

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

18 July 2019 at 11 AM CT

Draft Call Summary

In attendance:

David Gierada, MD (Co-chair)

James Mulshine, MD (Co-Chair)

Rick Avila, MS

RSNA:

Joe Koudelik

Susan Stanfa

Moderator: Dr. Mulshine

Working Toward Technical Conformance for the Profile

- Medical Imaging and Technology Alliance (MITA) submitted a letter to Dr. Jackson inquiring about metrics used in the SLN Profile
- Plans for further discussion
 - Call with Dr. McNitt-Grey to be scheduled to discuss response to MITA considering the MITA meeting with AAPM CT Physics Subcommittee
 - FTF meeting with MITA to be organized after September 15; attendees to be identified
 - Mr. Avila is gathering more data (e.g., MTF data) for MITA review
 - University of Wisconsin medical physicist to be identified to scan/test the Accumetra CTLX1 phantom; supporting pilot data needed for future MITA mtg
- The new Accumetra CTLX2 water-jacket phantom will address a global need, particularly in relation add on imaging to lung cancer screening, as screening often occurs in settings with limited access to physics support
- Dr. Gierada's colleague at Washington University has completed all the feasibility testing steps, including CTLX1 phantom scanning and uploading images and completing survey responses
 - Suggestion to send feedback to RSNA Staff for compilation and BC review at a later date
 - Two additional sites are needed to complete feasibility testing to finalize a Checklist for the Profile
 - Once this feasibility testing is complete, the Profile can move to Stage 3: Technically Confirmed
 - Software conformance data needed from multiple sites to demonstrate conformance
- Software conformance procedures require additional images from Dr. Yankelevitz which are now available; these cases can be used in the software conformance process for our Profile
 - Discussion regarding obtaining multiple phantoms for data comparison
 - Software approved by the CT physics community is needed; suggestion to discuss next steps with Dr. Armato
- Discussion re: SLN next steps to continue among BC members attending the IASLC 2019 World Conference on Lung Cancer in Barcelona (Sept 7-10)
 - Drs. Armato, Gierada, Mulshine, Sullivan and Mr. Avila attending
 - Suggestion to prepare topics for discussion and organize a SLN BC F2F during this meeting
 - Next step is to distribute CTLX2 Phantom in August, so preliminary data would be available for discussion during this September meeting

- Discussion re: how to integrate the QIBA Lung Density (LD) and SLN Profile efforts in a screening setting
 - Sources of noise and variability associated with scanner performance, reconstruction kernels, and analysis software must be addressed
 - Guidelines will need to be general enough to apply to multiple areas but should solidify practical application
 - Constrained by radiation dose (needs to be low)
 - LD and SLN Profiles are close to being co-conformant
 - Consistent techniques across both Profiles will help monitor disease progression
 - Slice thickness be harmonized
 - Low vs. standard CT energy levels used; reference literature to learn how will resolution may be affected
 - Consensus that the CTLX1 Phantom will provide enough data to address performance at 99% of imaging sites worldwide; the CTLX2 Phantom will provide additional details and may be integrated into the SLN Profile at a later date

- Discussion regarding the NLST lung cancer screening study
 - Due to lost interest/awareness, many participants stopped getting low dose CTs
 - Eleven years of results showed that screening was a clear benefit and should be conducted more often
 - Need to have empirical data to develop a precise understanding of the full utility of what screening can accomplish
Noted was the positive impact on patients' lives with a lower number of patients screened per life saved than with breast or prostate cancer screening

- Discussion re: European clinics continue screening for 5mm nodules as opposed to the U.S. standard of 6mm
 - There was deliberation on whether to provide guidance in the SLN Profile re: setting the threshold at either 5 or 6 (what level of sensitivity to pursue)
 - Likelihood of malignancy decreases at 5mm, resulting in more false positives
 - Misclassifications of nodules within images can lead to misdiagnosis in clinical decisions
 - Per recent NLST paper, overdiagnosis was 3% in the NLST
 - Previous overdiagnosis estimate was 18% which tended to scare patients away from screening

- Mr. Avila's focus has been on devising a new lesion-sizing algorithm re: image quality of small nodules
 - There is a bias correction feature and it will be one-size-fits-all for different nodule shapes (e.g., spheres vs. ellipsoids)
 - Once analysis is completed, Mr. Avila will shift focus back to phantom nodules
 - It was noted that based on ellipsoid scanning results, the Claim may need to be altered due to additional requirements

Next calls and deadlines:

- CT Small Lung Nodule BC: *tentatively scheduled* for August 15th at 1 pm CT
- Also – for CT Coordinating Committee members, the next call is Monday, August 19th at 11 am CT