Advancing Your Lung Cancer Screening Program with Lung-RADS® and the Lung Cancer Screening Registry

An Approach to Structured Performance Improvement Using Your Lung Cancer Screening Registry Data

August 23, 2023
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Disclosures

• None
Attendee Zoom Interface

Type a question in Q&A (only seen by organizers)

Type a comment in the chat (only seen by organizers)

Questions can be entered in the Q&A field
Advancing Your Lung Cancer Screening Program Webinar Series

This is the final webinar in this series:

- July 26 | ACR Lung-RADS® v2022: An Update on Lung Cancer Screening Reporting and Management
- Aug. 9 | How Does Your Lung Cancer Screening Program Measure Up?
  - View both recordings at https://nrdrsupport.acr.org/support/solutions/articles/11000114747-advance-your-lung-cancer-screening-program-webinar-series
- Aug. 23 | An Approach to Structured Performance Improvement Using Your Lung Cancer Screening Registry Data
  - This webinar will be recorded and distributed afterwards.
Webinar Agenda

1. Overview of LCSR for Quality Improvement
2. Review of Measures for Performance Improvement
3. PDSA Model and LCSR Support Materials
4. Using LCSR for a PI Project
   a. Adherence to Annual Screening
   b. Achieving Appropriate Radiation Dose
5. Sign-up to Start a Project
6. Q&A
7. Wrap-up
   a. CME credit claiming instructions
How NRDR Promotes Quality Improvement

Enables exploration of a wide range of questions about the practice of radiology and identifying new areas for improvement

- Research examples:
  - Outcomes from more than a million persons screened for lung cancer with low-dose computed tomography.
  - Characteristics of Persons Screened for Lung Cancer in the US

Fosters quality improvement through providing facilities performance reports that include comparison to peers
New Quality Improvement Initiatives for LCSR Participants

LCSR Model: Quality Improvement and Education Subcommittee (QED) established July 2021

Goals

• To create user friendly templates for QI
• To improve the interactive dashboard, user friendly focus

The process used for determining key performance indicators

• Reviewed all LCSR KPIs
• Rated according to importance and feasibility
Review of Measures for Performance Improvement

Established workgroups for the following KPIs:

- Improving adherence to annual screening
- Achieving appropriate radiation dose
- Increasing smoking cessation (non-smoking) rates
Adherence to Annual Screening

Goals

- Ensure eligible patients are screened for lung cancer and screening meets USPSTF 2021 recommendations
- Increase the number of patients who return for annual screening (11 to 15 months) when previous exam was Lung-RADS 1 or 2 and

Rationale

- Improving adherence will identify lung cancer at an earlier stage and improve outcomes
  - Mortality benefit associated with LCS requires high adherence to follow-up
  - Nearly 60% of lung cancers in the NLST intervention group were detected after the 2nd and 3rd rounds of screening
  - Adherence rate is lower in clinical practice with a meta-analysis showing 55% adherence with rates varying between 12% and 91%
## Adherence to Annual Screening Measure

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Description</th>
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<tbody>
<tr>
<td>Adherence to annual screening</td>
<td>Percentage of patients with follow-up exam 11-15 months after previous screening (where previous screening met appropriateness criteria and had Lung-RADS 1 or 2)</td>
</tr>
<tr>
<td>First-time screening</td>
<td>Percentage of screenings for first-time patients out of all screenings</td>
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Achieving Appropriate Radiation Dose

Goals
- Promote the most appropriate radiation dose for lung cancer screening exams
- Encourage the As Low As Reasonably Achievable (ALARA) principle

Rationale
- Patients may begin screening as young as age 50 and may continue to be screened through 80 years of age annually according to the latest USPSTF guidelines
- Additionally, patients may undergo additional CTs for screen-detected abnormalities between annual screens
## Appropriate Radiation Dose Measures

