

Scottsdale Medical Imaging Quality Report 2015



SMIL
SCOTTSDALE MEDICAL IMAGING

SDI

southwest diagnostic imaging

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.....	5
Assuring Our Quality.....	6
Physician-Led Process Improvement Projects	
Partnering with Strategic Radiology	
Experiencing Our Care.....	10
Improving Patient Satisfaction	
Increasing Our Referring Provider Satisfaction	
Examining Our Performance.....	14
Keeping Pace at HonorHealth	
Utilizing Data to Manage Our Imaging Centers	
Evaluating Our Radiologists.....	20
Conducting Peer Review	
Physician Accountability Report	
Continuing Our Work.....	26



Affiliates



Assuring Our Quality

SMIL radiologists and staff are committed to ensuring personal excellence. As technologies, medical research, and care-deliver methods 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 mandates more continuing professional education hours annually than normally required to maintain an active license and ongoing testing.

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

Additionally, all radiologists participate in a formal process improvement project each year within their respective clinical sub-specialty. In 2015, five projects were completed with the assistance of our two masters' level trained quality and process improvement experts. Three examples of that work are showcased next.



Physician-Led Process Improvement Projects

Improving Urinary Tract Visualization:

SMIL body imaging radiologists identified that standard compression of patients results in high-quality visualization of the ureters and bladder in approximately 90% of cases. A test of change was implemented whereby a noncompression protocol was followed instead.

The process improvement resulted in high-quality visualization of the ureters and bladder in 100% of cases. In this case reducing the number of imaging series without degrading the quality of the exam will benefit our patients, technologists and radiologists.

Reducing Radiation Dose in IVC Filter Placement:

Baseline
Mean total radiation dose?
3780 μGym²

Post-Intervention
Mean total radiation dose?
741 μGym²

Medical exposure to radiation is becoming frequently discussed in both scientific and lay literature. This project was helpful in providing objective evidence to the interventional radiologist that a low dose protocol significantly reduces radiation dose without impacting quality and safety.

Working with HonorHealth's Scottsdale Shea Medical Center, SMIL's interventional radiologists worked to decrease the total radiation dose patients are exposed to during the placement of an inferior vena cava filter.

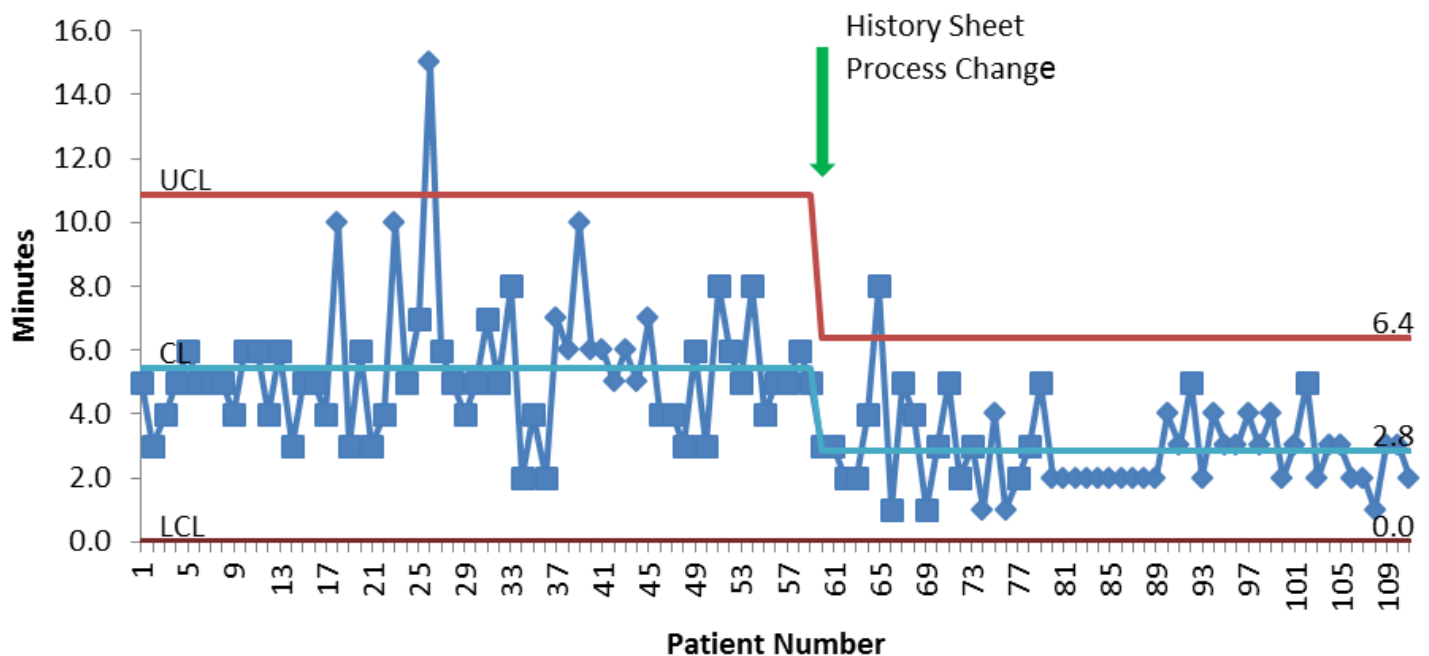
The dose protocol led to an 80% reduction in radiation dose for routine IVC filter placement. Image quality was marginally inferior from an aesthetic standpoint but adequate for safely completing these procedures. The interventional radiologists advocate continuing to develop use the low dose protocol for routine cases.

Physician-Led Process Improvement Projects

Improving Patient Throughput in Nuclear Medicine Treatment:

Patient history forms for hepatobiliary and skeletal scintigraphy at SMIL have been cumbersome to use, requiring the technologists to spend time asking patients rather extensive clinical and historical information. When patients had complicated histories or were poor historians, this process would result in a significant delay in the start of the study. In a busy outpatient setting, this would lead to falling behind on the schedule and delays for other patients. By condensing the history forms to focus on the most relevant clinical information, we observed a significant decrease in the time required to acquire the histories and begin the examinations. This change has been received well by the technologists and it enabled them to have a little more time to explain the examination and make sure that the patient is comfortable and ready to proceed.

