

QIBA DCE-MRI Subcommittee Update
October 13, 2010 at 11 AM CDT

Call Summary

In attendance
Gudrun Zahlmann, PhD (Co-chair)
Edward F. Jackson, PhD (Co-chair)
Sandeep Gupta, PHD (Co-chair)
Daniel P. Barboriak, MD
Michael Boss
Orest B. Boyko, MD, PhD
Alexander Guimaraes, MD, PhD
Gregory Karczmar, PhD

David E. Purdy, PhD
Mark Rosen, MD, PhD
Daniel C. Sullivan, MD

RSNA
Joe Koudelik
Julie Lisiecki

DCE-MRI Profile Update (Dr Gupta)

- Profile work in progress; more material to fill gaps and clarification on relevant questions needed
- Volunteers needed to help contribute since time is limited i.e., Profile needed by RSNA 2010 Annual Meeting
- Reference datasets and phantom imaging discussed; expected results from using this phantom needs further discussion
- Reference imaging datasets to be established
- Stringent and demanding analysis outline needed
- Quality control procedures to be documented
- Need to develop phantom recommendations even if based on preliminary results
- Phantom v3 to address cost efficiency, contrast response, spatial variation, and pulse sequence over time -- across multiple vendor systems
 - Need to confirm whether the MRI phantom version 3 is finalized
 - Profile wording required stating that MRI Phantom v3 is to be used in clinical retest activity also
 - Need to drive Phantom v3 forward as a validated QIBA phantom
 - Phantom details to be captured in the Profile appendix
- Current Profile does not address B1 inhomogeneity; flip angles will show spatial variations
- Dr Gupta to address Profile text concerning B1 inhomogeneity and circulate latest draft for feedback
- Exclusion criteria may be needed in Profile: "using site-specific procedures" proposed as suitable language

Additional Profile Considerations

- B1 inhomogeneity
- Exclusion criteria
- Patient positioning
- Injection rate
- Renal function
- Mitigation of motion affects
- Arterial input function
- Image analysis
- Ratio maps (may not have enough data)
- QC section needs additional work

Profile as a Reference vs. Teaching Document

- Teaching component to a point; perhaps a white paper could be Wiki posted to address additional teaching aspects
- Teaching doc will provide more detail as to why a parameter is to be used vs simply being a reference to follow

DCE-MRI Phantom Scanning Update (Dr Jackson)

- First phantom being repaired at MDACC
- Second phantom to be shipped from Duke directly to UC Davis for second GE site scans (Dr Buonocore)

Analysis of U Chicago Data Update (Dr Karczmar)

- U Chicago data shows multiple-frame DICOM data format (new format used by Philips) – sent to Dr Ashton for analysis but difficult to open; further discussion needed
- Drs Jackson and Karczmar to follow-up concerning next steps

NIBIB Contract Funding Update

- Protocol and new Phantom v3 activities need to be sent under NIBIB contract proposal
- Mr Joshua Levy (The Phantom Laboratory) contacted regarding fabrication of a commercial Phantom v3 prototype
- Mr Levy suggests replacing the 3 cm internal polypropylene tubes with 3 cm spheres; this deemed acceptable
- \$4,000+ quote considered high; need to compete with ISMRI phantom in price
- Goal is 2-3 copies of phantom (v3) for a “Round-robin” type of testing
- Obtaining an additional quote suggested; using NIBIB funding support suggested

Next Steps:

- RSNA staff to coordinate t-con for Drs Zahlmann, Gupta and Jackson to discuss developing proposal for NIBIB contract support
- Drs Jackson and Karczmar to follow-up concerning next steps for data analysis difficulty encountered with Philips (U Chicago) data
- Dr Gupta to incorporate all current suggestions (e.g. B1 inhomogeneity, etc) and circulate an updated draft Profile for feedback
- Current Profile draft to be Wiki posted by RSNA staff
- Next call: October 27, 2010 at 11 am CDT