



**PULSE-ECHO QUANTITATIVE ULTRASOUND
BIOMARKER COMMITTEE**
Agenda for June 5, 2020

Attendees: Ivan, Anthony Samir, Mike Wang, Brian F, Timothy Hall, Tian Lu, Richard Barr, Viksit Kumar, Juvenal Ormachea, Guy Cloutier, Stephen McLeavey, Marie Muller, Kibo Nam, Keith Wear, Stephen Rosenzweig, Paul Siddhu, Giovanna Ferraioli, Tim Stiles, Gary Ng, Arinc Ozturk, Xianhong Wang, Anil Chauhan, Aigu Han, Chris De Korte, Glen Mclaughlin, Michelle Robbin, Ravi Manguli, Jing Gao, Kevin Parker, Roberto Lavarello, Teddy Pierce, Arun Sanyal, Cristel Baiu, Todd Erpelding, Theresa Tuthill, Jon Rubin, Jim Zagzebski, Jeff Bamber, Andy Milkowski, Mark Lockhart, David Becker, Ted Lynch
AIUM staff: Therese Cooper and Kelly Phillips

AS: Anthony Samir
IRM: Ivan Rosado-Mendez
MW: Michael Wang

TOPIC	COMMENTS	ACTION ITEMS
Introduction	Introduction of participants (AS) Introduction of BC leadership (AS) Remind this is a joint effort with AIUM (AS)	
BC Communication	Frequency of teleconferences? (IRM) Similar to AIUM LFQTF (to simplify joint work), use of BaseCamp to host BC material, discussions? (IRM) Use of Mendeley (or another reference manager) to host the BC library? (IRM)	Monthly Use Basecamp To be discussed during the next conference calls.

<p>Timeline of activities</p>	<p>Review of proposed activities and timeline BC proposal, comments? (IRM)</p>	<p>Aim 1 - (due Dec 2020) - to produce first draft of profile</p> <p>Aim 2 - (due Dec 2020) - to design and manufacture phantoms for standardization and validation **happens in parallel to aim 1**</p> <p>Aim 3 - (due Dec 2021) - perform phantom-based groundwork and refine claims in the first draft of profile</p> <p>Aim 4 - (due Feb 2022) - review, approve and publish public comment draft</p>
<p>Funding</p>	<p>Definition of funded activities (MW)</p> <p>Identification of participating institutions (MW)</p> <p>Discussion on sources of funding (MW)</p>	<p>Pending (next call)</p> <p>Pending (next call)</p> <p>Pending (next call)</p>
<p>Task groups</p>	<p>Formation of task groups that could start compiling literature on the performance of possible biomarkers (sound speed, attenuation coefficient, backscatter coefficient) (AS)</p> <p>One committee per feature? (AS)</p>	<p>Form in Basecamp</p> <p>Work w/ AIUM Staff to divide up 4 groups:</p> <p>Phantom group</p> <p>Speed of Sound</p> <p>Attenuation</p> <p>Backscatter coefficient</p>

	<p>Focus only on pre-clinical and clinical applications on LFQ or also on other tissues? (AS)</p> <p>Create doodle or google form for participants to sign in? (AS)</p>	
Summary	<p>Summary of discussed points and review of proposed actions (IRM)</p> <p>What to present on QIBA Ultrasound Coordinating Committee Qtr 2 meeting? (IRM) Date: Wednesday, May 27, 2020 Time: 10:00 am, Central Daylight Time (Chicago, GMT-05:00)</p> <p>Next BC call? (IRM)</p>	

Comments from participants

B. Fowlkes gave a brief introduction to what QIBA is and to the QIBA process.

A minute of silence was kept in honor of Ed. Jackson

I. Rosado-Mendez invited participants to review QIBA wiki website and gave an overview of the proposal and timeline.

R. Lavarello brought up the complexity of extending results from phantoms to clinical performance. The abdominal wall poses a great challenge due to aberration. I. Rosado-Mendez responded that the purpose of Specific Aim 2 is to discuss these issues and come up with phantom designs that are more representative of problems found in vivo.

M. Muller mentioned that phantom characteristics will have to be defined depending on the particular organ or tissue that is going to be characterized. I. Rosado-Mendez mentioned that for the first stage of this QIBA BC we'll be jointly working with the AIUM Liver Fat Quantification Task Force, so emphasis will be put on liver-tissue mimicking phantoms (B/A, aberrators, etc.). A. Samir added that although the first stage will be focused on liver fat quantification, future work of the BC will explore applications in other tissues.

