



# Bevacizumab 15mg/kg Therapy- 21 days

## **INDICATIONS FOR USE:**

		Regimen	Reimbursement
INDICATION	ICD10	Code	status
In combination with CARBOplatin and PACLitaxel is indicated for the front-line		00215a	Hospital
treatment of adult patients with advanced (International Federation of			
Gynecology and Obstetrics (FIGO) stages III B, III Cand IV) epithelial ovarian,	C56		
fallopian tube, or	C57		
primary peritoneal cancer.	C48		
Bevacizumab at a dose of 7.5mg/kg <sup>i</sup> (unlicensed indication) in combination			Hospital
with CARBOplatin and PACLitaxel as first line treatment has been shown to be			
effective in FIGO stage III debulked but residual disease more than 1cm, or			
FIGO stage IV epithelial ovarian, fallopian tube, or primary peritoneal cancer			
with respect to both progression-free and overall survival (ICON-7 trial-			
Reference NCCP Regimen 00620 Bevacizumab 7.5mg/kg, CARBOplatin (AUC5)			
and PACLitaxel 175mg/m² Therapy <sup>i</sup> for more information)			
In combination with, topotecan given on days 1-5 every 3 weeks**, for the		00215c	Hospital
treatment of adult patients with platinum-resistant			
recurrent epithelial ovarian,	C56		
fallopian tube, or	C57		
primary peritoneal cancer	C48		
who received no more than two prior chemotherapy regimens and who have			
not received prior therapy with bevacizumab or other VEGF inhibitors or VEGF			
receptor—targeted agents.			
**Reference NCCP regimen 00212 Bevacizumab 10mg/kg for details of topoteca	ın (weekly	ι) in	
combination with bevacizumab 10mg/kg.			
In combination with fluoropyrimidine-based chemotherapy is indicated for	C18	00215d	Hospital
treatment of adult patients with metastatic carcinoma of the colon or rectum.	C19		
	C20		
In combination with PACLitaxel is indicated for first-line treatment of adult	C50	00215e	Hospital
patients with HER2-negative metastatic breast cancer.			
In addition to platinum-based chemotherapy is indicated for first-line	C34	00215f	Hospital
treatment of adult patients with unresectable advanced, metastatic or			
recurrent non-small cell lung cancer (NSCLC) other than predominantly			
squamous cell histology.			
In combination with erlotinib is indicated for the first-line treatment of adult	C34	00215g	Hospital
patients with unresectable advanced, metastatic or recurrent non-squamous			
cell lung cancer with Epidermal Growth Factor (EGFR) activating mutations			

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## TREATMENT:

The starting dose of the drugs detailed below may be adjusted downward by the prescribing clinician, using their independent medical judgement, to consider each patients individual clinical circumstances.

## **Epithelial Ovarian, Fallopian Tube and Primary Peritoneal Cancer:**

<u>Front-line treatment:</u> Bevacizumab is administered once every 3 weeks as an intravenous infusion in addition to CARBOplatin and PACLitaxel for up to 6 cycles of treatment followed by continued use of bevacizumab as single agent until disease progression or for a maximum of 15 months (22 cycles) or until unacceptable toxicity, whichever occurs earlier. Treatment with bevacizumab commences on cycle 2.

<u>Treatment of platinum-resistant recurrent disease:</u> Bevacizumab is administered once every 3 weeks as an intravenous infusion in combination with topotecan (given on days 1-5, every 3 weeks), until disease progression or unacceptable toxicity.

#### Metastatic Breast Carcinoma and Metastatic Colorectal Carcinoma:

Bevacizumab is administered once every 21 days with chemotherapy until disease progression or unacceptable toxicity develops.

#### **NSCLC:**

First line treatment of non-squamous NSCLC in combination with platinum based chemotherapy: Bevacizumab is administered once every 21 days in addition to platinum-based chemotherapy for up to 6 cycles of treatment followed by bevacizumab as a single agent until disease progression or unacceptable toxicity occurs.

