



PULSE-ECHO QUANTITATIVE ULTRASOUND

BIOMARKER COMMITTEE

Agenda for Friday, July 2, 2021

11:00am – 12:00pm

Attendees: Ivan Miguel Rosado-Mendez (Co-Chair), Anthony Samir (Co-Chair), Michael Wang, (Co-Chair), Stephane Audiere, Cristel Baiu, Richard G. Barr, Paul L. Carson, Anil Chauhan, Guy Cloutier, Chris De Korte, Ahmed El Kaffas, Aaron Engel, Raul Esquivel, David Fetzer, J. Brian Fowlkes, Jing Gao, Joel Gay, Timothy Hall, Viksit Kumar, Roberto Lavarello, Ted Lynch, Jonathan Mamou, Stephen McAleavey, Gary Ng, Arinc Ozturk, Theodore Pierce, Laurent Sandrin, Paul Sidhu, Timothy Stiles, Michael Thornton, Theresa Tuthill, Xiaohong Wang, Keith Wear, James Zagzebski

AIUM Staff: Kelly Phillips

TOPIC	COMMENTS	ACTION ITEMS
Introduction	Welcome (IRM, 3 min))	
Leadership Update	a. Position Paper (IRM and DF, 2 min) b. Round Robin Study <ol style="list-style-type: none"> i. Participant information spreadsheet (IRM, 2 min) ii. Contacting vendors for scanning instructions (IRM, 2 min) iii. Donations (MW, 3 min) 	<ul style="list-style-type: none"> • Finalize goals – what specific questions will be addressed in the RR study for each of the biomarkers - this month
Work Groups	Work Group Progress Reports <ol style="list-style-type: none"> a. Phantom (25 min) <ol style="list-style-type: none"> i. Presentation of phantom specification documents ii. Discussion b. Backscatter (7 min) 	<p>Attenuation WG: Get Nancy's perspective on # of measurements</p> <p>Provide feedback on the phantom specifications within the next week</p>

	c. Sound Speed (7 min) d. Attenuation (7 min)	
Summary	Summary (IRM, MW, AS – 2 min)	
NEXT CALL	Date: August 6, 2021 Time: 11:00am, EST	

IRM – Leadership Updates

- Position paper
 - Received almost all contributions
 - Please send yours if you haven't yet
 - Currently being edited by D. Fetzer and I. Rosado-Mendez
 - Next step: distribute first version for review among co-authors next week
 - Co-authors' focus:
 - Reduce number of references
 - Watch out for any nomenclature, terminology inconsistency
- Round Robin study updates
 - Finalization of phantom specifications (Phantom WG update)
 - Definition of goals from WG – this month
 - Request to vendors:
 - Scanning instructions/protocol
 - Systems, transducers, and software versions to be tested (commercially available or not)
 - Coordination with participating institutions
 - Check that systems, transducers, and software versions are available

- Coordinate with vendor representative in case they are not:
 - Discussion: what options are available to provide access?
 - Case-by-case basis
 - Representation
 - Number of sites per vendor $\geq 3^*$
(including headquarters)
 - Number of appraisers per site: $\geq 3^*$
 - Challenge in places where multiple systems will be tested
- *Discussion with Dr. Nancy Obuchowski

BF – when number of sites are indicated, intersection point in terms of systems and types of measurements in reference to the 3 biomarkers

IRM – 3 vendors implemented Sound speed, 1 vendor: Backscatter; discuss with Nancy about how to manage

IRM – We need to know the questions for the phantom study from each WG; propose a quantification strategy based on research systems; intersection point will be defined by the type of questions that we want to address for each of the biomarkers

DF – some sites will be doing research level quantification as well as clinical

IRM – evenly space those in the phantom circulation; some sites using ultrasound scanners, not water tank measurements – most interested in doing backscatter analysis - best to leave those sites for end of study, start first with attenuation where there is a clear idea on the type of comparison

- Donations – MW – a reminder was sent to vendors; thank you to those who have donated; please start the process as soon as possible if you have not already, and reach out if you need assistance with supporting documentation
 - GN – research grant rather than donation
 - MW – can create a protocol for that
 - IRM – should also talk to RSNA admin
 - BF – research contract vs research grant
 - AS – consider that the legal costs are higher than actual donation; whether incurring additional future costs should be structured in so that we don't have to go back and do this again

Work Group Progress Reports

TS – Phantom WG

- Sent out a draft phantom specification document earlier this week; finished an update; reviewed specifications
 - BSC Comparison

CB – 12 lollipops - 6 with phantoms, 6 to be stored in case of damage

TS – Phantom A with half the beads as B, but with same distribution?

