

QIBA Q-CT Committee Weekly Update
Monday, June 28, 2010
11 AM CDT

Call Summary

In Attendance

Andrew Buckler, MS (co-chair)
Lawrence Schwartz, MD (co-chair)
Maria Athelougou, PhD
Sung Chang, PhD
David Gustafson, PhD
Philip Judy, PhD
Grace Kim, PhD
James Mulshine, MD
Kevin O'Donnell

Nicholas Petrick, PhD
Anthony Reeves, PhD
Yuanxin Rong, MD, MPH
Ganesh Saiprasad, PhD
Hiro Yoshida, PhD

RSNA

Fiona Miller
Joe Koudelik

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
 - Free access is needed
 - Relevant details need to be tracked
 - 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 Athelougou's presentation in August)
- RSNA staff to assist with regularly scheduled calls (defined once call begin)
- RSNA staff to work with Dr Athelougou 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 Athelougou to send (MICCAI) paper to RSNA staff to distribute
- Dr Athelougou to present next steps in mid August ; RSNA staff to work with Dr Athelougou 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