

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

Wednesday, 22 July 2015 at 11 AM (CT)

Call Summary

Participants

Michael Boss, PhD (Co-Chair)

Mark Rosen, MD, PhD (Co-Chair)

Harsh Agarwal, PhD

David Bennett, PhD

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Elizabeth Mirowski, PhD

Savannah Partridge, PhD

Eric Perlman, MD

Walter Schneider, PhD

Ying Tang, PhD

Ona Wu, PhD

Junqian (Gordon) Xu, PhD

Yuxiang Zhou, PhD

RSNA

Susan Weinmann

Moderator: Dr. Boss

DCE-MRI TF Update (Dr. Chung)

- The DCE TF Literature Review Strategy, which was discussed at the previous DCE TF call was presented:
 - Databases used: PubMed – 916 articles, MEDLINE/Embase – 1845 articles
 - DCE search terms used: MRI, dynamic, DCE-MRI, contrast enhancement, permeability, site-specific terms: e.g. brain
 - Standardized search strategy = (((DCE-MRI) OR MRI)) AND ((dynamic) OR contrast enhance*) AND permeability
 - Fields to include: preclinical/clinical, field strength, parallel imaging, MR sequence: SE, GRE, TR, TE, FOV, matrix size, slice thickness, temporal resolution, overall scan duration, contrast: type, dose, injection protocol, data analysis: post-processing techniques applied prior to analysis, method of analysis, tissue/location analyzed, quantitative measurements extracted, main study purpose and overall study conclusion
 - Dr. Boss suggested that a type of reproducibility metric be indicated
 - A decision will be made regarding whether both pre-clinical and clinical literature will be reviewed
 - Use primary research articles only (use review articles to gather any additional references)
 - Volunteers were requested for sites to which no experts have yet been assigned
 - Google Docs is being considered as a cloud-based place for reviewers to access the article list
 - Dr. Chung will be adding three more columns to the article list spreadsheet:
 - Relevance score (papers will be ranked according to how applicable they are to the Profile)
 - Number of sites represented
 - Number of vendors represented

ACRIN Update (Dr. Rosen)

- Round 2 (2012) DCE-MRI Project Update
 - “Field-test” of DCE-MRI x1.0 claims in humans
 - Population:
 - Patients presenting for prostate MRI staging
 - Prostate (not the tumor) as a uniform target
 - AP imaging of interest in oncology
 - Uniformity of target – no issues with breathing
 - Challenges and Deviations
 - Avoidance of ecoil to maintain option of coil corrections for linear approximation
 - Challenge of test-retest recruitment

- Need to use MRI exam for clinical staging
 - Requires use of 3T
 - Axial imaging plane
 - Added DWI as an additional endpoint
 - Emergence of clinical and biomarker use
- ACRIN 6701 Site Imaging Manual by Drs. Rosen, Jackson, Chenevert, co PIs - ACRIN 6701
 - [“Repeatability Assessment of Quantitative DCE-MRI and DWI: A Multicenter Study of Functional Imaging Standardization in the Prostate”](#)
- Hypotheses, other planned analyses, trial summary, site qualification and quality assessment were presented
- Current Status
 - Nine sites qualified
 - Seven sites previously or actively enrolling
 - GE sites complete
 - Philips sites near-complete
 - Siemens sites still accruing
- Next Steps
 - Complete accrual at Siemens (& Philips) sites
 - Initiate segmentation phase
 - Two-reader evaluation
 - Identify dominant tumor nodule
 - Segment whole prostate and dominant tumor nodule (separately on DWI and DCE scans)
 - Compute automated Arterial Input Functions (AIF)
 - Need to avoid bias caused by reader-selection process bias
 - Computation and analysis phase
- Future Goals
 - Publish data set for QIBA investigators
 - Phantom images – separate analysis/publication
 - Human images – need to work within ECOG-ACRIN guidelines
 - Engage investigators in 2⁰/3⁰ analyses
 - QIBA cohort
 - Site PIs
 - Other interested parties (QIN/ISMRM)

Next PDF-MRI Biomarker Committee Call: August 5 at 11 AM CT [Dr. Rosen to moderate]