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| Policy Name: Study Monitoring by the DSMB | Policy Number: 16.1 |
| Section: Study Monitoring and Interim Analyses – 16 | Date Revised: March 15, 2013 |

16 Study monitoring and interim analyses

The primary purpose of monitoring a clinical trial is to ensure the safety and well-being of the specific participants entered on the trial. All therapeutic trials are monitored and all treatment protocols must include a formal monitoring plan. All randomized phase 2 and all phase 3 trials are formally monitored by a standing Data and Safety Monitoring Board (DSMB). The monitoring functions for other treatment trials (e.g., phase 1 and non-randomized phase 2), including accrual monitoring, are carried out by the study chair, the primary statistician, and the executive officer along with other members of the study team and Alliance staff. Non-treatment trials do not usually require formal monitoring procedures, however the DSMB does monitor selected Cancer Control studies.

16.1 Study monitoring by the DSMB

16.1.1 Studies requiring DSMB monitoring

All Alliance-led phase 3 and randomized phase 2 CTEP or DCP sponsored trials are monitored by the Alliance DSMB. Other studies may be monitored by the DSMB if deemed appropriate by the group chair and DSMB chair.

16.1.2 Function of the DSMB

The responsibilities of the DSMB are as follows:

1. The primary responsibility of the DSMB is to review interim analyses of outcome data (prepared by the study statistician) and to recommend whether the study needs to be changed or terminated based on these analyses. For phase 3, phase 2/3, and blinded randomized phase 2 trials, the committee also determines whether and to whom outcome results should be released prior to the reporting of study results at the time specified in the protocol.
2. The DSMB reviews reports of related studies performed by the network groups or other organizations to determine, considering information and recommendations supplied by the study committee, whether the group study needs to be changed or terminated.
3. The DSMB reviews interim toxicity data although that is primarily the responsibility of the study committee.
4. The DSMB reviews major modifications to the study proposed by the study committee prior to their implementation (e.g., termination, dropping an arm based on toxicity results or other trials reported, increasing target sample size).

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16.2 Overview of DSMB procedures

Each study to be monitored requires periodic confidential reports to be prepared by the primary statistician. These reports are submitted to the DSMB, a single standing committee established for the purpose of reviewing all of the individual reports. No individuals other than members of the DSMB receive a copy; specifically, the study chair does not receive a copy.

16.2.1 Confidentiality

All interim analyses are carried out in a confidential manner. No one other than those explicitly authorized to be part of the monitoring process have access to the results. All such persons must keep all aspects of their deliberations in strict confidence. Any violation of confidentiality is considered a serious offense.

All members of the DSMB are required to sign a written confidentiality pledge. The DSMB maintains confidential files of all reports and actions taken on each study. No communication of the deliberations of the committee, either written or oral, may be made except as provided for in these DSMB policies and procedures. Any violation of confidentiality must be reported to the group chair.

16.2.2 Membership

The DSMB chair is nominated for a five-year term by the group chair and confirmed by CTEP. The group statistician is a non-voting member of the DSMB. All other members are appointed by the group chair for three-year terms, and include individuals primarily from outside of the Alliance. The majority of the voting DSMB members cannot be affiliated with the Alliance, and voting quorums for a DSMB meeting require that the majority of voting members not belong to the Alliance. Individuals are selected based on their breadth of experience, reputation for objectivity, absence of the actual conflicts of interest or the appearance of conflicts of interest, and knowledge of good clinical trial methodology. There is at least one lay member and a voting statistician from outside the group. One or more CTEP physician(s) and a CTEP statistician, selected by CTEP, are non-voting *ex officio* members, as are one or more DCP physician(s), selected by the DCP. Members of the DSMB who chair or co-chair studies being monitored by the committee excuse themselves from all DSMB discussions concerning that study and do not receive DSMB reports concerning that study. Members of the DSMB who are leaders (chair or vice chair) of disease or modality committees excuse themselves from all DSMB discussions

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concerning studies being conducted by their committee and do not receive DSMB reports concerning those studies.

16.2.3 Meetings

The DSMB meets at least twice yearly, ordinarily in conjunction with scheduled group meetings (see section 5). Additional DSMB meetings may be held at any time or in any form as decided by the DSMB chair. At a minimum, an in person (face to face) meeting must be held at least every 18 months.