<table>
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<th>Measurement</th>
<th>Description</th>
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<tbody>
<tr>
<td>Radiation exposure, Mean CTDIvol – overall mGy</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed</td>
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<tr>
<td>Underweight (BMI less than 18.5) mGy</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed on underweight patients (BMI less than 18.5)</td>
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<td>Healthy weight (BMI of 18.5 to 24.9) mGy</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed on healthy weight patients (BMI of 18.5 to 24.9)</td>
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<td>Overweight (BMI 25 to 29.9) mGy</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed on overweight patients (BMI 25 to 29.9)</td>
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<td>Obese (BMI 30 or greater)</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed on all obese patients (BMI 30 or greater)</td>
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<tr>
<td>Obese Class 1 (BMI 30 to 34.9) mGy</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed on all obese class 1 patients (BMI 30 to 34.9)</td>
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<td>Obese Class 2 (BMI 35 to 39.9) mGy</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed on all obese class 2 patients (BMI 35 to 39.9)</td>
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<td>Obese Class 3 (BMI 40 and above) mGy</td>
<td>Mean Volumetrics CT Dose Index (CTDIvol) across all screening exams performed on all obese class 3 patients (BMI 40 and above)</td>
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Increasing Smoking Cessation

Goal

- Increase the number of former smokers enrolled in an LCS program
- Ensure effective smoking cessation counseling is offered to current and recently former smokers

Rationale

- Cigarette smoking is the number one risk factor for lung cancer. It causes about 90% of lung cancer cases. Smoking cessation is key to decreasing lung cancer risk
- The prevalence of smoking among individuals presenting for annual LCS is higher than among those in the community with 48–70% of those undergoing LCS actively smoking
- Cessation rates after LCS alone range from 16-42%; therefore, LCS is a prime opportunity for intervention and counseling amplifies the benefit of LCS
- Images of patient’s smoking-related lung disease and radiology reports are potential tools to encourage patients to consider smoking cessation and present a unique opportunity for radiologists to facilitate patient-centered care
# Increasing Smoking Cessation Measures

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<th>Measure</th>
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<tr>
<td>Non-smoking rate</td>
<td>Percentage of patients reporting as Former Smoker out of all patients reporting as Current Smoker; Former Smoker; or Smoker, Current Status Unknown</td>
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<td>Smoking cessation offered among current smokers</td>
<td>Percentage of screening exams done on Current Smokers where smoking cessation guidance was offered</td>
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<tr>
<td>Smoking cessation offered</td>
<td>Percentage of screening exams where patients are offered smoking cessation guidance out of all screening exams</td>
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Supporting Facilities in Performance Improvement

LCSR QED workgroup leaders reviewed improvement models

• Goal definition, data acquisition and analysis, implementing change, and review of results

Selected Plan-Do-Study-Act (PDSA) model

• Straightforward for PI newcomers
• Supported by the ABR
• Used by hundreds of health care organizations in the Institute for Healthcare Improvement’s (IHI) "Methods and Tools for Breakthrough Improvement" course
Plan-Do-Study-Act Model

PLAN (baseline phase)
- Identify area of improvement and set goals
- LCSR provides insight into performance gaps, measures, and data

DO (intervention phase)
- Implement change, document
- LCSR collects data

STUDY (post-intervention phase)
- Analyze results to determine root causes
- LCSR streamlines with PI reports

ACT (next steps)
- Continuous improvement

Cycle repeats until goal is achieved
LCSR Tailored Resources for Facilities

ACR customized support material developed to help facilities implement performance improvement (PI) projects using LCSR data

- Project Walkthrough
- PDSA Worksheet
- Measure-specific articles
- New LCSR reports: PI Assessment and PI Analysis
- Potential interventions
- PI Resources

Learn more from the LCSR PI Overview Knowledge Base article
LCSR Tailored Resources for Facilities - Articles

PDSA Walkthrough
• Instructions for each phase of the project

PDSA Worksheet
• Helps with project planning
• Guidelines for documenting progress

Rationale
• Explanation of importance to clinical practice

Data Review
• Step-by-step instructions for analyzing your data

Interventions
• Suggestions for intervention strategies
LCSR Tailored Resources for Facilities – PDSA Walkthrough

Step-by-step guidelines for completing any of the 3 projects using the LCSR and tailored support materials

- Presents how to complete each stage of a PDSA performance improvement project
- Provides “turnkey” approach to accommodate users of all types
- Dovetails with PDSA Worksheet with instructions on how to fill out the worksheet at each stage
- Provides links to resources (videos, articles, templates) at each step

**PLAN**

**Access Your Reports**
1. Log in to the NRDR Portal with your user credentials. If you do not have NRDR login credentials, contact your Corporate Account Administrator or Facility Administrator to assign you a user profile or submit a ticket to NRDR Support for help.

**DO**

**Design an Intervention Plan**
Discuss and adopt interventions to address contributing factors and root causes preventing you from reaching your performance goal. Review the intervention article for the relevant measure and select interventions appropriate for your team and facility. The interventions described in this article are provided as examples that have been used successfully, but you may design your own.

