QIBA CT Volumetry Technical Committee Update Call

05 November 2012 at 11 AM CST (GMT-5)

DRAFT Call Summary

In attendance:

Lawrence Schwartz, MD (Co-Chair)
Samuel G. Armato III, PhD
Andrew Buckler, MS
Barbara Croft, PhD
Charles Fenimore, PhD
Les Folio, DO, MPH
Gregory V. Goldmacher, MD, PhD
Philip Judy, PhD
Jessica Huang, BA
Hyun Grace Kim, PhD
Michael McNitt-Gray, PhD
Kevin O'Donnell, MASc
Ann Scherzinger, PhD
Neil Steinmetz, MD, JD
Daniel C. Sullivan, MD

RSNA:
Joe Koudelik
Madeleine McCoy

Discussion on Challenges of Quantitative CT Imaging of Metastatic Disease beyond the Lung

- Liver Mets
  - Overall lower contrasting noise
  - Distinguishing between hypo- and hyper-vasculature
  - Size and conspicuity dependent on administration of contrast agent
  - The process of a coffee-break experiment and if it requires dual contrast within the same setting or datasets
  - Border distinctions
  - Tissue limiting phantoms
  - Test/Retest could be conducted as a pre-scan relative to change of contrast
- Lymph Node Mets
  - In close proximity of normal anatomical structures
  - Distributed throughout the body
  - Appears normally in certain body regions
  - Micro-metastasis deemed outside the QIBA scope
  - Patient lifestyle, e.g., obesity
- Other possibilities to investigate include brain, colorectal, soft tissue and bone disease
- Challenges of coffee-break experiments, obtaining IRB approval (for a dual energy CT usage) and the applicability to QIBA Profiles discussed
- The comparison of using phantoms versus small animal models was considered
  - Patient risk vs. benefit of multiple CT scans were discussed

Subgroup project focus, current status and future direction discussed

Controlled experiments:

- 1A: Ability to create tissue-mimicking phantoms materials
- 1B: To establish an IRB-accepted protocol
- 1C: Extend the single-center phantom work to multiple platforms and acquisition sites
- 3A: Algorithm performance comparison studies which are relevant and should continue
- 3B: Correlating measurement change with patient survival deemed highly relevant
- Colorado: Characterization of various phantom nodule densities; additional phantom work deemed relevant
- Duke: Development of prediction models of performance and implications to calibration
  - Models need to incorporate technical assumptions
- Early Stage: (Dr. Armato)
  - Focus will be on Profile refinement for CT screening paradigms
  - The advanced stage Profile is being used as a starting framework/template
  - Future discussions to include claims, process details, and compliance
- Additional Groundwork Suggested:
  - The challenge will be to leverage available datasets and literature for use in future studies
  - Challenging RECIST vs. improving weak areas discussed; a new perspective requiring further discussion
  - Claims currently provide mitigation strategies to reduce false positives. The relationship between the claim and future groundwork needs to be re-evaluated.

- Dr. Les Folio is new to the group and requested information about the various studies of the QIBA CT Volumetry Technical Committee. Dr. Folio is also interested in circulating preliminary work done through NIH which will be presented at the RSNA 2012 Annual Meeting.

Next steps

- RSNA staff to circulate information from Dr. Folio regarding a study conducted by NIH as well as providing QIBA information to Dr. Folio.
- Next QIBA CT-VOL Tech Ctte t-con is December 10th at 11am (CST)