QIBA Perfusion, Diffusion and Flow – MRI Biomarker Committee (BC) Call
Wednesday, April 12, 2017 at 11 AM (CT)
Call Summary

Participants			**RSNA**
Daniel Barboriak, MD (Co-Chair)	Xavier Golay, PhD	Walter Schneider, PhD	Joe Koudelik
Michael Boss, PhD (Co-Chair)	Gloria Guzman, MD, MSc	Samir Sharma, PhD	Susan Weinmann
John Kirsch, PhD (Co-Chair)	Claudia Kirsch, PhD	Ying Tang, PhD	
Mark Brown, PhD	Daniel Krainak, PhD	Elisabeth Wilde, PhD	
Thomas Chenevert, PhD	Hendrik Laue, PhD	Ona Wu, PhD	
Amita Shukla Dave, PhD	Dariya Malyarenko, PhD	Dewen Yang, MD, PhD	
Daniel Gembris, PhD	Nancy Obuchowski, PhD		

Moderator: Dr. Boss

Announcements

- Dr. Rosen has transitioned from his role as PDF-MRI BC Co-Chair to MR CC Co-Chair
- Dr. Barboriak will be taking on the role of PDF-MRI BC Co-chair
- DWI Profile Status Update:
    - Vote-to-release e-ballot, sent out to the 15 MR Coordinating Committee eligible voters, closed with a unanimous "yes" vote, thus approving Profile release for public comment
    - Next Steps:
        - Prepare Profile draft for Public Comment Stage
        - Release for 90-day Public Comment Process with mid-July deadline

- Dr. Boss provided an update on phantom diffusion measurement efforts to establish ground truth
    - Consensus is being reached on MR pulse sequence at various scanning temperatures
    - Robust and agreed-upon methods for providing data are being examined
    - Sources of systematic error are being investigated

Arterial Spin Labeling (ASL) Update (Dr. Golay)

- Dr. Golay provided background on the ASL Network from its origins to the current collaborative effort as a new QIBA Profile Task Force
- Methods of MRI-based Perfusion Imaging were discussed
- ASL uses arterial blood flow as an intrinsic tracer
    - Spin labeling is inverted as cerebral blood flows through 'neck' of radiofrequency coil
    - This method improves SNR and minimizes measurement errors for better estimations of cerebral blood flow (CBF)

- There are many techniques to measure ASL, but they lack harmony in both acquisition and processing
- The lack of reproducibility studies spurred the creation of the ASL Network, which is a loose alliance that collaborates through the ASL Network Website
    - All ASL-related publications are listed on this website
    - COST Action ASL in Dementia: European grant allowed ASL Network to fund some work across ten imaging sites world-wide

- Discussion on reproducibility Study (QUASAR), which studied differences between groups, subjects, and within subjects
- ASL in Dementia (AID) Action
    - Focused on societal problem of dementia
    - A biomarker was needed for dementia and ASL seemed to be one of the earliest biomarkers of progression in AD, per ADNI
    - Biomarker progression: theoretical (time) vs. data-driven (disease progression with aging) was studied
    - AID Action scientific objectives
        - Harmonize, shortlist and develop the best possible ASL MRI sequences
        - Develop automatic image processing software
        - Establish clinical utility
        - Validate the technology as a biomarker

- Joint report by ISMRM Perfusion Study Group
    - Consensus on approach, "Recommended Implementation of Arterial Spin-Labeled Perfusion MRI for Clinical Applications: a Consensus of the ISMRM Perfusion Study Group and the European Consortium for ASL in Dementia"
        - Recommendations for clinical practice:
            - Parameters provided should be followed
            - Values specified in parameters should be used in equations
            - ASL should be able to be compared when measured by different people/sites

    - Led to thorough comparisons, e.g., Multi-vendor reliability study: "Multi-vendor reliability of arterial spin labeling perfusion MRI using a near-identical sequence: Implications for multi-center studies"
        - Large review article on variability of physiological brain perfusion
        - Provides thorough questionnaire to be applied to clinical trials

- Final outcomes of AID BM1103
    - With €380,000 the Action managed to organize over 4 years:
        - 31 Short term scientific missions (student exchanges)
        - 2 Teaching schools (100 people in total)
        - 11 Meetings
        - Over 200 people involved from all over Europe
        - Over 80 papers on ASL, with 30 citing the Action
        - Creation of Gold Standard Phantoms Limited, aimed at commercializing an ASL perfusion phantom (www.goldstandardphantoms.com)

    - Raised 1.1 million pounds in grants for very advanced ASL perfusion phantom
        - To be presented at ISMRM
        - Perfusion exchange unit was described
        - Very advanced perfusion chamber design optimization
        - MRI-compatible pump was explained
        - In process of selling this phantom

- Status of QIBA-ESR ASL TF
    - QIBA Profile to be joint effort between RSNA & ESR EIBALL-QIBA
    - EIBIR ("executive arm" of EIBALL) to provide administrative support for the ASL TF and
        - Hosted first online meeting
        - Current roster includes 35 task force members from all over the world
        - Demonstrations of QIBA methodologies were presented
        - Decision was made to focus on ASL for Brain applications including: stroke, dementia and brain tumors
        - Much groundwork has already been done
        - There is a rich trove of literature from which to draw to write QIBA Profile
        - Many PDF-MRI BC members are interested in attending future ASL TF calls, though time difference between the UK & US may pose a challenge
        - RSNA staff to distribute Dr. Golay's presentation and email address to PDF-MRI BC roster

Upcoming PDF Task Force Updates:

- ~~April 26~~ – No PDF-MRI call due to ISMRM
- May 10 – DTI Task Force
- May 24 – DWI Task Force
- May 24 – DSC Task Force
- ~~June 7~~ – No PDF-MRI call due to reallocation of time to quarterly MR CC t-con
- June 21 – DCE Task Force

Next PDF-MRI BC Call: Wednesday, May 10, 2017 at 11 AM CT