IRM – provide feedback or comment within the next week so phantoms can begin fabrication

TT – Backscatter WG

- Discussion on vendor backscatter survey response
 - Only viable response from Siemens
 - Other responders (GE, Canon) do not compute BSC
 - Raw data captured from commercial system, then sent to research institute for data processing to compute backscatter
 - IRM - we have information on academic institutions willing to be partnered with vendors - can make this available to WG leadership
 - KW – Siemens current commercial system does not make the BSC computation available to the user
 - IRM – SR said they can provide access to backscatter values to those sites with which they already have research agreements
- Need strategy for accounting for attenuation
 - Roberto Lavarello shared draft
 - Need to come up with a procedure for attenuation compensation to move forward
 - RB can send images

- To Do
 - Attenuation Compensation recommendation
 - Continue to work on Summary document

TP – Sound Speed WG

- SoS Review Paper
 - Working on outline – JB/XW
 - Will assign sections to WG members
- Position paper
 - Identify SoS WG Representative – Many thanks to Juvenal
- Post E-scopics/Samsung vendor surveys to Basecamp when returned
 - Have initial claims documents and plan to refine as we get more data

VK – Attenuation WG

- Discussion on the questions to be posed to vendors regarding
 - Software version
 - Request for vendor specific detailed protocol
 - Raw data collection
- Measurement protocol
 - 3 appraisers per institution
 - 10 measurement per person at different spatial locations
 - 3 different dept locations
 - Measurements at room temp 21 +/- 2
 - Coupling medium, prepared by phantom WG
- Attenuation WG position paper: Radiology: Minor changes requested
- **Action Items**
 - Gets Nancy's perspective on # of measurements

IRM – Reminders

- Those who contributed to the position paper - Look for an email early next week
- Sessions related to PEQUS work at next AAPM Annual Convention

- Giving a talk on the role of PEQUS regarding quantitative ultrasound as well as shear wave elastography
- Scientific session in which we'll feature colleagues from PEQUS talking about novel research strategies for quantitative ultrasound
- Both sessions are on July 28th.

DF – reminder that as we finalize phantom configuration, also putting together a manual for data collection; **can each WG start putting down notes for their requirements for data collection and can send out a manual along with the phantoms – need info in next few months as phantoms are manufactured and getting ready to ship – send to Tim and David**



PEQUS general call July 2, 2021



AGENDA

- Welcome (IRM, 3 minutes)
- Leadership update
 - Position paper (IRM and D. Fetzer, 2 minutes)
 - Round robin study
 - Contacting vendors for scanning instructions (IRM, 2 minutes)
 - Donations (MW, 3 minutes)
- Working group updates:
 - Phantom (25 minutes)
 - Presentation of phantom specification documents
 - Discussion
 - Backscatter (7 minutes)
 - Sound speed (7 minutes)
 - Attenuation (7 minutes)
- Summary (2 minutes, IRM, MW, AS)

Position paper

- Received almost all contributions
 - Please send yours in case you haven't
- Currently being edited by D. Fetzer and I. Rosado-Mendez
- Next step: distribute first version for review among co-authors next week
- Co-authors' focus:
 - Reduce number of references (we're over 100)
 - Watch out for any nomenclature, terminology inconsistency

Round robin study updates

- Finalization of phantom specifications (Phantom WG update)
- Definition of goals from WG's
 - **Action item: Finalize this month – present in August call**
- Request to vendors:
 - Scanning instructions/protocol
 - Systems, transducers, and **software versions*** to be tested
 - ***is it commercially available or not?**
- Coordination with participating institutions
 - Check that systems, transducers, and software versions are available
 - Coordinate with vendor representative in case they are not:
 - Discussion: What options are available to provide access?
 - Case-by-case basis

