

QIBA Perfusion, Diffusion and Flow – MRI Biomarker Committee (BC) Update Call

Wednesday, June 8, 2016 at 11:30 AM (CDT)

Call Summary

Participants

Michael Boss, PhD (Co-Chair)

John Kirsch, PhD (Co-Chair)

Dafna Ben Bashat, PhD

Orest Boyko, MD

Mark Brown, PhD

Thomas Chenevert, PhD

Catherine Coolens, PhD

Vadivel Devaraju, PhD

Timothy Dondlinger

Daniel Gembris, PhD

Wei Huang, PhD

Guang Jia, PhD

Chen Lin, PhD

Dariya Malyarenko, PhD

Elizabeth Mirowski, PhD

Nancy Obuchowski, PhD

Ying Tang, PhD

Brian Taylor, PhD

Ona Wu, PhD

Qing Yuan, PhD

Gudrun Zahlmann, PhD

Yuxiang Zhou, PhD

RSNA

Joe Koudelik

Susan Weinmann

Moderator: Dr. Boss

DSC Update (Dr. Wu)

- The DSC Profile version 2.0 was reviewed and discussed
 - Now in the revised template format
 - The following open issues were discussed:
 - How to specify the acquisition (E.g. spin echo vs. gradient echo, flip angle, pre-load)
 - Whether to limit field strength and create different claims for each field strength
 - Whether to limit claims to tumors in white matter
 - Metrics were chosen based on the frequency of appearance in the literature and usefulness
 - “Actor” responsibilities need to be refined
 - The formation of the claim statements was explained
 - Language is written, but numbers are to be determined
 - Four longitudinal, two cross-sectional and one phantom-based claims are included
 - Those interested in having a copy of the DSC Profile and/or submitting feedback were asked to email Dr. Wu at ona@nmr.mgh.harvard.edu
 - Dr. Wu to consult Dr. Obuchowski regarding claim development
 - Guidance was requested regarding the purpose of the pre-delivery section; guidance from the Process Committee needed whether this is a mandatory section heading
- Literature Results
 - PubMed search
 - The search strategy used was: “Dynamic susceptibility” OR “MR perfusion” OR “perfusion MR” OR “DSC MRI” OR “Perfusion MRI” OR “MRI perfusion” OR “CBV dynamic”
 - 2477 citations were yielded
 - 755 articles are remaining for review
 - 792 articles are DSC-related
 - 23 reproducibility studies are included
 - 4 serial studies

- Metadata are being extracted from the articles
 - All articles found during literature search were imported into Zotero, then categorized
 - A spreadsheet was created to organize and track the progress of the article review
 - Volunteers were requested to review and flag articles
- Status of Round-5 Funded Projects
 - Dynamic Susceptibility Contrast MRI Phantom
 - Phantom Layout
 - Same as DWI phantom, consisting of 13 vials
 - 6 vials with increasing concentration of contrast agent in 2 orientations, with central vial to be used for reference with 0 concentration
 - Components
 - NIST is currently experimenting with different contrast agents which do not change in T1 with increasing concentrations
 - Targeting R2* values up to 30 1/s
 - MRI Acquisition Protocol
 - Preliminary protocol was prototyped for the Siemens Trio that is compatible with clinical DSC acquisitions for brain tumor patients
 - Protocol was shared with NIST/Colorado and preliminary data were acquired
 - The phantom and acquisition parameters are currently being refined
 - Software Analysis
 - DSC TF members are working with Drs. Chenevert and Malyarenko at the University of Michigan to utilize their ROI placement code with DSC data

Other Business

- Upcoming PDF Task Force Updates:
 - June 22 – DCE
 - July 6 – DTI
 - July 20 – DWI
 - August 3 - DSC

Next PDF-MRI Biomarker Committee Call: June 22, 2016 at 11 AM CDT (DCE TF update is scheduled)