QIBA Ultrasound Shear Wave Speed (SWS): System Dependencies Subcommittee
Monday, November 12, 2012; 1 PM CT
Draft Call Summary

In attendance			**RSNA**
Mark Palmeri, MD, PhD (Co-Chair)	Liexiang Fan, PhD	Kathy Nightingale, PhD	Joe Koudelik
Keith Wear, PhD (Co-Chair)	Timothy J. Hall, PhD	Nicolas Rognin, MSc, PhD	Julie Lisiecki
Paul L. Carson, PhD	Kristina Hallam	Daniel C. Sullivan, MD	
Shigao Chen, PhD	Stephen McAleavey, PhD	Hua Xie, PhD	
Claude Cohen-Bacrie, MS	Andy Milkowski, MS	Zheng Zhang, PhD	
David Cosgrove, MD			

Moderator: Mark Palmeri, MD, PhD

10/26/2012 Call summary was approved without modifications

1. **Reference database meta-analysis discussed (Dr. Palmeri).**
   Values within these papers differed in how they were reported.
   - The URL for the Mendeley database is: http://www.mendeley.com/groups/2396601/qiba-sws/
   - 230 manuscripts were examined and 157 clinically relevant datasets were extracted.
   - Meta-analysis parameters included:

     1) liver disease etiology

     2) SWS

     3) imaging system (FibroScan, Siemens, MR); SSI to be included (Claude has provided a reference list to be added to the Medeley database).

     3) Discussion (Claude) about problem with converting standard deviations from E values to SWS values since it is a nonlinear process. That was acknowledged and agreed up, and will be addressed in future iterations of this analysis.

   - Difficulty comparing plotted data due to a variety of methodologies.
     - Challenge lies in the different metrics used for reporting measurements,
       - Different values calculated and reported (mean, median, range, standard deviation, IQR)
       - Number of studies conducted for a specific disease vary
       - Gender, age, BMI, number of patients – variables
       - Comparison with other meta-analyses difficult
   - The papers cover a good range of speeds with general trends showing the same uptick toward an increasing fibrosis score.
   - Variability encountered in the way pathologies are reported, due to subjective scoring by the pathologist.

- The clinical subcommittee is tackling this issue. Dr. Samir has volunteered to draft a 'standardized case reporting form'
- We will also be considering other factors such as steatosis, inflammation, hepatocyte ballooning and % of fat moving forward (Claude, Mark, Kristina).

- Discussion Point – Consider the number of studies being done and other liver confounding factors.
- We will include the input of a biostatistician moving forward (Mark, Paul)

2. Discussion of inter-laboratory phantom measurement parameters (Dr. Wear)

The QIBA SWS Phantoms Subcommittee is interested in conducting an inter-laboratory comparison of shear wave speed measurements in phantoms. They are currently in the process of evaluating designs for visco-elastic phantoms, but settling on the design parameters and the proper validation protocol (which will involve mechanical testing) will likely take many months. In the meantime, the QIBA SWS Phantoms subcommittee has decided to conduct a preliminary inter-laboratory comparison of shear wave speed measurements in purely elastic phantoms, which will be fabricated by Ted Lynch at CIRS. This preliminary study will provide interesting results and also serve as good practice for the eventual study in visco-elastic phantoms. The QIBA SWS Phantoms subcommittee has solicited input from the QIBA System Dependencies subcommittee regarding how the measurements should be performed and what information should be recorded.

A preliminary list of candidate measurement considerations is listed below:

Dr. Wear asked subcommittee members to suggest additions or deletions to this list and two consider two questions: 1) Are any of these considerations too burdensome? and 2) Do any considerations ask manufacturers to unnecessarily disclose proprietary information?

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.

Dr. Wear asked subcommittee members to submit any comments by email to Mark Palmeri and Keith Wear

Next steps:

- Editing permission within Mendeley will be granted to those with Gmail addresses (Please email mark.palmeri@duke.edu for access)

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. QIBA wiki

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Upcoming QIBA US SWS call schedule:

RSNA Annual Meeting – November 25 – 30, 2012, McCormick Place, Chicago				
December				
Date	**Time (CT)**	**Day**	**Committee/ Subcommittee**	**Moderator**
12/07/2012	11:00 am CT	Friday	Technical Committee	TBD
12/10/2012	1:00 pm CT	Monday	Phantom	TBD
12/17/2012	1:00 pm CT	Monday	Clinical Applications & Biological Targets Sub-committee	TBD
12/21/2012	11:00 am CT	Friday	System Dependencies Subcommittee	Dr. Wear