

QIBA fMRI Biomarker Committee (BC) Call

Wednesday, August 22, 2018 at 11 AM CT

Call Summary

In attendance

Feroze Mohamed, PhD (Co-chair)

Jay J. Pillai, MD (Co-chair)

Christopher Conklin, PhD

Cathy Elsinger, PhD

Ping Hou, PhD

Andrew Kalnin, MD

Nancy Obuchowski, PhD

Uma Ranjan, MSc, PhD

Flavius Raslau, MD

Jim Voyvodic, PhD

RSNA staff

Joe Koudelik

Susan Stanfa

Review of Previous Call Summary

- The 08.08.18 call summary was approved as presented

fMRI Profile 1.0 Update (Elsinger)

- Dr. Elsinger continues to address public comments and is working with Dr. Fedorov on co-registration issues

Summary of Motion DRO Results (Dr. Voyvodic)

- Results from a re-analysis of motion DROs were presented
- This was the third DRO design iteration due to the discovery of differences in methods used to create data and correct for motion among different testing sites
- Two different DROs were created to simulate motion: block and event design
- Analysis method/procedures were explained
- Both language and motor tasks were included in the block design; only motor tasks were used for event-based design
- Distribution of signal activation intensity was spatially-derived from human subjects
- Activation maps were generated, which in turn generated statistical maps of t-values from General Linear Model (GLM)
- FSL, SPM and AFNI fMRI software were used
- 999 samples of empirical head motion were used: each sample had 6 degrees of motion (3 trans, 3 rots) for each of 22 slices, for 150 time points
- Block-design tasks (Round 4 DROs): 6,700 DROs were generated and analyzed, with and without a motion correction option, also generated by censoring out (omitting images with in-volume motion) short periods of intense motion
- Many motion metrics were tried, but ultimately used were: assessment of frame-to-frame motion within TR and conditional change where some motion is relative to a fixed average
- Metrics that can be applied without known truth are needed
- Dr. Voyvodic hopes to publish the DRO analysis results
- Event-design tasks (Round-5 DROs) to be discussed during an upcoming fMRI BC call

Next calls:

- QIBA fMRI Bias TF call – Tuesday, August 28, 2018 at 1 PM CT
- QIBA fMRI Biomarker Committee call – Wednesday, September 5, 2018 at 11am CT

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