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# A comparison of adherence to imposed versus self-chosen quality metrics

Charles W. Laudenbach

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# A comparison of adherence to imposed versus self-chosen quality metrics

By  
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A Capstone

Presented to the  
Department of Medical Informatics and Clinical Epidemiology  
and the Oregon Health & Science University  
School of Medicine  
in partial fulfillment of  
the requirements for the degree of  
Master of Biomedical Informatics

May 2012

School of Medicine  
Oregon Health & Science University

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CERTIFICATE OF APPROVAL

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This is to certify that the Master's Capstone Project of

Charles W. Laudенbach, MD

"A comparison of adherence to imposed versus self-chosen quality metrics"

Has been approved

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Capstone Advisor

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## **ABSTRACT**

Despite knowledge of evidence-based guidelines, physicians often do not follow best practices. Barriers to physician quality improvement efforts include a culture that does not value measurement, time constraints, and little training in quality improvement efforts. Electronic health records (EHRs) have been shown to improve care in patients with diverse medical problems including asthma, diabetes, congestive heart failure, chronic kidney disease, depression, children with ADHD, childhood obesity, and in preventive care screening for breast cancer and colorectal cancer. EHRs have also been shown to reduce medication errors and infection rates. Meaningful use (MU) requirements are an attempt to incent physicians to use EHRs to improve quality by linking financial payments to quality reporting.

Meaningful use requires eligible providers to track 3 core quality metrics and 3 other metrics from a menu set of 38 quality metrics, many designed for primary care, but for many medical specialties there are no pertinent quality metrics included in the meaningful use set.

With similar financial incentives, will physicians without appropriate metrics participate in designing specialty specific metrics, and how will their adherence to custom metrics compare with adherence to metrics by physicians with appropriate meaningful use metrics?

This project examined whether physicians would report on clinical quality measures mandated by an outside agency, and whether they would be willing to



develop clinical quality metrics they felt exemplified quality in their specialty. Departments without the required number of CMS approved metrics were encouraged to develop metrics that they felt were meaningful for their specialty. While the ideal metrics are evidence-based medicine (EBM) guidelines or best practices, it is recognized that not all specialties have EBM-based guidelines readily available. However, all guidelines had to plausibly improve care processes, outcomes, or both.

Tracking the metrics had to be technically feasible using our current software. Forms for use within the EHR were developed as needed to facilitate data collection by the providers to document clinical care measures.

This project measured adherence to quality metrics as a surrogate marker for clinical quality. It compared adherence rates between specialties with and without appropriate meaningful use quality metrics, and examined rates of adherence between mandated and self-selected metrics.

The results of this project demonstrated that providers may be willing to report on quality metrics and may participate in choosing and developing metrics to report on. Providers in departments with few MU metrics and those with many MU metrics made similar significant improvements in rates of adherence to the MU core metrics, but no significant improvements in the MU menu metrics. Both groups made similar significant improvements in specialty-selected metrics.

## **INTRODUCTION**

Despite the availability of evidence-based guidelines, physicians often do not follow best practices and quality suffers. Patients with chronic disease receive only 56% of recommended care. For example, 37% of diabetic patients have HbA1c levels greater than 7.0, which is felt to represent suboptimal control of their disease.<sup>1</sup> Total cholesterol levels are above 200 in 50% of diabetics. Half of the patients admitted for congestive heart failure are readmitted to the hospital within 90 days. Two-thirds of patients with hypertension are undertreated.<sup>2</sup>

System issues frequently get in the way of good clinical care. This may be due to clinical inertia such as when a treatment is done because that is the way it has always been done. It may be due to lack of knowledge, or insufficient time or resources to implement current best practices. Improving quality requires changing care delivery.

Previously, there was little incentive to change how care was delivered. Because of this, the Center for Medicare and Medicaid Services (CMS) and many private payers are shifting to reimbursement based, at least in part, on quality. As more patients require more complex care, a higher component of physician payment depends on clinical quality and patient satisfaction metrics in pay-for-performance reimbursement formulas.<sup>3</sup> Pay-for-performance for this study is defined as “value-based purchasing” that rewards care providers for meeting performance targets related to quality. In 2005, there were more than 75 different

pay-for-performance contracts in place at health plans affecting 39 million enrollees.<sup>4</sup> Properly structured incentives motivate physicians to change care delivery. Improving quality requires changing care reimbursement.

### **Benefits of EHRs, Registries, Pay-for-performance and Quality Improvement**

Electronic Health Records (EHRs) can improve medical care through reminders, alerts, drug interaction warnings, and other decision support to enhance provider adherence to guidelines.

A disease registry, for the purposes of this study, can be defined as a computerized collection of data concerning the treatment rendered to patients with a specific disease. Disease registries provide multiple benefits. They can be used to provide feedback to physicians on clinical endpoints, to alert physicians when patients are not meeting performance metrics, to generate reminders to physicians for what care is due, to notify patients of what care is due, and to identify patients needing more intensive management. Studies show that registries used in these ways can improve clinical processes and outcomes.<sup>1</sup> The widely used chronic care model, which has been shown to improve clinical care, makes use of registries to improve care delivered to a patient population with a specific disease.<sup>5</sup>

Pay-for-performance programs also show benefits. Hospitals that participated in pay-for-performance projects had significantly higher quality scores in the clinical areas studied and a higher overall quality score.<sup>6</sup> Financial incentives did not decrease quality in non-measured areas.<sup>7</sup> In other industries bonuses for

high quality is common.<sup>8</sup> Health plans benefit financially when patients require fewer hospitalizations so it is reasonable to expect them to share this with physicians through higher payments and with purchasers of health care policies through lower premiums.<sup>3</sup>

Physicians, staff, and patients all benefit from quality improvement activities. Measurement and quality improvement activities improved practice efficiency, patient and staff retention, and provider and staff satisfaction. For example, in one study, seventy-four percent of physicians noted improved efficiency. Revenues increased in 40% of physician practices, and no physicians reported decreased revenues. Increased patient satisfaction and retention was reported by 71% of practices. Over half of the practices reported improved patient outcomes, and 66% of physicians felt their reputation improved.<sup>9</sup> In another study, physicians in practices that engaged in quality improvement activity reported feeling less professional isolation (15% vs 27%), work-life stress (24% vs. 34%), and dissatisfaction with practice (19% vs. 31%).<sup>10</sup>

### **Barriers to Change**

Physician issues, including physician culture, training, time, and concerns about measurement, are a barrier to changing the delivery of healthcare. Physicians often reject efforts to measure clinical quality or attempt to discredit the process. When measured, they may attempt to shift blame for the results and frequently take poor results as a personal failure rather than a system indictment. In the past,

physician training rarely included how to work in or lead a team effectively, and most practicing physicians have no training in quality improvement techniques.<sup>11</sup> Two thirds of physicians cite time as a barrier to implementing change and note it can take 2 to 3 years to see results in outcomes.<sup>9</sup> Bodenheimer et al. quoted one physician, “All these things make more work for me, so I don’t do them.”<sup>2</sup>

Physicians have several legitimate concerns about measurement of quality data. Physicians know recording and coding are inaccurate and question whether what is measured truly affects outcomes. When physicians perceive that data are incorrect, they pay less attention to the feedback they receive.<sup>12</sup> Most physicians have received reports labeling them as an outlier, which are often based on inadequate sample size, a skewed sample, or outdated claims data.<sup>4,11</sup> Physicians are worried that health plans do not understand diseases and treatments. One physician, talking about health plan guidelines, stated they assume “all the patients who have asthma or high blood pressure are the same.”<sup>2</sup> Physicians also worry that much of medical care depends on patient behavior and feel unfairly punished if patients do not follow medical advice.<sup>12</sup>

Practice issues, including inadequate information technology, inadequate financial resources, and inadequate staffing, are also barriers to changing the delivery of healthcare. In 2009, most physicians did not use an electronic health record (EHR) or registry, with 47% reporting cost a major barrier,<sup>9</sup> although the usage of EHRs has increased over the last three years. The rapid increase in EHRs in itself can be a barrier since busy providers must learn the new functions and

workflows associated with EHR use. Without careful implementation, the time spent learning the new system and the disruption to the practice during the change could result in decreased attention to clinical quality measures. Despite the increase in EHR adoption, many do not provide registry functions. Even where registries are available, the functions are not always fully implemented, with 51% of registries not linked to clinical data, limiting the value the registry provides.<sup>1,11</sup> While pay-for-performance initiatives are becoming increasingly common, previously there were few financial rewards for implementing an EHR in a fee-for-service environment and payers have not routinely reimbursed for the extra resources required to implement and maintain disease registries.<sup>13</sup> Reimbursement issues also lead to staffing issues. Most primary care practices hire medical assistants to save costs, but 26% of physicians complain that lesser training and scope of practice laws limit how much responsibility physicians can delegate to them.<sup>9,11</sup>

### **Measurement of Performance**

Measurement of performance is essential to improve practice, but the choice of what to measure can affect how readily physicians will buy in. Too many measures can be overwhelming and defeat the purpose of changing healthcare delivery to improve outcomes. Focusing resources on a limited number of goals increases the ability to improve metrics for those goals. There are difficulties finding appropriate quality measures<sup>14</sup>, particularly for certain specialties. There must be clinical agreement with the measures, along with evidence that outcomes improve when these measures are followed. Providers often resist metrics unless they lead

to better outcomes.<sup>15</sup> Process measures are often challenged due to uncertainty over whether they improve outcomes. Outcome measures are difficult to measure due to low event rates and problems with risk adjustment. Despite physician reluctance to embrace process measures, studies have shown a 10% decrease in mortality for every 10% increase in adherence to process measures.<sup>16</sup> There is general consensus among physicians for using appropriate metrics for quality improvement, but little or none for using metrics for pay for performance.<sup>17</sup>

Existing measures with standard methodologies and meaningful benchmarks are best, providing they can be collected with the proposed information technology. Choosing measures that give adequate sample size decreases physician complaints about statistical relevance.<sup>4</sup> The ability to measure adherence to appropriately chosen guidelines allows physicians to implement quality improvement techniques to redesign care delivery. Physicians must believe the quality targets being rewarded are beneficial to their patients, achievable, and aligned with their own perception of quality.<sup>6</sup>

Metrics are best used for continuous quality improvement. The metrics should have substantial impact, be scientifically valid, feasible to collect in an EHR, address what can be improved, and should be appropriate for the health of the patient.<sup>18, 19</sup> There are multiple ways to classify metrics, including by how they are developed and on by what they measure. Metrics can be divided into two classes based on how they are developed, performance measures and quality measures. Performance measures are developed in collaboration with multiple stakeholders

and include public comment and peer review. Quality measures are developed to support local quality improvement efforts but have not been validated in the same rigorous manner as performance measures.<sup>18</sup> Measures can be divided into three classifications depending on what they measure, structure, process and outcome measures. Structure measures address the resources of the system, including primary or specialty care, use of an EHR, and board certification. Process measures address how care is provided and what services are rendered. Outcome measures address how the care provided impacts the patient's health status and function.<sup>19</sup> While the ideal metrics are evidence-based medicine (EBM) guidelines or best practices, not all diseases have EBM-based guidelines readily available. In that case, metrics may alternatively be derived from best prevailing thoughts by leaders in the field.

### **Pay-for-Performance Incentives**

When targeting physicians, appropriate clinical quality measures in well-designed programs are important.<sup>6</sup> Physicians must believe the quality targets being rewarded are beneficial to their patients, achievable, and aligned with their own perception of quality. Quality targets are better received than previous utilization targets that physicians thought merely impeded their ability to provide good care. In addition, physicians are intrinsically motivated to provide good care. Most feel they do so and are more accepting of incentives structured as a reward for a job well done, rather than as a bribe to do a good job.<sup>12</sup>



The distribution of incentives affects how powerful they are to motivate change. Distributing money equally to all physicians in the practice decreases the incentive to change and is used infrequently. Distributing incentives based on reaching target goals is much more common and much more powerful. However, too many targets can be distracting and make it more difficult for the physician to improve care in all of the targets. Some practices distribute money based on internal ratings for participation but these do not have the same incentive power. Recognizing the group effort and the practice resources involved, some practices retain the entire pay-for-performance bonus to lessen conflict and build cohesiveness. This is the least powerful incentive. A hybrid approach retains some money for the practice and distributes the rest according to one of the other plans.<sup>12</sup>

## **Meaningful Use**

Congress passed The Health Information Technology for Economic and Clinical Health Act (HITECH) in 2009. This act set aside money to encourage providers to adopt an EHR to improve the quality of care, address known gaps in care, improve population and public health, and promote efficient use of healthcare resources.