Time for Hepatobiliary Hx (X chart)



Partnering with Strategic Radiology

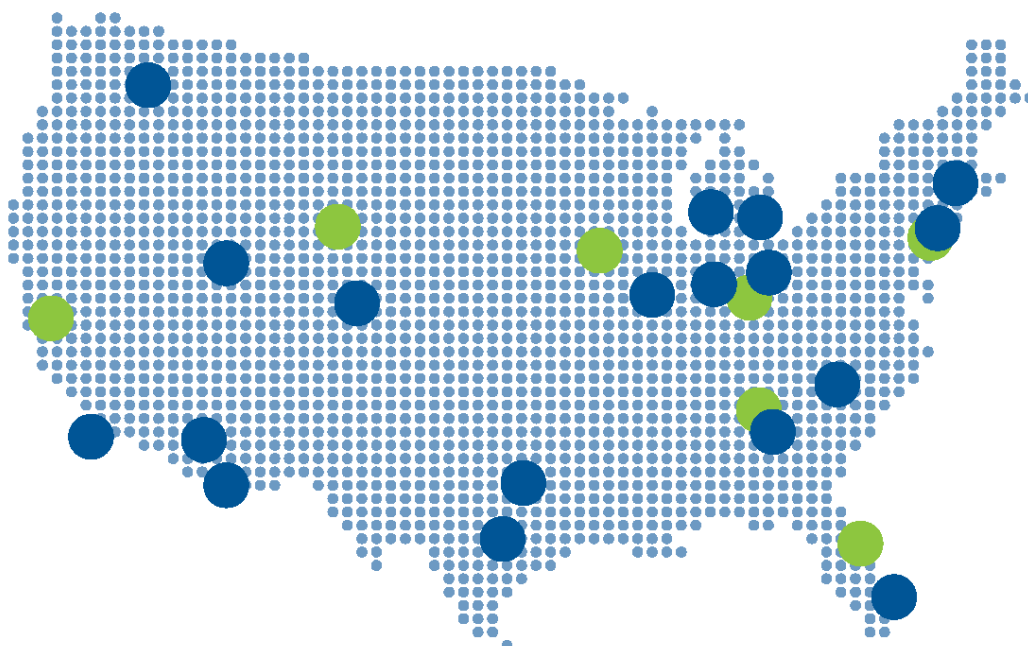
SMIL is an active member of Strategic Radiology (SR), a national consortium which represents more than 1,300 radiologists and is comprised of high quality, clinically-advanced radiology groups that are geographically dispersed throughout the United States.

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.

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.

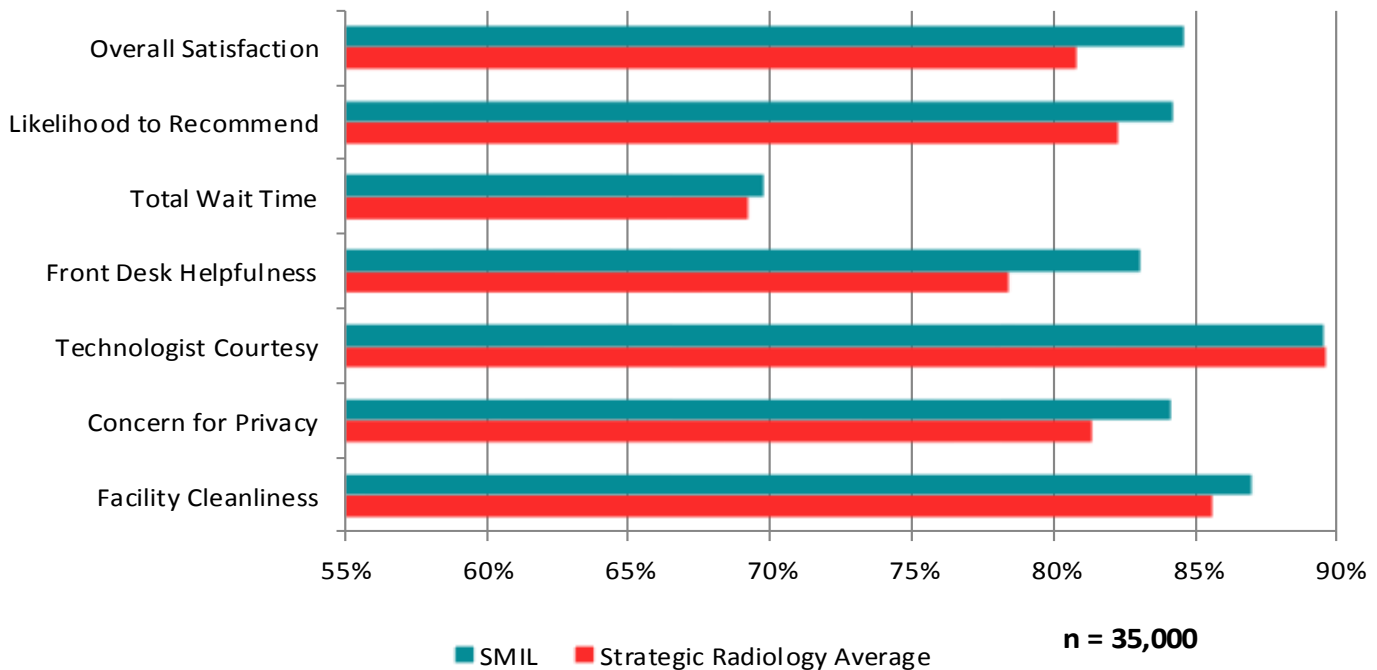


Improving Patient Satisfaction

We resolutely pursue excellence in patient experience and service, and we measure our progress via a Patient Satisfaction Survey. Over 2,500 of our outpatient imaging center patients complete the 14-question online 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

Imaging Center Patient Satisfaction (2015) Percent of Patients Choosing Highest Rating

