

# Defining effective Lung Cancer Screening (LCS) Finding the balance between radiation dose and image quality

## The trade-off between radiation exposure and image quality



Many people fear LCS may be an invasive procedure, could lead to incidental findings, or involve radiation exposure.<sup>1</sup>

To learn more about what stops people from participating in LCS, check out the first edition in our series

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In diagnostic imaging, reducing patient dose often comes with the trade-offs of poorer image quality<sup>2,3</sup> and increased clinical risk of patient mismanagement.<sup>3</sup>

The target for optimization is the point where the combined net risk is minimized.<sup>3</sup>

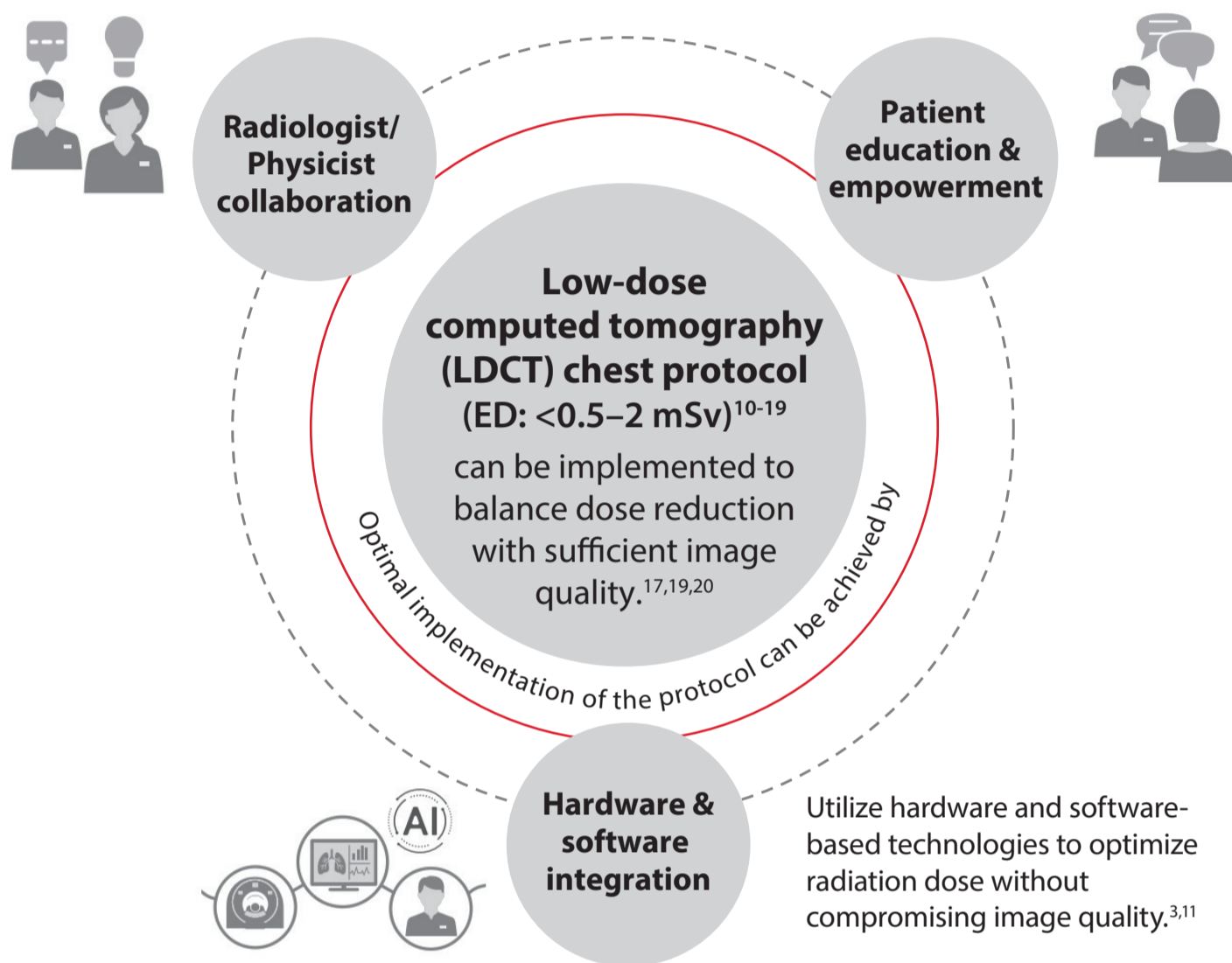
To deliver the benefits of LCS and minimize the effective dose (ED), many countries have provided recommendations<sup>4-8</sup> on radiation dose.

Despite the guidelines, a wide distribution of LCS CT doses across facilities continues to be reported.<sup>4</sup>

## Strategies for reducing radiation dose while preserving image quality

Keep close collaboration between the radiologist and medical physicist to monitor and optimize ED, eventually improving adherence to dose recommendations.

Communicate the benefits and potential risks of screening to facilitate informed decision-making among participants for improved adherence.<sup>9</sup>



**Effective screening program for asymptomatic at-risk individuals**

**96%**

of low-dose chest CT scans (0.44 mSv) were reported to be of diagnostic quality in a recent study.<sup>17</sup>

## Hardware and software that can help you optimize the implementation of the LDCT protocol

Examples & range of dose reductions based on data from recent studies:

	X-ray beam shaping filter with iterative reconstruction	Reconstruction technology	Artificial intelligence (AI)-assisted scan planning technology	Other
	Filters X-rays in CT scans and hardens the X-ray spectrum by selectively eliminating low-energy photons from a polychromatic X-ray beam	Deep Learning Reconstruction technology trained to reduce noise and boost signal to deliver sharp images	<ul style="list-style-type: none"> <li>Scouts using helical ultra low dose CT (ULD-CT) to identify anatomic structures</li> <li>AI assists to automate scan planning</li> </ul>	<ul style="list-style-type: none"> <li>Automatic exposure control (AEC)<sup>9</sup></li> <li>Adaptive collimation<sup>9</sup></li> </ul>
<b>Radiation dose</b>	<b>85.5%</b> reduction <sup>21</sup>	<b>51.3%</b> reduction <sup>22</sup>	<b>11.9%</b> reduction <sup>23</sup>	
	<b>while preserving image quality<sup>21,22</sup> or ensuring no anatomy is missed<sup>23</sup></b>			
<b>Canon's solutions</b>	SilverBeam filter <a href="#">Learn more</a>	Advanced intelligent Clear-IQ Engine (AiCE) <a href="#">Learn more</a>	3D Landmark Scan & Anatomical Landmark Detection <a href="#">Learn more</a>	

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<p><b>NEXT edition</b> Defining effective LCS: On the road to equitable lung health</p>	<p><b>Tell us how you manage radiation dose during LCS at your facility</b></p> <p><a href="#">Click here to take the poll</a></p>	<p><b>Hear what the experts say</b> Join our webinar "Unlocking Access to Lung Cancer Screening" and learn more about LCS</p> <p><a href="#">Click here to register</a></p>
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