

**QIBA VOL-CT Weekly Update WebEx
Monday, January 26, 2009, 11am CST**

Call Summary

In attendance:

Andrew Buckler, MS (Co-Chair)
P. David Mozley, MD (Co-Chair)
Lawrence Schwartz, MD (Co-Chair)
Harris Ahmad, MD
Alaaddin Akkaya, MD
Rick Avila, MS
Robert Ford, MD
David Gustafson, PhD
Michael McNitt-Gray, PhD
James Mulshine, MD

Kevin O'Donnell
Nicholas Petrick, PhD
Daniel Sullivan, MD
Hiro Yoshida, PhD

RSNA staff

Fiona Miller
Joe Koudelik
Susan Anderson

Agenda (Mr. Buckler)

- Discussion of Kitware Lesion Sizing Toolkit (Mr. Avila)
- Claims language and details (Drs. Mozley and Mulshine)
- Wiki updates
- Group reports

QIBA structure (Dr. Sullivan, Mr. Buckler)

- Mr. Buckler has left Philips but will stay involved with QIBA efforts
- QIBA membership and representation is in flux; when QIBA was started, representation from three companies was aligned with the three biomarkers
- QIBA structure is also in flux; may consider other biomarkers either within existing committees or in new structure of umbrella modality committees
- QIBA Steering Committee will address future structure and membership

Lesion Sizing Toolkit (Mr. Avila)

http://public.kitware.com/LesionSizingKit/index.php/Main_Page

- The goals are:
 - (1) To develop an open source and general framework for implementing lesion segmentation algorithms
 - (2) To provide reference methods and an application for CT lung lesion segmentation
- Emphasis is on volumetric segmentation methods using a model-based approach adaptable to different scanners/scanners/protocols
- Will be added to the Insight Segmentation and Registration Toolkit (<http://www.itk.org>)
- Has a BSD License
- The open source architecture provides a highly extensible framework designed to support rapid algorithm development and evaluation
- The extensible framework allows components to be replaced or replugged
- ITK has additional info on the Feature Generator or Segmentation Module
- Initial performance on FDA solid spherical lesion was good with a % Volume Error of - 4%; results will improve when sub-voxel edge detection is added
- Edge detector is being modified for part solid lesions

- Working towards data sets for multiple density lesions; Dr. Petrick has a case with a large air pocket in center
- The NIST pocket phantom, with a range of spherical pieces inside allows measurement of a large number of objects with one data set
 - Results with NIST pocket phantom will improve when sub-voxel edge detection is added
- Next steps for development of the Lesion Sizing Toolkit include:
 - Adding sub-voxel edge detection to decrease percentage error
 - Running against a large number of phantom and clinical datasets
 - Refining methods
 - Improved acquisition/protocol modeling
 - Better differential operators
 - Community comments/feedback
 - Feature aggregator may need additional description
- The components are well-described in the documentation; Mr. Avila encourages questions and comments from the committee.
- QIBA relevance: Toolkit can be used to better understand the performance of a range of algorithms, including tradeoffs such as resolution and other scanner parameters
 - Can be used to run QIBA analyses
 - Using current set of reference methods
 - Using contributed methods

Comments on Lesion Sizing Toolkit

- 1A (Dr. Petrick): may not be applicable in this first stage of readers because of timing but excellent option for readers in addition to Siemens options
- 1B (Dr. McNitt-Gray): could possibly use this as a reference method or benchmark
- 1C: could collect as characterization of algorithm
- Dr. Mozley: We could provide this software to CRO for head-to-head comparison with the software Merck generally provides and create a mechanism to verify individual reports on variance, etc.
- Efforts are similar to standardizing radioimmunoassays in England 20 years ago; this provides a way to communicate performance compared to benchmark
- Use QIBA as an archivist of metrics and repository of test cases?
- The Optical Society of America (OSA) is partnering with the National Library of Medicine on the Interactive Science Publishing initiative (ISP).
 - ISP software program provides publishing software and viewing and analysis tools for integrating very large data sets published in conjunction with a traditional text-based journal article.
- OSA collaborated with Kitware Inc, a supplier of open source imaging software, to develop ISP software.

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Review of Wiki activity

http://qibawiki.rsna.org/index.php?title=Volumetric_CT

- Graphic demonstrating a flow which represents the structure of the QIBA effort as well as the resulting output of flow inserted at top of page
- Dr. Mozley's claims are posted with numbers inserted to garner refinements from group
 - Need a description of a more rigorous and scientific way to arrive at numbers
- Dr. Mulshine's clinical description will be useful for evaluating claims within a clinical scenario

Next Steps

- Committee to review Wiki materials, comment or refine
- Group 2 will update the profile strategy section of the Wiki with the content of the paper that Dr. Mulshine has distributed
- Next call: February 2, 2009, 11am CST

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http://qibawiki.rsna.org/index.php?title=Profile_Strategy_for_Vol_CT