

QIBA Dynamic Contrast-Enhanced (DCE) MRI Biomarker Committee (BC) Call

Monday, August 19, 2019 at 11 AM (CT)

Call Summary

Participants

<i>Caroline Chung, MD (Co-Chair)</i>	Wei Huang, PhD	Ho-Ling (Anthony) Liu, PhD	RSNA Susan Stanfa
<i>Hendrik Laue, PhD (Co-Chair)</i>	Hyunki (Harrison) Kim, PhD, MBA	Kyunghyun Sung, PhD	
Michael Boss, PhD			

Moderator: Dr. Laue

Discussion on DCE-MRI Profile Claim Definition 3T for Prostate

- Publication data were examined and methods in the publication vs. methods being used in the DCE-MRI Profile were compared
- Review of percentiles needed to see what values to use for Claim definitions
- Addition of three Claims re: 3T for prostate was proposed:
 - General kinetic model (GKM) and individual Arterial Input Function (AIF)
 - Extended (eGKM) and individual AIF
 - GKM and averaged and peak corrected AIF
- Coefficients of variance to be finalized for the Claim statements

B1 Prostate results: consequences for Profile

- A significant effect of B1-mapping on measurements in prostate was found
- The techniques used in the publications were not genuine (meaning MRI-based) B1-mapping for DCE of the prostate, but rather extrapolations from known tissue T1 (either fat or muscle tissue)
- Usage of genuine B1-mapping in prostate for DCE-MRI has not been published
- There was discussion during the Aug. 5 t-con re: whether the DCE-MRI Profile should support B1-mapping, after all the information that was reviewed
 - Caution was voiced re: Claim statement wording if there is not citable literature available to support it
 - It was recommended that issues be broached in Profile discussion sections, which may be an opportunity to inform the community of needs to be met through further study e.g., obtaining test-retest data
- It was concluded that due to the dearth of literature, Profile users cannot be required by the Claim to perform B1 correction
- B1-mapping will be removed from Claims and 4.2 Assessment Procedure
- It was concluded that an appropriate, measured solution is to provide guidelines in the discussion for those who want to use B1 correction, but leave it out of the Claims
- Variable Flip Angle (VFA) variability discussion to be included in the Profile, citing, "[Repeatability and Reproducibility of Variable Flip Angle T1 Quantification in the Prostate at 3T](#)" (Zhong, et al)
- Brief discussion re: inter-scanner variability and methods to reduce it

T1 Phantom

- A T1 phantom is preferred over a B1 phantom, and it would be very helpful for this round of the DCE-MRI Profile
- B1 could be assessed at select points with a set of flood phantoms
 - Phantom Laboratory built the four phantoms for the original DCE BC ~10 years ago and may be able to make available a prototype phantom shell
- Phantom manufactured by QalibreMD (Boulder, CO) was mentioned
- An MR system phantom is another option
 - Dr. Russek at NIST to consider lending out phantoms owned by NIST; this would be valuable when phantoms are needed only temporarily for groundwork
 - Dr. Boss to provide Dr. Russek's email address to Dr. Laue
- QIBA DWI-MR ADC phantom – NIBIB project
 - Phantom shell would be very expensive
 - NIST traceable fill solutions were used; Drs. Boss (formerly NIST) and Katie Keenan (NIST) can be consulted on the development process for this phantom
 - In efforts to avoid quality-related issues, preparing phantom fill solutions at sites was discouraged; Profile to instruct sites to buy solutions or obtain a phantom that is fully constructed
- Instructions on acquiring phantoms to be provided in the Profile
- Suggestion to work on phantom recommendations in parallel with completing the Profile text
- Public comment may be an opportunity to learn more and to incorporate other solutions

DCE Profile v2.0 Update: Profile Text (Dr. Laue)

- Section 3.1 – 3.11 clean-up still needs to be finished
- The next 4 weeks will be spent completing the Profile text
- DCE-MRI BC members were urged to contribute to these efforts by visiting areas in the [Profile](#) still containing comments, address them and remove them
- Dr. Laue to consider holding a call re: statistical issues prior to the next RSNA staff-hosted DCE-MRI BC t-con

Next DCE-MRI BC Call: Monday, September 16, 2019 at 11 AM CT [Staff not available to host on Sept. 2 due to Labor Day holiday]

RSNA Staff attempt to identify and capture all committee members participating on WebEx calls. However, **if multiple callers join simultaneously or call in without logging on to the WebEx, identification is not possible.** Call participants are welcome to contact RSNA staff at QIBA@RSNA.org if their attendance is not reflected on the call summaries.