

QIBA Ultrasound Shear Wave Speed (SWS)

Phantom-System Measurement Testing

Monday, November 5, 2012; 1 PM CT

Call Summary

In attendance

Brian Garra, MD (Co-Chair)

Timothy J. Hall, PhD (Co-Chair)

Cristel Baiu, MS

Shigao Chen, PhD

David Cosgrove, MD

Steven E. Fick, PhD

Ted Lynch, PhD

Andrew Milkowski, MS

Nicolas Rognin, MSc, PhD

Cedric Schmitt, PhD

Bob Spaulding

Daniel C. Sullivan, MD

Keith Wear, PhD

Hua Xie, PhD

RSNA

Joe Koudelik

Julie Lisiecki

Approval of last call summary, 10/19/2012

Proposed Phantom criteria:

- Dr. Hall discussed proposed phantom design
- Two phantoms will be used for this initial experiment:
 1. Shear modulus of 2kPa – mimicking normal liver
 2. Shear modulus of 8 kPa – mimicking advanced liver fibrosis
- Dr. Lynch/ CIRS will provide 11 sets of phantoms– after RSNA 2012
- Mr. Milkowski will draft Protocol for US SWS phantom experiment with input from Drs. Hall and Garra, and the Systems Dependencies subcommittee.
- **Suggestions for parameters to consider:**
 1. Boundary condition differences
 2. Temperature dependence on modulus values
 3. Documentation of laboratory temperature when performing tests
- Discussion to continue on next call
 - Question raised as to whether more time should be spent on dispersive phantoms instead of on this control experiment, where all participants should get the same or very similar answers
 - Some measurements may be determined from the data mining effort
- **Measurement information for inter-laboratory study (from Dr. Wear/System Dependencies)**
 1. Measure variation of shear wave speed with depth from the transducer.
 2. Measure variation of shear wave speed with lateral range.
 3. All measurements should include error bars.
 4. Report spectral content of shear wave.
 5. Report Acoustic Radiation Force Push Beam transducer center frequency, focal properties, aperture size, pulse duration, and number of elements (if applicable).
 6. Report TI, MI, Isppa, Ispta
 7. Report measurements of inter-operator variability.
 8. Report criteria for data acceptance/ rejection
 9. Report how measurements are reduced to single value (e.g. median, mean, outlier, removal, etc.)
 10. Report tracking beam pulse repetition frequency.
 11. Report estimate of volume of averaging.
 12. Specify whether phase velocity or group velocity is measured.
- **Concerns raised:**
 - Level of protocol detail for the preliminary experiment.
 - Intellectual property
 - Would the protocol also be used as part of an accreditation process?

Volunteer Systems/Sites for Phantom study- to date:

1. Echosens
2. Siemens
3. SuperSonic Imagine (SSI)
4. Philips
5. GE – in cooperation with University of Rochester
6. University of Wisconsin, Madison
7. Duke University
8. University of Michigan
9. Institut Laue-Langevin (Grenoble, France)
10. UCSD – University of California, San Diego
11. Mayo Clinic

Next Steps:

- For the next t-con, consider questions that may need to be answered by phantom manufacturers.
- Consider construction / geometry of phantom and ranges of moduli:
 - Flat versus curved scanning surfaces
 - Ease of making measurements
 - Shelf-stable material
 - How these tests should be conducted
- A separate call may be needed to work out the study design specifics and protocol.
- Comments from System Dependencies group are requested and may be sent to Dr. Wear (Keith.Wear@fda.hhs.gov) or Dr. Palmeri (Mark.Palmeri@duke.edu)

Doodle Polls:

The QIBA working meeting at RSNA 2012 is Wednesday, Nov 28th, from 3 pm – 5 pm

- Please respond to the Doodle Poll regarding attendance: <http://www.doodle.com/kssb47q8up4446c6>
- Doodle Poll will be used by tech committees to prepare agendas based on attendance

QIBA Poster Meet-the-Expert (MTE) Sessions at RSNA 2012: <http://doodle.com/qi8fhubm6m3wtzsvv>

- Please provide your availability to participate in the QIBA Poster Meet-the-Expert (MTE) sessions.
- This is a chance to interact with attendees to discuss your poster content (current subcommittee projects).
- Sessions are 30 minutes over the noon-time hour, Sunday through Thursday.
- The Tech Ctte posters will be located at the QIBA Kiosk, within the Lakeside Learning Center (Hall E), off of the central aisle, just behind the Cases of the Day.

Next call for QIBA US SWS Phantom-System Msmt Testing Subcommittee: *Monday, December 10, 2012, 1 pm CT.*

RSNA Staff attempt to identify and capture all committee members participating on WebEx calls. However, if multiple callers join simultaneously or call in without logging on to the WebEx, identification is not possible. Call participants are welcome to contact RSNA staff at QIBA@RSNA.org if their attendance is not reflected on the call summaries.