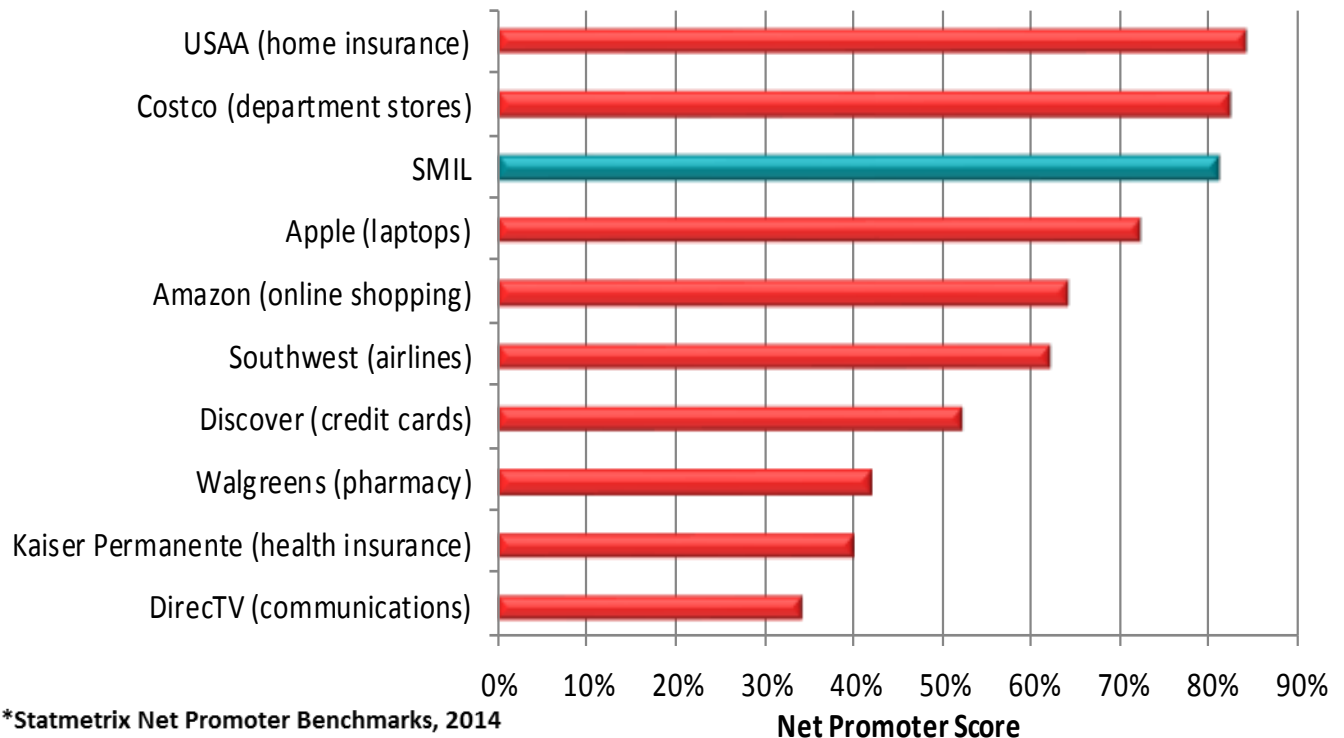


Improving Patient Satisfaction

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.

SMIL's Net Promoter (2015) Compared to Industry Leaders*



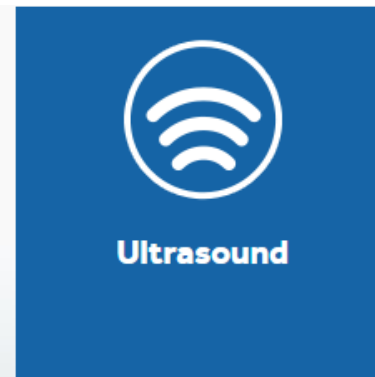
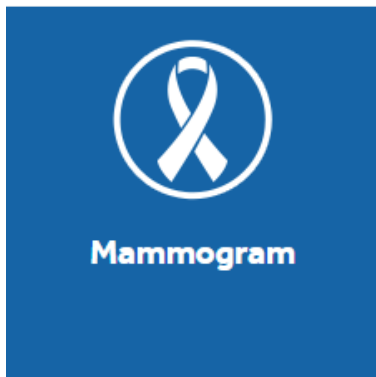
Improving Patient Satisfaction

appointment
avenue



Online Scheduling: In response to feedback we received in our electronic patient satisfaction surveys we collaborated to create an online scheduling tool that SMIL and another division have implemented called Appointment Avenue.

The first version of Appointment Avenue included the ability to self-schedule Mammograms, DEXA and Ultrasound exams. The second version, to be released in early 2016, will add MRI and CT scans.

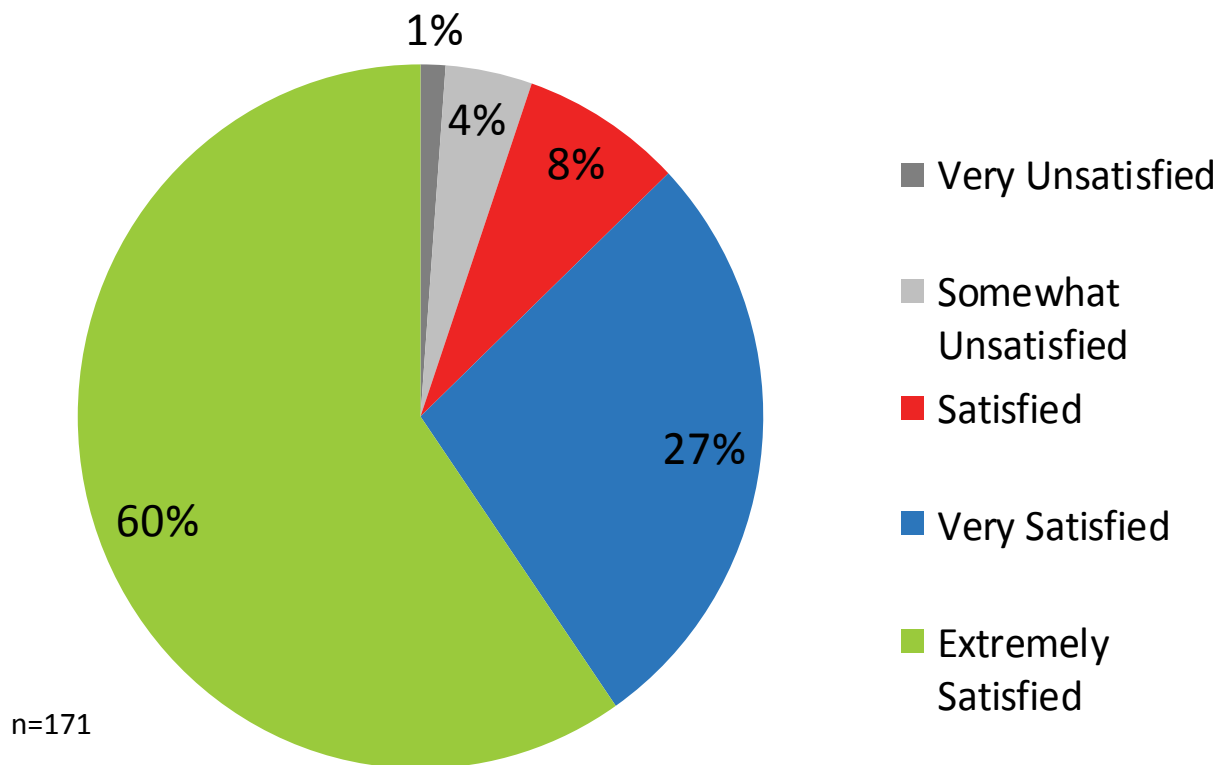


Increasing Our Referring Provider Satisfaction

Our 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. The most recent survey indicates that 95% of our referring providers are satisfied with SMIL, with 87% being extremely or very satisfied.



