

QIBA FDG-PET Technical Committee Update

March 04, 2011 at 9 AM CST

Call Summary

In attendance:

Richard Wahl, MD (Co-chair)
Andrew Buckler, MS (QIBA Program
Director)
Howard Higley, PhD
Blaine Horvath, RT
Dennis Nelson, PhD
Eric Perlman, MD

Ling Shao, PhD
Daniel Sullivan, MD
John Wolodzko, PhD
Jeffrey Yap, PhD

RSNA
Fiona Miller
Joe Koudelik

Agenda/ General discussion

- Identification of key knowledge gaps for Round II of QIBA funding
- Key sections of the FDG-PET Tech Ctte Project Plan (Gantt chart) reviewed for gap analysis
 - Technical Characteristics and Standards (I below)
 - Clinical Performance Groundwork (II below)
 - Clinical Utility Groundwork (III below)
- Definition of QC program including analysis and reporting

(I) Modification to Technical Characteristics and Standards

- Characterize potential sources of variability with new approaches and techniques
- Characterize Reader performance in study
- Resolution recovery algorithm issues concerning reproducibility need to be characterized
- Reader interpretation and inter-reader variability may create additional PET knowledge gaps; reader concordance a critical issue with the FDA

(II) Clinical Performance Groundwork

- Re-analysis of retrospective datasets at different sites deemed useful to identify potential variability; a key issue with the FDG-PET Tech Ctte (e.g. large PET SUV metrics reader study proposed)
- Readers vs. System (software) performance can be separated by use of DRO
- DRO and pre-defined RT Structure Set; i.e. test algorithms on data files
- Inter-reader vs. system error comparisons
 - Both approaches to same dataset proposed with digital phantom and patient data sets
- Some populations excluded from PET studies (e.g. diabetics) producing a gap in the knowledge base; PET procedures not known in this group

(III) Clinical Utility Groundwork

- Building statistical power with larger patient populations (data sets)
- Correlative studies to definitive clinical endpoints
- Different organ systems to be retrospectively studied, e.g. breast, colorectal, etc
- “Likelihood ratio” of tumor type to outcomes
- Dataset to determine SUV metrics; literature search useful
- PET in radiation therapy and planning discussed; beyond current Tech Ctte scope
- Need to develop interpretive confidence measures for given time points to account for variables in boundaries, e.g. out-of and within-range studies may pose specific data issues; more detail needed to structure projects
- Overtreatment issues (especially with children) to be discussed
- No standardized quantitative PET report; reporting elements to be identified

Next steps:

- FDG-PET project prioritization needed for available QIBA Round II funding
 - Committee feedback encouraged; send to Drs Wahl, Kinahan and Frank
- Mr Buckler to distribute the updated FDG-PET Profile template for group reference
- Discussion of how quantitative reporting can be incorporated into Profiles
- Next FDG-PET Tech Ctte call scheduled for Friday, March 18, at 9 AM CDT