

QIBA Multi-parametric Metrology Call

22 April 2020 at 10 AM CT

Call Summary

In attendance

Nancy Obuchowski, PhD (Co-Chair)

Huiman Barnhart, PhD

Andrew Buckler, MS

Patricia Cole, PhD, MD

Jana Delfino, PhD

Nandita deSouza, MD

Alex Guimaraes, MD, PhD

Erich Huang, PhD

Gene Pennello, PhD

Daniel Sullivan, MD

Xiaofeng Wang, PhD

RSNA

Julie Lisiecki

Moderator: Dr. Obuchowski

Overview Paper: (Dr. Obuchowski)

- Dr. Obuchowski provided an update on the draft overview white paper
- Discussion topics included the following:
 1. Phases of multi-parametric quantitative imaging biomarker (QIB) development
 - a. Dr. Obuchowski is creating a table that categorizes phases as described by different authors in the literature
 2. Preclinical exploratory phases, i.e., retrospective, longitudinal, prospective as described by M. Pepe, particularly with regard to cancer control studies
 3. Confusion in the usage of the terms, “validation” vs. “testing,” and clarification of how the group will standardize nomenclature across their multiple papers
 4. Placement of technical performance recommendations
 5. Concurrent and predictive biological validity, as well as placement of the discovery phase prior to validation
 6. Model discovery stage; suggested order: 1) Discovery, 2) QIB assessment, 3) Technical performance, and 4) Biological validity (?)

Comments:

- The validation aspect is perplexing; struggling to get a radiologic surrogate validation set, without a surrogate on the physiological end
- All radiomics data is related to patient outcomes, though it would be helpful to reduce statistical variability and obtain a better sample size in order to have more robust data
- QIB agreement with standard reference measurements is model-dependent

Next call: Dr. Raunig to present on Multi-dimensional descriptor (Use case 1) on Monday, May 4th at 2 pm CT

Call Schedule: (see changes as of 4/22)

Date:	Topic:	Lead:
Monday, May 4 (2 pm CT)	Use case 1: Multi-dimensional descriptor	Dr. Raunig
Wednesday, May 20 (10 am CT)	Use case 2: Phenotype classification	Dr. Delfino
Monday, June 1 (2 pm CT)	Use case 3: Risk prediction	Dr. Huang
Wednesday, June 17 (10 am CT)	Use case 4: Radiomics	Dr. Wang

Use cases:

- **Use case 1:** (Multi-dimensional descriptor) a panel to determine how to care for a patient
- **Use case 2:** (Phenotype classification) rule or decision tool to diagnose phenotype
- **Use case 3:** (Risk prediction) several biomarkers will be evaluated to create a prediction or risk score
- **Use case 4:** (Radiomics) may not have a specific biomarker for reference