Referring Provider Satisfaction (2015)



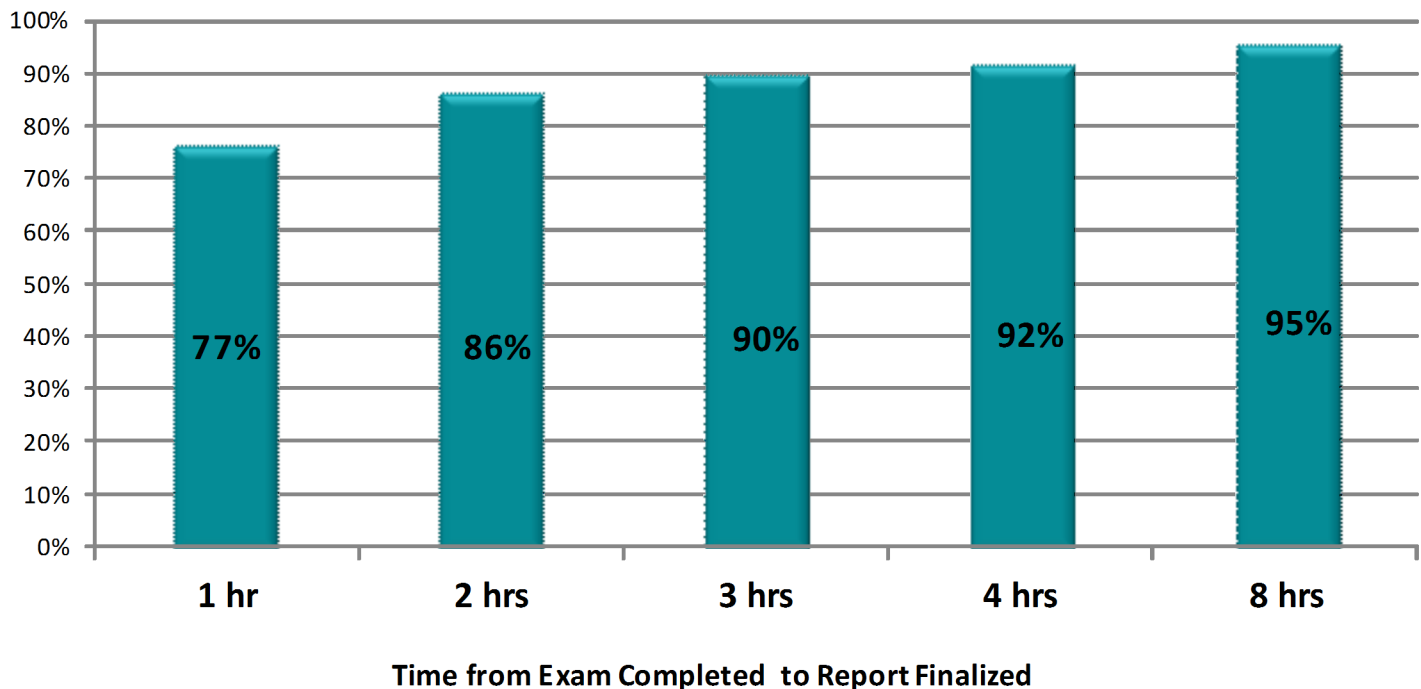
Keeping Pace at HonorHealth

SMIL provides sole professional services for three of the network’s five 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, the value placed on an accurate and timely reports remains a major driving force behind the satisfaction of our customers.

**Report Turnaround Time for Hospital Exams*
by Percent of Exams (2015)
Includes All Exams (STAT, Routine, ER, Inpatient)**



Keeping Pace at HonorHealth

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

Percutaneous Needle Biopsy Yields (2015)

Biopsy Site	Diagnostic Success Rate (%)	National Average (%)
Thoracic / Pulmonary	91.3	89
Musculoskeletal	98.7	82
Other Sites	95.6	89

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

Radiology/Pathology Correlation for Appendicitis (2015)

SMIL Radiologist Diagnoses Appendicitis	Proven Cases of Appendicitis	Diagnostic Accuracy (499 of 483)
499	483	96.8%

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.

Chest Port Placement and Removal Within 30 Days Due to Infection

Published Literature Infection Rate	2012	2013	2014	2015
1.0%	0.83%	0.84%	0.82%	0.47%

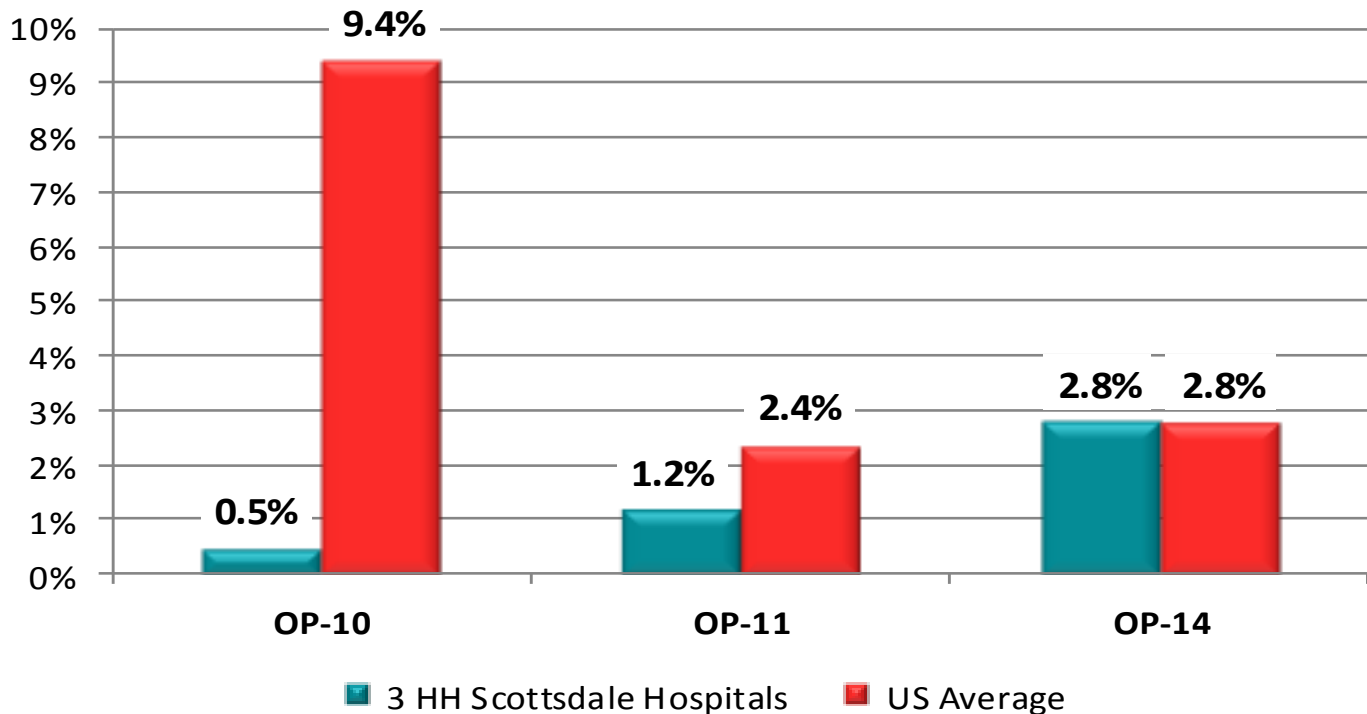
Keeping Pace at HonorHealth

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:

