



## NCCN Chemotherapy Order Templates (NCCN Templates®) Appendix B

### Carboplatin Dosing in Adults

#### Calvert Equation<sup>1</sup>

- Carboplatin Dose (mg) = Target area under the curve (AUC mg/mL/min) x (GFR\* + 25)

\*GFR estimated by calculated creatinine clearance using Cockcroft-Gault Equation (see below).

#### Cockcroft-Gault Equation<sup>2</sup>

$$\text{CrCl (male; mL/min)} = \frac{(140 - \text{age}) \times (\text{weight in kg})}{72 \times \text{serum creatinine (mg/dL)}}$$

$$\text{CrCl (female; mL/min)} = 0.85 \times \text{CrCl (male)}$$

#### Maximum Carboplatin Dose Calculation<sup>3</sup>

The FDA has recommended that physicians consider capping the dose of carboplatin for desired exposure (AUC) to avoid potential toxicity due to overdosing. The maximum dose is based on a GFR estimate that is capped at 125 mL/min for patients with normal renal function.

**Based on the Calvert formula described in the carboplatin label, the maximum doses can be calculated as:**

$$\text{Maximum Carboplatin Dose (mg)} = \text{Target AUC (mg/mL/min)} \times (125 \text{ mL/min} + 25)$$

For a target AUC = 6, the maximum dose is 6 x 150 = 900 mg

For a target AUC = 5, the maximum dose is 5 x 150 = 750 mg

For a target AUC = 4, the maximum dose is 4 x 150 = 600 mg

#### Additional Considerations<sup>4</sup>

- Overweight or obese patients (BMI ≥ 25 kg/m<sup>2</sup>): Consider using an adjusted body weight.

Adjusted body weight (kg) = ideal body weight (IBW) + 0.4 x (total body weight [TBW] – IBW)

- Patients with abnormally low serum creatinine (Cr), including elderly or cachectic patients: Consider using a minimum Cr of 0.7 mg/dL to avoid overestimation of CrCl.

- Measured CrCl: Consider using ethylene diamine tetraacetic acid (EDTA) or a 24-hour urine to measure CrCl (not a serum creatinine-based mathematical equation) when dosing at an AUC greater than 6 or when using an un-capped CrCl.



### **Carboplatin Dosing in Pediatrics**

- Several investigators have characterized carboplatin pharmacokinetics and pharmacodynamics in children, which led to the development of a variety of dosing formulas.

### **Modified Pediatric Calvert Equations**

- Marina et al<sup>5</sup>  
Carboplatin Dose (mg/m<sup>2</sup>)\* = Target area under the curve (AUC mg/mL/min) x [(0.93 x GFR\*[mL/min/m<sup>2</sup>]) + 15]
- Newell et al<sup>6</sup>  
Carboplatin Dose (mg)\* = Target area under the curve (AUC mg/mL/min) x (GFR\*[mL/min] + [0.36 x weight in kg])
- Pinkerton et al<sup>7</sup>  
Carboplatin Dose (mg)\* = Target area under the curve (AUC mg/mL/min) x ([GFR\*[mL/min] x 1.2] + 20)
- Mann et al<sup>8</sup>  
Carboplatin Dose (mg)\* = Target area under the curve (AUC mg/mL/min) x [GFR\*[mL/min] + (15 x BSA [m<sup>2</sup>])]

\*Note appropriate units for carboplatin dose (i.e. mg/m<sup>2</sup> or mg) and confirm units of measure for GFR (i.e. mL/min/m<sup>2</sup> or mL/min) when performing calculations for the equations above.

### **Additional Considerations**

- GFR Estimation: Use of Tc-99m labeled DTPA clearance, a 24-hour urine collection, or other validated methods to measure creatinine clearance are preferred for determining a carboplatin dose to achieve a desired AUC in children. If use of the aforementioned methods is not feasible, estimation by use of a serum creatinine-based mathematical equation may be considered, such as the Bedside Schwartz equation<sup>9</sup> ( $GFR [mL/min/1.73m^2] = 0.413 \times [(height \text{ in cm}) \div \text{serum creatinine (mg/dL)}])$ ) or another pediatric GFR equation as appropriate.
- Carboplatin dosing: Dose and frequency of carboplatin in pediatric patients varies. Carboplatin is not always dosed on AUC and is commonly regimen-specific in regards to dosing by AUC, mg/m<sup>2</sup>, or mg/kg. Refer to the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for standard dosing recommendations based on regimen.



## REFERENCES

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