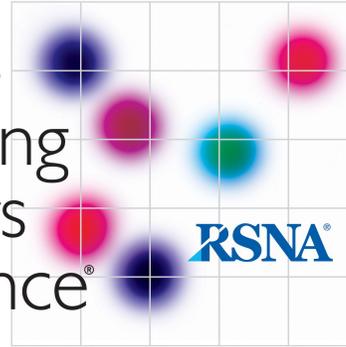
Guy Cloutier asked whether clinical studies and animal studies will be considered. I. Rosado-Mendez mentioned that clinical validation will be organized by the AIUM Task Force after the release of the first profile. During the first stage animal studies will not be considered. A. Samir emphasized the great value of human and animal in vivo studies, but that these are not necessary conditions for the QIBA profile. Certainly they are of great importance for clinical validation.

A. Samir mentioned that the selection of individual biomarkers for this stage does not represent endorsement of these biomarkers. The BC is not close to new ideas about possible biomarkers. However, for the first stage, we'll focus on those that have been studied by many groups and for which there exists a large body of literature.

M. Wang mentioned that there will be four work groups (or subcommittees): phantom, attenuation, sound speed and backscatter. M. Wang proposed to use a solicitation process for members to sign up to their work group of interest. A. Samir added that the BC leadership will make the best effort to balance the expertise of the participants in each work group.



Quantitative
Imaging
Biomarkers
Alliance®



Pulse-Echo Quantitative Ultrasound Biomarker Committee

BC conference call – June 5, 2020, 11:00 EDT

http://qibawiki.rsna.org



Quantitative Imaging Biomarkers Alliance

log in

main page | discussion | view source | history

Main Page

Quantitative Imaging Biomarkers Alliance (QIBA)

QIBA Mission: Improve the value and practicality of quantitative imaging biomarkers by reducing variability across devices, sites, patients, and time.

- QIBA Profiles standardize methods to create biomarkers that meet a claimed performance (accurate and reproducible).
- QIBA advances quantitative imaging in clinical trials and clinical practice.
- QIBA engages researchers, healthcare professionals and industry.
- [QIBA Concepts & QIBA Overview](#) & [QIBA Collaborations](#)
- [Stakeholder Benefits](#)

The navigation box to the left provides access to:

- **Profiles** - biomarker specifications published by QIBA
- **Committees** - developing biomarker Profiles and related work
- **Processes** - guidance used by all Committees for developing Profiles and other QIBA work
- **Conformance** - Self Attestation and Certification Services
- **Resource Catalog** - used for QIBA groundwork
- **Education** - Introduction to QIBA, *QIBA Newsletter* archive, QIBA posters and presentations, and citations

QIBA NEWS...

Congratulations to the Invicro Imaging Center, London for being an early adopter of the QIBA ADC Profile! Invicro has achieved QIBA Conformance through Self-Attestation as of April 8, 2020.

This wiki site is used primarily by the QIBA Committees. For the more formal QIBA website, [Click Here](#).

<Quantitative Imaging is a Work In Progress: read the [Stakeholder Benefits](#), create an account, and contribute>

Contact: qiba@rsna.org

- navigation
- Main Page
 - Profiles
 - Committees
 - Processes
 - Conformance
 - Resource Catalog
 - Education
 - Recent Changes
 - Help

search

Go Search

- tools
- What links here
 - Related changes
 - Special pages
 - Printable version
 - Permanent link
 - Page information



Communication tools

- Frequency of BC conference calls?
- BC document sharing and messaging: Basecamp
 - ✓ Same as AIUM Liver Fat Quantification Task Force
- Literature repository: Mendeley
 - ✓ Libraries for each biomarker work group

The screenshot shows a Mendeley library interface. The left sidebar displays a hierarchical view of folders, with 'AIUM/QIBA PEQUS' selected. The main area shows a list of publications under the heading 'Comercial implementations in AIUM/QIBA PEQUS'. The table below contains the following data:

