

**CENTERS FOR MEDICARE & MEDICAID SERVICES
MEDICARE EVIDENCE DEVELOPMENT AND COVERAGE
ADVISORY COMMITTEE
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**LUNG CANCER SCREENING WITH LOW-DOSE
COMPUTED TOMOGRAPHY**

Innovations in Technology

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Disclosures

- Richard A. Frank, MD, PhD is employed by Siemens Healthcare USA as the Chief Medical Officer.
- The Medical Imaging & Technology Alliance (MITA) represents medical imaging, radiation therapy, and radiopharmaceutical manufacturers.

Participants in Radiation Dose Reduction Initiatives

- Professional Societies
 - AAPM (American Association of Physicists in Medicine)
 - ACR (American College of Radiology: Image Wisely, Image Gently)
 - ASRT (American Society of Radiologic Technologists)
- Industry Associations
 - MITA (Medical Imaging & Technology Alliance)
 - COCIR – European MITA
 - JIRA – Japanese MITA
- Hospital Stakeholders
 - Cincinnati Children's, Huntsville Hospital
- Domain Knowledge Experts
 - CRCPD (Conference of Radiation Control Program Directors)
 - Mayo Clinic, Washington University
- Government Agencies
 - FDA (Food and Drug Administration)
 - HERCA (Heads of European Radiological protection Competent Authorities)
 - JCAHO (The Joint Commission on Accreditation of Health Care Organizations)
 - NCRP (National Council on Radiation Protection and Measurements)
 - IAEA (International Atomic Energy Agency)

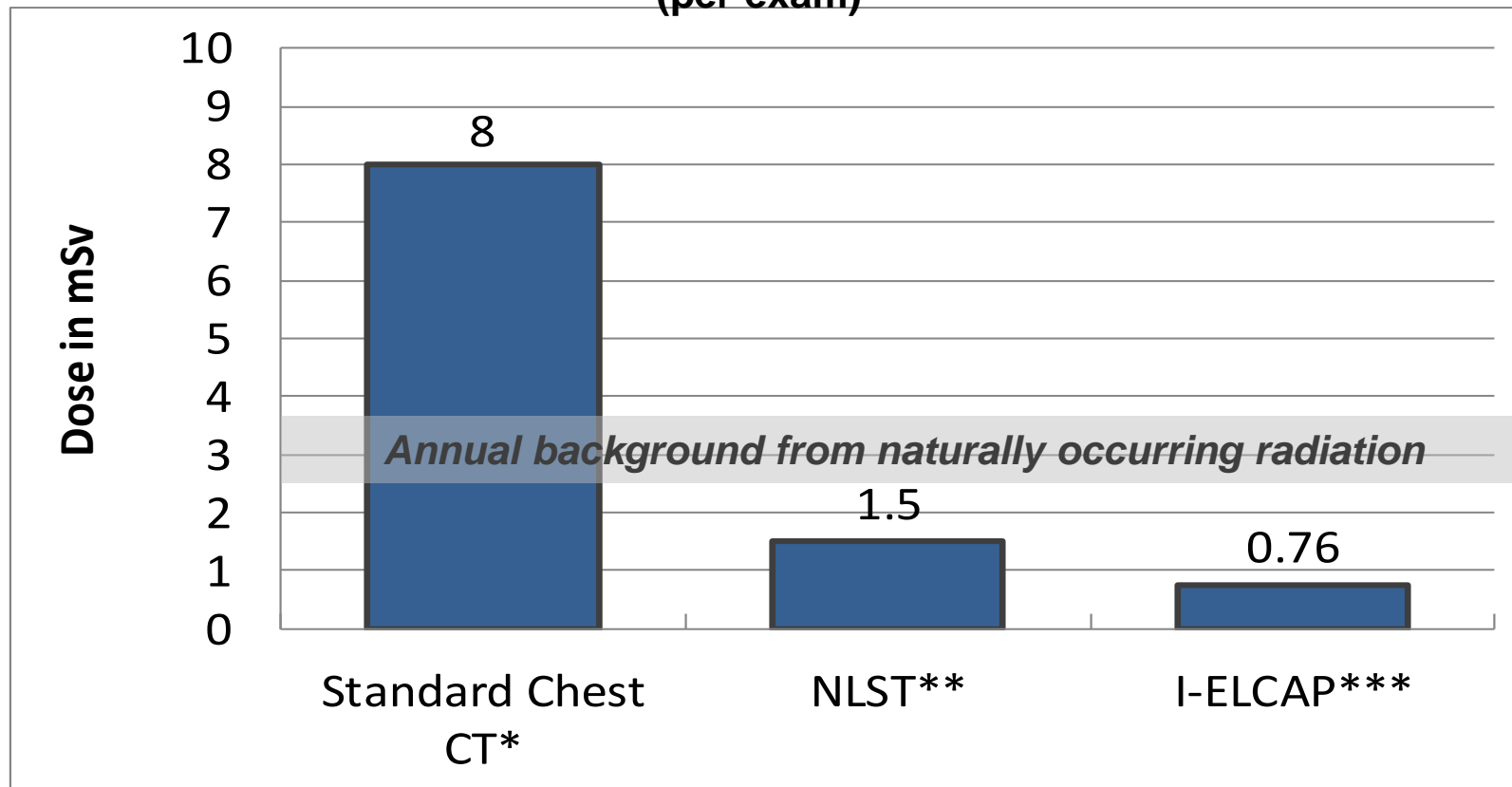
Radiation Dose Mitigation Standards

- NEMA XR 25 (2010): *Computed Tomography Dose Check*
- NEMA XR 26 (2012): *Access Controls for Computed Tomography: Identification, Interlocks, and Logs*
- NEMA XR 27 (2012): *X-ray Equipment for Interventional Procedures User Quality Control Mode*
- NEMA XR 28 (2013): *Supplemental Requirements for User Information and System Function Related to Dose in CT*
- NEMA XR 29 (2013): *Standard Attributes on Computed Tomography (CT) Equipment Related to Dose Optimization and Management*

Dose Reduction Innovations

- Automatic Exposure Control
- Wider coverage detectors
- “Shutter” modes
- Advanced electronics
- First and second generation CT iterative reconstruction
- DICOM Radiation Dose Structured Report
- XR – 25 Dose Check Standard

Typical Radiation Dose (per exam)



* Smith-Bindman R, Lipson J, Marcus R, et al. Radiation dose associated with common computed tomography examinations and the associated lifetime attributable risk of cancer. Arch Intern Med 2009;169:2078–86.

**Aberle DR, Adams AM, Berg CD, Black WC, Clapp JD, Fagerstrom RM, et al; National Lung Screening Trial Research Team. Reduced lung-cancer mortality with low-dose computed tomographic screening. N Engl J Med. 2011; 365:395-409

*** Data on file at I-ELCAP.

International Early Lung Cancer Investigators. “Survival of Patients with Stage I Lung Cancer Detected on CT Screening.” The New England Journal of Medicine. 2006; 355:1763-1771.