QIBA Quantitative CT Committee

Monday, February 8, 2010
11 AM CST

Call Summary

In attendance

Andrew Buckler, MS (co-chair)
Lawrence Schwartz, MD (co-chair)
David Gustafson, PhD
Philip F. Judy, PhD
Grace Kim, PhD
John Lu, PhD
Michael McNitt-Gray, PhD
James Mulshine, MD
Kevin O'Donnell
Nicholas Petrick, PhD
Yuanxin Rong, MD, MPH
Daniel Sullivan, MD
David Vining, MD
Binsheng Zhao, DSc

RSNA

Fiona Miller
Joe Koudelik

Group 1A Data Analysis (Drs Kim, Lu and Petrick)

1D, 2D, 3D Measurements

- Reader variability discussed for each measurement method (1D, 2D, 3D)
- 1D-2D-3D inter-comparisons beyond current project scope; additional preliminary data needed
- More discussion required of what numbers mean; will evolve as data is presented
- Intra-reader variability was the main approach for 1A analysis
- Examining 'cut' values proposed to superimpose across techniques
- 1D conversion to 2D for spherical nodules straightforward; spiculated nodules more difficult
- Working with 3D readouts is very new; may lead to structured reporting
- Alignment on axial slices needed for 1D and 2D measurement; not required for 3D
- 3D (volume) more accurate with odd shapes; may not be better, but never worse than 1D or 2D; 3D thin sections result in the lowest bias and a narrow standard deviation
- Volume better to show 'real' lesion change
- Need to apply numbers to characterize that volume deals with odd shapes better; this would lead to better measurements
- Measurement of performance of a longitudinal marker based on a Kaplan-Meier format discussed; consensus that it is too soon to make such a connection
- 1A output is static, not longitudinal, but results may help in establishing thresholds and criteria for 1B design

Slice thickness

- Not much statistical variation overall; subset may show greater variability
- 0.8mm sections routinely underestimated 1D and 2D
- 5.0mm sections routinely underestimated all measures
- Lowest nodule volume bias seen with thin sections; all other combinations underestimate volume

Nodule alignment

- Alignment on axial slices needed for 1D and 2D measurement; not required for 3D
- 3D thin section result in the lowest bias and narrow standard deviation

- 3D (volume) more accurate with odd shapes; may not be better, but never worse than 1D or 2D

Conclusion:

- 3D with 0.8mm sections resulted in the least variance – bias close to 0 with narrow standard deviation

Next Steps

- Continue 1A data analysis discussions and data interpretation
- Continue discussion on draft FDA Briefing Document
- Next call scheduled for Monday, Feb 22 at 11 am CST