

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

Monday, March 2, 2020 at 11 am (CT)

Call Summary

In attendance

Caroline Chung, MD (Co-Chair)

Hendrik Laue, PhD (Co-Chair)

Michael Boss, PhD

Harrison Kim, PhD, MBA

Cristina Lavini, PhD

Nancy Obuchowski, PhD

Mark Shiroishi, MD

Jinnan Wang, PhD

RSNA staff

Joe Koudelik

Susan Stanfa

Moderator: Dr. Laue

Profile Progress

3.5: Periodic QA Section

- *3.5.1 Discussion*
 - Discussion re: “Phantom imaging for R1” subsection continued
 - The NIST Phantom-lending library is referenced, but additional specifics are needed
 - Dr. Laue received an update from Dr. Russek (NIST) re: phantom availability, the software analysis package and was told the target start date for this program; details to be added to the Profile
 - DCE phantom rental from NIST was quoted as \$250/week 1, then \$100/week 2-4 (with a maximum rental period of 4 weeks) plus shipping costs
- *3.5.2 Specification*
 - Only high-level information for the following items to remain in this table:
 - R1 precision details to be moved to Section 4.1: Assessment Procedure: R1/T1 Mapping accuracy
 - Actors, specifications, etc., with which the system must conform; details to be moved to other sections

3.6: Protocol and Reconstruction Design

- Proposed edits to the signal saturation and non-linearity subsection were discussed; revisions to be incorporated
- A clear recommendation to be provided re: organ dose and sequences to be checked using an R1 phantom; consensus re: providing specifications within a table in Section 4
- Dr. Laue to work on this subsection and send text to Dr. Lavini for review

3.13.1: Image Analysis Discussion Section

- The list in “Algorithmic steps for parametric image calculation” subsection was reviewed
- Analysis of DCE-MRI data is performed in a series of distinct steps; detailed discussion is in Appendix B
- Public comment feedback to be sought for the step, “Calculate the DCE-MRI imaging biomarker parameter maps, K^{trans} using GKM or extended GKM”
- Specific requirements to be added re: “The extraction of quantitative DCE-MRI parameters requires a suitable software package,” as “suitable” is subjective

4.1: Assessment Procedure: R1/T1 Mapping accuracy

- *4.1.3: Testing sequence for signal quantization errors*
 - Reference to be added re: “simulation studies,” to the T1/R1 precision subsection

4.3: Assessment Procedure: Image Analysis Software

- Discussion re: test-retest study options if clinical scans are required; if phantom to be used, stricter conformance criteria needed
- Dr. Kim noted that he is currently developing a disposable dynamic phantom

Next Steps

- Section 5: Conformance will be reviewed and discussed during the next call

Next call: Monday, March 16, 2020 at 11 a.m. CT

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