

Image Standardization and Interpretation Issues *The NCI Perspective*

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Imaging Tools For Cancer Management

- **diagnosis**
- **staging**
- **stratifying patients based on biologic characteristics of the primary tumor and metastases**
- **assessing therapeutic response**
- **surveillance**

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Imaging assays in a cancer therapy trial

- **stratifying patients based on biologic characteristics of the primary tumor and metastases**
- **pharmacodynamic marker**
- **assessing therapeutic response**

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Standardization

- **Issues:**
 - **Variability of signal –**
 - Within a histology
 - Within a patient on different days (without therapeutic intervention)
 - With different scanners from the same manufacturer
 - With scanners from different manufacturers
 - With different therapeutic interventions

Standardization

- **Issues:**
 - What is a significant change in the FDG PET signal for assessing tumor burden or therapeutic response?
 - Prospective multicenter studies evaluating the role of FDG PET in assessing therapeutic response to standard therapy in appropriate histologies.

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Key issues evaluated in CIP Sponsored Phase I/II Imaging Trials

- **Preliminary efficacy**
- **Reproducibility**
- **Tissue correlation**

In the context of patient management:

- **prognosis**
- **treatment response**

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Phase II Consortium opening in Jan 2011

- **Program managed by CTEP and CIP**
- **9-10 contracts for consortia of multiple centers (80-100)**
- **Phase II treatment trial program with set aside funding for advanced imaging**
- **Drug development plans developed with the Investigational Drug Steering Committee.**

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Trial Selection

- **Input will be solicited from the IDSC and relevant taskforces**
- **Mass solicitations will include content regarding the appropriate imaging assays that would be useful to employ in the drug development studies**
- **Trials with advanced imaging will be chosen by the Clinical Trials Branch at CIP and the Investigational Drug Branch at CTEP**

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CCR FOCUS

Guidelines for the Development and Incorporation of Biomarker Studies in Early Clinical Trials of Novel Agents

Janet E. Dancey³, Kevin K. Dobbin³, Susan Groshen², J. Milburn Jessup³, Andrew H. Hruszkewycz³, Maria Koehler⁴, Ralph Parchment⁵, Mark J. Ratain⁶, Lalitha K. Shankar³, Walter M. Stadler⁶, Lawrence D. True⁷, Amy Gravell⁸, and Michael R. Grever¹ On behalf of the Biomarkers Task Force of the NCI Investigational Drug Steering Committee

Clin Cancer Res; 16(6); 1745–55.

Process Improvements Applicable across Trial Categories

- **Enhanced Biomarker Funding and Capabilities**
 - Expand the Biomarker, Imaging and Quality of Life Studies Funding Program (BIQSFP) to large randomized Phase II trials
 - Create program to fund biomarker studies for early-phase trials
 - Require clinical trial concepts/LOIs to describe proposed integral or integrated biomarker studies
 - Provide funding for development, validation, and conduct of clinical grade assays
 - Develop standards for qualifying sites to conduct imaging studies associated with clinical trials

Jim Doroshow, MD DCTD, NCI

Imaging Questions in NCI Sponsored Large Phase II and III Trials

- **Therapy (CTEP) Cooperative Groups:**
 - Protocol Review Committee
 - Concept Review Committee
 - Steering Committees
- **Imaging Cooperative Group (ACRIN)**

Quantitative Imaging Excellence Program

- **News Note: NCI Launches Centers of Quantitative Imaging Excellence Program**
- NCI is launching a new program to qualify existing NCI designated Cancer Centers with an added attribute -- as Centers of Quantitative Imaging Excellence. This program will significantly decrease potential variability in image procedures done while a patient is undergoing treatment as part of a NCI-sponsored clinical trial. Advanced imaging plays a pivotal role in cancer care by providing the ability to detect tumors early and to guide therapy as well as subsequent disease monitoring and surveillance. The American College of Radiology Imaging Network (ACRIN) and the American College of Radiology will coordinate this program for NCI.

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Centers of Quantitative Imaging Excellence Program

- **Qualification of 50 NCI Cancer Centers to perform:**
 - PET CT (static and dynamic)
 - DCE MR or CT
 - Volumetrics
 - Across all major manufacturers
 - For brain and body imaging

Timeline:

- SOPs by June 2010;
- First 25 Cancer Centers qualified by Feb 2011;
- Next 25 Cancer Centers qualified by July 2011

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Clinical Imaging Steering Committee

Forum for the extramural imaging and oncology communities to provide strategic input to NCI regarding our significant investment in imaging activities in clinical trials.

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Needs Assessment:

- **Prioritization of trial activities in imaging as they relate to NCI's strategic goal and objectives (Clinical Trial Planning Meetings)**
- **Robust extramural imaging representation in review of concepts with imaging aims (primary or secondary)**
- **Enhanced integration of imagers with oncologic expertise in the process of idea generation at the task force level**

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Clinical Imaging Steering Committee

- **Concept presented to:**
 - CTROC
 - Cooperative Group Chairs
 - Steering Committee Chairs
 - Approved in early 2010
 - Will be fully constituted by Fall 2010

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Trial Informatics: CTB, CIP Collaboration with CTEP and NCICB

- Clinical Data Reporting
 - CTRP – abstraction of imaging components of ALL NCI funded studies
 - Cancer Centralized Clinical Database (C3D)
 - Collaboration of CIP and NCICB.
 - Used in Phase II Contract trials
 - Pilot by ACRIN
- Severe Adverse Event Reporting
 - Customization of electronic AdEERS to report all imaging and IGI studies.
 - Migrating with CTEP to CAERS
- Common Data Elements
 - Engaging the Phase I/II investigators, ACRIN and NCICB to enhance the available CDEs for molecular and functional imaging.

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