The Center for Medicare and Medicaid Services (CMS), at the direction of Congress, has implemented an incentive plan to increase the use of EHRs to increase the quality of health care, in part by changing the delivery system. This pays physicians to implement and use an EHR, but payment depends on demonstrating meaningful use (MU) of the EHR. The meaningful use requirements include reporting on quality metrics.<sup>20</sup> All physicians must report on three core measures and choose three other metrics to report on from a menu of available metrics approved by CMS.

The core quality metrics for meaningful use are adult weight screening and counseling, smoking assessment and cessation intervention if indicated, and measurement of blood pressure in patients with hypertension. Meaningful use allows alternate core metrics of child and adolescent weight screening and counseling, childhood immunization status, and flu vaccination rates for patients 50 and older if the core metrics aren't indicated in a physician's specialty. The menu set

of quality metrics for meaningful use can be broken down into the following categories and corresponding numbers of metrics (see Table 2, Appendix C):

<u>Menu Metrics</u>	
Preventive Medicine	2
Immunizations	1
Hypertension	1
Coronary Artery Disease and Heart Failure	9
Diabetes	8
Asthma	3
Cancer Screening	3
Cancer Treatment	2
Prenatal Care	3
Ophthalmology	2
Appropriate Testing	3
Depression Management	1
Total	38

All of these metrics have good evidence supporting them, however, it is unclear how many physicians will buy-in to meaningful use with these quality metrics. Many of these metrics apply to primary care, some apply to certain specialties, and for some specialties there are few if any metrics that truly indicate the quality of care provided by that specialty. Furthermore, in Stage 1 of meaningful use, the quality metrics are reporting metrics only with no threshold that must be met. In other words, simply reporting on the 3 core metrics and 3 other menu metrics, even if the compliance rate is zero, is all that is required to meet the quality reporting measure of meaningful use. As noted above, for physician buy-in,

physicians must believe quality metrics are beneficial, achievable, and result in better outcomes for their patients. They may not be willing to buy-in if they believe it only increases their workload without enhancing what they perceive to be quality care for their specialty, although some will have no choice since they are employees.

### **Current EHRs and Meaningful Use**

Most studies showing that EHRs can increase quality and safety come from just 4 institutions with “homegrown” EHRs that were designed and implemented in house. Current commercial products have the requisite functions to document meaningful use, and also to develop unique provider alerts and report on the care provided.<sup>21</sup> Despite this, data capture in EHRs can be difficult. Physicians worry about the impact on production using an EHR will cause. Without physician buy-in there can be variability in recording data in a structured manner. This results in different assessments of physician performance between automated and manual review of the patient record.<sup>22</sup> Quality improvement activities that engage both low and high performing providers are the most effective.<sup>23</sup>

## **RESEARCH QUESTION**

With similar financial incentives, will physicians without the requisite six meaningful use metrics, appropriate for their specialty, participate in designing specialty-specific quality metrics, and how will their adherence to their custom metrics compare with adherence to metrics by physicians in specialties where there are an adequate number of meaningful use metrics?

Quality for this project is defined as processes of care that comply with evidence-based clinical guidelines to produce improved outcomes. These can take the form of lower morbidity and mortality or increased patient satisfaction.<sup>24</sup> It is recognized that not all specialties have EBM-based guidelines readily available. For this proposal, metrics may alternatively be derived from best prevailing thoughts in the specialty. All guidelines must plausibly improve care processes, outcomes, or both. Older utilization targets, those merely limiting the number of services rendered, are not considered part of the definition of quality for this project. However, there will be a shift in services since following evidence-based guidelines will reduce unnecessary services while increasing necessary services.

This project examined how well physicians in different specialties followed quality guidelines depending on how appropriate they were for their specialty. It also looked at how well guidelines were followed depending on the amount of input the physician had into developing and choosing the metric.

## **METHODS**

### **Type**

This study compared the mean adherence to clinical quality metrics (CQMs) between groups that have and do not have at least six MU metrics to choose from. Samples were obtained for each of these two groups three months apart and the mean adherence to CQMs were compared between the two groups at each time point, along with the longitudinal change within each group, and the difference in the longitudinal change between the groups. This was a prospective pre- and post-study with a control. This project measured adherence to quality metrics as a surrogate marker for clinical quality. It compared adherence rates between specialties with and without appropriate meaningful use quality metrics, and examined rates of adherence between mandated and self-selected metrics. The purpose was to determine 1) if physicians will participate in meaningful use as mandated by an outside agency, 2) to determine if physicians will participate in quality improvement where they control the metrics, and 3) to compare rates of metric adherence between these two groups.

### **Design**

Data were collected for all departments on the three core metrics from meaningful use. Data were also collected on other metrics identified by the department, including MU menu and specialty-selected metrics. Primary and specialty care departments with appropriate MU menu metrics could choose other

metrics from the MU menu list, or specialty-selected metrics of their choosing. Specialty departments that did not have appropriate MU metrics were identified and assisted in finding or creating quality metrics appropriate for their specialty.

### **Setting and Subjects**

Rockwood Clinic (RWC) is a large, multi-specialty clinic founded in 1930 with over 250 providers in 28 specialties. The clinic provides a wide range of clinical services in primary care (Family Medicine, Internal Medicine, Pediatrics and Obstetrics/Gynecology), medical subspecialties (Cardiology, Endocrinology, Gastroenterology, Hematology/Oncology, Nephrology, Pulmonology, and Rheumatology) and surgical specialties (General Surgery, Breast and Cancer Surgery, ENT, Ophthalmology, Orthopedics, Plastic Surgery, Podiatry and Urology) along with Allergy, Dermatology, Neurology, Radiation Oncology and Urgent Care. The clinic also has an Anti-coagulation management service and Physical Therapy department. Rockwood Clinic has over 35 outpatient locations in the Spokane, Washington metropolitan area. Surgeries are performed in four hospitals in Spokane. It serves a population of over 470,000 people in Spokane County, and over 600,000 people in the combined Spokane-Coeur d'Alene Metropolitan Statistical Area. It is a major referral center for the Inland Northwest, with patients coming from Eastern Washington, Northern Idaho, and Western Montana. It is the largest clinic between Minneapolis and Seattle.

Rockwood Clinic (RWC) has started an internal pay-for-performance plan to engage physicians in the quality improvement process and create a culture of measurement and constant improvement. The clinic uses GE Centricity EHR as its medical record. It also uses Meridios HealthMatrix software to monitor compliance with quality metrics, to provide a dashboard for physicians to assess how well they are complying with metrics, and as a tool for physicians to manage populations of patients. All providers at Rockwood Clinic are potentially part of the pay-for-performance plan and every department is expected to participate in choosing metrics they feel represent quality in their specialty. The pay-for-performance plan does not limit providers to the meaningful use quality metrics, but rather encourages departments to choose good evidence-based metrics appropriate to the specialty. Specialty departments are assisted in finding or creating appropriate metrics for their specialty that can be tracked through use of the EHR. Metrics are determined by consensus of the department. All custom specialty metrics undergo content validation by the Quality Improvement Committee. The committee is led by the Medical Director and consists of physicians in multiple specialties, the Department heads of Health Information Management and Quality Improvement, several clinical department leaders, and associate personnel from the two dominant health plans in the area. All metrics are tested using actual data to ensure validity of the reporting. Forms are created in the EHR to assist all providers in data capture. A dashboard has been created that allows all providers to both assess their adherence to the metrics in real-time and manage a population of patients.



Potential subjects for this study were the clinical departments at RWC. No individual provider or patient data were collected. All departments at Rockwood Clinic that participated in the pay-for-performance plan were included. Most of the departments were eligible to participate in the Medicare or the Medicaid meaningful use incentive program. Two departments that participated in the pay-for-performance plan, Anti-coagulation Management and Physical Therapy, were not eligible for the meaningful use program since no Eligible Providers (EPs), as defined in the MU regulations, worked in these departments. Many of the departments had Advanced Registered Nurse Practitioners (ARNPs) and Physician Assistant-Certified (PA-Cs), collectively referred to as Non-Physician Providers (NPPs), working in them. In the Medicare MU regulations, NPPs are not considered EPs, however, for the purpose of this study their data was included in the department averages since they were eligible for the pay-for-performance plan and often provided care to patients that were also seen by EPs. Pediatrics and Pediatric Endocrinology were the only two departments that qualified for the Medicaid MU Incentive Plan. NPPs are considered EPs for the Medicaid MU Incentive Plan and were included in the department data.

## **Metrics**

All data for tracking the clinical quality metrics in this project were entered in Centricity Group Management and Centricity EMR (GE Healthcare IT, Barrington, IL) and reported by HealthMatrix registry software (Meridios, Coshocton, OH). Data from Centricity Group Management and Centricity EMR was abstracted by

HealthMatrix to provide a dashboard that providers used to follow adherence to various metrics and to manage groups of patients.

Queries to track MU clinical quality metrics were developed in HealthMatrix if a department chose to track compliance with the metric. Departments were also allowed to develop other metrics they felt were indicators of high quality care. All specialty-selected metrics underwent content validation by the Quality Improvement Committee. Content to capture the data required to report on the metric was created in Centricity EMR and providers and staff were educated on the use of the data entry forms where required.

### **Data Collection**

Sampling was done twice, three months apart, in early November 2011 and late January 2012. At both times, data from each department was obtained on the rate of adherence to the three MU core or alternate core metrics. Data was also obtained for the MU menu metrics and specialty-selected metrics chosen by each department. Some departments chose a combination of MU menu and specialty-selected metrics to report on for their pay-for-performance plan.

The average rate of adherence for each metric by department was collected. This was the average rate of adherence for each metric for all the providers in a department. Metrics were divided into MU core metrics, MU menu metrics, and specialty-selected metrics. Each department was given three scores, one for the average of the core metrics, one for the average of the menu metrics, and one for the

average of the specialty-selected metrics. Each of these ranged from 0 to 1, indicating the percentage of patients seen by the department who met the metric criteria.

Data on adherence to quality metrics was obtained for all departments after appropriate metrics were chosen and EHR content was built using the EHR and supplemental dashboard software. Standard queries were available for meaningful use metrics.

## **Evaluation**

Descriptive, parametric and non-parametric statistics were calculated using PASW Statistics 18.0.3 (Predictive Analytics Software, subsequently IBM SPSS Statistics, IBM, Armonk, NY).

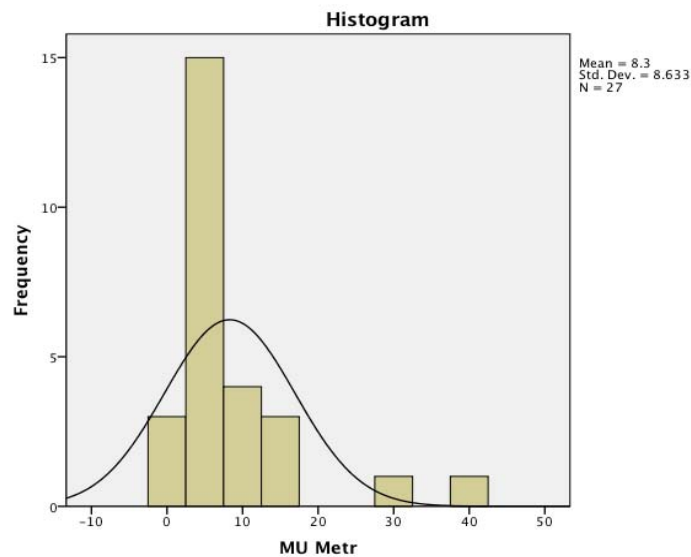
Statistics compared adherence to quality metrics between departments with and without meaningful use quality metrics and between meaningful use metrics and self-chosen metrics. The study looked at the percentage of patients in a department receiving the recommended care. The study looked for significant differences between groups and for a correlation between self-determination and adherence to the chosen metrics. Individual physician data was blinded and reports were by specialty department. No identifiable patient data was collected.

