QIBA VOL-CT Weekly Update WebEx
Monday, January 12, 2009, 11am CST

Call Summary

In attendance:
Andrew Buckler, MS (Co-Chair)
P. David Mozley, MD (Co-Chair)
Lawrence Schwartz, MD (Co-Chair)
David A. Clunie, MBBS
Charles Fenimore, PhD
Robert Ford, MD
Wendy Hayes, DO
Despina Kontos, PhD
Louis Marzella, MD, PhD
Michael McNitt-Gray, PhD
James Mulshine, MD
Kevin O'Donnell
Nicholas Petrick, PhD
Hiro Yoshida, PhD
Binsheng Zhao, PhD

RSNA staff
Susan Anderson
Joe Koudelik

Introduction (Mr. Buckler)

- The minutes from the 1.5.09 update call were approved without change.

Group reports

1A (Dr. Petrick)

- Dr. Lisa Kinnard (in Dr. Petrick's lab) is transferring case sets to RadPharm
  - Dr. Petrick to note on wiki when data sets are transferred
- Working with Dr. Ford and RadPharm on format issues; determining output format to account for both volumes and segmentation; decision will have implications for 1B and 1C
- Drs. Ford and Clunie noted no problems with any proposed formats; will forward to rest of group for comments
- Dr. Clunie outlined translation possibilities for output:
  - Want to provide access for other software developers
  - Decision on where to put the file/dataset: wiki, in e-mail, NCIA archive
  - Dr. Petrick will check with NCIA to determine timeframe for loading
  - Possible upload to FTP site in the meantime; avoiding upload delay at NCIA
- Dr. Petrick continuing work on writing protocol
- Work continues on mark-up representation coordinates

1B (Dr. McNitt-Gray)

- Reviewed progress made on 1.6.09 Group 1B call
- Discussion has centered around five questions:

- 1. What level of accuracy and precision can be achieved in measuring tumor volumes in patient datasets?
- 2. What level of reproducibility in estimating change can be achieved when measuring tumors in phantom datasets?
- 3. What is the minimum detectable level of change that can be achieved when measuring tumors in patient datasets under a "No Change" condition?

- 4. What level of reproducibility in estimating change can be achieved in measuring tumors in patient datasets with “Unknown Change” condition?
- 5. What is the effect of slice thickness on estimating change in tumors using patient datasets?
- Based on questions and resources, group identified questions 1 and 3 as first priority:
    - Question 1. What level of accuracy and precision can be achieved in measuring tumor volumes in patient datasets?
        - LICD contours and diameters (manually and derived from LICD contours)
    - Question 3: What is the minimum detectable level of change that can be achieved when measuring tumors in patient datasets under a “No Change” condition?
        - Extension of “coffee-break” experiment from Memorial Sloan Kettering with Dr. Schwartz
- Image data and readers available for both questions
- Work continues to tighten experimental design and determine change and volume metrics
- Work on Questions 2, 4, 5?
    - Need image data for 2,4,5
    - Question 2: Group 1B could work with Group 1A to leverage data for simulated time points
    - Question 4,5: uncertain about securing resources and readers
    - Use resources other than money, e.g. dedicated session/forum at RSNA with invited papers and scientific presentations; advertise at RSNA and other scientific meetings to secure participants
    - Dr. Ford will be looking at thin-section datasets (January 15-17); cases may serve as dataset for change over time parameter in Questions 2 and 4 and potentially in Question 5
    - Dr. Tony Reeves may also have datasets; Mr. Avila may have data or relevant experience
    - It is possible to approximate data from scanners, working “up”, but it may not be suitable for applying algorithms (growing layers); reloading raw data is not common and is very involved
    - Dr. Petrick to test reconstruction datasets across 2-3 ranges, then report back to the group
- Next VolCT Group IB call scheduled for Monday, Jan. 27 (2 PM EST) due to schedule conflicts on Jan. 20

1C (Dr. Fenimore)

- Charged with looking at interclinic/interdevice variation; cross-platform study to look at different scanners at different institutions to characterize variability and accuracy
- Discussion on last call about which variations to expect (e.g. cross-filter effects) and categorization for various systems
- Next call scheduled for Tuesday, Jan. 13, 2009 (2 PM EST)

VolCT Group 2 (Clinical Correlative Group) Profiles (Dr. Mulshine)

- Aim to have content and issues to define meaningful Profiles
- The cross-disciplinary group is a resource

- Dynamics of volume change may or may not enter into consideration
- Clustering types of trials where imaging management is used: early or advanced stages, Phase II, III, IV; however, clustering represents an artificial construct and we must be flexible to allow for profile evolution
- Dr. Mozley will send claims draft to Dr. Mulshine by Jan. 14

Discussion of Options and Profiling Process

  - Option 1. Develop Profile with a focus on the Strawman with layered tools, using sequentially more advanced tools and including
    - 1. volume;
    - 2. volume change; and
    - 3. true biomarker with specific relations to outcome measures.
  - Option 2. Develop one scalable Profile across diseases
  - Option 3. Develop three application-oriented or staged Profiles (disease specific); if extensive pieces are common across stages, duplicate between Profiles
    - 1. early lung cancer
    - 2. regionally advanced lung cancer
    - 3. distant metastatic lung cancer
- Option 1 emphasizing technology evolution or layering tools is relatively easy to complete now and disseminate into community; do not want to lose this emphasis
- Option 3: Practical to use this Option because this mirrors patient enrollment and research approach; however, with volumetric assessment we could see progression better
  - Ultimately, may need a combination of two Profiles
- Should we be Profiling the engineering or Profiling the clinical management and the medicine?
  - Every piece has to be pedigreed
  - We should profile patient preparation; users have to learn specific techniques
  - We should be cautious about how prescriptive we are but should evolve to more robust specifications
- Consider who target audience is: pharma (medical approach) or imaging companies (engineering approach)
  - We are aiming to do both medical and engineering approaches; bias should be towards technology but address medicine too
  - Ultimate goal is to integrate closer with clinical management
- Have we expanded concept and variables we want to look at e.g. short summary of complete protocol?
- For Profiles to be useful, have application-specific needs; want relevancy but not too simplistic
- How to interface/converge with work of CTSA Clinical Trials/UPICT
  - Is the Profile bigger than a Protocol or is a Protocol bigger than a Profile?

Next Steps

- Move forward on basis on Dr. Mozley's claims document, then discuss Profile details

- Dr. Mozley to post profile claims on the wiki
- An additional t-con suggested to discuss profile details based on claims
- Dr. Dorfman and Mr. O'Donnell to discuss impact of profile claims and details offline
- Next call: January 26, 2009 (No call scheduled for Jan 19th)