

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

Wednesday, August 17, 2016 at 11:00 AM (CDT)

Call Summary

Participants

Michael Boss, PhD (Co-Chair)

John Kirsch, PhD (Co-Chair)

Bradley Erickson, MD, PhD

Xavier Golay, PhD

Edward Jackson, PhD

Kathryn Keenan, PhD

Claudia Kirsch, PhD

Hendrik Laue, PhD

Savannah Partridge, PhD

Ying Tang, PhD

Ona Wu, PhD

Robert Young MD

Gudrun Zahlmann, PhD

RSNA

Susan Weinmann

Moderator: Dr. Boss

DSC TF Update (Drs. Erickson & Wu)

- QIBA DSC Phantom: Progress as of August 2016 (results were shared by Dr. Keenan at NIST)
 - Round 1:
 - Results matched values for blood found in the literature, but T1 changed with T2, T2*
 - Prefer samples with constant T1, variable T2* so it did not have to be measured for assessment of phantom
 - Round 2:
 - Switch to Dysprosium and Terbium, still salts
 - Successfully imaged in the axial orientation with no/few bubbles
 - T1 still changed with T2 and T2*
 - Round 3:
 - Stability of nanoparticles was a potential issue
 - Round 4:
 - Good stability of solution; possible phantom solutions were identified
 - Dr. Keenan to send results to Dr. Wu to confirm that they meet the needs of the DSC TF
 - Once confirmed, one phantom will be transported to Dr. Wu and the other will be kept at NIST for stability-monitoring
 - If solution remains stable, phantom will be distributed to additional scanning sites
 - Cost of dysprosium nanoparticles from Sigma-Aldrich is relatively inexpensive
 - Ratio of T2 to T1 is 50:1, which is very high and typically difficult to achieve
 - Stability and concentration monitoring of phantom solutions planned for the next 1 – 2 months
- DSC Profile Update
 - Minor modifications were made
 - The DSC Profile is available on Google docs and can be accessed by emailing [Dr. Wu](#) for the link
 - Representative figure based on workflow to be inserted
 - Literature review continues
 - Over 2,500 papers were reviewed
 - 300 papers were directly related to DSC and tumors

- 100 papers were associated with reproducibility studies
- Papers that will support the longitudinal and cross-sectional Claims in the DSC Profile to be identified

DCE, DSC & DWI Profile Cross-Comparison

- The DCE TF has requested a cross-comparison with sister MR Profiles, focusing on Section 3 details and format
- All three of these TFs are close to completing a Profile draft to distribute for public comment
- The goal is to be as consistent as possible across Profiles
- DCE & DSC TF Co-Chairs provided latest Profile drafts to Dr. Boss for cross-comparison
- All three Profiles follow the latest Profile template format with regard to sections and subsections
- The cross-comparison continued from subsection 3.3
- 3.4: Subject Selection
 - Placement of content within appropriate subsections discussed
 - Consensus was reached in regard to addressing safety and contraindications to MRI
 - Details beyond directing to local guidelines to be avoided; additional information would fall outside the scope of QIBA Profiles
 - The more generalized the Profiles are, the easier it will be for them to evolve over time
- 3.5: Subject Handling
 - Differences in these sections among the three MRI Profiles were described
 - Specific risks/contraindications to be included in the appendix
 - FDA safety specifications to be omitted; direct to local guidelines
- 3.6: Image Data Acquisition
 - There were tremendous variations across Profiles in this subsection
 - Consistent nomenclature across Profiles is needed
 - Discussion on inclusion of DICOM tags:
 - Tags may vary from vendor to vendor
 - If it is helpful to the actor in regard to achieving the Claim, then tags to be included
 - May be included in Appendix D: Vendor-specific tag use
 - Known issues that would preclude someone to achieving Claim to be highlighted
 - Distinction between Profile inclusion and QIBA efforts; role of QIBA is to address tags and push standardization, but it might not be within the scope of a QIBA Profile

Next Steps

- Continue with the Profile cross-comparison discussion on subsection 3.6 and proceed from there
- Discuss RSNA 2016 Annual Meeting PDF-MRI poster on August 31
 - Poster to include Profile activities and project updates from Rnd-5 and -6
 - Conciseness is crucial as there is limited space to represent four PDF TFs
- Upcoming PDF Task Force Updates:
 - August 31 – DCE
 - September 14 – DTI
 - September 28 – DWI
 - October 12 – DSC

Next PDF-MRI Biomarker Committee Call: August 31, 2016 at 11 AM CDT (DCE TF update is scheduled)