

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

Monday, April 29, 2019 at 11 AM (CT)

## Call Summary

### Participants

*Hendrik Laue, PhD (Co-Chair)*

Catherine Coolens, PhD

Dena Flamini, RT

Edward Jackson, PhD

Harrison Kim, PhD, MBA

Nancy Obuchowski, PhD

Kyunghyun Sung, PhD

Qing Yuan, PhD

### RSNA

Joe Koudelik

Susan Stanfa

### DCE Profile Update (Dr. Laue)

- DCE BC members were encouraged to review and comment on the updated [Profile](#)
- Discussion on Section 3.7: Subject Selection, was postponed until Profile edits are made

### Checklist

- A DCE checklist modeled on the DWI checklist will be developed and placed into Appendix G
- Dr. Laue encouraged subject matter experts to work offline on aspects of the checklist requiring their specialized experience
- 4.1 Assessment procedure: R1/TI Mapping Accuracy
  - The DCE Profile states that, “a static T1 phantom should be used”
  - Evaluation software for analysis of a phantom is available in the QIDW and [the link](#) is provided
  - “If T1-dependent analysis is intended for the DCE-MRI study, the fidelity of R1 measurement should be assessed based on phantom imaging”
  - Phantom Laboratory built the four phantoms for the original DCE BC ~10 years ago
    - A prototype phantom shell may be made available by Phantom Laboratory
    - Dr. Jackson to contact Josh Levy (Phantom Labs) to inquire about the possibility and associated cost to produce more phantom shells and whether they would oversee the mixing and filling of NiCl<sub>2</sub>... is production of a commercial phantom possible?
    - It was noted that it is important that all solutions originate from the same master batch; this was how consistency issues were addressed with the set of four phantoms
  - Phantoms would need to be shipped after being filled with solution; due to the heaviness and carcinogenic nature of NiCl<sub>2</sub>, shipping restrictions may be imposed
  - Discussion regarding RO1 measurements, stability and accuracy
  - DWI ADC phantom concerns discussed
    - This is an expensive phantom
    - Internal fill structures may become loose with repeated phantom shipping
    - NIST traceable fill solutions were used; Drs. Boss (American College of Radiology, formerly NIST) and Katie Keenan (NIST) can be consulted on the development process for this phantom
    - Analysis software was also developed by NIST and originally available online GitHub
    - Another disadvantage (in addition to cost) is the phantom size, i.e., is a head-sized phantom adequate; additional discussion is needed
  - An MR system phantom is another option
    - Additional discussion is needed regarding whether a phantom is needed to address any recommendations in re: B1 mapping

- Dr. Laue requested email addresses of NIST reps and links to commercial phantom info (Dr. Jackson to approach Stephen Russek, re: software and will CC Drs. Chung & Laue)
  - The software written specifically for analysis of MR system phantom would produce T1 results as part of overall analysis as well
  - Having specifications and a manual on how to build this phantom would be very helpful and may be added to the Profile as guidance
- The phantom situation needs to be resolved before subsections in Section 4: Assessment Procedures, can be completed
  - Section 4.2 Assessment Procedure: B1-mapping to be drafted
  - Section 4.3 Assessment Procedure: Image Analysis Software – “The requirements for the software in Image Analysis (Section 3.13) can be evaluated using digital reference object data and an evaluation software comparing the calculated results”
  - A detailed, step-by-step assessment procedure to be provided in the Profile
- DCE BC members were asked to visit the following QIDW links to verify whether they can access the data:
  - <https://qidw.rsna.org/#collection/594810551cac0a4ec8ffe574/folder/578021181cac0a118c5fa12f>
  - <https://qidw.rsna.org/#collection/594810551cac0a4ec8ffe574/folder/578021041cac0a118c5fa128>
- Suggestion to clean up redlines for a fresh Profile version from which the next round of edits can occur
- A DCE BC member f2f may be coordinated during the 2019 ISMRM Conference (May 11 – 16 in Toronto, Canada)

**Next DCE BC Call: \*Wednesday, May 29, 2019 [off-schedule due to no call May 13 ( ISMRM) or May 27 ( Memorial Day)]**

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