

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

Thursday, July 15, 2021, at 2 pm (CT)

Call Summary

Participants

Michael Boss, PhD (Co-chair)

Dariya Malyarenko, PhD (Co-chair)

Thomas Chenevert, PhD

Amita Shukla Dave, PhD

Daniel Margolis, MD

Kevin Miller

Savannah Partridge, PhD

RSNA

Joe Koudelik

Susan Stanfa

Review of Previous Call Summary

- The notes from the June 24, 2021, DWI BC t-con were approved as presented

General Updates

- Dr. Guzmán received an RSNA R&E Foundation grant to support a multicenter head and neck study to better inform the Profile; this was deemed a clear Campaign 2021 deliverable
 - Phantom study data to be reviewed once available
 - Two sites to participate in a test-retest study of DWI in head & neck squamous cell carcinoma, to inform an ADC Claim for the DWI Profile

Achieving Stage 3: Technical Confirmation (TC) for DWI Profile (Dr. Boss)

- Dr. Boss and the Brazil team to reschedule their meeting to discuss issues related to TC feedback in advance of the next DWI BC meeting
- CaliberMRI is interested in providing 3rd party conformance services for the DWI Profile and a software validation process 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 of ADC
 - Data and reporting will be useful for wider adoption of the Profile and additional future conformance testing
 - After testing the same dataset located in the QIDW, which is representative of three vendors, Dr. Chenevert found that differences stem from normalization
 - Dr. Chenevert suspected that small differences in numbers were due to inconsistent definitions used in calculations for standard deviation
 - Mr. Miller requested feedback re: software features to include that would be useful for DWI BC activities and the Profile; he offered to set up demos for all who are interested
 - Dr. Malyarenko stated that it would be helpful if the DWI Profile site and device checklists were automatically populated so that the software would match QIBA specifications for future Profile implementation
 - Dr. Chenevert described the report that QIBaphan, a software analysis package he developed for the ADC phantom, provides for a phantom run
 - CaliberMRI's long term objective is Profile implementation in larger clinical trials
 - The CaliberMRI team is exploring ways to link ACR site accreditation status into the qCal report as a user convenience
- QIBA leadership has focused on defining TC
 - DWI BC response to test site feedback in terms of Profile updating to be tracked
 - Dr. Zahlmann to be invited to an upcoming DWI BC call to discuss what it means to be Technically Confirmed; consensus is needed re: TC across disease sites; phantom vs. in vivo scanning, hardware differences among sites, etc.
 - Meeting start time to be earlier than usual for compatibility with Central European Summer Time zone

VERDICT Collaboration Update (Dr. Malyarenko)

- DWI Profile to be implemented through this prospective prostate UK cancer single site, single scanner clinical trial study
- Test/retest data will be collected from 400 subjects
- Multiple acquisition parameter combinations will be tested and optimized for prostate, using a DWI phantom and repeatability for subsets of 10 subjects will be assessed
- Dr. Malyarenko received details from Dr. Obuchowski re: the prospective study
- Results will help inform the next PIRADS version and DWI Profile Claim language
- A meeting was scheduled for July 28 for those who are interested in scanning the phantom for protocol optimization
- A second goal (and publication) is a retrospective analysis of recently published study data; 40 subject data collected using protocols similar to the DWI Profile
- The criticism voiced by the VERDICT team regarding the white paper was that t-values for b-value combinations were not kept constant for ADC calculations
- The summary of analysis submitted to Dr. Malyarenko was reviewed
- Echo time (TE) for b-value ranges were discussed; combinations within 15 milliseconds were identified and the VERDICT team will be asked to retain them in their analysis and remove combinations where TEs were greater than 15 milliseconds
- Dr. Malyarenko had suggested that the VERDICT team add the analysis for the Walk Around group as it was the most repeatable combination identified; she noted that a meeting with Drs. Nancy Obuchowski and Harriet Theony would be useful
- Dr. Margolis cited concerns related to the use of b-values deemed as extreme according to PIRADS document recommendations; while lower variation for more extreme b-values were observed, it is unclear whether this would improve the discriminatory value of ADC if these values were used to decrease within-subject variation
- Now that the DWI BC has reached consensus on the approach re: recommended changes, a response will be provided to the VERDICT team

Next DWI-MR BC Call: Thursday, August 19, 2021, at 2 pm (CT)

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