# QIBA fMRI Biomarker Committee (BC) Call

Wednesday, October 16, 2019 at 11 AM CT

Call Summary

| In attendance | | | RSNA staff |
|---|---|---|---|
| *Jay Pillai, MD (Co-chair)* | Andrew Kalnin, MD | Uma Ranjan, MSc, PhD | Joe Koudelik |
| *David Soltysik, PhD (Co-chair)* | Nancy Obuchowski, PhD | | Susan Stanfa |

**Review of Previous Call Summary**

- The 10.02.2019 call summary was approved as presented

**QIBA Posters at RSNA 2019**

- MR Co-chairs determined that two posters will be needed to accommodate all MR BC content
- Dr. Pillai to draft 1 or 2 bullet points on the impact of quantitative language-mapping and how the fMRI Profile will improve patient care and reproducibility
- Poster contributors were asked to send content to Dr. Boss (mboss@acr.org) by the end of October or sooner
- Following the Oct. 2 fMRI BC t-con, staff emailed MR CC Co-chairs on behalf of fMRI Co-chairs for clarification and additional information
- Dr. Pillai followed up with MR CC Co-chairs on Oct. 16 to gather more poster/template details

**Profile v2.0 (language-mapping)**

- A literature search and a review of presurgical language-mapping with fMRI repeatability studies are underway; several were highlighted
- Reliable reproducibility results will be acquired using Dr. Voyvodic's methodology in: Voyvodic J. **Reproducibility of single-subject fMRI language mapping with AMPLE normalization**. *J Magn Reson Imaging*. 2012.
- Clearly defined gold standard / ground truth for language paradigms across studies was lacking
- Reminder that Profile v2.0 will not include a "ground truth" Claim, but rather a reproducibility Claim re: BOLD activation; within-subject variability to be the focus, since bias is not understood (no phantom studies to compare in terms of truth)
- Fernández G, et al. **Intrasubject reproducibility of presurgical language lateralization and mapping using fMRI**. *Neurology*. 2003.
  - An early study that found laterality indices to be reliable

- Guisani C. **Is preoperative fMRI reliable for language areas mapping in brain tumor surgery? Review of language fMRI and direct cortical stimulation correlation studies**. *Neurosurgery*. 2010.
  - Papers from 1997 – 2008 using fMRI studies performed at 1.5T were reviewed; conclusion may be limited
  - The conclusion: "The contradictory results of these studies <u>do not</u> allow consideration of language fMRI as an alternative tool to DCS in brain lesions located in language areas, especially in gliomas because of the pattern of growth of these tumors," was deemed pessimistic

- Benjamin CFA, et al. **Presurgical language fMRI: clinical practices and patient outcomes in epilepsy surgical planning**. *Hum Brain Mapp*. 2018.
  - The goal of this study "was to document current clinical practice and report patient outcomes in presurgical language fMRI for epilepsy surgery"
  - A survey was conducted focusing on clinicians' use of and experience with presurgical language fMRI
  - Nearly all respondents reported using fMRI (96% of programs), neuropsychological assessment (99%) and extraoperative stimulation mapping (93%) in evaluating language preoperatively (total respondents: *n* = 80)

- Partovi S, et al. **Effects of covert and overt paradigms in clinical language fMRI**. *Acad Radiol*. 2012.
  - Language localization and BOLD signal characteristics were largely consistent using covert and overt paradigms
  - This study revealed high intra-individual and inter-individual reproducibility of language localization and lateralization using covert sentence generation (SG) and word generation (WG) paradigms; this is an argument for using covert language tasks based on supporting data

**Reminder:**
- Please RSVP for the Dec. 4 QIBA Working Meeting during the 2019 RSNA Annual Meeting
- Please sign up for the RSNA 2019 MTE Sessions at the QIBA Kiosk:
  - Type in your name next to the presentation time slot that works for you (we encourage that each 30-minute time slot is filled by at least one committee member)
  - Simply close out of the document (there is no save button and changes will automatically save)

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**Next call**: Wednesday, November 6th, 2019 at 11 a.m. CT (1st & 3rd weeks of each month)
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