QIBA Proton Density Fat Fraction Biomarker Committee (BC) Update Call
Thursday, February 1, 2018 at 3 PM (CT)
Call Summary

Participants   **RSNA**

Scott Reeder, MD, PhD (Co-chair)   Diego Hernando, PhD   Suraj Serai, PhD   Joe Koudelik

Takeshi Yokoo, MD, PhD (Co-chair)   Jonathan Riek, PhD   Claude Sirlin, MD   Susan Weinmann

Gavin Hamilton, PhD   Matthew Robson, PhD

Review of Previous Call Summary
- The 01.04.2018 call summary was approved as presented

Profile
- Dr. Yokoo (Philips) prepared a list of protocols with help from Drs. Hernando (GE) and Bashir (Siemens), consolidating details into a reference table
- Discrepancies were found across vendors
    - Some terminology differences identified for similar items, parameters, or features
    - Harmonization of naming conventions across vendors for all critical parameters recommended
    - Footnotes to be added
    - Suggestion to highlight vendor-specific options (non-common parameter setting) that are loaded/not changeable on scanners

- Both "default value" / "recommended range" columns for each vendor included in table
- The "recommended range" for Field of View (FOV) originated from PDFF BC, not from the vendor
- Volunteers to refine MRI PDFF Protocols at 1.5T (3D PDFF Product Sequences) table were requested; Dr. Serai to help with Siemens, Dr. Hernando with GE and Dr. Yokoo with Philips

Profile Conformance Requirement
- It was agreed that phantom testing alone was not adequate; a repeatability study with human subjects was recommended
- Discussion on MRS vs. MRI in regard to bias and variability
- Linearity and Bias testing shall be performed by:
    - Two independent studies with 25 patients using same machine (no machine variability) or one study with 50 patients; Dr. Obuchowski to be consulted on study design
    - Exploring how using different scanners affects bias and repeatability; Dr. Obuchowski to be consulted on study design
    - Scan-rescan experiment by complete removal of the subject from the magnet prior to rescanning

- Discussion on criteria for QIBA Claims, if MRS will not be used; any method will have a similar risk of Alpha Errors (type 1 errors):
    - 1. Human testing for repeatability (i.e. in vivo testing)
    - 2. MRS or MRI that has been previously validated by MRS in vivo
    - 3. Standard Reference Object for Bias (i.e. Phantom)
        - Phantoms may help identify imaging sites that implement the Profile correctly, i.e., conformant sites
        - Fat-water phantoms with known PDFF values using phantom-specific recon protocol helpful but may not be sufficient (i.e. human studies needed)
        - Additional discussion needed regarding range of fat fractions

- Dr. Yokoo to circulate Profile draft for review

Next call: Thursday, March 1, 2018 at 3 PM CT