2014

Measuring Mammography Quality Statewide
Illinois Leading the Nation

Metropolitan Chicago Breast Cancer Task Force, Chicago Breast Cancer Quality Consortium in collaboration with the Illinois Department of Healthcare and Family Services

October 2014

METROPOLITAN CHICAGO
Breast Cancer Task Force
Uniting to End Disparity

DEDICATION

This report is dedicated to
all women in Illinois and their families,
who have been impacted by breast cancer.

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October 7, 2014

The Illinois Department of Healthcare and Family Services is committed to empowering Illinois citizens to lead healthier and more independent lives through providing quality healthcare coverage for children and adults. As part of that commitment to quality and quality improvement, I am pleased to release today, in partnership with the Metropolitan Chicago Breast Cancer Task Force, this first community report of our pioneering statewide initiative to improve the quality of mammography in Illinois. 160 mammography facilities submitted data for this first year of the project, representing 80 percent by Medicaid volume of mammography in the State of Illinois. This level of participation is very promising and represents participation by all the different types of facilities providing mammography.

Every woman with breast cancer deserves the best chance possible at survival. A key component to survival is early detection. Early detection relies on access to high quality mammography. However, as this report shows, the ability to demonstrate quality varies considerably. This is unacceptable. A woman should not have to guess or worry about whether a facility that she is going to really finds small, early stage breast cancers. She should be assured that all facilities in Illinois are meeting the highest standards for detection and follow up.

We are proud to be sponsoring this initiative, which is a first in the nation project. It is my hope, that as years pass, this initiative will significantly improve the quality of mammography throughout Illinois, so that every woman is assured that her mammogram is the best quality possible. This would be a first step to ensuring that all women have an equal chance at survival.

Sincerely,

Julie Hamos

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Improving Mammography Quality: Reducing Disparities in Care

ESTABLISHMENT OF THE MAMMOGRAPHY QUALITY MEASUREMENT INITIATIVE IN METROPOLITAN CHICAGO

The purpose of a high quality mammography program is to find breast cancer early, at its smallest, most treatable stage, and before it has a chance to spread. Not all breast cancers can be seen on a mammogram but when one can be seen on a mammogram, it should be identified and followed up with very quickly. That is what a woman going for a mammogram expects and that is what she deserves.

Concern about mammography quality goes back to the 1980s. A study called the Nationwide Evaluation of X-Ray Trends (NEXT), done by state radiation control agencies working with the Food and Drug Administration (FDA) found that the image quality produced in as many as one-third of the facilities nationwide were less than desirable.[i] These quality problems led the United States Congress to pass the federal Mammography Quality Standards Act in 1992, which requires mammography facilities to meet uniform quality standards. While a lot of improvements happened since 1992, there is evidence that variation in mammography quality remains today. A report to Congress in 2005 by the National Cancer Policy Board suggested that the law Congress passed still had significant weaknesses.[ii] Experts on the board suggested that every mammography program should collect and look at certain key measures of quality. The board suggested that mammography audits should be standardized. To date, the Mammography Quality Standards Act has not been strengthened in the way suggested by the National Cancer Policy Board.

The Metropolitan Chicago Breast Cancer Task Force was established in 2007, after the publication of disturbing data showing large and growing disparities in breast cancer outcomes in Chicago.[iii] Other cities such as New York, Baltimore and San Francisco do not exhibit the same level of disparity, suggesting that health system rather than biology underlay Chicago's high disparity rate.[iv] A central hypothesis therefore, of the Task Force has been that unequal access to high quality breast care is a significant driver in breast cancer disparities.[v]

In 2008, the Metropolitan Chicago Breast Cancer Task Force established a project known as the Chicago Breast Cancer Quality Consortium (the Consortium). The Consortium is a healthcare collaborative

that originally brought together mammography and breast cancer treatment providers all across Metropolitan Chicago. The purpose of the Consortium is to address breast cancer care quality by initially measuring the quality of such care, identifying deficits and ultimately working collaboratively with providers to improve the quality of care. The Consortium established expert advisory boards in mammography and breast cancer treatment with broad representation from area facilities. The expert advisory boards established quality metrics for mammography and breast cancer treatment. The Consortium developed data collection tools for both mammography and treatment and established a methodology for training Metropolitan Chicago facilities on the collection and submission of the data. In essence, the Consortium operationalized the recommendation of the National Cancer Policy Board with respect to mammography. It established a uniform quality measurement and reporting system. All participants in the Consortium's mammography program collect the same standardized quality metrics. The Consortium aggregates this data and provides each participating facility with their own site specific report showing how each does compared to the community wide results and compared to national benchmarks.

In 2010, the Consortium reported the results of the first data collection for both mammography and treatment and this report received widespread coverage in the news. Two thirds of participating facilities could not show they met most benchmarks. The Chicago Sun Times headlined – Not Good Enough in an article by Monifa Thomas. The mammography data has since been published in a peer reviewed Journal in January of 2014.[vi]


CHICAGO SUN-TIMES

CHICAGO HOSPITALS' GRADE ON BREAST CANCER:

Not good enough

New study says 2 out of 3 Chicago hospitals are not able to show that they find cancer when it's small nor provide timely treatment after diagnosis

MONIFA THOMAS REPORTS ON PAGE 15

October 21, 2010, Monifa Thomas

EXPANDING MAMMOGRAPHY QUALITY MEASUREMENT STATEWIDE

In 2009, Governor Quinn signed Public Law 95-1045, the Breast Cancer Disparities Reduction Act into law. This law created the Breast Cancer Quality Screening and Treatment Initiative Advisory Board.

Breast Cancer Quality Screening and Treatment Initiative Advisory Board

The Breast Cancer Quality Screening and Treatment Initiative (BCQSTI) is a joint project of the Illinois Department of Healthcare and Family Services and the Department of Public Health. To ensure that women in all communities have access to high quality mammograms and breast cancer information, the State appointed the Breast Cancer Quality Screening and Treatment Board (Table 1). The Board's mission is to work with the Medicaid Program and the Illinois Breast and Cervical Cancer Program (IBCCP) to:

- Identify gaps in screening/diagnostic mammogram services throughout the state;

- Recommend the availability and use of digital mammography;
- Recommend common quality standards for Medicaid, IBCCP and healthcare providers, regardless of payer;
- Recommend best practices for effective outreach to reduce racial disparities in breast cancer mortality; and
- Monitor the Medicaid navigation pilot projects that were established.

