

# LAC+USC MEDICAL CENTER POLICY

Subject: <b>CARBOPLATIN DOSING BY PHARMACY</b>	Original Issue Date: 12/1/17	Policy # <b>946</b>
	Supersedes: 12/1/17	Effective Date: 11/16/20
Departments Consulted: P&T Committee	Reviewed & Approved by: Attending Staff Association Executive Committee Senior Executive Council	Approved by:  (Signature on File) Chief Medical Officer  (Signature on File) Chief Executive Officer

## PURPOSE

- A. Carboplatin dosing must be individualized and calculated in terms of a target Area Under the Curve (AUC) in order to allow reasonable estimation of a particular patient's true exposure to carboplatin.
- B. This policy establishes procedures for calculation and ordering of carboplatin dose by pharmacists.

## POLICY

- A. The pharmacist may pursue carboplatin dosing by pharmacy for all carboplatin orders. The carboplatin order must include target AUC but is not required to include a pre-specified dose by the ordering physician. When entered into the Orchid EHR, the carboplatin order must state the name of the original ordering physician whether dosed by physician or by pharmacist.
- B. Upon receipt of a carboplatin order without a pre-specified dose by the ordering physician, the pharmacist will calculate an appropriate dose according to the established principles below. The pharmacist will enter this dose into the Orchid EHR with an Order Comment stating, "Dosed by Pharmacy per P+T pharmacy protocol."
- C. Upon receipt of a carboplatin order with a pre-specified dose by the ordering physician, the pharmacist will calculate an appropriate dose according to the established principles below. If the calculated dose differs by greater than or equal to 5% from the pre-specified dose, then the pharmacist will enter the calculated dose into the Orchid EHR with an Order Comment stating, "Dosed by Pharmacy per P+T pharmacy protocol." Otherwise, the pharmacist will enter the pre-specified dose into the Orchid EHR.
- D. **Established Principles of Carboplatin Dosing**
  - 1. Carboplatin dosing is calculated using the Calvert formula:

Subject: **CARBOPLATIN DOSING BY PHARMACY**Effective Date:  
11/16/20Policy #  
**945**

Dose in mg = target AUC x (GFR + 25)  
(target AUC in mg x min/mL, GFR in mL/min)

2. Calculated CrCl is generally used as an estimate of GFR and is calculated using the Cockcroft-Gault formula:

CrCl in mL/min (male) = [(140 – age) x (weight)] / (72 x serum creatinine)

CrCl in mL/min (female) = [0.85 x (140 – age) x (weight)] / (72 x serum creatinine)

(age in years, weight in kg, serum creatinine in mg/dL)

- a. When actual body weight is greater than 130% of ideal body weight, an adjusted body weight may be used in the Cockcroft-Gault formula. This adjusted body weight is calculated as:

Adjusted body weight in kg = IBW + [0.4 x (actual body weight – IBW)]

(IBW in kg, actual body weight in kg)

- b. When an IDMS serum creatinine assay is used, the FDA recommends capping the calculated CrCl at 125 mL/min. In this situation, the maximum dose of carboplatin is calculated as:

Maximum dose in mg = target AUC x 150

(target AUC in mg x min/mL)

- c. When a patient is receiving hemodialysis, recommendations include the assumption that GFR is zero and administration of carboplatin within 12 to 18 hours prior to the next hemodialysis session.

3. Calculations for patients with gynecologic cancer must follow the GOG protocol for carboplatin dosing. Principles of the GOG protocol include:

- a. For patients with BMI of 25 kg/m<sup>2</sup> or greater, an adjusted body weight must be used in the Cockcroft-Gault formula. This adjusted body weight is calculated as:

Adjusted body weight in kg = IBW + [0.4 x (actual body weight – IBW)]

(IBW in kg, actual body weight in kg)

- b. For patients with serum creatinine less than 0.7 mg/dL, a minimum serum creatinine value of 0.7 mg/dL must be used in the Cockcroft-Gault formula.

Subject: **CARBOPLATIN DOSING BY PHARMACY**

Effective Date:  
11/16/20

Policy #  
**945**

## **DEFINITIONS**

- AUC: area under the curve for the relationship between time and drug concentration
- BMI: body mass index
- CrCl: creatinine clearance
- EHR: electronic health record
- FDA: Food and Drug Administration
- GFR: glomerular filtration rate
- GOG: Gynecologic Oncology Group
- IBW: ideal body weight calculated as:
  - IBW in kg (male) =  $50 + (2.3 \times \text{height in inches above } 60)$
  - IBW in kg (female) =  $45.5 + (2.3 \times \text{height in inches above } 60)$
- IDMS: isotope dilution mass spectrometry

## **RESPONSIBILITY**

Pharmacy Department

## **REFERENCES**

- Calvert AH, Newell DR, Gumbrell LA, et al. Carboplatin dosage: prospective evaluation of a simple formula based on renal function. J Clin Oncol 1989;7:1748-56.
- Carboplatin dosing, Appendix B. National Comprehensive Cancer Network Chemotherapy Order Templates, 2011.
- Carboplatin dosing. U.S. FDA, October 8, 2010.
- Guddati AK, Joy PS, Marak CP. Dose adjustment of carboplatin in patients on hemodialysis. Med Oncol 2014;31:848.
- Updated FAQ's for dosing of carboplatin. GOG Newsletter, Spring 2011.

## **REVISION DATES**

November 16, 2020