QIBA Musculoskeletal (MSK) Biomarker Committee (BC)
Tuesday, June 12, 2018 at 10 AM CT [one-time shift from 3rd week to 2nd]
Call Summary

In attendance			RSNA
Xiaojuan Li, PhD (Co-Chair)	Kecheng Liu, PhD, MBA	Qi (Chris) Peng, PhD	Joe Koudelik
Thomas Link, PhD (Co-Chair)	Vladimir Mlynarik, PhD	Erika Schneider, PhD	Susan Stanfa
Angie Botto-van Bemden, MD	Jie Nguyen, MD, MS	Suraj Serai, PhD	
Robert Boutin, MD	Nancy Obuchowski, PhD	Ramya Srinivasan, MD	
Peter Hardy, PhD	Edwin Oei, MD	Carl Winalski, MD	
Rick Kijowski, MD	Yuxi Pang, PhD	Cory Wyatt, PhD	

Moderator: Dr. Link

Arthritis Foundation Calibration Study Activities (Dr. Li)

[Some of the information below was taken from Dr. Li's slide presentation]

- Dr. Li provided an update on the Arthritis Foundation sponsored multi-site multi-vendor cartilage T1rho and T2 quantification effort
- An overview of sites, hardware, software and phantoms was provided
    - Vendors include: GE, Siemens, Philips
    - Sites include: Cleveland Clinic, UCSF, Univ of Kentucky, Albert Einstein College of Medicine
- Sequence Structure
    - T1rho preparation: spin-lock pulses (hard pulses)
    - T2 preparation: CPMG/MLEV refocusing pulses (hard pulses)
    - Acquisition: 3D Spoiled Gradient Echo; Segmented acquisition, Transit status immediately after T1rho/T2 preparation
    - Sequence standardization and measurement across multiple sites and vendors was a challenge
- Phantom composition:
    - Recipe and design were devised at the UCSF
    - Manufactured by the Phantom Lab
    - Same batch as the GE-NBA phantoms
    - Contained agarose gel 2%, 3% and 4% each (weight/volume)

- Phantom scan and traveling volunteer parameters and reproducibility data were presented
- While differences in T1rho and T2 measurements were observed between different vendors for phantom and volunteer data, the correlation of measurements demonstrated a linear correlation between phantom data from different vendors. Thus a correction factor can be developed to address these systematic differences
- Dr. Li thanked contributors for their efforts

Quality Assurance in the Osteoarthritis Initiative (OAI) (Dr. Schneider)

- Dr. Erika Schneider, who has overseen QA of the OAI, was invited to present her experiences and share lessons learned
- Discussion regarding QA procedures for MRI scans used during the Osteoarthritis Initiative (OAI), which can be used as a template

- Siemens scanners were utilized
- The initial QA process conducted with phantoms was described
  - It was determined that automatic systematic analysis was needed to measure difference
  - The standard ACR acquisition method was acceptable
  - In terms of coefficient of variation, there has been only minor change over 8 years
  - Phantom holders were used to limit variability

- It was recommended to use a holder for reproducible patient/volunteer positioning of the knee
- Also ankles and legs were sandbagged during scanning to eliminate motion in human subjects
- Discussion on MSK BC application of what was learned is this presentation
- Discussion on whether to run a test sequence (QA) monthly, weekly, or before scanning a patient; monthly QA deemed appropriate

Next Call: Tuesday, August 21 at 10 AM CT [regular time slot]

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