QIBA CT Volumetry Biomarker Ctte (BC) Call

30 January 2017 at 11 AM CT

Call Summary

In attendance:			**RSNA:**
Gregory Goldmacher, MD, PhD, MBA (Co-Chair)	Ritu Gill, MD, MPH	Nancy Obuchowski, PhD	Joe Koudelik
Jenifer Siegelman, MD, MPH (Co-Chair)	Lubomir Hadjiiski, PhD	Kevin O'Donnell, MASc	Julie Lisiecki
Samuel Armato, III, PhD	Rudresh Jarecha, MBBS	Eric Perlman, MD	
Hubert Beaumont, PhD	Claudia Kirsch, MD	Marthony Robins, PhD	
Andrew Buckler, MS	Yongguang Liang, PhD	Na Sun, PhD	
Heang-Ping Chan, PhD	Eleni Liapi, PhD	Ying Tang, PhD	
Matthew Fuld, PhD	James Mulshine, MD		

Profile Checklist Review – Section 4 continued (Mr. O'Donnell)

- Discussion centered around determining how to categorize lesions as measurable or non-measurable, tag measurements made as "good" or "bad," how this would translate to clinical practice, as well as where measurements should be recorded
  - It will be important to determine how a site's Profile conformance may affect clinical practice, e.g. diagnosis
  - The reader would determine if the measurement falls within a certain confidence range and whether the measurement is quantitative or qualitative
  - Some quality control measures have rated scans as "acceptable," "unacceptable," or "acceptable with reservations" with a 10% range allowed for inter-observer variability
    - This is not yet well defined for Volumetry
    - In clinical practice, a comment would be added to the report that the measurement is "poor" with caveat
    - A suggested aid for the Profile was to add some examples of report snippets for different cases to provide guidance, as the only guide now is RECIST, which is not the most precise reference

- There was also discussion on contours performed by image analysts
  - The main question was: "Do radiologists confirm the lesion contouring (if done personally) or do they simply accept the measurement?"
    - The consensus was that a radiologist should always sign off even if it is done by an image analyst or a "good" auto-segmenting algorithm

- Breath hold protocol was examined
  - If breath hold cannot be adequately confirmed during image acquisition, what should be done?
    - If patients achieve proper breath hold twice, consistency is achieved
    - If breath hold consistency is poor, results must be disqualified
    - The protocol needs to be consistent with the baseline, and it may need to be confirmed if done at a different site

- A question was raised regarding inclusion of controlling change for kVp measurements on prior scans
  - Per the Profile , the operator should use the kVp which is similar to that used previously (at baseline); however, justification for this statement is needed

  - Per Mr. O'Donnell, the proposed logic and resolution was:
    - The primary way that kV would affect segmentation performance is by changing the noise.
    - Protocols used for baseline and follow-up scans are required to satisfy the noise and resolution metrics outlined in the Profile.

        - It seems unlikely that the baseline and follow-up protocols could differ in kV in a way that would not violate the noise metrics but would affect the segmentation variability.
        - Therefore, the kV consistency requirement is redundant and can be dropped.

    - Another kV perspective from Dr. Samei:
        - If a kV change is large, noise is not the only thing that changes; edge properties of the lesion and its degree of enhancement (especially when contrast or Ca is present) changes as well. The varied lesion signal can impact estimation of volume.
        - If too restrictive, we can say kV should be within 20 keV of the baseline to minimize the above likelihood.
        - The subjective evaluation of observers is too "qualitative" to give us full assurance on a potential kV effect.
        - The degree of enhancement would potentially show up in the MTF, but the range that we allow is too wide, to capture the deviation due to kV. If we can afford fixing the kV, that would be ideal.

Follow up items:

- QIDW datasets – Determine how streamlined the datasets should be
- Determine whether users should be directed to read-only pages for Profile required items and whether registration should be required for more in-depth analysis

Action items:

- Feasibility testing participants will report back to the group with their progress on the 2/6 WebEx call
- A dataset from Dr. Petrick for the Lungman phantom data is still needed for the QIDW
- Additional spreadsheets for a regression module as well as for the coordinates for the RIDER tumors are being compiled by Mr. Tervé

Next Calls:

Monday, February 6, 2017 at 11 am CT – (Biomarker Committee)
Monday, February 13, 2017 at 11 am CT – (CT Coordinating Committee in place of BC call)