

QIBA COPD/Asthma Technical Committee (TC)

April 24, 2013 at 2 PM CT

Call Summary

In attendance

Philip F. Judy, PhD (Chair)

Paul Carson, PhD

Heather Chen-Mayer, PhD

Barbara Croft, PhD

Michael Flynn, PhD

Bernice Hoppel, PhD

David Lynch, MB

Mark Schiebler, MD

Daniel Sullivan, MD

RSNA

Joe Koudelik

Julie Lisiecki

Agenda COPD/Asthma Technical Committee

4/24/2013

1. Quantitative Imaging Data Warehouse (QIDW)

- In process of improving interface – Loading large image files
- Should we make effort to harmonize with dbGap?
- <http://www.ncbi.nlm.nih.gov/gap>

2. Poster

3. NIBIB Contract Projects – From Dan Sullivan’s email

“It seems likely that we will have an opportunity to respond to an RFP in the near future (i.e., in a couple of months) for funding for QIBA projects. ... To that end, I’d like to ask each Technical Committee to submit a draft list of such projects – that is, projects which will enable progress and/or (ideally) completion of Profiles.” Attached is draft project list with COPD/Asthma Technical Committee opportunities highlighted.

4. Profile Specifications

- Image analysis section
- Rank the open questions suitable for NIBIB Contract projects

Discussion topics:

1. QIDW – Image Data Warehouse Discussion

- It was noted that some DICOM headers are anonymized within the QIDW
 - If only phantom data is to be used, there is no reason to anonymize any of the headers
 - Dr. Judy suggested that QIBA only use phantom or synthetic data to avoid potential issues
- dbGap may be a possible QIBA collaborator for its repository of human images
 - dbGap relies on its technical users to anonymize DICOM headers correctly
 - Standard specifications for uniform DICOM header anonymization is an ideal goal
- The COPDGene mechanism is also recommended

2. QIBA Annual Meeting Poster

- Poster for the meeting will be created with content provided by Drs. Chen-Mayer, Levine, and Fain

3. Proposed Projects from the Statement of Objectives/ Other

- Main objective: Develop procedures and processes for hardware and software manufacturers and users to demonstrate compliance with QIBA Profiles.
- 2.3.1.3: CT densitometry for COPD
- 2.3.2.6: For COPD Profile: Improve reproducibility of lung density and airway size measures through experiments in phantoms
- 2.3.3.3: Develop and evaluate a procedure to calibrate lung density values using a QIBA-modified COPDGene Phantom
- 2.3.3.4: Create or identify a good algorithm for CT measurement of airway dimensions and create a public domain computer implementation of same.
- 2.3.3.5: Work with CT manufacturers to improve lung density measurements to state of the art and claim levels at traditional and reduced doses.
- 2.3.4.2: In collaboration with NIST, develop reference values for NIST foams imbedded in the COPDGene phantom

- 2.3.4.3: Measure CT number values for the NIST foam imbedded in COPDGene Phantom using multiple CT scanners.
- 2.3.5.2: Make available to the interested community image data from all QIBA physical and digital reference objects (phantoms), and phantom analysis algorithms.
- 3-D printing was discussed as a possibility to assess non-linear effects of phantoms and to create fractal lung images or phantoms
 - Dr. Chen-Mayer wants to produce low-density structures that show fractal variance
 - These images can be used to create a 3D-model
 - A micro-CT phantom of the lung would be ideal for group reference
 - Dr. Gierada may be able to advise the group further on micro-CT and segmentation issues
- Dr. Judy welcomes other suggestions for projects: philipfjudy@philipfjudy.com.

4. Specification of acquisition parameters

- Patient positioning bias must be addressed along with various reconstruction parameters, e.g., slice thickness, voxel noise, field of view (FOV), etc.
- Focus on those items that produce variation in CT and need to be specified

Action items:

- Dr. Judy to prepare summary for group prioritization
 - Summary to include “black boxes” from volumetric information
- Dr. Judy to follow up with Drs. Chen-Mayer, Levine and Fain regarding the poster
- Group to identify critical performance specifications; input welcome: philipfjudy@philipfjudy.com.

For next call: Discussion of the Image Data Warehouse and how analysis is specified

Next call: *QIBA COPD/Asthma Update Call, [Wednesday May 8, 2013, 2 pm CT](#)*