OIE Measures (2014) Lower is better



OP-10: Abdomen CT Use of Contrast Material

OP-11: Thorax CT Use of Contrast Material

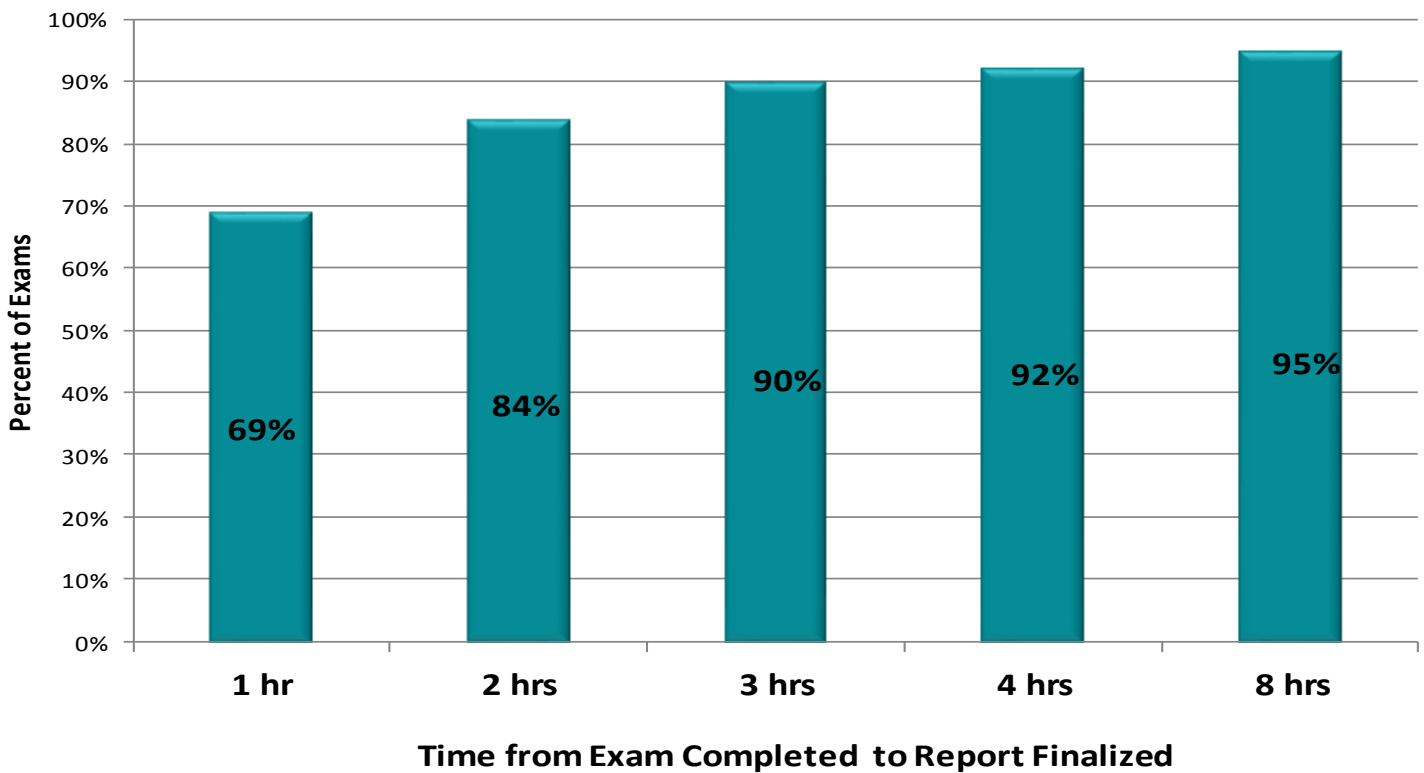
OP-14: Simultaneous Use of Brain CT and Sinus CT

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.

**Report Turnaround Time for Routine Imaging Center Exams*
by Percent of Exams (2015)**



*Performed 7AM to 6PM Mon-Fri, excludes DEXAs

Utilizing Data to Manage Our Imaging Centers

Assuring Quality:

Before a patient enters our imaging center for a study, we take steps to ensure we are doing the **right exam**, for the **right reason**, done the **right way**, at the **right time**.

To further our quality goals, SMIL created a program to review the appropriateness of incoming orders by creating a new workforce member called an Assessment Coordinator (AC). Part authorization/scheduling specialist and part appropriate use auditor, these individuals use our clinical guidelines to identify orders that need to be reviewed. The program began with computed tomography (CT) and magnetic resonance (MR) imaging and has now expanded to include Ultrasound (US) and Mammography.

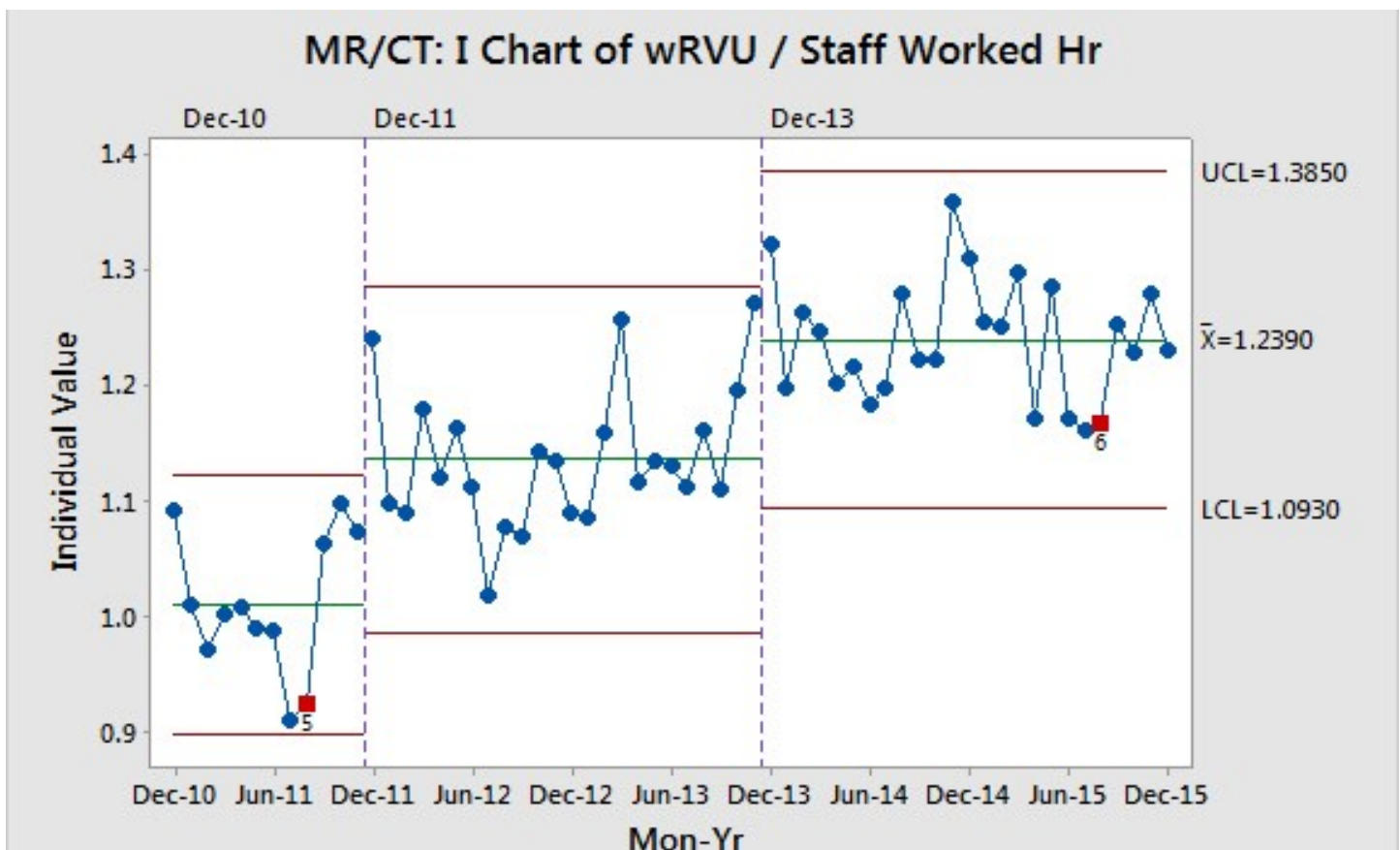
Each AC follows a protocol to systematically look for recent prior studies and review the clinical history. If the requested exam falls outside our guidelines, the AC contacts the referring provider with the goal of clarifying the order or clinical history, notifying them that the same exam was performed recently and offering to provide the results, or to suggest a different exam or exam protocol given the diagnosis or clinical question. We also offer the referring provider the opportunity to speak directly with a radiologist to discuss additional questions about ordering the best exam for their patient.