Departments were grouped into two categories, those with at least six MU metrics and those without six MU metrics. Since some specialties had many MU metrics to choose from, sub-group analysis was done on the group with at least six

metrics, dividing it into two groups based on the number of metrics. Means were compared between groups for both the November and January samples to determine if there was an absolute difference in the rate of adherence to the metric between groups at each time. The means within each group were compared from November to January to determine the longitudinal change. Finally, the change between November and January was compared between the groups.

## **RESULTS**

The mean number of MU metrics per specialty was 8.3, with a standard deviation of 8.633. The 95% confidence interval ranged from 5.44 to 11.55. See Figure 1. Since 6 metrics are required for MU reporting, and the lower range of the confidence interval fell at 5.44, departments with less than 6 metrics were both unable to report on 6 metrics felt to be meaningful for their specialty and were below the 95% confidence interval of the mean. For the purpose of this study, these departments were combined into the Limited group.



**Figure 1. Meaningful Use Metrics by Department.**

Departments with over 6 metrics were able to report on the required 6 MU clinical quality measures and were combined into the Complete group. Since some departments had a very large number of metrics, and the upper limit of the 95% confidence interval was 11.55, the Complete group was subdivided into a Sufficient

group with 6 to 11 metrics, and an Extensive group with 12 or more metrics for sub-group analysis. There were 14 departments in the Limited group with less than 6 MU metrics, and 13 departments in the Complete group that had 6 or more MU metrics. The Complete group was subdivided into a Sufficient group with 7 departments, and an Extensive group with 6 departments. See Table 1.

**Table 1. Meaningful Use Metrics by Department.**

<b><u>Department</u></b>	<b><u># Of MU Metrics</u></b>	<b><u>MU Group</u></b>	<b><u>MU Sub-Group</u></b>
Dermatology	0	Limited	Limited
Podiatry	2	Limited	Limited
Surgery	2	Limited	Limited
Breast Surgery	3	Limited	Limited
ENT	3	Limited	Limited
Plastic Surgery	3	Limited	Limited
Radiation Oncology	3	Limited	Limited
Urology	3	Limited	Limited
Gastroenterology	4	Limited	Limited
Neurology	4	Limited	Limited
Orthopedics	4	Limited	Limited
Anti-Coagulation	5	Limited	Limited
Ophthalmology	5	Limited	Limited
Physical Therapy	5	Limited	Limited
Urgent Care	6	Complete	Sufficient
Nephrology	7	Complete	Sufficient
Pediatric Endocrinology	7	Complete	Sufficient
Rheumatology	7	Complete	Sufficient
Allergy	8	Complete	Sufficient
Hematology/Oncology	10	Complete	Sufficient
Pulmonology	10	Complete	Sufficient
Pediatrics	12	Complete	Extensive
Obstetrics/Gynecology	13	Complete	Extensive
Cardiology	14	Complete	Extensive
Endocrinology	14	Complete	Extensive
Internal Medicine	32	Complete	Extensive
Family Medicine	38	Complete	Extensive

The range of available metrics was extremely broad, with Dermatology having 0 metrics that they felt applied to their specialty, and Family Medicine having 38 available metrics to choose from. See Table 2, Appendix C. The mean number of MU metrics for the Limited group was 3.29. This was significantly different from the mean number of metrics for the Complete group, which was 13.69 (p-value<0.001). The Sufficient and Extensive group means were 7.86 and 20.50 respectively, both also significantly different from the Limited group mean (p-value<0.001).

The Limited group participated in creating Specialty-selected metrics. The Limited group tracked an average total of 6.71 metrics, a significant average increase of 3.42 metrics above the MU metrics (p-value=0.001). See Table 3, Appendix D.

### **Meaningful Use Core Metrics**

The Limited group had a mean adherence rate with the MU core metrics in November of 0.571, which improved to 0.593 in January. The Complete group averaged 0.678 in November and 0.687 in January. There was a significant difference between the Limited and Complete groups for both the November and January core metrics (p-values=0.008 and p-value=0.025 respectively). Both groups made significant improvement between November and January (p-values=0.001 and p-value=0.023 respectively). The difference in the amount of change between the two groups was not significant (p-value=0.830). Sub-group analysis did not change these results. See Table 4 and Figure 2, Appendix E.

### **Meaningful Use Menu Metrics**

The Limited group had a mean rate of adherence to the MU menu metrics in November of 0.873, which improved to 0.917 in January. The Complete group averaged 0.729 in November and 0.752 in January. There was no significant difference between the Limited and Complete groups for both the November and January menu metrics (p-values=0.273 and p-value=0.273 respectively). Neither group made a significant improvement between November and January (p-values=0.180 and p-value=0.165 respectively). The difference in the amount of change between the two groups was not significant (p-value=0.273). Sub-group analysis did not change these results. The November to January time course of the study included the holidays, but data was collected for the Core and Specialty-selected metrics at the same times and these did show significant improvements. The small sample in the Limited group, with only 2 departments collecting MU Menu metrics, decreased the power to detect significant changes between the November and January data. See Table 5 and Figure 3, Appendix E.

### **Specialty-Selected Metrics**

The Limited group had a mean rate of adherence to the Specialty-selected metrics in November of 0.657, which improved to 0.789 in January. The Complete group averaged 0.634 in November and 0.713 in January. There was no significant difference between the Limited and Complete groups for both the November and January Specialty-selected metrics (p-values=0.772 and p-value=0.246 respectively).



Both groups made significant improvement between November and January (p-values=0.008 and p-value=0.017 respectively). The difference in the amount of change between the two groups was not significant (p-value=0.304). See Table 6 and Figure 4, Appendix E.

In sub-group analysis, the Sufficient group had a mean rate of adherence to the Specialty-selected metrics in November of 0.656, which improved to 0.733 in January. The Extensive group averaged 0.612 in November and 0.693 in January. These results showed that when the Sufficient and Extensive groups were broken out individually there was no significant improvement from November to January (p-values=0.138 and p-value=0.075 respectively), unlike when they were combined and did have a significant improvement. There was no significant difference between the November and January means for any of the groups, and no significant difference between the amounts of change among the groups.

#### **Limited Group Specialty-Selected Metrics vs Complete Group Menu Metrics**

The Limited group had a mean rate of adherence to the Specialty-selected metrics in November of 0.657, which improved to 0.789 in January. The Complete group averaged 0.729 in November and 0.752 in January on the MU menu metrics. There was no significant difference between the Limited group using the specialty-selected metrics and the Complete group using the MU menu metrics in either November or January (p-values=0.332 and p-value=0.616). The Limited group made a significant improvement between November and January (p-value=0.008). The

Complete group did not make a significant improvement between November and January (p-value=0.165). The difference in the amount of change between the two groups was significant (p-value=0.028). Sub-group analysis did not change these results. See Table 7 and Figure 5, Appendix E.

## **DISCUSSION**

This study examines three related questions concerning provider adherence to clinical quality metrics. First, whether physicians would participate in following and reporting a minimum number of clinical quality measures mandated by an outside agency, even if there were not a minimum number of available measures considered appropriate for the specialty by the provider. Second, whether they would participate in developing clinical quality measures they felt were appropriate to their specialty if few or none were available. Finally, whether there was a difference in the rate of adherence between groups with and without adequate appropriate measures, and if there was a difference in adherence rate between mandated and specialty-selected quality metrics.

### **Will Providers report clinical quality metrics mandated by an outside agency?**

There are 27 departments at Rockwood Clinic in this study. All reported on quality measures mandated by an outside agency. Most of the departments reported on the MU core metrics and either MU menu or specialty-selected metrics for outpatient clinical care. Several of the surgical specialty departments participated in reporting quality metrics associated with surgeries performed in the hospital. These were captured by a paper process performed by the local hospital as part of the Washington State Surgical Care and Outcomes Assessment Program (SCOAP) initiative. Due to the paper process used to collect these measures the results are not available in the registry software used in this study. Some of the surgical

departments did not feel there were any outpatient metrics that truly indicated quality as well as the surgical metrics. The surgical quality measures are not part of the MU quality measures but the surgical providers did report on quality measures mandated by an outside agency.

**Will Providers participate in developing clinical quality metrics?**

All of the other 25 departments chose meaningful use core or menu metrics to report, or participated in developing specialty-selected metrics to report on. The departments with Limited MU metrics participated in selecting or creating metrics they felt were appropriate to their specialty. Only two of the departments in the Limited group had MU menu metrics they felt were indicative of high quality care for their specialty. The departments in the Limited group tracked an average of 6.71 metrics, indicating providers in these specialties may be willing to develop metrics and report on them even when there are not easily available metrics for them to use. This may be important in designing further stages of meaningful use. Specialty societies may be of assistance in developing further metrics for specialties that currently have few metrics.

**What is the adherence rate with the clinical quality metrics?**

The adherence rates for the MU core and Specialty-selected metrics showed improvement over the time course of this study, but the MU menu adherence rate did not show significant improvement.

## MU Core Metrics

At the start of the study, there was a significant difference between the Limited and Complete group in the rate of adherence to the MU core quality metrics. At the end of the study, there was still a significant difference between the two groups, but both groups made significant improvement over the course of the study. That is, the Limited group's ending rate was significantly higher than the starting rate for the Limited group. This was also seen for the Complete group. Comparing the amount of improvement made by each group over the course of the study, there was not a significant difference between the amount of improvement made by the Limited and the Complete groups.

These results show that, in this study, providers are willing to report the core metrics but there is a difference in the rate of adherence between departments with six or more MU metrics and those departments with less than six MU metrics. Many of the departments initially felt that the measures included in the MU core metrics did not really affect their practice. That may contribute to the differences between the groups in the absolute values of their adherence rates for these metrics. Both groups made significant improvements in the metrics, however. This indicates that one of the HITECH Act's goals of improving the clinical quality of medical care in the United States may be achievable by mandating the reporting of clinical quality metrics for providers.

## MU Menu Metrics

At the start of the study, there was no significant difference between the Limited and Complete group in the rate of adherence to the MU menu quality metrics. At the end of the study, there was still no significant difference between the two groups. Neither group made significant improvement over the course of the study. That is, the Limited group's ending rate was not significantly higher than the starting rate for the Limited group. This was also seen for the Complete group. Comparing the amount of improvement made by each group over the course of the study, there was not a significant difference between the amount of improvement made by the Limited and the Complete groups.

The fact that there is no significant improvement in the MU menu metrics is a major concern for the viability of mandated CQM reporting to improve care. This may be due to multiple reasons. The core metrics are well supported by evidence and do apply to most specialties. It is hard for any physician in any specialty to deny the importance of weight, smoking and hypertension to the health of their patient. Furthermore, treatment outcomes in most specialties are impacted, at least to some extent, by obesity, smoking, or hypertension. On the other hand, the MU menu metrics are diverse, with some specialties having no MU menu metrics that they feel apply. The requirement to report six metrics, particularly if none of the menu metrics apply, may adversely affect provider perception of the utility of tracking and reporting clinical quality measures. As noted by Grossbart, physicians must believe the quality measures are beneficial to their patients and aligned with their own

perception of quality.<sup>6</sup> Another possibility, for departments with a large number of menu metrics available, is that the large number of choices made it difficult to focus on a few metrics, thus leading to little or no improvement for all of them. In subgroup analysis, the Sufficient group had an average MU menu score of 0.805 in November that rose to 0.862 in January. The Extensive group, which had many metrics to choose from, had scores of 0.679 and 0.679 in November and January respectively. Neither the differences in the scores, nor the differences in the change over time are significant in this small study, which may be due to a lack of power to show statistical significance. It does call into question, however, the effect of having many metrics and is a topic for further investigation.