★	📄	👤	Authors	Title	Year	Published In	Added
★	📄	👤	Ferraioli, Giovanna; Monteiro, Livia Beatriz S...	Ultrasound-based techniques for the diagnosis of liver steatosis	2019	World Journal of Gastroente...	Jun 1
★	📄	👤	Ozturk, Arinc; Grajo, Joseph R.; Gee, Michael ...	Quantitative Hepatic Fat Quantification in Non-alcoholic Fatty Liver Disease Using Ultrasound-Ba...	2018	Ultrasound in Medicine and ...	Jun 1
★	📄	👤	Fajardo, Santiago; García-Galvan; R., Federico; Ba...	Quantification of liver steatosis	2016	Ultrasound Elastography	Jun 1
★	📄	👤	Tada, Toshifumi; Kumada, Takashi; Toyoda, Hideno...	Liver stiffness does not affect ultrasound-guided attenuation coefficient measurement in the evalu...	2020	Hepatology Research	Jun 1
★	📄	👤	Dioguardi Burgio, Marco; Ronot, Maxime; Reizine, ...	Quantification of hepatic steatosis with ultrasound: promising role of attenuation imaging coefficient I...	2020	European Radiology	Jun 1
★	📄	👤	Jeon, Sun Kyung; Lee, Jeong Min; Joo, Ijin; Yoo...	Prospective Evaluation of Hepatic Steatosis Using Ultrasound Attenuation Imaging in Patients with C...	2019	Ultrasound in Medicine and ...	Jun 1
★	📄	👤	Cerit, Mahinur; Şendur, Halit Nahit; Cindil, Emet...	Quantification of liver fat content with ultrasonographic attenuation measurement functi...	2020	Clinical Imaging	Jun 1
★	📄	👤	Tada, Toshifumi; Kumada, Takashi; Toyoda, Hideno...	Guided Attenuation Parameter for	2019		Jun 1
★	📄	👤	Tada, Toshifumi; Iijima, Hiroko; Kobayashi, Nats...	Usefulness of Attenuation Imaging with an Ultrasound Scanner for the Evaluation of Hepatic ...	2019	Ultrasound in Medicine and ...	Jun 1
★	📄	👤	Fujiwara, Yudai; Kuroda, Hidekatsu; Abe, Tamami;...	The B-Mode Image-Guided Ultrasound Attenuation Parameter Accurately Detects Hepatic Steatosis i...	2018	Ultrasound in Medicine and ...	Jun 1
★	📄	👤	Sporea, Ioan	What is new in liver elastography	2019	Ultrasound in Medicine & Bi...	Jun 1
★	📄	👤	Sporea, Ioan; Bâldea, Victor; Lupuşoru, Raluca...	Quantification of Steatosis and Fibrosis using a new system implemented in an ultrasound machine	2020	Medical Ultrasonogra...	Jun 1
★	📄	👤	Bae, Jae Seok; Lee, Dong Ho; Lee, Jae Young; Kim...	Assessment of hepatic steatosis by using attenuation imaging: a quantitative, easy-to-perf...	2019	European Radiology	Jun 1
★	📄	👤	Ferraioli, Giovanna; Maiocchi, Laura; Raciti, ...	Detection of Liver Steatosis With a Novel Ultrasound-Based Technique: A Pilot Study Using...	2019	Clinical and translational ...	Jun 1
★	📄	👤	Yoo, Jeongin; Lee, Jeong Min; Joo, Ijin; Lee, Dong ...	Reproducibility of ultrasound attenuation imaging for the noninvasive evaluation of hepatic steatosis	2020	Ultrasonogra...	Jun 1
★	📄	👤	Cerit, Mahinur; Şendur, Halit Nahit; Cindil, Emet...	Quantification of liver fat content with ultrasonographic attenuation measurement functi...	2020	Clinical Imaging	Jun 1

The screenshot shows a Basecamp workspace for 'QIBA PEQUS'. The interface includes a navigation bar with 'Home', 'Pings', 'Hey!', 'Activity', 'My Stuff', and 'Find'. Below the navigation bar, there is a 'Message Board' with a message from 'Therese Cooper' at 8:04am saying 'Hi Everyone, Last, there is something titl...'. To the right, there are sections for 'To-dos' (with a 'Next Steps' section), 'Docs & Files' (showing documents like 'PEQUS Call Date' and 'PEQUS Call Date...'), 'Campfire' (with a 'Schedule' section), and 'Automatic Check-ins' (with a question mark icon and text: 'Create recurring questions so you don't have to pester your team about what's going on.').

