

## **Utilization of Comparison to Prior Relevant Imaging Studies Group or Individual PQI**

**Primary Authors:** Matthew D. Gilman, M.D.  
Ella A. Kazerooni, M.D., M.S.

### **Purpose and Rationale**

An important component of interpreting diagnostic radiology examinations is comparison to prior relevant examinations for interval change, and documenting the date/exam type of the comparison and whether there has been an interval change or not.

The goal of this project is to monitor and improve adherence to the use of reviewing prior relevant imaging examinations when interpreting a current study.

### **Project Resources**

1. American College of Radiology Practice Guideline for Communication of Diagnostic Imaging Findings. (Revised 2010; Resolution 11), Reston, VA, American College of Radiology
2. Berlin L. Communicating findings of radiological examinations: whither goest the radiologist's duty? AJR 2002;178:809-815.
3. Berlin L. Malpractice issues in radiology must new radiographs be compared with all previous radiographs, or only with the most recently obtained radiographs. AJR March 2000 174:611-615
4. Berlin L. Comparing new radiographs with those obtained previously. AJR 1999;172:3-6.

### **Project Measures**

#### **Metric 1**

Numerator # of cases documenting relevant exam comparison date (and type) in the current exam report  
Denominator # of cases in which a relevant exam comparison is available within the same radiology department/health system

#### **Metric 2**

Numerator # of cases documenting change or lack thereof from a relevant exam comparison in the current exam report  
Denominator # of cases in which a relevant exam comparison is available within the same radiology department/health system radiology department/health system

## **Baseline Data Collection**

Make a plan for selecting cases. Using CPT codes, PACS or RIS data, identify a list of consecutive examinations of the specific exam type or the range of exam types under review. Examples:

- only chest CT examinations with the relevant comparisons being a prior chest CT or chest radiographic image, or series of these examination types
- only abdominal CT examinations with the relevant comparisons being prior abdominal CT, US or MR images, or series of these examination types
- consecutive examinations within a practice with the relevant comparisons being defined by the cross section of the examination types performed

Obtain the list of examinations and the final reports for the exams and review for the following:

1. availability of a relevant comparison examination in the PACS (or film files)
2. documentation of the comparison date (and type) in the current examination report
3. documentation of change or lack thereof from the prior examinations in the current examination report

The number of cases required will vary based on the patient demographics typical of your practice and the frequency of having prior examinations. A reasonable target would be to end up with 100 exams. Therefore, if approximately 50% of your patient mix has a prior relevant comparison exam malignancy, 200 exams should be selected, leaving approximately 100 eligible exams.

Sort your cases into those with and without a relevant comparison exam. The number of cases with a relevant prior exam becomes your metrics denominator. Then code each of these cases as having availability of a relevant comparison examination in the PACS (or film files), documentation of the comparison date (and type) in the current examination report and documentation of change or lack thereof from the prior examinations in the current examination report. Each of these three variables becomes the numerator of the specific metrics.

A tally sheet may be useful, to include radiologist name, subspecialty (if applicable), presence or absence of relevant comparison examination in the PACS (or film files), documentation of the comparison date (and type) in the current examination report and documentation of change or lack thereof from the prior examinations in the current examination report.

## **Data Analysis**

The goal is to achieve high compliance with this practice. There may always be cases for which some deviation from the policy is appropriate, such as lack of access to images for comparison due to unavoidable technology issues (PACS failure, CD won't open), so 100% compliance may not be possible. It is reasonable, however, to set a goal of 0 for documenting comparison date (and type) in the current examination report, and documenting change or lack thereof from the prior examinations in the current examination report.

## **Factors Potentially Influencing Performance**

After analyzing the data, identify metrics where there is room for improvement. Reflect on your setting and practice and identify factors that may have influenced your results. Then, design an intervention intended to improve performance.

Possible contributors may include:

1. Not recognizing the value of other comparison examinations types other than the same examination type being interpreted. This might include a lung nodule that may be visible on a thoracic spine CT or abdominal CT and may be directly relevant to the interpretation of a current chest CT, or the value in reviewing an ultrasound of the liver when reading a current abdominal MR. An appropriate intervention might be an educational program for individuals or a group practice to understand the value reviewing the comparison examinations have in rendering an interpretation and diagnosis.
2. Perceived as not adding value and taking too much time. An appropriate intervention might be an educational program reviewing the value gained from adherence to this practice and standard of care (see ACR Practice Guideline)
3. Concern about where to put this information in the radiology report or voice recognition concerns about recognizing dates. Suggest creating standard templates with a field for comparison exam date/type to be completed as part of the process of reading cases.
4. Operational issues, including lack of access to older comparison examinations on the PACS archive or film library, lack of completed prior examination lists on RIS and/or PACS, lack of inability to open/load CDs containing examination data to PACS or local PC. Appropriate interventions should be targeted at the specific operational issues, such as:
  - a. Loading older examination data to the PACS archive
  - b. Working with staff to identify examinations with relevant comparisons to load to the PACS and/or pull prior films
  - c. Working with IT to reconcile examination lists in RIS and/or PACS for completeness
  - d. IT solutions to load CDs or to receive data directly from outside facilities

## **Post Intervention Data Collection**

Plan to collect data again six months after baseline and then every six months for the duration of the project (one to three years is typical). In the interim, implement your intervention.

Make sure that cases are collected, tallies are performed and metrics are analyzed the same way as at baseline. The only exceptions to this would be to adjust the number of cases identified if more cases are needed for analysis or to correct a problem identified with the baseline data collection procedure. If so, once the procedure has been corrected use it consistently going forward.

You may want to make a chart or graph of your performance on the metrics to identify trends and patterns. Review the data with your project team after every six month collection period.

If you are meeting your goals, no further changes may be necessary. However, you should plan to take steps to institutionalize whatever changes contributed to successful performance. If additional improvement is possible, look at your processes again and design additional interventions. It is generally best to only make one intervention per study cycle so that conclusions can be drawn about what caused the observed effect.

Once performance has stabilized or you feel the project is well underway, consider selecting and launching another PQI project.