#### Specialty-Selected Metrics

At the start of the study, there was a significant difference between the Limited and Complete group in the rate of adherence to the Specialty-selected quality metrics. At the end of the study, there was still a significant difference between the two groups, but both groups made significant improvement over the course of the study. That is, the Limited group's ending rate was significantly higher than the starting rate for the Limited group. This was also seen for the Complete group. Comparing the amount of improvement made by each group over the course of the study, there was not a significant difference between the amount of improvement made by the Limited and the Complete groups.

This indicates that, at least in this study, providers are willing to develop, report, and invest the time and effort to improve their adherence rate to these metrics. This may further indicate that providers perceived these metrics, and the processes they put in place to improve them, valuable to the care of their patients.

The provider perception of the importance of the MU metrics may be lessened by the fact that most of the MU metrics are process metrics, and very few are outcome metrics. Kirsch points out that providers will often resist metrics unless they are outcome measures.<sup>15</sup> As with the MU metrics, the Specialty-selected metrics were predominantly process metrics. Contrary to Kirsch, in this study, providers do seem willing to improve adherence on process measures if they are involved in choosing them.

The CMS MU rules require providers to report three of the MU menu metrics. This allows providers to choose metrics that they feel are meaningful for quality in their practice. In this study, providers in the Limited group, all with few MU menu metrics available, were allowed to choose three metrics that they felt were meaningful for their practice, and to report on them rather than arbitrarily requiring metrics that they felt were not meaningful. Since both the MU menu metrics and the Specialty-selected metrics give providers the option to select metrics they feel are indicative of quality in their practice, the Specialty-selected metrics for the Limited group were analogous to the MU menu metrics for the Complete group and rates of adherence were compared.



At the start of the study, there was no significant difference between the Limited group's rate of adherence to the Specialty-selected metrics and the Complete group's rate of adherence to the MU menu quality metrics. At the end of the study, there was still no significant difference between the Limited group's rate of adherence to the Specialty-selected metrics and the Complete group's adherence to the MU menu metrics. The Limited group made significant improvement in the Specialty-selected metrics over the course of the study. That is, the Limited group's ending rate was significantly higher than the starting rate for the Limited group. This was not seen for the Complete group when looking at the MU menu metrics. There was a significant difference between the amount of improvement made by the Limited and the Complete groups.

Comparing the rates of adherence to the MU menu metrics by the Complete group with the adherence rates to the Specialty-selected metrics for the Limited group shows that there is a significant improvement in the adherence rates only for the Specialty-selected metrics over the course of the study. The Complete group has sufficient numbers of MU menu metrics to choose from but did not make a significant improvement in their adherence rates to the metrics. There are at least two possible explanations for this. As noted above, if there are too many targets the providers may not be able to change their practice workflows to meet all the targets. Alternatively, if providers value the Specialty-selected metrics more than the MU menu metrics this may explain why they increased their adherence to the Specialty-selected metrics but not to the MU menu metrics. This is only conjecture since this

study did not examine the perceptions or motivations of the individuals involved, but the disparity in improvement rates brings into question whether outside mandates to report on specific metrics will positively impact medical care. This suggests further research that may be beneficial in determining the factors that will motivate providers to follow guidelines, and may have importance in designing the next stages of meaningful use to accomplish the goal of improving medical care. As currently outlined in Stage 1, MU clinical quality reporting is rigidly defined, allowing the use of only specific metrics. A wider range of available metrics may be beneficial in improving provider adherence to metrics, but providers did not show a significant improvement in the menu metrics even in the group that had a large variety of metrics to choose from. Alternatives that may lead to increased adherence to metrics may be to allow individual providers, or Specialty societies, to generate appropriate metrics to report on for the individual specialty.

### **Strengths**

One of the strengths of this study is that Rockwood Clinic is a single, large, multi-specialty group with each department drawing from the same geographic area with similar patient demographics. All providers used the same EHR throughout the reporting period. Patients were attributed to providers based on being seen twice, or having a new or existing patient complete exam or consult, so this increased the likelihood of having an actual medical relationship with the provider, and so increased the likelihood of meeting guidelines.<sup>25</sup> Another strength is that this study looked only at clinical quality measures. For meaningful use, a provider must meet

15 core and 5 menu functional measures, along with reporting six clinical quality measures. Not meeting even one of the functional measures means all financial incentive is lost. All providers in this study had similar financial incentive without the risk of losing the financial incentive if a single MU functional measure wasn't met. This prevents the possibility of providers giving up on the quality measures if they feel that they won't meet other items required for MU.

### **Limitations**

This study has several limitations. First, it is non-randomized and is not blinded, although this is difficult if not impossible in a study like this. Second, there are differences between the departments that are not controlled for. The choice of metrics to report on was up to the department. Some metrics were easy to collect without additional work by the provider, for instance, HbA1c values that are automatically entered into the EHR from the Lab Information System. Other metrics required the provider to enter data in a structured format that could be used for reporting. Some metrics required new data forms and instructing providers and/or staff in their use. Many departments had combinations of automatically collected data for metrics, provider-entered data for metrics, and new forms for data entry. Third, this study uses composite measures, grouping all the measures for all the providers in a department into an average score for the department. This combines up to six metrics into one average metric score. This is reasonable, particularly with the menu and specialty-selected metrics, since they are usually completely different metrics between departments and so a direct metric-to-metric comparison is not

possible. Also, MU requires reporting on six measures. Comparing the MU core metrics individually does not change the results of the study. Fourth, this is a small study from a single multi-specialty group practice in Eastern Washington so the results may not be generalizable to individual practitioners or small single-specialty groups, providers in other geographic locations or providers with different patient demographics. Finally, Clinic leadership has provided strong support for measuring and improving clinical quality. Without strong leadership at the executive level and a recognizable champion pushing for quality improvement these results may not be achievable in other settings.

## **CONCLUSIONS**

This study shows that providers may be willing to report on quality metrics and may participate in choosing, and developing if need be, metrics to report on. Providers in departments with few MU metrics and those with many MU metrics made similar significant improvements in rates of adherence to the MU core metrics, but no significant improvements in the MU menu metrics. Both groups made similar significant improvements in specialty-selected metrics. This may have importance in the ability of Meaningful Use, as it is currently defined in stage 1, to impact the quality of medical care.

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## APPENDIX A – IRB APPROVAL



December 21, 2011

Charles Laudenbach, MD  
Rockwood Clinic  
400 E. Fifth Ave.  
Spokane, WA 99202

Re: **IRB 1756 -- "A Comparison of Adherence to Imposed Versus Self-Chosen Quality Metrics"**

**Date of Exempt Review Status Expiration: 12-21-2016**

Dear Laudenbach:

For the above noted project, your IRB Application dated 12-6-2011 was reviewed by the IRB on December 20, 2011, by Douglas Weeks, PhD, IRB Co-Chair.

From the information received and reviewed it has been determined that this project qualifies for Exempt Review Status under 45 CFR 46.101.b4.

- If your project is completed prior to the expiration date above, please notify the IRB in writing and provide a brief summary.
- If your research activity is to continue beyond the expiration date above, it is your responsibility to contact the IRB and re-apply for Exempt Review Status.
- If your project is significantly altered in the future, it is your responsibility to contact the IRB for additional review and consideration.

Thank you for your submission of this project for IRB review.

Sincerely,

A handwritten signature in cursive script that reads "Carol Llewellyn".

Carol Llewellyn, CCRP  
Administrator

## **APPENDIX B – ABBREVIATIONS**

ARNP	Advanced Registered Nurse Practitioner
CMS	Center for Medicare and Medicaid Services
EBM	Evidence Based Medicine
EHR	Electronic Health Record
EP	Eligible Provider
GE	General Electric
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health Act
IT	Information Technology
MU	Meaningful Use
NPP	Non-Physician Provider
NQF	National Quality Forum
PA-C	Physician Assistant – Certified
PASW	Predictive Analytics Software
RWC	Rockwood Clinic
SCOAP	Surgical Care and Outcomes Assessment Program
SPSS	Statistical Package for the Social Sciences

## APPENDIX C – MEANINGFUL USE CLINICAL QUALITY MEASURES

**Table 2. Meaningful use clinical quality measures.**

O/P – O=Outcome measure; P=Process measure. NQF – National Quality Forum metric number.

Numbers in the second row indicate the number of MU metrics for the specialty.

### Part 1

Meaningful Use Clinical Quality Measure Title & Description	O/P	NQF #	All	Anti Coag	Breast Surg	Card	Derm	Endo	ENT	Fam Med	GI	Hem Onc	Int Med	Neph	Neur	Ob Gyn	Ophth
		7		8	2	3	14	0	14	3	38	4	10	32	7	4	13

#### Core Set

Hypertension: Blood Pressure Measurement	P	13				X		X		X		X	X	X	X	X	
Tobacco Use Assessment and Intervention	P	28	X		X	X		X	X	X	X	X	X	X	X	X	X
Adult Weight Screening and Follow-Up	P	421				X		X		X		X	X	X		X	

#### Alternate Core Set

Weight Assessment and Counseling for Children and Adolescents	P	24								X							
Childhood Immunization	P	38								X							
Influenza Immunization ≥50	P	41	X					X		X		X	X	X		X	

#### Menu Set

##### Preventive Medicine

Alcohol and Other Drug Dependence Treatment	P	4		X					X	X	X		X				
Smoking and Tobacco Use Cessation	P	27	X		X	X		X	X	X	X	X	X	X	X	X	X

##### Immunizations

Pneumonia Vaccination ≥65	P	43	X					X		X		X	X	X			
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##### Hypertension

Controlling High Blood Pressure	O	18				X		X		X		X	X	X		X	
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##### CAD / CHF

IVD: Blood Pressure Management <140/90	O	73				X				X			X				
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Meaningful Use Clinical Quality Measure Title & Description	O/P	NQF#	All	Anti Coag	Breast Surg	Card	Derm	Endo	ENT	Fam Med	GI	Hem Onc	Int Med	Neph	Neur	Ob Gyn	Ophth
	7		8	2	3	14	0	14	3	38	4	10	32	7	4	13	5
IVD: Complete Lipid Panel and LDL Control <100	O	75				X				X			X				
CAD: Oral Antiplatelet Therapy	P	67				X				X			X				
IVD: Aspirin	P	68				X				X			X				
CAD: Beta-Blocker	P	70				X				X			X				
CAD: Drug Therapy for LDL-Cholesterol	P	74				X				X			X				
CHF: ACE or ARB	P	81				X				X			X				
CHF: Beta-Blocker Therapy	P	83				X				X			X				
CHF: Warfarin Therapy Patients with Atrial Fibrillation	P	84		X		X				X			X				

**Diabetes**

Diabetes: A1c > 9.0%	O	59						X		X			X				
Diabetes: BP <140/90 mmHg	O	61						X		X			X				
Diabetes: LDL-C < 100 mg/dL)	O	64						X		X			X				
Diabetes: Hemoglobin A1c Control (<8.0%)	O	575						X		X			X				
Diabetes: Eye Exam	P	55						X		X			X				
Diabetes: Foot Exam	P	56						X		X			X				
Diabetes: Urine Screening	P	62						X		X			X				

**Asthma**

Asthma Assessment: frequency of daytime and nocturnal symptoms	P	1	X							X			X				
Appropriate Medications for Asthma	P	36	X							X			X				
Asthma: long-term control medication	P	47	X							X			X				

**Cancer Screening**

Cervical Cancer Screening	P	32								X			X				X
Breast Cancer Screening	P	112			X					X			X				X
Colorectal Cancer Screening	P	113								X	X		X				X

Meaningful Use Clinical Quality Measure Title & Description	O/P	NQF #	All	Anti Coag	Breast Surg	Card	Derm	Endo	ENT	Fam Med	GI	Hem Onc	Int Med	Neph	Neur	Ob Gyn	Ophth
		7		8	2	3	14	0	14	3	38	4	10	32	7	4	13

**Cancer Treatment**

Colon Cancer: Chemotherapy for Stage III Colon Cancer	P	385										X					
Breast Cancer: Hormonal Therapy for Stage IC-IIIC (ER/PR) Pos Breast Cancer	P	387										X					

**Female / Prenatal Care**

Prenatal Care: Screening for (HIV)	P	12								X							X
Prenatal Care: Anti-D Immune Globulin	P	14								X							X
Chlamydia Screening	P	33								X							X

**Ophthalmology**

Primary Open Angle Glaucoma (POAG): Optic Nerve Evaluation Description	P	86															X
Diabetic Retinopathy: Macular Edema and Level of Severity of Retinopathy Description	P	88															X
Diabetic Retinopathy: Communication with PCP	P	89															X

**Appropriate Testing**

Testing for Children with Pharyngitis	P	2	X							X							
Low Back Pain: Use of Imaging Studies	P	52								X		X		X			
Prostate Cancer: Avoidance of Overuse of Bone Scan	P	389										X					

**Depression Management**

Anti-depressant medication management	P	105								X		X				X	
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O/P – O=Outcome measure; P=Process measure. NQF – National Quality Forum metric number.