PEQUS Biomarker Committee

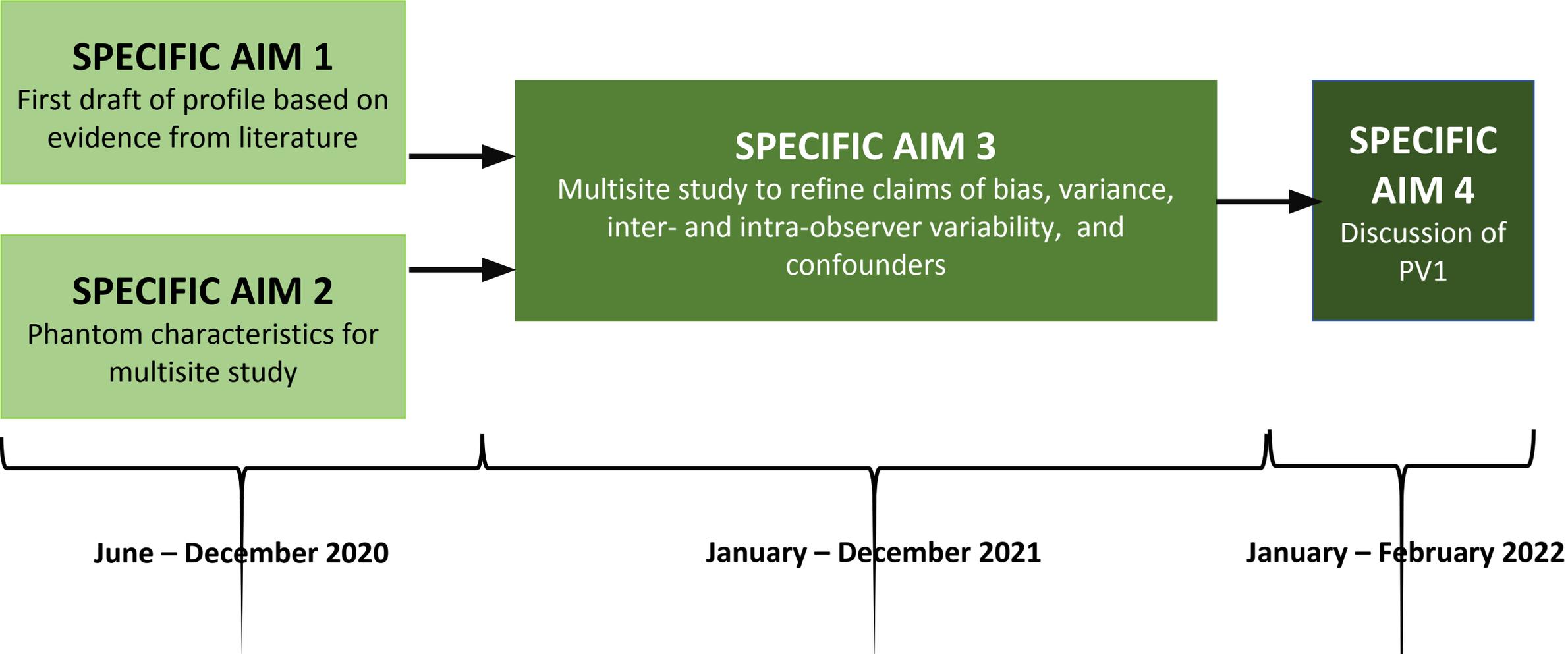
Mission: Reach consensus on how to report PEQUS features among manufacturers and under equivalent conditions

- Several PEQUS features are included in this committee:
 - ✓ Attenuation
 - ✓ Sound speed
 - ✓ Backscatter coefficient (and related parameters)

Initial goals

- ✓ Reach Stage 1 (public comment) of QIBA's profile creation process within 20 months
- ✓ Producing version 1 of the biomarker profile (PV1) based on phantom-based standardization and validation of PEQUS features that result on initial accuracy and precision claims

Timeline



Goals and aims

- **Specific aim 1 (Due December 2020): Produce the first draft of PV1**
 1. Approval of BC proposal
 2. Formation of biomarker work groups
 3. Compilation of literature on sources of bias and variability, covariates, and confounders (physical, technical, biological)
 4. Initial consensus on how to report biomarkers
 5. Drafting of PV1, including protocols for data acquisition, quality control, and biomarker reporting

Goals and aims

- **Specific aim 2 (Due December 2020): Design and manufacture phantoms for standardization and validation**
 1. Definition of criteria for the structure and composition of tissue-mimicking phantoms to be used in Specific Aim 3
 2. Definition of a phantom work group to coordinate design and fabrication of the required phantoms

Goals and aims

- **Specific aim 3 (Due December 2021) – Perform phantom-based groundwork**
 1. Multi-site prospective study to evaluate intrinsic scanner variability and intra- and inter-operator bias and variance
 2. Definition of claims of accuracy and precision and the conditions under which they were achieved
 3. Refinement of draft of PV1

Goals and aims

- **Specific aim 4 (Due February 2022) – Review, approve and publish public comment draft**
 1. Revision, discussion, and refinement of PV1 within committee members
 2. By the end of this period, PV1 will be published for public comment

What comes next?

- Public comment and technical claim confirmation
- Clinical confirmation organized by the Liver Fat Quantification task force of the American Institute of Ultrasound in Medicine focused on liver fat fraction quantification
- Improvement of the profile considering new quantification algorithms:
 - ✓ Regularization methods for attenuation compensation
 - ✓ Use of single-channel data for sound speed estimation
 - ✓ Data compounding strategies