

QIBA Perfusion, Diffusion and Flow – MRI Biomarker Committee (BC) Update Call

Wednesday, December 9, 2015 at 11 AM (CST)

Call Summary

Participants

Michael Boss, PhD (Co-Chair)

John Kirsch, PhD (Co-Chair)

David Bennett, PhD

Mark Brown, PhD

Thomas Chenevert, PhD

Caroline Chung, MD

Alexander Guimaraes, MD, PhD

Edward Jackson, PhD

Hendrik Laue, PhD

Dariya Malyarenko, PhD

Elizabeth Mirowski, PhD

Nancy Obuchowski, PhD

David Purdy, PhD

Ying Tang, PhD

Walter Schneider, PhD

Xiangzhi Zhou, PhD

Yuxiang Zhou, PhD

RSNA

Joe Koudelik

Susan Weinmann

Moderator: Dr. Boss

Dr. Boss thanked those who participated in the face-to-face QIBA Working Meeting at the RSNA 2015 Annual Meeting, where plans for the coming months were discussed

Cross-modality DRO Poster (Dr. Boss)

- Dr. Boss showed the final version of the poster, which was displayed in the QIBA Kiosk area at the RSNA Annual Meeting
- Poster contributors were thanked for the following content:
 - Previous work: NIBIB-funded projects, Rounds 1 – 4 (Drs. Barboriak, DeYoe, Kinahan, Laue, Obuchowski, Pillai, and Voyvodic)
 - Measures of agreement: disaggregate vs. aggregate (Dr. Obuchowski, et al.)
 - Future work: NIBIB-funded projects, Round 5 (Drs. Barboriak and Malyarenko)
 - Publications and presentations (Drs. Clunie, Elston, Huang, Kessler, Kinahan, Nelson, Obuchowski, Pierce, Raunig and Sullivan)
- PDF-MRI and DRO posters will be posted on the [QIBA wiki](#)

DCE Update (Drs. Chung & Laue)

- Discussion at the QIBA Working Meeting breakout sessions was summarized
 - Goals of DCE-TF and history of PDF BC and DCE TF
 - DCE Profile v1.0
 - Expert consensus was utilized in areas where published data were lacking
 - Drs. Rosen and Guimaraes will continue working on the ACRIN 6701 trial data input for updated Profile version
 - The DCE-MRI phantom may be recirculated for additional scanning (currently in Germany)
 - Development of DCE Profile v2.0
 - In order to guide the directions of v2.0, a literature search ensued
 - Given recent review of the 3T literature search results, B1-mapping was recommended by the group to be included in v2.0
 - Interest in coordinating Profile effort with MR Vendor Subcommittee
 - Timeline goal: complete literature search by end of February 2016

- Use of DRO to validate analysis methodology as part of the Profile
 - Test open source software packages for DCE-analysis on DROs
- Potential groundwork projects: 3T multisite study
 - B1 mapping using QIBA DCE phantom
 - 20 vs. 30 degree flip angle evaluation using phantoms (QIBA DCE, flow) and DRO
- Topics for future calls:
 - Use DRO to test individual analysis approaches vs. commercial software
 - B1 mapping – vendor software availability
 - Unpublished test-retest studies: Drs. Jayashree and Uulke
- Dr. Jackson will work with Dr. Chung regarding access to phantoms
- Interested QIBA Members were encouraged to visit the QIDW at: <https://www.rsna.org/QIDW/> to view data resulting from groundwork projects

DSC Update

- One Round 5 project investigates designs for a DSC phantom, which was discussed at the face-to-face QIBA Working Meeting at the RSNA 2015 Annual Meeting
- Drs. Mirowski, Wu, Erickson, et al. discussed components to be included in the phantom as well as a timeline of deliverables
- Drs. Wu and Erickson to continue discussion on future call, as this group is very early in its developmental stage

DWI Update

• ADC Phantom Paper

- Dr. Boss presented at the RSNA Annual Meeting
 - Standardized image analysis performed
 - Regions for interest (ROIs) drawn in diffusion-weighted images
 - ADCs calculated from mean signal within ROI in 5 slides across b-values over 4 passes
 - Excellent scanner repeatability observed
 - Interscanner reproducibility
 - Effect of higher and larger number of b-values analyzed
 - Lower ADCs require higher b-values
 - Up Next:
 - Rich dataset already collected, analysis ongoing
 - Orientation data
 - Longitudinal reproducibility
 - Multiple scanners at sites
 - Need to look at all collected data across vendors and field sites - 4 GB of data still needs to be analyzed in efforts to identify performance placeholder figures/numbers
 - Catalog data and identify any gaps
 - Extend analysis to 4th vendor
 - More 1.5 T data
- Over next 3 – 6 months: draft paper on prototype phantom data changes in imaging protocol and production phantom

Profile

- To be discussed on future call

General

- The RSNA office will be closed Dec 24, 2015 through Jan 3, 2016. The next call will be on Wednesday, January 6.
- The next call will contain an update on DCE TF activities and a status update on the MR Vendor Subcommittee

Next PDF-MRI Biomarker Committee Call: January 6, 2016 at 11 AM CST [Dr. Boss to moderate]