Construct an Intervention Plan based on these findings and a process by which to implement the plan. The plan should provide guidance on who will participate, how often the group will meet, and what the goals and key activities will be. In addition, the plan should lay out the process that will be used to drive improvement in the facility, such as PDSA cycles, from these to be documented, and the way current and ongoing data is going to be monitored using data.

Determine an appropriate time interval after plan implementation to allow for the plan to have its desired effect. Then proceed with re-measurement to assess improvement in the study stages of the project.

**STUDY**

**Measure Post-Intervention Results**
During and after conducting your interventions, you need to know if they are making a difference and how close you are to achieving your performance goal. A run chart displays performance over time, but it can be hard to know if changes in values are due to true change or typical random variation. Statistical process control helps discern the A control chart is a run chart with 3 additional lines, a line in the middle called the central line which is the performance median and lines above and below the data called the upper and lower control limits (defined as + - 3 standard deviations from the mean). See the example below:
LCSR Tailored Resources for Facilities – PDSA Worksheet

Introduction
This worksheet provides step-by-step guidance to complete a LCSR Plan-Do-Study-Act (PDSA) performance improvement (PI) project cycle. A project may have multiple cycles for building a variety of improvement interventions to meet your performance goal. A new worksheet should be completed for each cycle of improvement. For more information on how to use this worksheet, please see the PDSA Performance Improvement Project Worksheet for details on how to use this worksheet to plan and document each stage of your project.

Performance Improvement-CME Credit
20 Performance improvement (PI)-CME credits are offered for completion of a PDSA cycle. All sections of this worksheet must be completed to obtain PI-CME credits. For more information, please see the Instructions for PI-CME.

Worksheet Instructions
This worksheet includes tips for recording your project data and provides references to NICE Support Knowledge Base articles for more in-depth information to guide you through completing the PI project.

The gray boxes include guidance and examples for completing the worksheet which will be overwritten when you click in the box and begin typing your content. The sections include:
1. Project Title—Documents your project data and includes space to add new project data.
2. Plan—Documents your project data and provides space to add new project data.
3. Do—Moderates your project data and provides space to add new project data.
4. Study—Documents your project data and provides space to add new project data.
5. Act—Documents your project data and provides space to add new project data.

Plan Selection and Team Review the National Wristband Article for each LCSR measure for an exploration of the measure and how it relates to patient care.

Project Title

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Description</th>
<th>Choose an Item</th>
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Project Title

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<th>Corporate Account</th>
<th>Facility Name</th>
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Baseline Measure

Baseline Measure Performance: Record the baseline measure performance for all or several facilities within your corporate account (individually or combined) or for a single facility.
Baseline Registry Median: Record the baseline registry median.

Determine the Performance Gap

Performance Gap: Establish a desired goal for the measure.
Scope: Briefly describe the parameters for this cycle.

Analyze Baseline Performance Results
Review the Baseline Performance Improvement Measures article for methods to identify possible root causes of your baseline not meeting your performance goal and determine meaningful interventions for improvement.

Plan Do Study Act Cycle

Performance Gap:

Plan Do Study Act Cycle

Plan Interventions

<table>
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<tr>
<th>Intervention</th>
<th>Timeframe</th>
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</table>

Project Do

Project Study

Project Act

Plan Do Study Act Cycle

Plan for What's Next

Interventions to be Followed:

Interventions That Need Continued Work:

April 14, 2023
Increasing Adherence to Annual Screening

Rationale

The project rationale describes a potential improvement opportunity for lung cancer screening (LCS) programs related to patient adherence to annual exams as documented in peer-reviewed literature and national guideline documents (see Reference below). This information is presented to provide facility personnel with an overview of the Lung Cancer Screening Registry (LCSTR) measure and the impact on patient care.

The Adherence to Annual Screening measure can help facilities identify when and where patients are not returning for screening so that performance improvement activities can be initiated as needed.

This information is a fast step in completing a performance improvement project using a PDCA model and is intended to provide a simple understanding about your patient adherence to annual LCS. The project is based on data entered in the LCSTR, including comparison to national data, and tailored to practices like yours.

Improving Adherence to Annual Screening Measure

The Adherence to Annual Screening measure is defined as the percentage of patients who returned within the annual screening window (1 to 15 months after their previous exam) when their previous exam met UPTF screening appropriateness guidelines and was assigned a Lung-RADS 1 or 2.

