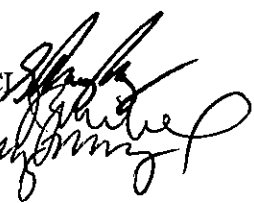




**FOLLOW- UP for  
ACTION LETTER FOR PROTOCOLS  
SPONSORED BY THE NATIONAL CANCER INSTITUTE  
THAT USE CARBOPLATIN**

**DATE:** 15 October 2010

**FROM:** S. Percy Ivy, M.D., Associate Chief, IDB, CTEP, DCTD, NCI  
James Zwiebel, MD, Branch Chief, IDB, CTEP, DCTD, NCI  
Meg Mooney, MD, Branch Chief, CIB, CTEP, DCTD, NCI 

**SUBJECT:** Area Under the Curve (AUC)-based Dosing of Carboplatin Using IDMS-measured Serum Creatinine

**TO:** Investigators Performing NCI-Sponsored Clinical Trials that Include Carboplatin (NSC 241240)

**This follow-up is in response to queries regarding the original (October 1, 2010) Action Letter and includes additional information NCI/CTEP has received since issuing the original Action Letter. The new or additional information is bolded.**

The purpose of this letter is to alert investigators of a modification of Area Under the Curve (AUC)-based dosing of carboplatin (NSC 241240) in studies sponsored by the Cancer Therapy Evaluation Program (CTEP), Division of Cancer Treatment and Diagnosis (DCTD), National Cancer Institute (NCI). See the accompanying list of all NCI/CTEP trials that are affected by this Action Letter.

Since this information represents a change in the AUC-based dosing of carboplatin in patients, an appropriate amendment must be reviewed and approved by NCI/CTEP as well as by the Institutional Review Board (IRB) of record for the study. **Physicians should use the instructions for carboplatin dose determination described below ONLY for patients initiating treatment. Patients already on study who have tolerated their carboplatin dose should not have their dose modified (unless they are experiencing toxicity that requires dose modification per protocol). As this is a change to enhance patient safety (by providing maximal allowed carboplatin doses), physicians should use the new instructions described below even if the treatment starts before the study amendment is approved.**

Amendments are due to the Protocol and Information Office (PIO) at [PIO@CTEP.NCI.NIH.GOV](mailto:PIO@CTEP.NCI.NIH.GOV) by 5 PM ET on **November 12, 2010** or as required based on protocol status (see the *Specific Instructions on Amendment Preparation Based on Protocol Status* section). The cover letter for the submitted amendment should state that it is being submitted in response to an Action Letter from S. Percy Ivy, MD (301-496-1196; [ivyp@ctep.nci.nih.gov](mailto:ivyp@ctep.nci.nih.gov)). Failure to respond in a timely fashion may result in suspension of the Principal Investigator or permanent study closure.

During the last several years, the National Institute for Standards and Technology (NIST) has standardized the measurement of serum creatinine using Isotope Dilution Mass Spectrometry (IDMS). By December 31, 2010, all clinical chemistry laboratories in the United States of America (USA) will have switched to the IDMS measurement and reagents for older methodologies will no longer be available. Older methods were not standardized and lead to variable creatinine measurements. **Due to this**

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variability, the use of a single correction factor to convert IDMS creatinine values to “non-IDMS” creatinine values will not work across all labs and institutions.

The IDMS method, in general, generates a lower creatinine value than older methods in patients with normal renal function. In addition, the IDMS method is more likely to generate creatinine levels that are below the lower limit of normal. Serum creatinine is used to estimate glomerular filtration rate (GFR). Measurement of serum creatinine by the IDMS method could result in an overestimation of GFR in some patients with normal renal function. If the total carboplatin dose is calculated based on an estimated GFR using an IDMS-measured serum creatinine and the Calvert formula, carboplatin dosing could be higher than desired and could result in increased toxicity.

In view of the potential for an increase in serious expected adverse events, NCI/CTEP is requiring that all principal investigators for the specified protocols do the following:

- 1) Distribute this letter to all participating investigators and IRBs. The principal investigator or lead organization (e.g., coordinating center or group operations office) also needs to forward a copy of the e-mail or other rapid traceable communication (e.g., fax with return requested) to [PIO@CTEP.NCI.NIH.GOV](mailto:PIO@CTEP.NCI.NIH.GOV) within 7 calendar days of the date of this letter. Failure to comply within the 7-day timeframe may result in the temporary suspension of the principal investigator and enrollment of patients to the study.
- 2) **Remove any language in protocols indicating that conversion of IDMS creatinine levels to “non-IDMS” values should be performed. No standard correction factor has been adequately validated. Amend the protocol to assure that a correction factor is NOT used to calculate carboplatin doses based on modifications of IDMS serum creatinine measurement.**
- 3) The initial dose of carboplatin may be calculated using an estimated GFR or a measured GFR. The current label for carboplatin provides safe dosing instructions that are based on measured GFR. Provided that direct GFR measurements are made to assess renal function, carboplatin can be safely dosed according to the instructions described in the label.
- 4) If the initial carboplatin dose is based on an estimated GFR, amend the protocol to assure that your protocol uses a dose not to exceed the maximum dose for carboplatin based on the target AUC. Once the initial dose of carboplatin is calculated it does not need to be recalculated for subsequent cycles unless the patient is experiencing toxicity and requires dose modification to a lower dose of carboplatin.

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- 5) If your study employs the Calvert formula using an estimated GFR for calculation of the initial carboplatin dose, amend the patient treatment and drug administration section of the protocol to assure that your protocol applies the following instructions to determine the maximum administered carboplatin dose\*. The maximum administered carboplatin dose calculation below applies if serum creatinine is used in the formula for estimating GFR.

