



**QUALITY**

# **Quality Report 2014**





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## Mission

To be leaders in medical imaging and intervention through clinical excellence, advanced technology, innovation, and research, and to serve our patients and referring clinicians in a collegial work environment.

## Vision

To be nationally recognized as a premiere provider of service oriented patient care using medical imaging, image guided intervention, and state-of-the-art technology.

## Values

- Service:** We are committed to providing excellent service and compassionate care with responsible stewardship of our resources and traditions.
- Integrity:** We honor commitments and maintain the highest standards of behavior.
- Quality:** We pursue excellence in patient care and service.
- Innovation:** We improve quality of imaging services by adopting new technology and participating in research.
- Equity:** We strive for equality of effort and benefit.



## Overview

- Assuring Our Quality.....7**
  - Completing Process Improvement Projects**
    - Improving Urinary Tract Visualization
    - Reducing Time to Obtain Images for Stroke Patients
    - Improving the Dosing of Nuclear Medicine Treatment
  - Partnering with Strategic Radiology**
  
- Experiencing Our Care.....11**
  - Improving Patient Satisfaction**
    - Measuring Net Promoter
    - Delivering Results in Minutes
  - Increasing Our Referring Provider Satisfaction**
  
- Examining Our Performance.....15**
  - Keeping Pace at Scottsdale Lincoln Health Network**
    - Providing Timely Hospital Care
    - Ensuring Favorable Clinical Results
    - Providing *Right Test, Right Patient, Right Time*
  - Utilizing Data to Manage Our Imaging Centers**
    - Delivering Timely Imaging Center Care
    - Talking to Our Patients
    - Leading the Industry in Technologist Productivity
  
- Evaluating Our Radiologists.....21**
  - Monitoring Key Mammography Indicators
  - Quantifying Thyroid Diagnostic Yield
  - Conducting Peer Review**
    - Utilizing *CaseExplorer*
  - Generating a Physician Accountability Report**
    - Conducting Radiologist Reviews

## Continuing Our Work





## Assuring Our Quality

SMIL radiologists and staff are committed to ensuring personal excellence. As technologies, medical research, and care-delivery methodologies progress at a rapid pace, we recognize that lifelong learning is integral to our continued success in delivering high quality services.

As such, SMIL radiologists participate in the American Board of Radiology (ABR) Maintenance of Certification (MOC) which requires more continuing professional education hours annually than is normally required to maintain an active license and requires periodic ABR administered testing.

Often a radiologist will not see or interact with patients who come to us for imaging services. When our radiologists do perform a procedure, we strive to follow the outcomes as completely as possible.

Additionally, all radiologists participate in a formal process improvement project each year within their respective clinical subspecialty. In 2014, a combination of eight individual and group projects were completed with the assistance of our two masters' level trained quality and process improvement experts. Three examples of that work are showcased.



## Completing Process Improvement Projects

### Improving Urinary Tract Visualization:

SMIL body imaging radiologists identified that standard positioning of patients results in high-quality visualization of the ureters and bladder in approximately 56% of cases. A test of change was implemented whereby the patient was positioned lying on their stomach for part of the imaging procedure, instead of the standard positioning of lying on their back.

The process improvement results in a statistically significant increase in high-quality visualization of the ureters and bladder in 86% of cases, using the same amount of radiation.

Standard Position	New Position
Exams where the ureters were highly visualized:	
78%	86%
Exams where the bladder was highly visualized:	
61%	100%
Exams where ALL structures were highly visualized:	
56%	86%

From the start, the team was achieving this standard 85% of the time. In the improved process, the paramedics transport the patient directly to the radiology department for imaging and then to the ED for further evaluation, which meets the standard 90% of the time. Most significantly, this increases the percent of patients that have their imaging completed in less than or equal to 15 minutes from 45% to 62%.

### Reducing Time to Obtain Images for Stroke Patients:

Working with a multi-disciplinary team at Scottsdale Healthcare's Osborn Medical Center Level 1 Primary Stroke Center, SMIL's neuroradiologists decreased the time it takes for a patient with a suspected stroke to have a non-contrast head CT upon arriving at the hospital.

The Joint Commission standard is to get 80% of patients from the door of the emergency department (ED) to having the appropriate imaging completed in less than 45 minutes.



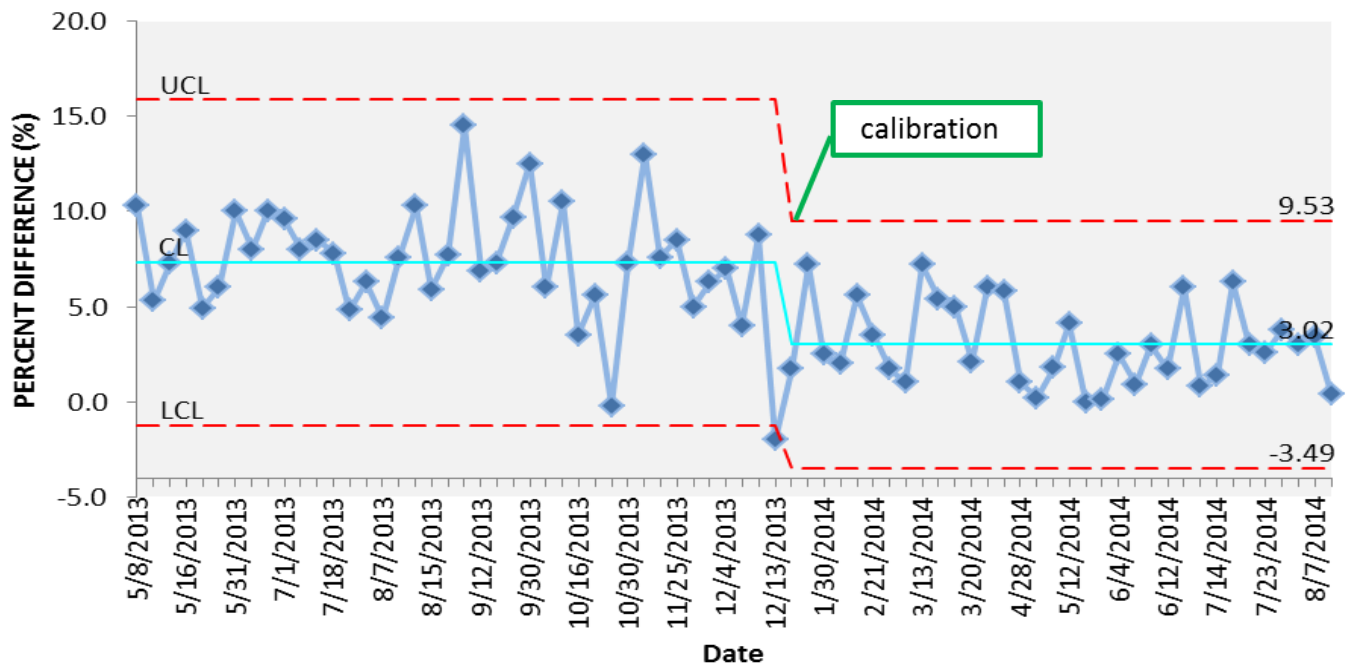
## Completing Process Improvement Projects

### Improving the Dosing of Nuclear Medicine Treatment:

Nuclear medicine radiologists use radioactive Iodine-131 to treat patients with hyperthyroidism. A small amount is swallowed by the patient, it is absorbed into the bloodstream, and it concentrates in the thyroid gland. Once in the thyroid tissue, it begins to destroy the thyroid cells.

