changes ◦ vaginal dryness ◦ irregular or no periods. • You may also: ◦ have trouble sleeping ◦ find sex painful or lose interest in sex • These symptoms may go away after treatment, or the menopause may be permanent. • If you have sex you should use contraception as there is still a risk of pregnancy. Talk to your doctor about what form of contraception is right for you. • Talk to your doctor or nurse about ways to manage these symptoms.
Heart problems	• You may get: ◦ chest pain or tightness ◦ shortness of breath ◦ swelling of your ankles ◦ an abnormal heartbeat. • Heart problems can occur months to years after treatment. • Tell your doctor if you have a history of heart problems or high blood pressure. • Before or during treatment, you may be asked to have a test to see how well your heart is working. • **Tell your doctor or nurse immediately, or go to the nearest hospital Emergency Department if you get any of the symptoms listed above.**

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.
- Grapefruit and grapefruit juice can interact with your medication and should be avoided while you are on this treatment.
- 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.

Breast cancer information

- Australasian Lymphology Association – lymphoedema.org.au
- Australasian Menopause Society – menopause.org.au
- Breast Cancer Network Australia – bcna.org.au
- National Breast Cancer Foundation – nbcf.org.au
- YWCA Encore breast cancer exercise program – ywcaencore.org.au

General cancer information and support

- Australian Rare Cancer (ARC) Portal – arcportal.org.au/
- Beyondblue – beyondblue.org.au
- Cancer Australia – canceraustralia.gov.au
- Cancer Council Australia – cancer.org.au
- Cancer Voices Australia – cancervoicesaustralia.org
- CanTeen – canteen.org.au

- Carers Australia – carersaustralia.com.au
- CHILL Cancer related hair loss – scalpcooling.org
- eviQ Cancer Treatments Online – eviQ.org.au
- LGBTQI+ People and Cancer - cancercouncil.com.au/cancer-information/lgbtqi
- Look Good Feel Better – lgfb.org.au
- Patient Information – patients.cancer.nsw.gov.au
- Radiation Oncology Targeting Cancer – targetingcancer.com.au
- Redkite – redkite.org.au
- Return Unwanted Medicines – returnmed.com.au
- Staying active during cancer treatment – patients.cancer.nsw.gov.au/coping-with-cancer/physical-wellbeing/staying-active

Quit smoking information and support

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

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

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