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QIBA Musculoskeletal (MSK) Biomarker Committee (BC)
Tuesday, March 19, 2018 at 10 AM CT [regular time slot]
Call Summary

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In attendance   **RSNA**

Xiaojuan Li, PhD (Co-Chair)	Peter Hardy, PhD	Rob Peters, PhD	Joe Koudelik
Thomas Link, PhD (Co-Chair)	Edward Jackson, PhD	Hollis Potter, MD	Susan Stanfa
Michael Boss, PhD	Youngkyoo Jung, PhD, DABR	Ramya Srinivasan, MD	
Angie Botto-van Bemden, MD	Leon Lenchik, MD	Carl Winalski, MD	
Robert Boutin, MD	Vladimir Mlynarik, PhD	Cory Wyatt, PhD	
Christine Chung, MD	Nancy Obuchowski, PhD	Gudrun Zahlmann, PhD	
Garry Gold, MD			

Moderator: Dr. Link

Update on March 14 QIBA MR Coordinating Cmte T-con
- Dr. Link provided an overview from the MR CC call summarizing all MR BC & TF activities and gave an update on their various Profile development stages
    - The full QIBA organization chart can be found on the QIBA Wiki at: https://tinyurl.com/QIBA-Org-Chart
- There was a discussion on MR publications status and next steps in efforts to enhance the Profile

Arthritis Foundation Calibration Study Activities (Dr. Li)
- The Arthritis Foundation calibration study and its results are crucial for MSK Profile development
- The first set of phantom data is now being analyzed
- After analysis is complete, phantom data will be reported to the study committee and the MSK BC
- Sequence standardization and measurement across multiple sites and vendors will be a challenge
    - Once variability is assessed, differences will be optimized and minimized
    - The hypothesis is that there may be systematic differences seen across sites and scanner vendors which may require a correction factor
    - Once it is determined whether the cross vendor correlation is linear, a correction factor can be developed

MRI Phantom Development
- Drs. Mirowski at QalibreMD (an offshoot of High Precision Devices), Keenan from NIST, and Li are collaborating on phantom development
- Dr. Mirowski plans to submit a NIH/SBIR grant application (to develop a phantom) by the April 4 deadline
- Discussion on machine-learning and how one would develop automatic imaging segmentation for cartilage
    - The number of abstract submissions on machine-learning has increased
    - Those working in this area of interest to be invited to become members of the MSK BC

Osteoarthritis Research Society International (OARSI) Image Interest Group
- This new forum could be leveraged to increase the visibility of QIBA's MSK quantitative efforts
- An understanding of the underlying physics of imaging is critical for participation in deep-learning efforts; active radiologist members are crucial to the group
- Caution was voiced regarding the use of machine learning technology by novices or non-SMEs

- Discussion on synthetic MR; Dr. Peters explained this technology and its function
- The major scanner vendors all have their own versions of Synthetic MR
- Recommendations for sequences outside of relatively standard approaches were requested
  - Scan time efficiency is driving the machine-learning trend
  - Finding multiple uses of output data also benefits from machine-learning
  - MSK Profile to promote use of 3D acquisition for quantitative MR

Potential Publications
- The Arthritis Foundation calibration study to conclude by September 2018 and a paper to be submitted for publication
- Suggestion to develop MSK TFs for writing white papers
- Opportunities for QIBA-generated publications need better organization and coordination; members are encouraged to inform QIBA leadership before submitting articles for publication in order to present a united front with a cohesive message and consistent language
- Series of papers to possibly be published by JMRI could make QIBA more recognizable to community by emphasizing QIBA-supported trials and QIBA participation in studies
- It must be clear that this effort is being driven by the radiology field, not other areas of medicine

Next Steps
- Recommendations for subject-handling to be discussed
- Creation of data sets to help streamline the reconstruction and data analysis
- Use of the automatic algorithms to be investigated further
- Dr. Link encouraged MSK BC members to attend the Osteoarthritis Research Society International (OARSI) Meeting in Liverpool during the second half of April
  - Goal is to develop the image interest group as a forum for imaging researchers
  - There will be a need for co-chairs (3-year terms) and 5 – 6 people to plan yearly 90-minute image interest group meeting
  - Cutting edge developments and novel abstracts to be included in program.
  - There will be 1 – 2 regular talks, a review of 5 – 6 short abstracts and research discussion
  - Dr. Link will maintain the group roster and distribute yearly invitations and papers for those who are unable to attend the meeting

Next Call: Tuesday, April 17, 2018 at 10 AM CT [regular time slot]; no May meeting due to QIBA Annual Meeting

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