

QIBA Musculoskeletal (MSK) Biomarker Committee (BC) Call

Tuesday, October 22, 2019 at 10 a.m. CT

Call Summary

In attendance

Thomas Link, MD, PhD (Co-Chair)

Robert Boutin, MD

Majid Chalian, MD

Ali Guermazi, MD, PhD

Peter Hardy, PhD

Youngkyoo Jung, PhD, DABR

Nancy Obuchowski, PhD

Qi (Chris) Peng, PhD

Cory Wyatt, PhD

RSNA

Joe Koudelik

Susan Stanfa

Moderator: Dr. Link

MSK Profile (Dr. Link)

- The latest Profile version was circulated prior to the Oct. 22 MSK BC call
- Updates made since the Sept. 24 MSK BC call were reviewed
- Feedback from MSK BC members was requested re: a few outstanding issues
 - The clinical performance target is to achieve a reproducibility of 4-5% for measurements of cartilage composition with T2 and T1rho relaxation time measurements and a 95% confidence interval level for a true/critical change in cartilage composition (least significant change) with precision of 11-14%
 - The target applies to 3T MR scanners of one manufacturer with identical scan parameters across different sites; cannot be generalized to scanners from different manufacturers
 - A cross-validation project using T1rho and T2 to evaluate the cartilage matrix was completed; awaiting Dr. Li's final study results for inclusion in the Profile
- Section 2: Clinical Context and Claims
 - In the absence of ground truth, separate longitudinal Claims to be rewritten to incorporate the results from the OAI Arthritis Foundation study (intra- and inter-site reproducibility to be differentiated)
 - Longitudinal Claims based on changes over time are included in the MSK Profile
 - Wording in Claims 1A and 1B was slightly modified as suggested
 - Claims were separated for T1rho and T2 measures to indicate that cartilage T2 mapping sequences are available as a commercial product while T1rho sequences are not
- Section 3.2: Installation
 - As coils have a significant impact on signal and measurements, quadrature transmit/(minimum) eight-channel phased-array receive coils shall be used
 - In order to meet the Claims, identical coils need to be used for repeated, longitudinal measurements
 - Conventional, flexible coils not recommended, as reproducibility was found to be limited unless special holders to improve reproducibility are used.
 - Calibration phantom used for a previous Arthritis Foundation funded study is currently available at several sites
 - Dr. Li is working with Katy Keenan at NIST to develop a calibration phantom which can be made available for commercial use
 - More details to be added to the Profile re: company name and purchasing info
- Section 3.3: Periodic QA: relaxation time measurements and geometrical phantom references to be added
- Section 3.4: Subject Selection: The overall goal is risk assessment and monitoring of interventions/management

- Section 3.5: Subject Handling
 - No vendor available for leg/knee holders that were recommended in the Profile to achieve reproducible imaging and standardized positioning
 - Availability of standardized vs. custom-made knee holders discussed
 - Suggestion to include examples or materials that can be used e.g., foam, to reproducibly position the subject
- Section 3.6: Image Data Acquisition: High-resolution sequences were added for various vendor platforms
 - Recommendation to use geometrical phantom for high-resolution imaging
 - Suggested imaging protocols for GE, Philips and Siemens were revised
 - Contact information for new GE contact, Misung Han, PhD at UCSF was added
- Section 4.2: Test-Retest Conformance Study –
 - Dr. Obuchowski added text and formula to add rigor to the process (to raise the bar)

RSNA Annual Meeting

- The QIBA Working Meeting will be held on Dec. 4 at 2 p.m. in E253AB - Dr. Link unable to attend
- MSK BC members were encouraged to sign up for QIBA Kiosk [MTE sessions](#)
- Discussion re: format and avenue for publishing the manuscript based on the multivendor, multisite study
 - Technical report submitted to *JMRI* or *Radiology* suggested
 - White paper (with fewer than 5,000 words)

Next steps

- Due to their proximity to the RSNA Annual Meeting and Thanksgiving and Christmas holidays, there will be no Nov. or Dec. MSK BC call; to reconvene for the first regular time slot of the new year on Jan. 28
- The Profile will be sent to Dr. Boss for review, finalized as Stage 1: Public Comment version, and then to [eligible BC voters](#) for a [vote to release for public comment](#)

Reminder:

- Please [RSVP for the Dec. 4 QIBA Working Meeting](#) during the 2019 RSNA Annual Meeting
- Please [sign up for the RSNA 2019 MTE Sessions](#) at the QIBA Kiosk:
 - Type in your name next to the presentation time slot that works for you (we encourage that each 30-minute time slot is filled by at least one committee member)
 - Simply close out of the document (there is no save button and changes will automatically save)

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Next Call: Tuesday, January 28, 2020 at 10 AM CT [4th Tuesdays of each month]

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