

## QIBA Diffusion-Weighted Imaging MR Biomarker Committee (BC) Call

Thursday, August 19, 2021, at 11 am (CT)

### Call Summary

#### Participants

Michael Boss, PhD (Co-chair)

Dariya Malyarenko, PhD (Co-chair)

Trevor Andrews, PhD

Ishtiaq Bercha, MSc, MSEE

Thomas Chenevert, PhD

Amita Shukla Dave, PhD

Wen Li, PhD

Daniel Margolis, MD

Kevin Miller

Nancy Obuchowski, PhD

Gudrun Zahlmann, PhD

#### RSNA

Susan Stanfa

RSNA Staff attempt to identify and capture all committee members participating on Zoom calls. However, **if attendees join only by phone, or do not use a recognizable name, identification is not possible.** Participants are welcome to contact RSNA staff at [QIBA@RSNA.org](mailto:QIBA@RSNA.org) if their attendance is not reflected on the call summaries.

#### Review of Previous Call Summary

- The notes from the July 15, 2021, DWI BC t-con were approved as presented

#### Achieving Stage 3: Technical Confirmation (TC) for DWI Profile

- There are unique considerations, e.g., multiple disease sites, hardware differences among sites, etc. with the DWI Profile as it advances toward TC; Dr. Zahlmann (QIBA Vice Chair) provided guidance
- Though there are multiple organ systems addressed in the Profile, there are only a few small disparities in imaging parameters among them, with the most significant being the use different RF coils
- Data and checklist feasibility feedback have been received from three sites, including: Invicro, Cornell and the Brazil team with all major scanner vendors being represented and head coils used to perform scans
- All sites sufficiently demonstrated the ability to conform to the Profile when scanning patients regardless of slight differences in imaging parameters across organs, which were still deemed within DWI Profile performance limits
- If a clinical trial site seeks to Claim conformance to the DWI Profile, it would need to complete all checklist requirements for that specific organ site
- Including images of available phantoms for each of the different anatomical sites in the appendix would be beneficial for Profile user reference and for those who intend to build their own phantoms
- If posting a list of phantom vendors on the QIBA Wiki would be permitted, a link to that page would be added to the DWI Profile; other QIBA BCs may also choose to include it in their Profiles
- Once the TC feedback from the Brazil team is added to the DWI TC Comment Resolutions document it will be posted on the [Comment Resolutions page](#) of the QIBA Wiki as a public record that all TC feedback was addressed
- Phantom data are currently stored on M-Box, but access will soon be terminated; DWI TF members were urged to download those data as soon as possible and it was suggested that they eventually be stored in the QIDW

#### CaliberMRI – Partial Conformance

- CaliberMRI provided 3<sup>rd</sup> party conformance services for the DWI Profile, and a QIBA validation process to assess their analysis software (qCal) was completed with help from Drs. Malyarenko and Chenevert
- Mr. Miller from CaliberMRI and his team have been continuously updating and improving their automated analysis software (qCal) based on QIBA DWI conformance requirements
  - ADC phantom data were analyzed with this new software package to demonstrate accurate measurement
  - Focus had been on ensuring that qCal supports Caliber MRI phantoms, but it may be adaptable to other applications, e.g., the ADC ice-water phantom, and phantoms built at testing sites
  - It would be helpful for future conformance testing if the DWI Profile site and device checklists were automatically populated so that the software would match QIBA specifications for future Profile implementation

- The DWI Profile software checklist was modified to be more applicable to use cases, e.g., software for QC, before sending it to CaliberMRI; it will be added to the [Profile Conformance page](#) of the QIBA Wiki as reference for the conformance testing validation step, and also so that 3<sup>rd</sup> party vendors similar to CaliberMRI will be able to use it for future validation testing or their service
- CaliberMRI installed and ran QIBaphan software to perform data analysis which was compared to analysis conducted by qCal; outputs were compared and causes for discrepancies were investigated
- High-level reports were reviewed to confirm that they contained the appropriate metrics as specified by DWI Profile
- qCal and QIBaphan outputs were essentially identical with slight systematic differences related to normalization, possibly due to inconsistent definitions used in calculations for standard deviation

**MOTION APPROVED** to validate CaliberMRI as a 3<sup>rd</sup> party analysis software provider

- Dr. Boss moved, seconded by Dr. Margolis, that the DWI BC members support Drs. Chenevert and Malyarenko's recommendation that CaliberMRI's qCal software is capable of data analysis for scanner assessment and is deemed sufficient for certification
- Dr. Boss stated that qCal's certification is valid with the 2019 DWI Consensus Profile
- There were 6 ayes, 0 abstentions, 3 recusals, and 2 voting members absent (n=11)

#### **VERDICT Collaboration Update (Dr. Malyarenko)**

- The latest version of the paper was reviewed, and feedback was provided to the VERDICT team; the manuscript will soon be submitted
- Study results will help inform the next PIRADS version, establish more precise protocols for prostate cancer imaging, and phantom results and analysis will be used to form a DWI Profile cross-sectional Claim on prostate
- Update on manuscript submission process to be provided during the October DWI BC meeting

**Next DWI-MR BC Call:** Thursday, September 16, 2021, at 2 pm (CT)