



# 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

# **Speakers and Panelists**





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# **Speakers and Panelists**





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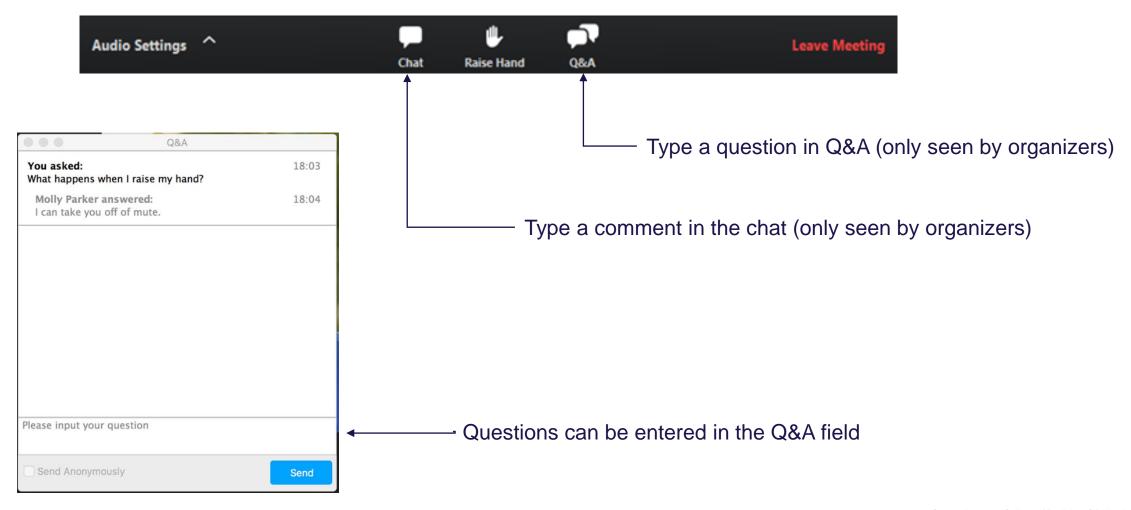
# **Disclosures**



None

# **Attendee Zoom Interface**





# **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 <a href="https://nrdrsupport.acr.org/support/solutions/articles/11000114747-advance-your-lung-cancer-screening-program-webinar-series">https://nrdrsupport.acr.org/support/solutions/articles/11000114747-advance-your-lung-cancer-screening-program-webinar-series</a>
- 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 lowdose 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**



Measurement	Description
Adherence to annual screening	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)
First-time screening	Percentage of screenings for first-time patients out of all screenings

# **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**



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

# **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**



Measure	Description
Non-smoking rate	Percentage of patients reporting as Former  Smoker out of all patients reporting as Current  Smoker; Former Smoker; or Smoker, Current  Status Unknown
Smoking cessation offered among current smokers	Percentage of screening exams done on <b>Current Smokers</b> where smoking cessation guidance was offered
Smoking cessation offered	Percentage of screening exams where patients are offered smoking cessation guidance out of all screening exams

# **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

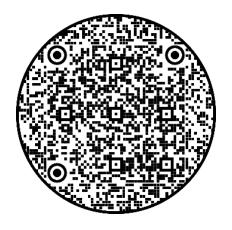




Act	Plan
Study	Do







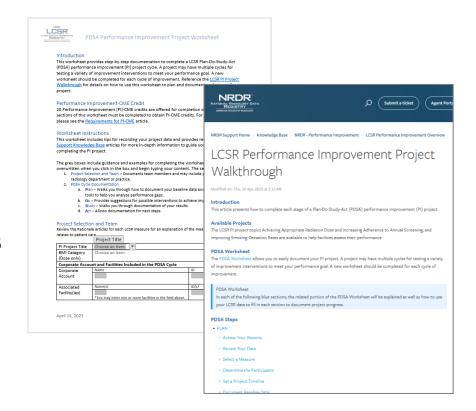
PQI with JACR Course

### **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



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## **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**

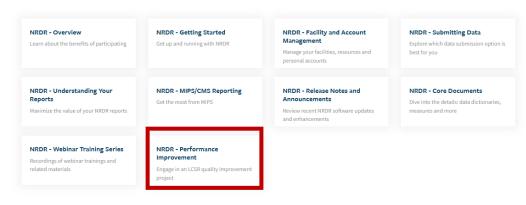
 Step-by-step instructions for analyzing your data

### **Interventions**

 Suggestions for intervention strategies



Knowledge Base



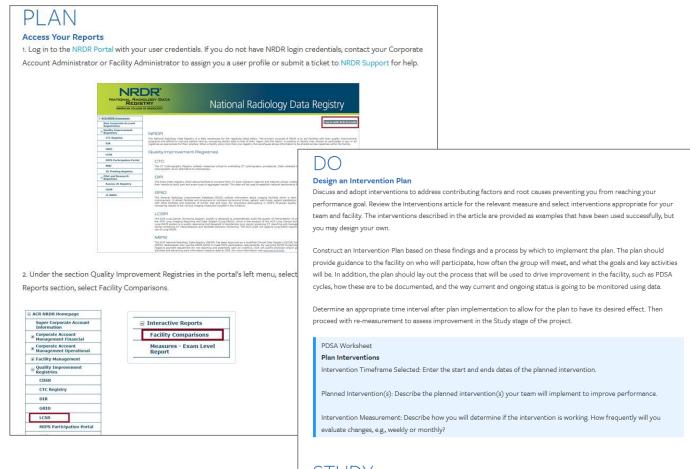
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# LCSR Tailored Resources for Facilities – PDSA Walkthrough