First line treatment of non-squamous NSCLC with EGFR activating mutations in combination with erlotinib:

Bevacizumab is administered once every 21 days in addition to erlotinib until disease progression or unacceptable toxicity occurs.

Facilities to treat anaphylaxis MUST be present when the chemotherapy is administered.

Day	Drug	Dose	Route	Diluent & Rate	Cycle
1	Bevacizumab	15mg/kg	IVinfusion	100ml NaCl 0.9% over 90mi ns*	Repeat every 21 days

Flush line with NaCl 0.9% pre and post bevacizumab dose as it should not be mixed with glucose solutions.

It should not be administered as an intravenous push or bolus.

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<sup>\*</sup>The initial dose of bevacizumab should be delivered over 90 minutes as an intravenous infusion.

If the first infusion is well tolerated, the second infusion may be administered over 60 minutes.

If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 minutes.





#### **ELIGIBILITY:**

- Indication as above
- ECOG status 0-2
- Adequate haematological (ANC ≥  $1.2 \times 10^9$ /L, platelets >100 x  $10^9$ /L) renal Creatinine ≤  $1.5 \times 10^9$  and liver status (bilirubin ≤  $26 \times 10^9$  micromol/L; AST/ Alkaline Phosphatase ≤  $5 \times 10^9$  micromol/L; AST/ Alkaline Phosphatase ≤  $1.5 \times 10^9$  micromol/L; AST/ Alkaline Phosphatase =  $1.5 \times 10^9$  micromol/L; AST/ Alkaline Phosphatase =
- Non squamous NSCLC in combination with erlotinib: Demonstration of EGFR mutation by a validated test method

## **EXCLUSIONS:**

- Hypersensitivity to bevacizumab or to any of the excipients
- Pregnancy
- Hypersensitivity to Chinese Hamster Ovary (CHO) cell products or other recombinant human or humanised antibodies

#### **USE WITH CAUTION:**

Use with caution in patients with:

- Previous pelvic radiotherapy
- Pre-existing uncontrolled hypertension
- Clinically significant cardiovascular disease
- Renal disease including proteinuria
- Bleeding/Clotting disorders
- Previous anthracycline exposure
- History of significant venous thromboembolism
- Recent (less than 6 months) arterial thromboembolic events
- Prior radiation to the chest wall or other serious medical illness

#### PRESCRIPTIVE AUTHORITY:

• The treatment plan must be initiated by a Consultant Medical Oncologist.

## TESTS:

### Baseline tests:

- FBC, renal and liver profile
- Dipstick urinalysis for protein
- Bood pressure measurement, cardiac assessment including history and physical exam.
- ECHO should be considered in patients who have had chest wall radiation or prior treatment with an anthracycline.
- INR if clinically indicated\*.

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## Regular tests:

- FBC, renal and liver profile, dipstick urinalysis for protein.
- Blood pressure prior to each cycle and post treatment.
- INR if clinically indicated\*
  - \*(For patients on warfarin, weekly INR until stable warfarin dose established, then INR prior to each cycle.)

## Disease monitoring:

Disease monitoring should be in line with the patient's treatment plan and any other test/s as directed by the supervising Consultant.

## **DOSE MODIFICATIONS:**

- Any dose modification should be discussed with a Consultant
- Bevacizumab dose reduction for adverse events is not recommended (SmPC). If indicated, bevacizumab therapy should either be permanently discontinued or temporarily suspended until toxicity resolves (Table 2 and Table 3).

## Renal and Hepatic Impairment:

Table 1: Dose Modification of bevacizumab in renal and hepatic impairment

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ent.

