QIBA COPD/Asthma Lung Density Reference and Consistency Standards Work Group Update
July 27, 2011 at 2 PM CDT

Call Summary

In attendance
Philip Judy, PhD (Co-chair)  Sean B. Fain, PhD  Joe Koudelik
Andrew Buckler, MS  Baojun Li, PhD  Julie Lisiecki
Heather Chen-Mayer, PhD  Jered Sieren

RSNA

Agenda:

Dr. Baojun Li presentation: Investigation of the causes for CT number shifts in the "lung" test objects

Summary from PowerPoint presentation:

- Scatter and cone-beam effect prevail beam-hardening effect as the root causes of cupping effect
- They account for the majority of cupping (~10 HU)
- Recommend to focus future technical efforts on scatter/cone-beam reduction. E.g.:
  - Narrower collimation < 10 mm
  - Lower pitch 0.5 - 0.7 : 1
  - Better way to center phantom/patient
  - How to address elevated dose level?
  - In conjunction with scatter reduction algorithms
- ...

Proposed idea from Dr. Judy:

- Scan a set of phantom rings; ask for the reconstruction that makes air inside the ring – 1,000 HU; and encourage vendors/algorithm developers to understand why it is necessary to make air inside the ring flatter
- Goal to reduce variability among scanners by establishing an additional calibration procedure.
  - Need to demonstrate that this is an improvement.
- Dr. Judy working on a plan for comparison of results with this particular scheme; will report back to the group
  - Goal to improve variation reduction
  - Would like to test Philips scanner with the phantom ring inserts

Next steps:

- Dr. Judy to summarize the critical issues and send a query to the group re: suggestions
- Dr. Judy to share email with group regarding the difference between a Quality Assurance Phantom and a Reference Phantom
- Drs. Levine and Chen-Mayer to report on the NIST program of matching foam; normal lung and low density lung (August 17th)
- Dr. Newell to ship one of the 20 phantoms to Dr. Chen-Mayer
- Profile discussion on the next Tech Ctte call on August 10th

Next calls:

- Wednesday, August 10th - COPD/Asthma Technical Committee Update Call
- Thursday, August 11th – COPD/Asthma Tech Ctte Strategic Plan WG Update Call
- Wednesday, August 17th - Lung Density Reference and Consistency Standards Work Group