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Post-Graduate Health Informatics and Information Management

Department of Health Informatics and Information Management

Sajeesh Kumar KR, PhD., 2014

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Abstract

The world of medicine has long been an ever changing environment. The advancements and progress in both knowledge and techniques has made patient care and treatment an increasingly successful endeavor. Physicians are often eager to embrace any new technology in the medical field that allows them to better care for their patients. The problem with new medical technology is that unless this technology can be shared or related to others, it is somewhat useless.

The medical profession has been somewhat reluctant to come to terms with the use of computer technology and its many benefits. Generally embedded in the use of paper records and being untrusting of electronic technology, healthcare professionals were reluctant to adopt or even try this new technology.

The concept of Meaningful Use brings all the arguments of Pro's and Con's concerning health information technology into perspective. The use of health information technology (HIT) via electronic health records (EHR) to promote the collection, enhancement and sharing of medical health records to advance patient care is inevitable for successful healthcare in the future. This will not be an easy task and there will be many obstacles to overcome. The progression of Meaningful Use, like any other major endeavor will be slow, sometimes relying on a trial and error system and there will be the ever present delays as well as adjustments, upgrades and mistakes.

This research will attempt to provide the reader with an accurate viewpoint of both sides of the Meaningful Use program in an effort to deliver a clear concept of whether all this new technology and work is clearly worth all the time, aggravation, confusion and monetary investment of the medical profession to allow cost effective, reliable and successful patient care.

Table of Contents

List of Figures

Figure 17. - Is your immunization information system currently prepared or are you
           planning to be prepared to receive immunization data submissions in HL7
           2.3.1 or 2.5.1 and CVX codes?

Figure 18. - In which HL7 format will your Syndromic Surveillance System receive messages?

Figure 19. - When will your agency be ready to receive test messages?

Figure 20. - Please describe any barriers in preparing your agency for meaningful use?

Figure 21. - What type of technical assistance do you need from the CDC?

Figure 22. - Percentage of physicians with electronic health record systems that meet
           meaningful use criteria: United States, 2011

Figure 23. - Percentage of physicians using electronic health record systems who report
           agreement with selected efficiency indicators, by whether the systems meet
           meaningful use criteria: United States, 2011

Figure 24. - Percentage of physicians using electronic health record systems who report
           agreement with selected clinical and financial benefits indicators, by whether
           the system meets meaningful use criteria: United States, 2011

List of Graphs

List of Tables

Meaningful Use – Is It Worth it

Chapter 1

Introduction

Healthcare in the United States has been an industry which has seen vast and ongoing leaps in medical prowess. The physical and psychological advances in medicine have been many as technology has evolved through the 20th century and continue to grow and develop into the 21st century. As with any other growing business, healthcare is hampered by the inability or neglect of some caregivers to utilize what is possibly the most useful tool at its disposal; electronic technology. The medical profession needs to bring itself into the professional business world of the 21st century by taking advantage of the use of electronic technology so as to provide caregivers the ability to collect, share and utilize the medical information needed to both treat their patients and prevent the reoccurrence of health issues in the future.

The medical world has been somewhat reluctant to establish the necessary groundwork for electronic communications. The use of electronic technology has been done mostly on a voluntary basis. The need for a unified system has been long overdue. The American Recovery and Reinvestment Act of 2009 (ARRA) was the key to unlock the door for healthcare and provide the necessary boost to push providers in the medical world to use the electronic technology available. The computer age has made great advances in the use of electronic informatics, which the medical world needs to capitalize on. The ARRA supplies the needed incentives to providers, enabling them to justify the money needed to allow technology to be utilized, thereby bringing the medical profession closer to becoming more efficient and cost effective for everyone.

Background

The term Meaningful Use is the focus of the ARRA. Meaningful Use implies that by following the guidelines and criteria of ARRA and implementing the use of electronic health records (EHR's), the time, monies, training and technology will bring about the changes needed in healthcare to be effective, cost efficient and successful. This will have a major impact on patient outcomes and realize an overall positive reflection for healthcare providers and patients as well.

The ARRA and Meaningful Use will affect the entire healthcare industry. Healthcare providers from all aspects of the medical field will be involved in some way, shape or form by Meaningful Use. The values of pros and cons were documented in many of the articles: BMC Medical Informatics and Decision Making, American Journal of Managed Care, Hawaii Journal of Medicine and Public Health (October, 2012). The goals and aspects of EHR's were key to articles of the National Institute of Health (*Sittig, & Singh, 2012*), American Journal of Managed Care (*Adler-Milstein, Furukawa, King, & Jha, 2013*)

The term Meaningful Use applies either directly or indirectly to every aspect of healthcare. Hospitals will be most affected by Meaningful Use because of the amount of patients involved when dealing with various medical issues as evidenced in Hospital Characteristics Related to the Intention to Apply for Meaningful Use Incentive Payments (*Diana, Kazley, Ford, & Menachemi, n.d.*) and Hawaii Journal of Medicine and Public Health (*Reddy, 2012*).

Physicians are also greatly affected by this program. The collection and maintenance of patient health records or EHR's on a daily basis is the key factor for Meaningful Use. The security of this information is as important as the integrity of patient's EHR (Sittig, & Singh, 2012) as stated by the article Electronic Health Records and National Patient-Safety Goals.

Significance of the Study

The Medical and Healthcare industry has long been challenged by the use of paper-based records kept in storage cabinets. The efficiency rate suffered, but the quality of care remained relatively good. As population grew and diversified the possibility for error also accelerated. New and improved methods were required and so Meaningful Use became the way of life. The aspects of incentives for the improvements required more than justified the reasoning. The article Early Results from the Hospital Electronic Health Record Incentive Programs written by Adler-Milstein, Furukawa, King, & Jha outlines the ways and means for criteria of Meaningful Use. Patient Safety is a key issue addressed by the article from National Institute of Health Article Electronic Health Records and Nation Patient Safety Goals (*Sittig, & Singh, 2012*).

The Meaningful Use provisions of the ARRA are arguably the best path for healthcare in the US. The benefits of this program are many as stated in BioMed Central article, Meaningful Use a roadmap for the advancement of health information exchange. The program has created a series of advancing steps to enable healthcare to progress into the future both effectively and economically.

Another article from the Hawaii Journal of Medicine & Public Health outlines the incentive programs, advancing stages and penalties for non-use; as well as benefits and potential downfalls.

The barriers for radiologists are stated in the Health Care Reform Vignette (*Anumula, & Sanelli, 2012*) where certain products are yet to become available for certifiable EHR requirements.

The concept of Meaningful Use has been long overdue for the United States healthcare system. The streamlining technology now available to providers eliminates redundancy and

alleviates the possibility for errors thus lowering costs to both provider and patient. This along

with the incentives available to qualified users will bring healthcare into the future.

Purpose of the Study

The use of EHR technology will enhance the confidence and patient safety (*Sittig, &*

Singh, 2012) by integrating patient health records into a unified system. According to the New

England Journal of Medicine the number of providers using Meaningful Use started slowly; but

has been climbing progressively. The Canadian Medical Association is skeptical as to the

opportunities presented by Meaningful Use, but the Hawaii Journal of Medicine and Public

Health believes that although compliance will be difficult for some, benefits will become evident

as needs are met. BioMed Central states that the advancement of meaningful use will be a

progressive system that will ultimately result in the overall success of integrated technology with

the end result being successful.

The stages and designated programs stipulated by the Centers for Medicare and Medicaid

System (CMS) for compliance to meet Meaningful Use criteria are stated in Health Care Reform

Vignette (*Anumula, & Sanelli, 2012*). The incentive payoffs for compliance (American Journal

of Managed Care (*Adler-Milstein, Furukawa, King, & Jha, 2013*) are more than adequate to

convince anyone who doubts the obvious worth of this project. The Medicare and Medicaid

Incentive programs are explained in the Hawaii Journal of Medicine and Health (*Reddy, 2012*).

The overall prospect of a successful program for Meaningful Use is like any other

program of this magnitude. The groundwork is done, but the progression of program stages will

be slow with steady compliance being an issue. Once the initial problems have been overcome,

the system will move along progressively, gaining in both speed and success. The end result will

be a healthcare system that is economically sound and technologically smooth; becoming a

provider-patient friendly excellent choice.

The American Recovery and Reinvestment Act (ARRA) of 2009 established goals that

would enable the healthcare industry to become more efficient, both technically and

economically. To accomplish this task, an incentive program was established by the Centers for

Medicare and Medicaid Services (CMS) that requires eligible healthcare providers to adopt the

use of Electronic Health Records (EHR) to establish Meaningful Use (MU). The Office of the

National Coordinators for Health Information Technology (ONC) set guidelines for potential

providers to meet a set criterion in order to receive the monetary incentives for meaningful use

(*Syndromic Surveillance Submission of electronic Syndromic surveillance data to public health*

agencies, 2010).

Public health criteria for meaningful use objectives such as immunizations, reportable

laboratory results, and Syndromic Surveillance are three of the objectives of meaningful use

Stage 1. The completion of at least one of these criteria is mandatory for establishment of

meaningful use for EHR technology and incentives. The use of Syndromic Surveillance will

provide public health information by supplying data and statistical tools by automation. The

ongoing care of healthcare facilitators using this technology greatly improves the response time

and overall effectiveness of patient treatments (*Syndromic Surveillance Submission of electronic*

Syndromic surveillance data to public health agencies, 2010).

The implementation of meaningful use via EHR will benefit healthcare throughout the

United States. The establishment of EHR technology will provide caregivers the information

needed to enable providers the tools necessary to diagnose and treat their patients as well as

empower the patients themselves to share and become more active in their own healthcare plans.

The use of EHR technology will not only provide a higher quality of healthcare for the public,

but will automatically reduce the cost of care by allowing information to be shared by medical

professionals; thus reducing time and effort needed to facilitate treatment (*Policymaking,*

Regulation, & Strategy Meaningful Use, n.d.).

Research Questions

> ➢ Is technology a better source of information then paper based data collection?

> ➢ Will Electronic Health Records enable rapid exchange of patient data?

> ➢ Will incentives offered by the government entice providers to implement Meaningful
>   Use?

> ➢ Are providers willing to change their practice protocol?

> ➢ Will training and software cost too much for timely adherence to requirements?

> ➢ Do deadlines for implementation allow sufficient time for incentive payments?

> ➢ Will providers invest their time and resources to actively participate in Meaningful Use?

> ➢ The healthcare industry has long been delinquent in progressive use of information
>   technology. Will Meaningful Use provide the necessary boost for adoption to new
>   technology and its usage?

> ➢ Will Meaningful Use be worth the overall difficulty of time, training and expenditure to
>   allow the continuity of both efficient and effective healthcare for the future?

Definition of Key Terms

ARRA – American Recovery and Reinvestment Act

CBC – Colorado Beacon Consortium

CCD – Continuity of Care Documentation

CCR – Continuity of Care Record

CDA – Clinical Documentation Arch

CMS – Centers for Medicare and Medicaid System

EHR – Electronic Health Record   ⟶   Inter-changeable

EMR – Electronic Medical Record

HIPAA – Health Insurance Portability and Accountability Act

HIT – Health Information Technology

HITECH – Health Information Technology for Economic and Clinical Health

ICD9 – The International Classification of Diseases 9th Edition

ICD10 – The International Classification of Diseases 10th Revision

IHE – Integration of Health Exchange

IT – Information Technology

LOINC – Logical Observation Identifiers Names and Codes

MU – Meaningful Use

PDSA – Plan-Do-Study-Act Learning Cycles

PHI – Personal Health Information

QI – Quality Improvement

REC – Regional Extension Center

SHS – Shore Health System

SNOMED – The Systematized Nomenclature of Medicine

Chapter 2

Methodology

Research Design

In my endeavor to provide a clear, concise view of all aspects of Meaningful Use from beginning to end, I have gathered an immense volume of information. This has required countless hours of research involving every field of medicine and technology available to my disposal. The internet, books, and medical articles all provided the needed information to make this possible.

Research was gathered from a multitude of sources. Information from research from medical journals concerning Meaningful Use from both medical and government perspective provided background and knowledge and pertinent information concerning guidelines, implementation, incentives and technology. All aspects of Meaningful Use were brought into focus through documented research as well as use of statistical graphs fundamental to Meaningful Usage.

Variable and Rationale

1) Variable – What does Meaningful Use Mean?

   Rationale – Meaningful Use is described as the best possible use of procedures to achieve medical care that is effective and efficient in both cost and technique.

2) Variable – Are EHR technology implementations necessary?

   Rationale – EHR technology is the primary instrument for implementation of Meaningful Use.

3) Variable – Providers need to embrace Meaningful Use for the future.

Rationale – Healthcare's future is dependent on collection and interoperability of patient information for treatment.

4) Variable – Is Meaningful Use timeframe too fast?

Rationale – Implementation needs to be progressive and continuing. Slow movement causes boredom and redundancy.

5) Variable – Will Meaningful Use bring healthcare into the future with better healthcare as anticipated?

Rationale – As Meaningful Use implementation is realized healthcare will be vastly improved and will continue to provide care for patients both efficiently and effectively.

6) Variable – Unexpected delays and setbacks.

Rationale – As with any major endeavor, setbacks and delays will occur, but the overall prospect of success is inevitable.

7) Variable – Will Meaningful Use be enough for the future of healthcare?

Rationale – The ever changing environment of the healthcare industry will always be the source of uncertainty, but the Meaningful use program is a necessary tool to bring healthcare into the future by integrating all the technology available to lower costs, improve efficiency and improve patient outcomes.

Database Selection

This information was gathered from Medicare and Medicaid, EHR, Health Information Technology, HITEC, CMS.gov, and Journal of American Medicine websites. My own workplace Shore Health System was a valuable asset as well because I work with physicians, nurses, and patients in a variety of Meaningful Use areas and am familiar with the software and protocols involved in implementation.

Review of Literature

The array of statistics and graphs provides a certainty of the dilemma that healthcare professions face when dealing with Meaningful Use. The questionnaire I developed was realistic

enough to provide a clear viewpoint as to the mindset of providers concerning the value of

Meaningful Use in the future of healthcare.

Chapter 3

Meaningful Use – Shore Health System

Background

I work for Shore Health System (SHS) which comprises three hospitals and numerous physician offices as well as outpatient facilities. The implementation of meaningful use began at SHS in August, 2012. To meet the objectives of meaningful use, we are currently upgrading and adding a number of new electronic systems to meet the criteria needed for compliance. The programs that are currently being implemented include: 1) Meditech Electronic Progress Notes which physicians are required to now to all progress notes electronically versus previous hand written sometimes illegible on the charts. The electronic progress note eliminates hand writing perception errors and provides a more accurate patient history as well as patient safety (*Eligible Professionals Preparing for Meaningful Use in 2014, 2012, December*). 2) Electronic Discharge Instructions which provides patients with a compact disc (CD) upon discharge from the facility with discharge instructions for current medications as well as any new prescribed medication (*Eligible Professionals Preparing for Meaningful Use in 2014, 2012, December*).   3) Meditech Computerized Provider Order Entry (CPOE) where physicians are required to electronically enter orders for their patients to eliminate errors due to incorrect interpretations of illegible hand written orders (*Eligible Professionals Preparing for Meaningful Use in 2014, 2012, December*). 4) Upgrade OB Tracevue to the next version which is certified for meaningful use. OB Tracevue is an obstetrics information management system that provides coverage from the first antepartum visit, delivery, postpartum, the newborn's record as well as discharge and postpartum follow-up visits (*Extensive OB Surveillance and charting solution, 2010*). 5) Update Meditech to

Client/Server 5.66 to meet Meaningful Use Stage 2 certification requirements. Client/Server

5.66 includes the components necessary for Stage 2 such as a patient portal, e-prescribing,

electronic medication administration records, scanning and archiving, as well as interfaces for

orders in and results out for lab orders between acute and ambulatory facilities (*Meditech*

Prepares You for Stage 2 of Meaningful Use: Eligible Hospitals, 2010). 6) Demographics recall

was updated in Meditech to include the patient's sex, preferred language, race; ethnicity and date

of birth (*Meaningful Use of Certified EHR Software, 2010, September*). 7) A smoking cessation

query was added to nursing documentation during the assessment admission process to record

the smoking status for patients thirteen years or older (*Meaningful Use Stage 1 Requirements,*

2010). 8) Electronic capture of advance directives for patients 65 years and older to record

whether an advance directive exists as well as provide a copy of the directive if it exists

(*Meditech Prepares You for Stage 2 of Meaningful Use: Eligible Hospitals, 2010*). 9) Addition

of a drug and drug allergy as well as drug formulary checking to the electronic medical record

(*Meditech Prepares You for Stage 2 of Meaningful Use: Eligible Hospitals, 2010*). 10) Addition

of a Continuity of Care Document (CCD) which is an electronic document exchange standard for

sharing patient summary information. 11) The summaries include pertinent information about

current and past health status in a format that can be shared by computer applications, web

browsers, electronic medical record (EMR) and electronic health record (EHR) systems

(*Continuity of Care Document (CCD), 2010*). 12) Shore Health System will be meeting core and

menu objectives as well as they will report on thirteen required core objectives and five chosen

objectives as well as their fifteen clinical quality measures (*Meaningful Use, 2010*).