Table 1: Board members, Breast Cancer Quality Screening and Treatment Initiative (BCQSTI)

Board Members	Institution
Salim Al Nurridin	Healthcare Consortium of Illinois
Dr. David Ansell	Rush University Medical Center
Dr. Bechara Choucair	Chicago Department of Public Health
Stephani Huston Cox	Planned Parenthood Springfield Area
Dr. Gary Dunnington	SIU School of Medicine
Dr. Pamela Ganschow	John H. Stroger, Jr. Hospital of Cook County
Dr. Paula Grabler	Northwestern Memorial Hospital/Northwestern University
Eileen Knightly	Mercy Hospital and Medical Center
Shannon Lightner	American Cancer Society-Illinois
Sister Sheila Lyne	Mercy Hospital and Medical Center
Terry Macarol	Advocate Health Care
Dr. Elizabeth Marcus	John H. Stroger, Jr. Hospital of Cook County
Linda Maricle	Susan G. Komen for the Cure
Anne Marie Murphy	Metropolitan Chicago Breast Cancer Task Force
Elizabeth Patton S.A.	East Side Health District
Dr. Melissa Simon	Northwestern Memorial Hospital/Northwestern University
Donna Thompson	Access Community Health Network
Ruth Todd	Alexian Brothers Medical Center
Vicki Vaughn	St. Mary's Hospital

The Breast Cancer Disparities Reduction act also increased the Medicaid reimbursement for mammography, raising it to the Medicare rate along with a variety of other changes to both private insurance law and the Medicaid statute. During deliberations of the BCQSTI, Director Hamos suggested that it would be advantageous to tie the increased mammography reimbursement rate to mammography quality reporting. This would promote quality improvement, which is a goal of the Medicaid program

under her leadership. Members of the BCQSTI were in agreement and additional modifying legislation to effectuate this change was passed. The modifying legislation, Public Law 97-638 tied the increased Medicaid reimbursement for mammography to a requirement that mammography facilities and radiologists join a quality measurement and improvement program established by the Illinois Department of Healthcare and Family Services.

THE MAMMOGRAPHY QUALITY METRICS

The Breast Cancer Quality Screening and Treatment Board decided to continue collecting the metrics that the Consortium had already been collecting. The Consortium had already demonstrated feasibility of collection and had multiple years of experience collecting these metrics from a wide variety of facilities, including larger academics, small community hospitals, satellite clinics, public facilities and other safety net facilities. Illinois Department of Healthcare and Family Services engaged the Consortium to collect and analyze this data on its behalf.

The benchmarks used to evaluate facility performance were developed in collaboration with the Chicago Breast Cancer Quality Consortium's Mammography Quality Advisory Board. The advisory board looked at national guidelines including those of the American College of Radiology and also the averages found by the Breast Cancer Surveillance Consortium's mammography registries. The Breast Cancer Surveillance Consortium (BCSC) is a research collaborative that houses 7 mammography registries. Over 450 papers have been published on mammography and other breast cancer screening modalities from the work of BCSC. Eleven mammography quality metrics were selected to evaluate facility performance. These 11 quality metrics measure quality in 2 basic ways:

A. **Radiologist quality** – These metrics ask whether cancers are being found (cancer detection rate), whether they are found when small (% of cancers that are minimal), whether they are early stage (% of cancer that are stage 0 or 1), whether too few or too many women are called in for diagnostic follow up after a screening mammogram (recall rate), whether too few or too many abnormal screening mammograms result in a biopsy recommendation, whether too few or too many abnormal mammograms yield cancers (PPV1), or whether too few or too many biopsies yield cancers (PPV3).

B. **Facility care processes quality** – These metrics ask whether necessary follow up is happening on time at the diagnostic mammogram or biopsy stage, and whether patients are lost to follow up at the time of diagnostic mammogram or at the time of biopsy.

Both of these types of measures are important for optimal identification of early stage breast cancer. Reading mammograms is a highly skilled procedure and a body of literature indicates that reading a certain volume of mammograms,[vii] fellowship trained breast-imaging specialists[viii] or those radiologists who specialize or focus on reading mammograms do so more proficiently.[ix] Additionally, there is considerable variation in the processes in place at facilities to ensure that necessary follow up takes place. Below, the 11-mammography quality metrics are first described and then a comparison of the benchmarks chosen to the BCSC averages is provided in Table 2.

THE 11 MAMMOGRAPHY QUALITY METRICS AND THEIR BENCHMARKS:

RECALL RATE – Measures the proportion of patients who are called back for a follow-up mammogram (diagnostic mammogram) after their initial screening mammogram. An out of range recall rate may mean too many or too few patients were called back and therefore patients may be either receiving unnecessary follow-up mammograms (if recall rate is too high) or breast cancers are being missed (if recall rate is too low). The expert advisory board set the recall benchmark at 5 to14 out of every 100 women screened being called back for a follow-up diagnostic mammogram. The upper boundary was informed by Centers for Medicare and Medicaid Services Imaging Efficiency statements.[x]

FOLLOW UP IMAGING IN 12 MONTHS – Of the patients who required a follow-up diagnostic mammogram, the metric for follow-up imaging within 12 months measures what proportion of those patients received the follow-up imaging within 12 months of their screening mammogram. It is a measure of who was not lost to follow-up. The benchmark was set at 90% of women needing diagnostic follow up receiving such follow up within 12 months of their original screening mammogram. Otherwise, they are considered lost to follow-up.

FOLLOW-UP IMAGING WITHIN 30 DAYS - Of patients receiving follow-up diagnostic imaging within 12 months (who fall within metric #2 above), what proportion receive follow-up imaging within 30 days. This is a metric of timeliness of care. The benchmark for this metric is that 90% or more of patients receive diagnostic imaging follow up within 30 days of the abnormal screening mammogram.

ABNORMAL SCREENING MAMMOGRAMS RESOLVED AS NEEDING A BIOPSY – Measures what proportion of patients with an abnormal screening mammogram were recommended for a biopsy. The benchmark range was set at 8 to 20% of patients with an abnormal screen being recommended for a biopsy.

BIOPSY RECEIVED IF RECOMMENDED (not lost to follow-up at biopsy) – Of patients needing a biopsy, what proportion actually received a biopsy within 12 months of their abnormal screening mammogram. The benchmark was set at 70 % of patients recommended for a biopsy receiving that biopsy within 12 months of their abnormal screening mammogram. Those patients not demonstrated to have received a recommended biopsy within 12 months of their abnormal screen are considered lost to follow-up at biopsy.

BIOPSIED WITHIN 60 DAYS This measures timeliness of biopsy – Of patients receiving a biopsy within 12 months, what proportion actually received a biopsy within 60 days from their abnormal screening mammogram. This metric's benchmark was set at 90% or more of women recommended for a biopsy, received it within 60 days of abnormal screening mammogram.

CANCER AMONG ABNORMAL SCREENS (Positive predictive value 1 [PPV1]) – This measures the proportion of patients with an abnormal screen that were eventually diagnosed with cancer. The benchmark for this metric was set at 3-8% of abnormal screens being diagnosed with cancer.

CANCER AMONG BIOPSIED (PPV3) – This measures the proportion of the patients biopsied that were diagnosed with cancer. This metric's benchmark was set at 20-40% of biopsied patients are diagnosed with cancer.

CANCER DETECTION RATE (CANCER AMONG SCREENED) – This measures the number of cancers diagnosed for every 1000 patients screened. This metric's benchmark was set at 3-10 cancers detected for every 1000 patients screened. If less than 3 cancers are found, it may mean that some cancer were missed. This is particularly true if the recall rate is also low or several other metrics are also out of range. A rate higher than 10 may be a sign that segregation of screening and diagnostic mammograms has not taken place. To measure the quality of a screening mammography program, it is essential to only include screening mammograms (mammograms performed on asymptomatic women). This benchmark is challenging as we currently use the same benchmark for all facilities. A more unscreened population should yield a higher cancer detection rate, perhaps over 5 cancers found per 1000 patients screened. A more regularly screened population should yield a lower cancer detection rate. In future years, two benchmarks may be developed to account for highly screened vs unscreened populations.