The appropriate dose of Iodine-131 needed for each patient is calculated by the treating radiologist, and when it arrives at the imaging center, it is tested with a dose calibrator to confirm the dosage. A small degree of variation between the ordered dose and the received dose is normal and expected. SMIL's radiologists want to ensure that the degree of variation is within the accepted standards at our imaging centers with nuclear medicine departments. Testing and calibrating the dose calibrator as the process improvement intervention yielded excellent results. The average difference between the ordered and received dose fell from 7.6% to 2.9% and no doses differed by more than 10% after the implementation of improved processes.

### PERCENT DIFFERENCE (%)



## Partnering with Strategic Radiology

SMIL is an active member of Strategic Radiology (SR), a national consortium which represents more than 1,300 radiologists and is comprised of large, high quality, clinically-advanced radiology groups that are geographically dispersed throughout the United States.

Through participation in SR, these groups are uniquely committed to a collaborative improvement model in which data and best practices are shared, clinical practice information is interchanged, and certain practice expenses are consolidated. SR's primary goal is to improve value through the development of higher quality, more cost-efficient medical imaging.

Through our internal efforts, and via collaboration with SR, SMIL has established internal best practices and benchmarks that are unavailable to the rest of the radiology community.



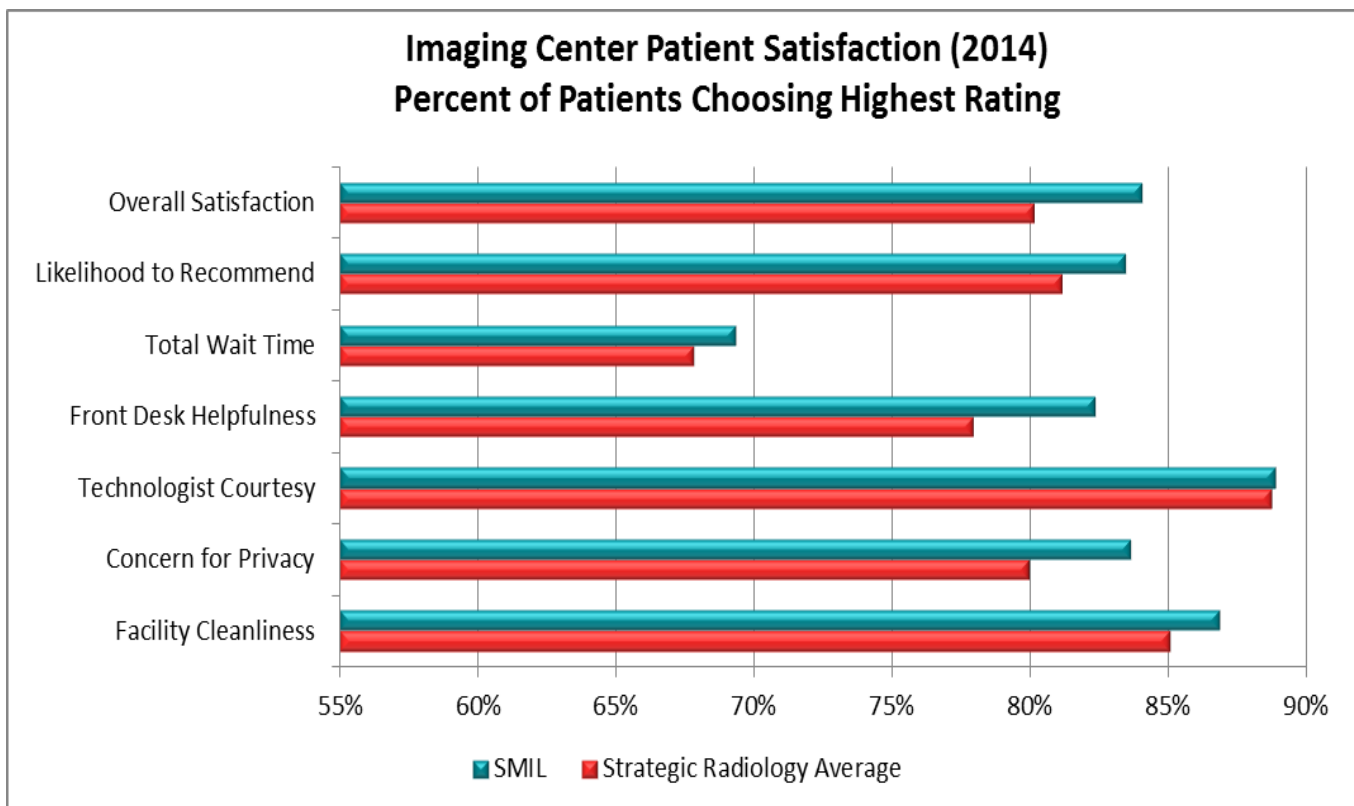
SR formed the first radiology specific national Patient Safety Organization (PSO) in 2013. The PSO model allows individual practices and hospitals to share quality and patient safety data in a confidential yet transparent manner that fosters improvement in outcomes through identification and reduction of risks and hazards in healthcare delivery.



## Improving Patient Satisfaction

We resolutely pursue excellence in patient experience and service, and we measure our progress via our Press Ganey Patient Satisfaction Survey. Over 2,200 of our outpatient imaging center patients complete the 16-question on-line survey each month. Our management team identifies compliments and investigates complaints on an ongoing basis. We perform root-cause analysis on responses from displeased patients and use this information to drive innovation in our care processes. In addition, benchmarking with Strategic Radiology enables us to identify and adapt best practices from other leading imaging facilities around the country.

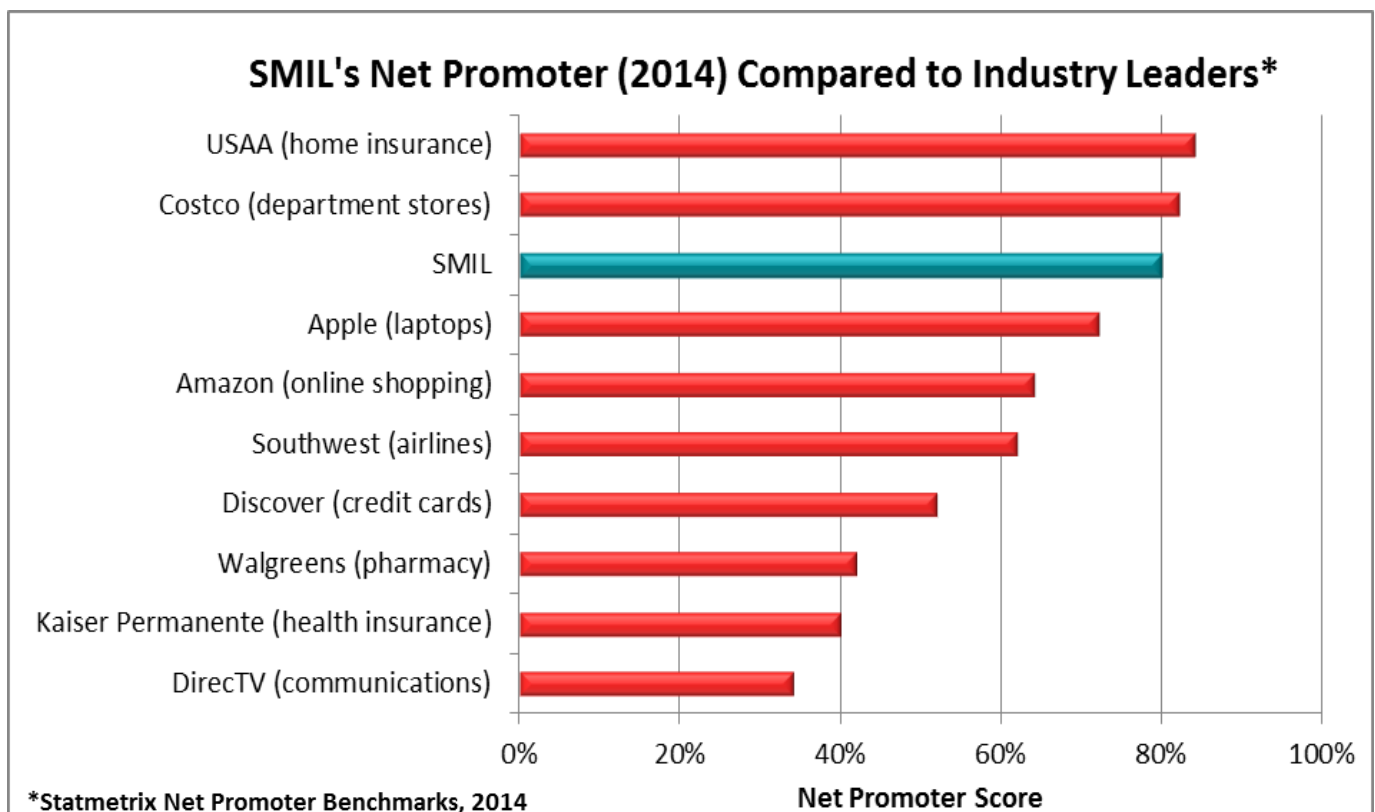
*96% of our patients are satisfied with their appointment date and time*



