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

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

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:
  o QIBA fMRI subcommittee composition, i.e., stakeholders
  o Mission and overall objectives, including unmet needs of the fMRI community
  o Background on Profile work and purpose; Claim language to be addressed
  o 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”:
  o 1) Characterization
  o 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
  o Center of mass, overlap of activation clusters, and laterality proposed
• Types of things that affect reproducibility:
  o 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