**Calvert Formula**

**Total Dose (mg) = (target AUC) X (GFR + 25)**

**NOTE: the GFR used in the Calvert formula to calculate AUC-based dosing should not exceed 125 mL/min, such that**

Maximum carboplatin dose (mg) = target AUC(mg•min/mL) • 150 mL/min.

\*The maximum carboplatin dose should not exceed target AUC(mg•min/mL)•150 mL/min. For example, if a trial utilizes a target carboplatin AUC of 6, the maximum dose would be 900 mg. Highly specific settings like bone marrow transplant or pediatric studies may target a higher AUC.

<b>Maximum AUC-based Carboplatin Dose</b>	
<b>AUC</b>	<b>Maximum Carboplatin Dose</b>
<b>6</b>	<b>900 mg</b>
<b>5</b>	<b>750 mg</b>
<b>4</b>	<b>600 mg</b>

- 6) For U.S. sites that have not yet implemented the IDMS serum creatinine measurement, or international sites that may or may not be using IDMS serum creatinine measurements, please use the same dosing instructions outlined above in Point number 5.
- 7) For specific patients, e.g. those with low muscle mass, direct measurement of GFR may be preferable to an estimation of GFR. In patients with an abnormally low serum creatinine, estimate GFR using a minimum creatinine level of 0.6 mg/dL, or cap the estimated GFR at 125 mL/minute as described in Point number 5.
- 8) Accrual to this trial may continue, but the measures to assure patient safety must be put in place immediately. The safety measures should be implemented while IRB and NCI/CTEP approval is obtained.

Patients currently on study should continue on study and may be informed of the rationale for the possible change in their dosing of carboplatin.

Patients currently on study who are not experiencing toxicity should continue on their current dose of carboplatin.

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- 9) Patients currently on study should continue to be monitored for the known adverse events associated with the administration of carboplatin as outlined in the package insert that can be found on the manufacturer's web site.
  
- 10) Dose modifications should occur as outlined in the protocol document. Each patient should be thoroughly evaluated, closely monitored and supported as clinically appropriate.
  
- 11) Adverse event reporting should continue as outlined in the protocol document.
  
- 12) Submit all amendments to the protocol and informed consent form to NCI/CTEP by 5:00 pm ET on November 12, 2010. The amendment cover letter must state "This amendment is in response to the memo from Dr. S. Percy Ivy, MD." Failure to comply within this timeframe may result in the temporary suspension of the principal investigator and enrollment to the study.

Please submit the amendment, the change memo, and the cover letter to the PIO at [PIO@CTEP.NCI.NIH.GOV](mailto:PIO@CTEP.NCI.NIH.GOV).

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**ACTION LETTER GENERAL INSTRUCTIONS**

1. Distribute this Action Letter to all participating investigators and IRBs within 2 working days. For Cooperative Group studies, please follow instructions from Group Operations office. For sites participating in the NCI Central-IRB (CIRB) Initiative, NCI/CTEP has provided a copy of this Action Letter to the CIRB if the Action Letter affects any studies under CIRB review.
2. Save a copy of the Action Letter for your records.

**INSTRUCTIONS FOR PREPARATION OF AN AMENDMENT IN RESPONSE TO THIS ACTION LETTER**

**General Instructions on Amendment Preparation:**

- Instructions regarding the due date for an amendment and where to send it are included on the first page of the Action Letter. If any of the NCI-required changes are not applicable for your trial (i.e., already appear in your protocol), note this in your Change Memo.

**Specific Instructions on Amendment Preparation Based on Protocol Status:**

1. Trials with a current NCI/CTEP status of Active
  - Review and follow **ALL** the instructions outlined in this Action Letter.
  - You may include additional non-Action Letter related changes (any type) in your amendment response; however, this may delay amendment approval and thus, re-activation of your trial.
  - **If an amendment is required by a specific date and it is not submitted by the required submission date**, NCI/CTEP will suspend accrual to your trial and may suspend the principal investigator and/or close your trial permanently (i.e., administratively complete).
2. Trials with a current NCI/CTEP status of Closed to Accrual or Temporarily Closed to Accrual
  - Review and follow **ALL** the instructions outlined in this Action Letter.
  - You may include additional non-Action Letter related changes (any type) in your amendment response; however, this may delay amendment approval.
  - **If an amendment is required by a specific date and it is not submitted by the required submission date**, NCI/CTEP will suspend accrual to your trial and may suspend the principal investigator and/or close your trial permanently (i.e., administratively complete) unless you explicitly request and are granted a waiver to delay submission of the amendment (may be applicable for trials temporarily closed to accrual when other protocol changes are pending).
3. Trials with a current status of Approved or Temporarily Closed to Accrual and Treatment
  - The protocol must be revised as per the instructions outlined in the Action Letter in the next revised protocol draft submitted to NCI/CTEP. The protocol amendment must be submitted and approved by NCI/CTEP before the trial can be activated or re-opened.
  - You may include additional non-Action Letter related changes (any type) in your amendment response.

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4. Trials with a current NCI/CTEP status of **In Review**
  - The protocol must be revised as per the instructions outlined in the Action Letter. These changes must be included in the next revised protocol draft submitted to NCI/CTEP. The protocol will not be approved until these changes are made.
  - You may include additional non-Action Letter related changes (any type) in your revision response.
  
5. Trials with a current NCI/CTEP status of **Closed to Accrual and Treatment or Complete**
  - This information is being sent for informational purposes only. You may follow local IRB or Operations Office procedures and requirements.