Application for Round 3 QIBA Project Funding

Title of Proposal: FDG-PET/CT Profile Field Test		
QIBA Committee/Subgroup: NM/FDG-PET/CT		
NIBIB Task Number(s) which this project addresses: 2.3.2 (Objective 2)		
Project Coordinator or Lead Investigator Information: Timothy Turkington, PhD		
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e-mail:	Tel #:	
Institution/Company: Duke University		
Amount Requested:		

Project Description

The FDG PET profile has been developed over the past 2 years, leveraging the UPICT FDG Protocol effort to a more concise and, hopefully, more workable document. While best efforts have been used to develop an FDG PET whole body profile, which is feasible for deployment, there are several steps, which are need ed to comply with the document and implement imaging in practice. Before the profile can be considered valid, the QIBA process encourages field-testing in select sites. The FDG PET technical committee recognizes that compliance with all elements of the profile may be difficult, and that if expert sites cannot comply with the profile, it is unrealistic to expect less experienced sites to be able to implement the profile. In addition, since there are at least 3 main manufacturers of PET cameras, the ability to comply with the profile may vary by manufacturer and product. Thus, the necessity for a field test of the profile in expert sites with each of the 3 manufacturers PET cameras.

This project is a field test of the FDG-PET/CT Profile to assess both performance and compliance at multiple sites. This project will use real and digital phantoms to provide data that can be analyzed to determine Profile feasibility. Patient scan data will be used within the validation workflow as much as feasible.

Three testing sites will be selected from FDG-PET/CT Technical Committee members, with one of the three site PIs being the contact or point person. Each PI will be expert in working with, and will have access to, equipment from each of the 3 main manufacturers, ideal ly more than one model. The 3 PI arrangement included Dr. Boellaard (Philips systems), Dr. Turkington (GE systems), and Dr. Lodge (Siemens systems). These sites have multiple PET/CT scanners, and it is anticipated that more than one scanner will be assessed for Profile compliance.

The Project Lead will coordinate testing procedures, data analysis and conference calls as needed. The project will start with experienced quantitative imaging centers first, and then expand to community centers and/or core labs (if budget allows in later years).

Primary goals and objectives

The primary goal is to determine the feasibility of the FDG-PET/CT Profile as standard to test against for compliance. This data will be used to revise the Profile to improve its utility and establish efficacy. A step-by-step list of compliance tests will be generated as documentation for compliance testing for PET/CT scanners from each of the major manufacturers. Areas in which compliance cannot be achieved will be identified and documented.

The secondary goal is to measure test-retest scan SUV variability and bias at different points in the image processing chain across multiple sites using real and digital phantoms, This will also be done, as much as feasible, with patient scans within the validation workflow. It is anticipated that the acquisition, processing, display and analysis phases will be tested with at least one scanner at each site in the first phase.