

"Quantitative Imaging Workshop XIII: Lung Cancer, COPD and Cardiovascular Disease – Exploring the Intersections"

DATES: June 13-14, 2016

LOCATION: Hyatt Regency Bethesda
7400 Wisconsin Avenue
Bethesda, Maryland 20814

Background and Justification

Lung cancer remains the leading cause of cancer death globally and a major public health challenge across the entire world. According to the CDC, smoking accounts for \$167 billion annually in health care costs, including significant costs related to lung cancer. The aging of the US population will drive a rise in the total number of annual lung cancer cases by 50% over the next two decades. The workshop will continue to provide a small, high impact forum for a multi-disciplinary exchange of ideas on the application of quantitative CT imaging to early lung cancer management and to consider exciting new public health opportunities.

Clinical imaging is in the midst of a major transition in moving from routine clinical imaging for qualitative assessment to re-inventing imaging as a precise measurement tool. Imaging now frequently involves such quantitative assessments as measuring the growth rate of specific objects. Lung cancer screening routinely involves precisely measuring pulmonary nodules to help clinicians decide what cases require more detailed diagnostic work-up. A growing body of research suggests that new CT technology, even using low dose techniques, permits accurate quantitative imaging not only for lung cancer screening, but also for COPD and coronary calcification as a marker of host injury from tobacco exposure.

The global roll-out of lung cancer screening services is increasing the need to establish quality standards for the low dose CT scans to ensure the reliability of accurately measuring lung nodules. While numerous CT scanners and protocols are more than capable of delivering a high quality CT scan with a low radiation dose, there remain CT instruments in routine use that may not be suitable for small nodule management. Adding to the challenge is that CT scanners are constantly evolving and changing. Achieving compliance with a standard is difficult, as there are multiple scanner settings, such as the type of reconstruction kernel or iterative reconstruction settings that are used. Therefore, in providing optimal clinical care, it is critical to establish how minimum quality specifications can be defined for lung cancer screening. Moving forward it is also important to understand how such specifications may affect imaging quality for co-occurring diseases and conditions such as COPD and coronary artery

disease.

Lung Cancer Workshop XIII will be focused on two critical areas for progress with the application of quantitative CT imaging for lung cancer. The first issue involves an opportunity arising out of the national implementation of CT screening for lung cancer. Provisions are just being developed now as to how best to ensure the delivery of high quality screening services which will involve the development of data registries to track screening outcomes. It is becoming more evident that it is critical to store the full imaging data along with the clinical information to enable continuous quality control, additional research and sustain innovation for this critical new service. Beyond quality control, this clinical follow up/ CT image data base could be a profoundly important resource for enabling rapid research progress in looking at COPD and coronary artery disease in this tobacco-exposed high risk cohort engaged in screening. We will review the imaging factors, the care delivery factors and the public health policy dimension of this vibrant area. Many of the participants in this Workshop are experts on aspects of these issues so this is a great opportunity to share strategic perspectives and how we can determine approaches that will allow us to make the most rapid progress in this area.

The second focus of the Workshop follows up on a theme that we have discussed at previous Workshops, as the use of quantitative imaging tools has the potential to cross fertilize and accelerate image processing research across lung cancer to other tobacco-induced diseases, including coronary artery disease and chronic obstructive pulmonary disease (COPD). The use of high resolution CT imaging is providing a window to obtain coronary calcium assessment, as we have considered previously. However, new CT scanners can be used to obtain higher quality and more quantitative coronary calcium assessment.

Over the past year, great progress has been made in addressing quality issues. This may be a seminal approach to enabling robust quantitative imaging across a broad spectrum of quantitative imaging platforms and will be presented during the Workshop. We will also hear how to practically weave lifestyle interventions and drug management research into the screening process to enable progress in cost-effective and significant mortality reduction within this exciting new area of innovation.