     Shore Health System attestation preparation for Meaningful Use Stage 1 started on July 1,

2012 and continued through January 31, 2013. Shore Health System's Stage 1 ninety day

reporting period is February 1, 2013 through April 30, 2013 and the last day to submit the

reporting documentation to Centers for Medicare and Medicaid services (CMS) is July 1, 2013

(*2012 - 2014 Health Information Technology (H.I.T.) Timeline,* (2012). Shore Health System

will attest to secure CMS EHR Incentive Program reimbursements to prove they are

meaningfully using a certified EMR (*EMR Incentive Center FAQs Program Attestation, 2010*).

Shore Health Systems Stage 2 phase will be October 1, 2013 and will run through October 1,

2014.

Overview of Shore Health System Meaningful Use

Stage 1 Year 1 Reporting Period

Standards: 2011

Core Objectives Met:

CPOE, Problem List, Active Medication List, Active Medication Allergy List, Record Vital

Signs, Record Patient Demographics, Record Smoking Status, Provide Electronic Copy of

Patient Health Record, Provide Electronic Copy of Discharge Instructions, Report Clinical

Quality Measures to CMS, Clinical Decision Support Rule (1), Drug/Drug & Drug/Allergy

Interactions, Protect Electronic Health Information

Menu Objectives Met:

Record Advance Directives, Incorporate Discrete Lab Results, Implement Drug Formulary

Checks, Public Health Interface—Immunizations, Public Health Interactions—Syndromic

Surveillance

Reporting Period:

February 1–May 1 2013

Stage 1 Year 2 Reporting Period

Standards: 2014

Core Objectives to be met:

CPOE, Drug/Drug & Drug/Allergy Interaction Check, Problem List, Active Medication list,

Active Medication Allergy List, Record Demographics, Record Vital Signs, Record Smoking

Status, Clinical Decision Support Rule (1), View/Download/Transmit, Protect Electronic Health

Information

Menu Objectives to be met:

Enable Drug Formulary Checks, Record Advance Directives, Incorporate Discrete Lab Results,

Public Health Initiative—Immunization, Public Health Initiative—Syndromic Surveillance

Reporting Period:

July 1-September 30, 2014

Stage 2 Year 1 Reporting Period

Standards: 2014

Core Objectives to be met:

CPOE, Record Demographics, Record Vital Signs, Record Smoking Status, Clinical Decision

Support Rule (5), View/Download/Transmit, Protect Electronic Health Information, Incorporate

Discrete Lab Results, Patient Condition Lists, Patient Education, Medication Reconciliation,

Transitions of Care, Public Health Interface—Immunization, Public Health Interface—Labs,

Public Health Interface—Syndromic Surveillance, Electronic Medication Administration Record

(eMAR)

Menu Objectives to be met:

Advance Directives, Electronic Notes, Record Family History

Reporting Period:

October 1, 2014–September 30, 2015

Stage 2 Year 2 Reporting Period

Standards: To be finalized

Core Objectives to be met:

To be finalized

Menu Objectives to be met:

To be finalized

October 1, 2015–September 30, 2016

Challenges Faced

Implementing software upgrades

Implementing process change

Communication

Implementing 2014 standards:

Delay in CMS response constrained timeline - Delay in CMS response resulted in delay

for vendor to implement software changes and documentation resulted in delay implementing

and compressed implementation timeline.

Nomenclature mapping - All responses must be mapped to standardized nomenclature

(SNOMED, LOINC, ICD-9, etc.). Time consuming and required mapping to multiple standards.

Implementing new technologies - Patient portal, DIRECT messaging, and Electronic exchange of patient health information (Continuity of Care Document).

Vendor resource constraints - Hospitals and providers across nation on same timeline. Vendors not prepared.

In-House resource constraints - Having available in-house resources to dedicate time and effort to implementation. Resource engagement.

Obtaining patient engagement - Stage 2 measures require patient engagement thresholds, meaning patients utilize the technology implemented. Requires creative marketing and is new to healthcare setting, especially in hospital setting (where traditionally the patient is discharged, and therefore, ending relationship).

Overall process change.

Implementing software and associated processes - Replacing software deemed to not meet the requirements of Meaningful Use, implementing replacements, and associated process changes.

Chapter 4

Future of Healthcare

The future of healthcare in the United States will be greatly enhanced by the implementation of Meaningful Use. Healthcare facilities will become more efficient by the documentation of data related to patient care and provider practices. The incentive payouts will be a major factor for providers to adhere to the required criteria. Electronic Health Records will allow both physicians and their patients' access to medical records to afford better healthcare possibilities for long term care. The goal of every healthcare facility is to provide quality care that is both efficient and affordable. The adoption of Meaningful Use will be beneficial for patient safety by monitoring how care is provided and documentation of protocols within healthcare facilities. Meaningful Use is the future of healthcare (*Medicare & Medicaid EHR Incentive Program Meaningful Use Stage 1 Requirements Overview 2010, 2010*).

There are a lot of differing opinions as to the worth of Meaningful Use. On one half, the general concerns is that Meaningful use goes neither far enough or fast enough in healthcare to be viable. The fact is that providers are both reluctant and slow to adopt the necessary technology in healthcare IT. Healthcare consumers on the other hand as both willing and eager to partake in their health management. Statistics show that 75% of consumers would go online to access their medical records and 60% would use email and the internet for communication with their doctors or other healthcare professionals. The technology that enables this transfer of information and communication is widespread and is not limited to age or gender as consumers of all age groups are capable of online participation *(A Survey of Stakeholder Views Meaningful Consumer Engagement,. (2013, December 20).*

Although providers were somewhat reluctant to adopt the new technology offered for usage. The necessity for healthcare advancement made the move imperative. The Meaningful Use objectives have made the use of electronic medical records (EMR) a vital aspect of healthcare today. Physicians are rapidly proceeding to use at least some forms of EMR for their practices, with many progressing onto more technological advances, as technology becomes available.

The purpose of EMR technology is to benefit both providers and patient needs. The use of EMR provides a clear, concise and accurate record of the patient's healthcare. This benefits the physician by enabling an ongoing chronological overview of the medical background of the patient's health. The patient benefits by having access to their records and enable then to actively participate in their healthcare regimen.

For Meaningful Use to work successfully there are a variety of factors that need to be fully implemented and integrated. Much like a favorite recipe, the Meaningful Use agenda needs a variety of key ingredients to enable the completion of the intended result.

The American Recovery and Reinvestment Act of 2009 (ARRA) enabled the Health Information Technology for Economic and Clinical Health Act (HITECH) to provide for the Meaningful Use agenda by providing incentives to enable providers adoption of technology for EMR systems. This was a radical change that required the use of electronic records and made paper records obsolete. Health Information Management (HIM) underwent a drastic change, affecting both providers (staff) and patients.

The Meaningful Use objectives include every aspect of healthcare from providers (doctors, nurses, and staff), HIT, patients and vendors. All aspects are significantly empowered with the ability to enable the success of Meaningful Use. The providers are responsible for

adoption and implementation of technology required for usage. The HIT staff oversees and

provides healthcare professionals the tools needed for correct usage. The patients can actively

participate in their own healthcare decisions and the vendors are responsible for the provision of

necessary software to make it work.

Chapter 5

Meaningful Use Stages

The Meaningful Use objectives were delegated for implementation in three stages:

Stage 1 – 2011 – 2012

Stage 2 – 2014

Stage 3 – 2016

Each stage has certain criteria to be met for participation and incentive payments.

Stage 1

➤ The electronic capture of health information in a standardized format
➤ The use of captured information to track key clinical conditions
➤ The communication of this key information in an effort to coordinate healthcare
➤ Initiating these quality health measures and public health information
➤ Using this information to allow patient access to allow contributions to their own healthcare by allowing them to actively participate in their own care

Stage 2

➤ More rigorous health information exchange
➤ Increased requirements for e-prescribing and incorporation of lab results
➤ Electronic transmission of patient care summaries across multiple settings
➤ More patient controlled data

Stage 3

➤ Improving quality, safety, and efficiency to improve health outcomes
➤ Decision support for national high priority conditions
➤ Patient access of self-management tools
➤ Access to comprehensive patient data through patient centered HIE
➤ Improving population health

Meaningful Use for eligible professionals

1) 14 core objectives
2) 5 of 10 menu set objectives
3) 6 total clinical quality measures
    a. 3 core or alternate core

b. 3 of 38 from additional set

Meaningful Use criteria for hospitals / CAH

1) 14 core objectives
2) 5 of 10 menu set objectives
3) 15 clinical quality measures

1. Core Objectives

Eligible Professionals must complete all 15:

1. Computerized Provider Order Entry (CPOE)
2. E-Prescribing (eRx)
3. Report ambulatory clinical quality measures to CMS/States
4. Implement one clinical decision support rule
5. Provide patients with an electronic copy of their health information, upon request
6. Provide clinical summaries for patients for each office visit
7. Drug-drug and drug-allergy interaction checks
8. Record demographics
9. Maintain an up-to-date problem list of current and active diagnoses
10. Maintain active medication list
11. Maintain active medication allergy list
12. Record and chart changes in vital signs
13. Record smoking status for patients 13 years or older
14. Capability to exchange key clinical information among providers of care
15. Protect electronic health information

2. Menu Set

Eligible Professionals must complete 5 out of 10:

1. Drug-formulary checks
2. Incorporate clinical lab test results as structured data
3. Generate lists of patients by specific conditions
4. Send reminders to patients per patient preference for preventive/follow up care
5. Provide patients with timely electronic access to their health information
6. Use certified EHR technology to identify patient-specific education resources and provide to patient, if appropriate
7. Medication reconciliation
8. Summary of care record for each transition of care/referrals
9. Capability to submit electronic data to immunization registries/systems*

10. Capability to provide electronic syndromic surveillance data to public health agencies*

* At least 1 public health objective must be selected

3. Clinical Quality Measures (CQM)

Core CQM

Eligible Professionals must complete 3 of the following:

- Hypertension – Blood Pressure Measurement
- Preventive Care and Screening Measure Pair
  - Tobacco Use Assessment
  - Tobacco Cessation Intervention
- Adult Weight Screening and Follow up
- Weight Assessment and Counseling for Children and Adolescents
- Preventive Care and Screening
  - Influenza Immunization for Patients > 50 Years old
- Childhood Immunization Status

Additional Set of CQMs

Eligible Professionals must complete 3 out of 38:

1. Diabetes: Hemoglobin A1c Poor Control
2. Diabetes: Low Density Lipoprotein (LDL) Management and Control
3. Diabetes: Blood Pressure Management
4. Heart Failure (HF): Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy for Left Ventricular Systolic Dysfunction (LVSD)
5. Coronary Artery Disease (CAD): Beta-Blocker Therapy for CAD Patients with Prior Myocardial Infarction (MI)
6. Pneumonia Vaccination Status for Older Adults
7. Breast Cancer Screening
8. Colorectal Cancer Screening
9. Coronary Artery Disease (CAD): Oral Antiplatelet Therapy Prescribed for Patients with CAD
10. Heart Failure (HF): Beta-Blocker Therapy for Left Ventricular Systolic Dysfunction (LVSD)
11. Anti-depressant medication management: (a) Effective Acute Phase Treatment, (b) Effective Continuation Phase Treatment
12. Primary Open Angle Glaucoma (POAG): Optic Nerve Evaluation
13. Diabetic Retinopathy: Documentation of Presence or Absence of Macular Edema and Level of Severity of Retinopathy

14. Diabetic Retinopathy: Communication with the Physician Managing Ongoing Diabetes Care
15. Asthma Pharmacologic Therapy
16. Asthma Assessment
17. Appropriate Testing for Children with Pharyngitis
18. Oncology Breast Cancer: Hormonal Therapy for Stage IC-IIIC Estrogen Receptor/Progesterone Receptor (ER/PR) Positive Breast Cancer
19. Oncology Colon Cancer: Chemotherapy for Stage III Colon Cancer Patients
20. Prostate Cancer: Avoidance of Overuse of Bone Scan for Staging Low Risk Prostate Cancer Patients
21. Smoking and Tobacco Use Cessation, Medical Assistance: a) Advising Smokers and Tobacco Users to Quit, b) Discussing Smoking and Tobacco Use Cessation Medications, c) Discussing Smoking and Tobacco Use Cessation Strategies
22. Diabetes: Eye Exam
23. Diabetes: Urine Screening
24. Diabetes: Foot Exam
25. Coronary Artery Disease (CAD): Drug Therapy for Lowering LDL-Cholesterol
26. Heart Failure (HF): Warfarin Therapy Patients with Atrial Fibrillation
27. Ischemic Vascular Disease (IVD): Blood Pressure Management
28. Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic
29. Initiation and Engagement of Alcohol and Other Drug Dependence Treatment: a) Initiation, b) Engagement
30. Prenatal Care: Screening for Human Immunodeficiency Virus (HIV)
31. Prenatal Care: Anti-D Immune Globulin
32. Controlling High Blood Pressure
33. Cervical Cancer Screening
34. Chlamydia Screening for Women
35. Use of Appropriate Medications for Asthma
36. Low Back Pain: Use of Imaging Studies
37. Ischemic Vascular Disease (IVD): Complete Lipid Panel and LDL Control
38. Diabetes: Hemoglobin A1c Control (<8.0%)

(Meaningful Use Stage 1 Requirements [Fact sheet]. (n.d.)

Figure 1. Meaningful Use Consumer Engagement

Patients willing to engage	Provider systems lag
75% of patients are willing to go online to view their medical records **76%** of patients are willing to go online to view test results	**41%** of physicians have EMR systems capable of giving patients timely access to this information
65% of patients want appointment reminders via e-mail	**44%** of physicians have EMR systems that provide guideline-based follow-up or screening reminders
62% of patients want to correspond online with their primary physician about their health	**46%** of physicians have EMR systems capable of communicating patient-specific information to help patients make decisions about their health

Source: Optum Institute/Harris Interactive Multi-Stakeholder Health Care Environment Survey, June 2012.

(A Survey of Stakeholder Views Meaningful Consumer Engagement,. (2013, December 20).

Figure 2. Physicians move ahead on EMR adoption but connections with patients lag
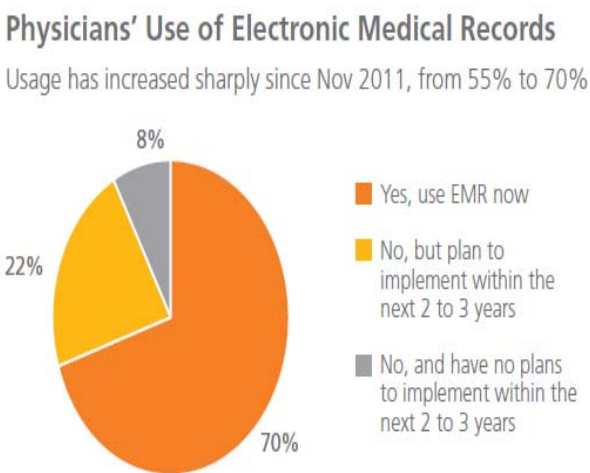
Physicians' Use of Electronic Medical Records
Usage has increased sharply since Nov 2011, from 55% to 70%

8%
22%
70%

- Yes, use EMR now
- No, but plan to implement within the next 2 to 3 years
- No, and have no plans to implement within the next 2 to 3 years

Source: Optum Institute/Harris Interactive Multi-stakeholder Health Care Environment Survey, June 2012. Base: All qualified U.S. physicians (n=1,000).

How Long Has Your EMR System Been in Place?

over 5 years 31%
less than 12 months 18%
3-5 years 27%
1-2 years 23%
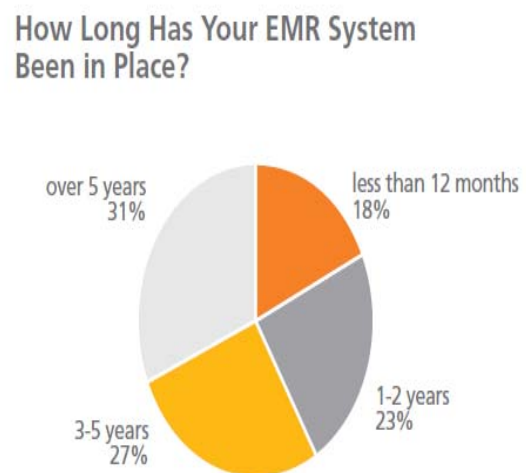
Source: Optum Institute/Harris Interactive Multi-stakeholder Health Care Environment Survey, June 2012. Base: All qualified U.S. physicians with EMR (n=716).

(A Survey of Stakeholder Views Meaningful Consumer Engagement,. (2013, December 20).

Important factors for Meaningful Use Success:

- ➤ Vendors – supply the right software
- ➤ Physicians – to understand the system

- IT – be comfortable with usage
- Staff – needs proper training – understand
- Software – needs to be interactive, comprehensive and secure
- Information – clear, concise, accurate
- Patients – needs to be able to access information

Chapter 6

Meaningful Use – Six Years Later Survey Results

Atlanta, Georgia

2008:

- 4% adoption rate
- 72% - 96% reported a positive effect of EMR or patient care
- 93% physician user satisfaction

    o Physician's reasons for non-use:

        ▪ 66% - cost
        ▪ 50% uncertain or cost of return
        ▪ 41% loss of productivity during implementation
        ▪

2013:   Survey of 967 physicians

- 70% felt investment was not worth cost and effort
- 73% would not re-purchase current system
- 69% condition of care did not improve
- 65% EHR did not improve quality of care
- 45% EHR made patient care worse
- 66% report financial losses as a result of EHR
- 38% significant losses
- 67% lack of functionality of system
- 45% of physicians spent over $100,000 on EHR
- 77% of larger practices spent over $200,000
- Increased staff costs
- Loss of production
- 17% of Stage 1 2011 Meaningful Use providers did not participate in 2012
- Satisfaction rate dropped from 90% in 2008 to 30% in 2013
- Belief that EHR improves quality of care from 82% in 2008 to 35% in 2013
  (Six Years Later...What Has Meaningful Use Accomplished? (n.d.).

