QIBA COPD/Asthma Committee Update
Tuesday, April 13, 2010
11:00 am CT

Call Summary

In attendance
Philip Judy, PhD (co-chair) 
Harvey Coxson, PhD 
David Gierada, MD 
Zachary H. Levine, PhD 
Jered Sieren 
RSNA staff 
Joe Koudelik

Status of phantom working group efforts
• COPDGene modified phantom being scanned extensively at U Iowa by Dr Hoffman
  o Phantom scanned on multiple Siemens systems
  o Annulus with modified air hole raises the CT numbers more than seen with the Catphan phantom
• Wide variation in air hole CT numbers patient-to-patient difficult to explain; correlation to patient weight is 0.5
• Are CT numbers dependent on air hole size?
• 25mm is standard trachea diameter; range of phantom annulus air holes to be examined
• Mr Sieren (U Iowa) received acrylic rings from Toshiba for re-scanning at U Iowa; will manipulate material within phantom to determine if CT numbers vary with position changes (beyond noise issues)
• Median CT numbers of lung not dependent on slice thickness, recon kernel, or rad dose
• Metric to evaluate difference between CT scanner design is based on median of lung stabilization
• Mean continues to be most reliable measure, but not of most interest; better metric needed
• Metrics based on extreme values (e.g. -950 HU) used because they correlate well with pathology; additional metrics with pathology validation needed
• Dr Coxson mentioned the Madani et al Radiology papers on pathology validation as a possible starting point for COPD (http://qibawiki.rsna.org/index.php?title=COPD-Asthma under Reference Documents)
• Dr Judy to follow-up with Dr Stoel concerning additional pathology validation references
• Dr Judy to meet with Kyoto Kagaku company rep concerning an anthropomorphic phantom

QIBA Profile requirements
• Slides posted by Mr Kevin O’Donnell very helpful for understanding the Profiling process; Requirements Table lists what implementers need to know and do to comply (slide below for reference)
• Current CT systems not calibrated for lung density; vendors may need to modify CT number scale or the investigators will have use CT scanners as built but calibrate measurements themselves
• Propose phantom that can confirm whether vendors have complied with the “Requirements Table” or will assist with calibrating output across imaging platforms
• ECLIPSE phantom study designed to understand differences between scanners and time
  o 2 scans separated by 3 years across 42 centers
  o No phantom/CT number corrections done yet
  o Pushback encountered by some academic departments when asked to perform a standardized protocol
• Introducing a research protocol into a clinical setting may cause issues; more questions associated with quantitation, i.e. a more demanding process
• Important to get radiologists and technologists “on board” with quantitation
Scientific abstract for RSNA 2010 annual meeting

- Mr Sieren has drafted the Methods section for a planned RSNA scientific abstract submission; will finalize and forward to Dr Judy for feedback

Next steps:

- Dr Judy to follow-up with Dr Stoel concerning additional pathology validation references
- Mr Sieren to forward RSNA abstract to Dr Judy for feedback – submission deadline is April 15
- Imaging Committee of COPDGene Study to meet during ATS meeting (New Orleans) on Saturday, May 15 at 4 PM (International House Hotel, New Orleans, Louisiana, QIBA members are welcome,
- Dr Levine to send Dr Gierada 8 foam samples to scan; to discuss off-line (zlevine@nist.gov)
- Next call scheduled for April 27th at 11 am CDT

Slide courtesy of Mr. Kevin O'Donnell (QIBA Quantitative CT Ctte)