QIBA fMRI Reproducibility Work Group Update

Tuesday, May 01, 2012 at 11 AM CT

Call Summary

In attendance		**RSNA**
James Voyvodic, PhD (Chair)	Jay Pillai, MD	Joe Koudelik
Paul Carson, PhD	Laura Rigolo, MS	
Barbara Croft, MD	David Soltysik, PhD	
Ted DeYoe, PhD	Domenico Zaca, PhD	
Jeffrey Petrella, MD		

Discussion regarding the study of Metrology as it relates to fMRI and quantitative measurement

- Metrology efforts were focusing on volume, repeatability, and terminology (definition)
- Greater discussions concerning fMRI involvement could be shelved for the QIBA Annual Meeting in May

QIBA/NIBIB Round-1 funded project updates (Dr Voyvodic)

- Dr Voyvodic is close to completing his reproducibility study
- Publication proof for fMRI language task reproducibility assessments in hand
- Rerunning quantitative algorithm for temporal stability over multiple patient datasets
- Variability in AMPLE normalization still exists due to various factors
- Good temporal normalization observed (within session); better spatial consistency (cross-session) needed
- Stability within a session should predict stability across multiple sessions
- Will finalize analysis to present data at 2012 QIBA Annual Meeting in Chicago

QIBA/NIBIB Round-1 funded project updates (Dr DeYoe)

- Remaining datasets being gathered into spreadsheets to perform reproducibility analysis
- Collecting final numbers soon
- Plans to post datasets online for reference
- All derived measurements comprise this dataset

Open Image Archive (OIA) / QIBA-RIC Task Force (TF) Update (Dr Voyvodic)

- QIBA-RIC TF implementing a data warehouse hosted through the RSNA
- DCE-MRI phantom data to be the first use-case; data to be uploaded once functionality is determined
- This would be an ideal site to store fMRI image and meta-data

Variability and BOLD signal calibration discussed

- What physiological "thing" is fMRI reflecting? This is the ultimate goal and must be determined
- Need to make fMRI more quantitative
- Reproducibility of the BOLD signal is of primary interest; accuracy (comparing to a physiological standard) is secondary; need to establish a reproducibility methodology first
- Sources of variance needed, with side projects examining methods beyond BOLD, e.g., calibrated fMRI based on blood flow
- Relationship not clear between BOLD signal and neural activity via field potential or action potential differences not known; linear relationships not expected
- Units for biomarkers not yet clear; what is needed is (1) definition of a "standard range" and (2) where the patient falls within this range
- Need to quantitate activation maps

Next Calls

- QIBA fMRI Technical Committee, ***Wednesday, May 9, 2012 at 11 am CT***
- QIBA fMRI Reproducibility Working Group, ***Tuesday, May 15, 2012 at 11 am CT***