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



### 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 a true change or typical random variation. Statistical process control helps discern this. A control chart is a run chart with 3 additional lines: a line in the middle called the centerline 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.

iau the Statistical Decess Control vides below to loave more about the use of control charte in perfermence improvem

### LCSR Tailored Resources for Facilities – PDSA Worksheet





PDSA Performance Improvement Project Worksheet

#### Introduction

This worksheet provides step-by-step documentation to complete a LCSR Plan-Do-Study-Act (PDSA) performance improvement (PI) project cycle. A project may have multiple cycles for testing a variety of improvement interventions to meet your performance goal. A new worksheet should be completed for each cycle of improvement. Reference the LCSR PI Project Walkthrough 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 Requirements for PI-CME article.

#### Worksheet Instructions

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

The grey 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 Selection and Team Documents team members and may include persons outside the radiology department or practice.
- 2. PDSA Cycle Documentation
  - a. Plan Walks you through how to document your baseline data and provides links to tools to help you analyze performance gaps.
  - b. Do Provides suggestions for possible interventions to achieve improvement.
  - c. Study Walks you through documentation of your results.
  - d. Act Allows documentation for next steps.

#### Project Selection and Team

Review the Rationale articles for each LCSR measure for an explanation of the measure and how it relates to patient care

	Project Title	
PI Project Title	Choose an item. ▼	
BMI Category	Choose an item.	
(Dose only)		
Corporate Accou	nt and Facilities Included in the PDSA Cycle	
Corporate	Name	ID
Account		
Associated	Name(s)	ID(s)
Facility(ies)		
	*You may enter one or more facilities in the field above.	

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PDSA Performance Improvement Project Worksheet

The Project Tear	ect Team			
Project Lead	Name	Role	Email	
· ·				
Project Team	Name(s)	Role(s)	Email(s)	
Cycle	From: Click or tap to enter a date.			
Timeframe	To: Click or tap to enter a date.			

#### Plan Do Study Act Cycle

#### Document Baseline Data

Review the Data Review article for the relevant measure for details about how to access your registry

Baseline Timeframe	From: Click or tap to enter a date.
	To: Click or tap to enter a date.
Baseline Measure	Record the baseline measure performance for all or several
Performance	facilities within your corporate account (listed individually or
	combined) or for a single facility.
Baseline Registry Median	Record the baseline registry median.

#### Determine the Performance Gap

Performance Goal	Establish a desired goal for the measure.
Scope	Briefly describe the parameters for the cycle.

#### Analyze Baseline Performance Results

Review the <u>Performance Improvement Resources</u> article for methods to identify possible root causes of your baseline not meeting your performance goal and determine meaningful interventions for improvement.

Performance Gap	Describe the root causes of the gap in performance and the	
	methods you used to come to this conclusion.	

#### Plan Do Study Act Cycle

#### Plan Interventions

Review the Interventions article for the relevant measure.

Intervention Timeframe	From: Click or tap to enter a date.
	To: Click or tap to enter a date.
Planned Intervention(s)	Describe the planned intervention(s) your team will
	implement to improve performance.

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PDSA Performance Improvement Project Worksheet

Intervention Measurement	Describe how you will determine if the intervention is working
	and how frequently you will evaluate changes.

#### Plan Do Study Act Cycle

#### Document Post-Intervention Data

Post-Intervention Timeframe	From: Click or tap to enter a date.
	To: Click or tap to enter a date.
Post-Intervention Measure	Record the post-intervention measure performance for all or
Performance	several facilities within your corporate account (listed
	individually or combined) or for a single facility.
Post-Intervention Registry	Record the post-intervention registry median.
Median	
Post-Intervention Results	Describe post-intervention results as compared to your
	performance goal.

#### Plan Do Study Act Cycle

#### Plan for What's Next

Interventions to Sustain	What did you learn and how will you sustain improvements?
Interventions That Need	Which interventions need further testing or refinement?
Continued Work	Which will you test next, if any?

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

# Increasing Adherence to Annual Screening - Rationale

Modified on: Fri, 10 Mar, 2023 at 10:18 AM

#### Introductio

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

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

This information is a first step in completing a performance improvement project using a PDSA model and is intended to provide a stepwise understanding about your patients' adherence to annual LCS. The project is based on your data entered in the LCSR, 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 (11 to 15 months after their previous exam) when their previous exam met USPSTF 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 11 to 15month 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 <11 months, 11 to 15 months (adherent), 16 to 24 months, >24 months, or has not returned.