Conclusion: Meaningful Use is sole cause among EHR users

The healthcare industry although forever eager to adopt new technology in the medical

field has been reluctant in the adherence and implementation of computer technology (HIT). In

2008, when Meaningful Use was in its initial phase, many providers were eager to adopt the new

software offered by vendors for an electronic medical record (EMR) or electronic health record

(EHR). Many believe that providers would have welcomed a slow transition, or at least a self-

paced changeover. Meaningful Use doctrine was forced on providers still unsure of the validity

of the program. There were literally forced to spend large amounts of money on untested

software and equal amounts of time to train their staff. This was quite an imposition on

physicians with already lucrative practices established. The initial incentive payments aside, the

continuing upgrades and ongoing stages of implementation will further cut into profits. Granted

healthcare will ultimately become more successful overall, but providers will, I fear, carry a

grudge for a long time because of the way Meaningful Use was forced on them.

Issues:

❖ **Meaningful Use as applied to Mental Health (Psychiatric & Behavioral Health)**

There is a substantial difference in money delegated to mental healthcare and this has

been quite significant in the last two decades. The numbers of patients on the other hand has

been increasing. Mental health providers, such as psychiatrists are on the lower end of the pay

scale; often because of smaller office requirements. Thus, the use of information technology (IT)

and the funding for such in unfortunately limited.

There are large gaps in quality measures and improvement and compared to other

healthcare fields is radically underdeveloped. The issue of privacy concerning mental health

requires strict protocols be adhered to. Mental health needs to be as much a part of Meaningful

Use as it is a vital aspect of overall public health.

❖ **Electronic Medical Record Technology**

Electronic medical record technology requires fine tuning or customization by vendors for optimum usage. The aspects of documentation, quality and usability all become critical issues for an EMR to be both effective and efficient both monetarily and logistically. The use of EMR technology is costly and time consuming for both staff and healthcare professionals. Providers need to undergo sufficient training and system testing long before implementation to forego any technical glitches that may occur. The need for constant re-evaluation and further customization of software is necessary to allow for future upgrades and optimum performance.

❖ **Information Technology Challenged Older Adults**

Although the large majority of the "older" generation has rapidly become technology oriented, the issue of age does come into play in the use of an EHR system. The concept of Meaningful Use as it applies to healthcare is ideally designed to allow each person access and communication ability via the internet with healthcare professionals in an attempt to partake in management of their medical treatments.

It is predicted that by 2030, 20% of the population of the United States will be over 65 years of age. Although people are living longer and in better health, this is still the timeframe when chronic disease affects older patients. The electronic technology required for health information may be too challenging for older users to fathom let alone participate in successful. The issue of usability and understanding will be greatly diminished by a large portion of the elderly.

The answer to this is fairly simple. Web designers need to focus on a simplistic approach to both design and user ability. It has been proven in a study that older adults required longer time periods to complete a specified user ability tests than their younger counterparts. The issues

of graphics, color contrast, small letter size and then letter size in a menu bar as well as

complicated medical terminology usage were all factors and concerns for the elderly participants.

The results were recommendations for the inclusion of a medical terminology dictionary on the

homepage, a more organized menu structure, and clearly labeled contents for websites for user

friendly access.

Meaningful Use, as previously described is the best usage of information to implement

quality care and effective cost for enhanced patient outcomes. There are many key aspects of

Meaningful Use that enable the success. The overall goal of Meaningful Use relies on five

strategic points. The first strategic point is to adopt and achieve the ability of healthcare

information interoperability. The second strategic point is the improvement of individual

patients care as well as the population health and reduction of costs involving all aspects of

healthcare. The third strategic point is to strive to inspire trust in HIT and confidence in new

technology. The fourth strategic point is allowing patients the ability to improve their own

healthcare by electronic information exchange with caregivers. The fifth strategic point is the

expansion of technology and learning techniques for further advancement of healthcare. These

ingredients when combined with security of health information will enhance EHR technology

allowing healthcare to progress effectively into the future, ensuring the integrity and success of

the healthcare industry in the future (*Health Information Exchange: From Meaningful Use to

Personalized Health*, 2011, September).

The future of healthcare and success of EHR technology is reliant on the exchange of

health information. This requires software that is interoperable among all the various standards

such as LOINC, SNOMED, RxNorm, ICD-9, ICD-1q0 and all others. The rapidly evolving

upgrades and expansion of these technologies will soon make total adherence to full exchange of

information throughout healthcare. A standardized medical summary is being developed by

vendors for Integrating the Healthcare Enterprise (IHE) compliance. This will include the visit

history, such as lab reports, allergies, medical history as well as age, address, and other

demographics. This will also include a Continuity of Care Record (CCR) and a Clinical

Documentation Architecture (CDA). All these steps will be instrumental in the success of

Meaningful Use (*Health Information Exchange: From Meaningful Use to Personalized Health*,

2011, September).

Security / Interoperability

   The security and issues of trust within the electronic exchange of PHI is critical. The

regulation and enforcement of privacy policies is a major concern in the federal and state

agencies as well as the ONC. Healthcare security standards are developing a gateway system to

connect consumers, providers, hospitals and other healthcare and government agencies to allow

the Personal Health Information to flow securely and discreetly within the system. This enables

EHR interoperability within the gateway standards. These include:

   - Nu HIN – standards, services and policies enabling the security of information exchange
     over the internet.
     Direct Project ⟶ both are
     CONNECT   parts of Nu HIN

   - Integrating the Health Enterprise (IHE) enables the coordination of standards to address
     and support the best possible patient care and clinical needs.

   - Direct Project – established international standards for health-e-mail via encrypted e-
     mail for internet security.

   - CONNECT – open source software solution supported by vendors, government agencies
     and academic institutions.

The benefits of these programs are to facilitate a secure system by which to communicate HIE between patients, providers and healthcare institutions through the internet; mainly an encrypted secure e-mail system (*Health Information Exchange: From Meaningful Use to Personalized Health*, 2011, September).

The least used facet of MU is possibly the consumer or patient use of access to their own HIE. Although public interest in partaking in their own healthcare issues. Studies show that only 10% of patients use the Web to access their PHI as compared to those who access their banking information daily. This will change exponentially when people become more educated as to their capabilities and also gain more confidence in the security issues of internet usage as it applies to healthcare. Health Information Exchange (HIE) is governed by the Health Information Portability and Accountability Act (HIPAA) and subject to both privacy and security doctrines. Provisions are in place to expand the HIPAA policies as needed to provide security for health data in the future throughout the system.

The use of EHR and HIE will undoubtedly lead to the improvement of quality, coordination and efficiency throughout the healthcare network. As these facets of healthcare improve, so will the trust issue of the consumer. This coupled with products, practices and enhanced care will all bring Meaningful Use into compliance. The challenges of Meaningful Use implementation are complex and will take time and effort, but the benefits from all the work will ultimately be proven.

Figure 3. The Majority of Organizations Implemented New EHR Within the Past Two Years
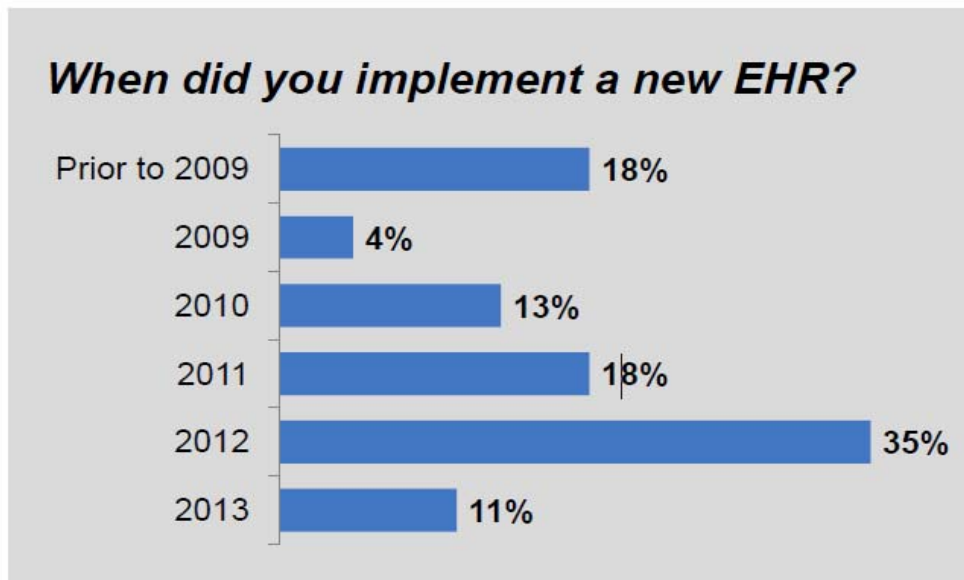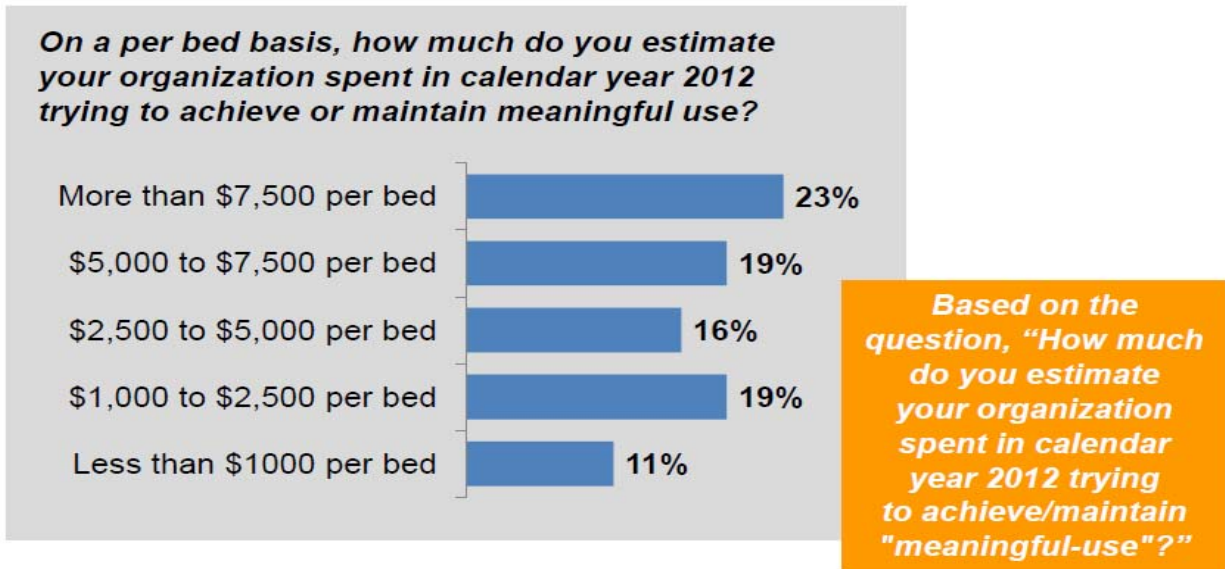

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 4. Most Organizations have Achieved Stage 1 and are Making Progress Toward Meeting Stage 2 Criteria

Where does your organization currently stand with regard to EHR implementation and meaningful use criteria?	
Implemented an EHR, have achieved Stage 1, and are progressing toward Stage 2 criteria	76%
Implemented an EHR and have achieved Stage 1 meaningful use criteria	10%
Implemented an EHR and have not yet achieved all Stage 1 meaningful use criteria	7%
In process of implementing an EHR	7%
Do not have an EHR	1%

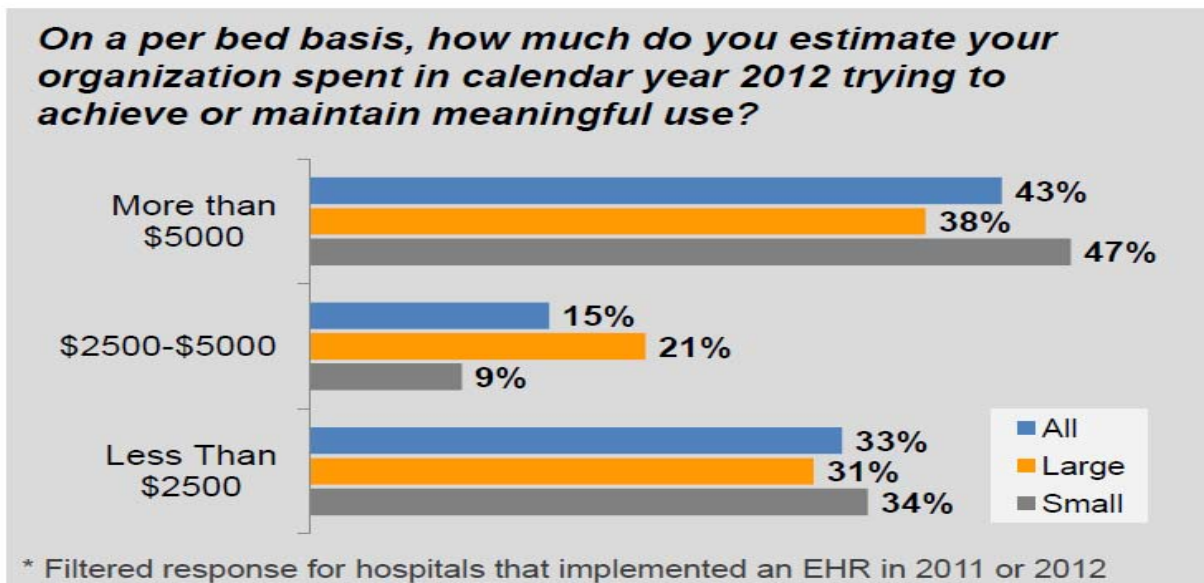*(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).*

Figure 5. Almost One-Quarter of Organizations Spent More than $7,500 per Bed to Achieve or Maintain Meaningful Use

Similarly, of those implementing and EHR within the past two years, more than half spent $5,000 or more per bed.
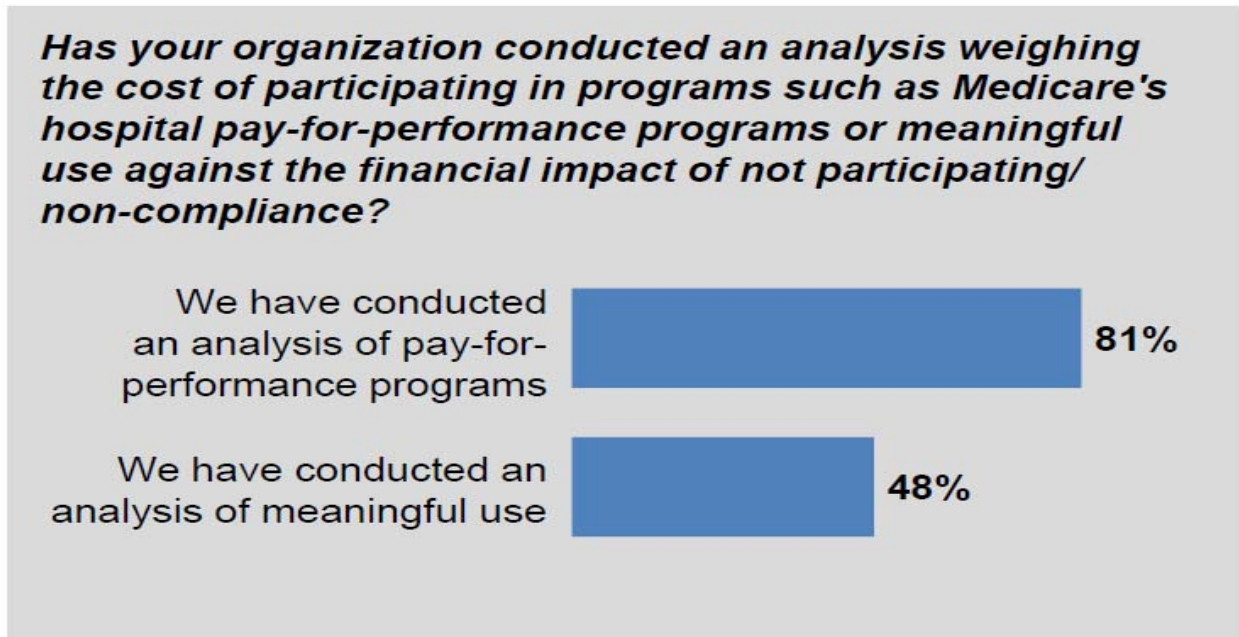
(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 6. Small Organizations Spent More to Achieve or Maintain Meaningful Use

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 7. Most Organizations Have Conducted and Analysis of Pay-for-Performance Programs

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 8. Most Analyses Indicated a Favorable Financial Return for Meaningful Use

What was the result of your analysis of the potential financial impact of pursuing meaningful use?	
Financial return would be favorable to our institution	65%
Financial return would not be favorable to our institution	19%
Result of analysis was inconclusive	16%

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 9. In Most Organizations, Physician Performance Returned to Normal Within Two Years

How long did it take to resume to pre-conversion physician performance (i.e. physician productivity)?

