

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

Thursday, August 2, 2018 at 11 AM (CT)

Call Summary

Participants

Hendrik Laue, PhD (Co-Chair)
Michael Boss, PhD

Harrison Kim, PhD, MBA
Cristina Lavini, PhD

Ho-Ling (Anthony) Liu, PhD
Gudrun Zahlmann, PhD

RSNA

Joe Koudelik
Susan Stanfa

Moderator: Dr. Laue

New DCE BC Member

- During the June ISMRM conference in Paris, Dr. Cristina Lavini was invited by DCE BC Co-Chair, Dr. Chung to join the DCE BC. Dr. Lavini is a physicist who has been working at Amsterdam University Medical Hospitals (AUMH) for 19 years and has done research in DCE-MRI for most of her career.

DCE Profile Update

- Profile is located at:
<https://docs.google.com/document/d/1in76va1Q96tVX97RWLHHqimOHxCeDsMqh98na8pwOb8/edit?usp=sharing>
- Dr. Fedorov to make DICOM-related updates to the Profile
- Section 3: Profile Activities, to be shortened and cleaned up; Dr. Laue has made a few edits but work remains
- Discussion focused on error propagation and issues associated with limited test/retest data
- If the Profile is followed, the user should get similar results
- Difficult to find test-retest data, mainly because of contrast agent usage
- Dr. Lavini discussed a 30-patient test-retest, multi-time point study she was involved in and is currently working on another reproducibility study focused on the head and neck
- The point of Claims is to standardize image acquisition and reduce the bounds of reproducibility found in the measurement process
- Dr. Kim discussed an article that showed DCE imaging repeatability of locally advanced pancreatic cancer
 - Klaassen R, Gurney-Champion OJ, Wilmink JW, Besselink MG, Engelbrecht MRW, Stoker J, et al. **Repeatability and correlations of dynamic contrast enhanced and T2* MRI in patients with advanced pancreatic ductal adenocarcinoma.** *Magnetic Resonance Imaging.* 2018; 50:1-9. doi: [10.1016/j.mri.2018.02.005](https://doi.org/10.1016/j.mri.2018.02.005); [PubMed citation](#)
 - This paper was of interest because DCE-MRI is rarely used for pancreatic cancer
 - This study raised several concerns, the major one being that a population-averaged Arterial Input Function (AIF) tracking method rather than a measured AIF was used
 - The Coefficient of Variation (COV) of ~30, resulted in an unsurprising repeatability of ~40%
 - Discussion re: the use of a modified Weinmann input function to estimate the AIF in the DCE Profile
- The lack of published test-retest study data limits the current Claim scope to older technology
 - Due to lack of funding for groundwork projects, the DCE BC is unable to start over with different data for a new Claim; Claims are based on "trusted" published data and work done by DCE BC subject matter experts/members
 - Commentary to be provided after Claim statements to note possible concerns with specific models (e.g., using 2D vs. 3D), suggesting that the Claims may not be based on the latest technology

- Dr. Lavini to discuss paper on shortcomings of using 2D for DCE-MRI with Dr. Laue offline (Lavini C, Kramer G, Pieters-den Bos I, Hoekstra O and Marcus JT. **MRI protocol optimization for quantitative DCE-MRI of the spine**. *Magnetic Resonance Imaging*. 2017; 44:96-103. doi: [10.1016/j.mri.2017.08.010](https://doi.org/10.1016/j.mri.2017.08.010); [PubMed Citation](#).)
- Clear statement needed regarding the fact that Claims are based on limited published data, and models other than those outlined in the Claims statement may work as well
- Discussion to be continued during the next call

Next DCE BC Call: Thursday, August 16, 2018 at 11 AM CT

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