## Improving Patient Satisfaction

### Measuring Net Promoter:

A key indicator of excellent patient experience is the Net Promoter (NP) score. This score is a widely recognized metric that reflects the likelihood of a customer to recommend a service provider to a friend or family member. Our survey questions are on a standard 5-point scale, with 5 being very good and 1 being very poor. Patients who give us a score of 5 on the likelihood to recommend question are SMIL's loyal enthusiasts, or *promoters*. Those who give us scores of 1, 2 or 3 are *detractors*. The NP is calculated by simply subtracting the percent of patients who are detractors from the percent who are promoters.



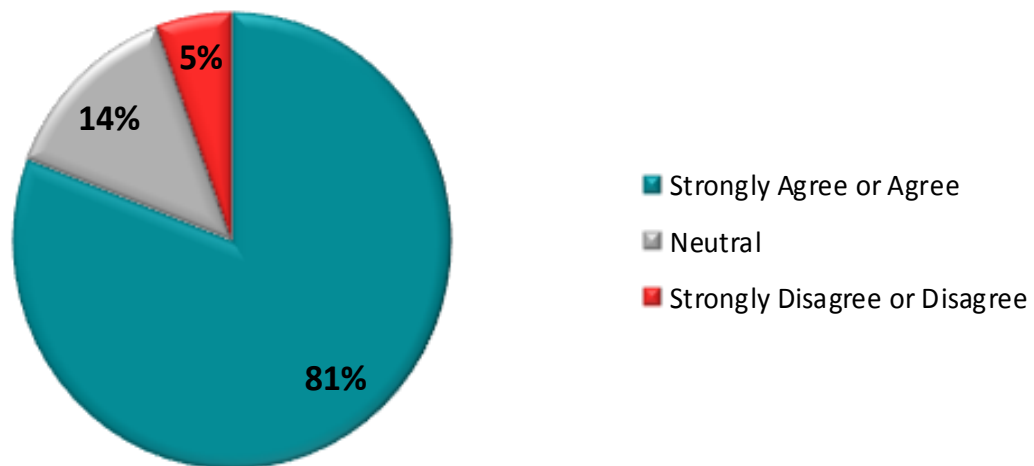
## Improving Patient Satisfaction

### Delivering Results in Minutes:

Our Patient Satisfaction Surveys are also used to assess the impact of operational changes. Realizing that waiting days to find out the results of a screening mammogram induces significant patient anxiety, we tested the impact of verbally providing results to the patient within minutes of the exam completion. Survey results from 12,000 women revealed a highly favorable reaction to knowing their results before ever leaving our offices. We continue to offer near instantaneous results to all screening mammogram patients who chose a brief wait.



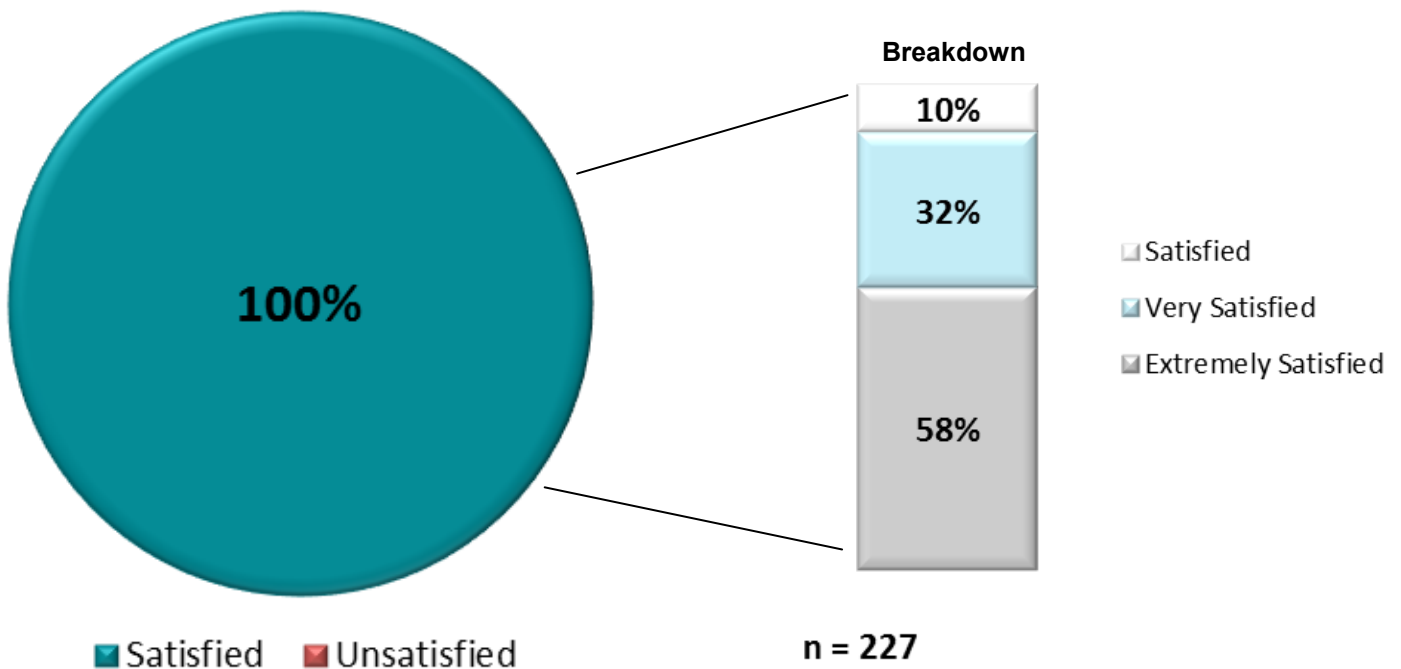
### Receiving My Results within Minutes is the Reason I Choose SMIL (2014)



## Increasing Our Referring Provider Satisfaction

Our fellowship-trained, subspecialized radiologists partner with referring providers to provide high quality, patient-centered care. In addition to engaging in ongoing collaborations with our referrers, SMIL conducts a satisfaction survey every two years to assess how providers in our local healthcare community rate our performance. Doing so identifies opportunities for improvement. Our most recent survey indicates that 100% of our referring providers are satisfied with SMIL, with 90% being extremely or very satisfied.