- < 1 Year — 38%
- 1-2 Years — 46%
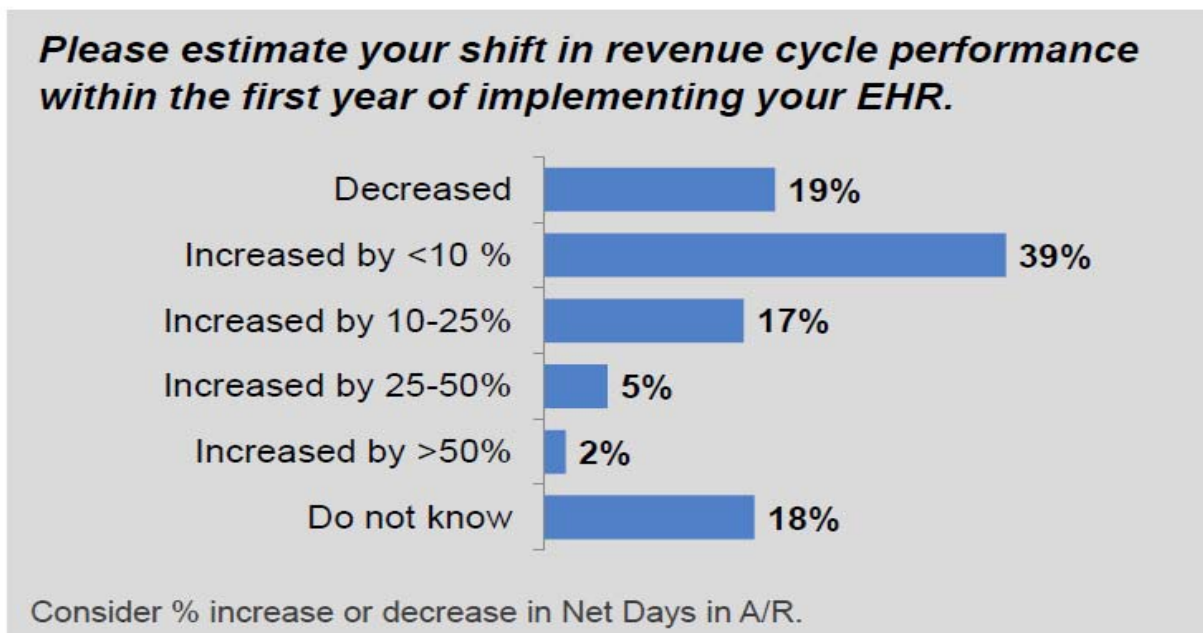- 2-3 Years — 11%
- 3-4 Years — 2%
- 4-5 Years — 2%
- 5 Years or Longer — 1%
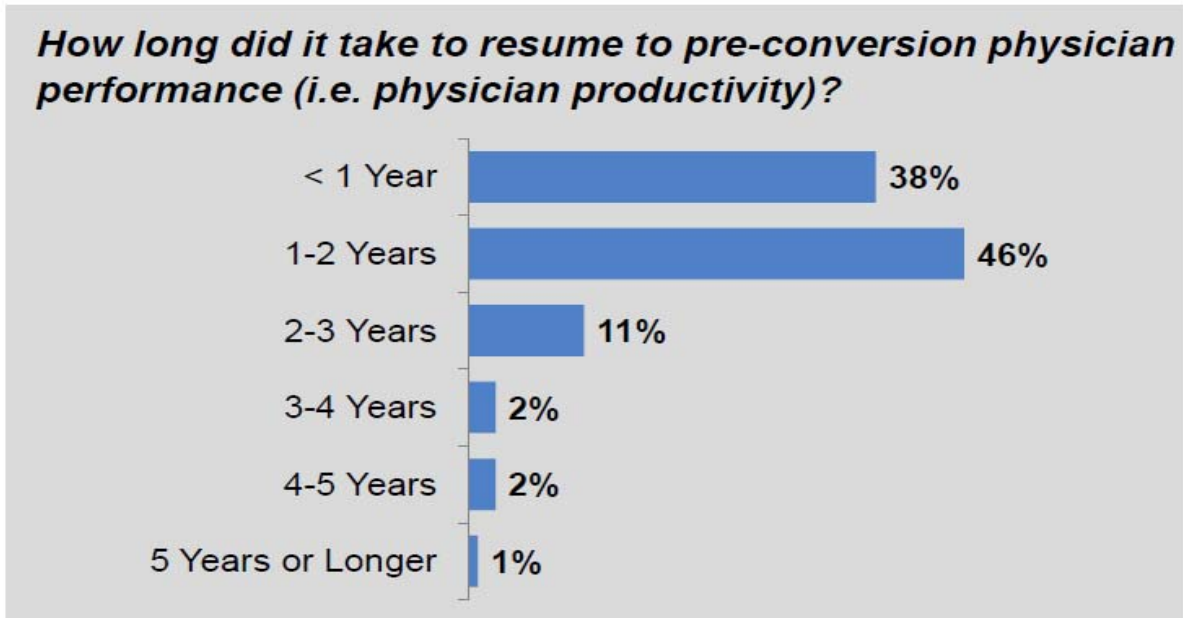
(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 10. Most Organizations Noted a Modest Impact to Revenue Cycle Performance Within the First Year

Please estimate your shift in revenue cycle performance within the first year of implementing your EHR.

- Decreased — 19%
- Increased by <10 % — 39%
- Increased by 10-25% — 17%
- Increased by 25-50% — 5%
- Increased by >50% — 2%
- Do not know — 18%

Consider % increase or decrease in Net Days in A/R.

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 11. In Most Organizations, Revenue Cycle Performance Returned to Normal Within One Year

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).
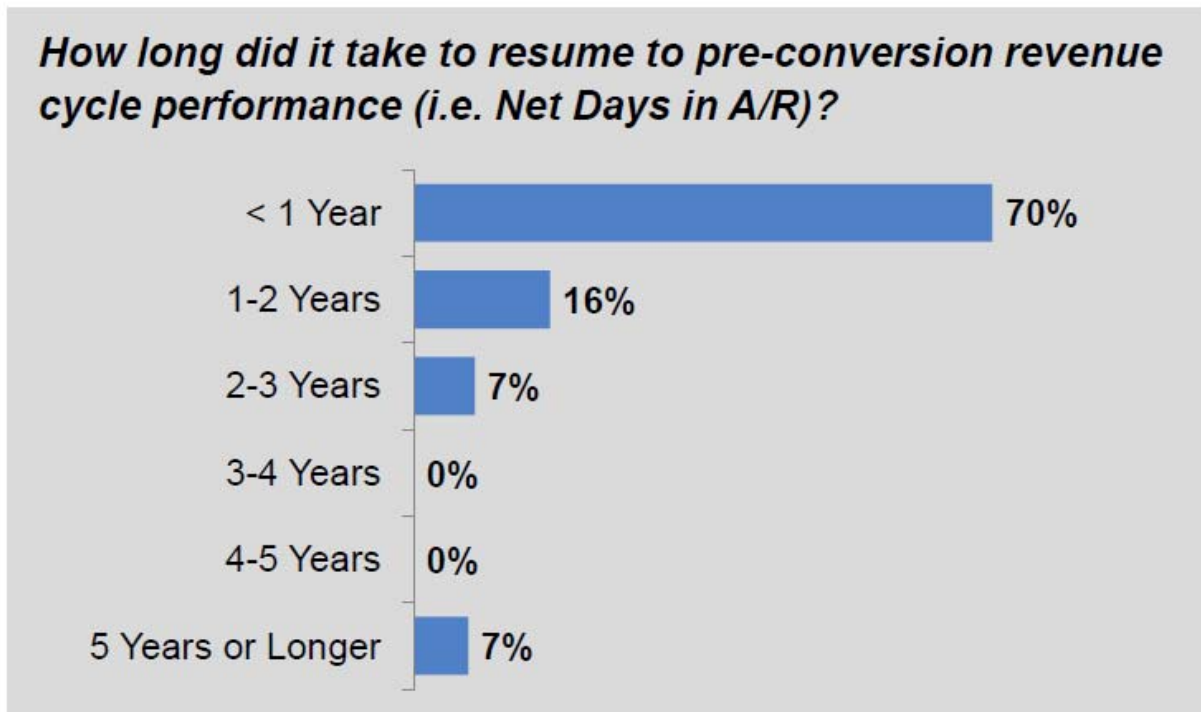
Figure 12. EHR's Impact on the Revenue Cycle: Some See Positive Results, Others Face Learning Curve

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 13. Key Learnings from EHR Implementations

EHR implementation **costs and resources** are often underestimated	*"There are ALWAYS hidden (or additional) costs that can be significant."*
Allowing time to select the right vendor is important	*"We would have been more deliberate in our selection. More interviews with more questions."*
Physician engagement can make or break an EHR roll-out	*"Physician participation and choosing physician champions to lead and be an integral part of the EHR selection and implementation process is key."*
Many organizations underestimate the **impact on documentation**	*"It is a lot harder than using paper charts and lot more time consuming."*
Communication and training is critical	*"Develop a group of super users to assist in training and with questions as the system is implemented."*

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

Figure 14. 122 Valid Responses from Hospital and Health System Financial Executives

Response by size of hospital or health system

Bed Size	Survey Respondents	U.S. Hospitals
Fewer than 100 beds	43%	50%
100-300 beds	31%	29%
300-500 beds	8%	9%
Greater than 500 beds	6%	5%
System	12%	8%

(HFMA Survey: Electronic Health Records and Meaningful Use, 2013, August).

ASTHO Meaningful Use Readiness Survey

Association of State and Territorial Health Officials

- National Non-Profit Agency

- 48 Respondents

    o 46 States
    o The U.S. Territories
    o District of Columbia
    o Over 100,000 public health professionals these agencies employ

- Lack of funding and technical expertise and lack of flexibility with current funding cited as top 3 barriers to readmission

- 38 respondents (79%) plan to have Electronic Lab Reporting system ready by April, 2011

- 41 (85%) plan to have immunization information system by April, 2011

- 25 (52%) will have Syndromic Surveillance System by April, 2011

Figure 15. Which public health information systems are you planning to prepare for meaningful use?
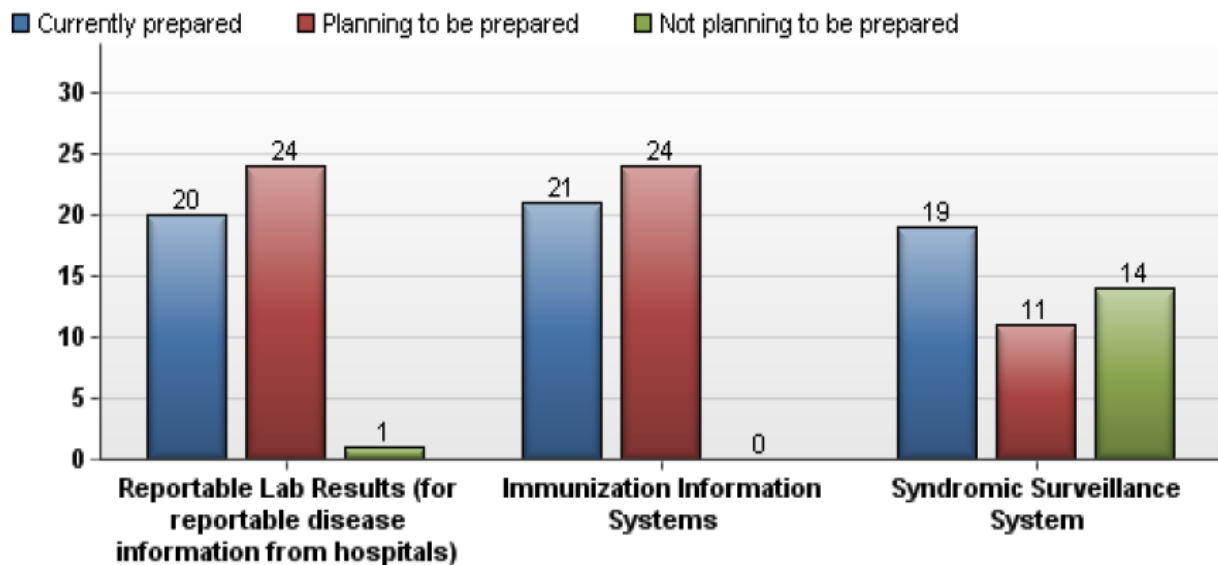
(ASTHO Meaningful Use Readiness Survey, n.d.).

Figure 16. Is your electronic laboratory test reporting system currently prepared or are you planning to be prepared to receive lab results in HL7 2.5.1 and LOINC Codes in version 2.27 for reportable diseases?
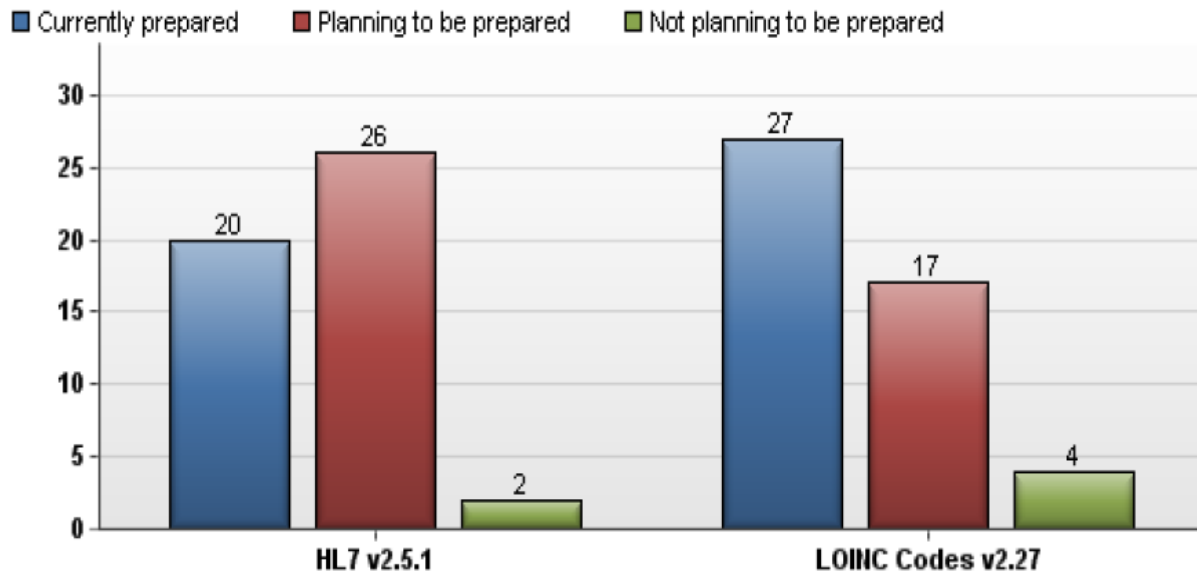
(ASTHO Meaningful Use Readiness Survey, n.d.).

Figure 17. Is your immunization information system currently prepared or are you planning to be prepared to receive immunization data submissions in HL7 2.3.1 or 2.5.1 and CVX codes?
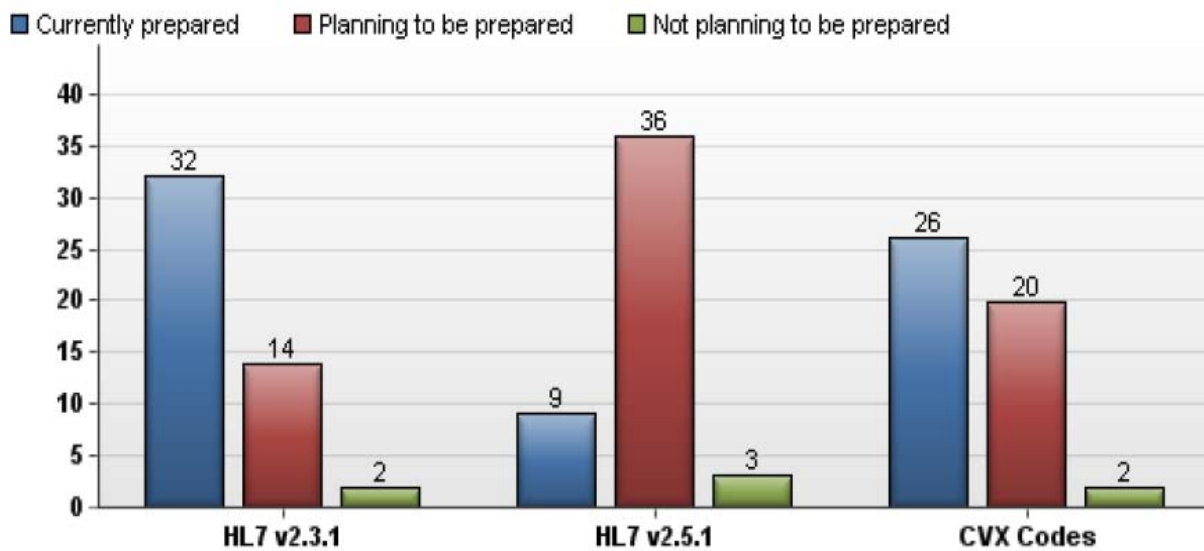
(ASTHO Meaningful Use Readiness Survey, n.d.).

