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

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](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.:
  o What are feasible language paradigms for laterality?
  o What are feasible motor task for motor cortex?
• Subgoals may include:
  o Guidelines for acquisition of fMRI data for presurgical mapping
  o Guidelines for processing and statistical analysis of data (quality control analysis)
  o Guidelines for design of clinically appropriate task paradigms
  o Clinical application, e.g. motor mapping
  o Explore methodology (optimal vs. workable); QIBA reflects in bull’s eye approach of acceptable, target and ideal performance levels
  o What current state of the art is as reflected in the literature?
  o 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