

## QIBA Ultrasound Shear Wave Speed (SWS): System Dependencies Subcommittee

Friday, January 18, 2012; 11 AM CT

Call Summary

### In attendance

**Mark Palmeri, MD, PhD (Co-Chair)**

**Keith Wear, PhD (Co-Chair)**

Paul L. Carson, PhD

Shigao Chen, PhD

Liexiang Fan, PhD

Timothy J. Hall, PhD

Christopher Hazard, PhD

Andy Milkowski, MS

Kathy Nightingale, PhD

Laurent Sandrin, PhD

Hua Xie, PhD

### RSNA

Joe Koudelik

Julie Lisiecki

**Moderator:** Mark Palmeri, MD, PhD

### Notes provided by Drs. Palmeri and Wear

11/12/2012 Call summary was approved without further modifications

### CIRS Multi-Site Phantom Study Discussion

- Tim provided overview of the study
  - 11 sites confirmed, including academic & industry
  - Systems represented include SSI, Siemens, GE, Philips and Verasonics configurations
  - Phantom should ship around week of 01/28; concerns remain about shipping in freezing temps
  - There will be several measurements that exist on all of the phantoms at the same location, including CIRS and Duke
  - Mechanical testing will be conducted at University of Wisconsin and at Rheolution
  - There is concern about temporal stability of phantoms. Measurements will be made over time to check this.
- Kathy provided an overview of measuring SWS in all of the phantoms
  - Will use 3 focal zone Verasonics configuration using a curvilinear array (30, 50 & 70 mm) – typical conditions for liver fibrosis measurement (QIBA focus)
  - Focal depths will be targeted for those realistic for liver applications (i.e., not superficial)
  - Imaging 8 spatial locations in each phantom, including some near the edges of the phantom
  - Phantoms will be placed on a turntable. At each location, replicate measurements will be done, rotating about that location, to get different speckle realizations but interrogate the same region
  - Transducers will be held in a ring stand w/ a fixed spatial offset in the water well and a constant amount of water in the well
  - Duke will provide report of consistency of phantom without absolute stiffnesses (or velocities) to not bias other measurement sites – e.g. 100% plus or minus X%
  - Measurements will be made within FDA recommended levels for MI
  - Kathy asked whether Duke should duplicate these measurements with Siemens S2000, but group did not believe this was necessary.
- Andy gave an overview of his draft protocol for the site phantom measurements; some details below
  - Removing the transducer from the surface of the phantom between each data acquisition (otherwise, speckle pattern wouldn't change for a motionless phantom). Andy noted that patients breathe but phantoms don't.
  - Number of replicate measurements to get a single value? Discussion of what we do w/ system protocols that use multiple measurements to report a single value; do we still collect individual values? We should record individual values because the data can be analyzed later in order to help design the final QIBA recommended measurement protocol (e.g., should QIBA advocate MEDIAN or MEAN or whatever?)
- Laurent said that FibroScan bases values on median of 10 measurements but perhaps 10 could be reduced to 5 for a phantom experiment since phantoms are very stable.
- Keith brought up the point about the size of ROI between the different systems; should be recorded since ROI size will affect measurement variability.

- Protocol must be finalized before phantoms ship to individual sites for measurement on 01/28!!
  - Andy will circulate draft protocol for comment.
  - QIBA Metrology tolerance limits also to be reviewed for guidance.

**Next steps:**

- Items not covered from today’s call agenda will be deferred to the next call.
- It is most important that the protocol document be finalized within the ten day window.

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**Next QIBA US SWS Calls - February 2013**

<b>Date</b>	<b>Time (CT)</b>	<b>Day</b>	<b>Committee/ Subcommittee</b>	<b>Moderator</b>
2/08/2013	11:00 am CT	Friday	US SWS Technical Committee	Dr. Hall
2/11/2013	1:00 pm CT	Monday	Phantom System Testing & Measurement Subcommittee	Dr. Garra
2/15/2013	11:00 am CT	Friday	System Dependencies Subcommittee	Dr. Wear
2/25/2013	1:00 pm CT	Monday	Clinical Applications & Biological Targets Subcommittee	Dr. Samir