QIBA Musculoskeletal (MSK) Biomarker Committee (BC) Call

Tuesday, September 18, 2018 at 10 AM CT

Call Summary

In attendance			**RSNA**
Xiaojuan Li, PhD (Co-Chair)	Peter Hardy, PhD	Ed Mojahed, PhD	Joe Koudelik
Thomas Link, MD, PhD (Co-Chair)	Edward Jackson, PhD	Yuxi Pang, PhD	Susan Stanfa
Angie Botto-van Bemden, PhD	Youngkyoo Jung, PhD	Hollis Potter, MD	
Robert Boutin, MD	Leon Lenchik, MD	Carl Winalski, MD	
Ali Guermazi, MD, PhD	Kecheng Liu, PhD, MBA	Cory Wyatt, PhD	

Moderator: Dr. Link

Arthritis Foundation Calibration Study Activities (Dr. Li)

- Dr. Li provided an update on the Arthritis-Foundation-sponsored, multi-site, multi-vendor cartilage T1rho and T2 quantification effort
- Phantom T2 measurements are sensitive to seasonal temperature fluctuations which may impact T2 values as well as the detection electronics or overall power levels into the various system components
    - Storing the phantom in the scanning room over night to maintain temperature consistency is recommended
    - New phantom to be developed will contain built-in thermometer
    - As a side project, Dr. Li to look into temperature effects on T1rho measurements

- Most in-vivo data, including subjects for each site and two traveling volunteers, as well as phantom data, have been collected
    - Target is to have five volunteers per each of the four sites
    - Data to be finished by the end of this month and presented during the October 16 MSK BC t-con

New Treatments for Degenerative Joint Disease

- Clinical trials underway for a new disease-modifying osteoarthritis drug (DMOAD)
    - Developed by pharmaceutical company, Galápagos, in Belgium: http://www.glpg.com/
    - Studies presented with interesting early results
    - Efficiently targets ADAMTS-5, a cartilage degrading enzyme
    - Will not only decrease pain and improve function; indication is disease modification to prevent cartilage breakdown
    - Those interested in getting more information may contact Dr. Botto-van Bemden (Arthritis Foundation, OA program) at: avanbemden@arthritis.org

- Phase 2 clinical trials underway in US for an injectable drug
    - Developed by pharmaceutical company, Unity Biotechnology in Brisbane, California: https://unitybiotechnology.com/
    - For those diagnosed with moderate to severe painful osteoarthritis of the knee
    - The goal is to remove zombie, or senescent cells, which may cause joint damage

MSK Profile (Dr. Link)

- RSNA staff explained next steps after the 1st draft of a Profile is completed which can be found on QIBA Wiki at: http://qibawiki.rsna.org/index.php/Public_Comment_Process
- Those with suggestions for changes and additions to the Profile sections being drafted are welcome to email Dr. Link
- Executive Summary and Summary for Clinical Trial Use
    - Target audience to be identified, e.g., physicians, biopharma companies, clinical researchers, technician staff, etc.
    - Revisions to be incorporated based on feedback
    - A summary of the technical specifications required to achieve claim, formatted as a checklist, to be provided in appendix

- Brief discussion on clinical context and Claims
- Section 3.3: Periodic QA has been refined
    - Because they introduce variation, hardware changes/upgrades (e.g. specific coils used) as well as change in calibration phantoms need dedicated QA sessions
    - It was agreed that QA sequences and testing should be performed on a monthly basis
    - References were added to this section and content based on literature has been incorporated into the discussion text
    - Information regarding reproducibility (coefficients of variation) was incorporated
    - A calibration factor that allows the comparison of measurements of scanners from different manufacturers and sites (current info based on multisite study with same vendor scanners across sites) needs to be developed
    - Data from Dr. Li's multisite/multivendor Arthritis Foundation project will be incorporated into the Profile
    - Will need to work closely with vendors to address intervendor variation initially calculated at 10%
    - Different sequences used by vendors will be an issue for clinical trials (drug development) and for clinical application; quantification needed to more accurately assess disease progression
    - Discussion on paper: "The role of radiography and MRI for eligibility assessment in [disease-modifying osteoarthritis drugs] DMOAD trials of knee OA" (to be distributed following this t-con)
        - Suggestion to include patients/research subjects based on MRI in clinical trials; do not include subjects based on radiographic evidence of degenerative disease such as Kellgren-Lawrence (KL) grade 3 and greater,
        - Drug trials using KL scores as inclusion appear to have been unsuccessful
        - MRI may provide better insights in different phenotypes of Osteoarthritis (OA)
        - Recommendation to use T1rho/T2 as an exploratory endpoint in clinical trials; but would companies be willing to include this in their trials
        - **Goal is to write a White Paper including results of Dr. Li's Arthritis Foundation's calibration study and the committee work to be developed**
            - Paper to contain Profile technical performance recommendations
            - To submit to QIBA leadership for review
            - *Radiology* is a possible avenue for publishing this white paper
            - Goal is publication ahead of the upcoming FDA meeting in November/December 2019 (May 2020 is more realistic)

- Section 3.5: Subject Handling
    - Additional discussion needed regarding length of resting time prior to scanning; there is no systematic study to define empirically the amount of time needed;
        - 30 minutes was an arbitrary number with no supporting study data and may be practical for a clinical trial, but not clinical practice
        - Assessing the effects of measurement stability over various resting times suggested

    - Reduction in length of entire scanning process time to be further explored since time is a major factor in clinical practice; clinical staff push-back assumed with longer protocols
        - Suggestion to identify any possible measurement errors associated with shorter scan protocols in support of the MSK Profile specifications

2018 RSNA Annual Meeting

- Deadline for submitting a print-ready poster to RSNA Staff is Oct 31

RSVP to the QIBA Working Meeting at RSNA 2018 | Wednesday, November 28, 2 – 6pm – Lakeside Center

Next Call: Tuesday, October 16 at 10 AM CT [regular time slot]

RSNA Staff attempt to identify and capture all committee members participating on WebEx calls. However, **if multiple callers join simultaneously or call in without logging on to the WebEx, identification is not possible.** Call participants are welcome to contact RSNA staff at QIBA@RSNA.org if their attendance is not reflected on the call summaries.