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## Management of adverse events:

## Proteinuria:

Table 2: Dose modifications of bevacizumab for proteinuria

Degree of proteinuria	Action
Neg or 1+dipstick or less than 1 g/L laboratory urinalysis for protein	Administer bevacizumab dose as scheduled
2+ or 3+ dipstick or greater than or equal to 1 g/L laboratory urinalysis for protein	Administer bevacizumab dose as scheduled. Collect 24-hour urine for determination of total protein within 3 days before the next scheduled bevacizumab administration. Adjust bevacizumab treatment based on the table below
If urine dipstick shows 4+ at bas eline or during treatment	Withhold bevacizumab and proceed with 24 hour urine collection.
24-hour urine total protein (g/24hr)	Action
less than or equal to 2	Proceed
greater than 2 to 4	Hold dose and recheck 24 hour urine every 2 weeks, resume therapy when less than or equal to 2g/24hour
greater than 4	Discontinue Therapy

## Table 3: Dose modification of bevacizumab for adverse events

Adverse reactions	Recommended dose modification
Hypertension Uncontrolled or symptomatic hypertension on Day 1	Withhold bevacizumab treatment, start antihypertensive therapy or adjust preexisting medication
Grade 4 hypertension or persisting grade 3 hypertension	Discontinue bevacizumab
Grade 4 Proteinuria	Discontinue bevacizumab
Tracheoesophageal (TE) fistula or any Grade 4 fistula	Discontinue beva cizumab
Grade 4 Thromboembolic events	Discontinue bevacizumab
Haemorrhagic event ≥ Grade 3	Discontinue bevacizumab
Gastrointestinal Perforation	Discontinue bevacizumab

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### **SUPPORTIVE CARE:**

EMETOGENIC POTENTIAL: Minimal (Refer to local policy).

**PREM EDICATIONS:** Not usually required unless the patient has had a previous hypersensitivity.

**OTHER SUPPORTIVE CARE:** Anti-diarrhoeal treatment may be required **(Refer to local policy)** 

#### ADVERSE EFFECTS / REGIMEN SPECIFIC COMPLICATIONS

The adverse effects listed are not exhaustive. Please refer to the relevant Summary of Product Characteristics for full details.

- **Gastrointestinal perforations:** Patients may be at an increased risk for the development of gastrointestinal perforation and gall bladder perforation when treated with bevacizumab. Intraabdominal inflammatory process may be a risk factor for gastrointestinal perforations in patients with metastatic carcinoma of the colon or rectum, therefore, caution should be exercised when treating these patients. Therapy should be permanently discontinued in patients who develop gastrointestinal perforation.
- Wound healing complications: Bevacizumab may adversely affect the wound healing process.
   Therapy should not be initiated for at least 28 days following major surgery or until the surgical wound is fully healed. In patients who experienced wound healing complications during therapy, treatment should be withheld until the wound is fully healed. Therapy should be withheld for major elective surgery for 28 days and for 7 days for minor surgery or as directed by the prescribing Consultant.
  - Necrotising fasciitis, including fatal cases, has rarely been reported in patients treated with bevacizumab. This condition is usually secondary to wound healing complications, gastrointestinal perforation or fistula formation. Bevacizumab therapy should be discontinued in patients who develop necrotising fasciitis, and appropriate treatment should be promptly initiated.
- Hypertension: An increased incidence of hypertension has been observed in patients treated with bevacizumab. Clinical safety data suggest that the incidence of hypertension is likely to be dosedependent.
  - Pre-existing hypertension should be adequately controlled before starting bevacizumab treatment. Bevacizumab may be continued in conjunction with standard anti-hypertensive therapy at physician's discretion.
  - Patients should have their blood pressure measured before each dose or more frequently if hypertension develops/worsens.
  - Any patient who develops hypertension (>150/100 mmHg) should be treated with antihypertensive medications, or have their pre-existing medications adjusted. Patients developing severe hypertension (>200/110 mm Hg) that is not controlled with medication should have bevacizumab discontinued.
  - It should be permanently discontinued if the patient develops hypertensive crisis or hypertensive encephalopathy.