Numbers in the second row indicate the number of MU metrics for the specialty.

**Part 2**

Meaningful Use Clinical Quality Measure Title & Description	O/P	NQF #	Ortho	Peds	Peds Endo	Phys Ther	Plas Surg	Pod	Pulm	Rad Onc	Rheum	Surg	UC	Uro
	7		4	12	7	3	3	2	10	3	7	2	6	3

**Core Set**

Hypertension: Blood Pressure Measurement	P	13							X				X	
Tobacco Use Assessment and Intervention	P	28	X				X		X	X	X	X	X	X
Adult Weight Screening and Follow-Up	P	421	X			X	X	X	X	X	X			

**Alternate Core Set**

Weight Assessment and Counseling for Children and Adolescents	P	24		X	X	X								
Childhood Immunization	P	38		X	X									
Influenza Immunization ≥50	P	41							X		X			

**Menu Set**

**Preventive Medicine**

Alcohol and Other Drug Dependence Treatment	P	4											X	
Smoking and Tobacco Use Cessation	P	27	X				X		X	X	X	X	X	X

**Immunizations**

Pneumonia Vaccination ≥65	P	43							X		X			
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**Hypertension**

Controlling High Blood Pressure	O	18							X					
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**CAD / CHF**

IVD: Blood Pressure Management <140/90	O	73												
IVD: Complete Lipid Panel and LDL Control <100	O	75												
CAD: Oral Antiplatelet Therapy	P	67												
IVD: Aspirin	P	68												

Meaningful Use Clinical Quality Measure Title & Description	O/P	NQF #	Ortho	Peds	Peds Endo	Phys Ther	Plas Surg	Pod	Pulm	Rad Onc	Rheum	Surg	UC	Uro
		7		4	12	7	3	3	2	10	3	7	2	6
CAD: Beta-Blocker	P	70												
CAD: Drug Therapy for LDL-Cholesterol	P	74												
CHF: ACE or ARB	P	81												
CHF: Beta-Blocker Therapy	P	83												
CHF: Warfarin Therapy Patients with Atrial Fibrillation	P	84												

#### Diabetes

Diabetes: A1c > 9.0%	O	59		X	X									
Diabetes: BP <140/90 mmHg	O	61												
Diabetes: LDL-C < 100 mg/dL)	O	64												
Diabetes: Hemoglobin A1c Control (<8.0%)	O	575		X	X									
Diabetes: Eye Exam	P	55		X	X									
Diabetes: Foot Exam	P	56		X	X			X						
Diabetes: Urine Screening	P	62		X	X									

#### Asthma

Asthma Assessment: frequency of daytime and nocturnal symptoms	P	1		X					X					
Appropriate Medications for Asthma	P	36		X					X					
Asthma: long-term control medication	P	47		X					X					

#### Cancer Screening

Cervical Cancer Screening	P	32												
Breast Cancer Screening	P	112												
Colorectal Cancer Screening	P	113												

#### Cancer Treatment

Colon Cancer: Chemotherapy for Stage III Colon Cancer	P	385												
Breast Cancer: Hormonal Therapy for Stage IC-IIIC (ER/PR) Pos Breast Cancer	P	387												

Meaningful Use Clinical Quality Measure Title & Description	O/P	NQF #	Ortho	Peds	Peds Endo	Phys Ther	Plas Surg	Pod	Pulm	Rad Onc	Rheum	Surg	UC	Uro
		7		4	12	7	3	3	2	10	3	7	2	6

**Female / Prenatal Care**

Prenatal Care: Screening for (HIV)	P	12												
Prenatal Care: Anti-D Immune Globulin	P	14												
Chlamydia Screening	P	33		X										

**Ophthalmology**

Primary Open Angle Glaucoma (POAG): Optic Nerve Evaluation Description	P	86												
Diabetic Retinopathy: Macular Edema and Level of Severity of Retinopathy Description	P	88												
Diabetic Retinopathy: Communication with PCP	P	89												

**Appropriate Testing**

Testing for Children with Pharyngitis	P	2		X									X	
Low Back Pain: Use of Imaging Studies	P	52	X			X					X		X	
Prostate Cancer: Avoidance of Overuse of Bone Scan	P	389												X

**Depression Management**

Anti-depressant medication management	P	105									X			
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## **APPENDIX D – DATA**

**Table 3. Department metrics and measurements.**

Bonus – B if used for RWC bonus incentive calculation. MU – C=Core; M=Menu; S=Specialty-selected. O/P – O=Outcome; P=Process.

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
<b><u>Allergy</u></b>						
Patients with Hypertension - BP measured within 12 mon	B	C	P	98.82%	100.00%	1.18%
Smoking Status Assessed	B	C	P	79.08%	80.97%	1.88%
Smoking Cessation Advised	B	C	P	81.63%	77.36%	-4.27%
BMI Measured within last 6 months		C	P	93.49%	93.29%	-0.19%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	9.65%	11.46%	1.81%
Asthma Assessment	B	M	P	97.33%	98.72%	1.38%
Pharmacologic Therapy in Asthma	B	M	P	85.71%	100.00%	14.29%
<b><u>Anti-Coagulation</u></b>						
<b><u>N</u></b>						
Patients with Hypertension - BP measured within 12 mon	B	C	P	97.31%	97.99%	0.68%
Smoking Status Assessed	B	C	P	81.58%	86.94%	5.36%
Smoking Cessation Advised	B	C	P	62.66%	80.52%	17.86%
BMI Measured within last 6 months		C	P	89.43%	89.06%	-0.38%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	11.48%	13.15%	1.67%
INR in A-Fib within 30 days	B	S	P	78.18%	73.80%	-4.38%
INR in A-Fib in Target Range within 30 days	B	S	O	69.60%	68.73%	-0.88%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
* No Thrombotic Complications in A-Fib (1+ year with dx) within 365 days	B	S	O	98.22%	95.57%	-2.66%
<b><u>Breast Surgery</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon	B	C	P	94.56%	95.23%	0.67%
Smoking Status Assessed	B	C	P	70.70%	72.97%	2.27%
Smoking Cessation Advised	B	C	P	58.94%	58.55%	-0.39%
BMI Measured within last 6 months		C	P	91.96%	92.33%	0.37%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	16.13%	19.01%	2.88%
* No Open Breast Biopsy Markers Placed During Breast Biopsy	B	S	P	100.00%	100.00%	0.00%
Imaging Confirmation of Non Palpable Lesions	B	S	P	0.00%	90.16%	90.16%
SLN Biopsy in Breast Cancer	B	S	P	0.00%	100.00%	100.00%
	B	S	P	68.00%	69.01%	1.01%
<b><u>Cardiology</u></b>		<b><u>Y</u></b>				
Patients with Hypertension - BP measured within 12 mon	B	C	P	96.32%	96.74%	0.42%
Smoking Status Assessed	B	C	P	80.74%	82.65%	1.91%
Smoking Cessation Advised		C	P	71.88%	75.59%	3.72%
BMI Measured within last 6 months		C	P	95.81%	95.39%	-0.41%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	9.82%	11.45%	1.64%
CAD on ASA or Antiplatelet therapy or CI		M	P	91.77%	91.86%	0.09%

<b>Department / Metric to medication</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
HF with LVEF < 40 on ACEi or ARB or CI	B	M	P	82.54%	86.24%	3.70%
HF with LVEF <40 on Beta Blocker		M	P	89.55%	88.06%	-1.49%
CAD LDL Past 12 months	B	S	P	70.94%	78.75%	7.81%
HF Ejection Fraction Measured	B	S	P	96.63%	97.83%	1.20%
HF Patient Instructions * No Hospitalization for Heart Failure in the last 365 days		S	P	16.13%	30.87%	14.74%
		S	O	99.04%	98.71%	-0.32%
<b><u>Dermatology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon	B	C	P	92.78%	92.84%	0.06%
Smoking Status Assessed	B	C	P	76.04%	78.98%	2.93%
Smoking Cessation Advised	B	C	P	44.94%	45.54%	0.61%
BMI Measured within last 6 months		C	P	66.13%	65.52%	-0.61%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	13.57%	15.75%	2.17%
Melanoma Follow-Up Aspects of Care	B	S	P	73.09%	81.25%	8.16%
Melanoma Skin Exam within 12 Months	B	S	P	73.32%	81.25%	7.93%
Melanoma - Coordination of Care	B	S	P	67.98%	84.00%	16.02%
<b><u>Endocrinology</u></b>		<b><u>Y</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	95.17%	96.58%	1.41%
Smoking Status Assessed	B	C	P	87.25%	88.42%	1.17%
Smoking Cessation Advised		C	P	68.72%	69.80%	1.08%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
BMI Measured within last 6 months		C	P	97.23%	97.30%	0.06%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	28.93%	32.22%	3.29%
* A1c <9.0	B	M	O	87.42%	86.82%	-0.59%
BP <140/90	B	M	O	88.87%	89.35%	0.49%
LDL <100	B	M	O	48.36%	53.16%	4.80%
Dilated Eye Exam Past 12 Months			P	48.85%	53.23%	4.39%
LDL past 12 months	B	S	P	75.74%	83.35%	7.61%
Osteoporosis screening/therapy for women		S	P	59.17%	68.39%	9.22%
A1c past 6 months		S	P	78.87%	82.26%	3.40%
<b><u>ENT</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon	B	C	P	95.70%	95.63%	-0.07%
Smoking Status Assessed	B	C	P	75.94%	78.05%	2.10%
Smoking Cessation Advised	B	C	P	58.29%	58.58%	0.29%
BMI Measured within last 6 months		C	P	81.89%	81.83%	-0.07%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	10.72%	14.40%	3.68%
Treatment Options Offered for Sudden Hearing Loss	B	S	P	33.33%	50.00%	16.67%
Auditory Status Assessment Prior to Tube Placement	B	S	P	90.91%	94.44%	3.54%
Chronic Otitis Requiring Nasal Endoscopy	B	S	P	22.22%	50.00%	27.78%
<b><u>Family Medicine</u></b>		<b><u>Y</u></b>				