PROPORTION EARLY STAGE – This measures the proportion of the cancers detected through screening that were stage 0 or 1. This metric's benchmark was defined as over half of the women diagnosed with cancer were stage 0 or 1.

PROPORTION MINIMAL – This measures the proportion of the cancers detected through screening that were smaller than a centimeter. This metric's benchmark was set at over 30% of the cancers found were smaller than a centimeter. In comparison to the BCSC averages in 2009, this benchmark may be somewhat low and may need revision upward for future years of data collection.

TABLE 2: MAMMOGRAPHY QUALITY METRICS COMPARED TO BREAST CANCER SURVEILLANCE CONSORTIUM (BCSC) 2009 AVERAGES

Measure	Illinois Benchmarks	BCSC Average 2009
Recall Rate	5-14%	9.2%
Follow-up imaging within 12 months	>90%	NA
Follow-up imaging within 30 days	>90%	NA
Abnormal screen resolved as needing biopsy (biopsy recommendation rate)	8-20%	12.2%
Biopsy received if recommended	>70%	70.6%
Biopsied within 60 days	>90%	NA
Cancer among abnormal screens (PPV1)	3-8%	4.2%
Cancer among biopsied (PPV 3)	20-40%	26.9%
Cancer detection rate (cancer among screened)	3-10 per 1000	4.1 per 1000
Proportion early Stage	>50%	73.6%
Proportion minimal	>30%	53.6%

The Results of the First Year of Statewide Mammography Facility Data Collection, CY2011

Mammography quality data submitted by facilities during the first year of statewide data collection represented screening mammograms performed and screening practices in Calendar Year 2011 (CY2011). Collectively, 160 mammography facilities submitted 124 data sets. Some data sets included data for more than one facility operated by a parent organization. The facility data represented 584,245 individual screening mammograms and 80% of mammography volume for Medicaid patients.

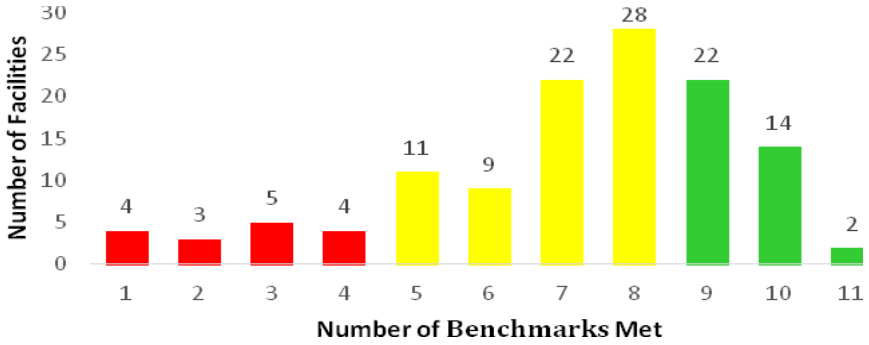
Summarized below is an overview of the data across all 124 data sets, along with a brief explanation of each result. For each one of the 11 metrics, a facility either met or did not meet a benchmark. Each participating mammography facility received a site specific report that showed how they performed relative to the benchmarks chosen and in comparison to the community wide distribution of results. Results were aggregated for all 124 datasets and the eleven 2 bar graphs that follow summarize the proportion of the 124 submissions that met (bar in green) or did not meet (bar in red) each of the individual quality metrics.

Copies of the data collection tool used by facilities to submit mammography quality data, the mammography capacity survey that each facility was required to submit and an example of a site-specific report template can all be found on our website at www.chicagobreastcancer.org under HFS statewide initiative.

Overall, How Many Facilities Met Each of the 11 Benchmarks?

Figure 1 shows that of the 124 submissions for Calendar Year 2011, only 38 facilities met 9 or more of the 11 quality benchmarks. Only 2 submissions met all 11 benchmarks. Sixteen submissions were only able to meet 4 or less benchmarks. This wide distribution in the ability of facilities to meet the 11 selected metrics is evidence of the variability in the quality of mammography across the State of Illinois.

Figure 1: Number of facilities that met each benchmark.



How Did Facilities Measure Up Within Each Individual Benchmark?

The 11 selected quality metrics measure quality in 2 basic ways: Radiologist quality and Facility care processes quality. Table 3 below summarizes the 11 quality metrics stratified by these two subcategories. Following table 3, there is a brief explanation of each individual metric and a respective 2 bar graph showing the proportion of the 124 submissions that met (bar in green) or did not meet (bar in red) each of the benchmarks.

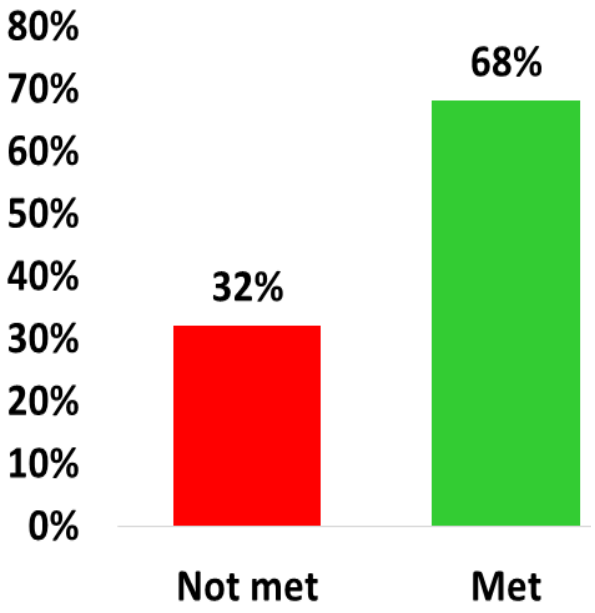
Table 3: Summary of Benchmarks and Proportion of Submissions Meeting the Benchmarks

	Measure	Participants meeting benchmark	Consortium Benchmarks	BCSC 2009
Radiologist *Quality*	Cancer detection rate (cancer among screened)	68%	3-10 per 1000	4.1 per 1000
	Proportion minimal	81%	>30%	53.6%
	Proportion early stage	59%	>50%	73.6%
	Abnormal screen resolved as needing biopsy (biopsy recommendation rate)	59%	8-20%	12.2%
	Cancer among abnormal screens (PPV1)	57%	3-8%	4.2%
	Cancer among biopsied (PPV 3)	67%	20-40%	26.9%
	Recall Rate	63%	5-14%	9.2%
Facility *Care Process Quality*	Follow-up imaging in 12 months	75%	>90%	NA
	Follow-up imaging within 30 days	53%	>90%	NA
	Biopsy received in 12 months	81%	>70%	70.6%
	Biopsied within 60 days	53%	>90%	NA