The adherence to annual screen percentage is calculated based on the number of patients who returned within the 1 to 15-month annual screen window divided by the number of patients who should have had an annual screen based on the Lung-RADS 1 or 2 recommendation of the prior screening exam.

The data can also be viewed based on when and if the patient returned for a screening exam when the prior exam was given a Lung-RADS 1 or 2. Time periods for return screening include 6 months, 15 to 15 months (adherence), 16 to 24 months, or none returned.

Introducing the LCSTR Facility Comparisons Report

NRDR Support Home | Knowledge Base | NRDR - Performance Improvement | Increasing Adherence to Annual Screening

Introduction

This article provides a step-by-step review of the Lung Cancer Screening Registry (LCSTR) reports you can use to determine if your facility can increase adherence to annual screening for patients with a Lung-RADS 1 or 2 recommendation enrolled in your lung cancer screening program. If a gap in performance is identified, pursuing a LCSTR Facility Comparisons (FCSA) report can improve your facility’s performance improvement and ensure that your facility is making the best possible improvements.

The article provides a detailed overview of the measures used to calculate adherence and discusses the importance of adhering to national guidelines when screening patients for lung cancer.

Methodology

The following is a suggested adaptive progression for reviewing the LCSTR Facility Comparisons (FCSA) report to help pinpoint areas that could benefit from a performance improvement initiative:

1. Review your facility's Lung-RADS 1 or 2 recommendation of the prior screening exam.
2. Review your facility's Lung-RADS 1 or 2 recommendation of the prior screening exam.
3. Review your facility's adherence to annual screening measure.

Conclusion

By following this step-by-step process, facilities can determine which areas to focus on for improvement and create a plan to address any gaps in adherence.

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LCSR Tailored Resources for Facilities - Articles

Data Review: Identifying problems and delving into the details

- Takes user through a step-by-step approach
- How/where to access reports
- What and how to review the reports
- Starting general and digging into the details

Increasing Adherence to Annual Screening - Data Review

Introduction
This article provides a step-by-step review of the Long Cancer Screening Registry (LCSR) reports you can use to determine if your facility can increase adherence to annual screening for patients with a Lung Nodule (LD) or a recommendation enrolled in your lung cancer screening program. If a gap in performance is identified, pursuing a LCSR Plan-Do-Study-Act (PDSA) Performance Improvement project could help your facility get on the road to improvement. Visit LCSR Performance Improvement Overview for details about conducting a project.

Reviewing the Reports
Get started by reading the LCSR Facility Comparisons Report article available in the NDRR Support's Knowledge Base for information about how to access the report and an overview of the various report tabs. Each report tab contains help features that provide more information about the report's functionality. The report is viewable by all NDRR user profiles with the exception of Service User.

Note: Please keep in mind your facility’s data submission practices when reviewing the reports and how these may affect report results.

The following is a suggested stepwise progression for reviewing the LCSR Facility Comparisons Report to help pinpoint areas that could benefit from a performance improvement initiative:

1. Review the LCSR Facility: Peer Comparisons Report to view aggregate data about how your facility (or how multiple facilities within the same Corporate Account) compares to peer groups and to all registry participants.
2. Review your facility’s rankings for the three PDSA Measure 4s to determine if there are measures for which your facility fails below peer performance suggesting an opportunity for improvement.
3. Does your facility rank in the highest quartile, consider if there is still significant room for improvement.
4. Review the LCSR Facility Comparisons Report (for Corporate Accounts with more than one facility) to compare how well your facility performs relative to each of your facility’s peers.
Interventions: Make a change

• General concepts and some specific ideas about what a site might do to improve
• Use the PDSA to document the test of change
• Looking to profile site approaches
LCSR Tailored Resources for Facilities - Reports

Development of interactive reports

- Help facility personnel:
  - Identify areas for improvement through performance reports that include comparisons with various peer groups
  - Delve into details to better understand performance issues
  - Support demonstrating results of performance improvement interventions

![Adherence to Annual Screening PI Analysis Report](image1)
![Radiation Dose PI Assessment Report](image2)
Adherence to Annual Screening – Facility Peer Comparisons

<table>
<thead>
<tr>
<th>Exams</th>
<th>Division</th>
<th>Facility Type</th>
<th>Location</th>
<th>Registry</th>
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<td>East North Central (N=629)</td>
<td>Community hospital-based (N=1,761)</td>
<td>Metropolitan (N=1,019)</td>
<td>LCSR (N=3,002)</td>
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<td>213,676</td>
<td>572,467</td>
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Adherence to annual screening: Percentage of patients with follow-up exam 11-15 months after a previous screening with Lung-RADS 1 or 2.

