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

Call Summary

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

RSNA staff

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
  o 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:
  o Want to provide access for other software developers
  o Decision on where to put the file/dataset: wiki, in e-mail, NCIA archive
  o Dr. Petrick will check with NCIA to determine timeframe for loading
  o 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
  o 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.
  o Option 2. Develop one scalable Profile across diseases
  o 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
  o Ultimately, may need a combination of two Profiles
• Should we be Profiling the engineering or Profiling the clinical management and the medicine?
  o Every piece has to be pedigreed
  o We should profile patient preparation; users have to learn specific techniques
  o 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)
  o We are aiming to do both medical and engineering approaches; bias should be towards technology but address medicine too
  o 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
  o 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)