Figure 18. In which HL7 format will your syndromic surveillance system receive messages?
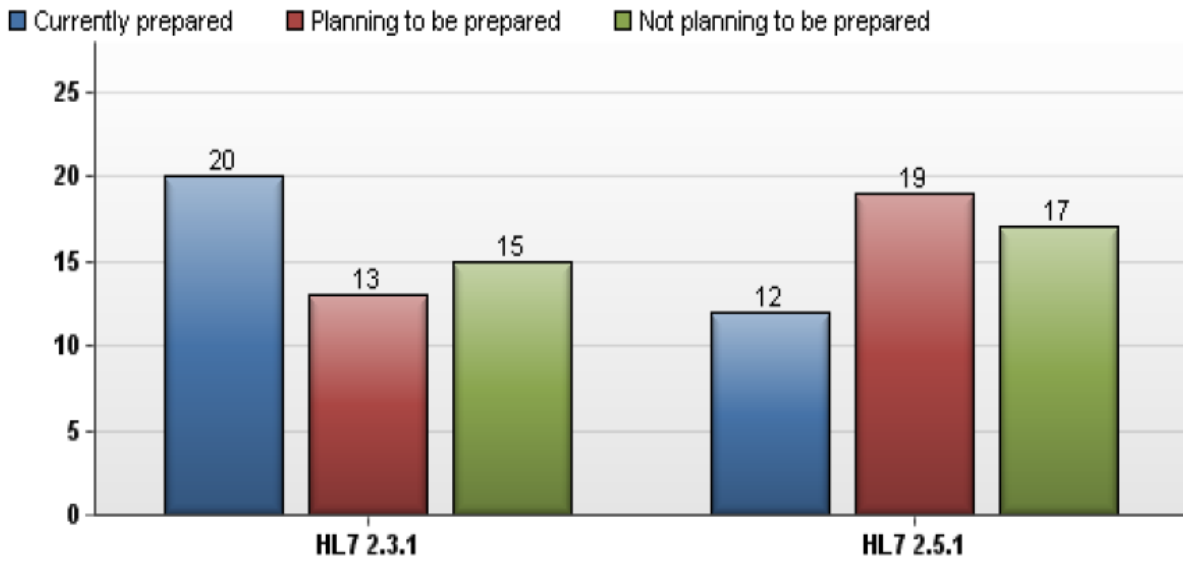
(ASTHO Meaningful Use Readiness Survey, n.d.).

Figure 19. When will your agency be ready to receive test messages?
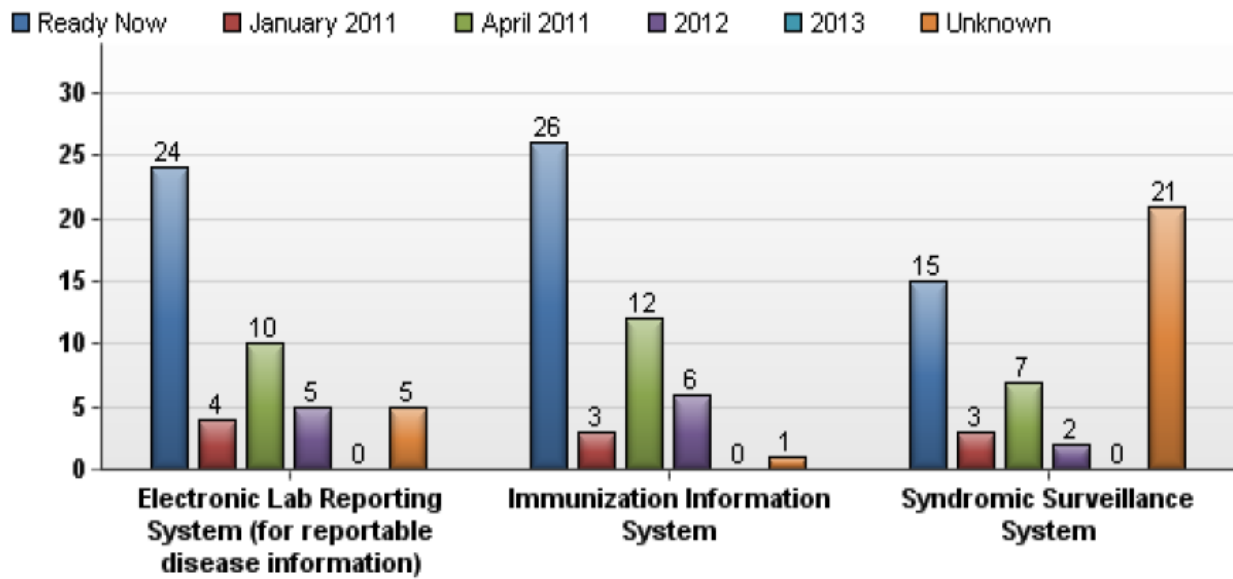
(ASTHO Meaningful Use Readiness Survey, n.d.).

Figure 20. Please describe any barriers in preparing your agency for meaningful use?
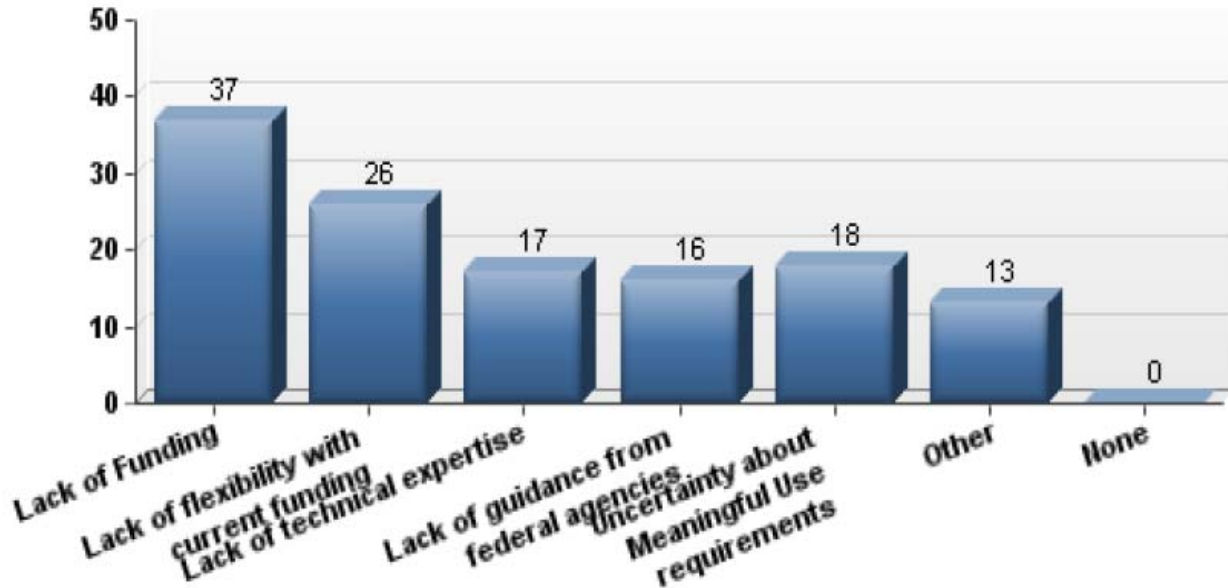
(ASTHO Meaningful Use Readiness Survey, n.d.).

Figure 21. What type of technical assistance do you need from the CDC?
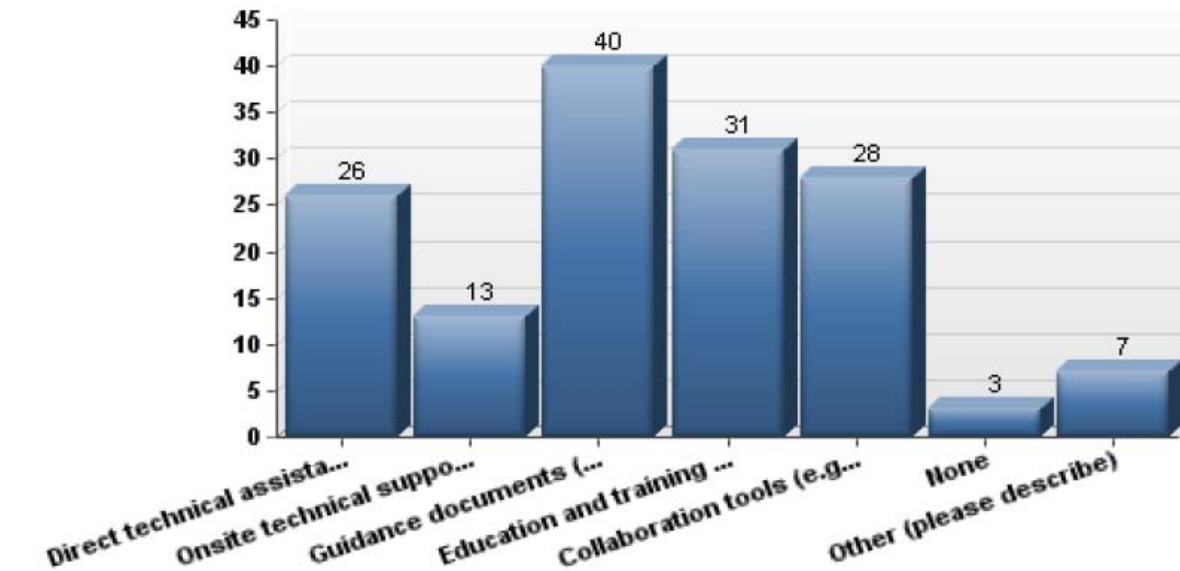
(ASTHO Meaningful Use Readiness Survey, n.d.).

Physician Experience With Electronic Health Record Systems That Meet Meaningful Use Criteria: NAMCS Physician Workflow Survey, 2011

How common are EHR systems that meet meaningful use criteria in physician practices?

Figure 22. Percentage of physicians with electronic health record systems that meet meaningful use criteria: United States, 2011
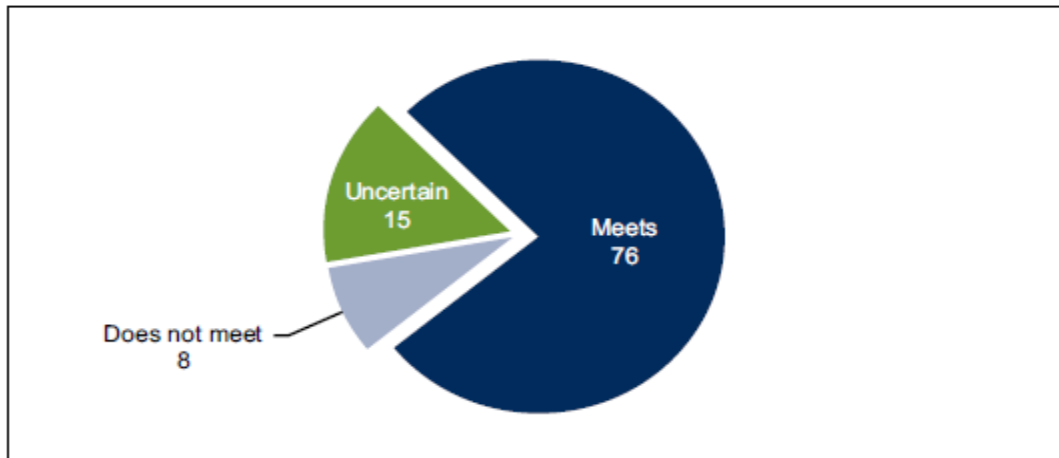
(Physician Experience With Electronic Health Record Systems That Meet Meaningful Use Criteria: NAMCS Physician Workflow Survey, 2011, 2013, September).

Are physicians who have EHR systems that meet meaningful use criteria more likely to report times savings?

Figure 23. Percentage of physicians using electronic health record systems who report agreement with selected efficiency indicators, by whether the systems meet meaningful use criteria: United States, 2011
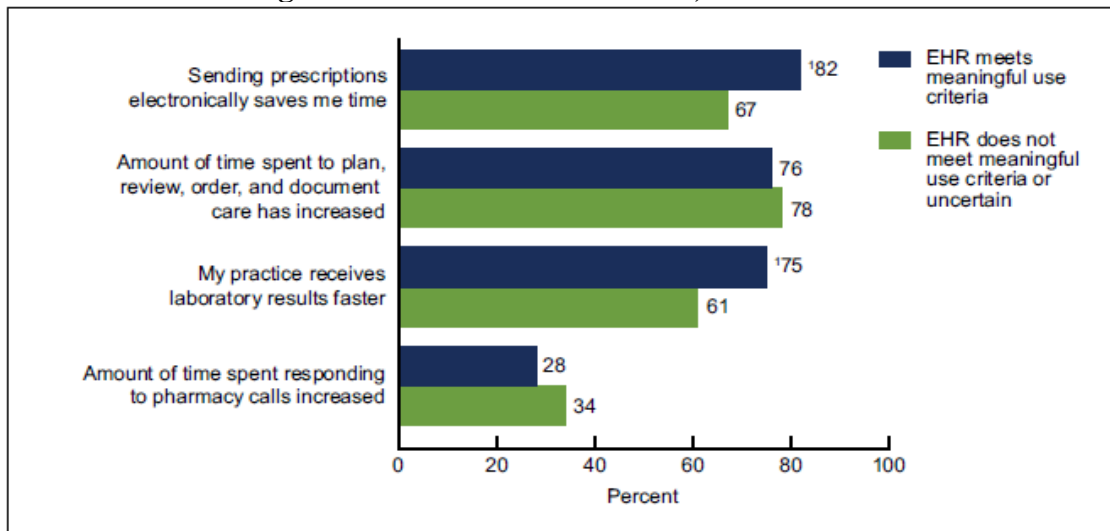
(Physician Experience With Electronic Health Record Systems That Meet Meaningful Use Criteria: NAMCS Physician Workflow Survey, 2011, 2013, September).

Are physicians who have EHR systems that meet meaningful use criteria more likely to report clinical and financial benefits?

Figure 24. Percentage of physicians using electronic health record systems who report agreement with selected clinical and financial benefits indicators, by whether the system meets meaningful use criteria: United States, 2011
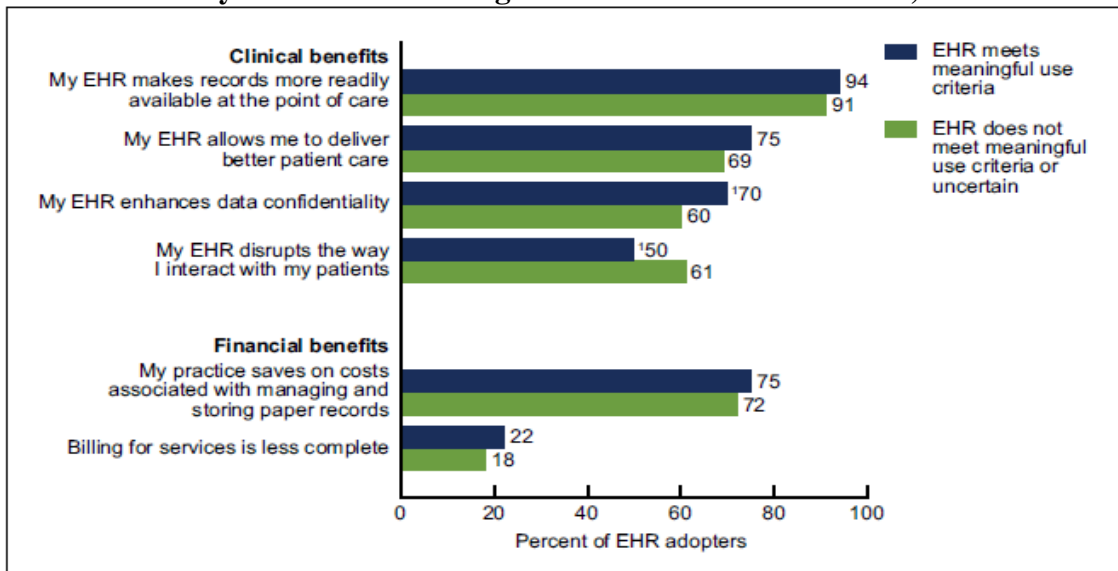
(Physician Experience With Electronic Health Record Systems That Meet Meaningful Use Criteria: NAMCS Physician Workflow Survey, 2011, 2013, September).