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

# Increasing Adherence to Annual Screening - Data Review

Modified on: Wed, 12 Apr, 2023 at 5:32 PM

#### Introduction

This article provides a step-by-step review of the Lung Cancer Screening Registry (LCSR) reports you can use to determine if your facility can increase adherance 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 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 NRDR 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 NRDR 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 tabs to help pinpoint areas that could benefit from a performance improvement initiative.

- 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.
- View your facility's rankings for the three Plan-Do-Study-Act (PDSA) measures to determine if there are measures for which your facility falls below peer performance suggesting an opportunity for improvement.
- 2. Even if your facility ranks in the highest quartile, consider if there is still significant room for improvement.
- 2. Review the LCSR Facility Comparisons Report (for Corporate Accounts with more than one facility) to compare

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 ${\sf NRDR\,Support\,Home} \to {\sf Knowledge\,Base} \to {\sf NRDR\,-Performance\,Improvement} \to {\sf Increasing\,Adherence\,to\,Annual\,Screening}$ 

# Increasing Adherence to Annual Screening - Interventions

Modified on: Mon, 20 Feb, 2023 at 1:01 PM

#### Introduction

The ACR's LCSR Committee established a subcommittee to focus on offering registry participants PI and educational opportunities. The subcommittee developed the PDSA Worksheet tailored for the LCSR PI projects and these accompanying instructional articles as tools for implementing and documenting PI efforts based on the Adherence to Annual Screening measure.

Below is a list of potential interventions to help improve adherence to annual lung cancer screening. This activity corresponds to the Plan section of the PDSA Worksheet. Interventions are suggested for addressing factors leading to performance gaps and demonstrating improved performance that you will record in the Do section of the PDSA Worksheet.

This is an area with limited scientific research and publications on the effectiveness of the proposed interventions. If there are supporting articles for a proposed intervention, they have been included for reference. However, many of the proposed interventions are based on the expert opinion of the subcommittee.

Consider using some of the tools for characterizing performance factors in the Set a Goal and Analyze Baseline Data section of the Performance Improvement Resources article.

- 1. Increase program factors effecting adherence such as:
- Staff training (navigators, coordinators, technologists, persons doing shared decision making, and referring physicians)
  to educate patients about the importance of annual screens.
- Screening center accessibility (ease of scheduling including hours of operation and appointment availability). Consider
  offering screening for a limited number of hours on the weekend, such as participating in Lung Cancer Screening Day.
- Wernli KJ, Tuzzio L, Brush S, et al. Understanding Patient and Clinical Stakeholder Perspectives to Improve Adherence to Lung Cancer Screening. Perm J. 2021;25:20.295. doi: 10.7812/TPP/20.295

Intervention planning relevance: This publication describes how the Lung Cancer Screening (LCS) Program at



# 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



#### Reviewing the Reports

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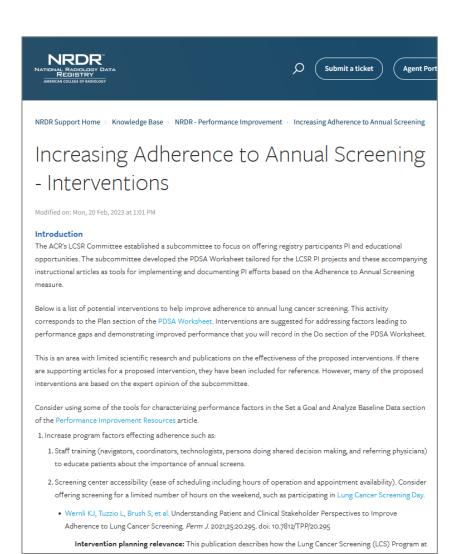
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- $2. Review \ the \ \textit{LCSR Facility Comparisons Report} \ (for \ Corporate \ Accounts \ with \ more \ than \ one \ facility) \ to \ compare$



### 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





# 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

# **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



# Q&A



# Adherence to 6 and 3-month Interim Assessment Measures are Live



### Adherence to 6-month Interim Assessment

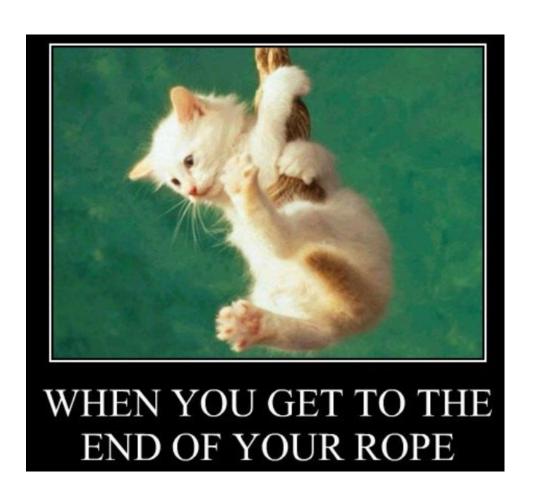
 Percentage of patients with a chest CT 4-8 months after a previous screening with Lung-RADS 3

### 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

# NRDR Help Desk





> Email: NRDRSupport@acr.org

> Phone: 1-800-227-5463 x3535

> Web: https://nrdrsupport.acr.org

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For questions regarding the credit claiming of this activity, please contact us at NRDRSupport@acr.org.



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