Radiologist Quality

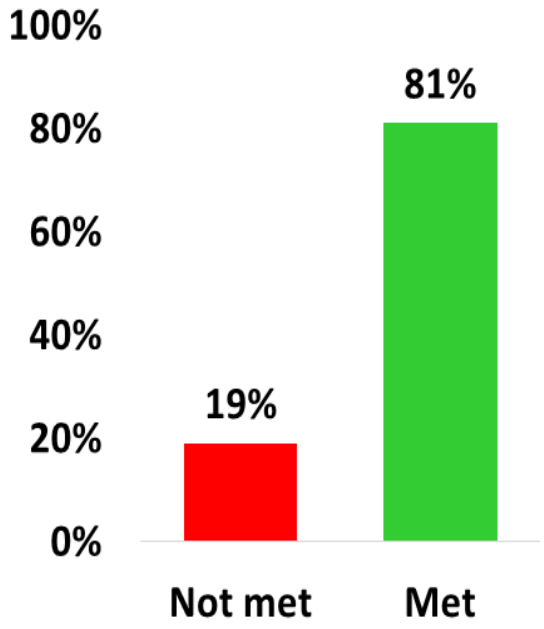
Cancer detection rate - Did the facility find an appropriate number of cancers? The benchmark for this metric is that between 3-10 cancers should be found per 1,000 women screened. Adjacent figure 2 shows that nearly a third of facilities did not meet this benchmark. A challenge with this benchmark is that the number of cancers expected will vary depending on how well screened the patient population is. A safety net facility with a lot of unscreened patients should expect to have a higher cancer detection rate with a minimum expected perhaps of 5 per 1000 women screened or more. In future years, we will attempt to estimate how well a facilities patient population is so as to provide a benchmark that correlates with the patient population of the facility.

Figure 2: cancer detection rate



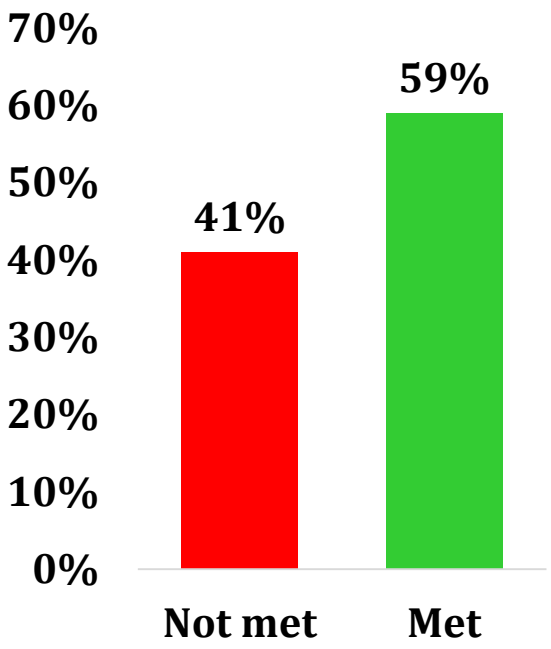
Proportion minimal - What proportion of the cancers found were small (less than 1 centimeter or DCIS)? The adjacent figure 3 demonstrates that 81% of facilities are able to find small cancers. This metric was calculated using a denominator that excluded cancers of unknown size. For a facility to achieve this benchmark, 30% of the cancers found should be small. If we look at the benchmark compared to the BCSC average, this benchmark may be somewhat low and may in future years need to be adjusted upward.

Figure 3: Proportion minimal



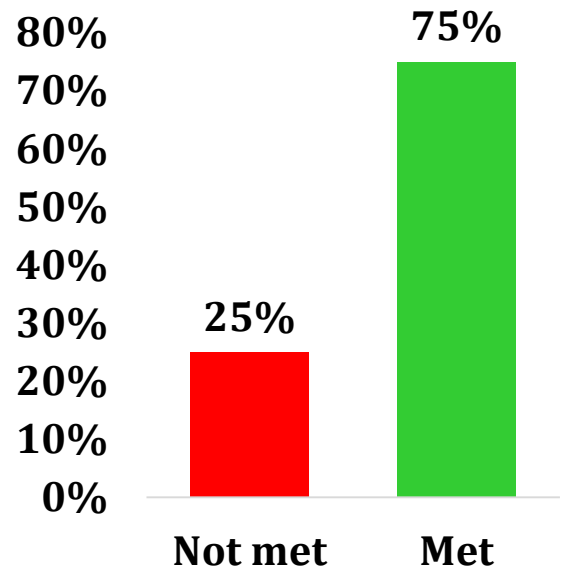
Proportion early stage – This measures the proportion of the cancers detected through screening that were stage 0 or 1. A facility is considered to have met this metric if over half of the patients diagnosed with cancer were stage 0 or 1. This metric was calculated using a denominator which included cancers that did not have staging information available to the facility. Fifty nine percent of the 124 submissions were able to meet this benchmark. Many facilities had missing data with respect to staging. Staging requires pathology results and many facilities had challenges either receiving or accessing the pathology results.

Figure 4: Proportion early stage



Abnormal screening mammograms resolved as needing a biopsy – Of all patients with an abnormal screening, the diagnostic workup resolved that they did need a biopsy confirming the original screening finding. The benchmark range was set at 8 to 20% of patients with an abnormal screen being recommended for a biopsy. Three quarters of facilities were able to achieve this benchmark.

Figure 5: Abnormal screening mammograms resolved as needing a biopsy



Abnormal Screens resolving as cancer (PPV1) - What proportion of patients who initially had an abnormal mammogram were diagnosed as having cancer? The benchmark for this metric is 3-8%. Figure 6 demonstrates that 57% of facilities were able to show that they find an appropriate number of cancers among patients with abnormal screening mammograms.

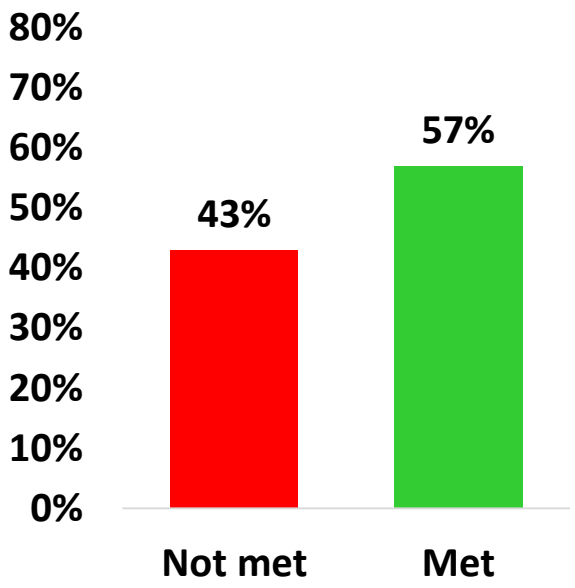


Figure 6: Abnormal screens resolving as cancers (PPV1)

Biopsy resolving as a cancer (PPV3) - What proportion of patients who initially had a biopsy ended up having cancer? The benchmark for this metric is that 20-40% of the patients biopsied should be diagnosed with cancer. Figure 7 demonstrates that 67% of facilities were able to show that they find an appropriate number of cancers among patients who had a biopsy. Explanation: Experts suggest that if the biopsy yield for cancers is too high that it may mean that cancers are being missed. If the yield is too low, it suggests that perhaps too many biopsies are being done or that the initial recall rate is too high.

