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“Advancements in Clinical Implementation and Machine Learning Utilization in Lung Cancer Screening”

Abstract:

Screening for lung cancer with annual low-dose CT (LDCT) saves lives through the early detection of disease. Lung cancer screening (LCS) is currently recommended for individuals between 50 and 80 years old with a 20 or more-pack year history of smoking who are either currently using tobacco or quit within the past 15 years. These screening recommendations were expanded in 2021 and nearly doubled the eligible population to approximately 15 million Americans. Despite the clinical success of lung screening, enrollment remains challenging with fewer than 10% of eligible individuals undergoing LDCT. This lecture will include the evidence for lung screening, from the National Lung Screening Trial published in 2011 to randomized controlled trials from around the world and recent publications on the clinical implementation of screening across the country. Data will be presented from VUMC that has influenced national LCS guidelines and resulted in a national campaign to improve lung screening uptake. Recent publications on the incorporation of machine learning to improve our ability to interpret screening exams and predict cancer incidence and all-cause mortality will be included with future projects designed to fundamentally change the patient experience in cancer screening.