Early Results of the Meaningful Use Program for Electronic Health Records

Graph 1. Meaningful Use of Electronic Health Records, April 2011 through May 2012.
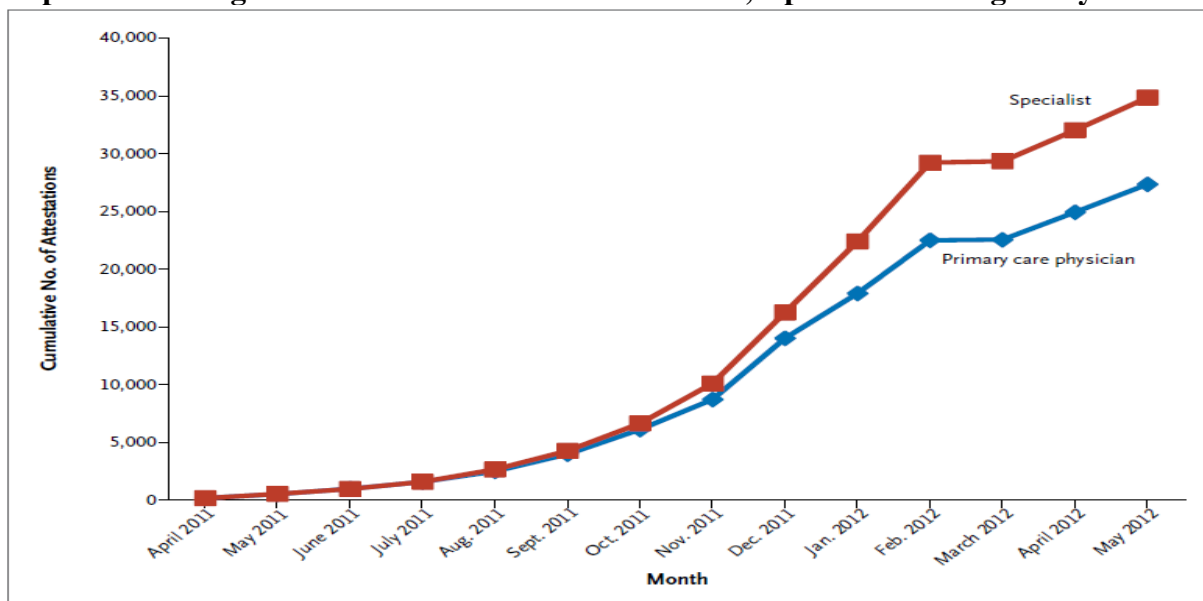
Cumulative attestations of meaningful use of electronic health records by primary care physicians and specialists increased substantially during the period from April 2011 through May 2012.

(Wright, A., Ph.D., Henkin, S., B.A., Feblowitz, J., M.S., McCoy, A. B., Ph.D., Bates, D. W., M.D., & Sittig, D. F., Ph.D., 2013).

Incentive Programs for Meaningful Use

Table 1. First payment year in which eligible professionals receive an incentive payment.

Calendar Year	2011	2012	2013	2014	2015+
2011	$18,000	-	-	-	0
2012	$12,000	$18,000	-	-	0
2013	$ 8,000	$12,000	$18,000	-	0
2014	$ 4,000	$ 8,000	$12,000	$12,000	0
2015	$ 2,000	$ 4,000	$ 8,000	$ 8,000	0
2016	-	$ 2,000	$ 4,000	$ 4,000	0
Total	$44,000	$44,000	$39,000	$24,000	0

Note: - indicates that incentive payment is not applicable during that year.

(Anumula, N., & Sanelli, P. C., 2012).

Table 2. Proposed payment-reduction schedule

Calendar Year	Payment Reductions Proposed
2015	1% total Medicare fee schedule compensation
2016	2% total Medicare fee schedule compensation
2017	3% total Medicare fee schedule compensation
2018	3% or 4% if >75% of eligible professionals are not demonstrating meaningful use
2019 and beyond	3% or 5% if > 75% of eligible professionals are not demonstrating meaningful use

The process for application for funds from Meaningful Use and CMS is done through a computer. The use of assistance via a consultant is advised because of the possibility of problems. This is a step by step process where all those who register must be affiliated with Medicare Provider Enrollment, Chain and Ownership System (PECOS).

(Anumula, N., & Sanelli, P. C., 2012).

Attaining Meaningful Use of Health Information Technology in a Residency Program: Challenges and Rewards

Payment Schedules and Requirements for Eligible Providers (does not apply to hospitals):

1. Medicare: Maximum amount attainable = $44,000/provider over 5 years ($18,000/1st year, decreasing yearly amounts thereafter)

2. Medicaid (must have at least 30% Medicaid patients, and state must be participating): Maximum amount attainable = $63,750/provider over 6 years ($21,250/1st year, subsequent annual payments of $8,500 for up to six years total

Table 3. Core Measures for achieving Meaningful Use

Core Measure	Definition
Use CPOE for medication orders directly entered by any licensed healthcare professional who can enter orders into the medical record per state, local, and professional guidelines	More than 30% of unique patients with at least one medication in their medication list seen by the EP have at least one medication entered using CPOE
Implement drug-drug and drug-allergy interaction checks	The EP has enabled this functionality for the entire EHR reporting period
EP Only: Generate and transmit permissible prescriptions electronically (eRx)	More than 40% of all permissible prescriptions written by the EP are transmitted electronically using certified EHR technology
Record demographics: preferred language, gender, race, ethnicity, date of birth, and date and preliminary cause of death in the event of mortality in the eligible hospital or CAH	More than 50% of all unique patients seen by the EP have demographics as recorded structured data
Maintain up-to-date problem list of current and active diagnoses	More than 80% of all unique patients seen by the EP have at least one entry or an indication that no problems are known for the patient recorded as structured data
Maintain active medication list	More than 80% of all unique patents seen by the EP have at least one entry (or an indication that the patient is not currently prescribed any medication) recorded as structured data
Maintain active medication allergy list	More than 80% of all unique patents seen by the EP have at least one entry (or an indication that the patient has no known medication allergies) recorded as structured data
Record and chart vital signs: height, weight, blood pressure, calculate and display BMI, plot and display growth charts for children 2-20 years, including BMI	For more than 50% of all unique patients age 2 and over seen by the EP, height, weight, and blood pressure are recorded as structured data
Record smoking status for patients 13 years old or older	More than 50% of all unique patients 13 years or older seen by the EP have smoking status recorded as structured data
Implement one clinical decision support rule and the ability to track compliance with the rule	Implement one clinical decision support rule
Report clinical quality measures to CMS or the States	For 2011, provide aggregate numerator, denominator , and exclusions through attestation; For 2012, electronically submit clinical quality measures
Provide patients with an electronic copy of their health information (including diagnostic test results, problem list, medication lists, medication allergies, discharge summary, procedures), upon request	More than 50% of all unique patients of the EP who request an electronic copy of their health information are provided it within 3 business days
Hospitals Only: Provide patients with an electronic copy of their discharge instructions at time of discharge, upon request	More than 50% of all patients who are discharged from an eligible hospital or CAH who request an electronic copy of their discharge instructions are provided it
EPs Only: Provide clinical summaries for each office visit	Clinical summaries provided to patients for more than 50% of all office visits within 3 business days
Capability to exchange key clinical information (ex: problem list, medication list, medication allergies, diagnostic test results), among providers of care and patient authorized entities electronically	Performed at least one test of the certified EHR technology's capacity to electronically exchange key clinical information
Protect electronic health information created or maintained by certified EHR technology through the implementation of appropriate technical capabilities	Conduct or review a security risk analysis per 45 CFR 164.308(a)(1) and implement updates as necessary and correct identified security deficiencies as part of the EP's risk management process

(Reddy, R., MD., 2012).

Table 4. Menu Items for achieving Meaningful Use

Measure	Definition
Implement drug-formulary checks	The EP has enabled this functionality and has access to at least one internal or external drug formulary for the entire EHR reporting period
Hospitals Only: Record advance directives for patients 65 years old or older	More than 50% of all unique patients 65 years old or older admitted to the eligible hospital or CAH have an indication of an advance directive status recorded
Incorporate clinical lab-test results into certified EHR technology as structured data	More than 40% of all clinical lab test results ordered by the EP authorized provider during the EHR reporting period whose results are either in a positive/negative or numerical format are incorporated in certified EHR technology as structured data
Generate lists of patients by specific conditions to use for quality improvement, reduction of disparities, research or outreach	Generate at least one report listing patients of the EP with a specific condition
EPs only: Send reminders to patients per patient preference for preventive/follow-up care	More than 20% of all unique patients 65 years or older or 5 years old or younger were sent an appropriate reminder during the EHR reporting period
EPs Only: Provide patients with timely electronic access to their health information (including lab results, problem list, medication lists, medication allergies) within 4 business days of the information being available to the EP	More than 10% of all unique patients seen by the EP are provided timely (available to the patient within 4 business days of being updated in the certified EHR technology) electronic access to their health information subject to the EP's discretion to withhold certain information
Use certified EHR technology to identify patient-specific education resources and provide those resources to the patient, if appropriate	More than 10% of all unique patients seen by the EP are provided patient-specific education resources
The EP who receives a patient from another setting of care or provider of care or believes an encounter is relevant should perform medication reconciliation	The EP performs medication reconciliation for more than 50% of transitions of care in which the patient is transitioned into the care of the EP
The EP who receives a patient from another setting of care or provider of care or refers their patient to another provider of care should provide a summary of care record for each transition of care or referral	The EP who transitions or refers their patient to another setting of care or provider of care provides a summary of care record for more than 50% of transitions of care and referrals
Capability to submit electronic data to immunization registries or Immunization Information Systems and actual submission in accordance with applicable law and practice (counts as public health measure)	Performed at least one test of the certified EHR technology's capacity to submit electronic data to immunization registries and follow-up submission if the test is successful (unless none of the immunization registries to which the EP submits such information have the capacity to receive such information electronically)
Hospitals Only: Capability to submit electronic data on reportable (as required by state or local law) lab results to public health agencies and actual submission in accordance with applicable law and practice	Performed at least one test of certified EHR technology's capacity to provide submission of reportable lab results to public health agencies and follow-up submission if the test is successful (unless none of the public health agencies to which the EP, eligible hospital or CAH submits such information have the capacity to receive such information electronically)
Capability to submit electronic syndromic surveillance data to public health agencies and actual submission in accordance with applicable law and practice (counts as public health measure)	Performed at least one test of certified EHR technology's capacity to provide electronic syndromic surveillance data to public health agencies and follow-up submission if the test is successful (unless none of the public health agencies to which the EP, eligible hospital or CAH submits such information have the capacity to receive such information electronically

(Reddy, R., MD., 2012).

Table 5. Eligible Professionals – Core & Alternate Set CQMs

Core CQM	
NQF Measure Number & PQRI Implementation Number	**Clinical Quality Measure Title**
NQF 0013	Hypertension: Blood Pressure Measurement
NQF 0028	Preventive Care and Screening Measure Pair: (a) Tobacco Use Assessment, (b) Tobacco Cessation Intervention
NQF 0421 PQRI 128	Adult Weight Screening and Follow-up
Alternate Core Set CQMs– From the Center for Medicare Services Website	
NQF Measure Number & PQRI Implementation Number	**Clinical Quality Measure Title**
NQF 0024	Weight Assessment and Counseling for Children and Adolescents
NQF0041 PQRI 110	Preventive Care and Screening: Influenza Immunization for Patients 50 Years Old or Older
NQF 0038	Childhood Immunization Status

(Reddy, R., MD., 2012).

Table 6. Additional Set CQM-EPs must complete 3 of 38

Diabetes: Hemoglobin A1c Poor Control
Diabetes: Low Density Lipoprotein (LDL) Management and Control
Diabetes: Blood Pressure Management
Heart Failure (HF): Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy for Left Ventricular Systolic Dysfunction (LVSD)
Coronary Artery Disease (CAD): Beta-Blocker Therapy for CAD Patients with Prior Myocardial Infarction (MI)
Pneumonia Vaccination Status for Older Adults
Breast Cancer Screening
Colorectal Cancer Screening
Coronary Artery Disease (CAD): Oral Anti-platelet Therapy Prescribed for Patients with CAD
Heart Failure (HF): Beta-Blocker Therapy for Left Ventricular Systolic Dysfunction (LVSD)
Anti-depressant medication management: (a) Effective Acute Phase Treatment, (b)Effective Continuation Phase Treatment
Primary Open Angle Glaucoma (POAG): Optic Nerve Evaluation
Diabetic Retinopathy: Documentation of Presence or Absence of Macular Edema and Level of Severity of Retinopathy
Diabetic Retinopathy: Communication with the Physician Managing Ongoing Diabetes Care
Asthma Pharmacologic Therapy
Asthma Assessment
Appropriate Testing for Children with Pharyngitis
Oncology Breast Cancer: Hormonal Therapy for Stage IC-IIIC Estrogen Receptor/Progesterone Receptor (ER/PR) Positive Breast Cancer
Oncology Colon Cancer: Chemotherapy for Stage III Colon Cancer Patients
Prostate Cancer: Avoidance of Overuse of Bone Scan for Staging Low Risk Prostate Cancer Patients
Smoking and Tobacco Use Cessation, Medical Assistance: (a) Advising Smokers and Tobacco Users to Quit, (b) Discussing Smoking and Tobacco Use Cessation Medications, (c) Discussing Smoking and Tobacco Use Cessation Strategies
Diabetes: Eye Exam
Diabetes: Urine Screening
Diabetes: Foot Exam
Coronary Artery Disease (CAD): Drug Therapy for Lowering LDL-Cholesterol
Heart Failure (HF): Warfarin Therapy Patients with Atrial Fibrillation

Ischemic Vascular Disease (IVD): Blood Pressure Management
Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic
Initiation and Engagement of Alcohol and Other Drug Dependence Treatment: (a) Initiation, (b) Engagement
Prenatal Care: Screening for Human Immunodeficiency Virus (HIV)
Prenatal Care: Anti-D Immune Globulin
Controlling High Blood Pressure
Cervical Cancer Screening
Chlamydia Screening for Women
Use of Appropriate Medications for Asthma
Low Back Pain: Use of Imaging Studies
Ischemic Vascular Disease (IVD): Complete Lipid Panel and LDL Control
Diabetes: Hemoglobin A1c Control (<8.0%)

(Reddy, R., MD., 2012).

Additional Steps for Achieving Meaningful Use Registration

Necessary items for registration include:

1) A National Provider Identifier (NPI): All eligible professionals, eligible hospitals, and critical access hospitals (CAHs) must have a National Provider Identifier (NPI) to participate in the Medicare and Medicaid EHR Incentive Programs.

2) An enrollment record in the Provider Enrollment, Chain and Ownership System (PECOS): All eligible hospitals and Medicare eligible professionals must have an enrollment record in PECOS to participate in the EHR Incentive Programs. (Note: Eligible professionals who are only participating in the Medicaid EHR Incentive Program are not required to be enrolled in PECOS). If a provider does not have an enrollment record in PECOS, he/she should still register for the Medicare and Medicaid EHR Incentive Programs.

3) National Plan and Provider Enumeration System (NPPES) User ID and Password.

4) Payee Tax Identification Number (if reassigning benefits).

5) Payee National Provider Identifier (NPI) (if reassigning benefits).

(Reddy, R., MD., 2012).

Steps for Meaningful Use

Table 7. Major Thematic Constructs with Examples of Barriers, Successes, and Resources That Support Practices in Their Journey to Meaningful Use Data

	Barriers	Successes	Support Resources
Getting Started	Provider and staff resistance to change Lack of personal connection to meaningful use changes Technical insufficiency of EHR	Staff and provider buy-in Staff and provider turnover Alignment of practice vision with vision of meaningful use	Learning collaboratives On-site advising, education, and training Network of local/regional peers
Re-engineering	EHR: cost, technical limitations, upgrades, new installations (especially among "certified" EHRs) EHR vendor support Data quality and accuracy Insufficient office processes Inconsistent use of EHR Time-consuming and tedious Staff role changes	Technical support and troubleshooting Improved consistency of EHR use Accurate data and reports QI tools and processes (e.g., PDSAs, process maps, regular meetings, communications Culture change Staff engagement Stronger sense of community among practices	QI advisors Health IT REC Training Learning collaboratives Peers Local technical support and expertise
Attestation	Inflexible meaningful use criteria	Successful attestation of stage 1 meaningful use	QI advisors Health IT REC Technical support
Using Data Meaningfully	Availability of time and resources EHR upgrades, insufficiency (especially for stages 2 and 3) EHR vendor support Fatigue Continued staff or provider resistance Patient activation and participation Lack of shared vision or understanding	Registries Population management Routine use of data Patient portals Medication reconciliation New patient services Patient feedback Automated patient follow-up	Local technical support and expertise Learning collaboratives QI advisors (resources, connections, accountability, research, cross-practice sharing) Network of peers/collaborators

EHR, electronic health records; IT, information technology; PDSA, plan-do-study-act learning cycle; QI, quality improvement; REC, regional extension center.
(Fernald, D. H., MA, Wearner, R., RD, & Dickinson, W. P., MD. (2013).

Conclusion

The entire concept of Meaningful Use has been and will continue to be debated throughout the healthcare industry. The idea of quality, efficient and cost effective healthcare is undoubtedly the epitome of all healthcare professionals' dreams; but the question of the details of adherence; application and achievement are all a complex workload many have serious doubts about. The government, on one hand, dictates that providers take a head-first, full speed ahead approach justified by incentive programs to bolster both the speed and economic values of implementation. Physicians and caregivers, on the other hand, would prefer a slower, go at your own pace and not be forced into compliance on a rigid schedule. The issue of Meaningful Use has been both a boon and a nightmare to software developers and vendors in an ever changing technological environment, where rules and guidelines change every day. Healthcare professionals as well are experiencing a major upheaval in their practices with not only procedural record keeping, but with changes in technological adaptation requiring vast amounts of extra training and education for themselves and their staff. This ultimately translates into a large fiscal outlay which is supposedly balanced by the incentives offered for compliance.