Comparison data compiled from 678,488 exams across 3,109 facilities using data from 2022.

The facility value of 33.2% is in the Upper 25% - 50% of all sites in the registry.

Lowest 25% (778 sites): 6.1 - 10.0 %, 10.1 - 14.0 %, 14.1 - 18.0 %, 18.1 - 22.0 %, 22.1 - 26.0 %, 26.1 - 30.0 %, 30.1 - 34.0 %, 34.1 - 38.0 %, 38.1 - 42.0 %, 42.1 - 46.0 %, 46.1 - 50.0 %, 50.1 - 54.0 %, 54.1 - 58.0 %, 58.1 - 62.0 %, 62.1 - 66.0 %, 66.1 - 70.0 %, 70.1 - 74.0 %, 74.1 - 78.0 %, 78.1 - 82.0 %, 82.1 - 86.0 %, 86.1 - 90.0 %, 90.1 - 94.0 %, 94.1 - 98.0 %, 98.1 - 100.0 %.

Highest 25% (778 sites): 10.1 - 14.0 %, 14.1 - 18.0 %, 18.1 - 22.0 %, 22.1 - 26.0 %, 26.1 - 30.0 %, 30.1 - 34.0 %, 34.1 - 38.0 %, 38.1 - 42.0 %, 42.1 - 46.0 %, 46.1 - 50.0 %, 50.1 - 54.0 %, 54.1 - 58.0 %, 58.1 - 62.0 %, 62.1 - 66.0 %, 66.1 - 70.0 %, 70.1 - 74.0 %, 74.1 - 78.0 %, 78.1 - 82.0 %, 82.1 - 86.0 %, 86.1 - 90.0 %, 90.1 - 94.0 %, 94.1 - 98.0 %, 98.1 - 100.0 %.
Adherence to Annual Screening – Adherence

Patients with followup 11-15 months after previous screening (when previous screening met appropriateness criteria and had Lung-RADS 1 or 2)

Compared to 50th Percentile for Registry: All LCSR Facilities

Distribution of time to followup for All year(s)
Adherence to Annual Screening Data – PI Analysis

Followup within 11-15 months after previous screening (patients meeting appropriateness criteria with Lung-RADS 1 or 2) Jan. 2, 2022 thru Mar. 31, 2023

Compared to Registry Median
- Registry: 24.6%
- Difference: +21.7%

% of Patients
- January 2022: 38.3%
- February 2022: 40.9%
- March 2022: 41.8%
- April 2022: 40.0%
- May 2022: 48.0%
- June 2022: 52.4%
- July 2022: 53.3%
- August 2022: 44.2%
- September 2022: 40.9%
- October 2022: 50.9%
- November 2022: 46.6%
- December 2022: 48.9%
- January 2023: 48.5%
- February 2023: 54.3%
- March 2023: 63.8%
- April 2023: 52.0%

Facility Opportunity

Adherence Report Date
Adherence to Annual Screening Data – PI Analysis

Followup within 11-15 months after previous screening (patients meeting appropriateness criteria with Lung-RADS 1 or 2) Jan. 2, 2022 thru Mar. 31, 2023

41.9%

Compared to Registry Median
- Registry: 24.6%
- Difference: +17.3%

Facility Opportunity

Adherence Report Date

<table>
<thead>
<tr>
<th>Facility ID</th>
<th>Previous Screening</th>
<th>ACR Exam Number</th>
<th># Pack Years Smoking</th>
<th># Years Since Quit</th>
<th>Smoking Status</th>
<th>Lung-RADS®</th>
<th>Adherence Deadline (15 months after prev. screening)</th>
<th>Next Screening</th>
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<th>Next ACR Case Number</th>
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<td></td>
<td>Mon, Jan 31, '22</td>
<td>(has not returned)</td>
<td>22</td>
<td>Jan, 22</td>
<td>Jan, 22</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>Mon, Jan 31, '22</td>
<td>Fri, Aug 26, '22</td>
<td>22</td>
<td>Jan, 22</td>
<td>Jan, 22</td>
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</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mon, Jan 31, '22</td>
<td>Fri, Sep 30, '22</td>
<td>23</td>
<td>Jan, 22</td>
<td>Jan, 22</td>
<td>0</td>
</tr>
</tbody>
</table>