The DSMB meeting itself consists of open (optional, per discretion of DSMB chair) and closed (required) sessions for each study under consideration. During the open session, the study chair, primary statistician, and committee chair are available to answer questions posed by DSMB members. During the closed session, the DSMB decides what action, if any, is required. The study chair, primary statistician, and committee chair must absent themselves from the closed session even if they are members of the DSMB.

16.2.4 Recommendations

The results of each DSMB meeting are summarized in a formal report sent by the DSMB chair to the group chair within one week of the meeting (urgent matters are addressed immediately). The DSMB report contains recommendations on whether to modify or close each study reviewed, whether to report the results, and whether to continue accrual or follow-up. A primary recommendation (e.g., continue with no change; recommended or required modification; stop) must be included in the document. The group chair must approve these recommendations before any action is taken.

In the unlikely situation that the Alliance group chair does not concur with the DSMB recommendation, the Alliance group chair must discuss his/her reasons for not accepting the DSMB recommendation with the chief, Clinical Investigations Branch (CIB). The chief, CIB, will then inform the CTEP associate director of the recommendation of the DSMB and of the Alliance group chair's reasons for disagreeing with the recommendation. The CTEP associate director, chief, CIB, and the Alliance group chair, in consultation with the DSMB chair, will be responsible for reaching a mutually acceptable decision about the study. Confidentiality will be maintained during these discussions, but relevant data will be shared with the Alliance group chair, chief, CIB, CTEP associate director, and other parties whom they wish to involve in reaching a decision. In the exceptional circumstance that a mutually acceptable decision cannot be reached, final

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responsibility for a decision will rest with the CTEP associate director in consultation with the director of the Division of Cancer Treatment and Diagnosis.

The group chair, or designee, is responsible for notifying the study chair, primary statistician, and committee chair before the recommendations of the DSMB are carried out. An edited version of the recommendations is distributed to Alliance membership. The Alliance keeps an archive of DSMB minutes and recommendations.

16.2.4.1 Study change for patient safety reasons

In the event that the DSMB recommends a study change for patient safety reasons (including early stopping for inferior therapy), the Alliance group chair will act to implement the change as expeditiously as possible. For studies that are being closed based on a DSMB recommendation, although CTEP/DCP pre-approval is not required, the Alliance group chair (or his/her designee) must inform and discuss the closure of the study with the chief, CIB, (chief COPTRG if a DCP study) or his/her designee before disclosing the study closure to anyone. If the DSMB recommends closure of a study, the NCI/DCTD physician member of the DSMB will provide the current 24/7 contact information for the chief, CIB, or his/her designee.

16.2.4.2 Study closure due to slow accrual

In the event that the DSMB recommends a study be closed early due to slow accrual, then the recommendation of the DSMB would be processed as described in 16.2.4.1 above. Note: NCI/DCTD/CTEP may have additional closure policies that apply to studies with slow accrual that have not yet had formal interim efficacy analyses presented to the DSMB.

16.2.4.3 Study change for non patient safety reasons

In the event that the DSMB recommends a change in a study for reasons other than either patient safety (e.g., to extend accrual because of an event rate lower than expected) or study closure due to slow accrual, the DSMB will provide to the Alliance group chair an adequate rationale. In the absence of disagreement, the Alliance group chair will be responsible for having an amendment prepared and submitted to CTEP's Protocol and Information Office reflecting the recommendations of the DSMB and

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providing the rationale for the changes. (This is required even if NCI/DCTD/CTEP approval has been obtained prior to the amendment being presented to the DSMB.) NCI/DCTD/CTEP approval of the amendment will be required prior to implementation of the change, although it is anticipated that a decision to override the recommendation of the DSMB will be made only in the most exceptional circumstances. In the event that the Alliance group chair disagrees with the DSMB recommendation, the recommendation would be processed as described in 16.2.4.1 above.

For DSMB recommendations specific to cancer prevention and control trials funded by a CCOP Research Base grant, the appropriate NCI staff to include and report to are the DCP/Community Oncology and Prevention Trials Research Group (COPTRG) program director (instead of the NCI/DCTD physician member of the DSMB), the chief of COPTRG (instead of the chief, CIB) and the associate director for clinical research in DCP (instead of the CTEP associate director), and the director of the Division of Cancer Prevention (instead of the director of the Division of Cancer Treatment and Diagnosis).