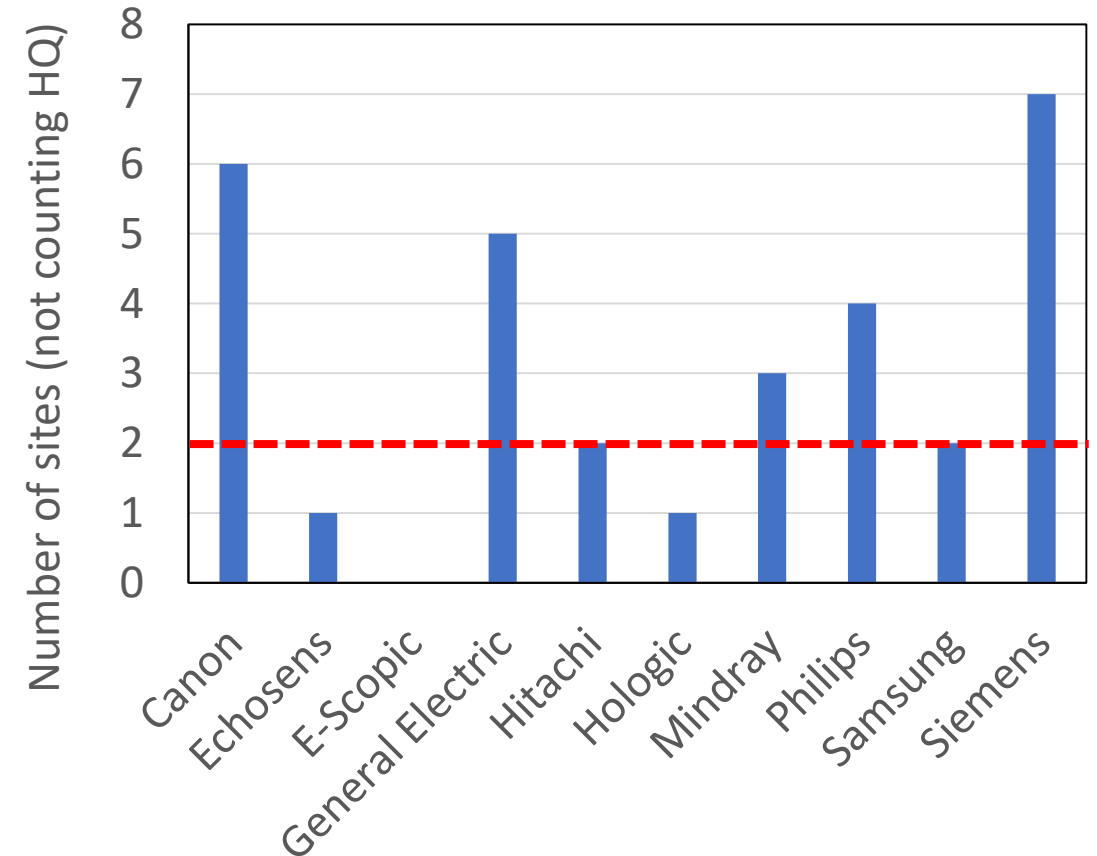
Round robin study updates (cont...)

- Representation

- Number of sites per vendor: $\geq 3^*$ (including headquarters)
- Number of appraisers per site: $\geq 3^*$
 - Challenge in places where multiple systems will be tested

*Discussion with Dr. Nancy Obuchowsky

- Donations (M. Wang)



IMPORTANT: Before checking software version access!

Working Group Updates

Next...

- Next general call: Friday, August 6, 2021, 11am ET
- Next week: Circulation of first draft of position paper
- AAPM annual convention:

Ultrasound QA/QC Workshop

Wednesday, July 28, 2021, 10:30-11:30 PM ET

10:30 AM **ACR Required QC Tests** - Z Long, Presenting Author

10:40 AM **Automated Whole-Breast US QC** - M Holland, Presenting Author

10:50 AM **Doppler QC** - J Zagzebski, Presenting Author

11:00 AM **Quantitative Ultrasound and Shear Wave Elastography Evaluation** - I Rosado-Mendez, Presenting Author

11:10 AM **Automated Ultrasound QC Methods** - S Dekker, Presenting Author

11:20 AM **Q&A** - Z Lu, Presenting Author

<https://w4.aapm.org/meetings/2021AM/programInfo/programAbs.php?sid=9124&aid=57469>

Frontiers in Ultrasound Imaging session

• Wednesday, July 28, 2021, 3:30-4:30 PM ET

• **Unifying Concepts of Spectral and Statistical Backscatter, and In Vivo Application** - G Cloutier

• **Pressure-Wave Elastography (Sound-Speed Measurement and Imaging) and Its Biomedical Applications** - J Bamber

• **Quantitative Lung Ultrasound, Beyond Artifact Imaging** - M Muller

<https://w4.aapm.org/meetings/2021AM/programInfo/programAbs.php?sid=9128&aid=58513>