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- Posterior Reversible Encephalopathy Syndrome (PRES): There have been rare reports of bevacizumab-treated patients developing signs and symptoms that are consistent with PRES, a rare neurologic disorder, which can present with the following signs and symptoms among others: seizures, headache, altered mental status, visual disturbance, or cortical blindness, with or without associated hypertension. A diagnosis of PRES requires confirmation by brain imaging, preferably magnetic resonance imaging (MRI). In patients developing PRES, treatment of specific symptoms including control of hypertension is recommended along with discontinuation of bevacizumab. The safety of reinitiating therapy in patients previously experiencing PRES is not known.
- **Proteinuria:** Patients with a history of hypertension may be at increased risk for the development of proteinuria.
- Thromboembolism: Patients receiving bevacizumab plus chemotherapy, with a history of arterial thromboembolism or age > 65 years have an increased risk of developing arterial thromboembolic reactions during therapy. Caution should be taken when treating these patients. Therapy should be permanently discontinued in patients who develop arterial thromboembolic reactions. Patients may be at risk of developing venous thromboembolic reactions, including pulmonary embolism under bevacizumab treatment. Bevacizumab should be discontinued in patients with lifethreatening (Grade 4) thromboembolic reactions, including pulmonary embolism. Patients with thromboembolic reactions ≤ Grade 3 need to be closely monitored.
- **Haemorrhage:** Patients treated with bevacizumab have an increased risk of haemorrhage, especially tumour associated haemorrhage and minor mucocutaneous haemorrhage. Bevacizumab should be used with caution in patients at risk of bleeding.
- Aneurysms and artery dissections: The use of VEGF pathway inhibitors in patients with or without
  hypertension may promote the formation of aneurysms and/or artery dissections. Before initiating
  bevacizumab, this risk should be carefully considered in patients with risk factors such as hypertension
  or history of aneurysm.

## **DRUG INTERACTIONS:**

- The safety and efficacy of concomitant administration of radiotherapy and bevacizumab has not been established.
- No interaction studies have been performed between EGFR antibodies and bevacizumab. EGFR monoclonal antibodies should not be administered for the treatment of mCRC in combination with bevacizumab-containing chemotherapy. Results from the randomised phase III studies, PACCE and CAIRO-2, in patients with mCRC suggest that the use of anti-EGFR monoclonal antibodies panitumumab and cetuximab, respectively, in combination with bevacizumab plus chemotherapy, is associated with decreased PFS and/or OS, and with increased toxicity compared with bevacizumab plus chemotherapy alone.
- Concurrent use of bevacizumab and sunitinib can increase the risk of microangiopathic haemolytic anaemia (MAHA).
- Current drug interaction databases should be consulted for more information.

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Version	Date	Amendment	Approved By
1	12/06/2015		Dr Maccon Keane
	23/5/17		Prof Maccon Keane
3	22/11/2018	Update of dose modifications of bevacizumab for proteinuria	Prof Maccon Keane
4	22/05/2019	Reviewed.	Prof Maccon Keane

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		Removal of 00215b as this is now regimen 00499a (GemCARBO(AUC4)Bev)	
5	12/02/2020	Clarification of dose modifications of bevacizumab for proteinuria	Prof Maccon Keane
	28/04/2021	Reviewed. Clarification of dose modifications	Prof Maccon Keane

Comments and feedback welcome at oncologydrugs@cancercontrol.ie.

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<sup>&</sup>lt;sup>i</sup> This is an unlicensed indication for the use of Avastin® in Ireland. Patients should be informed of the unlicensed nature of this indication and consented to treatment in line with the hospital's policy on the use of unlicensed medication and unlicensed or "off label" indications. Prescribers should be aware of their responsibility in communicating any relevant information to the patient and also in ensuring that the unlicensed or "off label" indication has been acknowledged by the hospital's Drugs and Therapeutics Committee, or equivalent, in line with hospital policy.