Exams Volume

<11 months: 3 (0.2%)
11-15 months: 263 (21.8%)
16-24 months: 41 (3.4%)
>24 months: 395 (32.7%)
No followup (overdue): 506 (41.9%)
Adherence to Annual Screening Data – PI Assessment

Followup within 11-15 months after previous screening (patients meeting appropriateness criteria with Lung-RADS 1 or 2) Jan. 1, 2022 thru Feb. 28, 2023

Baseline

Post Intervention

Baseline Mean: 38.0%

Mean: 46.1%
Adherence to Annual Screening Data – PI Assessment

Follow-up within 11-15 months after previous screening (patients meeting appropriateness criteria with Lung-RADS 1 or 2) Jan. 1, 2022 thru Feb. 28, 2023

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Exam Volume</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>598</td>
<td>38.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Post Intervention</td>
<td>380</td>
<td>46.1</td>
<td>2.6</td>
</tr>
</tbody>
</table>

### Chart Description

- **Mean:**
  - Baseline: 38.0%
  - Post Intervention: 46.1%

- **Standard Error:**
  - Baseline: 2.0
  - Post Intervention: 2.6

- **Confidence Interval:**
  - Baseline
  - Post Intervention

**Legend:**
- Baseline: Green Circle
- Post Intervention: Blue Circle
# Achieving Appropriate Radiation Dose – Facility Peer Comparisons

## Facility Peer Comparisons

### Exams

<table>
<thead>
<tr>
<th>Division</th>
<th>Facility Type</th>
<th>Location</th>
<th>Registry</th>
</tr>
</thead>
<tbody>
<tr>
<td>East North Central (N=629)</td>
<td>Academic (N=174)</td>
<td>Metropolitan (N=1,019)</td>
<td>LCSR (N=3,002)</td>
</tr>
<tr>
<td>213,673</td>
<td>84,356</td>
<td>380,278</td>
<td>969,593</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- first-time screening</td>
<td></td>
<td>Appropriateness of screening by USPSTF criteria: 2013 Guidelines</td>
<td>52.8 %</td>
<td>163</td>
<td>86</td>
</tr>
<tr>
<td>- Appropriateness of screening by USPSTF criteria: 2021 Guidelines</td>
<td></td>
<td>60.1 %</td>
<td>163</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>- Smoking cessation counseling offered</td>
<td></td>
<td>85.3 %</td>
<td>163</td>
<td>139</td>
<td></td>
</tr>
<tr>
<td>- Smoking cessation counseling offered among current smokers</td>
<td></td>
<td>91.4 %</td>
<td>163</td>
<td>149</td>
<td></td>
</tr>
<tr>
<td>- Non-Smoking Rate</td>
<td></td>
<td>100 %</td>
<td>77</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>- Adherence to annual screening</td>
<td></td>
<td>52.5 %</td>
<td>162</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>- Adherence to 6-month interim assessment</td>
<td></td>
<td>46.3 %</td>
<td>391</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>- Adherence to 3-month interim assessment</td>
<td></td>
<td>34.0 %</td>
<td>50</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>- Radiation exposure, Mean CTDIvol - overall</td>
<td>mGy</td>
<td>2.4</td>
<td>163</td>
<td>387</td>
<td></td>
</tr>
<tr>
<td>- underweight (BMI less than 18.5)</td>
<td>mGy</td>
<td>0.9</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>- healthy weight (BMI of 18.5 to 24.9)</td>
<td>mGy</td>
<td>1.9</td>
<td>51</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>- overweight (BMI of 25.0 to 29.9)</td>
<td>mGy</td>
<td>2.4</td>
<td>51</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>- obese (BMI 30.0 or greater)</td>
<td>mGy</td>
<td>2.8</td>
<td>58</td>
<td>165</td>
<td></td>
</tr>
<tr>
<td>- obese class 1 (BMI 30.0 to 34.9)</td>
<td>mGy</td>
<td>2.9</td>
<td>34</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>- obese class 2 (BMI 35.0 to 39.9)</td>
<td>mGy</td>
<td>2.0</td>
<td>17</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>- obese class 3 (BMI 40.0 and above)</td>
<td>mGy</td>
<td>3.1</td>
<td>7</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>- Low-Dose Chest CT - CTDIvol</td>
<td>mGy</td>
<td>2.4</td>
<td>163</td>
<td>387</td>
<td></td>
</tr>
<tr>
<td>- Routine (not Low-Dose) Chest CT - CTDIvol</td>
<td>mGy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>- Radiation exposure, Mean Dose Length Product (DLP) - overall</td>
<td>mGy/cm</td>
<td>82.7</td>
<td>163</td>
<td>13,476</td>
<td></td>
</tr>
</tbody>
</table>

