QIBA fMRI Biomarker Committee (BC) Call
Wednesday, November 4, 2020 at 11 a.m. (CT)
Call Summary

In attendance

Jay Pillai, MD (Co-chair)

David Soltysik, PhD (Co-chair)

Feroze Mohamed, PhD (Co-chair)

Shruti Agarwal, PhD

Cathy Elsinger, PhD

Ichiro Ikuta, MD, MMSc

Ho-Ling (Anthony) Liu, PhD

James Voyvodic, PhD

Francisco Zamorano, PhD

RSNA staff

Joe Koudelik

Susan Stanfa

Moderator: Dr. Soltysik

Review of Previous Call Summary
- The 10.21.2020 call summary was approved as presented

Update on Language Reproducibility Study (Dr. Voyvodic)
- 1,300 cases in-hand; 650 different subjects (composed of: 80% cancer patients, 10% with epilepsy and 10% healthy individuals) were scanned
- Dr. Voyvodic has cross-session (between subjects) and within-session (to assess within-subject variability) data for the same tasks and different tasks (mainly sentence completion or word generation)
- A detailed, step-by-step description of the methodology was provided
- Two rounds of analysis were conducted to determine how best to perform comparisons
- Large ROIs based on the brain atlas map were used
- The number of activation clusters in particular language regions based on peak signals was determined, and that information was used to generate language and activation ROI maps
- Individual clusters of activation between different language areas were identified
- Metrics Laterality Index (LI), cluster location and cluster size of language activations in human subjects who have performed more than one sentence completion or word generation language task were compared
- Maps were scored based on the amounts of activation overlap; greater overlap signifies a better scan
- Each scan was scored for head motion and various other quantitative metrics, then, for each one, peaks of language activity were defined, and cluster analysis was done
- There was peak activation in four different language ROIs, including the left and right frontal and left and right temporal areas
- Due to detection of many bad scans during the first round of analysis (e.g., activation below a minimal cut off value), minimal quality criteria were developed and used in the second round
- Mean activation of subjects that performed sentence completion tasks was determined
- Findings indicate that sentence completion tasks and word generation tasks produced activation in similar areas of the brain
- Results suggest that reproducibility metrics within tasks or across sessions or across tasks are very good if performed as specified
- Discussion of this study to be continued during an upcoming fMRI BC call

Next call: Wednesday, November 18, 2020 at 11 a.m. CT (1st & 3rd weeks of each month)