The initial outlook for Meaningful Use was very positive as it provided all the best aspects of healthcare on a timely basis as well as monetary provisions for user compliance. The program, much like any other of this magnitude proves to be a long, drawn out procedure with the usual delays, drawbacks and various successes. Physicians, as a rule, do not like to be told what to do or how to do it and the Meaningful Use program is no exception; but deep in their physique they know that this seemingly impossible task will ultimately be worth all the work. Meaningful Use is currently making a profound impact on healthcare at all levels and will continue to be a positive initiative toward overall healthcare success.

Survey: Meaningful Use Is It Worth It?

Meaningful Use Questionnaire / Survey Design

The questionnaire/survey was designed to give an overall opinion by healthcare professionals as to their personal experience and reflection on Meaningful Use. It was provided to four hospital systems and a variety of physician practices, both general practitioners as well as specialists. This I believed would give a beneficial look at whether Meaningful Use is practical for the future of healthcare.

Meaningful Use Questionnaire / Survey Questions - Rationale

1) How has Meaningful Use impacted your practice?
   ____ Positive
   ____ Negative

   1 - Rationale – The Meaningful Use Project is intended to bring Healthcare into the future via data collection, sharing and security. The implementation adjustments for many providers have been difficult at best, but anything worthwhile in life is not easy. Each provider has different needs and expectations, so these questions are designed to give an overall feel for the Meaningful Use and its impact on individual providers.

2) In your opinion is Meaningful Use necessary?
   ____ Yes

   ____ No

   2 - Rationale – This question allows each individual to voice their own opinion on Meaningful Use after firsthand experience with implementation procedures. Hopefully opinions will be fair to both sides of the issue.

3) Are incentives adequate for Meaningful Use to be worthwhile?
   ____ Yes

   ____ No

   3 - Rationale – This will be a much debated issue as each provider has different needs to implement due to practice size and monetary issues, as well as software and training issues.

4) What would you change to make Meaningful Use more realistic?

   _____ Comment / Open Text answer

   4 – Rationale – The need to address each providers needs are never universal as each practice is different. This question is to allow future directives to be more customized for their needs.

5) Would you take part in Meaningful Use again, knowing what you now know about Meaningful Use?

____ Yes
____ No

5 - Rationale – This question is designed for future usage issues, knowing that hindsight is 20/20 and already knowing what to expect.

6) Would a longer time frame for implementation of Meaningful Use be helpful?

____ Yes
____ No

6 & 7 – Rationale – Each provider; due to size, limitations, location etc. has their own procedures for how things are done. This question may help alleviate future time constraints on providers.

7) Are current regulations for implementation procedure too strict?

____ Yes
____ No

6 & 7 – Rationale – Each provider; due to size, limitations, location etc. has their own procedures for how things are done. This question may help alleviate future time constraints on providers.

8) What has been the biggest obstacle for implementation of Meaningful Use?

____ Software selection
____ Software adoption
____ Training
____ Physician Acceptance
____ Patient Acceptance and Adoption of Use

8 – Rationale – This is a general question considering the differences of each providers practice to ascertain which issue is more prevalent to cause difficulties for implementation.

9) Would larger incentive payments help implementation?

____ Yes
____ No

9 – Rationale – The question of monetary assistance is an ongoing issue with most providers and their ability to provide necessary funding for healthcare. This question begs the question of whether money is a substantial alternative to rising costs.

10) The Electronic Health Record (EHR) is a vital part of Meaningful Use. Are patients using this technology to actively participate in their own healthcare decisions and the retrieval of their own medical information history?

____ Yes
____ No

10 – Rationale – This question allows the individual providers to voice whether their patients are actually using the new technology as it is intended.

Survey: Meaningful Use Is It Worth It?

Email / Fax Cover Letter: Meaningful Use Is It Worth It?

My name is Karen P. Callahan, CNA, AA, BSISM and I am a Master's degree candidate in Health Informatics and Information Management (MHIIM) at the University of Tennessee Health Science Center (UTHSC). I am completing my thesis and need your help.

My thesis topic is Meaningful Use Is It Worth It. Below is a link to a survey about the impact, outcomes and relevance of Meaningful Use. The survey is short, confidential and anonymous.

Please note that this survey has been reviewed and approved by

If you would be so kind as to complete and submit the survey by (date), I would be very appreciative. The survey will only take a few minutes of your time.

If you have questions, my e-mail address is kcallahan@shorehealth.org

The link to the survey is http://

Thank you for your help,

Karen P. Callahan, CNA, AA, BSISM

Meaningful Use Is It Worth It Survey Questions

https://kwiksurveys.com/app/rendersurvey.asp?sid=4gi46pv2fz3eosd428776&refer=

Example of Online
MEANINGFUL USE QUESTIONNAIRE / SURVEY

This Meaningful Use Questionnaire/Survey has been prepared to acquire data necessary for completion of my thesis "Meaningful Use Is It Worth It?"

Thank you, Karen P. Callahan

University of Tennessee Health Science Center

Masters of Health Informatics and Information Management Student

1* How has Meaningful Use impacted your hospital or practice?

  o Positive

  o Negative

2* In your opinion is Meaningful Use necessary?

  o Yes

  o No

3* Are incentives adequate for Meaningful Use to be worthwhile?

  o Yes

  o No

4* What would you change to make Meaningful Use more realistic?

> Comment box

5*   Would you take part in Meaningful Use again, knowing what you know about Meaningful Use?

    o   Yes

    o   No

6*   Would a longer time frame for implementation of Meaningful Use be helpful?

    o   Yes

    o   No

7*   Are current regulations for implementation procedure too strict?

    o   Yes

    o   No

8*   What has been the biggest obstacle for implementation of Meaningful Use?

Drop Down List – Only one can be selected
o   Software Selection o   Software Adoption o   Training o   Physician Acceptance o   Patient Acceptance and Adoption of Use

9*   Would larger incentive payments help implementation?

    o   Yes

    o   No

10*   The Electronic Health Record (EHR) / Patient Portal is a vital part of Meaningful Use. Are patients using this technology to actively participate in their own healthcare decisions and the retrieval of their own medical information history in your hospital or practice?

    o   Yes

    o   No

Meaningful Use Is It Worth It Questionnaire / Survey Results

Graph 2. How has Meaningful Use impacted your hospital or practice?

     Survey Question #1 – Results

How has Meaningful Use impacted your hospital or practice?
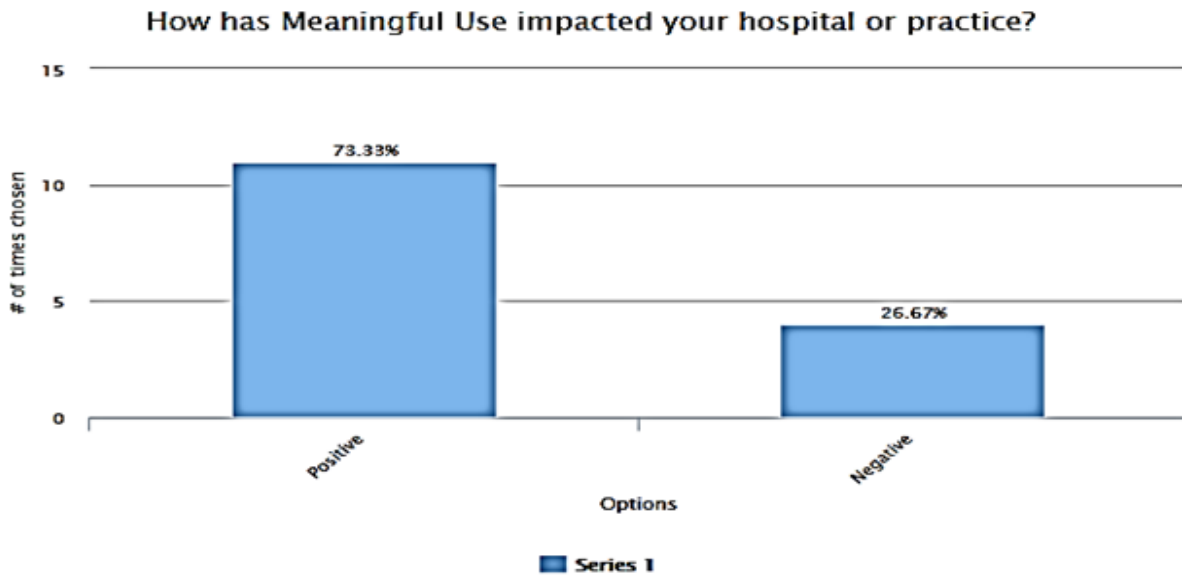
Explanation of Results:

This graph illustrates the positive vs negative impact providers feel Meaningful Use provided.

73.33% believed that Meaningful Use has helped while 26.67% feel that Meaningful Use has not

been beneficial.

Graph 3. In your opinion is Meaningful Use necessary?

Survey Question #2 – Results
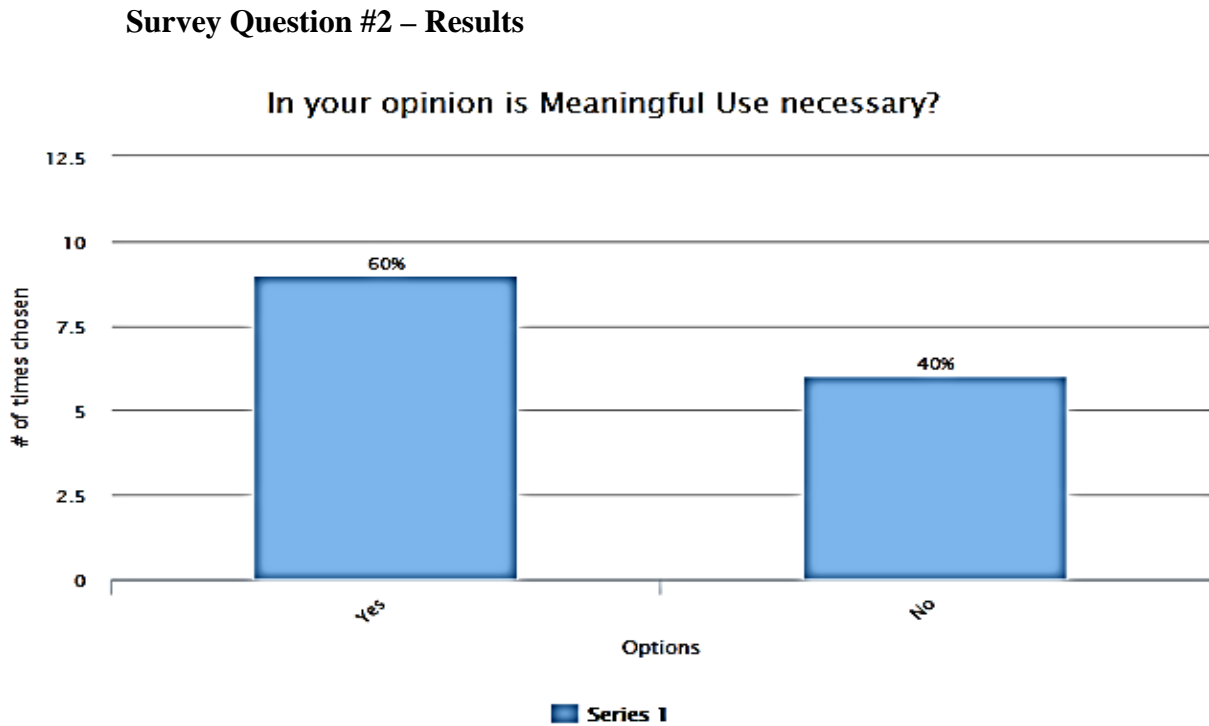
Explanation of Results:

This question reveals a result showing that 60% of providers feel that Meaningful Use is necessary, while 40% feel that Meaningful Use is unnecessary.

Graph 4. Are Incentives adequate for Meaningful Use to be worthwhile?

Survey Question #3 – Results

Are incentives adequate for Meaningful Use to be worthwhile?
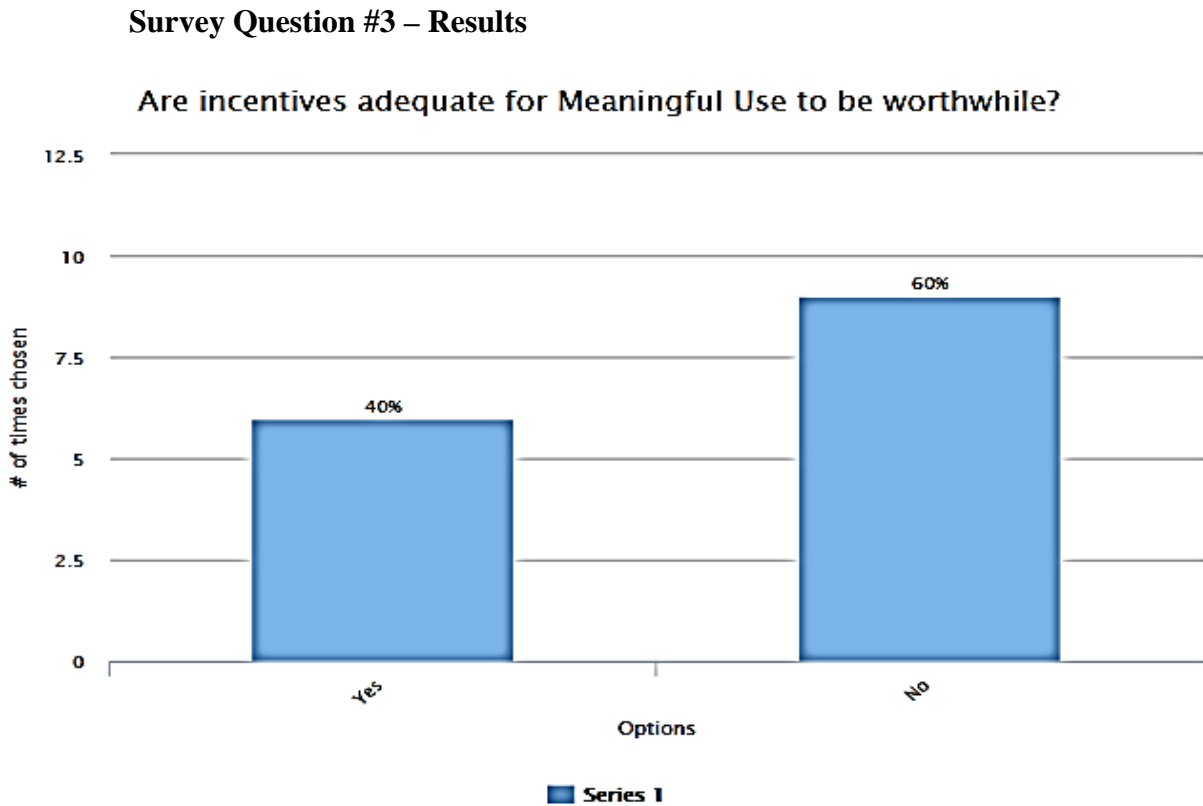
Explanation of Results:

The incentive program for Meaningful Use implementation has been a much debated topic. The survey shows that only 40% feel these payments are adequate, while 60% feel they are not.

Table 8. What would you change to make Meaningful Use more realistic?

Survey Question #4 – Results

What would you change to make Meaningful Use more realistic?

being able to get info to out of network docs (out of area)

Making the physicians be accountable for their actions and realize that the changes reflected for MU is not brought on by the hospital or the staff and their extreme efforts to implement, but MU is from the government.

more time for implementation, especially mapping to standardized nomenclature

Along with insurance reform, cut the administrative cost of doing business especially in physician office practices.

Increase the monetary incentive, and make some of the items more realistic for measurement. Have the criteria stable and normalized prior to releasing it to the public for gathering the data. The constant changes have mad it very difficult for hospitals to work with. To achieve these goals hospitals are having to expend as much money often time as they are receiving from the government for increased labor costs and consultants. In the case of the patient portal the patient demographics can make it very difficult to achieve the goals, as several age groups and socioeconomic groups do not utilize computers or do not have access to computers, and the data is difficult to view via a smart phone.

Longer time span between phrases to implement.

I would have more companies available for interfacing engaged. Interfacing from a hospital system into a physicians office is a timely process. Physician offices need this interface to be able to attest and they are getting very discouraged when it is taking too much time to complete the interface.

Requirements are not realistic to meet the every day patient care needs. They might sound good on paper, but implementation with software restrictions and with scarce resources make utilization almost impossible. EMR adaptation is itself difficult so coupled with MU requirements make it almost impossible and improbable to have positive results that are truly meaningful.

Timeline to meet objectives and measures needs to be extended. More time to achieve MU receiving incentives during this time before penalties begin.

I think the whole concept needs to be re-examined and structured. Computerization in the medical community and world has been to haphazard.

The measures being evaluated need to be more relevant to clinical practice

Meaningful use needs to have a separate team to implement. There is not enough time given other projects that are happening within the organization.

make it optional

MU is currently in its infancy. The reality is that it will drive all of the future development of HIS. This transition is pretty painful.

More time to implement changes.

Explanation of Results:

Every hospital or practice is different and Meaningful Use implementation and reactions is as varied as they are due to size, budget and location. The biggest change in Meaningful Use is the timeframe for implementation involved; the time for each stage needs to be longer with higher incentives. More interoperability is also a concern as well as relevancy of requirements.

Graph 5. Would you take part in Meaningful Use again, knowing what you know about Meaningful Use?

