

Artificial intelligence–aided lung cancer screening in routine clinical practice: A pilot of LungFlag at Geisinger.

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Background: Use of low-dose computed tomography (LDCT) in lung cancer screening is recommended for early detection and can reduce mortality. LungFlag (Medial-EarlySign) is a machine-learning risk prediction model that identifies individuals at high risk of non-small cell lung cancer so their care team may recommend LDCT screening. The LungFlag model was developed using data from Kaiser Permanente Southern California and is being implemented in a pilot at Geisinger. Here we provide an overview of the clinical workflow for the LungFlag pilot. **Methods:** Geisinger has implemented LungFlag into routine clinical practice via integration with the electronic medical record system. This pilot is examining the performance and clinical impact of LungFlag in the first year. LungFlag runs every month to provide risk evaluation for individuals 50 to 80 years old who are eligible for annual lung cancer screening according to US Preventive Services Task Force recommendations. Eligible individuals have a 20 pack-year smoking history, no lung cancer history, and currently smoke or quit within the past 15 years. Patients with cancer history in the past 5 years and those screened or scheduled for screening in the past year are excluded. LungFlag identifies the top 30 individuals with the highest LungFlag scores per month (high-risk patients) and refers them for targeted outreach from a lung cancer screening program nurse navigator. A positive LungFlag result prompts nurse navigator chart review, patient outreach, and coordination with the primary care provider. Flagged individuals are contacted (up to 3 phone calls) and encouraged to receive lung cancer screening. Individuals not flagged by the model (non-high-risk patients) receive usual care consisting of reminders for lung cancer screening during primary care visits without additional targeted outreach and high-risk prioritization. **Results:** The LungFlag pilot was initiated in August 2023 and will continue until August 2024. As of January 2024, risk profiles of >12,000 patients were analyzed and 180 high-risk patients were identified. **Conclusions:** This pilot is the first evaluation of the implementation process for the LungFlag model in routine clinical practice. After the pilot, a retrospective observational study is planned to further assess the impact of LungFlag and the associated clinical workflow in identifying high-risk individuals and increasing compliance with LDCT screening among high-risk individuals. Research Sponsor: F. Hoffmann-La Roche Ltd.