

## QIBA Musculoskeletal (MSK) Biomarker Committee (BC) Call

Tuesday, September 24, 2019 at 10 AM CT

### Call Summary

#### In attendance

Xiaojuan Li, PhD (Co-Chair)

Thomas Link, MD, PhD (Co-Chair)

Angie Botto-van Bemden, PhD

Robert Boutin, MD

Ali Guerhazi, MD, PhD

Peter Hardy, PhD

Youngkyoo Jung, PhD, DABR

Leon Lenchik, MD

Nancy Obuchowski, PhD

Yuxi Pang, PhD

Suraj Serai, PhD

Carl Winalski, MD

Cory Wyatt, PhD

#### RSNA

Joe Koudelik

Susan Stanfa

**Moderator:** Dr. Link

#### Summary of August 28 QIBA MR Coordinating Cmte Call (Dr. Li)

- An overview of the 2019 RSNA Annual Meeting QIBA Kiosk Posters was provided
  - A broad, high-level perspective regarding the importance of quantitative imaging (QI) is the goal for 2019 QIBA Kiosk posters
  - The 2019 posters will be modality-based, rather than BC-based
  - Posters with less text and more images (clean space) highlighting specific use cases for QI (both clinical and research) to be developed
- Reminder to BC Co-chairs to regularly update the QIBA dashboard re: BC activities, including dates (or target dates) of milestones reached
  - This will help keep the [Dashboards](#) current and will be a useful reference for BC deliverables and progress; CCs Co-chairs are to reach out to BC leaders for assistance with these updates
- Overview of the Public Comment Resolution Process
  - The purpose of the [Comment Resolution](#) QIBA Wiki page is to allow public comment submitters to access details on how their feedback was addressed, i.e., incorporated into the subsequent draft (Consensus Profile)
  - The [Public Comment Process QIBA Wiki page](#) guidelines, as well as the Google Sheet [comment resolution template](#) was provided by the Process Committee (Mr. O'Donnell)
    - Instructions on classifying comments are included: accepted, rejected, resolved, under discussion
    - Status is tracked for each comment (e.g., TBD, Ok, Discuss, TODO)
  - Once all public comments are addressed and the document is in its final stage, BC Co-Chairs to submit the document to staff for public posting on the [Comment Resolution](#) QIBA Wiki page
- Letter to Pharma Update (QIBA Sustainability Implementation Group effort)
  - MSK project proposal, "Development of calibration phantom for quantitative musculoskeletal MRI" (PI: Xiaojuan Li, PhD, Cleveland Clinic) was submitted in August; to-date there is no response to this MSK project from pharma/iCROs

## **Update on the Arthritis Foundation funded Cross-Calibration Study (Dr. Li)**

- While developing the initial Profile draft, challenges with cross-sectional differences with multi-site, multi-vendor were encountered
  - A cross-validation project is underway using T1rho and T2 to evaluate the cartilage matrix
  - Cross-sectional values are dependent on site/vendor; although they are now standardizing sequences, differences are still apparent
- A manuscript based on a multivendor, multisite study is actively underway and will be submitted for publication
- The current MSK Profile Claim is based on a study with only one vendor; the goal is to expand to additional vendors (including Siemens, GE and Philips machines) and strengthen the longitudinal Claim
- It was noted that, based on a previous meta-analysis, reproducibility was reported to be approximately 5% which corresponds to reproducibility obtained for scanners from one vendor while reproducibility for scanners from different vendors is approximately 10%
  - Efforts are underway to secure funding for a larger study to see whether intervender variation can be mitigated
  - In the absence of ground truth, separate longitudinal Claims to be rewritten to incorporate the results from this Arthritis Foundation study (intra- and inter-site reproducibility to be differentiated)
  - Sample was too small to determine differences between systems and linear or non-linear variance relationships; a more systematic evaluation will be done upon receipt of additional funding
  - Additional study and data are needed to define clinically significant cartilage change over time

## **MSK Profile (Dr. Link)**

- Dr. Link circulated the latest Profile version prior to the Sept. 24 MSK BC call
  - Updates made since the June 25 MSK BC call were reviewed
  - Feedback from MSK BC members was requested re: a few outstanding issues
- Section 3.5: Subject Handling
  - Factors (length of scan time, activity of patient, etc.) were discussed
  - Patient in supine position for 30 minutes prior to scanning deemed problematic; agreement to have patient in a seated position
- Section 3.6: Image Data Acquisition
  - Sequences in the Profile are currently research sequences and not generally available; contact details for obtaining sequence/patch for each vendor needed
  - Dr. Rob Peters (GE) no longer the contact for this purpose; reappointment to occur
  - Dr. Li to reach out to Siemens to determine contact/point person
  - Discussion to continue offline
- Section 3.7: Image Data Analysis
  - To determine how to conduct lesion-specific analysis, regions to be used and control regions to apply
  - ROI can be segmented manually; development of a control region needed
    - Contralateral knee not to be used as a control
    - Control region from the same compartment to be chosen
  - Dr. Link provided a brief overview on a publication that looked at focal regions
    - ROIs were segmented manually, and control regions were chosen

- Recommendations based on this paper to be made, implemented and distributed for MSK BC review; feedback on how to proceed will be requested
- Section 3.8: Data Interpretation
  - Data interpretation is another area of variability; discussion needed regarding how to interpret acquired measurement values
  - Longitudinal Claims based on changes over time are included in the MSK Profile
  - With other QIBA Profiles, examples of realistic data are made available and clinical interpretation based on that information is provided
    - References, papers, and examples are used re: interpreting the data to help the Profile user clinically
    - Reference populations not currently used in any QIBA Profiles
  - Agreement that a reference database with risk scores would be outside the scope of the Profile

### Next steps

- Feedback from someone who has not worked on the MSK Profile first-hand is desired
- It was recommended that the checklist/protocol be reviewed for real-world feasibility by technologists
- Dr. Link to circulate another Profile draft, updated as a result of today's discussion for internal BC review; it will then be sent to MR CC leaders for feedback
- The Profile will be finalized as Stage 1: Public Comment version and sent out to [eligible BC voters](#) for a vote to release for public comment, i.e., how to improve
- It was noted that while the Profile is out for public comment, updates can be made to the document, which will become the next Profile version, Stage 2: Consensus Profile

### 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)

**NEW! Visit the QIBA Citations EndNote Library! Details can be found on the [QIBA Wiki Education](#)**

**Next Call:** Tuesday, October 22, 2019 at 10 AM CT [4<sup>th</sup> Tuesdays of each month]

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