### Referring Provider Satisfaction Bi-Annual Survey Results (2013)



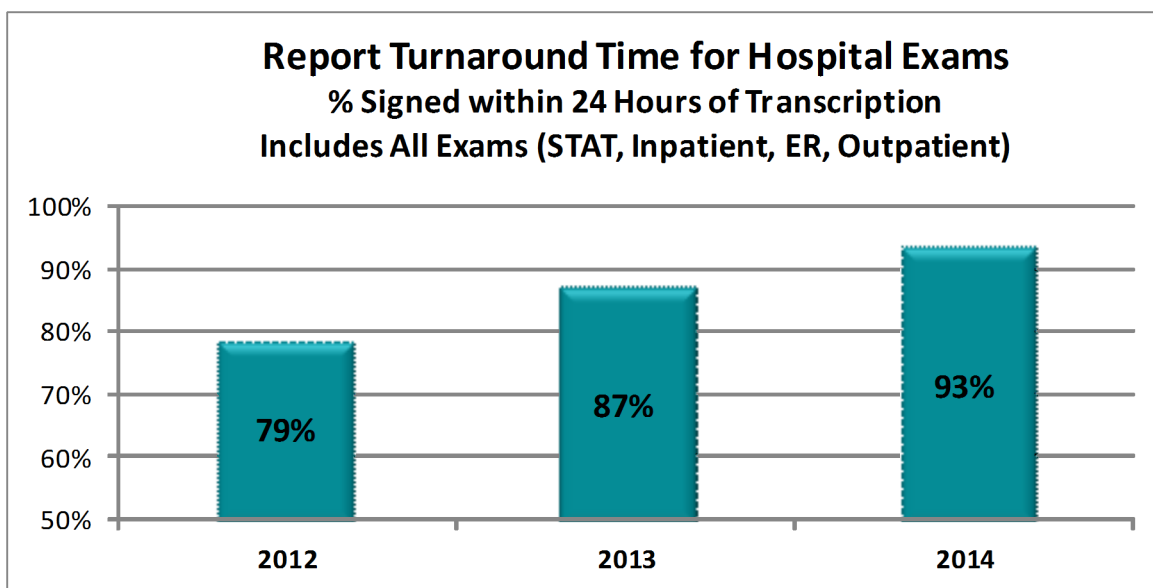
## Keeping Pace at Scottsdale Lincoln Health Network

SMIL has a long-standing, excellent relationship with Scottsdale Lincoln Health Network. SMIL provides sole professional services for three of the network's hospitals and works diligently with the quality professionals and other healthcare providers within the healthcare system to monitor and successfully achieve high standards of patient care.



### Providing Timely Hospital Care:

Report turnaround time (TAT) data has been collected and monitored at SMIL for several decades. Technological advances have made it possible for nearly instantaneous reporting, and SMIL has risen to the challenge to meet and exceed increased expectations. Though the speed may have changed as we move from traditional transcription models to voice recognition software, the value placed on an accurate and timely reports remains a major driving force behind the satisfaction of our customers.



## Keeping Pace at Scottsdale Lincoln Health Network

**Ensuring Favorable Clinical Results:** SMIL tracks the outcomes of biopsies performed by our radiologists at Osborn, Shea and Thompson Peak Medical Centers to ensure that pathologists are able to make diagnoses.

### Quarter 4 2014: Percutaneous Needle Biopsy Yields

Biopsy Site	Diagnostic Success Rate (%)	National Average (%)
Thoracic / Pulmonary	92.8	89
Musculoskeletal	97.2	82
Other Sites	94.7	89

We also monitor the accuracy of our interpretations on patients that undergo surgery.

### Quarter 4 2014: Radiology/Pathology Correlation for Appendicitis

SMIL Radiologist Diagnoses Appendicitis	Proven Cases of Appendicitis	Diagnostic Accuracy (123 of 127)
127	123	96.9 %

As a means of monitoring what can be a serious problem in patients with weakened immune systems due to chemotherapy, a chest port removal review is done annually.

### 2014: Chest Port Placement and Removal Within 30 Days Due to Infection

Published Literature Infection Rate	2012	2013	2014
1.0%	0.83%	0.84%	0.82%



## Keeping Pace at Scottsdale Lincoln Health Network

### Providing *Right Test, Right Patient, Right Time*:

The Center for Medicare & Medicaid Services (CMS) wants to ensure that the right test is given to the right patient at the right time, and we at SMIL could not agree more. As part of their Hospital Outpatient Quality Reporting Program, CMS has created several Outpatient Imaging Efficiency (OIE) measures aimed to promote high-quality, efficient care with a careful eye to reduce unnecessary exposure to contrast material and/or ionizing radiation.

In particular, three OIE measures include decisions and work flows that directly involve SMIL's radiologists:

#### **OP-10: Abdomen CT Use of Contrast Material**

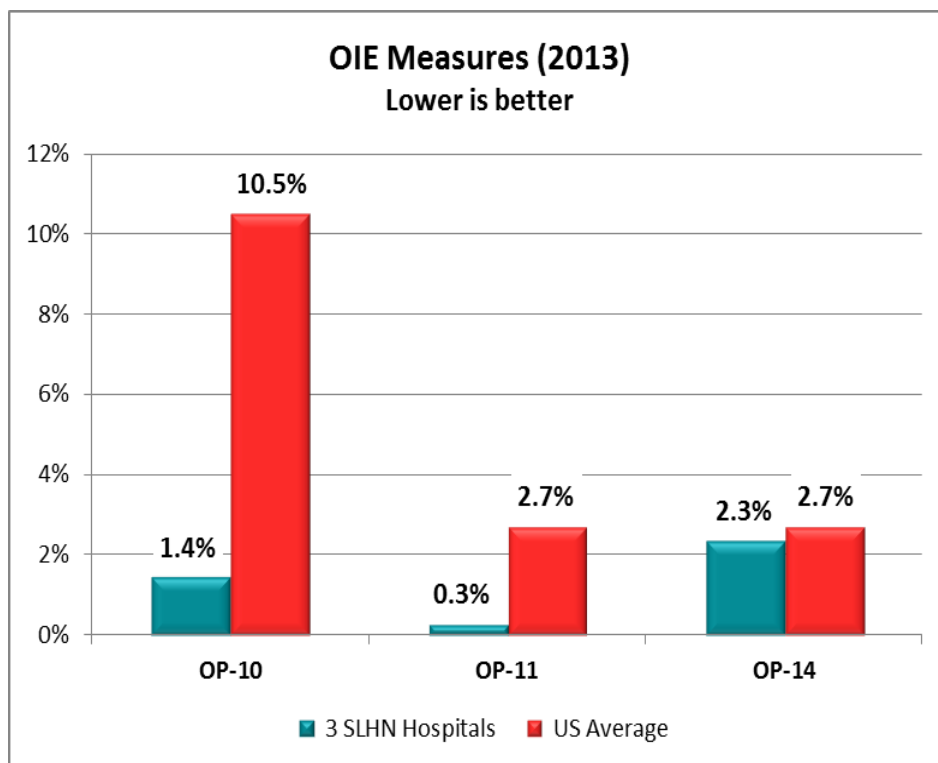
Percentage of abdomen studies that are performed with and without contrast out of all abdomen studies performed.

#### **OP-11: Thorax CT Use of Contrast Material**

Percentage of thorax studies that are performed with and without contrast out of all thorax studies performed.

