### QIBA Ultrasound Shear Wave Speed (SWS) Biomarker Committee (BC) Call

**Friday, April 7, 2017; 11 AM CT**

#### Call Summary

**In attendance**
- **Tim J. Hall, PhD (Co-Chair)**
- **Brian Garra, MD (Co-Chair)**
- **Andy Mikowski, MS (Co-Chair)**
- **S. Kaisar Alam, PhD**
- **Michael André, PhD**
- **Paul Carson, PhD**
- **Jun Chen, PhD**
- **Elaine Collins, RDMS**
- **Manish Dhyani, MD**
- **Richard Ehman, MD**
- **Todd Erpelding, PhD, MSE**
- **Joel Gay, MSc**
- **Albert Gee**
- **Mike MacDonald, PhD**
- **Stephen McAleavey, PhD**
- **Nancy Obuchowski, PhD**

**RSNA**
- **Mark Palmeri, MD, PhD**
- **Nicolas Rognin, MSc, PhD**
- **Stephen Rosenzweig, PhD**
- **Theresa Tuthill, PhD**
- **Matthew Urban, PhD**
- **Michael Wang, PhD, MASc**
- **Keith Wear, PhD**
- **Heng Zhao, MS, PhD**

**Moderator:** Dr. Hall

**Review prior call summary:** March 17th summary approved as submitted

#### AIUM Update

- Dr. Nightingale was requested to present her AIUM talk on SWS propagation in phantoms on the next BC call
- This information would be valuable for vendors and buyers to communicate what they each need regarding boundaries on how measurements can be reproduced using viscoelastic phantoms.

#### Profile Updates/Open Issues

- Remaining open issues for the Profile were discussed
- Questions remain regarding how to handle measurement bias
- MRE measurement provides a rubric which can be used for calibration
- Use of a calibrated Verasonics system and transducer for reference is also under consideration
- It would be ideal to have a given platform as a starting point for the measurement of CIRS phantoms
- Phantoms are being tested at Duke for variance across Verasonics systems
- Dr. Urban to follow up with Verasonics; he is working on building the case
- The MRE Profile does not yet address bias; Dr. Ehman is focusing on reproducibility and repeatability at lower clinically-relevant frequencies
  - Only one site has the higher frequency implementation necessary to do these tests
  - If others are interested in performing tests, Mayo is willing to provide the phantom to other sites
  - MRE frequencies are not suitable for human application; however, finding a standard would be helpful
- Existing sequence data on both sets of phantoms from Duke and Mayo are available
- A goal would be to address bias relative to the phantom measurements
  - However, measurements may not have been acquired with the same sequences
  - It will be necessary to provide bias relative to what is being calibrated
    - Calibrating against the Verasonics standard was suggested as one option
    - A calibration technique is being proposed as a standardized reference measure
- While this method using Verasonics is under consideration, some questions will need to be resolved:
  - There is a potential for reference system inconsistencies due to periodic system upgrades, or drifting
  - It may be helpful to keep staggered versions of sequences for software upgrades
  - Some realignment of data may also be necessary to use the same processing codes
  - Plan is to yield a group SWS estimate with specifications regarding the systems and versions used, as well as dispersion curves
  - As there are many confounders in a clinical setting, standards based on physical phantoms with known ground truth are needed
o Centralization of the measurement procedure with a designated neutral party would be ideal, e.g. a national laboratory

Profile Release Plan
- Some roadblocks remain that may require additional discussion
- Volunteers will be needed for internal BC review prior to release for public comment
- Any further comments regarding the Profile should be sent to Mr. Milkowski, and Drs. Dhyani and Garra: andy.milkowski@siemens.com; Dhyani.Manish@mgh.harvard.edu; bgarra@gmail.com

Action items:
- For the next call, Dr. Garra would like to see if Dr. Nightingale might present her AIUM talk on shear wave propagation in phantoms
- Establish whether doing a test-retest with MRE would be reproducible and move forward
- Co-chairs to talk with Verasonics reps and invite to future SWS call for group discussion

Dashboard Updates: Please send Dr. Carson any relevant updates: pcarson@umich.edu. Thank you.

Next QIBA WebEx calls are as follows:

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