QIBA VolCT Update WebEx
Monday, June 8, 2009
11 AM (CDT)

Call Summary

In attendance:

Andrew Buckler, MS (Co-Chair)
P. David Mozley, MD (Co-Chair)
Lawrence Schwartz, MD (Co-Chair)
Maria Athelogou, MD
Rick Avila, MS
David A. Clunie, MBBS
Charles Fenimore, PhD
Robert Ford, MD
Dana Ghiorghiu, MD, PhD
Philip F. Judy, PhD
Michael McNitt-Gray, PhD
James Mulshine, MD
Kevin O'Donnell
Nicholas Petrick, PhD
Anthony P. Reeves, PhD
Daniel Sullivan, MD
Hiro Yoshida, PhD

RSNA
Fiona Miller
Susan Anderson
Joe Koudelik

Review of Agenda

1. Profiling activities
    a. Review of 1st Profile on advanced stage lung cancer, now in UPICT template format
    b. Discussion of subsequent Profiles: COPD and early stage lung cancer
2. Experimental groundwork: Reports from Groups A, B and C
3. Group 2 report on establishment of means to determine clinical efficacy

Introduction of new group members

Dr. Anthony Reeves is on the faculty of the School of Electrical and Computer Engineering at Cornell (http://www.ece.cornell.edu/peo-detail.cfm?NetID=apr5&pers_intid=62_)
Research interests include precise measurements for multi-dimensional image data and work on primary nodules and CT as well as emphysema and COPD

- Research includes ELCAP database and enduring bank of images
    - Dr Reeves is working with phantom data for basic machine calibration; coffee-break data (real data) is main focus; with more complex lesions, phantoms lose validity
- Dr Reeves invites participation from group in ongoing experiments including a 'challenge' (deadline June 24):
    - Measure change on real lesions measured with different scanners on 50 pairs of lesions downloadable from website
    - Next step will be RECIST measurements and volumetric boundary markers viewed side-by-side with online tools
    - Results will be used to see how precisely experts are able to determine change in size

Dr Philip Judy
(http://www.dfhcc.harvard.edu/index.php?id=2162&print=1&no_cache=1&tx_dfhccmemberprofile_pi1[memberID]=1355_) is a medical physicist and Director, Radiologic Physics, at Brigham and Women's Hospital. Dr Judy serves on the Imaging Committee of the COPD Gene study, a multi-center trial evaluating the consistency of measurements across CT platforms in effort to determine effects on COPD/emphysema imaging and possible mitigation strategies.

Profiling activities

- Using an iterative spiral approach with analytical groundwork and profiling activities concurrent

Group 1A report (Dr Petrick)

- Group is using both phantom data and clinical data
- The reader study is using a subset of cases with various lesion shapes and different CT characteristics; using 1D, 2D and volumetric tool
- Working with RadPharm data; expect resolution of questions within 1-2 weeks
- Next t-con will discuss workflow which will include defining primary hypotheses, conducting analysis and charting secondary analysis on types of lesions, readers, slice thickness, etc.

Group 1B (Dr McNitt-Gray)

- Experiment design is in place
- Dr Kim has been working on draft statistical design for IB; Drs McNitt-Gray and Kim will work closely with Dr Petrick on statistical design for Group 1A
- Dr Reeves supplied nodule size information from LIDC; consider bridging efforts between Dr Reeves and Group 1B; Dr McNitt-Gray to share 1B experimental design with Dr Reeves; feedback welcome
- MSK coffee-break data from RIDER should be available this week
- Decision not to use AVT as it is not completely developed; there is a gap in segmentation for volumetrics
    - Group experiment would be a good test use case for AVT, but QIBA not to wait for AVT update
    - AVT: What works/doesn't work; please forward comments to Mr Buckler

Group 1C (Dr Fenimore)

- Working towards a reader study with readers at RadPharm; inter-laboratory, inter-clinical study using FDA phantom with imaging on same device used by Dr Petrick
- Split protocol approach taken
    - QIBA "general" protocol focusing on clinical response to therapy
    - Performance based protocol focusing on resolution and noise feedback
- Will collect new images according to QIBA protocol from a range of scanners at a number of sites to determine accuracy and precision of measurements
- Finalizing imaging site list

Discussion of formation of COPD Group

- Group structure in QIBA strengthens efforts by achieving critical mass of expertise
- VolCT committee in role of 'clearinghouse' for 'measurement science'

Profiles

- Discussion of need for claim to address volume change
    - Group began with measuring volume before stating that is was possible to measure volumetric change
    - Intention is to move from <u>volume</u> to <u>change</u> eventually
    - Absolute volume may be inclusion criteria for some clinical trials
    - Absolute volume depends on a number of different things; change is dependent on fewer things
- Profile list to be amended to include only three: late-stage lung cancer; early-stage lung cancer; COPD
- Intention to move major efforts from 1st Profile to next Profiles
    - Refinement of first Profile will come with use; suggestion to test Profile and return to it in 4-8 weeks with data from testing
    - Determine whether 'real' values are to replace placeholder values. Pharma (Merck) has shown that existing placeholder values tend to be conservative
    - Begin to turn focus to Early-Stage and COPD Profiles next

Next steps:

- Schedule group calls: Group 1A and 1B calls within 1-2 weeks; Group 1C call week of June 22-26
- Dr Mulshine will work with RSNA staff on scheduling group call for early stage lung cancer
- Dr McNitt-Gray to share experimental design for Group 1B w/Dr. Reeves