#### **OP-14: Simultaneous Use of Brain CT and Sinus CT**

Percentage of Brain CT studies with simultaneous Sinus CT (performed on same day at same facility).



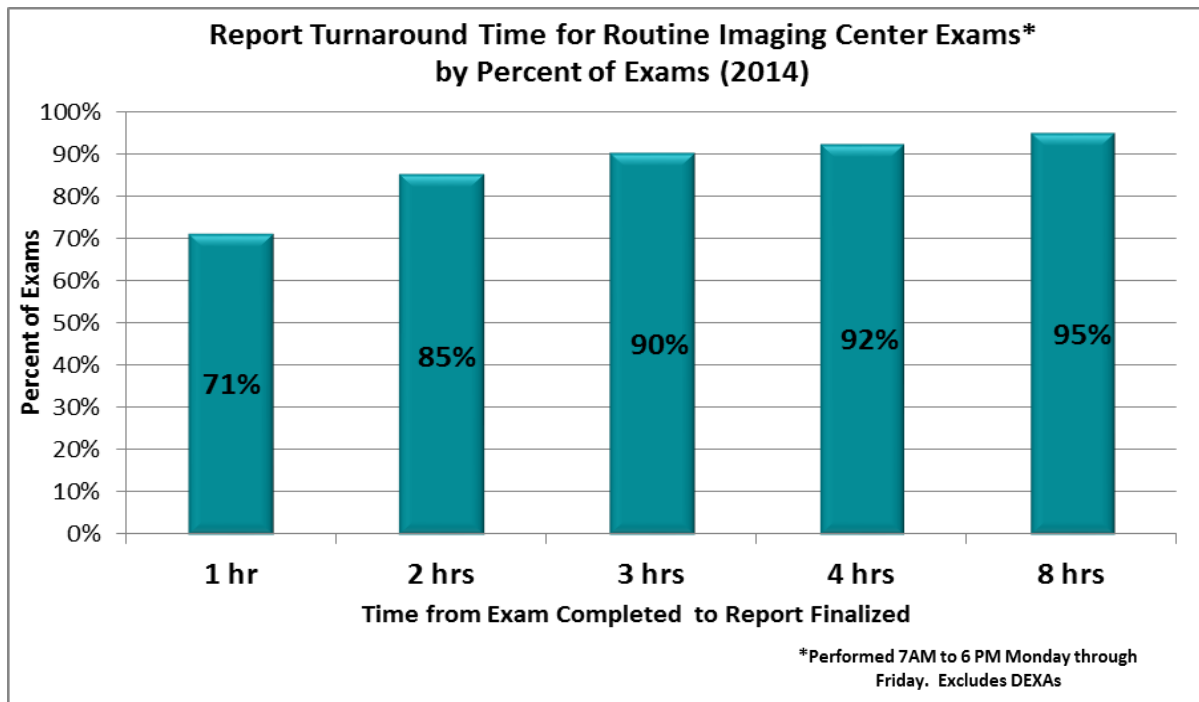
## Utilizing Data to Manage Our Imaging Centers



SMIL's approach to business decisions mimics the approach we take with quality efforts. We collect quantifiable data, frame our questions putting the patient's needs first and then use that information to drive changes.

### Delivering Timely Imaging Center Care:

In our outpatient facilities, SMIL made the transition from traditional transcription to voice recognition in 2010. This enabled our practice to significantly decrease report turnaround time, the time it takes from after the images are captured and processed to when the radiologist is done creating and editing the report so it is available for the patient or referring provider.

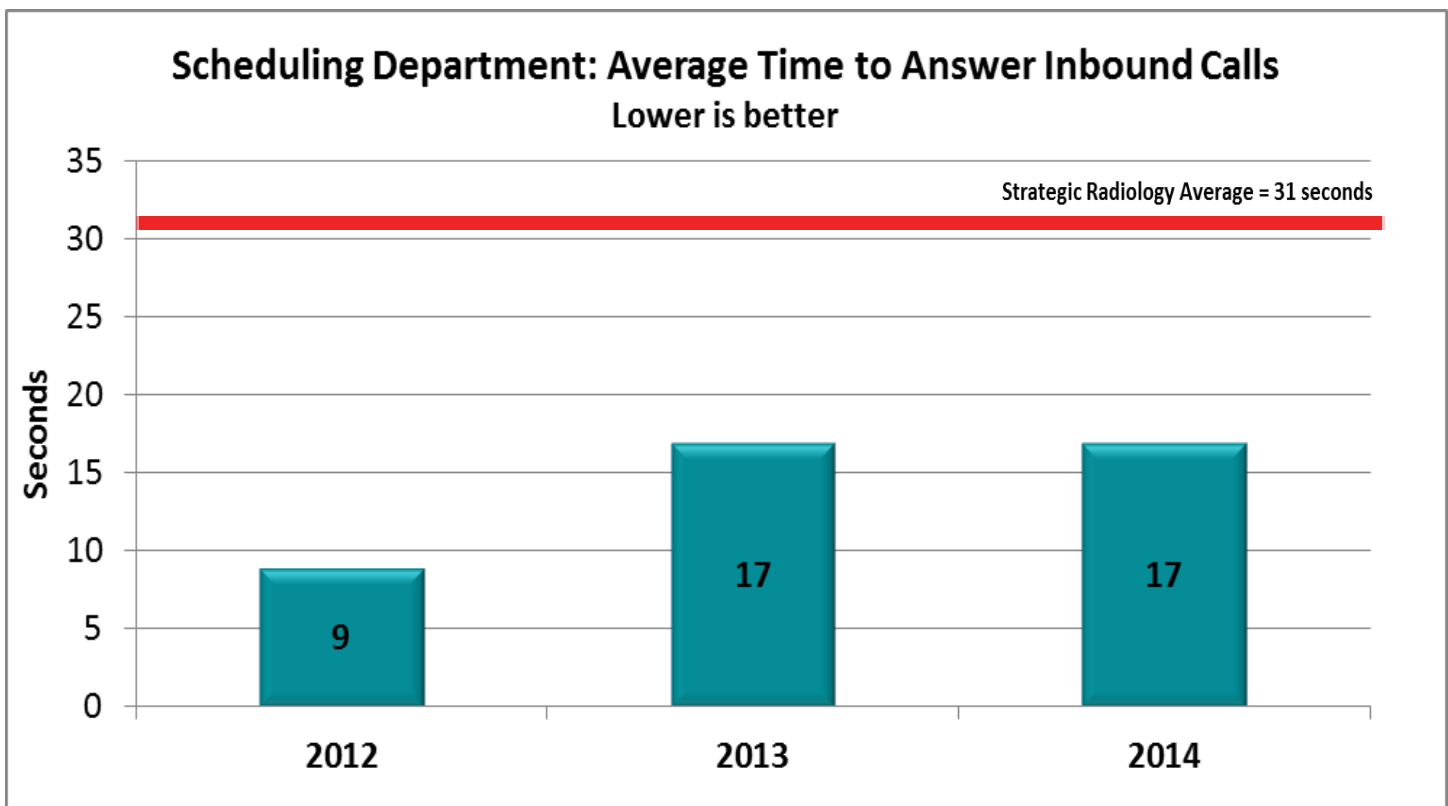


## Utilizing Data to Manage Our Imaging Centers

### Talking to Our Patients:

Several years ago we had an unacceptably high abandon call rate and a high average time to answer a call, both of which were adversely affecting our exam volume. After multiple process improvement cycles, we were able to lower the abandon call rate. We achieved this through a combination of adjusting staffing and altering workflow processes.