In 2015, Assessment Coordinators reviewed 89.5% of all MR and CT exams for appropriateness prior to them done in our imaging centers.

Leading the Industry in Technologist Productivity:

In order to quantify the productivity of our clinical workers, we applied the point system 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, we are easily able to measure the average wRVU's produced by a technologist for each hour they work.

After establishing baseline data for each imaging modality, a detailed observation process allows us to observe the similarities and differences between high and low-producers. We make 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.



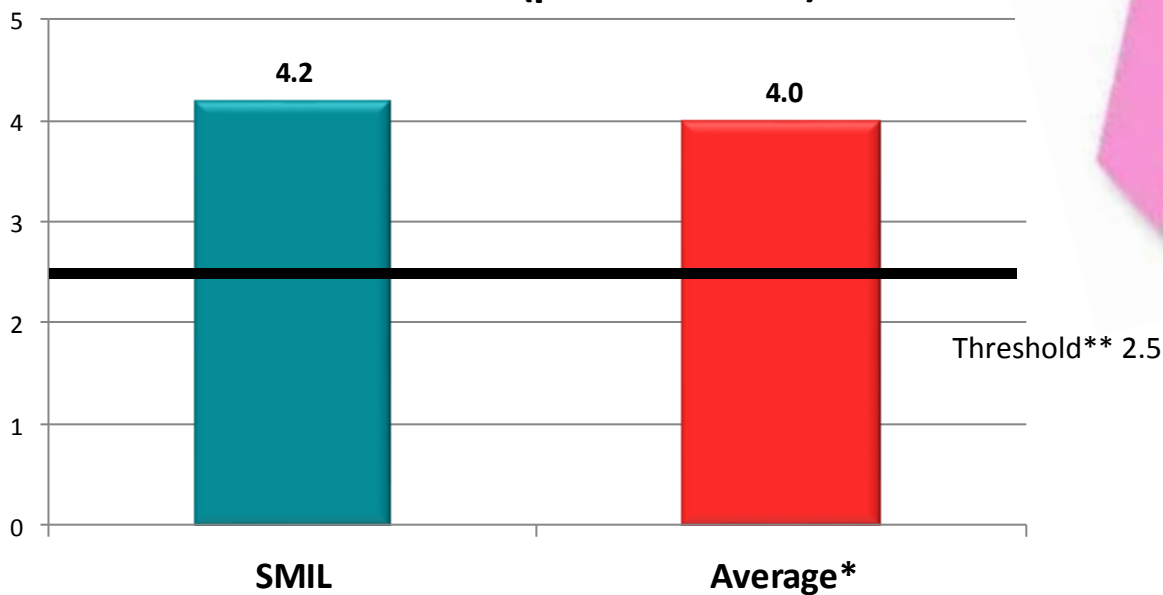
Monitoring Key Mammography Indicators:

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 screening mammogram.