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Patients with Hypertension - BP measured within 12 mon		C	P	95.79%	95.73%	-0.06%
Smoking Status Assessed	B	C	P	82.71%	83.64%	0.92%
Smoking Cessation Advised		C	P	69.51%	71.05%	1.53%
BMI Measured within last 6 months		C	P	90.94%	89.14%	-1.80%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	8.65%	9.86%	1.22%
Pneumovax		M	P	72.55%	73.13%	0.59%
* DM: A1c <9.0		M	O	90.69%	90.62%	-0.07%
DM: BP <140/90	B	M	O	86.19%	86.79%	0.60%
DM: LDL <100		M	O	62.30%	62.53%	0.23%
DM: A1c <7.0		M	O	51.14%	52.62%	1.48%
DM: Eye exam past 12 months		M	P	54.65%	56.03%	1.39%
DM: Foot exam past 12 months		M	P	81.78%	82.73%	0.95%
DM: Microalbumin past 12 months		M	P	75.00%	76.63%	1.63%
Paps		M	P	81.23%	81.05%	-0.18%
Mammo age 42-69	B	M	P	85.97%	87.04%	1.06%
Annual Mammogram		M	P	63.17%	63.27%	0.10%
CRCS		M	P	76.73%	76.90%	0.17%
Chlamydia Testing Within Past 365 Days		M	P	12.86%	26.59%	13.73%
DM: Smoke status assessed		S	P	93.87%	95.11%	1.25%
DM: Smoking cessation advised/obtained		S	P	86.97%	86.61%	-0.36%
DM: Pneumovax		S	P	72.94%	73.46%	0.52%
DT Vaccine		S	P	67.69%	67.61%	-0.08%
Flu shot		S	P	43.53%	46.73%	3.21%
DM: Flu shot past 12 months		S	P	41.58%	45.91%	4.34%
BP <= 130/80		S	O	69.83%	70.51%	0.68%
LDL Past 12 Months - CAD Patients	B	S	P	85.97%	92.73%	6.76%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
DM: On ASA or anticoagulation or contra to medication		S	P	75.24%	75.12%	-0.12%
DM: On ACE or ARB		S	P	71.86%	71.07%	-0.80%
DM: A1c past 6 months		S	P	79.72%	82.04%	2.32%
DM: A1c past 12 months	B	S	P	93.52%	95.61%	2.10%
DM: LDL past 12 months	B	S	P	90.08%	92.88%	2.80%
DM: Eye Exam from Eye Center		S	P	96.72%	97.53%	0.82%
DM: Needs an Educator Visit (not seen last 365 days)		S	P	13.15%	13.25%	0.10%
<b><u>Gastroenterology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	90.93%	91.49%	0.56%
Smoking Status Assessed	B	C	P	55.60%	58.62%	3.01%
Smoking Cessation Advised		C	P	53.45%	54.36%	0.91%
BMI Measured within last 6 months		C	P	90.89%	90.44%	-0.45%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	10.96%	12.70%	1.74%
IBD - Corticosteroid Treatment	B	S	P	25.66%	80.33%	54.67%
IBD - Corticosteroid-Sparing Therapy	B	S	P	100.00%	100.00%	0.00%
RNA Testing for confirmation of Hepatitis HCV RNA Testing in Hep C Patients on Antiviral Therapy	B	S	P	99.71%	98.55%	-1.16%
Genotype Testing in Hepatitis C patients on Antiviral Therapy	B	S	P	100.00%	98.53%	-1.47%
Antiviral Treatment in Hepatitis C		S	P	98.53%	95.59%	-2.94%
IBD - Flu Shot past 18 months		S	P	19.48%	19.65%	0.17%
		S	P	14.88%	17.74%	2.87%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
<b><u>Hematology/Oncology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	97.10%	97.25%	0.15%
Smoking Status Assessed	B	C	P	71.22%	76.25%	5.03%
Smoking Cessation Advised	B	C	P	64.69%	66.10%	1.41%
BMI Measured within last 6 months		C	P	97.02%	96.51%	-0.51%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	10.01%	10.69%	0.68%
Breast Cancer Hormonal Therapy	B	M	P	63.71%	66.27%	2.55%
Ferritin test in MDS on ESAs past 6 mos	B	S	P	20.00%	75.00%	55.00%
Multiple Myeloma Treatment - Bisphosphonate Therapy	B	S	P	66.67%	86.67%	20.00%
Cytogenetic Testing for MDS and Leukemia Patients	B	S	P	59.18%	79.63%	20.45%
<b><u>Internal Medicine</u></b>		<b><u>Y</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	92.81%	92.96%	0.15%
Smoking Status Assessed	B	C	P	85.25%	87.47%	2.22%
Smoking Cessation Advised		C	P	75.74%	76.41%	0.67%
BMI Measured within last 6 months		C	P	91.29%	91.13%	-0.16%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	16.15%	17.71%	1.56%
Pneumovax		M	P	81.34%	81.54%	0.20%
HF with LVEF <40 on		M	P	90.32%	90.48%	0.15%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
ACEi or ARB						
* DM: A1c <9.0		M	O	90.09%	90.07%	-0.02%
DM: BP <140/90	B	M	O	84.50%	85.06%	0.56%
DM: LDL <100		M	O	61.40%	61.10%	-0.30%
DM: A1c <7.0		M	O	49.05%	50.61%	1.57%
DM: Eye exam past 12 months		M	P	56.50%	56.93%	0.43%
DM: Foot exam past 12 months		M	P	84.90%	86.63%	1.73%
DM: Microalbumin past 12 months		M	P	70.26%	73.55%	3.29%
Paps		M	P	79.68%	80.04%	0.37%
Mammo age 42-69	B	M	P	88.27%	88.45%	0.18%
Annual Mammogram		M	P	66.50%	65.86%	-0.64%
CRCS		M	P	84.00%	83.85%	-0.16%
Chlamydia Testing Within Past 365 Days		M	P	6.67%	11.76%	5.10%
DM: Smoke status assessed		S	P	92.43%	93.73%	1.30%
DM: Smoking cessation advised/obtained		S	P	89.16%	87.08%	-2.08%
DM: Pneumovax		S	P	74.76%	75.00%	0.24%
DT Vaccine		S	P	59.57%	59.95%	0.38%
Flu shot		S	P	42.53%	47.40%	4.88%
DM: Flu shot past 12 months		S	P	43.80%	48.91%	5.11%
BP <= 130/80		S	O	63.21%	63.73%	0.53%
CAD LDL Past 12 Months	B	S	P	88.17%	92.61%	4.44%
HF Ejection Fraction Measured		S	P	96.89%	96.65%	-0.23%
DM: On ASA or anticoagulation or contra to medication		S	P	82.09%	82.58%	0.49%
DM: On ACE or ARB		S	P	71.68%	72.07%	0.40%
DM: A1c past 6 months		S	P	82.83%	86.03%	3.20%
DM: A1c past 12 months	B	S	P	94.15%	96.26%	2.11%
DM: LDL past 12 months	B	S	P	89.03%	93.88%	4.84%
DM: Eye Exam from Eye Center		S	P	95.25%	97.09%	1.84%
DM: Needs an Educator Visit (not seen last 365 days)		S	P	11.35%	11.75%	0.40%



<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
<b><u>Nephrology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	90.01%	90.63%	0.62%
Smoking Status Assessed	B	C	P	43.41%	54.28%	10.87%
Smoking Cessation Advised		C	P	36.13%	38.32%	2.19%
BMI Measured within last 6 months		C	P	87.67%	86.37%	-1.30%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	8.09%	8.71%	0.62%
CKD Lab - Calcium Phosphorus iPTH Past 12 Months	B	S	P	81.53%	84.42%	2.90%
CKD Lab - LDL Past 12 Months	B	S	P	66.30%	73.66%	7.36%
CKD - BP Management (140/90)	B	S	O	72.96%	71.60%	-1.35%
CKD - Elevated Hgb	B	S	O	5.56%	62.07%	56.51%
Ferritin test in anemia on ESAs past 120 days	B	S	P	62.32%	63.64%	1.32%
CKD - On ACE or ARB or CI to medication		S	P	65.81%	66.56%	0.76%
Dialysis - KT/V >1.2		S	O	86.79%	85.39%	-1.40%
Dialysis - Albumin >4.0		S	O	39.13%	35.29%	-3.84%
CKD - Flu shot past 12 months		S	P	14.33%	17.67%	3.33%
Dialysis - KT/V Test past 30 days		S	P	21.99%	19.78%	-2.21%
Dialysis - Phosphorus <5.0		S	O	0.00%	0.00%	0.00%
Dialysis - Hgb <11		S	O	62.42%	45.77%	-16.65%
Dialysis - Hgb past 30 days		S	P	32.57%	31.56%	-1.02%
Dialysis - Albumin past 30 days		S	P	19.09%	15.11%	-3.98%
Dialysis - Phosphorus past 30 days		S	P	26.56%	28.44%	1.89%
Dialysis Patient List		S	P	100.00%	100.00%	0.00%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
<b><u>Neurology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	95.86%	96.12%	0.26%
Smoking Status Assessed	B	C	P	57.80%	59.31%	1.51%
Smoking Cessation Advised		C	P	51.36%	54.05%	2.69%
BMI Measured within last 6 months		C	P	86.51%	82.41%	-4.09%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	7.84%	10.00%	2.16%
Osteoporosis Screening within 2 years - Patients on Chronic Steroids	B	S	P	39.66%	47.66%	8.01%
Fall risk assessed	B	S	P	24.20%	30.54%	6.33%
Plan of care if at risk for fall	B	S	P	100.00%	100.00%	0.00%
Dysphagia assessed past 6 months	B	S	P	15.80%	21.22%	5.42%
Plan of care set for patients with high risk for Dysphagia	B	S	P	100.00%	100.00%	0.00%
<b><u>Obstetrics/Gynecology</u></b>		<b><u>Y</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	96.82%	96.49%	-0.32%
Smoking Status Assessed	B	C	P	74.17%	79.54%	5.36%
Smoking Cessation Advised		C	P	55.49%	62.35%	6.86%
BMI Measured within last 6 months		C	P	92.74%	93.28%	0.53%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	21.96%	27.70%	5.74%
Cervical Cancer Screening 21-64	B	M	P	86.62%	90.16%	3.53%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Mammo age 42-69	B	M	P	77.01%	75.60%	-1.40%
Chlamydia Testing Within Past 365 Days	B	M	P	75.51%	51.72%	-23.79%
Osteoporosis Screening	B	S	P	28.40%	30.34%	1.94%
Post Partum Depression Screening	B	S	P	10.47%	47.37%	36.90%
<b><u>Ophthalmology</u></b>		<b><u>Y</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	90.71%	90.94%	0.23%
Smoking Status Assessed	B	C	P	61.87%	62.90%	1.03%
Smoking Cessation Advised		C	P	67.03%	68.30%	1.27%
BMI Measured within last 6 months		C	P	77.98%	78.04%	0.06%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	15.91%	18.16%	2.26%
POAG - Optic Nerve Evaluation	B	M	P	79.51%	86.91%	7.41%
Diabetic Eye Exam: Macular Edema Level of Severity	B	M	P	94.24%	96.42%	2.18%
Diabetic Eye Exam: Communication with PCP	B	M	P	94.24%	96.42%	2.18%
AMD - Dilated Macular Exam	B	S	P	58.14%	79.25%	21.12%
20/40 or better VA within days of Cataract Surgery	B	S	O	25.23%	90.52%	65.29%
* No Complications 0 - 30 days post Cataract Surgery		S	O	100.00%	100.00%	0.00%
<b><u>Orthopedics</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	86.88%	87.18%	0.30%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Smoking Status Assessed	B	C	P	61.47%	63.03%	1.56%
Smoking Cessation Advised	B	C	P	41.41%	43.20%	1.78%
BMI Measured within last 6 months		C	P	79.24%	78.98%	-0.27%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	9.88%	11.76%	1.88%
Osteoporosis Screening Following Fracture Age 50+	B	S	P	18.55%	19.48%	0.94%
* No Infection after total joint replacement	B	S	O	99.33%	100.00%	0.67%
SF36	B	S	P	20.86%	24.70%	3.84%
<b><u>Pediatrics</u></b>		<b><u>Y</u></b>				
Completed Immunization Series	B	AC	P	75.84%	76.43%	0.59%
Smoking Status Assessed	B	C	P	37.19%	45.52%	8.33%
Smoking Cessation Advised		C	P	62.62%	73.33%	10.72%
BMI Measured within last 6 months		C	P	94.54%	90.79%	-3.75%
Weight Mgmt age 2-17 Counseling for BMI Outside Parameters within 6 mon	B	C	P	9.48%	27.34%	17.86%
Asthma Assessment	B	M	P	23.57%	26.29%	2.72%
Pharmacologic Therapy		M	P	39.10%	40.34%	1.24%
6 Well Child Visits 15 to 18 mos	B	S	P	66.75%	66.78%	0.03%
ADHD Medication Follow-Up	B	S	P	53.85%	79.63%	25.78%
<b><u>Pediatric Endocrinology</u></b>		<b><u>Y</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	100.00%	100.00%	0.00%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Smoking Status Assessed	B	C	P	45.71%	67.35%	21.63%
Smoking Cessation Advised		C	P	100.00%	100.00%	0.00%
BMI Measured within last 6 months		C	P	97.67%	97.01%	-0.67%
Weight Mgmt age 2-17 Counseling for BMI Outside Parameters within 6 mon	B	C	P	30.99%	69.35%	38.37%
Peds - Eye exam past 12 months	B	M	P	74.42%	68.00%	-6.42%
Peds - Microalbumin past 12 months	B	M	P	81.82%	90.20%	8.38%
Peds A1c past 6 months	B	S	P	92.31%	86.96%	-5.35%
Peds - LDL past 12 months	B	S	P	83.64%	90.91%	7.27%
<b><u>Physical Therapy</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	95.30%	95.65%	0.36%
Smoking Status Assessed		C	P	77.55%	80.03%	2.48%
Smoking Cessation Advised		C	P	72.33%	72.03%	-0.30%
BMI Measured within last 6 months		C	P	85.28%	84.17%	-1.12%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	9.16%	9.87%	0.71%
Plan of Care within 6 months	B	S	P	98.19%	99.07%	0.89%
CLOF assessed in follow-up visits not initial eval	B	S	P	99.37%	99.43%	0.06%
Patient Goals Assessed in follow-up visits	B	S	P	89.36%	98.87%	9.51%
Pain Assessment within 6 months	B	S	P	99.05%	99.23%	0.17%
Home Exercise Program within 6 months	B	S	P	95.35%	97.27%	1.92%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Patients with one long term and one short term goal past 6 mo	B	S	P	99.13%	99.43%	0.30%
Referring Provider Documented on initial evaluation		S	P	93.14%	93.77%	0.63%
<b><u>Plastic Surgery</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon	B	C	P	73.39%	76.60%	3.21%
Smoking Status Assessed	B	C	P	41.01%	68.73%	27.72%
Smoking Cessation Advised	B	C	P	30.34%	52.38%	22.04%
BMI Measured within last 6 months		C	P	67.79%	69.55%	1.76%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	24.72%	23.60%	-1.12%
<b><u>Podiatry</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	88.56%	87.89%	-0.66%
Smoking Cessation Advised	B	C	P	67.63%	70.26%	2.63%
Smoking Status Assessed		C	P	74.10%	79.39%	5.29%
BMI Measured within last 6 months		C	P	82.02%	84.05%	2.03%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	16.59%	17.11%	0.52%
Foot exam past 12 months	B	M	P	85.21%	90.23%	5.03%
Diabetes Wound Care (Patient Instructions)	B	S	P	49.38%	88.57%	39.19%
Peripheral Neuropathy Instructions	B	S	P	51.64%	66.34%	14.70%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Peripheral Neuropathy - Shoes Recommended	B	S	P	51.56%	76.47%	24.91%
Osteomyelitis Foot Exam - 12 months	B	S	P	93.75%	100.00%	6.25%
<b><u>Pulmonology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	95.74%	95.84%	0.10%
Smoking Status Assessed	B	C	P	83.68%	84.52%	0.84%
Smoking Cessation Advised		C	P	72.44%	72.11%	-0.33%
BMI Measured within last 6 months		C	P	92.37%	91.72%	-0.66%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	14.82%	16.04%	1.22%
Asthma - Prescription Therapy	B	M	P	88.46%	100.00%	11.54%
COPD - Spirometry Evaluation	B	S	P	81.22%	82.42%	1.20%
Pneumovax in COPD	B	S	P	72.27%	73.12%	0.85%
Assessment prior to sleep study	B	S	P	1.94%	20.13%	18.19%
Inhaler Instruction Given	B	S	P	2.07%	33.27%	31.20%
Flu Shot in COPD within 18 Months		S	P	56.18%	59.60%	3.42%
<b><u>Radiation Oncology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	98.95%	100.00%	1.05%
Smoking Status Assessed	B	C	P	74.26%	77.78%	3.52%
Smoking Cessation Advised	B	C	P	47.83%	66.67%	18.84%
BMI Measured within last 6 months		C	P	88.52%	90.00%	1.48%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64		C	P	8.08%	8.42%	0.34%

