

QIBA fMRI Technical Committee Summary

Friday, June 6th, 2014 at 12PM (CT)

In attendance

Ted DeYoe, PhD (Co-chair)

Cathy Elsinger, PhD (Co-chair)

Jeffrey Petrella, MD (Co-chair)

Feroze Mohamed, PhD

Nancy Obuchowski, PhD

Jay Pillai, MD

James Reuss, PhD

David Soltysik, PhD

Daniel Sullivan, MD

James Voyvodic, PhD

Zhiyue Jerry Wang, PhD

Kirk Welker, MD

Yuxiang Zhou, PhD

QIBA Round 4 (2014-15) Project Proposal – Revised version (May 12) has appropriate budget information and can be submitted as is for July deadline.

DICOM WG-16 fMRI is proceeding along. We've just started preparing a work proposal for approval. Activity is going to slow down a little now with the summer (next tcon is August).

Brief Review of June 4th meeting discussion and introduction - *Clarification of the Profile concept*

- Version 1.0 aims to quantitatively specify spatial characteristics (measurands) of fMRI activity foci and describe a set of procedures that can be used to achieve those specifications. (Procedures that depart from those described are not guaranteed to achieve the claims. Future versions of the profile may identify procedural factors that can be varied and still allow the claims to be achieved. Future versions also may indicate more optimal procedures that will allow greater precision to be achieved.)
- General audience: scientists, clinicians, manufacturers, and other “actors” involved in fMRI.
- Target end user and output: Neuroradiologist and fMRI data ready for, but not including, clinical interpretation (neurosurgeon is end user of ‘product’, but neuroradiologist is our main target end user for purposes of profile)
- V1.0 will focus on motor cortex (hand representation) with versions 1.? addressing other functional areas – much discussion surrounding the advantages/disadvantages of this issue. Consensus of the discussion is that we will focus on motor for first version of profile and claims will need to be modified.

V1.0 Claims Discussion

- V1.0 Claims will address measurands reflecting spatial characteristics of fMRI activity foci in context of motor mapping. Claim #3 will be removed for the time being and may be renewed when a new version for language mapping is in development.
- Claim #1 remained unmodified, but Claim 2 was discussed at length. Questions regarding out to define spatial extent included a lengthy discussion of thresholding (most common approach) and potentially using an alternative approach such as AMPLE, or adaptive thresholding approach. Feroze shared literature for discussion in future meeting. It was decided that Claim 2 will have 2 parts, one with language appropriate to the common thresholding of Tmap approach and one appropriate to adaptive thresholding based on a second approach. This will require that specifications (Section 3, image processing) throughout the document address each approach.
- V1.0 Profile procedures will reflect those specific methods used to acquire the reproducibility data upon which the claims rest and which, consequently, should allow a user to achieve compliance with the claims – again, using both methodologies from the reproducibility studies and focusing on motor mapping.

Nancy Obuchowski joined call and clarified Repeatability/Reproducibility concept

- Provided an overview of the presentation from the annual meeting
- Confirmed that we have addressed repeatability appropriately in our claims
- Pointing out that reproducibility is probably more clinically relevant.
- Discussion/clarification of how to measure repeatability of spatial extent measurand (from center of mass).

Strategic plan for completing profile

Unanswered issues – we spent a bit of time discussing each of the topics below, reviewing the current draft of our profile and level of detail required/appropriate.

1. How do we test Compliance? What conditions must a new procedure meet to demonstrate the ability to reliably achieve the claims?
2. Do we need to obtain information for Table G.1: Acquisition Device Model-specific Parameters Demonstrated to Achieve Compliance.
3. Appendix C: Task Paradigm specifications and the issue of functional specificity.
4. What information can be provided from results of our Round 1 and 2 funded projects?

Profile writing/editing, moving V1.0 forward:

- Ted, Cathy and Feroze to continue working on writing.
- Focus on sections of the profile where results from Round 1 & 2 funding can inform specifications – assign to writers or request specific information from group members
- Note where gaps can be addressed with literature or established guidance documentation – assign to volunteers
- Note which sections are awaiting results of current DRO project
- Keep in mind gaps or holes requiring further groundwork (or V1.1?)

Brief Discussion of DRO project progress and requirements from sites – will focus on next Bias call

Action items: Jim to redistribute new DRO test data to all participating members