

## QIBA fMRI Bias Work Group Call

Tuesday, June 11, 2013 at 10 AM CT

Call Summary

*Additional notes provided by Dr. Voyvodic*

### Participants

James Voyvodic, PhD (chair)

Ted DeYoe, PhD

Cathy Elsinger, PhD

Erich Huang, PhD

Feroze Mohamed, PhD

Jay J. Pillai, MD

James Reuss, PhD

Daniel Sullivan, MD

Yuxiang Zhou, PhD

### RSNA

Joe Koudelik

Julie Lisiecki

**Agenda:** Follow-up from the 6/5 fMRI Technical Committee call to finalize selection and next steps for proposed future QIBA fMRI projects.

### Discussion:

- Briefly discussed possible collaboration with ASFNR on existing QIBA fMRI efforts related to QIDW
- Proposed projects reviewed in further detail:
  - Project 1: Assemble existing reproducibility fMRI scans and synthesize new DRO scans (in reproducibility pairs) to test reproducibility, sensitivity, bias, and linearity. Upload all to QIBA's QIDW. Design and implementation of the DRO data sets will be largely driven by the goals of Project 3.
  - Project 2: Have multiple different sites download a subset of Project 1 data sets and use their standard analysis methods to generate QC metrics and activation maps. Make AMPLE algorithm available for sites to download and use as well. Resulting unthresholded maps to be submitted to central site for review with respect to reproducibility and bias claims; sites can also submit thresholded maps using non-subjective thresholding algorithm. Sites need to specify algorithms used for comparison (we will not publish comparison of software products, only algorithms). One goal of multi-site approach is to include a wide variety of algorithms and software approaches so that our Profile is representative of the current state-of-the-art. Another consideration is to compare the quality control metrics normally applied at each site to address data qualification concerns.
  - Project 3: Perform a more extensive analysis of DRO data sets at one or two sites to systematically assess the important sources of variances we have identified in the Profile.
  - A review of existing optimum Profiles was suggested to provide a best-practices frame of reference
  - Extraction of unused but potentially helpful algorithms suggested
- Projects 1 and 3 represent a continuation of Year 1 reproducibility projects
- Project 2 may be structured as a multi-site challenge: What approaches produce best reproducibility?
  - Test run on a small case may be used to determine whether sites are equipped to participate
  - De-identification of software packages to be tested was recommended
  - Testing on different methods to include: GLM, correlation, t-test, motion correction, smoothing algorithms, and various thresholds
  - Listing the process steps in each analysis is very important
  - A list of sites that might be interested in future field testing will be derived from the QIBA fMRI Workflow Survey, ASFNR contacts, and a Doodle poll to tech ctte members
  - It was also suggested that reading sites be paid a small honoraria, \$2000 (10-20 datasets per site at \$100 per dataset). Approximately 10 participating sites was deemed manageable and useful for this effort

### Action items:

- Dr. DeYoe to summarize recent group project discussions and send proposed projects overview to Dr. Sullivan prior to 6/19 tech ctte call
- Dr. Reuss to provide QIBA fMRI Workflow Survey Poster to RSNA staff to post to the QIBA wiki

### Next calls:

- QIBA fMRI Technical Committee, *Wednesday, June 19, 2013 at 11 am CT*
- QIBA fMRI Bias Working Group, *Tuesday, June 25, 2013 at 10 am CT*