

QIW XVII Breakout

Defining and Managing CT Screening Findings of Early Lung Diseases

DRAFT Recommendations

October 30, 2020

Defining and Managing CT Screening Findings of Early Lung Diseases

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- Form a new consortium to develop a large CT + metadata database
 - Goal: Accelerate the development and deployment of quantitative imaging tools/methods for both CT lung cancer screening and COPD/emphysema/ILD
 - CT lung screening data (baseline + follow-up) contains large amounts of information relevant to the study and clinical management of COPD/emphysema/ILD
 - Can use to quantify emphysema burden including potentially change over time
 - While no proven pharma therapies presently exist to halt progression of COPD/emphysema, such information has the potential to help to change patient behavior/environment and efforts to control COPD exacerbations
 - Numerous other potential quantitative measurements of airways, vessels, ...
 - Quantitative COPD/emphysema/ILD analysis of this data has potential to inform and improve the study + clinical management of early lung cancer
 - Can potentially use to improve the quantitative assessment of lung cancer risk and clinical management decisions related to risk (screening interval)
 - We recognize that automated quantitative measurement and clinical reporting of lung CT imaging data could one day be applied to the 100's of millions of chest CTs performed annually (80K to 100K/year are performed in the US alone)

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- Short-term Goal: Retrospective Data Collection
 - Initial data collection goals and aims need to be carefully determined and outlined
 - A major goal of this data collection effort is to support hypothesis generating research
 - Quantitative lung phenotyping can be performed (emphysema/airway/fibrosis)
 - If we can obtain spirometry and other relevant tests and patient condition information we can evaluate for correlations and potential relationships
 - If we can further obtain Quality of Life or mortality outcome information the data and hypothesis generated may help support difficult to perform research including launching pivotal studies/trials
 - Appears to be strong interest in supporting this initiative and exploring what can be accomplished within a year

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- Long-term Goal: Prospective Data Collection
 - We have a major opportunity here to collect high quality data informed by the literature and our short-term results
 - We can launch lung imaging research studies that leverage quantitative imaging resources and capabilities
 - Advantage right out of the gate: We have a world class team with the needed multi-disciplinary expertise (Pulmonology, Radiology, AI/Computer Vision, Medical Physics, Statistics/Metrology, IT, ...)
 - Examples of Data Collection, Analysis Goals, and Studies
 - Compare old and new methods and sources of data
 - We can independently validate newly developed automated analysis methods of chest CT scans
 - Semi quantitative rating scales are a step toward full quantitative scores (e.g. Mild/Moderate/Severe for COPD)
 - We can explore the use of the Fleischner society emphysema scoring method (also ILA)
 - Longer term: look at public health outcomes
 - Potentially prove we can reduce cost and major outcomes – can be designed into trials
 - Would be good to collect patient reported symptoms
 - Could recommend spirometry when automated tool indicates
 - We need to keep in mind that disease state information may already be known and being managed.
 - In addition to lung cancer and COPD/emphysema, we can have additional projects that investigate IPF, Coronary Calcium, ...
 - We need to establish a standard nomenclature across participating sites
 - We will need to maintain good CT scanner/protocol calibration optimized for clinical decision task(s)
 - This is particularly important for measuring change of a metric over time