Most importantly, we've maintained our gains. Our average time to answer an inbound call is approximately 17 seconds, and our abandoned call rate is approximately 2.6%. Participating in Strategic Radiology has enabled us to compare these and other operational metrics with similar practices, and to share learning experiences and novel workflow solutions.

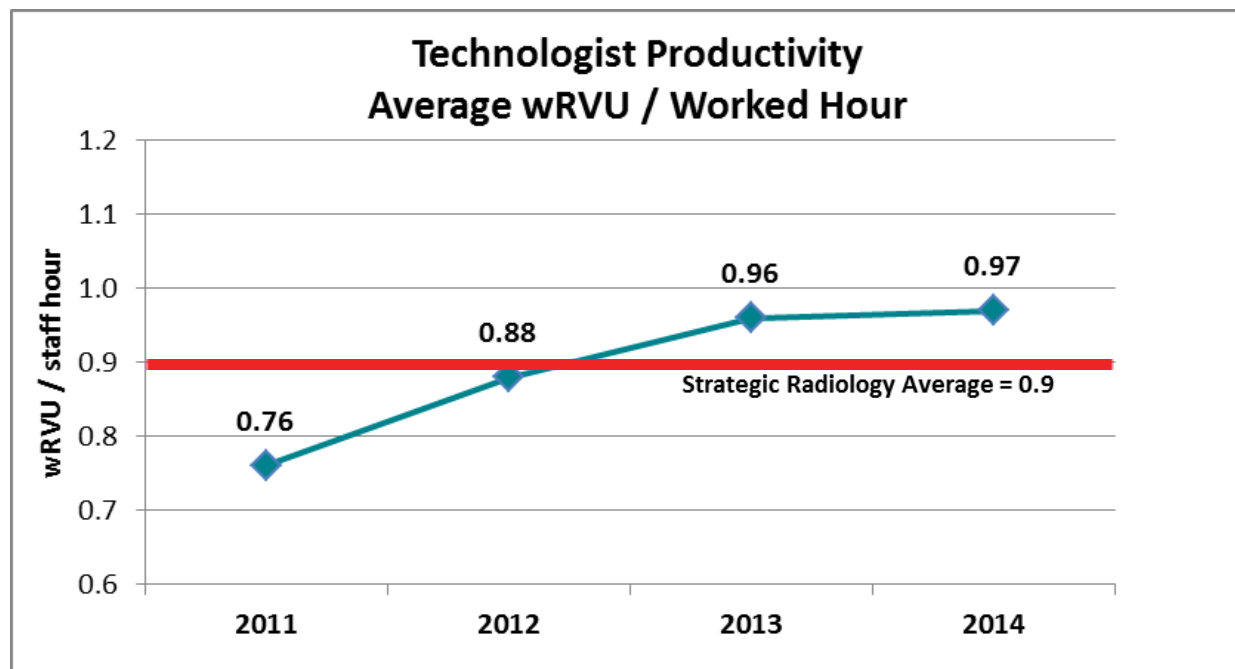


## Utilizing Data to Manage Our Imaging Centers

### Leading the Industry in Technologist Productivity:

In order to quantify the productivity of our clinical workers, we borrowed the point system usually used to measure physician productivity called the Worked Relative Value Unit or wRVU. By attributing each imaging study done by a technologist to the wRVU for that exam, we are easily able to measure the average wRVU's produced by a technologist for each hour they work.

Once baseline data was established for each imaging modality, a detailed observation process allowed us to observe the similarities and differences between high and low-producers. We made operational changes to help increase efficiency, for example reducing the time allotted to complete an exam. The metrics also help us demonstrate to each individual where they stand among their peers and set team expectations of productivity.

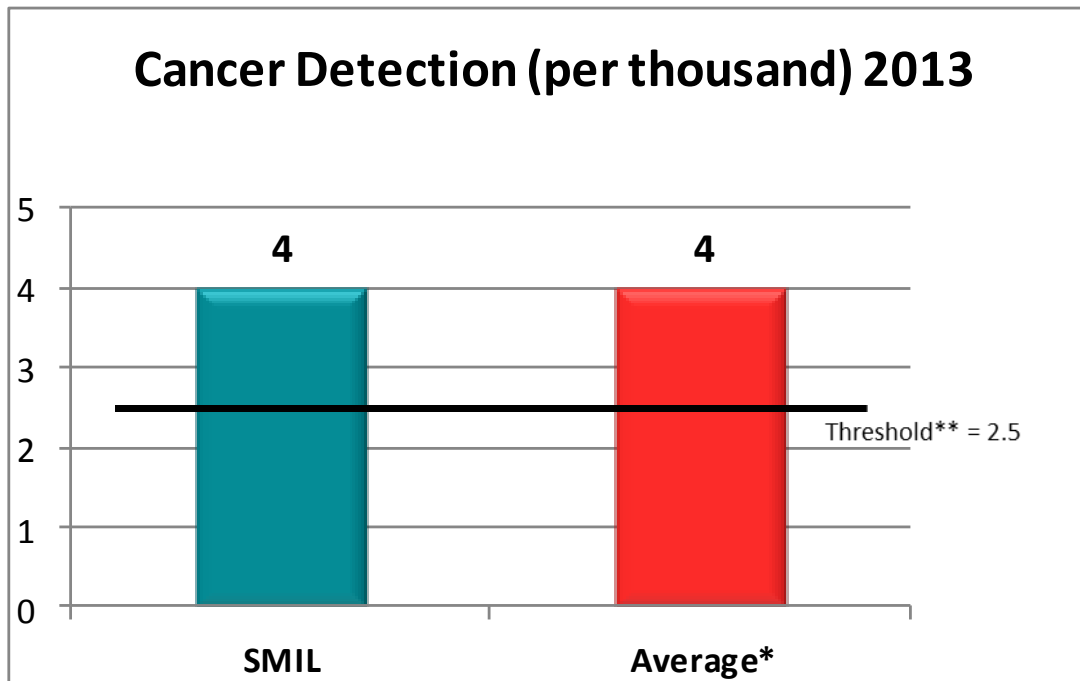




## Monitoring Key Mammography Indicators:

SMIL has complied with and exceeded the requirements of the Mammography Quality Standards Act (MQSA), as regulated by the Food and Drug Administration (FDA), since the final regulations became effective in 1994. In addition to adhering to MQSA standards, SMIL voluntarily obtained accreditation as an American College of Radiology Breast Center of Excellence in 2009. Additionally our board-certified mammographers regularly review key patient outcome metrics associated with providing the highest level of breast care.

**Cancer Detection Rate:** The cancer detection rate is comprised of the number of cancers correctly identified by the screening mammogram interpretation.

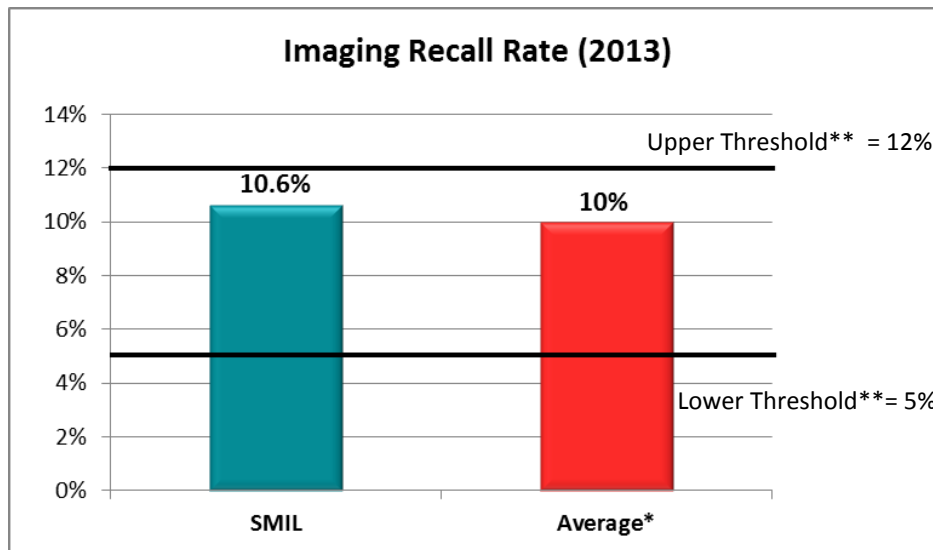


\*Rosenberg, RD, et al. Performance benchmarks for screening mammography. *Radiology*, Oct 2006;241(1):55-66.

