Pulse-Echo Quantitative Ultrasound Biomarker Committee

BC conference call – Aug 7, 2020, 11:00 EDT

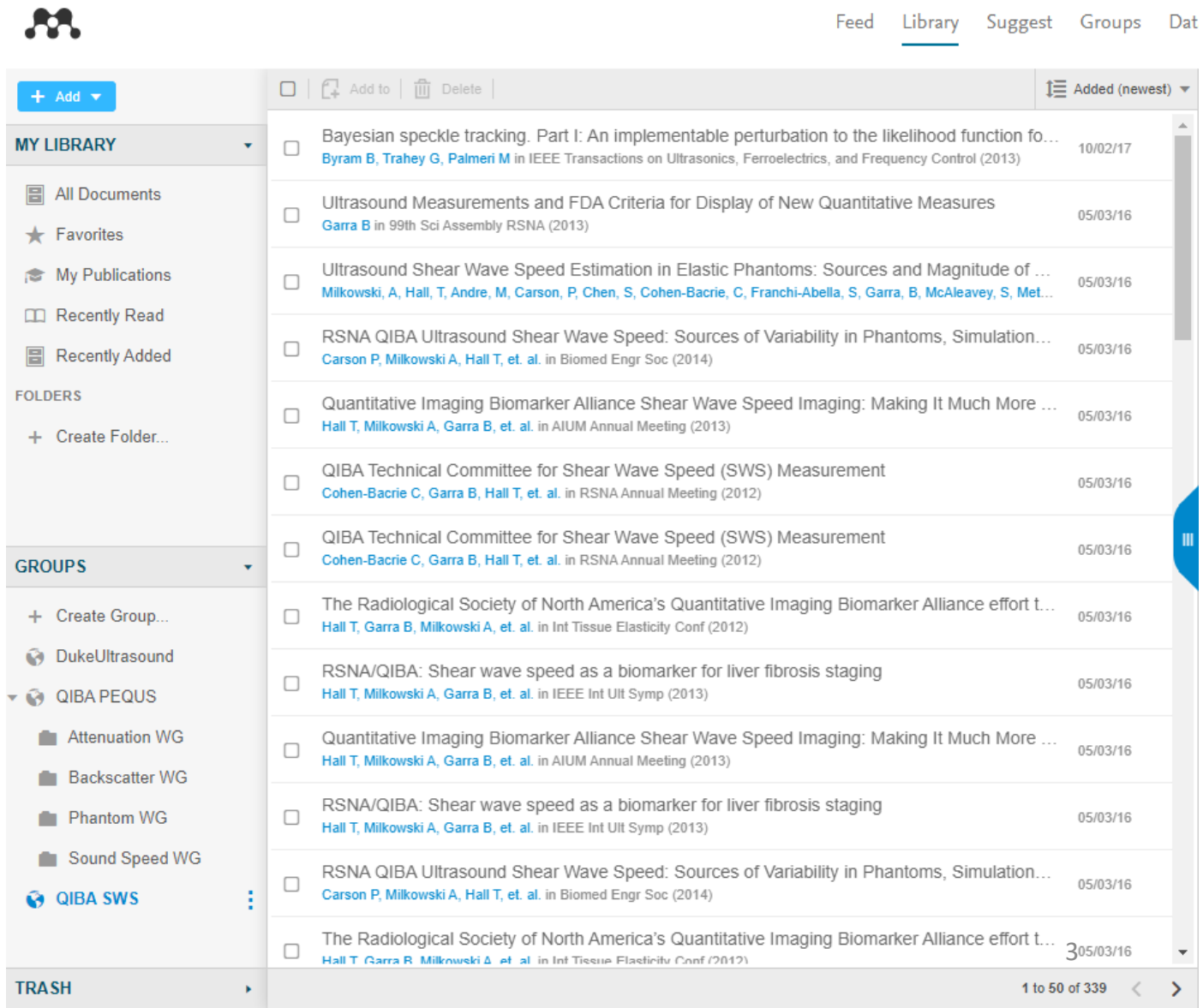
Agenda

- Introduction of WG co-chairs and last week's call summary
  - Backscatter (co-chairs Theresa Tuthill, Aiguo Han, Roberto Lavarello)
  - Sound Speed (co-chairs Theodore Pierce, Stephen Rosenzweig)
  - Attenuation (co-chairs Viksit Kumar, Arinc Ozturk, Richard Barr)
  - Phantom (co-chairs Tim Stiles and David Fetzer)

- Discussion of issues raised in last week's calls
  - Methods for sharing documents in literature search
  - Inclusion criteria for methods and systems to be tested in multi-site study – Special focus on Fibroscan
  - Selection of reference method for verifying phantom properties

Methods for sharing documents in literature search

- Excel file
- Mendeley Group
  - Separate folders for each WG



Inclusion criteria for methods and systems to be tested in multi-site study

1. PEQUS techniques supported by evidence of continuous development in the literature (simulations, phantom-based studies, pre-clinical and clinical implementations)

2. Conformance to initial consensus on
   - How to measure (e.g., frequency range, depth)
   - How to report (type of metric)

3. Documented hardware and software configuration. Examples:
   - Data acquired and processed on commercially released systems
   - Data acquired on commercially released systems (e.g., GE RF data capture), processed offline
   - Data acquired on modified commercially released systems (e.g., Siemens URI), processed offline
   - Data acquired on research systems (e.g., Verasonics), processed offline

Should Fibroscan CAP be included?

Pros:

- Substantial clinical evidence (10 years)
- Inclusion may lead to better understanding of relationship between CAP and image-based attenuation

Cons:

- Proprietary technique, unclear if CAP (dB/m) = attenuation reported by imaging systems (dB/cm-MHz)
- Conformance to measurement and reporting standards may not be possible
- Unclear if additional requirements are needed for phantoms

Proposed Strategy for Fibroscan

Consider imaging-based US methods as “core technology”

Consider CAP as “non-core technology”

- First priority is to design the phantom, define measurement protocol and reporting methods for the “core technologies”.
- Endeavor to have the phantom work for CAP as long as the first priority is achieved.
- Our goal is to reduce measurement bias and variability across the “core technologies”.
- Reducing measurement bias and variance between CAP and “core technologies” is out of scope, but would encourage Fibroscan to consider doing so.

Selection of reference method for verifying phantom properties

- Reference method for calibrating phantom should be independent of PEQUS techniques in consideration for multi-site study
  - For example: Narrow-band substitution, through-transmission for attenuation and sound speed
  - Backscatter? (by definition, pulse echo)

- Selection of reference method to be done by Phantom WG, with agreement from each Biomarker WG.

Other issues from last week’s calls?

Next BC Call

Date: Sep 4, 2020

Time: 11:00 am, EST

Reminder to WG co-chairs to set Aug call agenda