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

Friday, October 26, 2012; 11 AM CT

Call Summary: **Submitted by Keith Wear, PhD**

In attendance			**RSNA**
Mark Palmeri, MD, PhD (Co-Chair)	Liexiang Fan, PhD	Stephen McAleavey, PhD	Joe Koudelik
Keith Wear, PhD (Co-Chair)	Brian Garra, MD	Kathy Nightingale, PhD	Julie Lisiecki
Paul L. Carson, PhD	Gilles Guenette, RDMS, RDCS, RVT	Laurent Sandrin, PhD	
Shigao Chen, PhD	Christopher Hazard, PhD	Hua Xie, PhD	

Moderator: Keith Wear, PhD

9/28/2012 Call summary was approved without modifications

1. Mark Palmeri presented the state of the reference database. 157 papers have been entered. The papers have been mined for quantitative and qualitative data that have been assembled in a convenient spreadsheet format. Paul Carson suggested that we enlist a biostatistician to help with meta-analysis. Paul contacted Zheng Zhang from the Statistics Department at Brown University, who agreed to join the project.

2. Mark Palmeri presented information provided by industry reps and academic labs regarding the spectral content of shear waves generated by their systems. Spectral content is a major confounding factor that we need to understand. Now for the first time we have spectral information plotted on the same graph for the following systems: FibroScan, Philips, Siemens, Supersonic Imagine (industry), and SDUV, SMURF (research)--sometimes for multiple transducers. This information will help the group move forward to develop a protocol and data compensation methodology to allow inter-system comparison.

3. Hua Xie (Philips) gave her presentation from the 2012 IEEE International Ultrasonics Symposium (Dresden) on a phantom study to cross-validate multimodality shear wave elastography techniques. This study is very relevant to the upcoming study to be led by the SWS Phantom Subcommittee.

4. The group had a brief discussion of test conditions appropriate for a phantom study. The discussion was brief and a complete list was not generated. Group members were asked to email their ideas for test conditions to Mark Palmeri and Keith Wear so that a draft protocol could be assembled and forwarded to the phantom subcommittee.

A preliminary list is as follows:

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 and MI
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.

Next steps:

- Please email ideas for test conditions to Dr. Palmeri, mark.palmeri@duke.edu or Dr. Wear, Keith.Wear@fda.hhs.gov, so that a draft protocol can be assembled and forwarded to the phantom subcommittee – **by Friday, November 2, 2012.**
- For Mendeley, editing permissions will be allowed to those with Gmail addresses (email mark.palmeri@duke.edu for access)

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