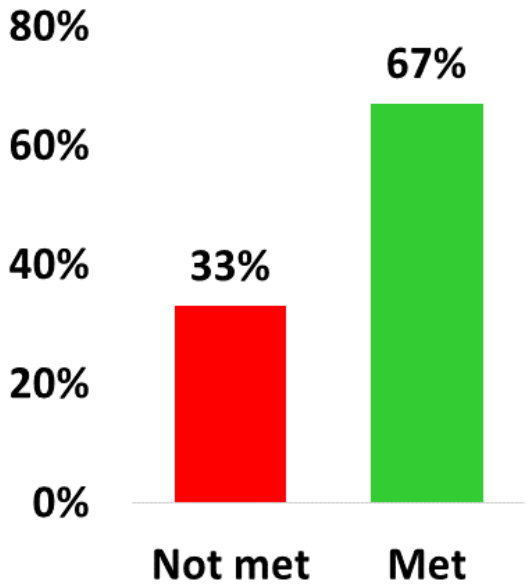
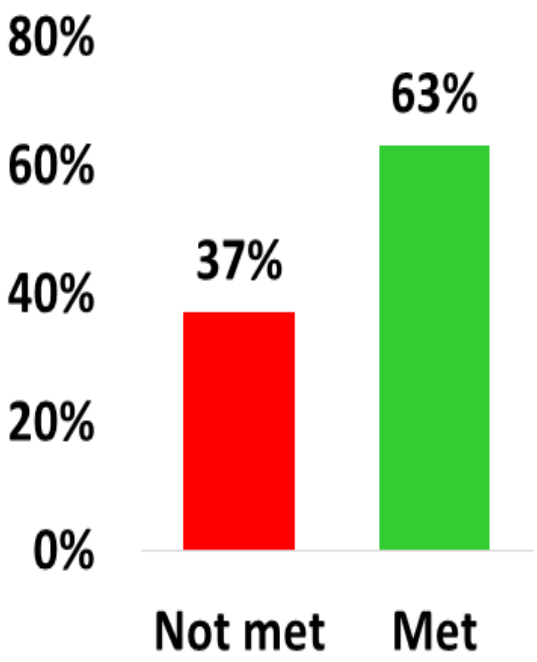


Figure 7: Biopsy resolving as a cancer (PPV3)

Recall Rate - What proportion of all facilities resolved an acceptable number of screening mammograms as needing additional imaging (BIRADS 0, 4 or 5)? The figure below shows that 63% of facilities met the benchmark established as a recall rate of between 5 and 14 percent. Calling too many patients back for additional mammograms may mean that some of those patients are being unnecessarily exposed to radiation. Calling too few patients back may mean that a cancer is missed. There are several factors that will also affect the recall rate. At safety net facilities where many patients are unscreened or do not have comparison films available, it will be expected that the recall rate will be higher due to the lack of comparison images

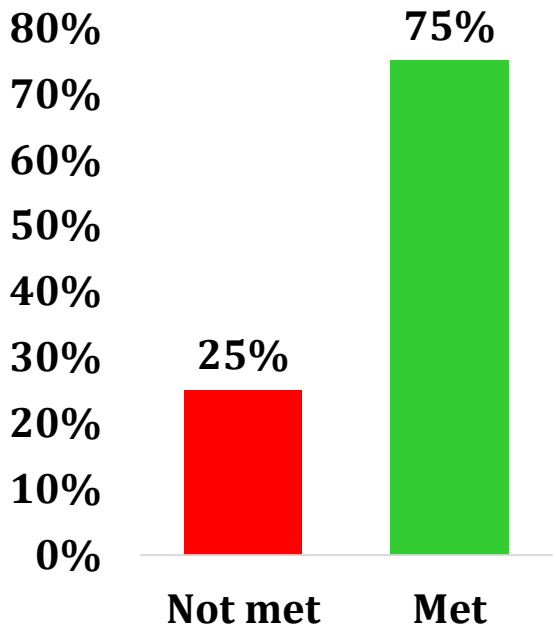
Figure 8: recall rate



Facility Care Process Quality

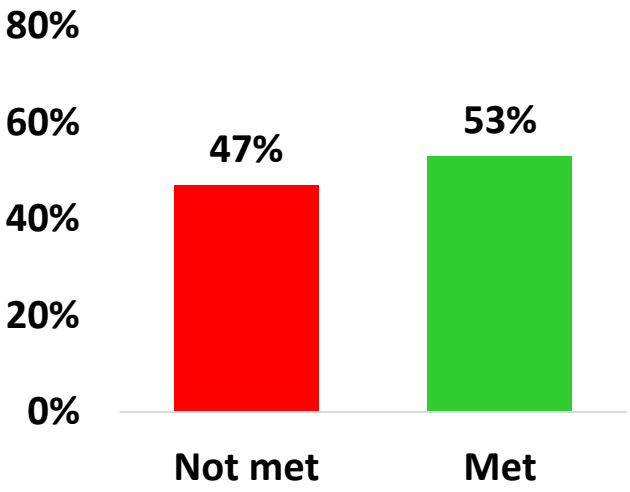
Follow-up imaging within 12 months - What proportion of patients with an abnormal screening mammogram had their follow-up diagnostic mammogram within 12 months? An abnormal screening mammogram should always be followed up by a diagnostic mammogram to help determine if the patient needs a biopsy. The benchmark set for this metric was that over 90% of patients with an abnormal screening mammogram should receive follow up imaging and that the facility performing the screening mammogram should be able to demonstrate this. This recognizes that there will be a certain number of patients who are unresponsive to recommendations for follow up. Three fourths (75%) of all facilities showed they could appropriately follow up with more than 90% of patients who needed a diagnostic mammogram.

Figure 9: follow-up imaging within 12 months



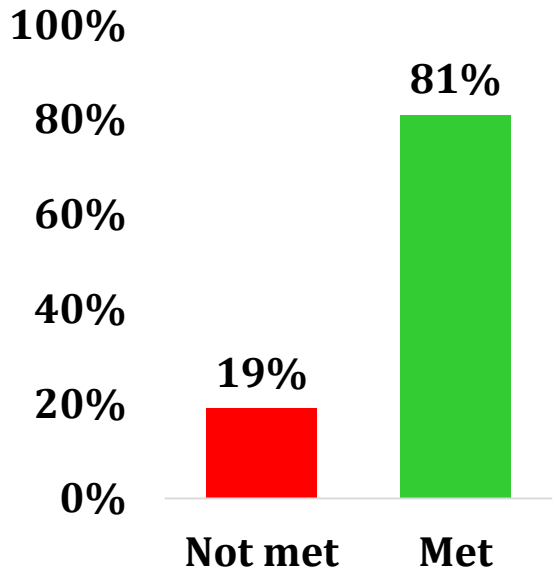
Follow-up imaging within 30 days - What proportion of patients who had their follow-up diagnostic mammogram within 12 months also had it within 30 days? An abnormal screening mammogram should always be followed up by a diagnostic mammogram to help determine if the patient has breast cancer. A little over half of the facilities (53%) showed that at least 9 out of every 10 patients who received a follow-up diagnostic within 12 months of their initial screen had it within 30 days.

