

QIBA fMRI Subcommittee Update

Wednesday, March 24, 2010

11 AM CDT

Call Summary

In attendance:

Cathy Elsinger, PhD (co-chair)
Jeffrey Petrella, MD (co-chair)
Daniel P. Barboriak, MD
Bradley Buchbinder, MD
Andrew Buckler, MS
Ted DeYoe, PhD
Feroze Mohamed, PhD
James L. Reuss, PhD

Daniel C. Sullivan, MD
Douglas M. Tucker, PhD, MBA

RSNA

Fiona Miller
Susan Anderson, MLS
Joe Koudelik

QIBA Update (Dr Elsinger)

- The fMRI wiki (http://qibawiki.rsna.org/index.php?title=FMRI_subctte) is open to all and does not require log-in for viewing; subcommittee members have received password for wiki editing privileges; contact Joe Koudelik, jkoudelik@rsna.org, with questions
- Acknowledgement of efforts by subctte members and guidance from Mr Buckler and others in drafting Profile
- QIBA annual meeting scheduled for May 25-26, 2010 in Chicago

QIBA fMRI Profile draft

- Review of Profile draft—Assumption, Long-and Short-term goals, Intended Use and draft Claims
- In Assumption text, define 'validate/verify appropriateness'
- Emphasize 'reduce variability, increase reproducibility/repeatability' rather than accuracy
- Discussion of sentence related to 'ultimate goal'; aim of group is to develop a framework beyond motor mapping and to learn more about quantitative measures to apply to other use cases; want to define a process/criteria to help develop guidelines and recommendations to reduce variability
 - Not limited to 1 or 2 paradigms but broader range of paradigms; a focus on informing a novice end-user is appropriate
- Identifying sets of paradigms will also help manufacturers and vendors test their products against specs
- Literature review (instead of clinical study) can define current data for reasoned judgment
- Consider adding goal of creating requirements on data and data display
 - DICOM Working Group 16 is looking at creating a supplement on fMRI; need communication and alignment of what both groups are doing to avoid overlap
 - fMRI has statistical and anatomical map; looking to vary threshold on statistical map and incorporate into DICOM, e.g. contrast level control and track vs. fMRI data
 - Standardization needed to allow interoperable communication between systems
 - Consider cross-representation on DICOM 16 and fMRI committees
 - Dr Clunie or Dr Tucker recommended as DICOM resource person
 - Need to focus beyond DICOM standards to maintain vendor interest
- Consider interaction with NIfTI (Neuroimaging Informatics Technology Initiative) at NIH;

Intended Use Statement

- Discussion of 'eloquent cortex' concept; reserve term for areas that result in clinically significant deficit if damaged or resected
- Dr Elsinger will re-word to differentiate between 'eloquent cortex' and functioning cortex
- Consider ASFNR and literature on predictive value
- Clarify statement on performing language paradigm; add text suggesting performing paradigm twice and comparing results
- Consider addition of neurovascular uncoupling task to each pre-surgical exam before functional exam or design of paradigm with additional data collection to ascertain uncoupling

Claims

- Interest in substantiating Claims and relating to goals to establish a framework for development of protocols
 - Establish minimum scores and measures
 - refine with operational definitions
 - make the implicit more explicit, e.g. behavior and amplitude of fMRI signal address qualification of performance/behavior and amplitude of fMRI signal
- Framing Claims in stronger language will be particularly useful to capture intention and motivate new users
- Address selection of task (to accommodate patient abilities) and training of subject to perform task, e.g. faster/slower version of task, different types of movement
- Level of performance needed; state-of-the art today to establish how current practice can be improved
- Emphasize importance of real-time monitoring of patient; the ultimate way to perform paradigms
- Consider one overarching Claim for each phase, e.g. QC for scanner, acquisition parameters, choice in performance and monitor task paradigms, statistical analysis, visualization
- Can incorporate bulls-eye approach - Acceptable, Target and Ideal

Next Steps:

- Comments and changes to Draft Profile sections on wiki encouraged
http://qibawiki.rsna.org/index.php?title=Profile_Development
 - Dr Elsinger will refine Claims language and will supply text to differentiate between eloquent cortex and functioning cortex in Intended Use section
 - Mr Buckler to provide feedback concerning number of Claims
- Next call scheduled for Wednesday, April 7, 2010 at 11am CDT