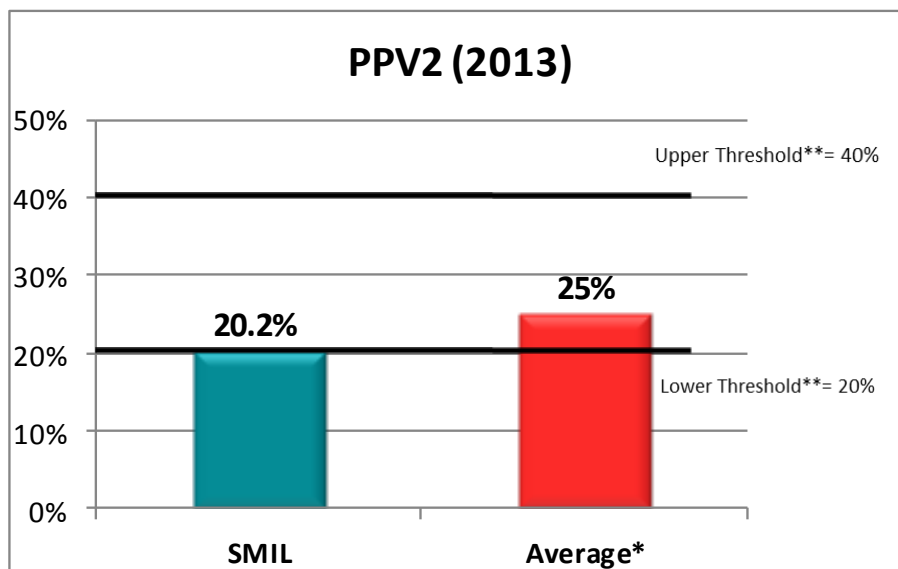
\*\*Carney, Patricia A, et al. Identifying Minimally Acceptable Interpretive Performance Criteria for Screening Mammography. *RSNA*, 2010



**Imaging Recall Rate:** The screening mammogram callback rate refers to the number of patients who are advised to have a diagnostic mammogram following interpretation of their screening mammogram.



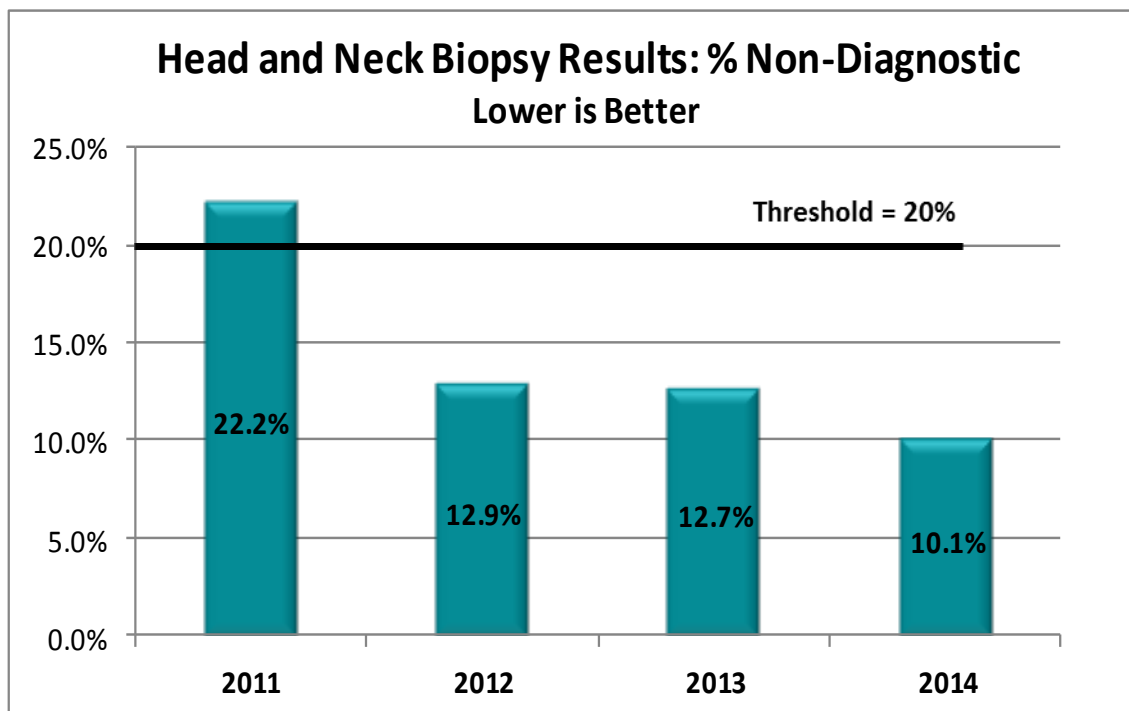
**PPV2:** The positive predictive value (PPV2) is the percentage of all positive mammograms where a biopsy was recommended and that result in a cancer diagnosis within one year.



