CANON MEDICAL

Defining effective Lung Cancer Screening (LCS)

At the crossroads of cost, efficiency, and effectiveness

Underestimated potential of LCS cost-effectiveness

Studies estimate that LCS is more efficient in preventing deaths than breast or colorectal cancer screening.

To prevent **1 death**

- **226** people screened with low-dose computed tomography (LDCT)[1]
- **769** people screened with colonoscopy[2]
- **1,400** people screened with mammography[3]

Multiple studies show that LDCT screening is cost-effective;[4-15] however, LCS remains less cost-effective compared to other cancer screening programs.[16,17]

Factors that impact the cost-efficiency and efficacy of LCS

Lower cost-efficiency and efficacy of LCS

- The high cost of LDCT screening, particularly when not integrated with smoking cessation programs[4,16,18-20] or coronary artery calcium scoring assessments[5]
- High false positive ratio[21-23]
- Lower uptake stemming from factors such as limited awareness of screening benefits[24] and higher out-of-pocket costs for downstream procedures[25, 26]
- Suboptimal screening utilization and follow-up adherence[27]
- Lack of structured LCS programs[28-31]

Strategies for more sustainable LCS

Streamlining screening processes

- **Automate the provision of scan orders and scanning procedures** to ensure that eligibility criteria are met,[32] reduce workflow variability, and increase throughput[32,33]
- **Use digital platforms for scheduling** and reminders to ease administration and boost patient compliance[33]
- **Provide a structured reporting system** to improve standardization, communication, and coordination among providers[34,35]
- **Create patient-friendly resources** to effectively inform and address concerns in a clear and swift manner[36,37]

Enhancing detection accuracy

- **Leverage artificial intelligence (AI) technologies** to assist in image analysis, improving the detection of subtle abnormalities while reducing the radiologist's workload[38] and capital expenditure for medical imaging[39]
- **Integrate biomarkers.**[40] Combine LDCT with biomarkers such as microRNA signatures[41,42]

Others

- Refine eligibility criteria using personalized risk models (e.g., $PLCO_{M2012}$)[5,43,44] and incorporating non-smoking factors[45-47]
- Adjust screening frequency based on individual risk[48]
- Expand implementation of comorbidity assessments[40,49] and combined screening[50]
- Enhance multidisciplinary collaboration to streamline lung cancer care,[30] optimize resources,[30,51] and uphold national quality standards in screening (e.g., computed tomography [CT] central reading centers)[52]
- Consider LCS and its associated downstream procedures as a single episode of care[26]

Supporting technologies throughout the patient screening pathway for a more sustainable LCS

Pre-scan

- AI-based **identification of potential patient cohorts**[38]
- **Electronic health record prompts** to enhance the identification of LCS eligibility and increase the number of LDCT orders[53]
- **Pre-screening web applications** for personalized risk assessment and patient scheduling[54]

Scan

Our Solutions:
INSTINX
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Advanced intelligent Clear-IQ Engine (AiCE)
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- **Workflow automation and radiation dose management**[33,55]
- **Image reconstruction**[38,52,56]

Post-scan

Our Solutions:
Vitrea
Learn more

- AI-based **lung nodule detection (AI as a second reader)**[38,57,58] to **increase the detection rate** of pulmonary nodules[59] and **reduce false positives**[35,60]
- **3D volumetric segmentation** of lung nodules[35,61,62]
- Computer-aided **determination of solid** or **subsolid composition**[63]
- Computer-aided **malignancy ranking** based on **morphological** and **quantitative features**[35,59,61]
- Longitudinal follow-up of lung nodules and assessment of **volume doubling time**[35,61,63]

Follow-up

Our Solutions:
Vina Analytics
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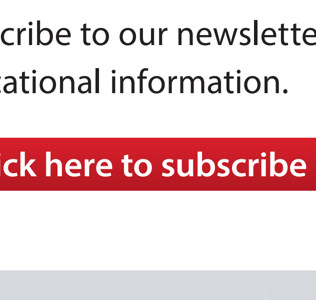
- AI-based **radiation dose management**[33,55]
- **Personalized screening intervals for low-risk groups** determined using AI algorithms[64]
- Automated patient/radiologist reminders[32] and patient scheduling[33]

More sustainable LCS



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NEXT edition

Defining effective LCS:
Mending the body.
Restoring hope.

Gain deeper insights into overcoming challenges in Lung Cancer Screening

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