

QIBA fMRI Subcommittee Update
October 20, 2010
11 am CDT

Call Summary

In attendance:

Cathy Elsinger, PhD (Co-chair)
Jeffrey Petrella, MD (Co-chair)
Harris Ahmad, MD
Andrew Buckler, MS
Edward DeYoe, PhD
Feroze Mohamed, PhD

Jay J. Pillai, MD
James L. Reuss, PhD
Daniel C. Sullivan, MD
James T. Voyvodic, PhD
Domenico Zaca, PhD

RSNA:

Joe Koudelik
Julie Lisiecki

QIBA fMRI/DICOM Work Group Update by (Dr. Elsinger)

- Dr Tucker to review submitted workflows and develop a set of common criteria

Discussion of QIBA fMRI Subcommittee Poster for RSNA 2010

- Characterization of subcommittees needed, e.g., clinical, academic, industry, etc
- Provide overall context of mission/ goal; advantages of standardization to all stakeholders needed
- Review wording from RSNA biomarker/ standards wording – Word document on WIKI
- Poster should stand alone and intrigue the casual observer who may not be familiar with the committee mission
- Outline for poster topics:
 - QIBA fMRI subcommittee composition, i.e., stakeholders
 - Mission and overall objectives, including unmet needs of the fMRI community
 - Background on Profile work and purpose; Claim language to be addressed
 - All feedback and comments welcomed by Dr. Elsinger (cathy@nordicneurolab.com)

Production of Profile

- Determine the deliverables this committee is aiming to provide
- List activities: DICOM work, etc.
- Add sub bullets under “Profile”:
 - 1) Characterization
 - 2) Quantitation
- Groundwork section to be moved to the left
- Specific numbers not to be included: as group has not yet identified specific claims

Update by Drs. DeYoe and Voyvodic

- Reviewed work on reproducibility including an outline of Dr. DeYoe’s plans for looking at fMRI reproducibility in vision and motor mapping
- Functional mapping of vision study data discussed, i.e., why this will be very informative to fMRI reproducibility studies
- fMRI reproducibility metrics based on literature search needed
 - Center of mass, overlap of activation clusters, and laterality proposed
- Types of things that affect reproducibility:
 - Will provide motor-system mapping data: vision + motor; moving forward: motor + language

Key components for Claims (conceptual framework)

1. Reproducibility: a) localization, b) laterality
2. Accuracy: a) accuracy of reproducible foci, b) accuracy of laterality assessment
3. Risk assessment: a) localization, b) laterality

- Note that accuracy and reproducibility still need to be distinguished

Claims

- Pros and cons of different approaches discussed
- fMRI as an accurate indicator of specific cortical function or risk; supportive data still lacking
- Claims need qualifiers, e.g., how Claim can be achieved
- Numbers needed to make the claim useful
- Recommendation to make both quantitative and qualitative provisional Claims

Laterality and Quantitation in Claims

- Reason for dividing Claims: clinically - neurosurgeons look at laterality as being more accurate
- Assessment of these Claims might be difficult to quantify; use of laterality is straightforward and not as difficult to control
- BOLD imaging used when patients may not be good candidates for other tests
- Need to show fMRI as a quantitative tool
- Quantitative measures in a clinical setting not replacing anything, but adding to the pre-surgical “tool kit”

Accuracy

- How accurate is the local measurement?
- How accurate is the laterality assessment?
- Positioning as it relates to accuracy: Correctly centered for primary motor cortex?
- fMRI can be functionally specific, e.g., an accurate indicator of specific cortical function
- Quantification of accuracy is the challenge; important to reproducibility but the most difficult thing to assess
 - Needs to be made functionally specific
 - Use standard acquisition and analysis techniques

Quantifying reproducibility

- To quantify reproducibility:
 - Make standard datasets available
 - Test/ retest for various tasks using a variety of analysis approaches

Next Steps:

- Dr. Elsinger to circulate draft poster edits for comment
- Profile draft in process: characterizing workflow, “Provisional Claims” to be used instead of disclaimers
- Dr. DeYoe to draft accuracy Claims
- Consider a new small subgroup to draft the Profile
- Next call scheduled for Wednesday, Nov 3 at 11 am CDT