<b>Department / Metric within 6 mon</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Documentation Sent to Referring Provider	B	S	P	100.00%	100.00%	0.00%
Pain Level Assessed	B	S	P	77.42%	72.41%	-5.01%
Plan Developed for Pain	B	S	P	50.00%	100.00%	50.00%
<b><u>Rheumatology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	93.89%	94.18%	0.29%
Smoking Status Assessed	B	C	P	83.21%	84.94%	1.73%
Smoking Cessation Advised		C	P	65.54%	70.42%	4.89%
BMI Measured within last 6 months		C	P	96.38%	94.58%	-1.80%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	30.31%	32.07%	1.76%
Screening for GI Bleed Drug Safety - Lab	B	S	P	89.87%	85.14%	-4.74%
Monitoring - DMARD Drug Safety - Lab	B	S	P	91.54%	92.28%	0.74%
Monitoring - Glucocorticoids	B	S	P	55.64%	58.52%	2.88%
RA - Assessment of Disease Activity	B	S	P	91.09%	92.23%	1.14%
Baseline Testing Prior to Medication Start in RA	B	S	P	95.81%	95.54%	-0.27%
RA - Anti-Rheumatic Therapy		S	P	97.53%	97.05%	-0.48%
RA - Tuberculosis screening		S	P	20.48%	20.00%	-0.48%
Flu Shot within 12 Months		S	P	16.36%	18.49%	2.12%
<b><u>Surgery</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP		C	P			



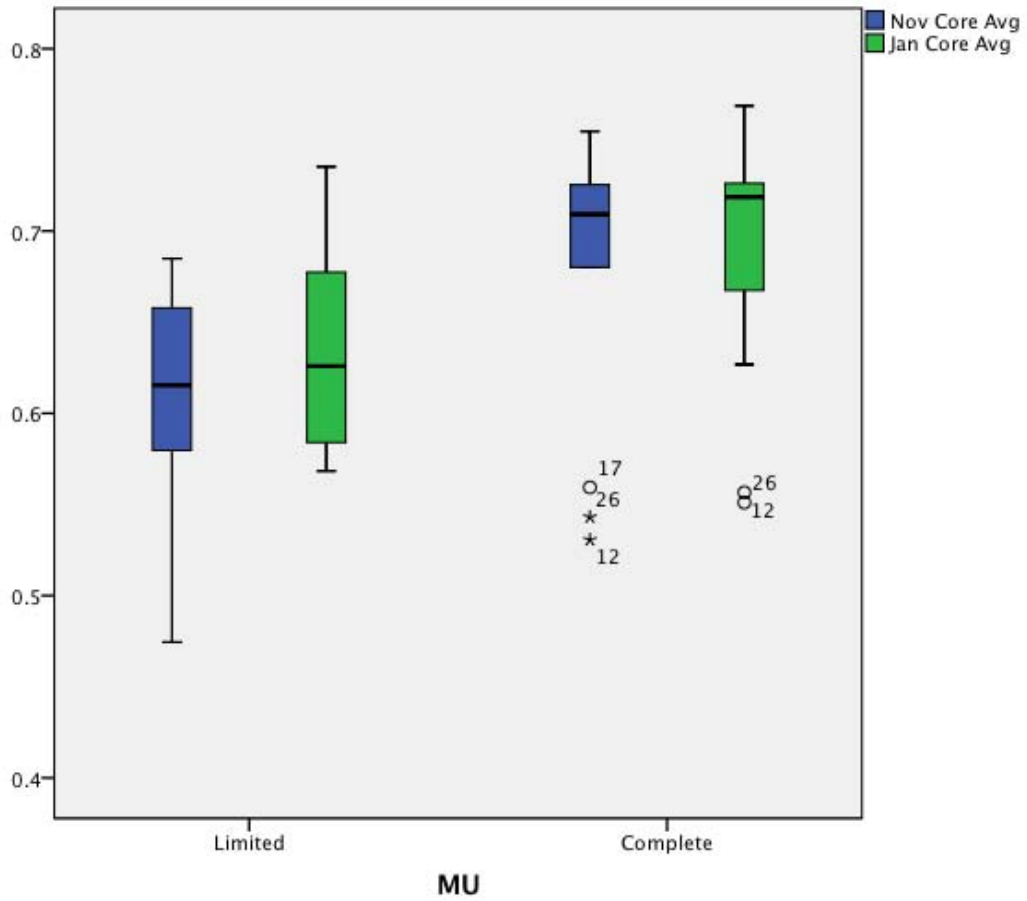
<b>Department / Metric</b> measured within 12 mon	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Smoking Status Assessed		C	P			
Smoking Cessation Advised		C	P			
BMI Measured within last 6 months		C	P			
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P			
<b><u>Urgent Care</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	99.30%	99.22%	-0.08%
Smoking Status Assessed	B	C	P	55.01%	56.89%	1.88%
Smoking Cessation Advised		C	P	50.98%	51.58%	0.60%
BMI Measured within last 6 months		C	P	54.65%	54.66%	0.01%
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	11.60%	13.19%	1.60%
Pneumonia - Vital Signs	B	S	P	100.00%	100.00%	0.00%
Pneumonia - Assessment of O2 Sat	B	S	P	100.00%	100.00%	0.00%
* Avoidance of Advanced Imaging for Low Back Pain	B	S	P	96.88%	99.25%	2.37%
Testing for Pharyngitis	B	S	P	92.59%	88.37%	-4.22%
<b><u>Urology</u></b>		<b><u>N</u></b>				
Patients with Hypertension - BP measured within 12 mon		C	P	94.69%	95.82%	1.14%
Smoking Status Assessed	B	C	P	59.88%	61.93%	2.05%
Smoking Cessation Advised	B	C	P	51.77%	51.35%	-0.42%
BMI Measured within last 6 months		C	P	71.48%	69.72%	-1.76%

<b>Department / Metric</b>	<b>Bonus</b>	<b>MU</b>	<b>O/P</b>	<b>Nov-11</b>	<b>Jan-12</b>	<b>Change</b>
Weight Mgmt Counseling for BMI Outside Parameters Age 18-64 within 6 mon		C	P	12.00%	13.21%	1.21%
Antibiotic Given Before Biopsy	B	S	P	69.39%	81.58%	12.19%
Antibiotic Given With Cystoscopy	B	S	P	78.10%	85.71%	7.62%
UA for Hematuria Consults	B	S	P	97.99%	96.93%	-1.05%

