

QIBA COPD/Asthma Committee Update

Tuesday, March 30, 2010

11:00amCT

Call Summary

In attendance

Philip Judy, PhD (co-chair)
David Lynch, MD (co-chair)
Andrew Buckler, MS
James Crapo, MD
Zachary H. Levine, PhD

RSNA Staff

Susan Anderson, MLS
Joe Koudelik

Plans for ATS (May 14-15, 2010) and QIBA Annual Meetings (May 25-26, 2010)

- In-person gathering of COPDGene group members at the ATS meeting (May 14-15) suggested; Dr Crapo to poll for availability and most accommodating schedule (Sat at 4pm following COPDGene meeting or Mon at noon-early afternoon suggested). Dr Judy to contact COPDGene members personally for availability.
- Interest in continuing group momentum by meeting at QIBA f2f one week later
- Proposed QIBA meeting agenda includes committee update reports, breakout group discussions, report-outs on breakout progress, and next steps
- Drs Crapo and Judy planning to attend both meetings

Precision Claim Language

- Claim for lung fraction under -950HU needed based on median CT numbers related to BLD
- Claim to be dependent on recon kernel (standard vs sharp)
- QIBA Profile can indicate/stipulate recon kernel usage, i.e. provide guidance
 - e.g. To meet specific Profile Claims, imaging sites are to follow the QIBA Protocols
- Acceptable/Target/Ideal bulls-eye approach allows user up to three levels of performance possible
- How many measures/metrics required? Goal would be one metric if possible
- Median and mean CT numbers appear not dependent on slice thickness, image or recon kernel
- What is needed to accomplish clinical goal? Pursuit of easier technology not useful if not clinically relevant
- Median CT numbers not sensitive enough for emphysema (1st percentile but corrected to 18%)
- Could get repeatable measures at -950HU but need to pin down recon kernel, slice thickness and other parameters
- Good repeatable performance at -950HU; Profile needed that outlines what is required
- Set of parameters needed to provide repeatability at -950HU to be pursued
- Diffuse background due to scatter more prevalent at lower densities ranges
- Metric dependent pixel noise is dependent on patient size
- Identifying a parameter set may be challenging
- Dr Judy discussed robustness of CT scanner calibration resulting in greater than expected precision and possible accuracy
- How median is affected by patient size needs further exploration
- Mean CT numbers expressed by Claim to deal with scanner variability
- Hypothesis proposed: Within a specific scanner, change of recon kernel should not change the CT median, but the median can change between/across-scanners
- Manufacturers should recognize the issues/problems identified by the radiology community as their own; multiple stakeholders already working together via QIBA efforts (vendors, pharma,

academics, radiology community, etc); engagement in the QIBA Profile process not obvious yet, process needs time

- Dr Judy to continue developing the COPD Profile; phantom related to median to be pursued
- Selection of needed parameters to proceed
- Need to work close to the -950HU range; phantom work to evaluate threshold to continue
- Phantom use to study variation of median values, variation to be demonstrated in phantom foam materials
- Dr Levine offered to continue pursuing foam scans

Next steps:

- Dr Judy to continue developing the COPD Profile claims and language; phantom related to median to be pursued
- Feedback on COPD Profile sections encouraged; convey to Dr Judy and Mr Buckler via email or Wiki mark-up
- Volunteers to complete specific Profile sections:
 - Drs McNitt-Gray and Lynch—acquisition section
 - Drs Coxson and Hoffman – analysis section
 - Drs Judy and Hoffman – protocol and analysis sections
 - Drs Crapo and Washko – clinical context section
 - Drs Crapo, Lynch and Coxson to develop statistical paragraph to be added to current Claim language
- Dr Levine to continue pursuing foam scans
- Next call scheduled for April 13th at 11 am CDT