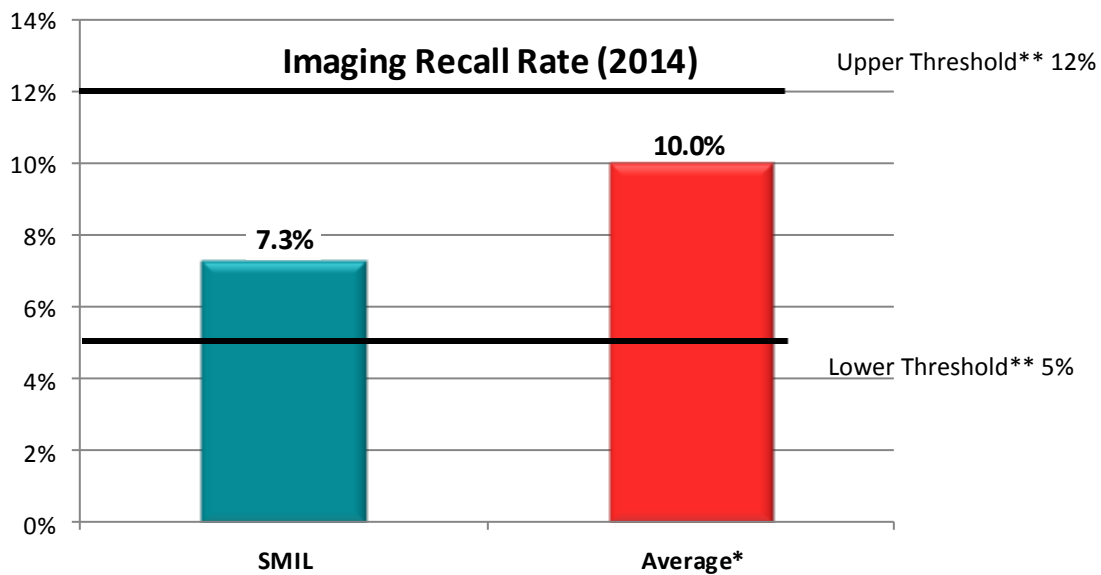
Cancer Detection (per thousand) 2014



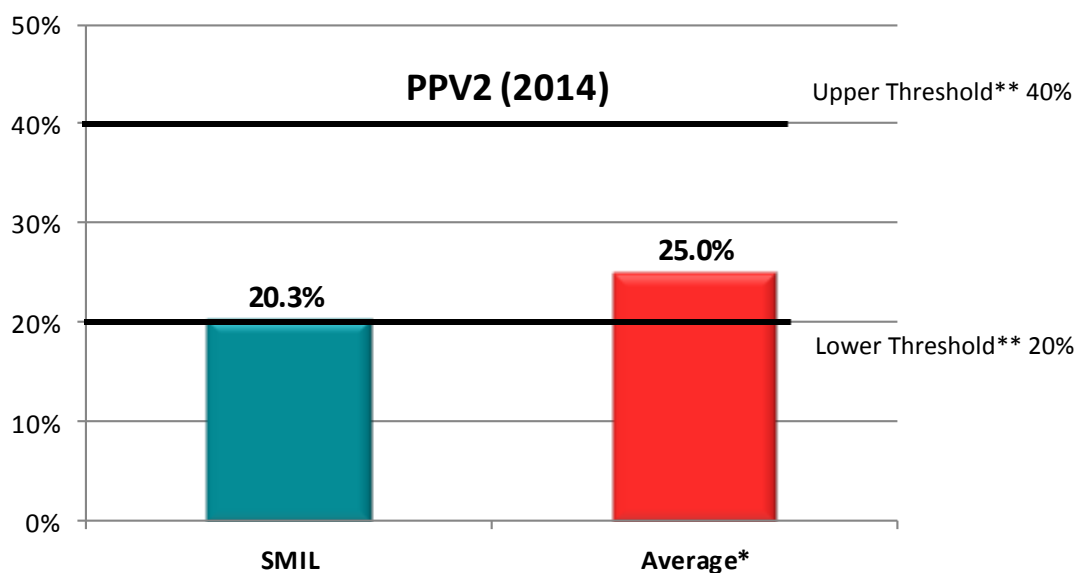
*Rosenberg, RD, et al. Performance benchmarks for screening mammography. *Radiology*, Oct 2006;241(1):55-66.

**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.



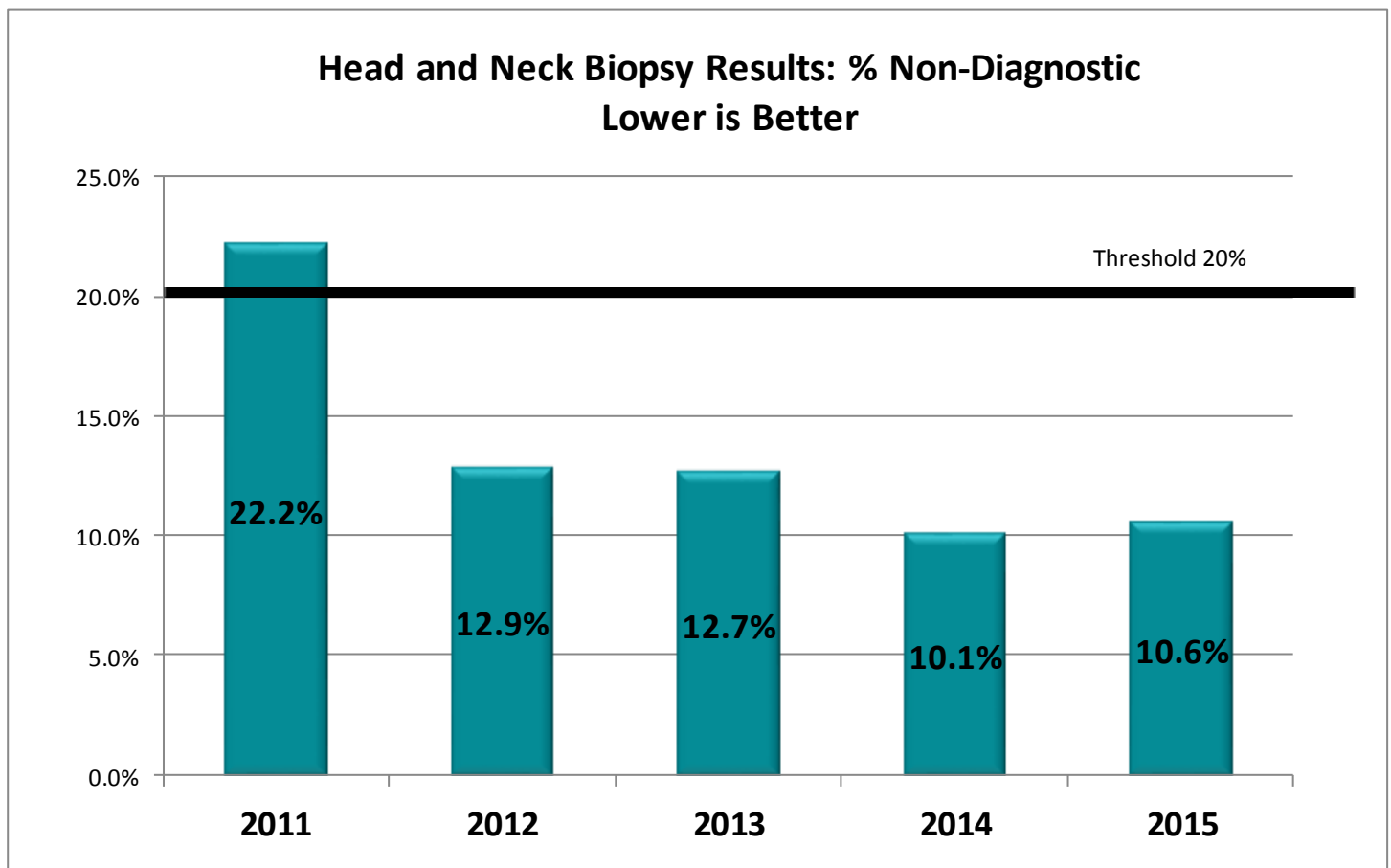
PPV2: The positive predictive value (PPV2) is the percentage of all positive mammograms where a biopsy was recommended and that result in a cancer diagnosis within one year.



Quantifying Thyroid Diagnostic Yield:

When evaluating the accuracy of the percutaneous head and neck biopsies done at our out-patient 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 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%.