Figure 10: Follow-up imaging within 30 days



Biopsy received if recommended - (not lost to follow-up at biopsy) – Of patients needing a biopsy i.e. those resolved as a BIRAD 4 or 5 at diagnostic mammography stage, what proportion actually received a biopsy within 12 months of their abnormal screening mammogram. A facility is considered to have met this metric if at least 70% of patients recommended for a biopsy receiving that biopsy within 12 months of their abnormal screening mammogram. Those patients not demonstrated to have received a recommended biopsy within 12 months of their abnormal screen are considered lost to follow-up at biopsy

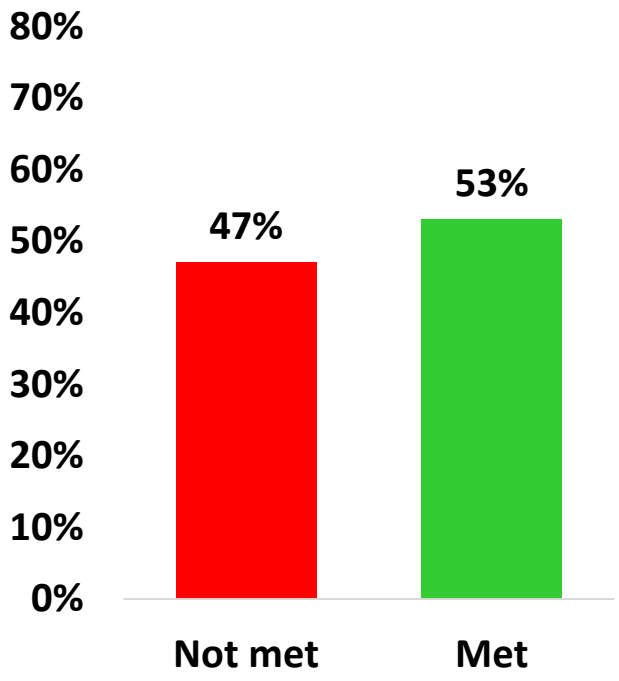
Figure 11: Biopsy received if recommended



Biopsied within 60 days - What proportions of biopsies were completed within 60 days of the initial screen? The benchmark for this metric was that 90% or more of patients should be biopsied within 60 days from their initial abnormal screening mammogram. Only 53% of facilities were able to demonstrate that they met this benchmark.

Explanation: the purpose of screening mammography is to identify cancer when it is small and early stage. This goal is compromised if there is significant delay as the patient navigates across the continuum of care

Figure 12: Biopsied within 60 days



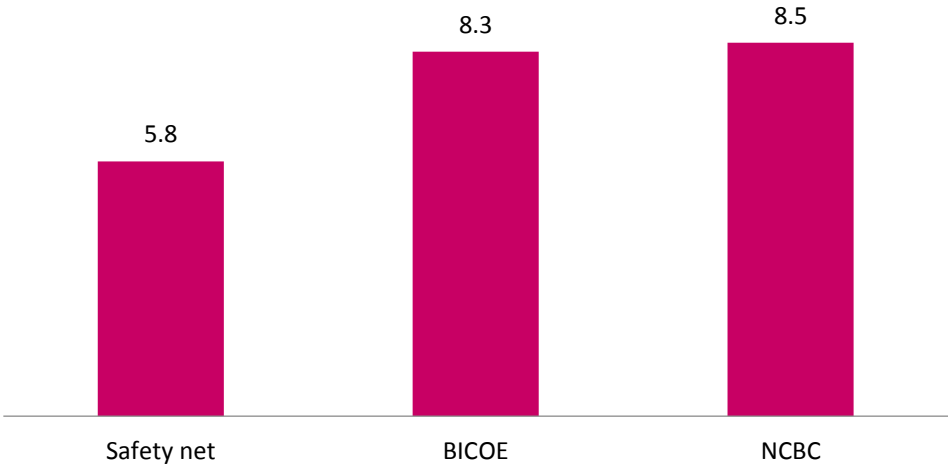
HOW DID DIFFERENT TYPES OF FACILITIES MEASURE UP?

We looked at a variety of different types of facilities to see how each type was or was not able to meet the various bench marks. We looked at both overall achievement of benchmarks and also at achievement of specific benchmarks or benchmark types.

Facility characteristics are an important factor to consider when evaluating the ability of an institution to meet mammography quality benchmarks. For example, smaller, lower volume facilities may not have full time, specialized and/or fellowship trained radiologists available to read mammograms. Larger facilities, higher volume or higher resource facilities may have specialized fellowship trained or mammography focused imagers, more diagnostic follow-up capabilities and they will likely have on-site radiology guided biopsy. This can help not only with ensuring timely follow up but also may ensure more availability of biopsy results so as to evaluate the screening mammography quality. Additionally, facilities that have undergone voluntary accreditation processes such as the American College of Radiology Breast Imaging Centers of Excellence (BICOE) or the National Consortium of Breast Centers (NCBC) are systemically engaged in quality measurement on an ongoing basis and therefore more likely to meet benchmarks. Below we provide results showing the average number of metrics (out of 11) met by each of the 124 facilities stratified by facility type: Safety net designation, BICOE designation or National Consortium of Breast Centers (NCBC).

As figure 13 below shows, safety net facilities met on average a lower number of benchmarks (5.8) compared to BICOE (8.3) or NCBC (8.5).

Figure 13: Mean number of benchmarks met by facility characteristics (N=124)



Volume Matters – High Volume mammography facilities meet more Benchmarks: Similar to many other areas in healthcare and more generally, facilities that do a large volume of mammography tend to meet more benchmarks compared to those that do lower volumes of mammography. High volume facilities were those that performed 10,000 or more mammograms per year. Low volume facilities were those that performed 1,500 or less mammograms per year. On average, high volume facilities were able to meet 9 out of 11 benchmarks, compared to low volume facilities that met on average 6 out of 11 benchmarks (Figure 14 below).

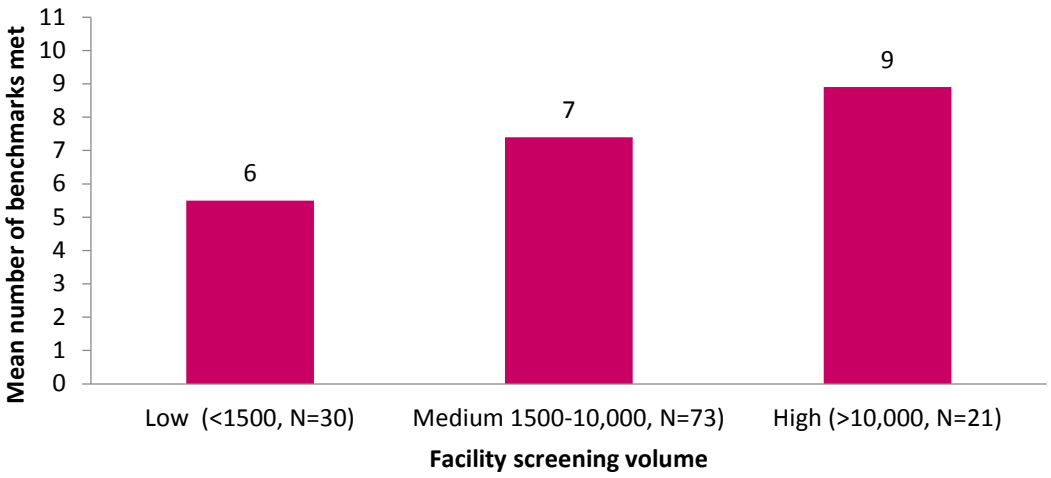


Figure 14. Mean Number of Quality Benchmarks Met by Facility Screening Volume

Radiologist Quality Metrics – Figure 15 below demonstrates that overall, a greater proportion of high volume facilities are able to meet benchmarks associated with radiologists quality.

