QIBA CT Volumetry Biomarker Ctte (BC) Call

26 October 2015 at 11 AM CT

Call Summary

In attendance:

Samuel G. Armato, III, PhD (Co-Chair)
Gregory Goldmacher, MD, PhD, MBA (Co-Chair)
Jenifer Siegelman, MD, PhD (Co-Chair)
Maria Athelogou, PhD
Hubert Beaumont, PhD
Andrew Buckler, MS
Heang-Ping Chan, PhD, FAAPM, FInstP
Charles Fenimore, PhD
Marios Gavrielides, PhD
David Gustafson, PhD
Lubomir Hadjiyski, PhD
Edward Jackson, PhD
Rudresh Jarecha, MBBS, DNB, DMRE
Hyun Grace Kim, PhD
Michael McNitt-Gray, PhD
James Mulshine, MD
Nancy Obuchowski, PhD
Michael O'Connor, PhD
Kevin O'Donnell, MASc
Nicholas Petrick, PhD
Marthony Robins, PhD
Berkman Sahiner, PhD
Ehsan Samei, PhD
Daniel Sullivan, MD
Ying Tang, PhD

RSNA:

Joe Koudelik
Julie Lisiecki

RSNA 2015 QIBA CT Volumetry BC Poster Updates:

- Poster authors are to provide updates to Dr. Goldmacher *by Wednesday, Oct 28th:* gregory.goldmacher@merck.com
  - Dr. Armato to provide an update on the small lung nodule effort
  - Dr. Siegelman to provide some updated text
- Completed PowerPoint print-ready files are due to RSNA Staff *by Friday, October 30th*

Dr. Samei Overview Presentation: "Lesion Modeling Tools for CT Image Quality Assessment"

Topics Discussed included:

- Lesion modeling framework and lesion addition software tool
- Internal heterogeneities designed into the lesions for added realism
- A Demonstration of the three Synthetic Lesion Insertion Methods
  - Projection space
  - Image space
  - FDA Blending
- Sensitivity of the insertion technique to different kinds of algorithms
  - May not always show consistent results
  - Need statistically significant number of test cases

Future Goals:

- Establishment of statistical exchangeability of hybrid and real datasets
- Creation of static reference clinical datasets: 100 normal images inserted with 100+ lung lesions
- Delivery of a software tool for lesion addition and database creation upon demand

Considerations for Next QIBA Group 3A Challenge

- Drs. Samei, Athelogou and Obuchowski to work off-line on a draft study design
- There are currently 4 different datasets with 4 different types of lesions, including: spherical, lobulated, speculated, and elliptical in virtual versions
  - Two studies would be designed based on these data
  - A solid hypothesis is still needed to determine the number of cases required for the study
- The primary goal is to achieve the same result whether measuring a virtual lesion or a real one, and to be able to quantify bias and precision in both
  - Are they "close enough" to be interchangeable?
  - This "close enough" measurement is needed
- Specific proposals for study designs will be discussed on the Group 3A call, 10/29, with additional discussion to occur on the BC call on 11/2

Action items:

- Group members / authors to update sections of the QIBA CT Volumetry poster for *RSNA 2015*
- Upcoming presentation to the Biomarker Committee: Drs. Petrick / Zhao on November 16th

Next Call: Monday, Nov. 2nd at 11 am CT | Synthetic Lesions Project and possible next Group 3A challenge (continue)

2015 Call Schedule:

1. November 2: Follow up discussion re: synthetic lesions
2. November 9: (**Topic TBD**) – Circulate Profile for review on 11/23 call; Request review and comment
3. November 16: Presentation: Drs. Petrick/ Zhao
4. November 23: Begin Profile Discussion – (week of Thanksgiving)
5. December 14: Last call of the year (**Topic TBD**)