

QIBA fMRI Subcommittee Update

Wednesday, March 10, 2010

11 AM CST

Call Summary

In attendance:

Cathy Elsinger, PhD (co-chair)
Jeffrey Petrella, MD (co-chair)
Bradley Buchbinder, MD
Andrew Buckler, MS
Ted DeYoe, PhD
Jay Pillai, MD
Daniel C. Sullivan, MD
Douglas M. Tucker, PhD, MBA

RSNA

Fiona Miller
Susan Anderson, MLS
Joe Koudelik

QIBA Update (Dr Elsinger)

- Dr. Joy Hirsch and Dr. Jeff Petrella, representing academic and clinical perspectives respectively, have agreed to co-chair the fMRI Subcommittee
- All fMRI subcommittee members have received password for wiki editing privileges; viewing the wiki (http://qibawiki.rsna.org/index.php?title=FMRI_Project_Page) is open to all and does not require log-in
- QIBA annual meeting scheduled for May 25-26, 2010 in Chicago; Dr Elsinger unable to attend; will continue discussion on breakout session for fMRI subcommittee

ASFNR face-to-face meeting 2/24/10 (Dr Elsinger)

- Group discussed respective focus, background and activities for ASFNR-sponsored multicenter trial as well as potential areas of collaboration on the ASFNR/QIBA initiatives
- The fMRI study group meeting reinforced the importance and critical need for QIBA-initiated activities

QIBA fMRI activities

- QIBA fMRI to consider taking initiative in establishing guidelines for implementing fMRI as an imaging tool in the context of presurgical mapping.
 - ASFNR working towards interpretive, clinical guidelines with qualitative results; QIBA can work towards technical paradigm and acquisition guidelines to address reducing variability, how exams are conducted and quantitative measures to validate/verify paradigms and their integrity
- Consider implementation of technology (scanner, software for paradigm) versus technology for analysis
- QIBA works towards reducing bias and variance as well as clinical interpretation and qualification; consider clinical trials as well as clinical practice
- Activities may fall between where FBIRN (scanner, validity, etc.) ended and ASFNR multi-center trials have picked up
- fMRI subcommittee could try to optimize single-subject acquisition parameters and paradigm design
- Issue: statistical analysis for fMRI data and quality control analysis lacks standardization
- Consider working through a test-case assessing a specific paradigm; as a starting place, motor mapping is less complex and more reproducible than language
- QIBA Profiles can address different uses; could be addressed through different subgroups
 - Presurgical planning endpoint involves *risk assessment* and *predictive value assessment* for patient undergoing surgery while a pharma/clinical trial involves *therapeutic effects/response*
 - Question may be phrased:
 - Is fMRI a measure of current cortical function at a certain location?
 - What is the quantitative value of fMRI as predictor of cortical function (or essential function)?
- QIBA Profiles consist of:
 1. Intended use (clinical context), e.g. risk assessment or clinical trials
 2. Claims (level of performance, both state-of-the-art and areas for improvement)
 3. Protocol (structure provided by UPICT template)
 4. Compliance check

- Develop questions that need to be answered, e.g.:
 - What are feasible language paradigms for laterality?
 - What are feasible motor task for motor cortex?
- Subgoals may include:
 - Guidelines for acquisition of fMRI data for presurgical mapping
 - Guidelines for processing and statistical analysis of data (quality control analysis)
 - Guidelines for design of clinically appropriate task paradigms
 - Clinical application, e.g. motor mapping
 - Explore methodology (optimal vs. workable); QIBA reflects in bull's eye approach of *acceptable, target and ideal* performance levels
 - What current state of the art is as reflected in the literature?
 - What is the degree of tolerable variability, i.e., what is clinically acceptable variance?

Other business

- Article "Methodology of guideline development". Neurosurgery. 2002 Mar;50(3 Suppl):S2-6 by Steve Haines, chairman of neurosurgery at U of MN has been sent to subcommittee for reference

Next Steps:

- Dr Elsinger to draft Profile sections on 1) Intended use and 2) revised Claims and circulate draft for review
- RSNA staff to post links to sample profile and UPICT template on fMRI wiki
- Next call scheduled for Wednesday, March 24, 2010 at 11am CDT