

QIBA Contrast Enhanced Ultrasound (CEUS) Biomarker Committee (BC) Call

Friday, July 13, 2018; 11 AM CT

Call Summary

In attendance

Mike Averkiou, PhD (Co-Chair)

Paul Carson, PhD

Ged Harrison, BS

Zaiyang Long, PhD

Wayne Monsky, MD, PhD

Nancy Obuchowski, PhD

Lihong Pan, PhD

Hugo Robert, MSc

Theresa Tuthill, PhD

Stephanie Wilson, MD

Heng Zhao, MS, PhD

RSNA

Julie Lisiecki

Moderator: Dr. Averkiou

Reproducibility Study Update:

- On the previous call, significant data and analysis results were reviewed
- The phantom-generated time-intensity curves (TICs) are meant to resemble liver curves
- Different software solutions were added
- Vuebox was used only for analysis

Variability in phantom results:

- It was agreed that four parameters (RT, MTT, AUC, and PI) were to be extracted for the analysis on three different systems (iU22, EpiQ, and GE LogiQ E9)
- Results returned approximately 20% variability, even in this controlled environment, using phantoms
- Variability is tied to the system and the software analysis performance among vendors

Next steps:

- Steps are being taken to investigate why this variability exists
 - Dr. Averkiou to share DICOM loops with Mr. Robert at Bracco to see whether they both get the same results
 - Mr. Robert also to check with his team at Bracco regarding whether it may be possible for Dr. Wilson to obtain a copy of Vuebox in Canada for research purposes
- Dr. Averkiou theorizes that the main source of variability is coming from the curve-fitting, not the data
 - He is trying to find the right curve fit to prevent noise

Questions posed to the group:

1. Shall we suggest exactly what the function is of the fitted curve and that everyone should implement this? or
2. Should we try to figure out different ways of extracting analysis from the curve?

Proposed QIBA menu for the scanners:

- BC members agree that the process must be standardized across systems
- A possible solution would be to have a "QIBA" menu button built into the scanners to allow for selection of quantitative algorithms that should facilitate smoother analysis
- This idea was widely accepted by manufacturer members of the group; however, it was also understood that such a change (if possible) could take years to effect
- Drs. Wilson and Pan agreed to collaborate offline regarding further discussion of this idea
- It was suggested that an agreed upon fixed curve fitting for all scanners would be ideal
- BC members would like to work out procedures for quantification in order to avoid issues for possible future clinical trials
 - This will involve simplification of parameters to correlate with clinical outcomes
- It may be possible to compare the two approaches in human studies for consistencies within and between manufacturers, etc.

Other:

- Dr. Averkiou is considering applying for funding from NIH
- He may need clinicians to express their support for the need for quantification

WebEx Calls: **July 27:** SWS BC **August 10:** US CEUS BC

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