QIBA VolCT Update WebEx
Monday, June 15, 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
Charles Fenimore, PhD
Philip F. Judy, PhD
Michael McNitt-Gray, PhD
James Mulshine, MD
Daniel R. Nicolson
Kevin O'Donnell
Nicholas Petrick, PhD
Anthony P. Reeves, PhD
Daniel Sullivan, MD

RSNA
Fiona Miller
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

Profiling activities

QIBA vs. UPICT Protocol Formatting

- UPICT protocol seen as more of a general template in format
- More detail contained in the QIBA vCT protocol
    - e.g. line pairs per centimeter, noise and resolution criteria, etc
- QIBA vCT protocols will be formatted as a "final product" for specific use
- UPICT / QIBA / DICOM relationship to be examined by Mr O'Donnell for common ground
- Dr McNitt-Gray welcomes feedback concerning level of detail needed in protocol
    - e.g. Noise and spatial resolution
    - This level of detail could be included in the concept (ideal level) protocols only

Software Performance Standards

- Minimum claims related to software (SW) performance needed for vendors
- Need claims to be in user terms that vendors can respond to
    - e.g. SW can detect edge of solid tumors with certain precision/accuracy
    - e.g. SW delivers value within inter- and intra-reader studies
- Software developers to fill-in gaps within profile
- Claims currently lack performance details and scientific foundation
- SW not proven yet; vCT Groups 1A, 1B, and 1C to help determine performance specifications
- Testable claim details needed for both hardware and software

Software version and characteristics

- Specific SW characteristics needed for image acquisition tools
- QIBA profiles should specify SW performance characteristics, not which SW version to use

- SW performance claims to include:
    - Volume, Longest Diameter, and Perpendicular Diameter in the boundary to be specified
- Need to look at both claims and details and determine expectations
- Claims need to get out; validation at a later date is acceptable
- Drs Schwartz and Zhao to provide additional SW performance characteristics for consideration
- Minimum SW performance claims to be submitted by all three QIBA Tech Cttes (claims/details section)
- Automated systems versions have the tendency to run away or get lost; SW needs to compensate
    - Mr Avila utilizes a "bounding box" to override automated SW issues
    - Profile text needs to account for this

Proposed claims language (below) based on software performance – Dr. Mozley

Claim 1: automated boundary detection algorithms will place edges with greater precision and accuracy than an operator can draw by hand with a pointing device, so that the intra- and inter-rater reliability for the area of any region of interest (ROI) on each slice will be greater than 90%.

Claim 2: automated algorithms for finding the Longest Diameter (LD) and Longest Perpendicular (LP) within each ROI will have a greater precision of measurement than an operator using electronic calipers. The intra- and inter-rater reliability for the automated measurements of LD and LP will be greater than 90%.

Acknowledgement of all QIBA vCT Protocol Contributors

- All contributors and their professional affiliations should be listed on QIBA protocols
- Reposition contributor names from first page to acknowledgment section (at bottom)
- Wealth of cross-industry involvement seen, leading to:
    - Comprehensive compilation of input
    - Breadth of input provides credibility
    - Concept that efforts represent broad thought of products
    - Email RSNA staff (jkoudelik@rsna.org) if you'd like to be added to the 1st vCT Protocol on Advanced Stage Lung Cancer

QIBA / IHE

- QIBA attempting to achieve similar recognition as IHE
    - Well funded movement
    - "Go-to" reputation for quantitative imaging
    - Recognition of contributing authors
    - Building an awareness larger than QIBA itself; a broader scope

Proposed Call Topics for Next Week (June 22, 2009):

- Where do we go next?
- What possible blind-spots might we have?
- NIBIB contract proposal update
- Next logical steps after vCT Groups 1A, 1B, 1C collect their data
- Dr Reeves' Group 1D efforts to be formalized
- Possibility of presenting at upcoming meetings, e.g. SPIE, RSNA '09, etc
- Next organ site beyond the lung
- Discussion of Dr Clunie's QIBA / COPD related questions (below)

    1. Is this confined to COPD, or is asthma also in scope?

2. Is the goal to determine biomarkers that are a surrogate for some other clinical measure (such as PFT), and if so is this for clinical or drug therapy evaluation (or both)?

3. Who is going to determine response criteria as opposed to the single time point measurement itself (if this is out of scope of QIBA, as has been determined for other biomarkers)? UPICT?

4. Does the scope include bronchial wall thickening quantification, or is this confined to lung density (both would be desirable)?

5. Is this within scope of the CT Volumetric group, or does it requires its own sub-group with equal standing to the others?

6. Do we have the right stakeholders involved to make an assessment of radiation dose versus dose required for accuracy and repeatability versus the clinical benefit obtained (over other measures)?

Next steps:

- UPICT / QIBA / DICOM relationship to be examined by Mr O'Donnell for a common ground
- RSNA staff to coordinate a call to discuss SW performance claims/details
    - Drs Schwartz, Zhao, Athelogou and Mr Avila, Nicolson and O'Donnell (Cc Drs Sullivan and Mozley and Mr Buckler)
- Drs Schwartz and Zhao to provide suggested SW performance characteristics