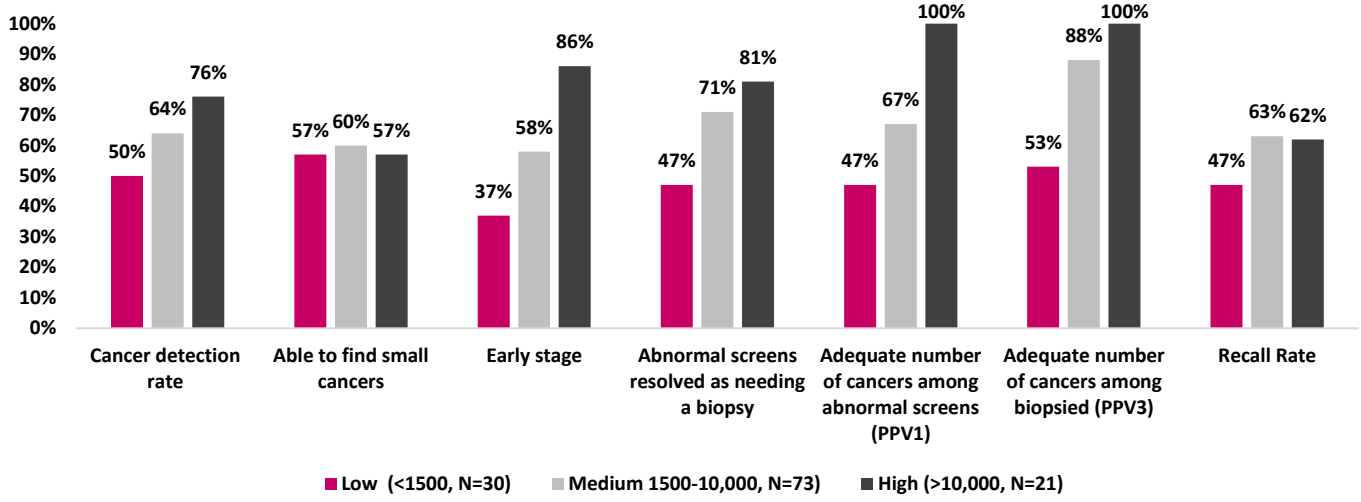


Figure 15. Individual Radiologist Quality Metrics Met by Volume of Facility

Facility Quality Metrics – Figure 16 demonstrates that similar to radiologist quality metrics, a greater proportion of high volume facilities are able to meet benchmarks associated with facility quality.

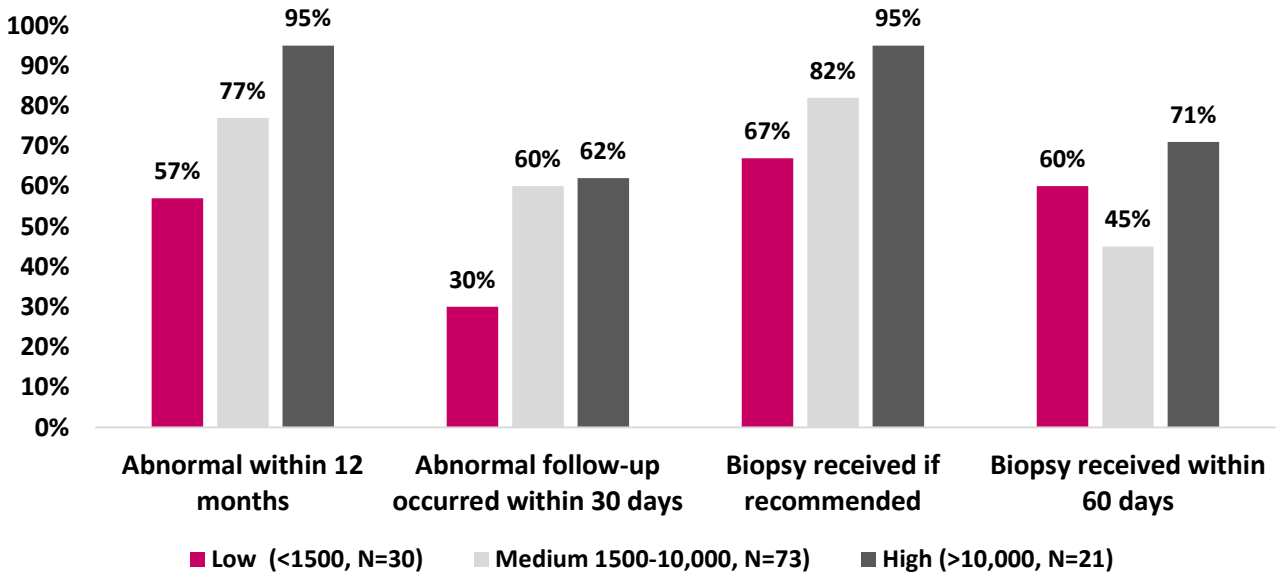


Figure 16. Individual Facility Quality Metrics Met by Volume of Facility

Only two metrics did not differ significantly by facility volume: the ability to find small cancers and biopsy received within 60 days.

Centers of Imaging Excellence meet more quality standards

Mammography facilities that go through a rigorous accreditation process by meeting certain standards set by the American College of Radiology are designated as breast imaging centers of excellence. We looked at whether facilities in the state that have this designation were more likely to meet the mammography quality benchmarks. Figure 17 shows that American College of Radiology designated Breast Imaging Centers of Excellence are indeed able to meet a greater number of quality benchmarks compared to undesignated facilities (8.3 out of 11 benchmarks met by designated sites, compared to 6.6 benchmarks by undesignated sites)

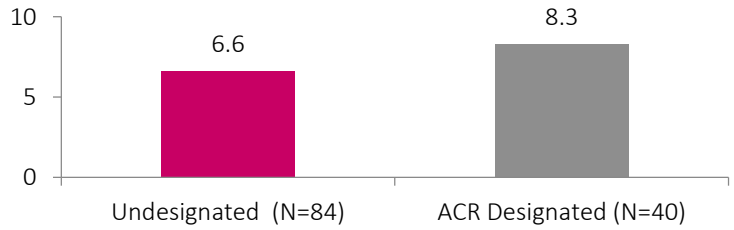


Figure 17. Number of Benchmarks Met by Centers of Imaging Excellence

SAFETY NET FACILITIES – HAVE MORE CHALLENGES

We looked at facilities that are designated either as public providers or who qualify for specific safety net provider payments in Illinois Medicaid. These are facilities that disproportionately serve the poor and have fewer resources because of their payor mix. They have far more uninsured patients and patients served by Medicaid some of whom have significant challenges in life that makes loss to follow up potentially more likely. The Medicaid program in Illinois reimburses providers in general well below all other payors including Medicare. This puts additional burden on these facilities to support their patients with fewer resources than other facilities. Figure 18 shows that indeed, safety nets were less likely to meet the quality benchmarks (5.8 out of 11 for safety net providers compared to 7.6 out of 11 for non-safety net providers). In particular, meeting timeliness and loss to follow up benchmarks were more challenging for the safety net.