## APPENDIX E – RESULTS

**Table 4. Meaningful Use Core Metrics.**

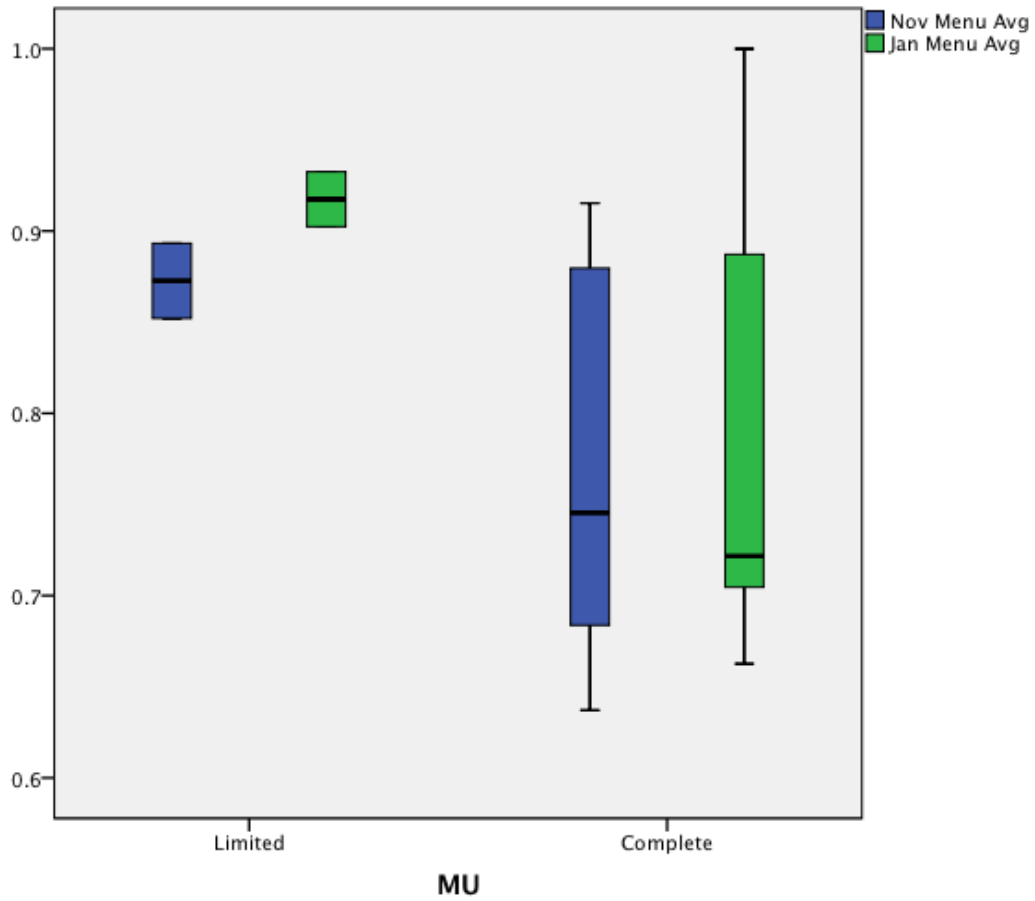
MU Group		Descriptives		Statistic
Nov Core Avg	Limited	Mean		0.571
		95% Confidence Interval for Mean	Lower Bound	0.471
			Upper Bound	0.671
		Median		0.615
		Std. Deviation		0.174
	Complete	Mean		0.678
		95% Confidence Interval for Mean	Lower Bound	0.630
			Upper Bound	0.726
Median			0.709	
	Std. Deviation		0.079	
Jan Core Avg	Limited	Mean		0.593
		95% Confidence Interval for Mean	Lower Bound	0.490
			Upper Bound	0.696
		Median		0.626
		Std. Deviation		0.178
	Complete	Mean		0.687
		95% Confidence Interval for Mean	Lower Bound	0.646
			Upper Bound	0.729
Median			0.719	
	Std. Deviation		0.069	
MU Group		Tests of Normality - Shapiro-Wilk		
		Statistic	df	Sig.
Nov Core Avg	Limited	0.585	14	0.000
	Complete	0.793	13	0.006
Jan Core Avg	Limited	0.564	14	0.000
	Complete	0.851	13	0.030



**Figure 2. Meaningful Use Core Metrics.**

**Table 5. Meaningful Use Menu Metrics.**

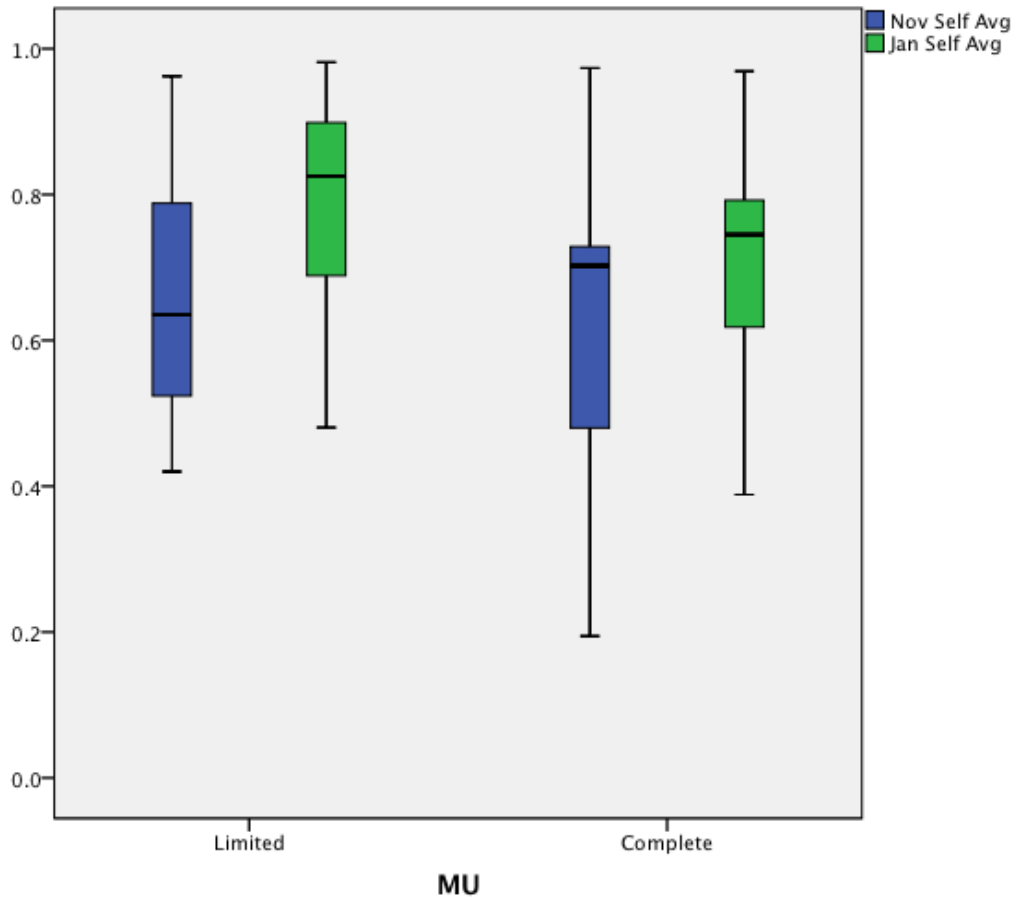
MU Group		Descriptives		Statistic
Nov Menu Avg	Limited	Mean		0.873
		95% Confidence	Lower Bound	0.611
		Interval for Mean	Upper Bound	1.135
		Median		0.873
		Std. Deviation		0.029
	Complete	Mean		0.729
		95% Confidence	Lower Bound	0.604
		Interval for Mean	Upper Bound	0.854
		Median		0.745
		Std. Deviation		0.175
Jan Menu Avg	Limited	Mean		0.917
		95% Confidence	Lower Bound	0.726
		Interval for Mean	Upper Bound	1.109
		Median		0.917
		Std. Deviation		0.021
	Complete	Mean		0.752
		95% Confidence	Lower Bound	0.615
		Interval for Mean	Upper Bound	0.889
		Median		0.722
		Std. Deviation		0.191
MU Group		Tests of Normality - Shapiro-Wilk		
		Statistic	df	Sig.
Nov Menu Avg	Limited Complete	0.858	10	0.072
Jan Menu Avg	Limited Complete	0.890	10	0.168



**Figure 3. Meaningful Use Menu Metrics.**

**Table 6. Specialty-Selected Metrics.**

MU Group		Descriptives		Statistic
Nov Self Avg	Limited	Mean		0.657
		95% Confidence Interval for Mean	Lower Bound	0.553
			Upper Bound	0.761
		Median		0.635
		Std. Deviation		0.164
	Complete	Mean		0.634
		95% Confidence Interval for Mean	Lower Bound	0.500
			Upper Bound	0.769
Median			0.702	
	Std. Deviation		0.212	
Jan Self Avg	Limited	Mean		0.789
		95% Confidence Interval for Mean	Lower Bound	0.695
			Upper Bound	0.883
		Median		0.825
		Std. Deviation		0.148
	Complete	Mean		0.713
		95% Confidence Interval for Mean	Lower Bound	0.609
			Upper Bound	0.817
Median			0.745	
	Std. Deviation		0.164	
MU Group		Tests of Normality - Shapiro-Wilk		
		Statistic	df	Sig.
Nov Self Avg	Limited	0.972	12	0.926
	Complete	0.954	12	0.693
Jan Self Avg	Limited	0.921	12	0.290
	Complete	0.934	12	0.428

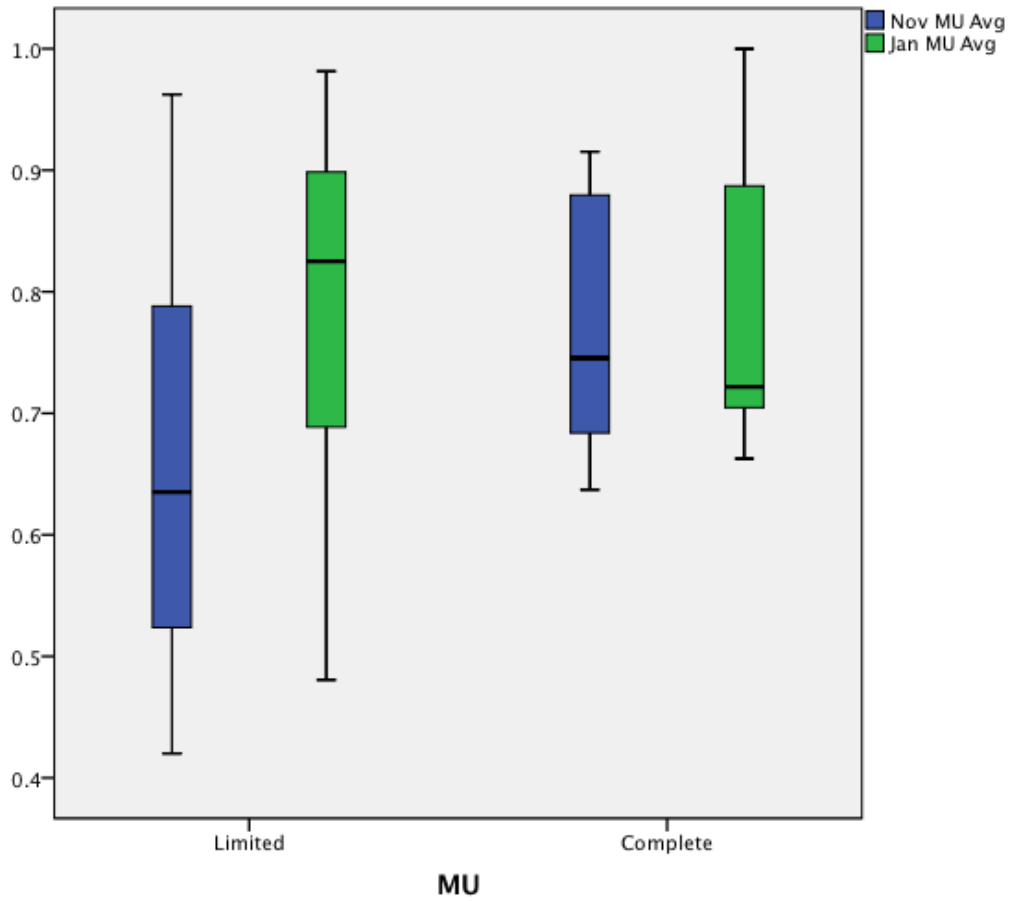


**Figure 4. Specialty-Selected Metrics.**



**Table 7. Meaningful Use Menu Metrics versus Specialty-Selected Metrics.**

MU Group		Descriptives		Statistic
Nov Avg	Limited Specialty-Selected	Mean		0.657
		95% Confidence Interval for Mean	Lower Bound	0.553
			Upper Bound	0.761
		Median		0.635
	Std. Deviation		0.164	
	Complete MU Menu	Mean		0.729
		95% Confidence Interval for Mean	Lower Bound	0.604
			Upper Bound	0.854
Median		0.745		
Std. Deviation		0.175		
Jan Avg	Limited Specialty-Selected	Mean		0.789
		95% Confidence Interval for Mean	Lower Bound	0.695
			Upper Bound	0.883
		Median		0.825
	Std. Deviation		0.148	
	Complete MU Menu	Mean		0.752
		95% Confidence Interval for Mean	Lower Bound	0.615
			Upper Bound	0.889
Median		0.722		
Std. Deviation		0.191		
MU Group		Tests of Normality - Shapiro-Wilk		
		Statistic	df	Sig.
Nov Avg	0	0.972	12	0.926
	1	0.858	10	0.072
Jan Avg	0	0.921	12	0.290
	1	0.890	10	0.168



**Figure 5. Meaningful Use Menu Metrics versus Specialty-Selected Metrics.**