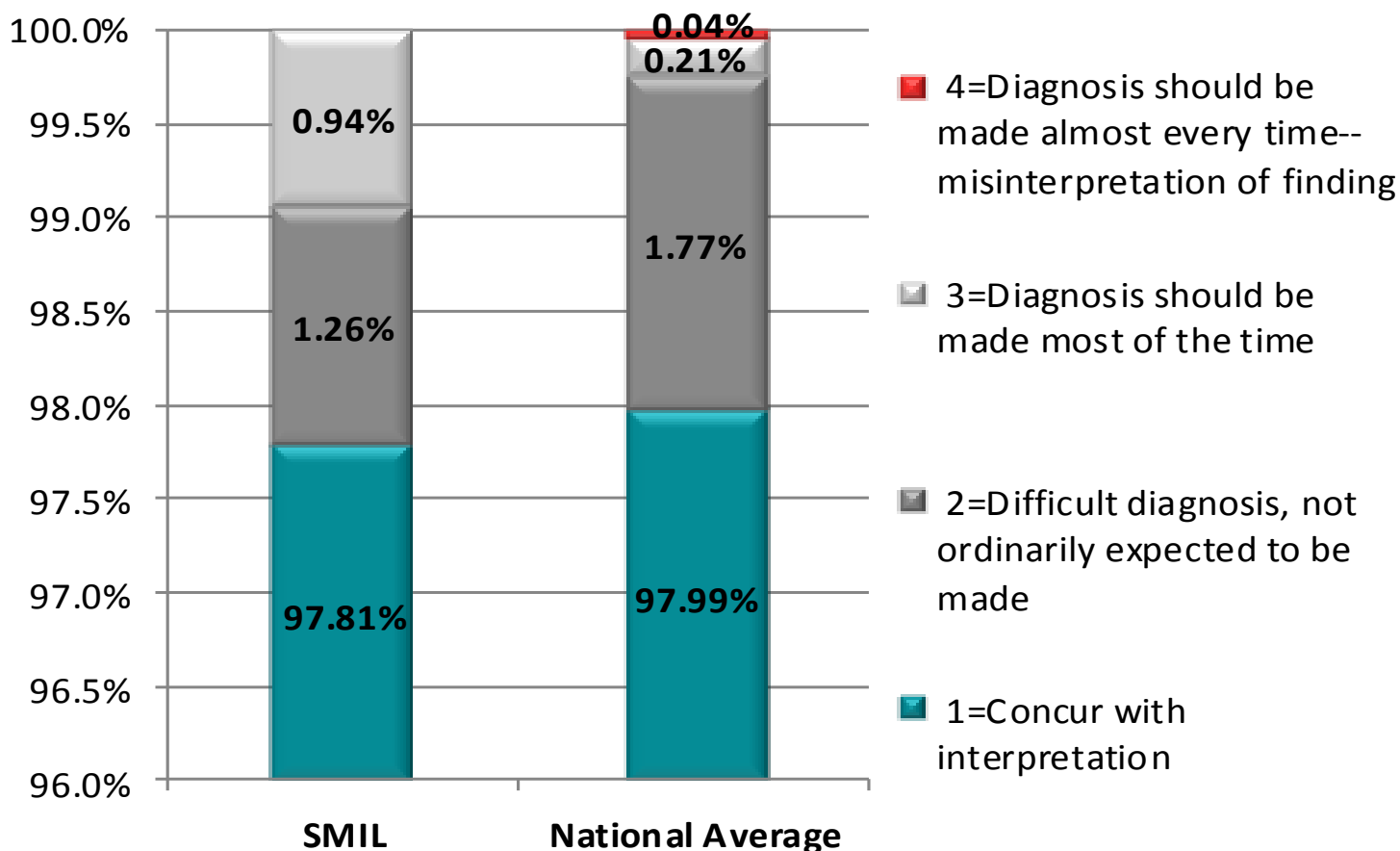
Several process improvements have been implemented based on this data, including physician-to-physician mentoring, direct collaboration with pathologists to standardize slide preparation, and reduction of the timeslots required for the biopsies.



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.

eRADPEER™ Results (2015)



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.

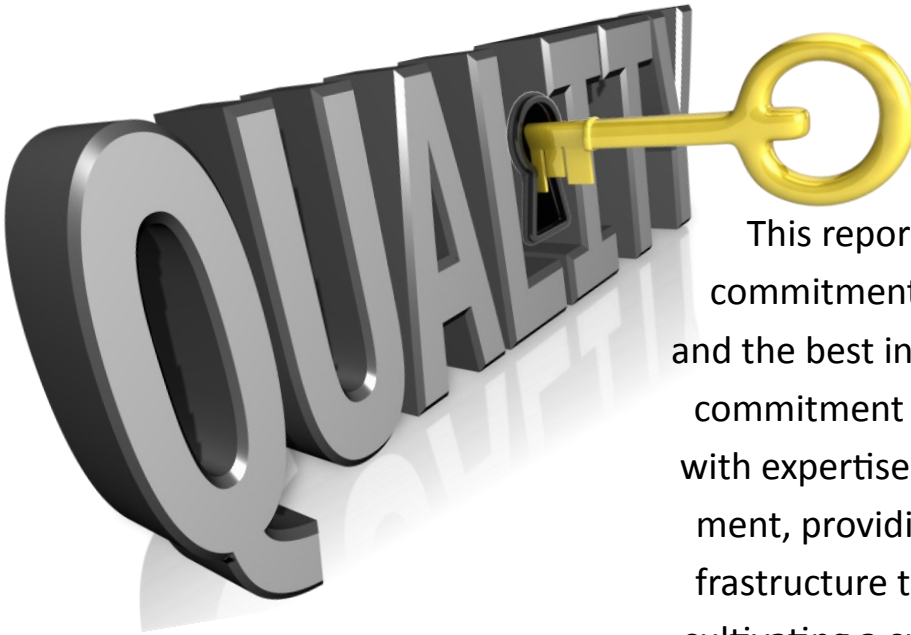
Not only does ***CaseExplorer*** allow for individual feedback and learning, but it also creates a robust database of material that the Physician Quality Committee reviews. The committee identifies systematic opportunities for radiologist improvement and provides an educational presentation on relevant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

Evaluating Physician Accountability

SMIL expects all radiologists to meet high quality standards, work efficiently, exhibit professional behavior, and contribute to the success and growth of the company.

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:

Productivity			
Metrics	Points Available	Points Earned	Meets Expectations?
wRVU / shift	50	48	
HH Report Turnaround Time	15	15	
Self Edit Rate	20	19	
Minor Procedures Performed	15	13	
Total	100	95	YES
Quality			
Metrics	Points Available	Points Earned	Meets Expectations?
CME Hours	20	20.0	
PQRS	20	20	
ABR Maintenance of Certification	20	20	
Hospital Variance Reports	20	20	
Case Explorer	10	9	
Monthly Case Review	10	10	
Total	100	99	YES
Behavioral			
Metrics	Points Available	Points Earned	Meets Expectations?
360 Review average rating-Allied	33.3	30	
360 Review average rating-Colleague	33.4	31	
360 Review average rating-Referrer	33.3	32	
Total	100	93	YES
Citizenship			
Metrics	Points Available	Points Earned	Meets Expectations?
Shareholder Meeting Attendance	50	50	
Committee and Project Participation	50	46	
Total	100	96	YES



This report provides an 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, we are able to refine and accelerate our 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 lead the way 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 communities.

