

## 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 Milkowski, 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

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

### RSNA

Joe Koudelik

Julie Lisiecki

**Moderator:** Dr. Hall

**Review prior call summary:** March 17<sup>th</sup> 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

- 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](mailto:andy.milkowski@siemens.com); [Dhyani.Manish@mgh.harvard.edu](mailto:Dhyani.Manish@mgh.harvard.edu); [bgarra@gmail.com](mailto: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](mailto:pcarson@umich.edu). Thank you.

**Next QIBA WebEx calls are as follows:**

<p><b>WebEx Calls:</b></p> <ul style="list-style-type: none"> <li>• <b>Apr 14:</b> CEUS BC</li> </ul>	<p><b>Task Force calls (if requested):</b></p> <ul style="list-style-type: none"> <li>• <del>Apr 21:</del> SWS TF</li> <li>▪ <b>Apr 28:</b> CEUS TF</li> </ul>
<ul style="list-style-type: none"> <li>• <b>May 05:</b> SWS BC</li> <li>• <b>May 12:</b> CEUS BC</li> </ul>	<ul style="list-style-type: none"> <li>• <b>May 19:</b> SWS TF</li> <li>• <b>May 26:</b> CEUS TF</li> </ul>