Single vs. multiple algorithm assessment

- Our technical committee has a strong interest in evaluation of algorithms used in volumetric CT analysis, which is particularly relevant for software suppliers
- Image analysis algorithms may be evaluated against image annotated data
- Current QIBA efforts to evaluate phantom data based on one algorithm only; new approach to use multiple algorithms to better understand classes of volumetric algorithms
- Separate datasets, algorithms and annotations need to be brought together based on combining acquisition and post processing
- Bulls-eye performance approach has not yet been applied to algorithms used in post processing; acquisition parameters only focus to-date
- Algorithm performance not characterized with current experiments; analysis of current phantom data with multiple algorithms a good idea
- Confounding between acquisition and post processing needs to be characterized
- Requirements would be (1) statistical significance needed and (2) must be doable from an implementation/practicality point-of-view

Phantom Study meta-analysis (Dr Kim)

- Dr Kim proposing a way to analyze multiple phantom studies together (to assimilate the multiple activities into a higher-level result)
- Sensitivity to size of change vs. time to change
- Quality Control is a four parts process
  - Precision (mean variation) / Accuracy (unbiasness) / Sensitivity (sensitivity of nodule) / Specificity (complexities)

Group 3A effort proposed

- Need to be able to calibrate analysis algorithms with something that is 100% measurable:
  - Organized approach for tracking, versioning and storage
  - Ties into qualification process
- How data/images store is critical, must be searchable; NBIA archiving datasets now
• QIBA may provide resources to archive this data with tracking features
  o Free access is needed
  o Relevant details need to be tracked
  o Important for biomarker qualification process
• Addition software suppliers to be included
• Early July call to be scheduled with A Buckler, B Zhao, D Gustafson, M Thorn of Siemens
  (before Dr Athelogou’s presentation in August)
• RSNA staff to assist with regularly scheduled calls (defined once call begin)
• RSNA staff to work with Dr Athelogou to set up next call

Group 3B effort proposed
• Analysis of clinical data remains goal
• Based on Dr Mozley’s pilot project; reanalyzing existing clinical trials data

Next Steps:
• Dr Athelogou to send (MICCAI) paper to RSNA staff to distribute
• Dr Athelogou to present next steps in mid August ; RSNA staff to work with Dr Athelogou to set up call(s) in advance of that time
• Dr Kim to consider broadening analysis to clinical data; beyond phantom data alone; umbrella of understanding needed for both phantom and clinical data. Work with Dr. Constantine Gatsonis.
• Next Q-CT Ctte call is July 12, 2010 at 11 am CDT