

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

Wednesday, February 1, 2017 at 11:00 AM (CT)

Call Summary

Participants

Michael Boss, PhD (Co-Chair)

John Kirsch, PhD (Co-Chair)

Mark Rosen, MD, PhD (Co-Chair)

David Bennett, PhD

Thomas Chenevert, PhD

Caroline Chung, MD

Catherine Coolens, PhD

Amita Dave, PhD

James Ewing, PhD

Andrey Fedorov, PhD

Daniel Gembris, PhD

Edward Jackson, PhD

Daniel Krainak, PhD

Hendrik Laue, PhD

Dariya Malyarenko, PhD

John Moreland, PhD

Nancy Obuchowski, PhD

Samir Sharma, PhD

Ying Tang, PhD

Brian Taylor, PhD

Junqian (Gordon) Xu, PhD

Gudrun Zahlmann, PhD

RSNA

Joe Koudelik

Susan Weinmann

Moderator: Dr. Boss

DCE Update (Drs. Laue & Wu)

- Literature search status:
 - Brain: done
 - Head and Neck: nearly finished
 - Prostate: 75% complete
 - Breast needs additional discussion
 - Limited test-retest data presents a challenge in regard to Claim development
 - Dr. Ewing to forward his test-retest publication (with control animals) to Dr. Laue for reference
- Round-6 Groundwork Project Z (Dr. Nayak) Assessing T1
 - Events:
 - October 1, 2016 – QIBA/NIBIB Round-6 project start date
 - December 14, 2016 – torso shells arrived
 - January 9, 2017 – head shells and fat mimic arrived (High Precision Devices)
 - Actions:
 - Learning curve – doping for T1 and conductivity matching
 - Failed experiment to “measure” conductivity of solution
 - Protocol development for Siemens (100% done)
 - Protocol development for GE (50% done)
 - Test scan with filled head shell
 - Next 3 months:
 - Protocol development for Toshiba
 - Protocol development for Philips
 - Vendor check/approve protocols
 - Logistics: handling the very heavy torso phantoms & safeguards against leaks
 - Check fill solutions – T1 [maybe Conductivity]; NIST to help assess
 - Scans to be conducted at UCLA, USC and CHLA
 - Dr. Boss to reach out to Dr. Mirowski regarding phantom solution stability

- Profile writing progress:
 - Literature search results to be included in the DCE Profile
 - Actors for section 3 to be defined
 - Sections 3 and 4 to be completed in February 2017
 - Because the purpose of groundwork is to assist in Profile development, it was recommended that resulting data from Round-6 groundwork project is incorporated into the DCE Profile before entering “Public Comment Stage” as defined on the QIBA Wiki at: http://qibawiki.rsna.org/index.php/QIBA_Profile_Stages
 - Profile review process described on the QIBA Wiki at: http://qibawiki.rsna.org/index.php/Review_Process
 - Subject Matter Experts (SMEs) to focus on specific sections
 - Others to review overall document for consistency
 - PDF-BC members vote by e-ballot to approve release for public comment after review period of 2 – 4 weeks
 - MR Coordinating Committee voting members to complete a ballot to approve the Profile for public comment
 - Details on the voting process can be found on the QIBA wiki at: http://qibawiki.rsna.org/index.php/Voting_Process

“Importance of Test-Retest Studies in Quantitative Imaging” - White Paper on Reproducibility Study Needs

- Effort is motivated by the dearth of papers that are able to support DWI claim statements
- There is paucity in published test-retest data and inconsistency in how the data are collected and presented, especially in some submodalities like DCE
- The white paper is to communicate the need for more published test-retest data, especially patient data, with a proper statistical approach to address the literature gaps across organs and submodalities
- The goal is to standardize how the data are collected, analyzed and reported to be most useful for Claim development across various QIBA Profiles
- Enough similarity exists across modalities regarding data reporting to render this useful for developing Profile Claims
- Document draft includes:
 - Introduction drafted by Dr. Chung
 - “Why Repeatability” section drafted by Dr. Obuchowski
 - Steps for calculating standard deviation (wSD) and coefficient of variation (wCV) so that user will know how to calculate these elements before designing a study
- To be drafted:
 - Instructions for designing a test-retest study
 - Examples of issues and possible solutions investigated by QIBA groups
- Dr. Dave to share paper/review article authored with Drs. Schwartz, Nunez and Jambawalikar
- To approach leaders in other modalities regarding issues that they have encountered
- Ad hoc call to be scheduled with Drs. Kinahan, Laue, Chung, Obuchowski Boss, et al. to discuss importance of test-retest data from the nuclear medicine perspective

DWI Profile Update (Drs. Boss & Chenevert)

- Internal Profile review comments were addressed on the January 26 DWI TF call
- Profile was transferred to Google docs for an efficient review process
 - Feedback provided in “suggesting mode”
 - Editing restricted to Dr. Boss
- DWI Profile includes only organs with sufficient test-retest data around which a Claim statement can be developed
- Future Profile iterations to include additional organs as more data becomes available
- Open & closed issues used in drafting stage to be resolved or incorporated into text before entering Public Comment Stage
- Next steps:
 - Address final comments and incorporate edits into clean version
 - PDF-BC members to vote by e-ballot to approve release for public comment after review period of 2 – 4 weeks
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Upcoming PDF Task Force Updates:

- February 15 – DTI Task Force
- March 1 – DWI Task Force
- March 15 – DSC Task Force
- March 29 – DCE Task Force

Next PDF-MRI Biomarker Committee Call: Wednesday, February 15, 2017 at 11 AM CT