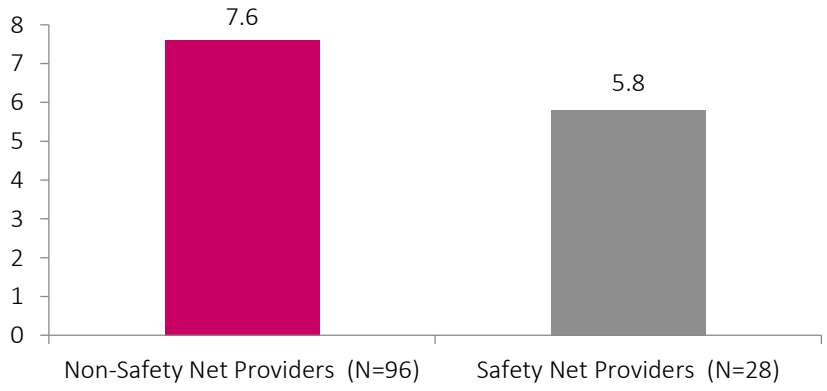


Figure 18. Benchmark Attainment for Safety Net vs. Non-Safety Net Facilities

IMPROVEMENT OVER TIME:

While this is our first year collecting data statewide, we have collected data for Metropolitan Chicago for 2006, 2009 and 2010. Figure 19 demonstrates that facilities that have participated in the quality measurement program across multiple years (2006, 2009, and 2011) have improved. The average number of benchmarks met has increased from 5 benchmarks in 2006 to meeting 8 out of 11 possible benchmarks in 2011. We believe this means that our program is making a difference and assisting facilities in improving the quality of their mammograms. We believe a high quality mammogram saves lives and everyone deserves a high quality mammogram.

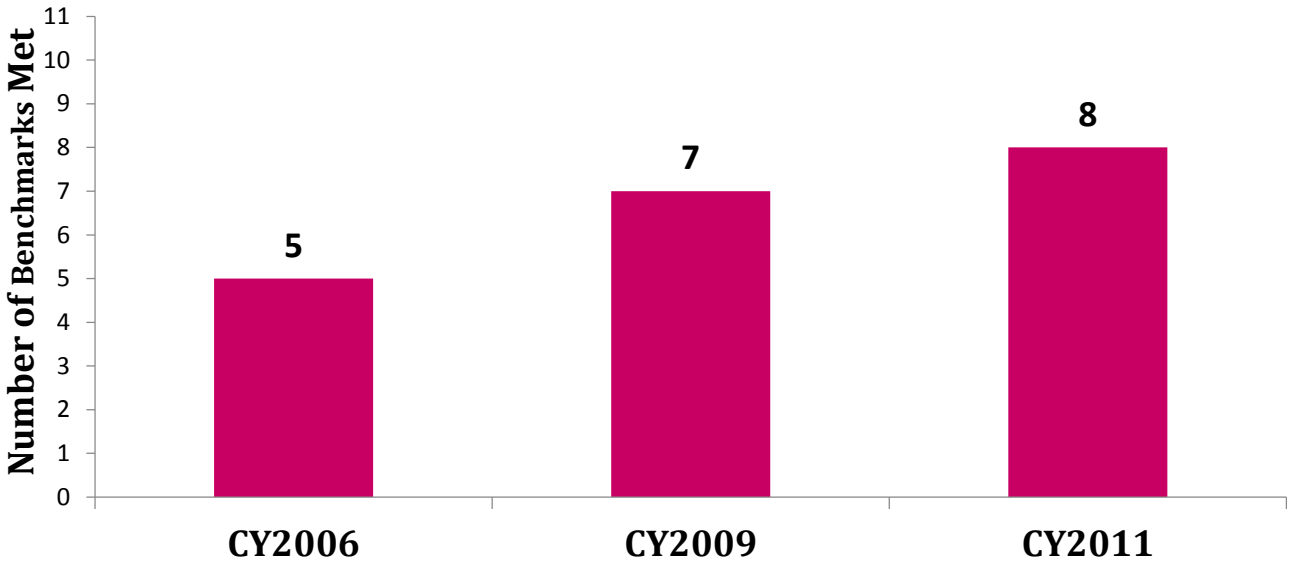


Figure 19: Average number of benchmarks met for 32 facilities participating all years

FUTURE DIRECTIONS:

Over the next year, we will be building upon this program and engaging facilities in quality improvement. With generous funding from the Coleman Foundation, we will be offering mammography technologist training to safety net facilities to improve the skills of their mammography technologists. In collaboration with Northwestern's Lynn Sage Breast Imaging Center, we will be having a new educational symposium geared toward breast imaging teams and we will be improving on this first year's data collection tools so that more information can be gathered on quality of mammography.

We will also be following up with future reports on our findings from the radiologist's quality survey and the mammography capacity surveys.

Together as a state, we believe that we can improve the quality of breast care and move to a day where every woman has an equal chance at survival from breast cancer.

REFERENCES

[i] Gray JE. Mammography (and Radiology?) is still Plagued with Poor Quality in Photographic Processing and Darkroom Fog Radiology 1994;191(2):318-19.

[ii] Improving Breast Imaging Quality Standards (2005) Sharyl Nass and John Ball, Editors. Committee on Improving Mammography Quality Standards, National Cancer Policy Board, The National Academies Press, Washington, D.C.

[iii] Hirschman J, Whitman S, Ansell D. The black:white disparity in breast cancer mortality: the example of Chicago. Cancer Causes & Control 2007;18:323-333.

[iv] Hunt BR, Whitman S, Hurlbert M. Increasing Black:White disparities in breast cancer mortality in the 50 largest cities in the United States. Cancer Epidemiology (2014), http://dx.doi.org/10.1016/j.canep.2013.09.009.

[v] Ansell D, Grabler P, Whitman S, Ferrans C, Burgess-Bishop J, Murray LR, Rao R, Marcus E. A community effort to reduce the black/white breast cancer mortality disparity in Chicago. Cancer Causes Control. 2009; 20(9): 1681-1688.

[vi] Rauscher GH, Murphy AM, Orsi JM, Dupuy DM, Grabler PM, Weldon CB. "Beyond MQSA: Measuring the quality of breast cancer screening programs" American Journal of Roentology. 2014 Jan; 202(1):145-51. doi: 10.2214/AJR.13.10806. Epub 2013 Nov 21.

[vii] Kan L, Olivotto IA, Warren Burhenne LJ, Sickles EA, Coldman AJ. Standardized abnormal interpretation and cancer detection ratios to assess reading volume and reader performance in a breast screening program. Radiology. 2000 May; 215(2):563-7.

[viii] Elmore JG, Jackson SL, Abraham L, Miglioretti DL, Carney PA, Geller BM, Yankaskas BC, Kerlikowske K, Onega T, Rosenberg RD, Sickles EA, Buist DS. Variability Radiology. 2009 Dec; 253(3):641-51. doi: 10.1148/radiol.2533082308. Epub 2009 Oct 28.

[ix] Miglioretti DL, Gard CC, Carney PA, Onega TL, Buist DS, Sickles EA, Kerlikowske K, Rosenberg RD, Yankaskas BC, Geller BM, Elmore JG. When radiologists perform best: the learning curve in screening mammogram interpretation.. Radiology. 2009 Dec; 253(3):632-40. doi: 10.1148/radiol.2533090070. Epub 2009 Sep 29.

[x]http://www.acr.org/~/media/ACR/Documents/P4P/PerformanceMeasures/ImagingEfficiencyMeasures.pdf

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