Carboplatin and radiotherapy (Head and Neck)

Indication
Chemo-radiation for head and neck cancers with curative intent when cisplatin is contraindicated.

Performance status 0-1

ICD-10 codes
Codes prefixed with C00-C13

Regimen details Weekly Carboplatin/RT

Day	Drug	Dose	Route
1	Carboplatin	AUC 2*	IV infusion

Cycle frequency
7 days

Number of cycles
Maximum of 6-7 cycles

Regimen details 3 Weekly Carboplatin/RT

Day	Drug	Dose	Route
1	Carboplatin	AUC 5*	IV infusion

Cycle frequency
21 days

Number of cycles
Maximum of 2-3 cycles

* Carboplatin dose is calculated using the Calvert equation: **Carboplatin dose (mg) = AUC (CrCl +25)**
The creatinine clearance (CrCl) can be calculated using the Cockcroft and Gault equation.
Consider nuclear medicine baseline assessment of GFR for all patients for accuracy. This is strongly advised for patients where the creatinine level may not truly reflect renal function (e.g. in extremes of BSA or debilitated patients). Calculated CrCl should be capped at 125mL/min.

Administration
Carboplatin is administered in 250-500mL glucose 5% over 30-60 minutes.

Patients should be observed closely for hypersensitivity reactions, particularly during the first and second infusions. Hypersensitivity reactions may occur within a few minutes following the initiation of the infusion of carboplatin. Facilities for the treatment of hypotension and bronchospasm **must** be available.

If hypersensitivity reactions occur, minor symptoms such as flushing or localised cutaneous reactions do not require discontinuation of therapy. The infusion should be temporarily interrupted and when symptoms improve restarted at a slower infusion rate. Administer intravenous premedications (chlorphenamine and hydrocortisone). Severe reactions, such as hypotension, bronchospasm or generalised rash/erythema require immediate discontinuation of carboplatin and appropriate therapy.

Pre-medication

None usually required.

Emetogenicity

This regimen has a moderate emetogenic potential

Additional supportive medication

Mouthwashes as per local policy.
Antiemetics as per local policy.
Loperamide if required.

Extravasation

Carboplatin is an irritant (Group 3)

Investigations – pre first cycle

Investigation	**Validity period** (or as per local policy)
FBC	14 days
U&E (including creatinine)	14 days
LFTs	14 days
Magnesium	14 days

Investigations - Assessed weekly during treatment for both weekly and 3 weekly regimens

Investigation	**Validity period** (or as per local policy)
FBC	72 hours
U+E (including creatinine)	72 hours
LFTs	72 hours
Magnesium	72 hours

Standard limits for administration to go ahead

If blood results not within range, authorisation to administer **must** be given by prescriber/ consultant.

Investigation	**Limit**
Neutrophils	≥ 1.0 x 10^9/L
Platelets	≥ 100 x 10^9/L
Creatinine Clearance (CrCl)	> 30mL/min (and <10% change in CrCl from previous cycle)
Bilirubin	≤ 3 x ULN
AST/ALT	≤ 5 x ULN

Dose modifications

- **Haematological toxicity**

If neutrophils < 1.0 x 10^9/L and/or platelets ≤ 100 x 10^9/L give GCSF and delay 1 week or until recovery. Continue Radiotherapy
If Hb< 90 g/L arrange 1-2 unit transfusion if >/= 5 fractions of RT remain. Continue Radiotherapy.

- **Renal impairment**

CrCl (mL/min)	**Carboplatin dose**
> 30	100%
20-30	Consider (if time allows) measured GFR assessment to be performed then 100% dose
< 20	Omit

If CrCl falls by more than 10% from the previous cycle then the dose should be recalculated.

- **Hepatic impairment**

Transient increases in liver enzymes have been seen in patients being treated with carboplatin although no dose reduction is usually required. If bilirubin ≥ 3 x ULN and/or transaminases ≥ 5 x ULN discuss with consultant.

- **Other toxicities**

For all grade 3-4 toxicities (except alopecia) discuss with consultant.
For management of hypomagnesaemia see local protocol.

Adverse effects - for full details consult product literature/ reference texts

- **Serious side effects**

Myelosuppression
Infertility
Hypersensitivity reactions

- **Frequently occurring side effects**

Myelosuppression
Nausea and vomiting
Constipation, diarrhoea
Stomatitis and mucositis
Fatigue
Rash
Oedema
Electrolyte disturbances

- **Other side effects**

Mild alopecia
Taste disturbances

Significant drug interactions – for full details consult product literature/ reference texts

Warfarin/coumarin anticoagulants: Avoid use due to elevations in INR. Switch to low molecular weight heparin or DOAC during treatment.

Aminoglycoside antibiotics: increased risk of nephrotoxicity and ototoxicity
Clozapine: increased risk of agranulocytosis, avoid concomitant use
Diuretics: increased risk of nephrotoxicity and ototoxicity
Nephrotoxic drugs: increased nephrotoxicity; not recommended
Phenytoin: carboplatin reduces absorption and efficacy of phenytoin

Additional comments

Nil

References

- Summary of Product Characteristics Carboplatin (Hospira) accessed 3 November 2022 via www.medicines.org.uk
- Allwood M, Stanley A, Wright P, editors. The cytotoxics handbook. 4th ed. Radcliffe Medical Press. 2002.
- Jeremic B. et al. Radiation therapy alone or with concurrent low-dose daily either cisplatin or carboplatin in locally advanced unresectable squamous cell carcinoma of the head and neck: a prospective randomized trial. Radiother Oncol. 1997 Apr;43(1):29–37.

Written/reviewed by: Dr E de Winton (Consultant Oncologist, RUH Bath NHS Trust)

Checked by: Kate Gregory (Lead Pharmacist for SACT protocols, SWAG Cancer Alliance)

Authorised by: Dr J Braybrooke (Consultant Oncologist, UHBW NHS Trust and SWAG Cancer Alliance)

Date: November 2022