- obese class 3 (BMI 40.0 and above) mGy: Mean Volumetrics CT Dose Index (CTDivol) across all screening exams performed on obese class 3 patients (BMI of 40.0 and above)

Comparison data compiled from 51,523 exams across 1,012 facilities using data from 2022

The facility value of 3.1 mGy is in the Upper 25% - 50% of all sites in the registry.
Achieving Appropriate Radiation Dose – PI Analysis

Mean CTDIvol across all screening exams performed Jan. 1, 2022 thru Aug. 20, 2023

2.5 mGy/exam

Compared to Registry Median
2.8 mGy/exam  - 0.3 mGy

BMI Category: All
Achieving Appropriate Radiation Dose – PI Analysis

Mean CTDIvol across all screening exams performed Jan. 1, 2022 thru Aug. 20, 2023

3.3 mGy/exam

Compared to Registry Median

Registry Median (dotted line)

BMI Category: overweight (25.0 - 29.9)

Facility Contribution

3.3 mGy/exam

CTDlvol (mGy)

BMI Category

Exam Date

Manufacturer / ..

Low-Dose CT

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Achieving Appropriate Radiation Dose – PI Assessment

Mean CTDIvol across all screening thru Aug. 21, 2023

Baseline Mean: 3.7

<table>
<thead>
<tr>
<th>Date</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Jan 22</td>
<td>10.0</td>
</tr>
<tr>
<td>31 Oct 22</td>
<td>8.0</td>
</tr>
<tr>
<td>21 Aug 23</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Control Chart by Month: Mar 1, 2022
BMI Category: Overweight

Mean CTDIvol: 11.0 mGy
Exams: 10

Distribution of CTDIvol values

Overweight (25.0 - 29.9)

Baseline
Post Intervention

Intervention
Post Intervention
Achieving Appropriate Radiation Dose – Use Case

Case Study: University of Michigan

• What was discovered from reports
• How investigation was carried out
• What problem was discovered
• What intervention remedied the problem
LCSR Performance Improvement Project

Volunteer to be an early adopter and receive:

• Guidance to gain the most benefit from your reports
• Opportunity to provide direct user feedback
• Registry discount
• Performance Improvement CME
• Case study publication opportunities
• Q&S conference presentation opportunity

Complete the interest form to get started
Adherence to 6 and 3-month Interim Assessment Measures are Live

Adherence to 6-month Interim Assessment

• Percentage of patients with a chest CT 4-8 months after a previous screening with Lung-RADS 3

Adherence to 3-month Interim Assessment

• Percentage of patients with a chest CT 6-18 weeks OR a diagnostic PET/CT 0-18 weeks after a previous screening with Lung-RADS 4a

<table>
<thead>
<tr>
<th>Report Section</th>
<th>Measurement Name</th>
<th>Num.</th>
<th>Den.</th>
<th>Facility Performance</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screened Population</td>
<td>First-time screening</td>
<td>117</td>
<td>117</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Appropriateness of screening by USPSTF criteria; 2013 Guidelines</td>
<td>78</td>
<td>117</td>
<td>66.7 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Appropriateness of screening by USPSTF criteria; 2021 Guidelines</td>
<td>117</td>
<td>117</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoking cessation counseling offered</td>
<td>15</td>
<td>117</td>
<td>12.8 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoking cessation counseling offered among current smokers</td>
<td>11</td>
<td>46</td>
<td>23.9 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-Smoking Rate</td>
<td>71</td>
<td>117</td>
<td>60.7 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adherence to annual screening</td>
<td>0</td>
<td>109</td>
<td>0.0 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adherence to 6-month interim assessment</td>
<td>0</td>
<td>2</td>
<td>0.0 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adherence to 3-month interim assessment</td>
<td>0</td>
<td>0</td>
<td>%</td>
<td></td>
</tr>
</tbody>
</table>
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➢ Phone: 1-800-227-5463 x3535
➢ Web: https://nrdrsupport.acr.org
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