COPD-Asthma Committee
Philip F. Judy – David Lynch

• Characterize the precision and accuracy of phenotyping and progression measurements in emphysema and asthma
• Compare the sensitivity of CT measurements to spirometry and other accepted measures.
Query and Comment of P. David Mozley from last year's meeting

- Are we ahead or behind the Volumetric CT Committee?
  Answer is Yes.

- Have a powerhouse of individuals involved.
  Accurate observation. They are involved because CT lung density measurements have been accepted as emphysema endpoint that is more sensitive than lung function measurements, however newer CT scanner CT numbers are inconsistent between scanner designs.
Characterize the precision and accuracy of phenotyping and progression measurements in emphysema and asthma

- Defined requirement: Measurement of CT number of lung with an accuracy and precision of 1-3 HU.
- Need suitable reference standard for CT measurement of lung density.
  - Foams suitable density and uniformity exist to fabricate a reference standard.
- Beyond stand-alone reference standard, internal reference standards may be required.
  - Trachea CT number and/or reference material on chest
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• Compare the sensitivity of CT measurements to spirometry and other accepted measures.
  – Done: For older CT scanner designs.
  – Need: Modern scanner designs can be made quantitatively equivalent to older CT scanner designs. Phantoms than mimic the human. Trachea air CT number as function of body mass index.
Median of trachea air CT number averaged along the trachea. Need a phantom that mimics this effect.
Median of trachea air CT number averaged along the trachea.

64 channel CT scanner – 19 cases

Need a phantom that mimics this effect.
Working Session

• Trial Experiences with Phantoms
• NIST Foam Experiments
• COPD Profile Development I
• Resource Requirements
• Internal Correction of density measurements
• COPD Profile Development II
Trial experience with available phantoms

• Will review experience during breakout session
  – COPDGene Phantom
  – ECLIPSE

• Individual CT scanners are very staple.
  – Cross-section studies scanner model can be put into a model.
Aside: Image Data Bases

- Does not seem to issue for interested investigators