

QIBA CT Small Lung Nodule (SLN) Biomarker Ctte (BC) Call

23 August 2018 at 2 PM CT

Call Summary

In attendance:

Samuel G. Armato, III, PhD (Co-Chair)

James L. Mulshine, MD (Co-Chair)

Charles Fenimore, PhD

Edward Jackson, PhD

Artit Jirapatnakul, PhD

Nancy Obuchowski, PhD

Anthony Reeves, PhD

RSNA:

Joe Koudelik

Julie Lisiecki

Moderator: Dr. Mulshine

ELIC Pilot Project (Dr. Mulshine)

- An overview was provided of the presentation Mr. Avila is developing for the *International Association for the Study of Lung Cancer (IASLC)* meeting on September 22nd
- A subset of the IASLC, the *Early Lung Imaging Confederation, (ELIC)*, has received a \$3M funding gift from the PhRMA Foundation for a pilot project that supports an open source quantitative lung volume experiment project aimed at validating drug and tool evaluation in a non-competitive space
 - A cloud-based, secure, and de-identified image archive is being developed to create a CT lung imaging computing environment that removes barriers to site participation with high quality data, while meeting the clinical data regulatory requirements for the European Union (EU)
 - This tool, comprised of hub-and-spoke architecture, would serve as a database for cancer imaging data
 - Shared data would remain housed and analyzed locally
 - The cloud-based computing tool would provide the analysis
 - A copy of the anonymized publicly available data would be available in the cloud image archive
 - The Clinical Trials Processor (CTP) will be used to assure removal of PHI
 - Quality control steps will be built into the process
 - Sites would be pre-screened prior to obtaining access to this shared data
 - Leveraging the cloud will allow collaboration amongst institutions internationally, and will facilitate research opportunities without having to move any data
 - This can be accelerated further with the use of artificial intelligence (AI) and deep learning tools

ELIC Design Details

- The ELIC cloud-based tool is comprised of centralized analysis hub-and data-shared (multi-site) spoke architecture
- There are 10 global spokes on the Amazon Cloud, each providing 100 de-identified CT lung images (total of 1,000)
- Two separate open source algorithms would be used to test the cloud-based tool for the following:
 - lung volume
 - nodule segmentation
- There will be a live demonstration at the [19th World Conference on Lung Cancer \(WCLC\)](#) in Toronto on September 22nd of the running of computational experiments at 10 sites
- This will demonstrate that prospective CT image quality can be monitored and optimized in the hub and spoke environment with the RSNA / QIBA Small Lung Nodule Profile
- All code is being distributed as free and open source software and sites are welcome to contribute to software development

Sharing the News

- Conversation between Dr. Fred Hirsch (IASLC) and RSNA/QIBA leadership has been requested to discuss ways to expand efforts and bring QIBA to a larger audience

- A peer-reviewed article published with details of the pilot project and simple experiments demonstrating the utility of the tool would be very helpful to publicize the effort
 - Dr. Reeves mentioned that he has a tool that can assess quality of large-batch cases
 - The Dutch-Belgian Randomized Lung Cancer Screening Trial (Dutch acronym: NELSON study) and International Early Lung Cancer Action Program ([I-ELCAP](#)) were suggested as additional resources
- Discussions are taking place with the FNIIH regarding a related biomarker
 - Reliability analysis is needed for qualification of a small lung nodule biomarker, which would be a logical evolution of Profile-writing efforts
 - A starter database comprised of data from I-ELCAP and the NELSON study was recommended
 - There are also several interested cohorts in Italy, Poland, China, and Japan that may be willing to contribute

Next Steps

- Dr. Mulshine to follow up with Mr. Avila to coordinate a live demonstration on the September 6th call of the cloud-based resource
- Dr. Armato to inform Dr. Maryellen Giger (U Chicago) of the pilot and concept

Next call: September 6th at 1 pm CT

- Calls will be scheduled bimonthly in the near future and will eventually be scheduled monthly