QIBA Volumetric CT Group 1C Update

Thursday, October 21, 2011; 11:00 AM CDT

Draft Call Summary

In attendance

Charles Fenimore, PhD, (Chair)			**RSNA**
Hubert Beaumont, PhD	David A. Clunie, MBBS	John Lu, PhD	Joe Koudelik
Andrew Buckler, MS	Barbara Croft, MD	Alec J. Megibow, MD, MPH, FACR	Julie Lisiecki
Paul L. Carson, PhD	Marios Gavrielides, PhD	Nicholas Petrick, PhD	
Baiyu Chen, PhD	Hyun Grace Kim, PhD		

Agenda: Progress update for the Group 1C project.

Statistical Data Analysis: Dr. Kim

- Dr. Kim reviewed the data analysis of phantom nodules (100HU, 3 spiculated nodules, non-attached, left lung, in sizes of 5, 10, and 20 mm respectively)
- The data is complete but coordinates need to be reconfirmed and edited based on information from Dr. Gavrielides
- Results shown via a whisker plot with overestimated numbers accounting for the contribution of the spiculated nodules
- Differences across the sites have implications for the scanners
- Dr. Clunie interested in seeing the breakdown by reader for possible sub-analysis to eliminate certain readers
- Objective: descriptive statistics for inter-reader variance
- Mean = average of estimation by lesion, scanner, and protocol

Primary Analysis: Dr. Lu

- Variation arises from scanner and protocol arm
- Nodule 4 data has relatively high variability; Reader 4 has relatively high variability
  - Reader variation was smaller than site variation'
  - Small variability exists between scanners; variation looked high but the mean was acceptable
  - Determining the effect of the variability on the analysis is still in progress
  - Additional factors may need to be considered or incorporated:
    - Looking at a subset of the nodules
    - Separating out intra-reader data and intra-scanner data
    - Impact of scanner and location A different protocol was used at each site
    - "Shape" effect
    - The data is preliminary and only applies to volume measurements

Overall Results:

- Question was raised as to whether data exists on the overall variation
- Mr. Buckler would like to see the paredo chart –
  - Comment: If contribution from the site is higher than the variability with the reader, then QIBA Group 1C is on the right track
  - Consider further evaluation starting with the mean – extend to look at variance among scanners

Conclusion for further analysis/discussion:

- Hypothesis – not substantiated by this data
- Either protocol (ACRIN 6678 or Performance-based) works equally well, but variance in the scanners themselves does not appear to be solved by using quality-based protocols

Next steps:

1. Update to be distributed only to those on today's call (core group)
2. Dr. Fenimore send Dr. Gavrielides' ground truth calculations to Dr. Kim
3. Dr. Gavrielides wants to redo weights on the FDA Phantom (water displacement not possible due to lesion porosity issues)

Next call: TBD