## Quantifying Thyroid Diagnostic Yield:

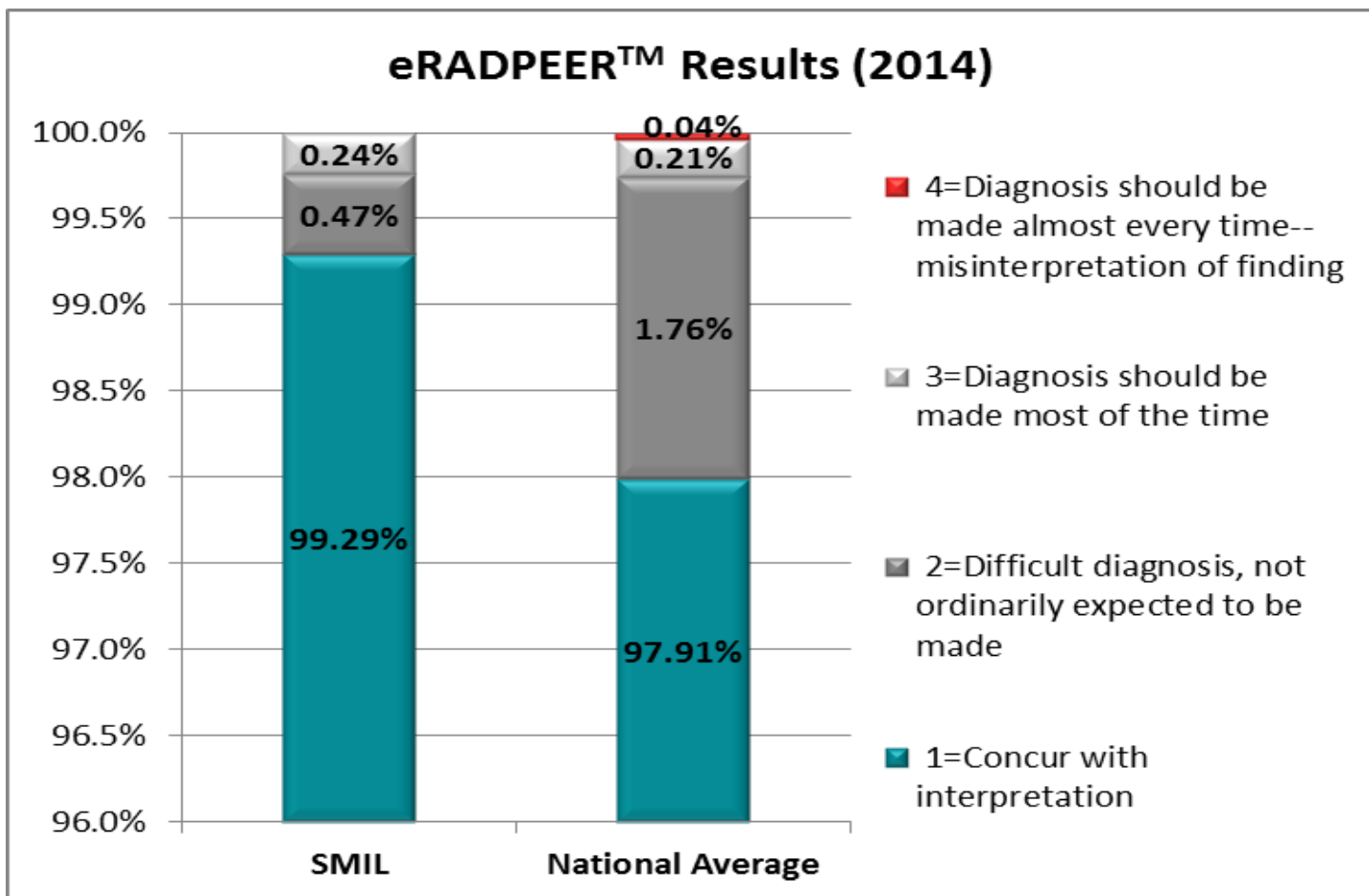
When evaluating the accuracy of the percutaneous head and neck biopsies done at our outpatient imaging centers, we focus primarily on diagnostic yield. In order to bring the focus to a larger scale, the percent of diagnostic and non-diagnostic percutaneous head and neck biopsies is tabulated each month and sent to the peer-elected physician head of the ultrasound section who reviews the data for any trends or outliers. We currently have a 10.6% overall non-diagnostic rate, which is better than the accepted national benchmark threshold of 20%.

Several process improvements have been implemented based on this data, including physician-to-physician mentoring, direct collaboration with pathologists to standardize slide preparation, and reduction of the timeslots required for the biopsies.



## Conducting Peer Review

The American College of Radiology developed a web-based peer review program called **RADPEER™** whereby, during the interpretation of current images, a radiologist will review a prior set of images and score the prior interpretation on its accuracy using a standardized scale. A score that indicates there was a clinically significant finding that was not made will result in internal review by our Physician Quality Committee.





## Conducting Peer Review

### Utilizing *CaseExplorer*:

One of the known pitfalls of the RADPEER™ system of randomized review is that only a limited number of cases are reviewed and errors observed in daily practice will not necessarily be included in the dataset.



Published literature on the topic of radiologist errors quote an error range from 3-10%. To counterbalance this, SMIL created a software program, called *CaseExplorer*, to better capture all potential cases where an error is identified during imaging review. Any time a SMIL radiologist identifies an error, opportunity for improvement, or a really outstanding call the case is logged and an electronic message is sent to the radiologist who read the original exam.

Not only does *CaseExplorer* allow for individual feedback and learning, but it also creates a robust database of material that the Physician Quality Committee reviews. The Physician Quality Committee identifies systematic opportunities for radiologist improvement and provides an educational presentation on relevant topics at all six physician group meetings each year.

## Generating a Physician Accountability Report

SMIL expects all radiologists to meet high quality standards, exhibit professional behavior, contribute to the success and growth of SMIL, and work efficiently. To ensure that these standards are met, a Physician Accountability Report (PAR) is generated annually for each radiologist. The PAR is composed of four equally important areas: Behavior, Quality, Citizenship and Productivity. The last three areas are made up of several metrics, examples of each are below.



Area	Items
Quality	Submits cases for peer review
	Completes PQRS projects
Behavior	Meets referring providers' expectations
	Works well with allied health professionals
Citizenship	Contributes to SMIL's success
	Participates in shareholder meetings
Productivity	Signs reports in a timely manner
	Reads cases efficiently

## Generating a Physician Accountability Report

### Conducting Radiologist Reviews:

The Behavior portion of the Physician Accountability Report, is made up of a 360° review for each physician. Input is gathered from fellow radiologists, referring clinicians, our employees, and the hospital radiology staff.

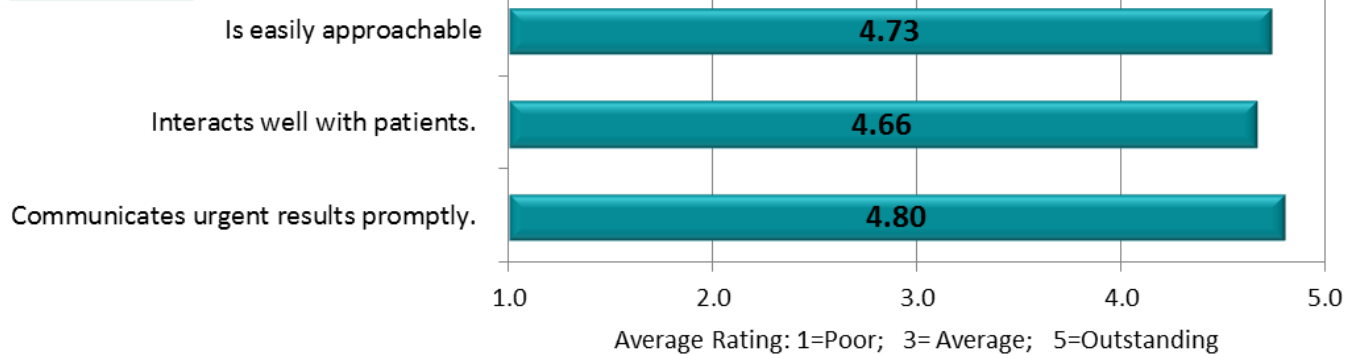


### Radiologist 360° Reviews: Average Scores (2012-2014)

#### Reports:



#### Radiologist:



This report provides a high-level overview of SMIL's commitment to offer the best in patient care and the best in customer service. We meet this commitment by investing in human resources with expertise in Quality and Process Improvement, providing them with the technology infrastructure to do their job, and by constantly cultivating a culture that embraces continuous quality improvement. By actively seeking external collaboration with other national leaders in the realm of quality as it relates to medical imaging and intervention, we are able to refine and accelerate our internal efforts. The results that we are achieving, when benchmarked against national "best practices", are a source of pride in our organization.

However, by its very nature, a quality improvement program is a never ending process. While we have come a long way along the quality journey, and are actually helping to lead the way nationally in collaboration with our Strategic Radiology partners, there is still much work to be done. We have audacious goals, and there are many challenges ahead of us. We view these challenges as opportunities to improve our organization, and in so doing, improve the care we provide to our patients, service we provide to our referring physicians and the value we bring to our partner institutions and community.





**SMIL**  
SCOTTSDALE MEDICAL IMAGING

**SDI** southwest diagnostic imaging