Survey Question #5 – Results

Would you take part in Meaningful Use again, knowing what you know about Meaningful Use?
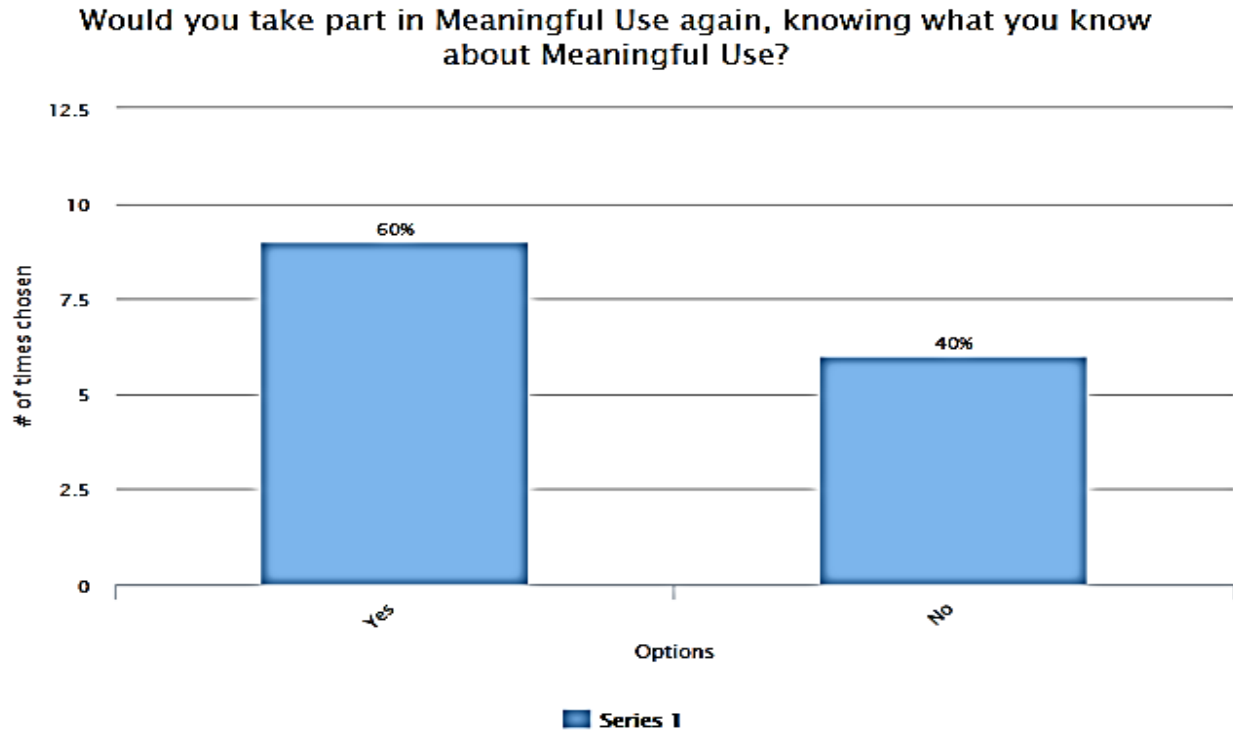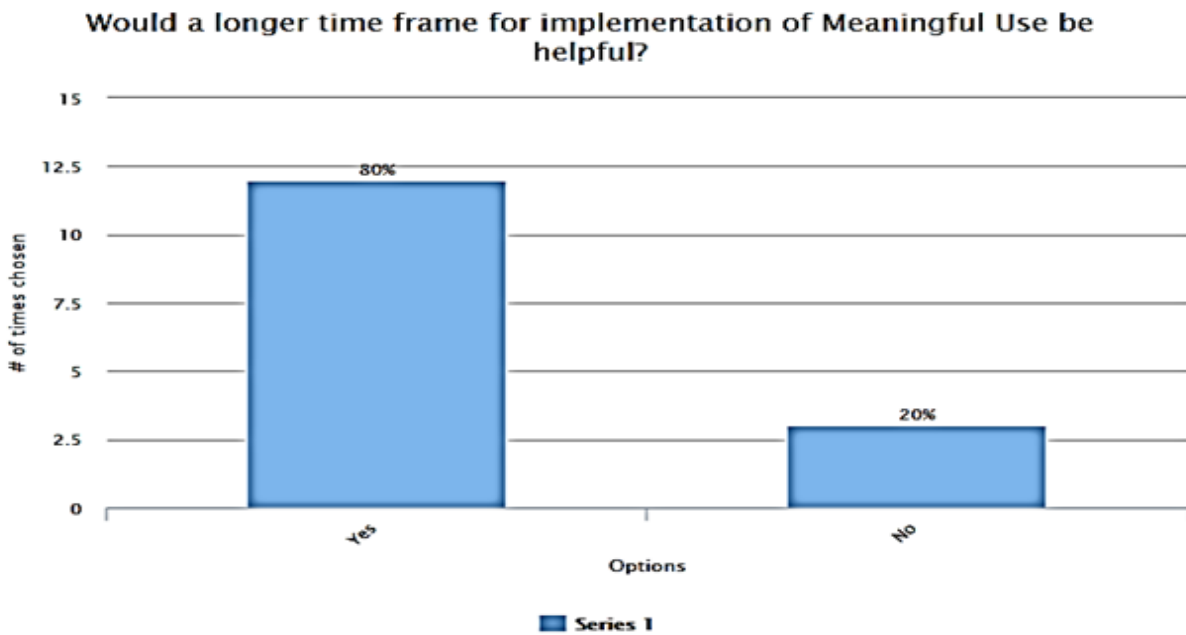

Explanation of Results:

60% of those questioned state they would take part in Meaningful Use again, already knowing what was expected, while 40% would not.

Graph 6. Would a longer time frame for implementation of Meaningful Use be helpful?
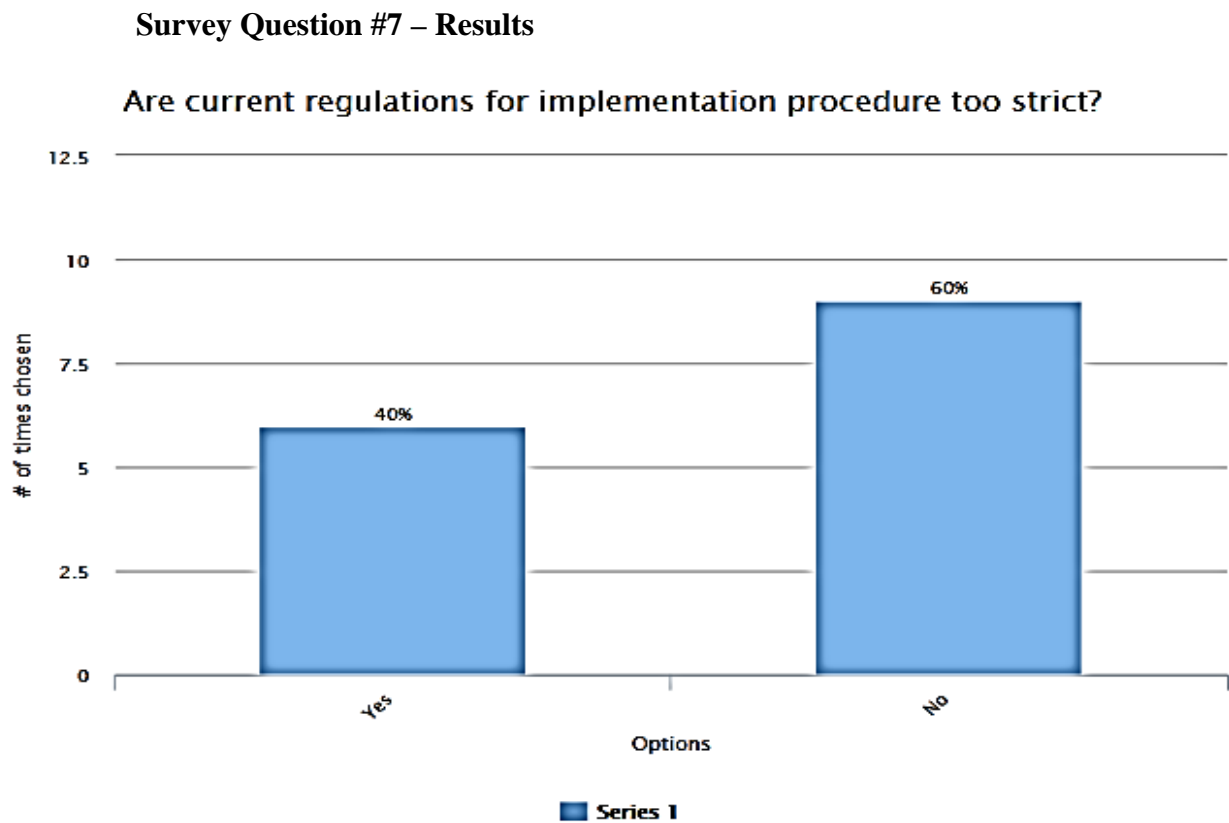
Survey Question #6 – Results

Explanation of Results:

Resoundingly 80% of those questioned would like to see longer timeframes for implementation

of Meaningful Use.

Graph 7. Are current regulations for implementation procedure too strict?

Survey Question #7 – Results

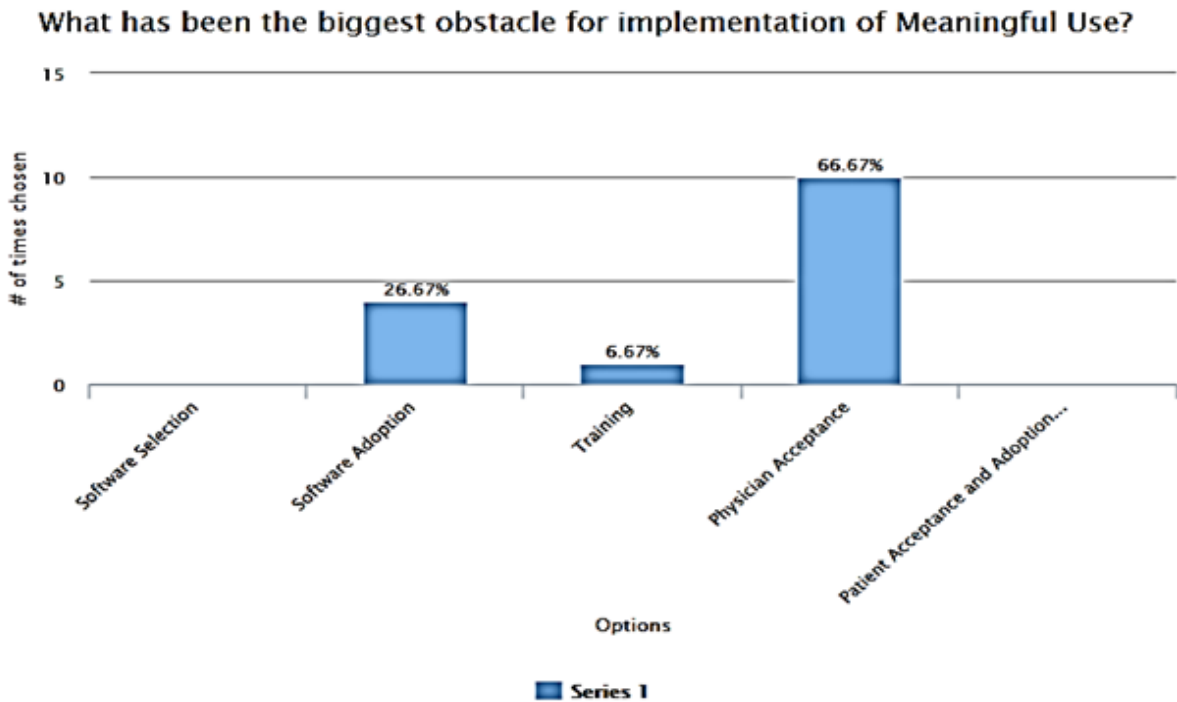Are current regulations for implementation procedure too strict?

Explanation of Results:

60% of those respondents stated the current regulations for implementation are not too strict,

while 40% believe they are.

Graph 8. What has been the biggest obstacle for implementation of Meaningful Use?
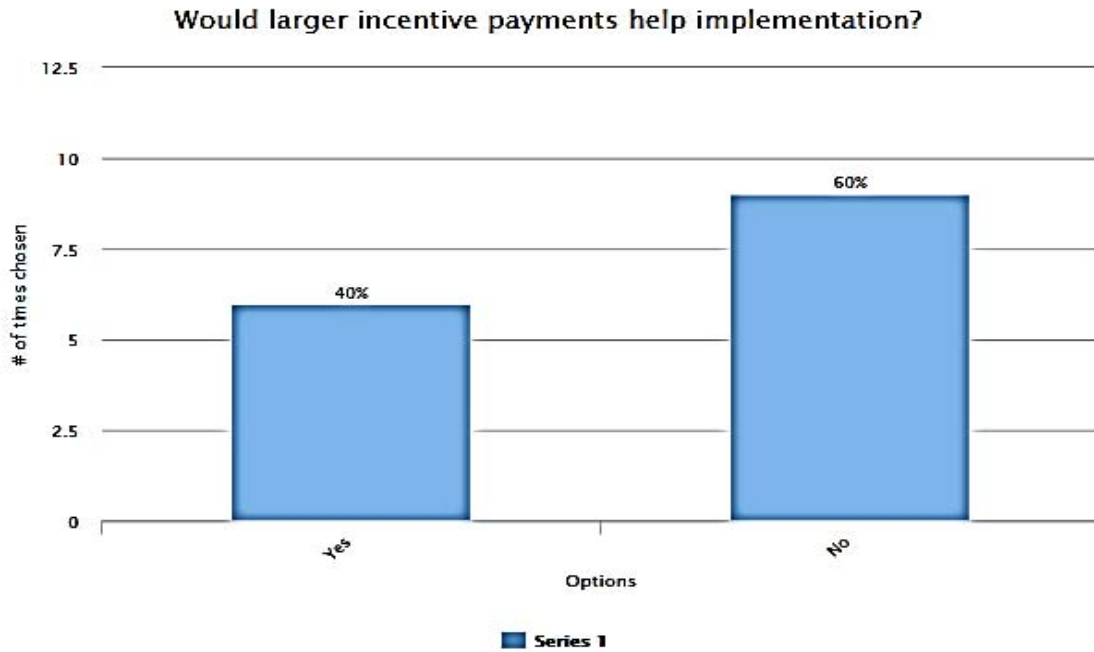
Survey Question #8 – Results

Explanation of Results:

The three largest obstacles for implementation of Meaningful Use are:

1) Physician Acceptance

2) Adoption of Software

3) Training

Graph 9. Would larger incentive payments help implementation?

   **Survey Question #9 – Results**

Explanation of Results:

Surprisingly the majority of responses indicated that only 40% believed larger incentive

payments would help implementation**.**

Graph 10. The Electronic Health Record (EHR) / Patient Portal is a vital part of Meaningful Use. Are patients using this technology to actively participate in their own healthcare decisions and the retrieval of their own medical information history in your hospital or practice?

Survey Question #10 – Results

The Electronic Health Record (EHR) / Patient Portal is a vital part of Meaningful Use. Are patients using this technology to actively participate in their own healthcare decisions and the retrieval of their own medical information history in your hospital or practice?
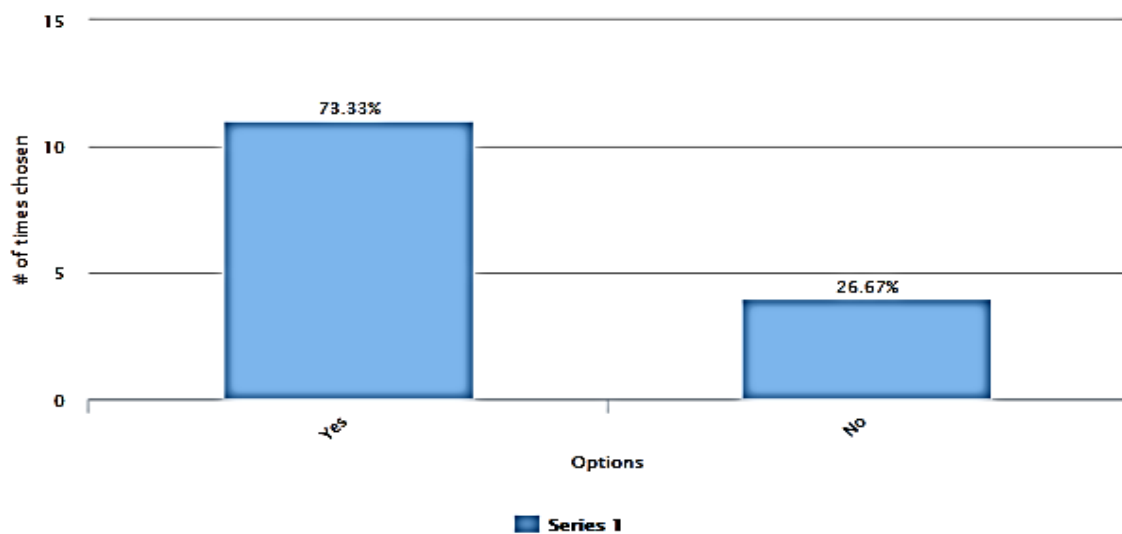
Explanation of Results:

This result shows that Meaningful Use is being used by the patient for its intended purpose as

71.3% actively use Patient Portals.

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