16.2.5 Study modifications

Major modifications to the study design not motivated by confidential outcome data or patient safety/toxicity data (e.g., increasing the sample size because of more rapid than expected accrual) must be discussed with NCI/DCTD/CTEP before being presented to the DSMB for consideration. If NCI/DCTD/CTEP is willing to approve the modifications, the network group may then seek DSMB approval before submitting an official amendment to CTEP’s Protocol and Information Office.

16.2.6 Release of results

For phase 3, phase 2/3, and blinded randomized phase 2 trials, *any* release of outcome data (either internal to the network group, to NCI personnel not members of the DSMB, or external [e.g., a paper presented at professional society meetings, seminars, papers, etc.]) prior to the final approval of general dissemination of results must be reviewed and recommended for approval by the DSMB to the Alliance group chair. In general, outcome data from phase 3, phase 2/3, and blinded randomized phase 2 trials would not be routinely made available to individuals outside of the DSMB until accrual has ceased and all patients have concluded their randomized treatment. After this time point, the DSMB may recommend the release of outcome data on a

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confidential basis to the study chair for planning the preparation of manuscripts, and/or to a small group of individuals for purposes of planning future trials. The DSMB will consider special requests for information from the disease committee chair prior to that time point. The DSMB should be made aware of any communication of analysis results from phase 3, phase 2/3, and blinded randomized phase 2 trials outside of the statistical center at any time. The Alliance group chair may not be able to accept the recommendation of the DSMB to release data for a specific trial if the Alliance and/or NCI/DCTD/CTEP has a binding agreement with a company collaborator (or other entity) that specifies data exclusivity for the trial without discussing the release with CTEP (for Alliance trials with a CTEP binding agreement) and/or the company or other collaborator (for Alliance studies that are under other binding agreements).

16.2.7 Presentation of results by treatment group

The DSMB assesses relative efficacy according to the protocol specified interim analyses; therefore results by treatment are presented and discussed. No treatment-specific results, coded or not, are released to anyone not on the DSMB.

16.2.8 Phase 2/3 trials

With respect to implementation of phase 2 decision rules in phase 2/3 designs of clinical trials, any protocol-specified phase 2 decision-rule analysis must be performed within six weeks from the date the required number of events are observed. If the trial follows the decision rule (i.e., continues or stops depending on whether the continuation threshold is met), then the Alliance notifies the DSMB and chief, CIB of the status of the trial (i.e., continuing or stopping) based on the protocol-specified phase 2 decision rule. In the unlikely event that the study statistician wishes to request permission not to follow the protocol pre-specified decision rule, such a request must first be discussed with NCI/DCTD/CTEP by conference call within two weeks. This request (change in the design of the trial) needs to be approved by the CTEP associate director or his/her designee in consultation with the chief, CIB who will notify the Alliance Chicago Office in writing of NCI decision regarding the request. If NCI/DCTD/CTEP is willing to approve the request, the Alliance must then seek DSMB approval within three weeks before submitting an official amendment to CTEP's Protocol and Information Office to change the design of the trial regarding the phase 2 decision rule.

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16.2.9 Industry-supported studies

Studies supported by industry are also covered by these policies and procedures. Industry representatives may not serve on the DSMB.

16.2.10 Conflict of interest

Individuals invited to serve on the DSMB are subject to the Alliance Conflict of Interest policy (see section 3.5).

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16.3 Monitoring phase 1 and 2 studies

16.3.1 Phase 1 studies

Phase 1 studies are ordinarily limited access studies. Routine monitoring is carried out via conference call among representatives of each participating institution, the primary statistician, the study chair and members of the study team. A representative from each institution must participate whenever the institution has any participants currently receiving protocol therapy. Institutions that fail to submit toxicity data as required or that do not participate in the conference calls will be prohibited from continuing to enroll participants on the study.

16.3.2 Phase 2 studies

Non-randomized phase 2 studies are routinely monitored by the study team (study chair, primary statistician, executive officer, protocol coordinator, data management personnel) and other Central Protocol Operations Program staff (e.g. director of regulatory affairs) as applicable. Each phase 2 protocol must specify the monitoring plan to be used.